d·i·e

Deutsches Institut für Entwicklungspolitik

German Development Institute

Studies

Retail Foreign Direct Investment Liberalisation and the Transformation of Agrifood Value Chains in India

Aimée Hampel-Milagrosa
Hauke Brankamp
Thomas Cremer
Alexander Haddad
Katharina Pannwitz
Franziska Wehinger
Sangeeta Agasty
Tamal Sarkar

Retail foreign direct investment liberalisation and the transformation of agrifood value chains in India

The German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) is a multidisciplinary research, policy advice and training institute for Germany's bilateral and multilateral development cooperation. On the basis of independent research, it acts as consultant to public institutions in Germany and abroad on current issues of cooperation between developed and developing countries. Through its nine-month training course, the German Development Institute prepares German and European university graduates for careers in the field of development policy.

Dr Aimée Hampel-Milagrosa, Senior Researcher, "Sustainable Economic and Social Development" Department, German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE)
Email: Aimee.Hampel@die.gdi.de

Hauke Brankamp, Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ)
Email: Hauke.Brankamp@bmz.bund.de

Thomas Cremer, Deutsche Investitions- und Entwicklungsgesellschaft (DEG)
Email: Thomas.Cremer@deginvest.de

Alexander Haddad, Council of Europe Development Bank (CEB)
Email: Alexander.Haddad@coebank.org

Katharina Pannwitz, Kreditanstalt für Wiederaufbau (KFW)
Email: Katharina.Pannwitz@kfw.de

Franziska Wehinger, Friedrich-Ebert-Stiftung (FES)
Email: Franziska.Wehinger@fes.de

Sangeeta Agasty, Foundation for Micro Small and Medium-Sized Enterprise Clusters (FMC)
Email: Sangeeta.Agasty@msmefoundation.org

Dr Tamal Sarkar, Foundation for Micro Small and Medium-Sized Enterprise Clusters (FMC)
Email: Tamal@msmefoundation.org

Studies
Deutsches Institut für Entwicklungspolitik 95

Retail foreign direct investment liberalisation and the transformation of agrifood value chains in India

Aimée Hampel-Milagrosa
Hauke Brankamp
Thomas Cremer
Alexander Haddad
Katharina Pannwitz
Franziska Wehinger
Sangeeta Agasty
Tamal Sarkar

Bonn 2017

Studies / Deutsches Institut für Entwicklungspolitik
ISSN 1860-0468

Die deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the Internet at http://dnb.d-nb.de.

ISBN 978-3-96021-038-2

Printed on eco-friendly, certified paper

Tulpenfeld 6, 53113 Bonn
☏ +49 (0)228 94927-0
🖷 +49 (0)228 94927-130
Email: die@die-gdi.de
http://www.die-gdi.de

Acknowledgements

This study is a product of a research project carried out by the German Development Institute / Deutsches Institut für Entwicklungspolitik, a think tank for German development policy. The research was carried out in India by participants of DIE's 49th post-graduate course, with the support of the following institutions, to which the group is extremely grateful:

- The Foundation for Micro, Small and Medium-Sized Enterprise Clusters (FMC) located in Delhi, India, led by its Executive Director, Dr Mukesh Gulati. Most of the empirical work in the project was carried out in Andhra Pradesh (AP) and the group would like to thank Mr A. S. K. Sharma, head of FMC's office in Andhra Pradesh for coordinating the logistics, work schedule and manpower with the group,
- the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) for connecting us with important contacts in Andhra Pradesh and for hosting the final presentation,
- the German Embassy in New Delhi for their local context inputs to the research and for linking us with other important institutions, and
- the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) led by its former Director General Dr William Dar, for the warm welcome in his home and the useful technical exchange with his scientific staff.

We talked to hundreds of people when we were in India. We would also like to thank all agency representatives, government officials, researchers, farmers, intermediaries, retailers, wholesalers and helpful individuals in Delhi, Andra Pradesh, Maharashtra and Karnataka who gave us tea, opened their homes and farms, graciously accommodated our interviews and offered valuable insights for this research. We profoundly thank you all for the time you spent answering our questions and for sharing your knowledge with the group.

During the field work, we were tirelessly assisted and accompanied by two translators. We would like to express our profound gratitude to Mr Sarma and Mr Shiva for their support to the group while we were collecting data in the south.

Finally, we would like to thank Dr Tilman Altenburg, Dr Michael Brüntrup, Dr Markus Loewe and Dr Sarah Holzapfel for their invaluable comments during project conception and the preliminary versions of this study.

All errors in this document are from the authors alone.

Bonn, May 2017

Contents

Figures

Tables

Box

Abbreviations

AMC	Agricultural Marketing Committee (in Andhra Pradesh)
AP	Andhra Pradesh
APMC	Agricultural Produce Marketing Committee
CAIT	Confederation of All India Traders
CII FACE	Confederation of Indian Industry – Food and Agriculture Centre of Excellence
FDI	foreign direct investment
FMC	Foundation for MSME Clusters
FSSAI	Food Safety and Standards Authority of India
GDP	gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ha	hectare (1 acre = 0.4047 ha)
ICRIER	Indian Council for Research on International Economic Relations
IFPRI	International Food Policy Research Institute
LSRs	local sourcing requirements
MBR	multi-brand retail
MSMEs	micro, small, and medium enterprises
Rs	Indian rupee
USD	United States dollar
VCA	value-chain analysis

Executive summary

India remains one of the last bastions of resistance in the global wave of "supermarketisation". Traditional retailing in the form of local markets, small-scale family-owned shops and street-side vendors continue to dominate the Indian food retail sector at an estimated total retailing share of 97 per cent (AT Kearney, 2006). This massive sector consists of roughly 13 million Indian small retailers, employs around 18 million people and contributes an estimated 14 per cent to national gross domestic product (GDP) (Reddy, Murthy, & Meena, 2010). Until recently, India remained one of the few countries in the world where foreign direct investment (FDI) in multi-brand retail (MBR) was prohibited, largely to protect traditional retailers.

In 2012, after years of heated debate, liberalisation of the country's retail FDI policy was approved. With a few non-negotiable conditions,[1] the new Indian retail FDI policy allows for 51 per cent majority foreign ownership in multi-brand retailing. With this new ruling, the United Progressive Alliance (UPA) government hopes to entice multinational retailers to enter the Indian economy and in particular hopes to modernise the country's agricultural value chains. Indian value chains are notoriously intricate and are incessantly plagued by a plethora of problems at all nodes. One persistent problem across fresh fruit and vegetable value chains is the huge amount of post-harvest losses incurred due to damage or decomposition of the produce.

In fact, an often-cited 2011 McKinsey report estimated that post-harvest losses along the Indian fresh fruit and vegetable supply chain amounted to 30 per cent of the total volume traded. This loss is due to traditional forms of packaging, transporting, and trading that rely on basic materials, poor transport systems and spot market transactions. For this reason, value

1 For example, one performance requirement for FDI retailers is to invest a minimum of USD 100 million of which 50 per cent should be spent on backend infrastructure such as storage facilities and warehouse and packaging establishments. Investors have to source at least 30 per cent of manufactured goods from Indian micro and small enterprises, with investments in plant and machinery not exceeding 1 million Indian rupees. Prospective supermarket investors also have to limit retailing activities to cities with a population of not less than 1 million.

chain modernisation brought about by new retail FDI investments heralds positive news not only to the retail but also to the agricultural sector, the second-largest and largest sector respectively in the Indian economy. Indian agriculture employs roughly 52 per cent of the employable workforce, contributes to almost 14 per cent of GDP and comprised around 10 per cent of total exports for 2011-2012 (Sharan, 2013). Fresh food retail – specifically fruit and vegetables – is the single most dominant and lucrative structure in the Indian retail market, owning a market share of over 60 per cent and an estimated worth of well over USD 200 billion in 2009 (UNIDO [United Nations Industrial Development Organization], NORAD [Norwegian Agency for Development Cooperation], & IDS [Institute of Development Studies], 2015).

The debate on Indian retail FDI liberalisation

According to Reardon (2005), the entry of modern retailers into an economy will result in a transformation of traditional value chains which will in turn lead to a reduction in post-harvest losses. Modern retailers are expected to bring in investments in infrastructure such as cold storage, warehouses, service roads and transport systems, along with introducing modern methods in marketing, procurement, inventory-taking and accounting. Researchers stated that the resulting retail transformation would allow India to fully integrate its economy into the global economy (Gupta, 2012), citing the Indian experience of the retail cooperation of Bharti Walmart as an overwhelmingly positive example (Babu, 2012; Nandi & Sahu, 2007; Singh & Singh, 2012). Nandal (2013), Rajput, Kesharwani, and Khanna (2012), and Chari and Madhav Raghavan (2012) added that the bulk of the Indian economy would gain in the transfer of technology and management practices, in local adoption of modern supply chains and in improved price signals. For fresh produce in particular, Gupta (2012) added that retail FDI is necessary to modernise the Indian agricultural sector, bring in much-needed investments in post-harvest infrastructure and to decrease unemployment in the cities where they are located.

