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UNDERSTANDING MANDIS: MARKET TOWNS AND THE DYNAMICS OF INDIA'S RURAL AND URBAN TRANSFORMATIONS

PHASE 1: PREPARATORY PHASE & EXPLORATORY RESEARCH IGC FINAL PROJECT REPORT

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The Project

Mandis or physical, primary agricultural markets are old and ubiquitous institutions of economic life in many parts of India. Wherever they form, they are usually dense sites of economic, social and political activity, connecting and shaping the relations between town and countryside, and between local markets for commodities and larger, national and global circuits of capital and commerce. According to available estimates, there are over 7500 regulated agricultural markets in India today, operating under different state-level acts covering a huge variety of notified agricultural produce.

Understanding the diversity and complexity of these rapidly changing markets and their relationships to larger economic forces currently transforming the linkages between rural and urban India is vital to enabling greater participation, inclusion, and dynamism in India's economic growth. The performance of these markets has been the subject of longstanding debates, which have become increasingly politically charged and polarized in the context of rising food inflation, deliberations over food security, grain procurement and distribution, and the controversial policy decision over allowing FDI in the retail sector.

Unfortunately, there is a very significant gap in the availability of accessible, systematic and robust data and analysis on this vast and varied mandi system. Like India's agricultural markets, our information about them is also highly fragmented, and our data disorganised, intermediated, and incomplete. In such a context, systematic, comprehensive and contextual studies, across agroecological regions, administrative units, commodities and

their supply chains, political economies, and regulatory regimes are needed to develop responsive and creative policies for India's food system and its different stakeholders.

Our goal is to develop, over a period of time, a collaborative, multi-level and interdisciplinary project to generate and anchor a range of new research activities to help fill this gap. The idea is to undertake process-oriented investigations that will involve the study of interactions, especially between agricultural markets, settlements, technology, infrastructure and regulations.

The larger project aims to undertake a multi-level data organization and mapping of the mandi system of India and the supply and value chains associated with it, to generate knowledge on the following:

- Developing a typology of India's agricultural marketing system
    - How are mandis distributed and categorized across different state-level regulatory systems and administrative areas?
    - How are mandis spatially distributed in India? Where are they located? How do these locations relate to different agro-ecological areas and access to larger metropolitan markets?
    - How do these markets vary across different local production conditions, crops and commodities?
    - What are the key alternative (public and private) agricultural marketing channels?
- How is the mandi system connected? What are the different networks that enable movement through and between mandis?
- How do specific commodities reach consumer markets and how is

value added along these supply chains?

Building on this multi-level data organization and mapping, the project will attempt to investigate questions regarding the workings of these markets and their supply chains. Research will be conducted in different phases and sites on a range of questions, including:

Market Dynamics

- How are prices set and transactions managed in mandis?
- What are the dynamics of collusion and competition among buyers?
- Who are the key market participants and how have they changed over time? Who are the traders and major buyers (government agencies, regional processors, multinational corporations etc.)?
- What are the factors determining farmers' access and participation in mandis and alternative marketing channels?
- How do different commodities affect mandi operations and effectiveness?
- What are the different forms of credit cycles that finance trade flows?
- How are electronic commodity exchanges affecting price discovery and physical trade?
- What are the advantages and disadvantages of different mandis and procurement systems: large vs. small, large number of bidders vs. a few, multi-product vs. single product?
- What are the ownership structures in place and how are mandis formally and informally managed and regulated across different markets?

Markets, supply chains and infrastructure

- What is the technological infrastructure available in these markets: e.g.: staging areas for vehicles, measurement systems, loading and unloading equipment, storage technology, retrieval systems, data systems, and transport technology?
- What is the regional variation in technological infrastructure? How are different forms of technology changing mandi operations and their supply chains?
- Who are the actors and entrepreneurs operating in logistics and supply chain management, including warehousing, transportation, cold chains, processing, retail etc.? How does skill upgradation take place?
- How is value captured and distributed across the supply chains? How does it vary across spatial locations and governance mechanisms of mandis?
- What are the best practices for the provision, financing, and use of infrastructure and technology in agricultural markets and supply chains?

Market reforms and social transformations

National policies and state-level reforms have continuously redefined and regulated agricultural markets and related sectors in diverse and uneven ways across different regional and political-economic contexts in India. A cross-cutting aim of this project, therefore, is to understand these reforms in depth in terms of their extent and dimensions across different states and regions and their impacts on different groups and stakeholders in the

marketing process and system. Finally, the project will also be attentive to understanding and documenting the social effects of changing agricultural markets, their new economic relationships, and the experiences of inclusion and exclusion that may be unfolding spatially and across social groups.

