

## **Understanding Competition in Food Chains**

Steve McCorrison  
University of Exeter, England, UK  
([s.mccorrison@ex.ac.uk](mailto:s.mccorrison@ex.ac.uk))

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# Understanding Competition in Food Chains

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## 1. Introduction

There have been considerable developments in the organisation of the food chain in both developed and emerging/developing countries. Many of these developments are common across different environments driven by similar factors including higher incomes, changing dietary patterns, improved technology and the role of women in the workplace, to name a few of the most cited causes. As such, there is considerable convergence in the way the ‘modern’ food chain is organised, most notably the increasing share in the overall value chain of processed food and retailing services and a diminishing share of agriculture in the unit price of any particular commodity bought by consumers. The most obvious developments relate to the increasing importance of the processing sector and, perhaps most notable in both developed and emerging/developing countries, the rapid growth of organised retail chains. Of course, there are differences across countries even within the same geographical space: for example, the industrial organisation of the food sector in the European Union can vary a great deal reflecting aspects of culture, stages of development, geography, the broader regulatory environment in which firms compete and the openness of the economy to trade and foreign investment. In many developing countries, there has been considerable and rapid development of a modernized food chain, although the rates of change have varied as has the timing. For example, Latin America and East Asia (outside China) witnessed considerable growth in retail chains in the early to mid-1990s with Central America and Southeast Asia following in the late 1990s, though for some regions (for example, most of Africa) and specific emerging economies (for example, India), the organised retail sector is at a comparatively low level. However, the trends are common and reflecting these common trends but recognising the variation across countries, I label the developments in the modernized food sector as “convergence with differences”.

These developments pose significant challenges for economists concerned with agricultural and food issues and, more directly in the context of this workshop, with food security issues in India and developing/emerging economies more generally. Specifically, given the characteristics of the “convergence” process, aspects of competition in the food chain will become increasingly important both for understanding the impact the growth of retailing and increasing consolidation throughout all aspects of the food chain for both consumers and farmers. Thus, while in the context of conventional policy analysis of agriculture and food markets little attention has been paid to industrial organisation issues, how firms compete and the impact of consolidation at the intermediate and retail stages of the food chain, this can no longer be the case given the emergence of the modernized food chains. There is therefore an increasing pressure on researchers and policymakers to fully understand the impacts of these developments on farmers and consumers and, in turn, the role for competition policy and regulatory policy more generally. However, in terms of understanding the potential impact of these developments in the food chain, there are three broad aspects to note.

First, although increasing consolidation at various stages in the food chain implies increasing concentration, what is important in understanding the impact of this is not to focus on levels of concentration (i.e. the number of firms) *per se* but rather the firm behaviour. The experience of many countries where concentration has increased is that competition between the ‘small’ numbers of firms has been intense to the benefit of consumers suggesting that a ‘small’ number of firms need not necessarily be harmful. Second, while competition in the downstream retailing has been intense (at least in some countries), vertical issues are also important. So, in the context of the workshop, how do the developments in the retailing sector impact on upstream suppliers, especially on farmers? Does the growth of retailing benefit consumers but result from the exercise of increased bargaining power upstream such that farmers are paid lower prices? Thus, in the context of the developments in the food chain we need to consider both horizontal and vertical issues together in fully understanding the impact of competition in modernized food chains. Third, there is an increasing need for case specific evidence relating to the impact of competition in the food chain. While emerging research is covering a range of experience in both developed and developing/emerging economies, often it is the details that matter and these details refer to the country (and regional) context and by industry. Despite the growing research, there are issues that remain for future work, especially in the context of food security concerns. Most notably, how do commodity price shocks impact on consumers and farmers when the intermediate stages of the food chain are (highly) concentrated, where there is the potential for bargaining power between stages and vertical coordination is an increasing feature of a modernized food chain? More generally, how do the developments in the food chain change the exposure of farmers and consumers to risk? With the on-going trends in the modernized food chain, how do these developments impact on the incentives for innovation which relate to overall productivity growth in agriculture and the food chain more generally?

The developments in the food chain and the issues that arise from them have important implications for policy makers – in particular ensuring an environment and policy framework that harnesses the potential benefits while limiting the potentially harmful effects. Most obviously in a context where competition in the food chain becomes an increasingly important issue, there is a role for competition policy, a policy concern that has been traditionally associated with agricultural and food markets. More generally, developments in the food chain and their impact on consumers and farmers can be influenced by the broader regulatory environment in which firms compete. For example, planning regulations, inter-state barriers, opening hours, application of food standards, hygiene requirements, restrictions on foreign investment and so on, will impact on the intensity of competition within and between stages in the modernized food chain and the potential benefits that could arise from such modernisation.