There are, however, just as many researchers who view the new retail FDI policy as a negative move for the Indian economy. Insecurity as to whether farmers will get the better deal with modern retailers as compared to traditional commission agents or traders is rife. Singh and Singh (2012)

stated that the new retail FDI policy has no provision for protecting farmers' interests (how can one assure that they will be absorbed into modern value chains, for example?) and the increasingly centralised supply chain may end up being more inefficient and disadvantageous for growers (Uttam & Kumar, 2013). With regard to employment benefits, Uttam and Kumar (2013) argued that multinationals will actually destroy more livelihoods than the jobs they create, estimating the balance to be around 2 million new jobs versus 40 million lost jobs in the first few years of FDI roll out. In a survey of perceptions of 138 retailers, Badrinath and Chitra (2012) argued that Indian consumers' preferences will be sidelined with the entry of modern retailers due to the introduction of foreign commodities that do not suit Indian lifestyles and due to the limited product range modern retailers offer.

Perhaps the greatest fear is felt by the largest group in the retail segment: the informal or unorganised retailers. Traditional "mom-and-pop" stores known as *kiranas* which provide the livelihood for many and are the social hub for most neighbourhoods fear they may be driven out. Although commodity prices from traditional retailers are expected to be not much different from those of supermarket chains, *kirana* owners fear that, in addition to competition with domestic supermarket chains, they will now have to simultaneously compete with multinational retailers (Baskaran, 2012; Gupta, 2012). In other words, many small retailers fear that they will not be able to survive the competition and eventually be crowded out.

The concern of Indian middlemen – a collective term we use for village collectors, commission agents and traders – is similar to that of the small retailers. Traditional middlemen are anxious that supermarkets will purchase directly from medium and large growers, crowding them out of the value chain (Baskaran, 2012; Gupta, 2012). Also, many middlemen are worried that they will not be able to compete with the efficient procurement methods applied by modern retailers and will have to look for employment elsewhere.

In view of these conflicting perceptions, this current research attempts to provide insights regarding the impact of retail FDI liberalisation in India. While from the international perspective studies exist which try to capture the various positive and negative effects of retail modernisation, assess the net effects and derive policy conclusions (see, for instance, Altenburg, Kulke, Hampel-Milagrosa, Peterskovsky, & Reeg, 2016), no

such comprehensive assessment exist for India thus far. Our study thus contributes to filling an important research gap. It provides an answer on the extent to which traditional and supermarket-driven vegetable value chains differ, and on how retail FDI liberalisation will impact the governance and efficiency of each value chain. Using the parameters of profits and crowding out, this paper evaluates how retail FDI liberalisation could impact on the income and the future of farmers, middlemen and retailers, in one of the world's largest economies. To do this, the report draws on a research project conducted by the German Development Institute (DIE) in the South Indian state of Andhra Pradesh. From February to April 2014, a research group from the 49th Postgraduate Course of the DIE gathered data and information about Indian agricultural value chains from a host of sources and interacted with various actors at national and state level.

Andhra Pradesh was selected as the research study area for two reasons: Firstly, the new retail FDI policy was approved and has been implemented in the state without much modification and with even less political interference. At present, there are several international and domestic retail/wholesale chains that concurrently operate with traditional retailers in the state, and this provided an excellent basis for value chain comparison. Secondly, agriculture constitutes the bulk of the GDP of Andhra Pradesh. To exemplify the effects of retail FDI, we focused our study on the tomato value chain, as tomatoes are one of the main agricultural products of Andhra Pradesh; tomatoes not only play an important role in Andhra Pradesh's economy, they are also a common component of traditional Indian cuisine across all income and social groups. Tomatoes are sold both in modern and traditional retail set-ups – a condition that allows researchers to compare all actors and nodes in both traditional and modern value chains.

Following a review of the relevant literature, three primary attributes to characterise and compare traditional and modern tomato value chains in Andhra Pradesh were identified. These characteristics are as follows: **governance** (including price-setting, payment, credit, standards and training provision); **efficiency** (including margins, value chain length, and post-harvest losses); and **profits and crowding out** (for each actor group). Accordingly, we generated and tested hypotheses for each of these characteristics. While existing literature consistently identified and contrasted only two stylised types of value chains (traditional and modern),

in the field we encountered a third type of value chain that is unique to Andhra Pradesh (*rythu* bazaars or farmers' markets). Hence, the research group ended up documenting and analysing three types of value chains in the state, namely:

1. The **traditional** value chain – the oldest type of value chain in the state, consisting of several middlemen actors (such as commission agents, traders and retailers) between farmer and consumer. The produce that goes through traditional value chains is sold in established wholesale markets known as *mandis*.
2. The **modern** value chain – a new type of supply chain in the state that could consist of a direct purchasing relationship between farmer and modern retailer or an indirect purchasing relationship with several intermediaries in between. In the case of the former, the produce is procured directly from the villages via supermarket collection centres while in the case of the latter, the produce goes through *mandis*.
3. The state-specific **farmers' markets** (known as *rythu* bazaars) – that are characterised by direct marketing from farmer to consumer. Farmers with *rythu*-selling permits personally transport their farm produce to farmers' markets that are located in the city centre and are allotted space to sell their produce to final consumers.

To facilitate analysis, within these three aforementioned types of value chains, three general types of actors were identified: farmers, intermediaries (that is, commission agents and traders), and retailers (modern and traditional).

Results of the empirical investigation

We conducted several interviews using semi-structured **qualitative** and structured **quantitative** questionnaires. Each type of actor group along the tomato value chain, as identified above, was interviewed and in total, the research group talked to 106 farmers, 22 intermediaries, and 25 retailers. In addition, a total of 23 experts at the international, national and state levels were interviewed in depth. Value chain analysis with a specific focus on governance, efficiency, profits and crowding out was the primary method used to analyse data.

It is imperative to note that this research was conducted during the very early stages of retail FDI liberalisation in India and, because of this, the report we now share reflects only the findings we encountered during these early stages. The following subsections present the results of the study which were the product of an 11-week research stay by the group.

An overview of value chains in Andhra Pradesh

We observed three types of value chains in Andhra Pradesh: traditional value chains, modern value chains, and the *rythu* bazaar value chains. Traditional value chains are the most dominant types of supply chains and are usually composed of six types of actors from the farmer to the final consumer. The actors are as follows: farmer – consolidator (at the village level) – commission agent – trader – retailer – consumer. In some cases, traditional value chains could be longer by having an additional commission agent or another trader before the produce reaches the consumer. Within traditional value chains the produce is transported to *mandis* where transactions are held. *Mandis are* state-designated and state-regulated vegetable trading centres governed by the Agricultural Marketing Committee.[2] The second type of value chain is the modern value chain used by domestic and international retailers alike. Modern value chains could be of two types: with no intermediary in between or with up to six actors from the farmer to the final consumer. In the case of the former, procurement occurs at supermarket collection centres within the villages. Farmers bring their produce to collection centres where it is weighed and sorted before being transported to retail stores. In the case of the latter, the retailers do not have their own collection centres at the village level and uses the *mandis* to purchase fresh fruit and vegetables instead. The actors in this type are similar to the traditional value chain as follows: farmer – consolidator (village level) – commission agent – trader (employee of the modern retailer) – modern retailer – consumer. The third type of value chain is the *rythu* bazaars (*rythu* is the Telugu term for "farmers") and is unique to the state of Andhra Pradesh. *Rythus* are technically farmers' markets, especially designated places where a limited number of farmers can bring their produce and sell it directly to consumers.

2 In other states, it is termed the Agricultural Produce Marketing Committee (APMC).

In practice it became clear that these chains were in fact strongly interlinked and created a web of transactions such that making a clear distinction between traditional and modern value chains proved to be challenging to establish for Andhra Pradesh. In fact, we observed that traditional value chains were so prevalent that they not only permeated but also comprised an integral part of modern value chains. Moreover, the study uncovered the fact that modern retailers and *rythu* bazaars use *mandi* prices as a basis for their own price-setting, and that modern retailers typically used *mandis* and *rythus* as a source to top up their own supplies.

Owing to the minimal market share of the *rythu* as compared to traditional and modern value chains, and because *rythus* are still at the pilot phase at state level, the rest of the analytical work in this study will employ data from the two most common and hence main types of stylised value chains: the traditional and the modern.

Comparing value chain governance

While the value chains of modern retailers are generally associated with highly formalised types of governance and more formal regulation, our research in Andhra Pradesh showed that this was not the fact. We tested four aspects of value chain governance – the power to set prices and standards; occurrence of delayed payments; availability of credit; and provision of training – as variables via which to compare governance between traditional and modern value chains.

Results show that, compared to traditional retailers, modern retailers possess more price-setting power in their value chains, successfully setting buying prices (which are benchmarked on *mandi* prices) at their own village collection centres. However, due to their low procurement volumes (they purchase only grade-A types of tomatoes), they are unable to dictate prices, and were only able to deviate from *mandi* prices by a few rupees. Although international supermarkets generally have higher standards, in this context modern retailers in India were found to not dictate nor apply standards for growers in their value chains except for sorting according to size (grade-A) and colour. This could imply that produce that is sold in supermarkets is not necessarily of higher quality than that sold in traditional chains.

Delayed payments from middlemen were not reported by farmers in Andhra Pradesh. In fact, most of the farmers that were interviewed rarely experienced delayed payments, regardless of the kind of value chain they were in. Credit, however, was a different matter. Farmer credit for production – and sometimes even for non-agricultural purposes – was found to be readily available from middlemen in the traditional value chain, cementing their critical role in the chain. We assumed that retailers would offer some sort of training to farmers to increase harvest quality and quantity. However, very few modern retailers were found to offer training to farmers to ensure compliance. Those who did offer training only did so in conjunction with private seed or fertiliser companies.