Phase 1: Preparatory Phase and Exploratory Research

Given the wide scope of these themes and the scale of the task, the larger project clearly requires considerable preparation before it can be launched, including the identification, refinement and prioritization of research questions, an assessment of key data sources and appropriate methodologies, familiarization with possible sites and comparatives contexts, and building partnerships with a network of individual researchers and organizations who can work on specific sites and segments within a larger policy research framework.

The current IGC-funded project is part of this preparatory phase and has enabled us to undertake exploratory research in a few field sites, using a combination of research methods, each taking up some aspects of the key themes and questions listed above. The objective was to enable a more robust and viable design for the larger multi-level project, develop a set of grounded, comparative research questions, and in the process generate some initial and preliminary data and insights, on which to build up further work.

Given the purpose of the preparatory phase, we began by matching the current expertise and capacities of our team and associates, with some of the key questions for research and policymaking. We decided to focus our work on

three broad components:

1. A basic data scoping, organization and mapping exercise
2. Exploratory fieldwork on the changes in the organization and regulation of agricultural markets in different states
3. Documenting and mapping agricultural commodity supply chains

To contextualize our investigations, we picked three states – Madhya Pradesh (where one of our co-investigators has an ongoing engagement with a long-term mandi fieldsite); Karnataka (where one of our research partners is based); and Bihar (where one of our research collaborators could undertake focused fieldwork on agricultural markets with the benefit of a decade of ethnographic research in the state). This gave us access to three different mandi sites – Harda (in MP), Ara (in Bihar), and Gulbarga (in Karnataka). Most importantly, while at this stage, access to field sites was clearly a key consideration in conducting this set of limited, exploratory studies, we were motivated to choose these three states because of the questions they enabled us to explore, each of which have critical and current policy relevance and together make for valuable comparative case studies:

- Over the last five years, Madhya Pradesh has seen a remarkable and unprecedented expansion in its wheat procurement operations, going from a virtual non-entity in the foodgrain procurement landscape to one of the largest contributors to the central pool. While the state has scaled up its presence in the wheat market, MP was also one of the first states in the country to amend its Agricultural Produce Marketing Act (also known as APMC Act) to allow private procurement yards, such as the

corporate conglomerate ITC's *e-choupals* and hubs to be set up outside the mandi yards, beginning with soybean procurement nearly a decade ago. Harda mandi, our field site in MP has experienced both significant public and private sector intervention in recent years and has had to respond to different systems and pressures as a result.

- In contrast, the newly-elected Government of Bihar decided against initiating reforms within the existing regulatory system and in 2006 went ahead and directly repealed its APMC Act, abolishing all state-regulated mandis or APMCs. This decision, one of the first enacted by Nitish Kumar's government (and the first such repeal of the existing Act in the country) was publicly justified as freeing the farmer from the clutches of middlemen and opening up the marketing system from the entrenched interests and control of traders and corrupt and inefficient APMCs. Ara, in Bhojpur district, is a major regional market for wheat and has seen the closure of its APMC after the policy was implemented, providing an opportunity to explore the consequences of this state action on different actors and on the organization of markets.
- In Karnataka, which like MP has an operational APMC/mandi system in place, our aim was to try to map the supply chain for *tur* or red gram and its main stakeholders, from Gulbarga (known as the '*tur* bowl' of India) to Bangalore, a key consumption centre. Unlike the relatively well-studied foodgrains, wheat and rice, much less is known about the performance of markets and supply chains for pulses, of which *tur* is one of the most important commodities. Our research partner, IIM-Bangalore

(IIM-B) has a centre dedicated to supply chain management and was well-placed to design and anchor this exploratory study and stakeholders' survey.

Each of these investigations have generated qualitative and quantitative data, thrown up methodological challenges and limitations, and suggested specific areas for more systematic study (Please see list of submissions/outputs listed at the end). In this report, we present a brief summary and synthesis of the key findings and insights from across the three components/sites, consider their policy implications, and highlight potential directions for further context-specific and comparative research. These findings focus on (1) Variations in market organization: credit and commission agents; (2) Variations in market practices; (3) State-regulated market yards and private channels; and (4) Supply chains and stakeholders: distribution of costs, value addition and margins.

These will be built upon in the larger research project and we hope, even at this early stage, will be of value to policy researchers and policymakers seeking to better understand, analyse and intervene in India's agricultural markets and how they work in practice. Taken together, they underscore the remarkable institutional diversity, dynamism and complexity that define agricultural markets in India and the urgent need for grounded, localized and comparative research to inform policymaking in this critical area of development.