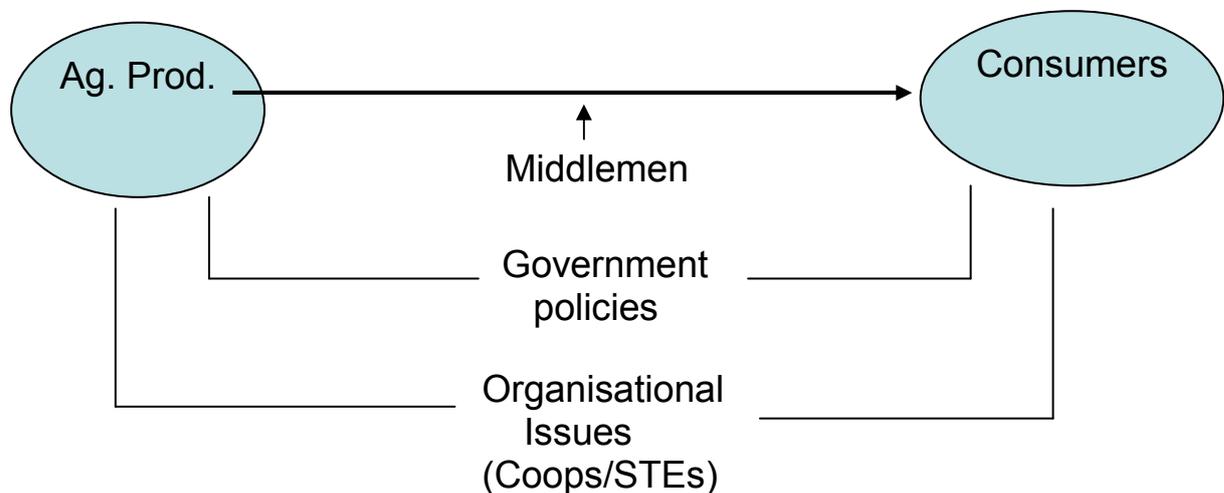
This paper briefly covers these issues. The aim is not to provide a comprehensive overview of research that has been carried out on the food chain to date but to highlight the most pertinent aspects that relate to competition and the potential issues for policy makers. More generally, the principal aim of the paper is to highlight issues for a research agenda that are particularly important in understanding the impact of competition in the food chain in emerging/developing countries, especially those where food security is an over-arching issue. Section 2 of the paper summarises briefly some of the main features of the food chain that has been common across

many countries and lists some of the main concerns and potential advantages associated with these developments covering both horizontal and vertical issues. In Section 3, we cover briefly the related evidence on these issues. In Section 4, the role of policy in harnessing the positive and limiting the negative effects is addressed while, in Section 5, a list of issues for an emerging research agenda on the impact of these developments is considered.

## 2. Developments in the Food Chain

Figure 1 presents a simplified view of how economists have perceived a “traditional” agriculture and food sector and, in turn, the way economists have typically modelled agriculture and the role of policy. Specifically, it is often assumed that there is a direct link between farmers and consumers with little attention given to the intermediate stages that link the two. Of course, this does not imply there are no players between farmers and consumers; there obviously are but given that the “bit between” is assumed to comprise a large number of small participants as is the retail sector (comprising a large number of small retail outlets), there is no general concern especially relating to the extent and nature of competition in the food chain. Of course, organisational issues may still be important (for example, the role of cooperatives or the presence of state trading enterprises) which may influence procurement and distribution but, in general, the intermediate and retail stages attract little sources of concern.

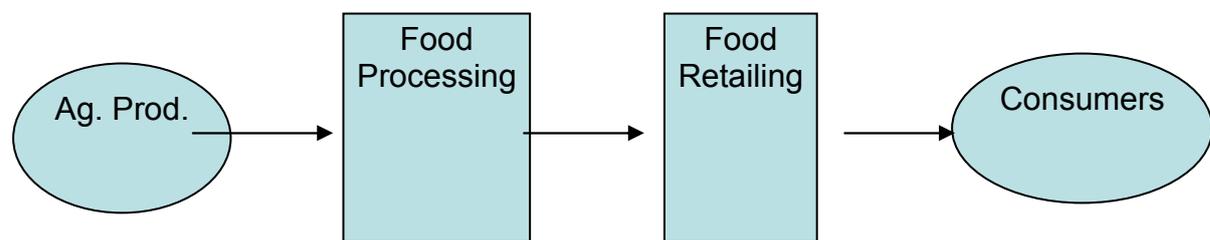
**Figure 1: A Simplified Characterisation of a “Traditional” Agriculture/Food Sector**



Ignoring such issues is not feasible in the context of modernized food chains where the intermediate and retail stages between farmers and consumers become increasingly important. Although there can be several such “successive” stages in the food chain, we focus on just two, primarily because these have been the associated with the major patterns of change across many countries. Thus, in contrast to Figure 1 above, Figure 2 characterises a “modernized” food chain.