Comparing value chain efficiency

Modern value chains are often associated with overall higher levels of efficiency than traditional value chains but in our case this did not hold true. We found that both modern and traditional value chains in Andhra Pradesh had the same level of efficiencies based on the parameters we used to analyse them: marketing margins, length of the value chain, and the amount of post-harvest losses. In terms of marketing margins, our results showed that regardless of the value chain length, modern retailers and traditional retailers incurred almost similar marketing margins. However, traditional value chains involved more actors and this tended to increase and absorb marketing margins without adding value to the produce. In terms of length of the value chains, supermarkets, by way of their collection centres within villages, had shorter value chains (meaning less actors) as compared to *mandis*. However *mandis* were found to host tomato producers and serve as markets/vegetable trading centres for growers who lived as far as 380 kilometres away. In terms of post-harvest losses, both modern and traditional retailers incur similar losses of around 1 to 5 per cent of the total harvest. Although some modern retailers invested in cold-storage facilities, these were not used for tomato storage at all since the tomato is not a high value crop. In addition, none of the modern retailers used their cold-storage facilities to the full capacity.

Anecdotal evidence from experts suggests that most Indians take another, totally different aspect into consideration when it comes to determining which type of retailer is more efficient: for most Indians, freshness of the produce and a personal selling touch are strong determinants of efficiency.

For this reason, most Indian consumers consider traditional value chains to be more efficient because of the frequent turnover of produce and, most importantly, because of the added service that traditional retailers put into sales activities. It is not uncommon for *kirana* owners and pushcart vendors to deliver produce to the doorstep of their buyers, to sell on credit, or to accept orders by telephone. These are, according to consumers, efficient sales strategies that modern retailers cannot compete with at the moment.

Comparing profits and crowding out

The entrance of modern retailers into an economy is commonly associated with a reduction of profits and crowding out of the smaller players – farmers, intermediaries and retailers – unless these same actors find a way to do business with modern retailers. We analysed the situation of each type of value chain actor using two parameters, namely profits and crowding out, and found out that this link does not hold true in our case in Andhra Pradesh.

We focused first on farmers. Our empirical evidence shows that farmers who supply to supermarkets tend to have higher profits than farmers who use other marketing channels. This is because farmers who supply supermarkets tend to receive higher prices for their sorted grade-A tomatoes than they would normally do when the produce is sold in bulk at the *mandis*. Thereafter, farmers who sold grade-A tomatoes to supermarket collection centres at the village level proceeded to *mandis* to sell the rest of their tomatoes. This small price segmentation already created a significant difference in farmers' incomes. However, no crowding out occurred. *Mandis* were found to absorb all produce that farmers or village-level consolidators brought in.

As a basis on which to compare profits, we considered two types of intermediaries: commission agents and traders. The results of our research showed that, due to the diverse buying sources of commission agents, their incomes and their current function in the market were not as negatively affected by the entry of supermarkets. The same result was found for traders: their incomes and their current function in the value chain were not affected as negatively as was expected by the purchasing activities of modern value chains. When asked about whether the activities of modern retailers posed a threat to their livelihoods, intermediaries replied to the negative. Modern retailers have not impacted intermediaries' current livelihoods in any way and are not expected to pose a threat in the future.

Finally, we focused on traditional retailers and compared their profits to modern retailers in the case of fresh fruit and vegetables. Traditional retailers were found to incur more profits in the sales of fresh fruit and vegetables than modern retailers for the same product portfolio. Part of the reason was the enduring consumer preference for the convenience of traditional retailing; but another reason was due to the low operational costs involved in running an unorganised family-owned business such as *kiranas* and pushcarts as compared to air-conditioned retail stores with additional sales people. Nevertheless modern retailers continue to offer fresh food in their product portfolio as a means to entice shoppers into their stores.

As India's economic development is still undergoing structural transformation and because supermarkets are at an early stage of market penetration, the current situation of farmers, intermediaries and retailers is expected to change in the future.

Conclusions and policy recommendations

Retail FDI was liberalised in India with the primary purpose of injecting new energy into the country's agricultural sector that is struggling as a result of staggering post-harvest losses. The idea behind the policy was for international retail chains to bring in investments in infrastructure and to lead the modernisation of Indian fresh fruit and vegetable value chains. However, not only has the response of international retailers been lukewarm, but the expected investments and modernisation have not been taking place. As the ensuing discussions will show, various barriers at the national level continue to hinder successful market penetration by supermarkets. These all contribute to the reason why, in contrast to the rest of the world, supermarket chains are still not conquering the market in India.

Our study shows that, while there is a strong difference between traditional and modern value chains in terms of structure and value addition, not much else differs between them. Traditional value chains tend to be much longer than modern value chains as regards the number of actors involved, but there is little value added by each actor. Modern value chains tend to be shorter than traditional value chains, even when retailers source produce through traditional channels. Value addition to the produce occurs at the village level through grade sorting and packing activities at the collection

centres of supermarket value chains. Such sorting and packing activities at the village level are not conducted in traditional value chains; there is simply no infrastructure for this activity and there is little awareness of the importance of quality standards among many farmers and consolidators.

Retail FDI liberalisation was not found to have any impact at all on the level of governance and efficiency of value chains in the state. In terms of governance, traditional value chains were not found to be significantly different compared to modern value chains when evaluated for price and standard setting powers within the chain, occurrence of delayed payments, and the availability of training provision to farmers. Specifically, the provision of training to farmers is critical because our case showed that basic crop management practices that could improve harvest quality and quantity tremendously (such as crop spacing, crop staking, and safety procedures for chemical applications) were unfamiliar to many farmers. In terms of marketing margins, the length of the value chain and the amount of post-harvest losses, traditional value chains were fully analogous to modern value chains. However, one important finding in this regard is the critical importance of providing basic infrastructure and backend infrastructure to the sector. In order to reduce post-harvest losses, regardless of the type of value chain, basic and backend infrastructure must be provided.

The Indian liberalisation of retail FDI has not yet had any major impact on the profits and future outlook of farmers, intermediaries and retailers. Except for the handful of farmers whose incomes increased by selling their grade-A tomatoes to village-level supermarket collection centres, there has been hardly any change. The vast majority of farmers have not experienced any reduction in profits nor have they been crowded out of their livelihoods by the activities of modern retailers. The same is true of intermediaries and retailers who all saw their future in positive terms. Intermediaries were convinced of the stability of their position and the indispensability of their function within the value chain. Many middlemen agreed that the agricultural marketing sector was massive and dynamic enough to absorb all value chain actors that entered it or were displaced within it. On a similar vein, traditional retailers were also convinced of their competitive advantage over modern retailers and were therefore not afraid to see modern retailers enter the Indian economy. In the light of the preference of a majority of Indian households for purchasing fruit and vegetables from traditional

sources, traditional retailers viewed modern retailers neither as threats nor as serious competition.

Then again, taking into account the increasing trends of urbanisation, converging consumer preferences and higher disposable incomes from the growing middle class, we presume that the status quo is bound to change. We, as researchers, believe that the supermarket revolution will eventually catch up with India and result in the rapid transformation of the retail sector such that modern retailers will surface and assert their dominance in the sector. This "supermarket revolution" has been observed to occur in waves in Africa, Latin America and Asia and its impact has been well documented in the literature (Altenburg et al., 2016). Against this background, it should be noted that its impacts in India may be much larger than today's findings suggest. Also, specific retail FDI policies will have a much greater role to play in shaping a more inclusive transformation process.

Based on our empirical evidence from Andhra Pradesh, we can conclude that retail FDI liberalisation is not negatively impacting traditional agricultural value chains in the state and in fact, in its current form, is actually providing financial benefits to producers who supply to supermarkets. The presence of modern retail chains does not pose a threat to traditional retailers and does not create the dreaded unemployment in the fresh fruit and vegetable value chains. Indian society – not only consumers but all actors across agricultural value chains as well – is seen to largely benefit from retail modernisation.

The central recommendation of this report for the Indian government is therefore to **carefully continue with the liberalisation of retail FDI and to ensure adequate policy space to shape the liberalisation process in an inclusive manner**. As of the time of writing, the debate around retail FDI liberalisation has not diminished; in fact, news reports of a possible government reversion of the decision are often heard sporadically. Naturally this not only creates unease among foreign investors but also uncertainty among policymakers within the Indian states.

- Along this vein, the government should aim for wide-ranging **information dissemination campaigns** that would clarify misconceptions and assuage fears about the impact of the entry of foreign modern retail chains into the country.

- Furthermore, the creation of **sufficient policy space** in which to tailor retail FDI to be more inclusive and sustainable should form part of the government's primary agenda.

In order to fully reap the benefits of liberalisation of retail FDI, policy approaches have to be inclusive and sustainable: there are a host of policy options that allow governments to shape retail modernisation in order to allow smaller farmers and traditional retailers to be actively linked to modern value chains, as listed below.

The provision of basic and backend infrastructure is the foundation of a thriving and profitable agricultural production and marketing network and a means to attract retail FDI. Examples of basic infrastructure include electricity, good farm-to-market roads, a centralised collection centre at the village level with equipment for weighing and sorting, and provision (or even renting out) of proper packing materials for vegetables. These will not only add value to the produce at the farmers' level but also contribute to a reduction of post-harvest losses. Backend infrastructure includes investment made towards processing, manufacturing, distribution, design improvement, quality control, packaging, logistics, storage, warehousing and agriculture market produce infrastructure. Since the infrastructure in Andhra Pradesh is not very far developed, international retailers still need to invest in electricity supply, transport and communications on top of their own investments in backend infrastructure. As our research shows, even with the new retail FDI policy, the expected investments in backend infrastructure and value chain transformation have not yet occurred and *mandis* continue to host the bulk of vegetable transactions for the state. In this context, the provision of better basic and backend infrastructure to facilitate vegetable marketing is critical. Against this background, the original mandate of the Agricultural Produce Marketing Committee,[3] that is, to **provide farmers with infrastructure** and to protect them from exploitative middlemen becomes more imperative. The Model APMC's design has a huge potential for change if implemented properly. For instance:

- The state's Ministry of Agriculture could ascertain that a fixed portion of the fees that the *mandi* marketing committee collects from commission

3 Later relaunched as Model APMC in 2003.

agents and traders should be allocated to infrastructure investments in the *mandis*.