Key Findings, Policy Implications and Directions for Future Research

Variations in Market Organization: Credit, Commission Agents and Commodities

The critical relationship between the advancing of agricultural credit and commodity marketing is one of the most well-established features of India's agricultural markets. This has been extensively documented in different agrarian contexts and described in terms of interlocked or interlinked markets and transactions, where the sale of post- harvest produce is tied to credit advanced to the producer during seasons of cultivation (Bardhan and Rudra 1978; Bardhan 1980; Basu 1983; Bhaduri 1986; Harriss-White 1996; 2010). The source and availability of agricultural credit was an important aspect across the three market sites studied in MP, Bihar and Karnataka. However, it is interesting to note that our exploratory research also suggests that the nature of these relationships vary considerably across diverse agrarian structures and commodity systems and have a critical part to play in the organization of markets and in determining the presence and purpose of commission agents within them.

From the fieldwork conducted in the markets of Ara and Bhiya (Bhojpur district), Bihar in 2011, Witsoe found that both before *and* after the abolition of the APMC, farmers in his research village and neighbouring village continued to sell their surplus wheat and rice to village banias, who then made sales in Ara. Farmers, across different landholding sizes, did not take their produce directly for sale to commission agents or traders in the mandi. This practice did not change in any way after the abolition of the APMCs.

Importantly, Witsoe found no evidence of credit transactions between farmers and either village banias or traders in Ara, a finding consistent with a detailed survey of credit transactions of 400 households that he had conducted in the same area in 2007. Therefore, here, credit ties with local traders/intermediaries are not a major factor keeping farmers from making direct sales of their surplus produce in the mandi. Distance and lack of transportation to Ara also did not appear to be the main obstacle. Indeed, Witsoe observed instances where the bania rented a tractor trolley from a large farmer to convey the aggregated load for sale in the mandi, while the farmer himself sold to the bania in the village. In such a context, the provision of agricultural credit to farmers alone is unlikely to yield a solution that gives farmers' direct access to more competitive markets; this will also require the organisation of larger market sites and procurement channels to transact directly with primary producers.

At present, however, beyond the village level, the regional grain market is organized for trader-to-trader sales, with the likelihood of credit advances and lagged payments from larger traders to commission agents and smaller traders, although this needs to be further investigated. When interviewed, major buyers/traders said that they did not deal directly with farmers, but purchased through known local traders only, either directly or in the APMC (when it existed) or in the private mandi, which operates outside the now defunct regulated yard. Interestingly, the private mandi was the primary centre for trading activity in the earlier period as well, but it was allowed to operate on the basis of bribes to APMC functionaries to bypass the public

mandi. The lack of direct interaction with farmers not only applied to regional traders, but to corporate grain traders that have entered the regional market in recent times. For instance, a multinational grain trading corporation was operating a wheat procurement centre right next to the research village in Bhiya block, but refused to accept even a large lot of wheat from farmers associated with one of the few functioning Primary Agricultural Cooperative Societies (PAC). When approached, their managers informed the Chairman of the PAC that the firm's policy was to only buy from traders. When prices were compared, Witsoe found that the purchase price at the corporate procurement centre was approximately 10 percent higher than the prices farmers were receiving in the village right next to it.

In contrast to Bihar, both the mandis in Harda in MP and Gulbarga in Karnataka functioned as genuine primary markets, where farmers comprised the large majority of the sellers. (Small mobile traders and aggregators, who had picked up produce from the villages in the mandi catchment areas also sold in the market, but they were fewer in number.) At the same time, we observed important differences in the composition of market actors and intermediaries operating within the regulated market yards in MP and Karnataka.

In the three major *tur* mandis surveyed by the IIM-B team in Karnataka – Gulbarga, Bidar and Bijapur – farmers' sales in the mandis were conducted only by licensed commission agents (*arhatiyas*), who were positioned between farmers and the processors and other buyers of their produce (in this case, *tur* or red gram). Generally, the commission agents

interviewed maintained long-term relationships with 50-100 farmers, who formed the core of their business in the mandi. For managing the sale of produce and processing the payments of individual farmer-sellers, the commission agents officially charged the buyers a fee of 2 percent of the sale. According to the APMC rules, the farmer should not have to pay any commission in order to sell produce in the mandi. In practice, however, commission agents deduct on average a fee of 2 percent per sale from the farmer (with a range of 2-4 percent depending on relations and the willingness to accept delayed payments – the longer the delay, the lower the commission). The fee covers a number of services that the commission agents provide to their farmer-customers, the most important of which is the advancing of agricultural credit during the cultivation season, which is lent out on interest. In addition, *arhatiyas* provide price advice to farmers (since they gain from a cut of the higher prices, both from the buyer and seller), offer storage facilities if farmers would like to hold back their produce in anticipation of higher prices for a few days, pursue potential buyers to bid on the lots in their shops, and often buy from farmers on their own accounts, when another suitable buyer is not available. In Karnataka (similar to Punjab and Haryana; Jodhka 1995; Gill 2004; Damodaran 2000, 2010) commission agents are an integral part of the mandi system, one of the most important sources of rural credit, and a well-organised political lobby.