There are several important aspects to this. First, with the increased role of manufactured food products and the growth of retailing, an increasing share of the “food dollar” is accounted for by these intermediate stages with a commensurate smaller share of this “dollar” going to farmers. Second, the industrial organisational features of these intermediate sectors become important. One aspect of this is the tendency for the food processing sector to exhibit relatively high levels of concentration. Data for selected European countries puts the average three-firm concentration ratio in food processing in excess of 65 per cent for several countries (including Finland, Norway, Sweden, Denmark, and Italy with France and Spain not far behind). Third, and perhaps more significantly, or at least what has attracted the most attention given recent developments, is the rapid rate of growth of retailing across many countries. Supermarket growth has been particularly rapid across many developing/emerging economies. For example, in the early part of this century, around 50-60% of retail food sales across many Latin American countries were accounted for by supermarket outlets. In East Asia, supermarkets also account for around 60% of retail food sales and, in China, which started the supermarket revolution behind Latin America, around 50% of retail sales in urban areas are accounted for by supermarket chains. These developments have occurred over a relatively short period of time and even in countries where supermarkets are less significant, the rate of growth of retail sales by supermarkets is increasing at a fast rate.

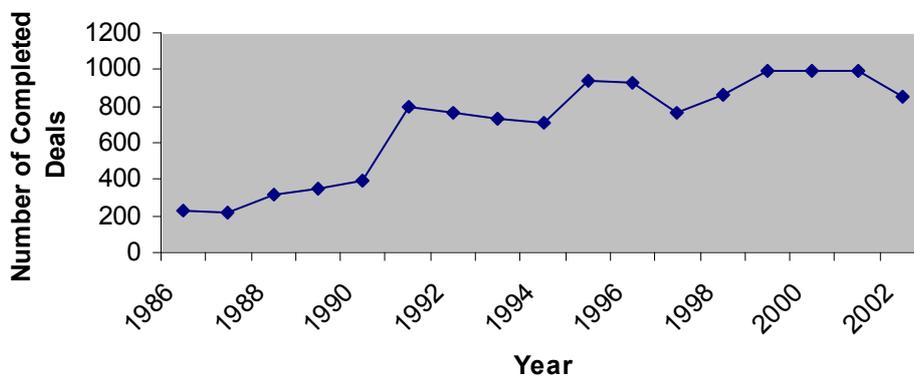
**Figure 2: A Simple Characterisation of a “Modernised” Food Chain**



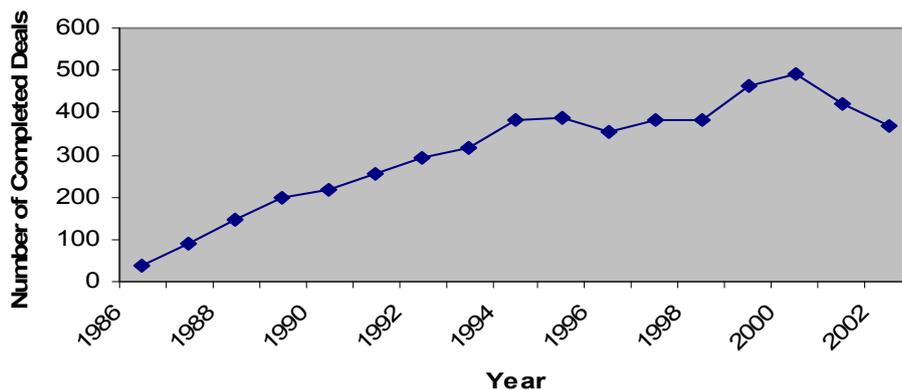
As noted above, the processing sector often exhibits high levels of concentration. This is also true of food retailing. To take some European data to illustrate this, over the 1990s, the 5 firm concentration ratio in the UK and France increased by 7 percentage points. In Germany, the corresponding increase was 10 percentage points; in Austria, 14 percentage points; and in Sweden, 24 percentage points!