- Within the *mandis*, the creation of proper cold-storage facilities or warehouses and even adequate parking bays, proper drainage and proper garbage disposal systems are investments that facilitate transactions, increase value added to the produce, and reduce post-harvest losses.
- Since many farmers in Andhra Pradesh have mobile telephones, digital means for price information dissemination could be explored.

The state could explore **raising up the rythu bazaar system beyond its pilot phase** and establish it as a real alternative market to *mandi*-based transactions, including exploring the opportunities for introducing basic quality standards within *rythus*.

- In order to be able to increase the number of farmers selling at *rythus* and thereby to increase the traded volume that *rythus* could absorb, investments in space with a view to enlarging the physical size of a market are critical.
- When *rythu* bazaars have enough physical space at their disposal, investments in warehouses and storage facilities within *rythu* markets are imperative.
- Linking *rythus* to modern retailers would be a means of connecting *rythu* vegetable supplies to supermarkets without the middlemen and at the same time a means to introducing the concept of standardisation to *rythu* farmers/sellers.

The inherent advantage of modern retailers over traditional retailers is **the implementation of strict agrifood safety and quality standards in their own value chains**. In the case of Andhra Pradesh, this was found to be lacking because only standards of size and colour were used by modern retailers. Food safety and quality standards are mechanisms that add further value to the produce and allow modern retailers to distinguish themselves from traditional retailers. Historically, except for a handful of processed food products, regulation of food safety and quality has been lax in India. The recent establishment of the Food Safety and Standards Authority of India (FSSAI) has increased awareness of the importance of food safety and the role that standards play in safeguarding public health. This is an

excellent opportunity for modern retailers to review their own private standards, align them with national objectives, and introduce international quality standards beyond standards of size and colour. Meeting supermarket standards also presents an opportunity for farmers to acquire a premium for their produce, leading to higher incomes.

- Supermarket standards that align with **good agricultural practices (GAP***)* that attempt to reduce chemical residues in produce, check for the sustainability of the production process, or verify whether a crop has been produced through socially conscious means are standards that appeal to the middle class with a higher willingness-to-pay.
- Introducing **certification** for organic production, for goods produced by a specific cooperative or by women or for goods from local/regional sources are other standards that could increase consumer demand for fresh fruit and vegetable products from modern retail chains and increase producers' premiums.

Evidence suggests that very few farmers are knowledgeable in terms of proper methods of production and crop/pest management as well as proper harvest and post-harvest handling methods. This results in poor quality yield and even greater post-harvest losses. In order to improve harvests and to reduce post-harvest losses, **opportunities for farmer training should be increased**.

- Training could be provided independently by state-level agricultural extension offices or jointly with modern retail chains. Joint training with supermarkets would create an opportunity for retail chains to introduce their own private standards to farmers. Farmers would be able to supply to supermarkets while supermarkets would have reliable and steady sources for their produce.
- Evidence suggests that farmer training in a trilateral cooperation agreement with private seed, chemical or fertiliser companies are alternative schemes that provide farmers with subsidised inputs but also lead to better crop management practices and improved farm outputs.

Based on global trends in the process of supermarket revolution, our research predicts that a transformation of the retail sector in India is bound to occur and that policy will play a strong role in preparing actors in the

traditional value chain who will be impacted by the change. Policy can ensure that the retail modernisation process will unfold in an inclusive manner (see Altenburg et al., 2016 for a review of policy options to shape retail modernisation in a "pro-poor" way).

To reduce transaction costs, modern retailers prefer to negotiate with groups of farmers rather than a multitude of small producers. Along this vein, **creating and strengthening small-farmer organisations** would help smallholders link up with supermarkets.

- The creation of **cooperatives and producer organisations** would increase farmers' leverage for better prices vis-à-vis supermarkets and could lead to better harvests due to common learning and technological exchange within the group.
- Cooperatives would also be in a better position to **obtain access to finance** that could be used for production inputs.

Finally, there is a need to **monitor the implementation of retail FDI provisions** that the Indian government has laid out for interested investors. Two provisions are highly relevant in the context of our study in Andhra Pradesh: zoning regulations and minimum local sourcing requirements (LSRs).

- Zoning regulations prescribe that retail sales outlets may be set up only in special zones and cities with a population of more than 1 million inhabitants. This provision will provide a niche for smaller retailers to thrive in the inner cities and at the same time preserve the cultural integrity and social structure of city centres.
- The Indian FDI policy also requires international investors to procure at least one-third of their product portfolio from small farms, or agricultural co-operatives whose investment in plant and machinery does not exceed USD 2 million. This important provision will help to link smaller farms to supermarkets directly.

1 Introduction

Over the past two decades, supermarkets and other forms of "Western-type" (so-called "modern") retailing have increasingly penetrated markets in developing countries. This development is what some authors have come to call the "supermarket revolution" (Reardon, Timmer, Barrett, & Berdegué, 2003). Within developing countries, this spread of modern retailing has altered existing market structures, remodelled local value chains and changed relationships within these chains. Evidence shows that retail foreign direct investment (FDI) in particular has accelerated and consolidated the spread of supermarkets by facilitating the entry of multinational corporations (MNCs) into host countries (Coe & Wrigley, 2007; Reardon & Gulati, 2008, p. 10).

In 2012, after years of heated debates, the Indian government liberalised FDI in the retail sector to allow majority foreign ownership. Under the old retail FDI policy, only minority share among foreign multi-brand retailers (MBRs) in India had been permitted and the previous route to investment was very circuitous. The likes of Metro AG of Germany entered the Indian market through the cash and carry (wholesale) agreement. Other methods of entry included franchise agreements (for instance, Auchan) and strategic licensing agreements (for example, SPAR with Radhakrishna Foodlands Pvt Ltd). The new liberalised FDI policy now allows 51 per cent foreign ownership for MBRs. The ruling United Progressive Alliance (UPA) government hopes that opening up to multinational retail chains will revive the stagnating Indian economy and inject new energy into the agricultural sector currently struggling with significant post-harvest losses.

However, foreign retail chains are only one part of the Indian "supermarket revolution". Large organised domestic retailers started opening up in the Indian agrifood retail sector right after widespread economic reforms that took place at the beginning of the 1990s. A few of these domestic modern retailers have survived (for example Reliance, Heritage and DMart) and have now established branches all over the country.

The spread of supermarkets and similar retail formats all over India is likely to have a significant impact on the agricultural sector, the country's largest economic sector in terms of workforce. Agriculture employs roughly 52 per cent of employable labour and comprised around 10 per cent of total exports for 2011-2012 (Cohen, 2013, p. 36; Sharan, 2013). Equally, this development is of particular interest to the fruit and vegetables segment. Fresh fruit and vegetables constitute the single most dominant and lucrative

structure in the Indian retail market, representing a market share of over 60 per cent and an estimated value of over USD 200 billion in 2009 (UNIDO [United Nations Industrial Development Organization], NORAD [Norwegian Agency for Development Cooperation], & IDS [Institute of Development Studies], 2015). Due to the special importance of fruit and vegetables for Indian consumers, retail-sector transformation is expected to impact these sectors tremendously.

This transformation of the retail sector, however, has been met with fierce resistance. Opponents argue that the presence of new forms of marketing from international retail chains would harm local micro, small and medium-sized retailers. They fear that traditional "mom-and-pop" stores, known as *kiranas*, which have been the livelihood of many Indians and the social hub for neighbourhoods, will be driven out (Baskaran, 2012). Some empirical tests showed that organised retailing would result in the decline in sales and profit of the informal retailers such as *kiranas* and pushcart vendors (Joseph, Soundararajan, Gupta, & Sahu, 2008). Some researchers even argue that international retail chains will in reality be the new middlemen who will purchase only from medium- and large-sized growers, leaving out smallholder growers who constitute 83 per cent of total farms in India (Baskaran, 2012; Gupta, 2012). And, although new market opportunities have arisen from the rapid growth in demand caused by expanding urban populations, those wary of retail liberalisation see this as a fuel for poverty and inequality (Reddy et al., 2010; Corporate Europe Observatory, 2010).

Studies undertaken by the Indian Council for Research on International Economic Relations (ICRIER) on the potential impacts of an earlier retail FDI policy – single-brand retailing – show that the co-existence of traditional and modern retailing is highly possible and even desirable in India (Mukherjee, Satija, Goyal, Mantrala, & Shouming, 2011). This is because of the segmented and differentiated shopping behaviours among the range of Indian consumers. However, the Indian agrifood sector – the sector impacted by the new multi-brand retail FDI policy – might be different. Except for specialty products, the *ingredients* of Indian cuisine remains pretty much the same across various social strata. However, little is known about the extent to which segmentation and differentiated consumer purchasing behaviour occurs in multi-brand retailing, as few studies have been published in this area.