This critical layer of market intermediaries between farmers and buyers does not exist in the state-regulated markets for foodgrains, oilseeds and pulses in Madhya Pradesh. In contrast to Gulbarga, in Harda, farmers who

come to sell in the mandi do so directly, putting up their lots for sale in an open auction, without having to go through a commission agent. The transfer of the produce and payment is processed on the same day itself, between the licensed buyer and the farmer, and the payment is made in cash, with no deduction charged formally or undercover for commission. Currently, except in a small number of cases where farmers and traders have a close, long-term relationship, mandi traders do not provide agricultural credit to farmers. In this area, an expansion in the availability of Kisan Credit Cards (especially to farmers with holdings over 5 acres) has been reported. The commission agents in this mandi buy on behalf of processors and private corporations, with whom they negotiate different payment cycles. Interestingly, Krishnamurthy discovered that the APMCs in MP were organised and run by commission agents until the early-mid 1980s, when they were eliminated from the mandi system by a concerted, state-wide intervention to remove commission agents and replace them with state-appointed auctioneers and direct sales. Importantly, fieldwork in Harda revealed that the successful reorganization of the mandi (and the abolition of commission agents) occurred around the same time that this region received canal irrigation and experienced a transition in cropping patterns, where short-duration soybean (followed by a second crop of irrigated wheat) replaced long duration and labour and input intensive cotton. Those familiar with the system of cotton marketing noted that the routine time lags in payments at each stage of the chain meant that immediate payments at the farmer-level for cotton sales had been rare, whereas they became routine in the case of soybean.

In the same site, however, the local wholesale market for fresh fruits and vegetables continued to be controlled and managed by arhatiyas, the majority of whom belonged to a single family. Indeed, a similar state-supported effort to eliminate the commission agents, along the lines of the action in the main foodgrains and oilseeds market failed to achieve the same results. After a brief exit and strike, the arhatiyas were back in action in the sabzi mandi within a fortnight. Here, the Mandi Committee did not have the necessary manpower to run multiple, simultaneous auctions for perishable produce that had to be quickly sold (unlike the soybean and wheat auction which could be conducted throughout the day, this mandi had to conclude its sales rapidly to catch the morning bazaar). Moreover, the sabzi mandi predominantly ran on credit supplied by the arhatiyas not only to the producers (in this case, overwhelmingly small and marginal farmers) but as importantly to the many small vendors, who bought small quantities of vegetables on credit that the arhatiyas would collect later on, after the day's sales had been made in the bazaar. In such a context, enforcing the Mandi Act proved rather pointless in the end, and indeed, the state government has now removed fruits and vegetables from APMC regulations.

These different market arrangements point to the importance of studying the specific relationships between credit and commodity marketing and the varied roles that commission agents play between farmers and larger buyers – in enabling access to a range of sellers and buyers of different sizes, in market management, and in the rotation of credit along the chain. This requires commodity and regional specific studies and careful comparative research.

Variations in Market Practices: Auctions/Tenders, Quality Assessments, Weights

In addition to the variations in credit relations and market structure across these different examples, our field studies also drew attention to the diversity of market practices involved in certain common activities across mandis and their changes/reforms over time. In each of our mandi sites the key market processes and the modalities of transactions were quite different.

Take the process of price determination for a lot of produce in the mandi. In Harda Mandi, the lots are sold through an open outcry auction. Each lot (now primarily brought in tractors that can carry approximately 40 quintals of soybean or wheat is lined up along a covered platform/auction shed. The licensed buyers working on any given day move from lot to lot sequentially, beginning the auction at 11am and concluding it by 6pm, with a one hour break for lunch at 1pm and a short interval for tea somewhere between 3- 4pm. The auction is conducted by a state appointed, auctioneer (*nilamkarta*) who declares the final bidding price, which is then recorded on the sale slips given to both farmers and traders. This is the basic practice in all the major APMCs for oilseeds, foodgrains and pulses in MP. But, as one observes different mandis, market participants will point out small, but significant differences in how each system is organized.

For instance, in Harda, the auctioneer waits for a trader to call out the starting price, rather than making a judgement himself about the price at which to begin, which is how it used to work when the same auctioneer conducted the process in the neighbouring mandi. As a result, there was a

common complaint that the bidding often began too low, even if it eventually came up to an acceptable price given the day's rates. This meant that the average auction in Harda often took longer than it did in similar mandis for comparable volumes and that on days of heavy arrivals, sales sometimes had to be carried over to the next day, with farmers having to bear the cost of the wait.