One aspect of the modernized food chain is the tendency towards industry consolidation. This is reflected in the growth in the number of mergers and acquisitions in the food sector over the last 20 or so years. Figure 3 highlights the growth in the number of domestic mergers and acquisitions worldwide with the most obvious reflection of this being the high number of deals recorded year on year. But another important aspect of consolidation has been the internationalisation of the food sector as witnessed by the growing number of cross-border mergers and acquisitions. The growth in the number of these deals is highlighted in Figure 4, the most immediate impression being the strong and consistently upward over the last 20 years. So, increasing consolidation and internationalisation is an important feature of the development of the modernized food sector globally.

**Figure 3: Domestic M&As in the Food Sector (All countries): 1986-2002**



**Figure 4: Cross-Border M&As in the Food Sector (all countries): 1986-2002**



At face value, these developments would give rise to considerable concerns about the potential for firms to exercise market power. In the “textbook” case, a small number of firms can be expected to give rise to higher prices for consumers and lower prices for suppliers. Indeed, in the context of food chains where there are multiple stages, the textbook problem is potentially worse in that market power can be exercised at any or even all stages of the food chain, the issue of multi-stage market power compounding the problem of market power that would arise in a single stage market. In the language of industrial organisation, we have the potential problem of “successive” market power. Before commenting further, we have to consider another aspect of the food chain, specifically issues relating to coordination between stages.

In the context of a chain, how the each constituent of the chain links together is important; in our context, vertical coordination between these different stages in the food chain. The nature of this vertical coordination has important implications for addressing the overall degree of competition in the food chain as well as the potential costs and benefits to farmers and consumers that arise from the overall developments.

Vertical coordination can take place between the proximate stages (retailers-food manufacturers) or across less proximate stages (retailers-farmers). Rather than reviewing the literature on vertical coordination, I instead raise some issues that highlight some potential advantages and disadvantages that arise from vertical coordination in the context of the food chain issues. The list is not intended to be exhaustive.

*Potential advantages:*

- (i) Vertical coordination may increase the overall efficiency of the food chain relating to logistics, raising standards, introduction of new technology and improved management and procurement practices.
- (ii) Improving coordination in the food chain (for example, via vertical integration or contracts that replicate the outcome of vertical integration) may circumvent “hold-up” issues that may arise in a chain which is uncoordinated.
- (iii) Contracts between stages may ameliorate the problem of “successive” market power. For example, contracts between retailers and food manufacturers may reduce the “double mark-up” issue that may arise in markets where there is successive market power
- (iv) Coordination between downstream stages and farmers may relieve factor market constraints, for example via the provision of credit, input supplies and so on.

*Potential Disadvantages:*

- (i) Vertical contracts between retailers and manufacturers may exacerbate the double mark-up problem because it leads to foreclosure (i.e. it is anti-competitive).
- (ii) The nature of vertical coordination may reflect bargaining power between retailers and farmers which results in lower prices for farmers (of course, these lower prices may be passed on to consumers thus making it a more complex issue from a competition policy perspective).
- (iii) The bargaining power of the large retailers may impact negatively on traditional retailers via a “waterbed” effect i.e. the large retailers attain low prices but the traditional retailers pay higher prices.
- (iv) There may be “contract incompleteness” to the disadvantage of the weaker participants in the food chain i.e. the farmer. For example, via changing the conditions of the contract, timeliness of payment and so on.

### **3. Related Evidence**

The range of issues that relate to developments in the modernized food chain and, in turn, the implications they have for how we (as academics and policy-makers) consider the nature and impact of competition are complex. Increasing consolidation does not necessarily imply “harm”. If there is “harm” it may be one-sided; for example, consumers benefit from the bargaining power of retailers but farmers lose. Depending on the details, vertical coordination has potential benefits and costs. In determining the impact of competition in the food chain, it is not necessarily the number of firms that matter but behaviour; but anti-competitive behaviour is much

more difficult to detect than just looking at numbers. Finally, the experience and impact of competition in the food chain may vary across countries, regions and by commodity sector such that case-specific evidence is what will really be required to provide important advice to policy makers. That said, what are the main messages that are arising from research and the investigations that have been conducted by competition authorities?