This paper sets to fill this gap. It intends to shed light on the conflicting perceptions regarding the impact of retail FDI liberalisation in India and hopes to provide an answer on the extent to which traditional and modern Indian value chains differ and how opening up the Indian economy to retail FDI will impact the governance and efficiency of value chains within the country. It will explore whether the presence of international retailers in India will impact incomes and eventually crowd out smallholder farmers, middlemen and retailers in traditional fruit and vegetable value chains. Researchers have campaigned for value-chain upgrading through retail modernisation as a means to reduce post-harvest losses, increase incomes, and promote inclusive growth (Grewal, Malhotra, & Ahmed, 2011; Narang & Satnalika, 2010; Sharma, 2012). This paper therefore also aims to provide evidence on whether retail FDI liberalisation will create spill-over effects and whether the presence of international supermarkets could prove to be a unique good that could potentially benefit both consumers and stakeholders in the agricultural sector.

One of the main impediments to carrying out this research was its novelty. Because of the newness of the MBR retail FDI policy and, correspondingly, the small amount of impact studies to date, a deliberate decision was made to seek cases within India where multi-brand retail FDI had been ratified and implemented. Note that not all Indian states have ratified retail FDI liberalisation and that not all Indian states have the concurrent existence of modern and traditional value chains. The research focus being agrifood, selection purposely considered states wherein agriculture was the main component of its gross domestic product (GDP). As the southern state of Andhra Pradesh fulfilled all of the abovementioned criteria, it was selected as the case state for the research.

This research differs from previous value-chain and retail FDI research that has been conducted in India and Andhra Pradesh in two ways: Firstly, our research proceeds from the assumption that neither of the value chains stylised is better than the other. The literature suggests a clear-cut distinction between two stylised kinds of value chains and retailers: traditional and modern. The dichotomy points to an inherent progress from traditional to modern value chains and implies that Western practices and values are superior to local practices and values (see, for example, Chakrabarty, 2000; Reardon, Henson, & Berdegué, 2007). We avoided this premise. Secondly, in order to appropriately compare value chains, our research used not one, but several parameters for a more thorough comparison. Hanumanthaiah (2010)

for example, used data on marketing cost, marketing margins and price spreads to evaluate the efficiency of the marketing of various horticultural commodities – including tomatoes – in the state of Andhra Pradesh. They found that the supply chain for commodities in AP is multi-layered and that no value chain is more efficient than the other. Aparna and Hanumanthaiah (2012) used only marketing costs, price spread and marketing margins to analyse vegetable value chains to come to the conclusion that supermarket channels are more efficient than the traditional channels. Though not exhaustive, our research used several parameters that evaluated value-chain governance, efficiency, profit distribution and crowding out prospects to compare traditional and modern value chains.

This report presents the results of this study and is structured as follows: Section 2 outlines the framework of the analysis together with our hypotheses. Section 3 summarises the main methodological elements of this study, including the selection of the state and cities, product selection, sampling procedure, as well as the interview procedure and the questionnaires employed during field research. It also gives a brief overview of value-chain analysis, the analytical tool that was used to examine agricultural marketing in Andhra Pradesh. Next, Section 4 describes our findings on tomato value chains in Andhra Pradesh. We present the three types of value chains that co-exist in the state: traditional, modern and *rythu* bazaar value chains, describing how in reality they strongly interlink with each other. Sections 5 to 7 present the findings of the study on the hypotheses developed prior to the fieldwork. Specifically, Section 5 looks at value-chain governance, while Section 6 discusses value-chain efficiency and Section 7 focuses on profits and the crowding out of middlemen. This is followed by conclusions and policy recommendations in Section 8.

2 Transformation of value chains: framework for analysis and hypotheses

This section provides an extensive review of literature on fruit and vegetable value chains in the context of an agricultural and retail transformation worldwide, with a distinct focus on the Indian context. In the succeeding explanation of value-chain analysis – the main analytical framework of the research – it becomes clear that due to the framework's numerous components, equally numerous approaches could be used to conduct the analysis itself. For this reason, this section also puts forward

the specifications on several hypotheses on fresh fruit and vegetable value chains that the research will test: on governance/efficiency, on profits, and on crowding out.

2.1 Retail and fresh fruit/vegetable value chains

Retail can be defined

> as all activities involved in selling goods or services directly to final consumers for their personal, non-business use, via shops, markets, door-to-door selling, mail order or over the internet, where the buyer intends to consume the product through personal, family or household dues. (Mukherjee & Patel, 2005, p. 26)[4]

Wholesale business, on the other hand, is defined as "sales for the purpose of trade, business and profession", as opposed to, "sales for the purpose of personal consumption" (GoI, 2012a).

In the past two decades, modern retailers have slowly penetrated markets in developing countries (Reardon et al., 2003). This phenomenon called the "supermarket revolution" has transformed agrifood systems and supply chains in many African, Asian, and Latin American countries in three major waves. The first wave occurred in the early-to-mid 1990s and affected many South American and East Asian countries. Within a decade, the share of modern supermarkets[5] in the food retail sector skyrocketed from 10-20 per cent to 50-60 per cent. The second wave in supermarket revolution occurred in the mid-to-late 1990s spreading through Mexico, several Southeast Asian countries, Central America, and South-central Europe. In these regions, the share of supermarkets rose from 5-10 per cent in 1990 to 30-50 per cent at the beginning of the 2000s. The third wave peaked in the late 1990s and early 2000s. It transformed the retail sectors in many countries of eastern and southern Africa, in Central and South America, as well as in China and India (Reardon and Gulati, 2008).

The spread of supermarkets was triggered by typical development processes in emerging countries such as an emerging middle class, high GDP growth, urban reorganisation (for example, a middle class going shopping by car

4 In India, a common definition of retail is still evolving (Mukherjee & Patel, 2005, p. 22).

5 It is important to understand that the term "supermarket" in this context is often used as a synonym for various different "modern retail" formats, including hypermarkets, supermarkets, and discount stores (compare Reardon & Hopkins, 2006, p. 525).

instead of on foot), and a convergence of tastes. However, though retailers themselves are perceived as modern, up until the early 2000s, some large international supermarket chains still employed traditional procurement systems in the countries they entered. Using these traditional systems meant in most cases relying on a rather fragmented per-store procurement system in which every store procured its own products from traditional wholesale markets (Reardon, 2005).

At roughly the same pace, the agricultural sector worldwide is going through a slow but progressive transformation of crop production. Gulati, Minot, Delgado, & Bora (2005) report that high-value agricultural commodities – also known as cash crops − cover progressively wider areas at the expense of traditional staple crops such as grains and starchy products. This production evolution is both a result and a catalyst of the transformation of agricultural value chains, and most notably of the spread of modern food retailing. On the one hand, cash crops require a stronger vertical coordination of the supply chains and imply "a greater need for close linkages between farmers, processors, traders, and retailers to coordinate supply and demand" (Gulati et al., 2005). On the other hand, the development of modern retailing and especially the arrival of international retailers are also fostering changes in the procurement system and in the infrastructure (Humphrey, 2007; Reardon, 2005). Examples of changes induced in both cases include "grades and standards, price information services, inspection and certification services, contract farming, farmer cooperatives, professional associations" (Gulati et al., 2005).

India's agrifood chain transformation is only just beginning and is rather slow. There are roughly between 8 and 15 million retail shops in the country, most of which are part of the informal sector. In fact, at 11 shops per 1,000 inhabitants, the Indian retail density is the highest in the world, and the sector is also more diverse than in any other country (Dholakia, Dholakia, & Chattopadhyay, 2012). Despite constant GDP growth over the past decade (between 6 and 9 per cent), an annual exponential growth of 15 million inhabitants, and an equally growing middle class, a strong retail transformation lag can be observed in India. There are several underlying reasons behind this, two of which are peculiar to India: First, the rate of Indian women participating in the labour market has not increased significantly over the years, implying a constant pattern of household purchasing habits, most of which are through traditional means.

Second, public investment has decreased rather than increased in India,[6] especially in areas related to agricultural marketing. This implies modest development initiatives from the Government of India (GoI) towards modernising agrifood chains.

Prior to 2006, foreign direct investment (FDI) was not allowed in India, and there were only a few routes through which FDI could enter (for example, franchise agreements, strategic licensing agreements, as well as through the manufacturing and wholly-owned subsidiary routes). In franchising, FDI was allowed through the Central Bank, the Reserve Bank of India (RBI), under the Foreign Exchange Management Act (FEMA). Food companies such as Pizza Hut and clothing companies such as Lacoste and Nike have entered the Indian retail market through this route, for instance. Mango (a clothing retailer) used this route via an agreement with Piramyd, Mumbai. Shoe brands such as Nike, Reebok, and Adidas have wholly-owned subsidiaries in manufacturing that are considered as Indian companies and are therefore allowed to retail.

FDI in the supermarket retail sector remained even smaller. Only a few chains with FDI shares have managed to enter India, for example N Store (a US franchise), Shoprite Hypermarket (Shoprite, South Africa) and Best Price Modern Wholesale (a joint venture between Walmart and Bharti). Within the food retail sector, value-chain transformation has been rather slow, partly because supermarket chains cover only a tiny part of this retail segment. Up to now, food retailing in India remains largely traditional (also referred to in the Indian context as "unorganised"): 98.5 per cent of food retailing is conducted by roughly 15 million unorganised retail units.