In another nearby large mandi, the auction was not conducted directly along the lined up trolleys, but each farmer-seller had to heap his produce on the ground and the bidding was conducted around the open heap. There was considerable disagreement among farmers, traders and mandi functionaries about the pros and cons of the heap v. trolley. For example, the heap revealed the quality of the produce much more effectively, rather than taking a sample drawn from digging one's arm into the trolley. This, some argued, led to better quality assessment and price determination and fewer disputes later on due to misjudgements of quality of the entire heap. However, the heaping system tended to take longer than a trolley-based one and the heap was harder to protect from the elements (rain etc.) while farmers awaited their turn. It also meant that farmers in one mandi used the electronic weighbridge after the bidding concluded, but in the other, small digital scales were used to weigh each bag. The implications for labour were also therefore different as the electronic weighbridge reduced one level of manual labour activities.

Within Harda itself, the sabzi mandi that ran in the early mornings had a different method, where farmers took their produce to an arhatiya for sale and multiple, simultaneous auctions were run by the different commission

agents, who continuously called out the prices for a given lot of produce, moving up and down the price range until a buyer stopped him to buy at a certain price.

In our field site in Gulbarga, we found that the price determination process for *tur* was organised completely differently. In the Karnataka mandis, the open outcry auction had not been opted for at all; here, the bidding took place through a process of tendering. Farmers would take their *tur* to the commission agent, who would prepare it for display. Different buyers would then come over to inspect the lots being sold through the various commission agents. If interested, they would note the lot number and the commission agent reponsible on a standardised slip along with their bid and place this in a box kept in the Mandi Committee office. The inspection and bids were completed in the morning and wrapped up by 1:30pm, before the bids were opened by 2pm. These were then sorted according to commission agent and lot and the highest bidders declared. Depending on the arrivals, in peak season the manual tendering process was observed and reported to take up to 3-4 hours to complete. In the last three years, a small number of mandis, included Gulbarga have instituted an "e-tendering" system, where commission agents and traders log in online to enter the lots being offered for sale and their bids on specific lots, respectively. The sampling process remains the same and the bids are now locked and then opened by 2pm in the computerized system. The e- tendering system is much faster and the winning bids are sorted and declared within 5 minutes. The shift to the electronic process, however, faced a great deal of resistance until traders and

commission agents familiarized themselves with the technical procedures and it has been only gradually taken up, with most mandis still using the manual process.

Auctions in agricultural markets in India have remained significantly understudied, although this critical aspect has been recently highlighted and pursued in the context of grain auctions in Punjab and Haryana (Banerji et al 2012). Our exploratory research points to the need for much more work in this area and a comparative approach (across market sites and a range of agricultural commodities) in the evaluation of different auctioning and tendering systems such as open outcry, manual tendering, and e- tendering. Research must include a closer analysis of the techniques and procedures involved and their implications for price determination (and the varying possibilities for collusion and forms of manipulation in the results) and for the organization and timing of mandi processes in the physical market. As seen above, this will necessarily interact with processes of quality assessment and sampling as well as weighing methods both of which are vital, but empirically understudied, aspects of agricultural marketing.

State Regulated Yards and Private Channels: Interactions and Alternatives

As mentioned, in 2006, Bihar became one of the first states to take the decision to repeal its APMC Act and to dismantle the state-regulated mandi system. This was a high-profile policy decision and was publicly projected as an action to open up the state's agricultural markets to greater competition,

end restrictions on the movement of commodities, and give farmers access to a greater range of buyers, outside the locally controlled and commission agent-dominated APMC system. Our exploratory research in Bihar, conducted 5 years after the repeal and removal of APMCs came into force, sought to investigate the consequences, especially for farmers, and to explore whether new actors and channels have been able to enter and operate on the ground.

One of the most striking findings from the fieldwork conducted in Ara and Bhiya is that the decision seems to have had virtually no impact on farmers, who continue to make sales, as they did before, to the village bania. In fact, Witsoe reported that many farmers seemed to have no idea that the state-regulated mandi/APMC in Ara had been closed down. This indifference is likely because the APMCs had long been dysfunctional and also because the activities of regional grain markets have never (or at least not recently) directly involved the farmer in either sales or credit transactions. There are an estimated 325 wholesale markets in operation across Bihar and 1500 rural haats. Even before the abolition of the APMCs, there were only 95 regulated principal markets (of which Ara APMC was one) and of these only 53 had basic marketing infrastructure. These 53 markets had been established on lands covering 1595 acres, of which around 813 acres of land is estimated to be lying vacant (NIAM 2012).

From the point of view of local traders and commission agents, the APMC had been dominated by people affiliated with the previous Rashtriya Janata Dal (RJD) government and was widely seen as anti-upper caste and anti-bania (trader). Traders recounted stories, not just of having to pay

bribes, but of having demands made publically with the threat of force in order to visibly subordinate traders to the RJD regime, with even a few cases of traders being attacked. Therefore, almost all of them welcomed the end of the APMC and felt that with the pro-trader BJP in the ruling coalition, "their" people were now in power and that an era of harassment had ended.