The first message is that the issues are complex. When competition authorities undertake investigations into competition in the food chain, they are difficult and time-consuming given the range of issues they have to address and the complexity of competition in the food chain. Perhaps most notable in this regard are the two wide-ranging investigations conducted by the UK Competition Commission into market power exercised by food retailers over the last 10 or so years. Overall, despite the high levels of concentration in UK food retailing, the Competition Commission concluded that consumers were not harmed by these developments as competition between retailers was sufficiently intense. However, the Competition Commission did raise concerns about the power exercised by the food retailers on upstream suppliers and highlighted 28 or so specific practices that gave rise to concern. Note that, the retailers passed the competitiveness test since the metric that was important to the Competition Commission related to “harm to consumers” but not bargaining power with respect to upstream suppliers. More generally, there is consistent evidence that has emerged from academic research (most relating to the US) that despite increasing consolidation, retail prices have not generally risen as a consequence.

The second main message that comes out from research and which relates more directly to the growth of retailing in emerging/developing countries is that neither farmers nor consumers are necessarily harmed by the developments noted above. There is evidence that food prices may be lower in the organised retail sector compared with the traditional retail sector and that returns to farmers can be considerably higher when selling to supermarkets and retail chains rather than selling through traditional wholesale outlets or via middlemen.

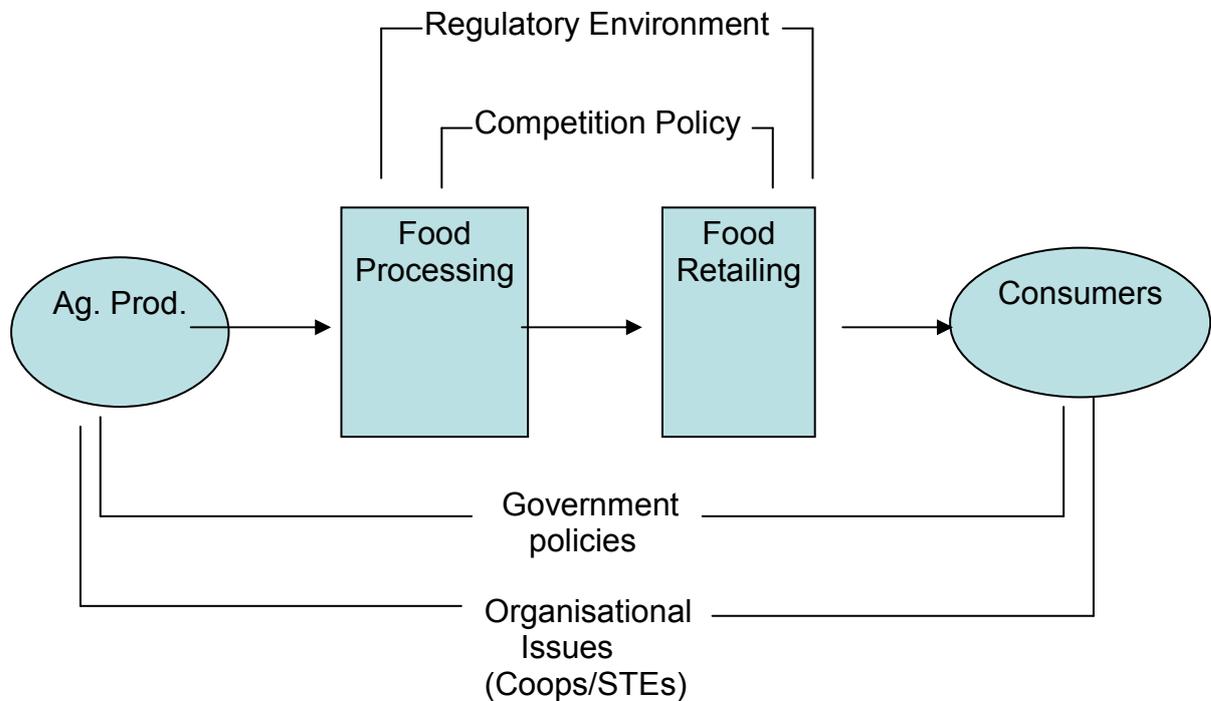
Of course, this is not intended by any stretch to give a full or accurate flavour of the existing research on the impact of competition in food chains but it serves to highlight two broad issues which need to be noted in any future research agenda. First, the growth of retailing and increasing consolidation in the food sector generally need not always cause “harm”. Second, there may be cases where the interests of farmers and consumers may be misaligned. This is obviously a complex issue in countries where food security is an important policy objective.