Apart from the differentiation between unorganised (traditional, informal) and organised (modern, formal) actors in the agrifood value chain, the variety in the Indian case necessitates additional categories in describing the chain. It is important to differentiate between "traditional" and "modern" types of actors and value chains. Although large parts of these categories are congruent with the "organised-unorganised" dichotomy, it is helpful to use these two categories as additional classifiers of the retail landscape because they add a cultural and social perspective to it. Overall, the Indian retail market is one of the most diverse in the world with an overwhelming number

6 Private investment in India is around 60 per cent while the public investment share is only at 40 per cent (Jairath, 2008).

of different types of outlets that can be classified along the aforementioned categories.

The vast majority of retail shops are small, family-owned businesses (termed *kiranas* in Hindi) and hawkers (Franz, 2010). The typical Indian consumer is very convenience-oriented and prefers to buy fresh food and ingredients in the proximity of his or her home (Baskaran, 2012). Further, traditional retailers have limited financial, human, and managerial capacities (Reardon & Gulati, 2008). Traditional food retail in India consists primarily of two types of retailers: the *kiranas* (comparable to "mom-and-pop" stores) are small shops with a limited range of products. They may, however, also offer services such as home delivery, phone orders, and credit sales. The pushcart vendors (hawkers) are the second main type of traditional retailer. Other types of traditional retailers include small general stores, roadside stands, and various different types of traditional markets (Singh & Singla, 2010; Reardon and Gulati, 2008; USITC [United States International Trade Commission], 2009) (see Table 1).

Modern retailers are mostly "Western-style" chains with shops of differing sizes. Their main formats are supermarkets and hypermarkets that offer a wide range of products. As in most developing countries, the Indian supermarket sector has been taken over by both domestic and foreign companies in various formats and under various different legal forms of organisation. The largest domestic chains include Reliance Fresh, Big Bazaar, More, Heritage Fresh, Nilgiri's, and HyperCity. Foreign chains are active primarily in the wholesale sector as joint ventures with Indian companies. Moreover, there are also Indian franchisees of foreign supermarket chains.

2.2 Value chains and agricultural marketing in India

A discussion of value chains in India would remain superficial without a discussion of agricultural marketing in the context of the country's Agricultural Produce Marketing Committee Act. The first Agricultural Produce Marketing Committee (APMC) Act launched in 1969 was designed to provide farmers with market infrastructure and to protect them from exploitative middlemen. The Act, however, led to unexpected negative externalities, rendering the marketing chain inefficient. Critics complained that

Table 1: Food retail establishments in India by type

Type of outlet	Central plazas/ bazaars	Street markets and roadside stands	Small stores/*kiranas*	Midsize stores	Hypermarkets, etc.
Estimated number	1,000	10 – 12 million	> 6.5 million	Relatively small number	
Estimated store size	Groups of approximately 100 stalls. Average size is 0.5-1 m² by 1-1.5 m².	Varies greatly. Can range from a table to a large shop with multiple vendors.	Less than 185 m²	280 – 600 m²	2,300 – 14,000 m²
Type	Unorganised	Unorganised	Mostly unorganised, but some organised	Organised	Organised
Characteristics	Groups of stalls that together sell a large range of items, usually within a building complex.	Generally little to no ambiance.	Range of products from limited amount to a wide range of goods. Generally little to no ambiance but good customer service.	Often clean and well lit. Self-service.	Quality varies, both for the store itself and for the presentation of products.
Types of products sold	A wide selection of goods, including local fruit and vegetables, pulses, snack foods, and spices. Some processed and consumer goods. Small amount of imported fruits.	Selection of goods can range from a handful of items at small stores to a wider range (20-30 different fresh items) at large stores. Imported fruits available.	Produce selection averages 15-30 items. Also dry goods. Some have bakeries and/or meat counters. Mainly at organised outlets: domestic food brands and some imported foods. Some outlets offer dairy and/or frozen foods.	Produce selection averages 20-50 products, although some chains offer a significantly greater selection. Domestic food brands available and some imported foods.	Range of products, e.g. domestic and foreign origin produce, dry goods, beverages, and snack foods. Some have bakeries and meat sections. Also non-food items.

Source: Adapted from USITC, 2009

> [...] the monopsonistic markets (locally known as 'mandis') have been exploitative of farmers with their huge presence of intermediaries like the commission agents, wholesalers, sub-wholesalers, etc, and their non-transparent methods of weighing, pricing, payment of commissions, taxes and payments for the produce. (Joseph, 2013)

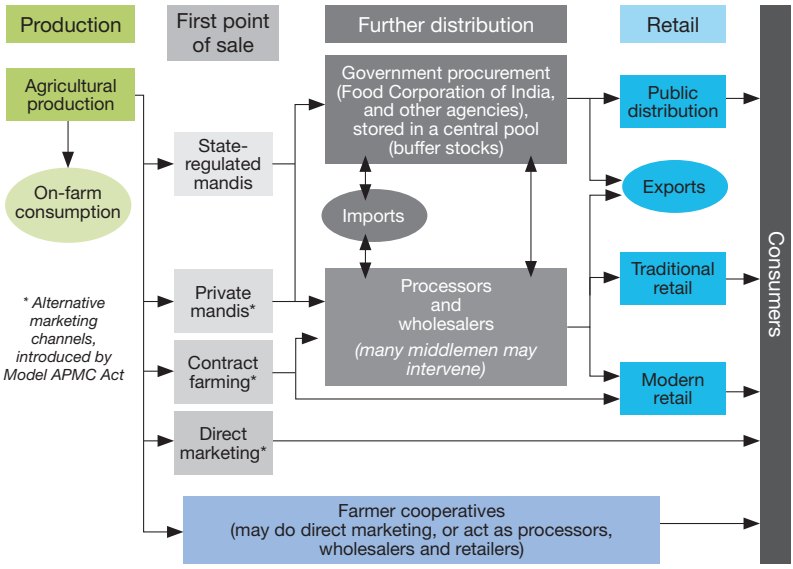
In many states, *mandis* (wholesale markets) were non-functional. The required facilities were not provided or were provided insufficiently, especially for cold storage (Acharya & Agarwal, 2011). Preliminary interviews with Indian experts had also indicated that actual transactions often did not take place on the *mandi* premises: the insufficient number of *mandis* meant that farmers had to transport their produce over long distances to reach a regulated market. Farmers then resorted to holding transactions outside the *mandis* but the APMC still continued to collect market fees for the exchange. In the end, farmers ultimately paid not only the APMC market fee but also commissions for middlemen, with expenses totalling around 1 per cent of the total value of produce sold for the former and 6-8 per cent for the latter. Further, farmers selling at state-regulated *mandis* were reported to suffer from limited price information and from non-transparent price-setting mechanisms (Acharya & Agarwal, 2011; Joseph, 2013; GoI [Government of India], 2011b).

In 2003, the Model APMC Act was introduced to resolve these negative externalities that had arisen from the original APMC Act. Though critics indicate that the state *mandis*, which were regulated by local government committees, pursued business as usual under the previous Act (Joseph, 2013), the main innovation of the Model APMC Act was the creation of three new alternative marketing channels as the first point of sale for agricultural producers (USITC, 2009) (see Figure 1):

- **Direct marketing:** The farmer is allowed to sell his products to consumers directly.
- **Private *mandis:*** Individuals or firms can acquire a license from the state government to own a private *mandi* and buy directly from farmers. This allows private *mandi* owners to grade purchased products and increase their quality while being able to determine prices. Private *mandi* owners also tend to save on middlemen costs and to obtain guaranteed access to storage facilities.

- **Contract farming:** Farmers and firms can mutually agree upon contract terms, short-circuiting local markets. The purchasing firm is warranted with a stable supply of products at an agreed quality and price. This may contribute to reducing transaction costs when contracting with large numbers of smallholders.

Figure 1: Indian agricultural marketing and distribution structure in AMPC states



Source: Adapted from USITC, 2009, section 7-3

The majority of Indian farmers own very little agricultural land. According to the latest agricultural census from 2010-2011, a total of 159.18 million hectares (ha) are shared among 138 million operational holdings (of which 12.79 per cent are held by women), leaving the average farmer with 1.16 ha of lands. Holdings are categorised according to the area cultivated.

Marginal and small holdings constitute a total of 84.97 per cent of all holdings, covering 44.31 per cent of operated area, while large holdings constitute 0.73 per cent of all holdings, covering 10.92 per cent of operated area. It should be noted that the average size of holdings in India has been steadily decreasing since 1970. This trend has been caused by a decrease of

the number of medium and large holdings and an increase in the number of small and especially marginal holdings (GoI, 2012a) (see Table 2).

Table 2: Size categories of Indian holdings

Marginal	Small	Semi-medium	Medium	Large
Below 1 ha	1 – 2 ha	2 – 4 ha	4 – 10 ha	Above 10 ha

Note: ha = hectares
Source: GoI, 2012a

Coupled with very high to extreme poverty rates, especially in rural areas, smaller-sized holdings tend to lead to subsistence farming. Only 50 per cent of cereals and pulses, which represent the bulk of the local diet, are marketed (USITC, 2009), leaving the rest for domestic consumption. The marketed surplus output ratios of fresh vegetables are higher (for example, in 2007, a total of 79.2 per cent of vegetables output was marketed), as fruit and vegetables are usually considered as cash crops. FV cultivation is said to be geared to the expanding urban market and covers 13.7 per cent of all the operated area in India (GoI, 2012a).