In the aftermath, however, smaller commission agents and mandi-based traders found they were being bypassed and their businesses quickly went into decline. Of the 35 arhatiyas who had operated in Ara mandi, only two remained by 2011 and they were struggling. The wheat trade had become more centralized in the hands of a small group of large traders, with one family in Ara reported to control the bulk of the surplus. Village banias and aggregators were selling directly to large traders and a greater proportion of sales were being transacted directly with local flour millers, most of whom were prominent politicians.

Notably, new investments in agricultural marketing and the creation of new procurement channels have not followed. The state government announced in 2006 that the APMCs were to be replaced with new markets through a PPP model, that would link 1500 haats and baazars in Bihar with secondary and then terminal markets and have recently released an agricultural roadmap. But, beyond planning and design, no significant progress has been made in actually constructing such markets even though detailed technical reports have been prepared with the assistance of the Asian Development Bank. Officials in the department of agriculture stated that the main obstacle was political resistance to providing public land (already

existing mandi yards) to private sector actors. Corporate grain traders currently operating in Bihar, as reported above, have not tried to set up procurement arrangements directly with farmers but continue to deal with large local traders for their requirements. More focused research is required to understand why this is the case and how this varies across other commodities. In the meanwhile, it appears that the most visible beneficiaries of the move to repeal the old APMC Act and regime, at least in the first five years, have been the large regional traders and agro-processors operating in the state.

In Madhya Pradesh, the presence of a fairly well-established and regulated mandi system, albeit with uneven implementation and significant weaknesses, was an important factor in drawing private participation, by ITC and other corporations into these markets, especially in oilseeds and foodgrains (wheat). Unlike Bihar, all of the estimated 241 principal wholesale markets in MP are under state regulation with 241 APMCs and a further 276 sub-market yards. (There are an estimated 1300 rural primary markets or haats, which are much more weakly formally regulated and as the mapping exercise undertaken as part of this project illustrates, the spatial distribution of mandis in MP is skewed to the western and central parts of the state, with few regulated markets in the underdeveloped eastern districts of the state.) Most importantly, again in contrast to the context in Ara in Bihar, in Harda and the majority of mandis in MP, a significant number of farmers were already directly selling their produce without going through a commission agent or intermediary. The move to open up the marketing system to private

procurement hubs, moreover, was supported by both Congress (who initiated the APMC amendment) in the early 2000s and the BJP government who upheld it in 2004 against massive opposition from the traders who are supposed to be at the core of the BJP's political base.

The fact that ITC's choupals provided an additional option to the mandi but did not have to fill an infrastructural vacuum, gave rise to an important effect: competition. In Harda, the arrival of the choupal outside, but only a short distance from the mandi yard pushed the Mandi Committee and the Mandi Secretary to actively upgrade market infrastructure, adding another electronic weighbridge and further tightening processes. In light of the new corporate competition, as the Mandi Secretary put it, the "mandi can either compete like BSNL, or like MP Roadways, it would be overrun by private operators." Moreover, it is important to note that perhaps even more than private corporations, since 2008, large mandis in MP have had to respond to a huge expansion in public wheat procurement, which has relied heavily on the already existing market infrastructure and deployed its network of state agencies and primary agricultural cooperative societies (PACS) at the field level, to dramatically increase directly procured wheat for public distribution (Krishnamurthy 2012). In Bihar, in contrast, with a non-existent APMC network and weak PACS, the growth in direct procurement in wheat and rice has been relatively limited during a time of steadily increasing Minimum Support Price (MSP) for both commodities.

But, even as there have been positive movements, it is evident that the political and commercial pressures of having local traders and corporate

channels operating within a common regulatory framework covering a wide range of commodities and allowing for multiple channels, such as single-buyer procurement centres (both public and private), direct contract farming arrangements, and multi-commodity, multi-buyer regulated marketplaces (such as locally-managed mandis) is proving a very complex task. In addition, MP is a state where considerable experimentation has been taking place on the organization and aggregation of farmers through Producer Companies, adding a new institutional form in this mix.

Our fieldwork in Bihar and MP clearly demonstrate that whether in the context of regulatory vacuum or in states of regulatory revision, agricultural markets are constantly changing across different regions and commodity systems and exhibit remarkable institutional diversity and complexity. For state governments, their regulation and management is also clearly sensitive political business, with a range of competing interests to address. The comparative political economy of agricultural marketing regulation and reform requires further systematic study to better understand the political dynamics that influence policy action and inaction at different periods of time. It is within these constraints and political calculus, moreover, that effective policy solutions will need to be carefully developed and implemented.