#### **4. Harnessing the Positive, Limiting the Negative**

The discussion above suggests three broad features of the “modernized” food chain: first, that competition in the food chain is currently for many countries, and will become increasingly so for many others, an important issue for economists and policy makers to address and understand; second, competition in the food chain is potentially complex with issues relating to food security at either end of the food chain an important issue to address; and third, the characteristics of these developments and the related evidence as it exists to date suggesting that the increasing importance of competition issues in the food chain are not necessarily, or at least not in every

instance, harmful. What are therefore the means by which policy makers can harness the positive aspects of these developments while limiting the negative aspects? To this end, I adapt Figures 1 and 2 to account for the additional policies that will be pertinent to a supply chain when competition matters (see Figure 5).

**Figure 5: Government Policies and a Modernized Food Chain**



*(i) The Role for Competition Policy*

The most obvious policy watch relates to competition policy. Having an effective competition policy that can address the concerns relating to competition in the food chain and the authorities have the resources and expertise to deal with them will be increasingly important in the context of the developments in the food chain outlined above. Clearly, though there is a concern about the welfare metric in terms of balancing the concerns of farmers versus consumers when the interests of each group are not aligned.

This would happen say with reference to bargaining power that impacts on upstream suppliers but leads to lower prices to consumers. One way in which these concerns relating to the impact on upstream suppliers including farmers have been tackled in some countries is via Codes of Conduct. Ideally, these should be voluntary but if necessary legally enforceable. Countries where this issue has been addressed include the UK (following the Competition Commission enquiries into the retailing sector noted above) and in Argentina and other Latin American countries.

(ii) *The Broader Regulatory Environment*

The extent of competition within each stage in the food chain and between stages will depend not only on competition policy enforcement but also on the broader regulatory environment in which firms compete. So, for example, de-regulation of state trading enterprises, the role of government in procurement and distribution, inter-state barriers, planning restrictions, application of food safety laws, restrictions on foreign direct investment and trade liberalisation more generally are all factors that determine the overall environment in which firms compete. Factors that deter entry or those that raise the costs of doing business will all impact on how effective competition will be in the food sector.

(iii) *Pro-Active Initiatives*

Of course, competition issues need not need await to be referred to the competition authority for the government to help promote a competitive food chain. Improving the broader regulatory environment will deter the potential for ant-competitive behaviour. More specifically, encouraging and supporting the unorganised retail sector in face of the growing penetration of supermarkets, small retail businesses can be supported via the development of wholesalers from which they can procure goods at a reasonable price (e.g. through cash and carry outlets). Cooperatives can be encouraged to counter the potential bargaining power emerging from downstream stages. Provision of appropriate credit facilities and the support of traditional markets can help small businesses throughout different stages of the food chain.

## **5. A Broader Research Agenda**

The above discussion gives rise to an obvious research agenda under the heading of understanding competition issues in the food chain. Chain-specific data and thorough analysis of this data will shed light on how the potentially positive versus the potentially negative aspects of competition in the food chain balance out and for whom. But rather than repeat those issues here, I highlight a broader range of issues that will be important in addressing how competition issues will matter particularly in environments where food security is a crucial issue. These are listed below:

(i) *Competition and Commodity Price Shocks*

In the context of a vertically-related food chain where competition at each stage and between stages matter, what will be the likely impact of commodity price shocks. More specifically, what will be the nature of price transmission as a consequence of these shocks and their impact on consumers and farmers. This issue is an important emerging issue in the European Union where the impact of the commodity price hikes of the last couple of years, was very different across EU states. To what extent is this impact related to the extent of competition in the food chain? Theory suggests a strong interaction between the extent of competition and how price changes are transmitted throughout the food chain and, as such, will therefore be an important concern in countries where food security is a concern.

(ii) *Competition, Vertical Coordination and Risk*

In the context of markets where supply may be stochastic, how does the nature of competition in downstream markets and the role of vertical coordination throughout the food chain determine the exposure of farmers and consumers to risk? Since competition has the potential to influence the dynamics of prices at alternative ends of the food chain, how does competition at each stage of the food chain and the links between stages influence the dynamics of prices and hence the exposure to risk? Most of the research that has been done on the effect of food chains has focussed on level effects but the impact on exposure to risk also needs to be addressed.

(iv) *Competition and Innovation*

Although the research is in its early stages, as noted above it is largely confined to static effects. Perhaps an issue that relates more to the longer term is how competition in the food chain influences the incentives for innovation. Given that productivity growth in agriculture will be one aspect of meeting food security objectives, how competition and vertical coordination in the food chain influences these incentives, will be an important issue to address as part of the food security agenda.