2.3 Theoretical approach: value-chain analysis

Value-chain analysis was employed as the main analytical tool to investigate different kinds of value chains and the transformation processes occurring therein. According to the most widely used definition, a value chain describes

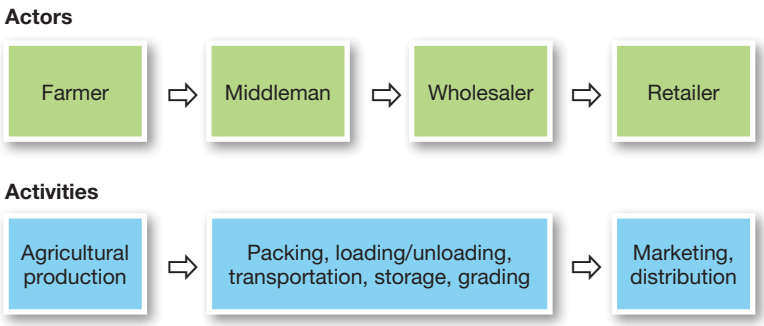
> the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. (Kaplinsky, 2000)

In other words, value-chain analysis (VCA) offers a comprehensive view of the whole chain. For example, VCA enables the researcher to trace product flows and value-adding stages and identify key actors as well as their relationships with other actors in the chain (Kaplinsky & Morris, 2001; Schmitz, 2005). It is thus a powerful tool with which to scrutinise the distribution of income along a value chain, to identify bottlenecks and conflicts, and to detect the reasons for the exclusion of certain actors. This information can then be used to develop adequate policy options

(Altenburg, 2006; Schmitz, 2005). For this report, VCA makes it possible to map the different value chains under study in their respective state of transformation along with determining the differences in their structures and the effects that their transformations have on stakeholders and value-chain efficiency.

In the case of agrifood, the value chain describes all activities required to bring farm products to consumers: agricultural production; processing; storage; marketing; distribution; and consumption (Gomez et al., 2011). The case of fresh fruit and vegetable value chains, in which no elaborated processing (other than packaging) is necessary, is illustrated in Figure 2.

Figure 2: Stylised fresh fruit and vegetables value chain



Source: Authors' illustration in accordance with Sanogo, 2010; Trienekens, 2011; ul Haq, 2012

In many developing countries, rising demands on quality, internationalisation and market differentiation have resulted in the co-existence of different kinds of retailing served by different types of value chains (Reardon, 2005). This is also the case in India.

Generally speaking, two stylised kinds of value chains exist according to the literature:

- **A traditional value chain** is characterised by a great number of usually small producers using traditional production systems and many intermediary parties (traders) serving various local markets. These chains are relatively long, which implies limited availability of (end-)

market information, distribution of value added over a large number of actors, and longer transportation distances (in both distance and time). (Trienekens, 2011).

- **A modern value chain** mainly serves supermarkets, either domestic or international, and is characterised by large-sized producers or medium to small producers organised in cooperatives and/or linked by subcontracting arrangements. Although the production volume produced by these chains is smaller than that of the traditional chain, the value generated is larger. These value chains are increasingly applying national or international retail quality and safety standards (Trienekens, 2011).

The abovementioned terms that are used in the literature to describe the two ideal types of value chains are very consistent. Most authors (for example, Dholakia et al., 2012; Humphrey, 2007; Reardon et al., 2007) create a rather clear-cut traditional/modern dichotomy, without reflecting further on the connotative implications of this terminology. This observation applies to value chains as well as to the categorisation of retailers. It is worth noting however that, from a post-colonial and critical perspective, the dichotomy connotes a notion of progress inherent to Western retail businesses. Further it may imply that modernisation is the equivalent to adopting Western practices and values and that these are – by definition – superior to local practices and values (see Chakrabarty, 2000; Wallerstein, 1997). Therefore, the terms traditional and modern, particularly if used in a dichotomous relationship, are an implicit judgement on local practices. This study does not follow this prejudgement (rather, it views "traditional" and "modern" as value-free terms). However, to avoid confusion, for the sake of clarity and in order to be able to link the present study to the bulk of literature on the subject, this study also uses the established terminology.

Modern market-oriented chains have the tendency to become shorter, meaning that they have fewer actors (Trienekens, 2011). This may lead to a concentration of activities within the chain and changes in governance and distributional patterns. Modern and traditional value chains thus also differ with regard to governance, performance of the chain, and distribution of income of participants.

To analyse the different structures of co-existing fresh fruit and vegetable value chains and their effects on stakeholders, the framework for agricultural value chains in developing countries that was proposed by Trienekens

(2011) was adapted to fit the current research purpose. When analysing value chains, many authors recommend combining approaches and looking at several salient elements that describe the chain (for instance, Kaplinsky & Morris, 2001; Sanogo, 2010; Taylor, 2006). Trienekens (2011) shares this view and characterises a value chain by its network structure, its governance form, and the way value is added.

The network structure of a value chain reflects, in the vertical dimension, the flow of products and services from "primary producer" up to "end-consumer" (that is, the value chain) and, in the horizontal dimension, the relationships between actors within the same chain link (Trienenkens, 2011). The way the chain is governed is described by Trienekens (2011) following transaction cost perspectives and global value-chain analysis and described as a fundamental aspect in value-chain analysis. For Trienekens (2011), the way value is added captures a number of aspects such as quality, costs, delivery times, delivery flexibility, and innovativeness. We focus on value-chain efficiency, as proposed for instance by Aramyan, Lansink, van der Vorst, and van Kooten (2007). This is especially interesting as the Indian government aims at increasing the efficiency and performance of value chains. Distribution of profits is not explicitly mentioned in Trienekens (2011) but is interesting especially regarding inclusiveness and poverty effects. This aspect could easily be integrated into the analysis as recommended, for example, by Schmitz (2005).

2.3.1 Value-chain governance

The concept of value-chain governance in the context of global value chains was introduced by Gereffi (1994). In this theoretical stream, power relationships and information asymmetry are key concepts in analysing global value chains. Actors in the value chain may have partly rivalling interests while asymmetric power relations prevail (Altenburg, 2006; Schmitz, 2005). The powerful actors in the chain are often called the "lead firms" who seek to "govern" the chain (Altenburg, 2006; Gereffi, 1994; Schmitz, 2005). These firms set and enforce the terms under which other actors in the chain operate. Value-chain analysis "unpacks" the relationships between the lead firms and other actors (often a global firm and local producers) and describes the opportunities and constraints that result from entering such relationships (Schmitz, 2005).

Coordination can be undertaken by buyers ("buyer-driven commodity chains") or producers ("producer-driven commodity chains") (Kaplinsky & Morris, 2001). Retail chains buying in large volumes are an example of "buyer-driven" sectors (Kaplinsky & Morris, 2001). Especially if competition in product differentiation and quality is intense, this normally leads to customised, complex exchanges between buyers and suppliers (Blandon, Henson, & Cranfield, 2009; Humphrey & Schmitz, 2002). Due to the size of supermarkets and the high number of suppliers, power asymmetries and quasi-hierarchical relationships develop (Humphrey & Schmitz, 2002). Also, modern retailers are endowed with greater buying power and, because they tend to make their procurement systems more efficient, they are expected to have greater ability to control their suppliers (Reardon, 2005).

When analysing governance patterns in a chain, many studies look at standards as these are a crucial tool for lead firms in governing their supply chains (Altenburg, 2006; Henson & Humphrey, 2010). In the case of supermarkets, the modernisation process of the supply chain not only increases retailers' capacity to monitor their suppliers very closely (Reardon, 2005; Reardon et al., 2007) but also allows them to have greater control over continuity of supply, quality and safety (Humphrey, 2010). Modern retailers, especially international retail chains, face higher customer expectations with regard to product quality and safety than traditional retailers (Reardon & Hopkins, 2006). Experience in developing countries and emerging economies shows that public standards often do not exist or are insufficient to guarantee this level of quality and traceability. Hence modern retailers introduce private standards at a very early stage and require their suppliers to meet them (Reardon, 2005). Because of their greater buying power and efficient procurement systems, modern retailers tend to have greater ability to impose standards and control their suppliers.

The role of standards in value-chain governance has been studied for example by Reardon et al. (2001) and Henson and Humphrey (2010). Reardon et al. (2001) use value-chain analysis to investigate the role of food-safety standards along the value chain and its effect on the competitive strategies of a company (Reardon, Codron, Busch, Bingen, & Harris, 2001). They find that large firms and multinationals increasingly create private standards and private certification, labelling, and branding systems and that medium to large domestic firms lobby governments to adopt public standards similar to those in export markets in developed regions. Small firms and farms,

however, have to ally with public and non-profit sectors to adopt standards and certification systems in order to access export markets and other modern value chains (Reardon et al., 2001). Henson and Humphrey (2010) studied the complexities of private standards in global agrifood chains as well as their impacts on developing countries. However, they concluded that, because of the diversity of actors creating standards and of the aims for which they were created (risk management, product differentiation), no generalisation of the impact could be made.

Due to their great buying power, modern retailers – especially international supermarkets – should also have more influence on the prices they pay to their suppliers. According to Schmitz (2005), in global value chains "global buyers set the terms for others in the chain. They decide what is to be produced, where, by whom, and at what price". Humphrey and Schmitz (2001) note that it is frequently the case that major customers make their suppliers meet a particular target volume and that this phenomenon applies also to "all-year-round available fruits and vegetables". Supermarkets especially have often been blamed for dictating low prices to their suppliers if retail concentration and thus the market power of supermarkets increases. However, this applies mostly to developed countries as evidence for this kind of trend in developing countries is hard to find (Humphrey, 2006). On the other hand, with supermarkets engaged in non-price competition, that is, competition in quality and convenience, price-setting power might materialise in their ability to reward higher quality with higher prices (Humphrey, 2006). Based on the abovementioned discussion, it is hypothesised that:

H1 (relating to governance): Modern retailers have more decision-making power over prices and set more standards in their supply chain than traditional retailers.