Supply Chains and Stakeholders: Distribution of Costs, Value Addition and Margins

While the previous sections have focused primarily on the performance of primary markets and the site of primary exchange between farmers,

intermediaries, and the first buyers of their produce, a critical component of this exploratory phase of research focused on mapping out agricultural commodity supply chains. Here, we began with one commodity, *tur* in Karnataka, the second largest producer of *tur* in the country after Maharashtra.

The findings of this study are drawn from a survey designed and supervised by the Centre for Supply Chain Management at IIM-B, which covered nearly 1500 stakeholders operating at different levels of the supply chain between three mandis (Gulbarga, Bidar and Bijapur) and Bangalore. A detailed report of the study methodology and findings has been submitted separately.

In this report, we focus on the key insights of the study as they relate to the distribution of costs, value addition and margins and identify three key areas for further research.

Figure 1: The Red Gram Supply Chain in Karnataka

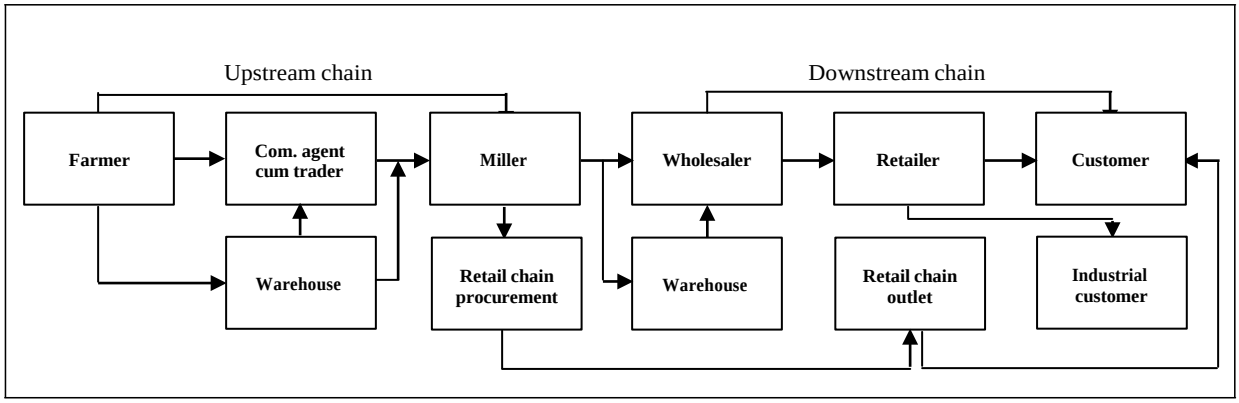

Table 1: Distribution of Red Gram Supply Chain Costs: By Activities of Stakeholders

Supply chain component	Supply chain costs	Marginal	Small	Medium	Large	Overall
		Cost/ quintal (Rs)	Cost/ quintal (Rs)	Cost/ quintal (Rs)	Cost/ quintal (Rs)	Cost/ quintal (Rs)
Farmer	Cost of production	1797.08	2032.67	1825.24	2065.20	1936.50
	Transporting to mandi	20.00	20.00	20.00	20.00	20.00
	Sub-total (cost before	1817.08	2052.67	1845.24	2085.2	1956.5
	Sales price	3901.61	3824.57	3820.53	3765.38	3820.05
	Service charges paid @ 2% on sales to	78.03	76.49	76.41	75.31	76.40
	Profit [sales – (cost + service	2006.50	1695.41	1898.88	1604.87	1787.15
Processor	Purchase price	3901.61	3824.57	3820.53	3765.38	3820.05
	Commission @ 2% on purchase to	78.03	76.49	76.41	75.31	76.40
	Market fees @ 1.5% on purchase to APMC	58.52	57.37	57.31	56.48	57.30
	Loading @ Rs.3.00 per	3.00	3.00	3.00	3.00	3.00
	Transporting to mill	20.00	20.00	20.00	20.00	20.00
	Un-loading @ Rs.3.00 at mill	3.00	3.00	3.00	3.00	3.00
	Processing (milling)	216.10	216.10	216.10	216.10	216.10
	Storing cost @ Rs.5.63/month for 6	33.78	33.78	33.78	33.78	33.78
	Loading @ Rs.3.00 for	3.00	3.00	3.00	3.00	3.00
	Canvassing agent fees	15.36	15.36	15.36	15.36	15.36
	Sub-total	4332.40	4252.67	4248.49	4191.41	4247.99
	Sales price	6000.00	6000.00	6000.00	6000.00	6000.00
	Profit	1667.6	1747.33	1751.51	1808.59	1752.01
Wholesaler	Purchase price	6000.00	6000.00	6000.00	6000.00	6000.00
	Transportation	300.00	300.00	300.00	300.00	300.00
	Canvassing agent fees	9.30	9.30	9.30	9.30	9.30
	Market fees @ 1.5%	90.00	90.00	90.00	90.00	90.00
	Unloading @ Rs.3.00	3.00	3.00	3.00	3.00	3.00
	Sub-total	6402.30	6402.30	6402.30	6402.30	6402.30
	Sales price	6955.88	6955.88	6955.88	6955.88	6955.88
	Margin	553.58	553.58	553.58	553.58	553.58
Retailer	Purchase price	6955.88	6955.88	6955.88	6955.88	6955.88
	Loading & un-loading @	4.00	4.00	4.00	4.00	4.00
	Transportation	50.00	50.00	50.00	50.00	50.00
	Sub-total	7009.88	7009.88	7009.88	7009.88	7009.88
	Sales price	7500.00	7500.00	7500.00	7500.00	7500.00
	Margin	490.12	490.12	490.12	490.12	490.12
Customer	Consumption	7500.00	7500.00	7500.00	7500.00	7500.00

Table 2: Distribution of Costs and Revenues along the Supply Chain (Rs/quintal)

Player	Cost			Revenue	Profit
	Purchase/ Outsourced inputs	Internal inputs	Total		
Farmer	1321	712	2033	3820	1787
Miller	4076	172	4248	6000	1752
Wholesaler	6402	---	---	6956	556**
Retailer	7010	---	---	7500	490**

Notes: All figures are averages, based on the sample data.
**Gross margin, exclusive of wholesaler's/retailer's cost of marketing and sales

Table 3: Distribution of Costs by Activities

Supply chain activities	Costs (Rs/quintal)
Production*	1936 (66%)
Processing	216 (7%)
Transportation**	406 (14%)
Storage	34 (1%)
Commission & fees	325 (11%)
Supply chain cost	2917 (100%)

* Excludes the farmers' transportation costs and the costs of commission (these are included in the transportation and commission & fees sections of the table
** Includes loading and unloading expenses

Key Findings

1. An analysis of the distribution of costs and revenues (Table 2) by key stakeholders across the red gram supply chain reveals that on average, the farmers' profit works out to approximately 39 percent of the profit across the supply chain. Moreover, the average price received by farmer (Rs. 3820 per quintal) is just over 50 percent of the price paid by the end consumer (Rs. 7500 per quintal). After deducting his costs (approx. 2000 per quintal) the farmer makes on average Rs. 1787 per quintal of profit, which is a return of roughly 88 percent on his costs. On first glance, this

might appear reasonable. However, we also observe that the farmers' costs contributes roughly 66 percent of the total supply chain costs (Table 2) which is considerably higher than his share of the profit. The farmer also bears the largest risks, with little or no formal insurance or risk management options.

2. In contrast, the cost of processing (the conversion of *tur* to *tur dal*) works out to Rs. 216 per quintal (this factors in interest on loans, depreciation of machinery, wages, chemicals, energy/fuel, packaging, and maintenance) which is only 7 percent of the supply chain cost. When the other costs associated with processing are also added (commissions, labour, storage, transportation etc.) the total costs borne by the miller over above the price paid for *tur* are approximately Rs. 428 per quintal. His profit margin on the other hand is nearly the same as the farmers – Rs. 1752. The miller is therefore covering his expenditure over four times. These findings need to be further explored, but indicate considerable inequities in the distribution of costs and revenues between the activities of production and processing with implications for policy and potentially makes the case for supporting producers (or collectives of producers) to take up grading and small-scale processing activities directly, so as to both increase their share of profit and bring in efficiencies into the chain.

3. Here, two other observations are also useful to consider. First, due to the seasonal nature of production, capacity utilization of processing facilities remains sub- optimum, somewhere between 60 to 80 percent depending

on the size of operations. Second, in the absence of well specified standards, quality appreciation is rather ad- hoc with millers and subsequent downstream players trying to exploit consumers through private branding initiatives. It appears desirable for the development of some basic guidelines and establishment of standards for quality grading.

4. In the course of the survey, we were unable to accurately collect and estimate the detailed costs for wholesalers and retailers, but the difference between the purchase and sale prices reported for them respectively are between Rs. 556 and Rs. 490 per quintal.

5. Finally, the survey reveals that transportation, including loading and unloading expenses, contributes 14 percent of the supply chain costs. This is a significant figure and represents a segment of the supply chain that we know very little about. We find there is a great need for empirical work on the transportation networks and logistics, including a much better understanding of how transportation charges are negotiated and set between locations and different segments of the chain.

Additional Project Reports/Outputs Submitted

Project Reports:

Mapping Mandis

A Comparative Study of Agricultural Marketing Reforms

Supply Chain Mapping of Agri-Commodities: A Study of Red Gram in Karnataka

Article:

Krishnamurthy, Mekhala 2012. "States of Wheat: The Changing Dynamics of Public Procurement in Madhya Pradesh." *Economic and Political Weekly*, vol xlviI no 52, December 29, 2012, 72-83.

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