2.3.2 Value-chain efficiency

The bulk of literature asserts that the value chains of modern retailers are more efficient. However the concept of efficiency is very broad and dynamic, and definitions do not only differ among different disciplines but also among different cultures. This study employs a fairly mainstream and simplistic definition of "efficiency", namely: "efficiency" means whether the value chain fulfils the objectives assigned to it at a minimum possible cost (Acharya & Agarwal, 2011).

However, unwrapping the term "efficiency" by means of indicators that measure it is a critical way in which research can engage with this simplistic terminology. Alternative indicators that could be used to measure value-chain efficiency are: 1) marketing margins; 2) the length of the value chain (in terms of number of steps/or actors); and 3) post-harvest losses.

Let us look at the first indicator: if the marketing margin is very high, this means that costs may have been reduced on the side of the consumer. The literature claims that the marketing margins of modern retailers are lower than the margins of traditional retailers (Acharya & Agarwal, 2011). Marketing margins are the net price received by the farmer compared to the price that the retailers sell the produce for (consumer price) (ul Haq, 2012). The higher the ratio, the more market efficient the value chain (Aparna & Hanumanthaiah, 2012). Regardless of type of value chain, lower margins are indicative of higher efficiency. Second, the more steps a value chain involves − namely the longer the length of the chain − the less efficient it is. Shorter chains are particularly important for perishables such as fresh fruit and vegetables. According to Reardon (2005), supermarkets set up their own collection centres in the rural areas closer to the farmers and therefore source directly from the growers. This proximity renders the value chains of supermarkets shorter, with fewer actors involved, fewer transfers of the produce, and therefore more efficient than the value chains of traditional retailers. The second indicator is related to the third component: post-harvest losses. According to Gomez et al. (2011) post-harvest losses are an important determinant of market inefficiencies. Looking at post-harvest losses, the literature assumes that modern retailers produce less post-harvest loss, since they have invested in a better transport system and in cold storage.[7] Again, regardless of type of value chain, more efficient value chains are characterised by lower post-harvest losses. All in all, based on the literature, it is hypothesised that:

H2 (relating to efficiency): Value chains of modern retailers are more efficient than value chains of traditional retailers in terms of lower marketing margins, a broader procurement area, more investment in cold storage and transport, lower post-harvest losses in the value chain.

7 In our study, we measure post-harvest losses not only by the quantitative data that we acquired from the actors in the value chain, but also by the storage and transport system.

2.3.3 Profit distribution and crowding-out

With regard to the transformation processes in India, two effects on farmers seem particularly relevant. First, studies show that the majority of retailers in India still purchase fresh produce from intermediaries instead of buying it directly from farmers, with few exceptions. Moreover, private modern processing firms increasingly enter into competition with farmers' cooperatives, thus reducing the cooperatives' market share and increasing the potential for conflict between these actors (Reardon & Minten, 2011). Next, while many studies view the Indian farmer as being in a very weak position, there is more recent evidence that hints at the opposite. While some authors argue that the majority of Indian farmers tend to be not well-informed about agricultural produce markets and dependent on advance payments from intermediaries, Reardon and Minten (2011) found that only a small percentage of farmers were in need of advanced payments. In comparison with the situation 15-20 years ago, today's farmers have better access to credit and to agricultural markets. This finding is supported by other researchers (Das Gupta, Reardon, Minten, & Singh, 2010) who claim that the majority of farmers use their mobile phone to contact buyers and to negotiate prices.

What one may deduct from these trends is that while suppliers – farmers in particular – may still be in a position of weakness in competition with other actors in the value chain, infrastructure and technological developments may have improved their leverage. According to Reddy et al. (2010), smallholder farmers integrated into the modern value chain gain higher margins than smallholder farmers that remain in traditional chains. Recent research in other developing countries show similar trends: in Kenya, for example, "for smallholder vegetable farmers, supermarket participation is associated with a large and positive income boost" (Andersson, Kiria, Qaim, & Rao, 2013). In this regard, it is therefore hypothesised that:

H3(a) (relating to profits): Farmers integrated into value chains of modern retailers make larger profits than farmers who remain in the value chains of traditional retailers.

Whether Indian retail FDI will have an effect on smallholders may depend on whether the government succeeds in actually implementing policies

such as local sourcing requirements (LSRs).[8] In simplest terms, LSRs refer to requiring international supermarkets to source a minimum percentage of their portfolio from local suppliers. However, critics were quick to point out that smallholder farmers will experience difficulties in fulfilling the quality standards of international supermarkets. First of all, it will be difficult for smallholders to regularly serve the huge quantities that large-scale retailers demand due to the small size of their landholdings. Second, it will be difficult for smallholders to meet the quality standards of global retailers that demand special private quality and safety standards. Small farmers are used to selling all produce as undifferentiated commodities without standardising them based on different levels of quality. As examples in Malaysia, Thailand and Vietnam show, small farmers cannot meet international supermarket standards because they do not have access to investment and technology such as cold storage and machinery (Romo, Digal, & Reardon, 2009).

Yet there are several ways to empower smallholders in order for them to fulfil retailers' standards and participate in modern value chains. One way involves increasing product quality through increased inputs of fertilisers, pesticides, water, mechanisation and improved crop management. Having said this, these changes often result in increased production costs. Another way is for farmers to come together and form producer companies or farmer cooperatives wherein membership will facilitate the farmers' access to information, technology and credit to be used for production inputs (Gupta, 2012).

In reality, not all smallholder farmers will be able to increase the quality and quantity of their production or engage themselves in a cooperative. Therefore, while some smallholders are expected to survive the entrance of global retailers by upgrading their own crop production qualities/quantities

8 The Indian law on FDI liberalisation (Revised FDI Policy, Press Release No. 5 , n. d.) designed specific local sourcing requirements (LSRs) for international investors, which protect the young industry and small farmers in India (Mukherjee & Patel, 2005, p. 54). LSRs are imposed to regulate investments with the intention of strengthening domestic manufacturing and creating local employment. The Indian FDI policy requires international investors to procure at least 30 per cent of products from farms, agricultural co-operatives or farmer's co-operatives whose investment in plant and machinery does not exceed USD 2 million. Likewise, 30 per cent of the manufactured and processed products need to be sourced from small Indian industries (total investment in plant and machinery not exceeding USD 2 million to the time of the installation), preferably from micro, small and medium enterprises (MSMEs)

and marketing activities, other smallholders will not be able to fulfil the demanded standards and continue to sell to the traditional retailer or cease farming altogether.

Effects on middlemen

As in other developing countries, numerous organised modern-type retailers in India attempt to cut off middlemen such as village merchants or commission agents and instead source directly from wholesalers or cooperatives (Reddy et al., 2010). Literature shows that the establishment of modern value chains tend to eliminate unnecessary or redundant intermediaries along the chain. In this way, value-chain transformation is seen to disadvantage middlemen the most among all actor groups in the vegetable value chain. However, not all middlemen will be cut out of the value chain. There will be remaining intermediaries, for example specialised wholesalers, who will then be able to gain more profits as a result of the reduced number of players in the chain. It is hypothesised that:

H3(b) (relating to crowding out): The modern value chain of fruit and vegetables will cut out some middlemen as a result of the direct purchasing activities of modern-type retailers. The remaining intermediaries in the chain will tend to enjoy larger profits.

However, modern retailers in India push the payment periods for purchased goods as far ahead as possible. In some extreme cases, retailers fail to pay their suppliers within the contractually fixed periods of time. In other cases, retailers ask their suppliers to extend the payment period by several weeks due to liquidity issues. In India, this practice of financing modern retail via de facto "credits" has resulted in open resistance from the suppliers (Singh & Gupta, 2008).

Some of the protests against supermarket chains in India have been quite intense and even violent. There are several reasons for this: According to online publications by the civil society organisation "India FDI Watch", Reliance Fresh (an Indian retailer) has displayed particularly aggressive market behaviour towards its competitors. Further, the company's focus on fruit and vegetables has spurred tensions, notably with groups such as wholesalers, market workers, and other middlemen who are among the most politically active stakeholders in the supply chains. Wal-Mart has been targeted for similar reasons (Franz, 2010). The German retail and wholesale giant Metro faced protests from a variety of organisations – including trade

unions, *kirana* owners, hawkers, and Hindu-nationalist activists – because it had allegedly conducted retail operations under a wholesale license (Franz, 2010; Franz, 2012).

Effects on retailers

Traditional Indian retailers have often been depicted as resilient because of their specific advantages over modern retail and because of their particular social importance within the Indian shopping culture. The aforementioned "convenience" orientation of Indian customers plays a significant role here. On average, shopping frequency (to capture produce freshness) and proximity (of the retailer to the customer) are highly valued by Indian consumers. Traditional shopkeepers often build personal relationships, characterised by trust and familiarity with their customers (Baskaran, 2012; Dholakia et al., 2012). In the Indian context it seems that traditional retailers are well-positioned in the emerging competition with supermarkets and other forms of modern retail. Dholakia et al. (2012) argue that the resilience of traditional retailers could even be strengthened by culturally appropriate adaptation. This means that traditional shops could adapt to changing market structures while offering services that cannot be offered by modern retailers.

However, from a review of the literature, it would seem that traditional retailers see themselves as in competition with modern retailers. It is a fact that many traditional retailers, middlemen, and market personnel fear that the spread of modern retailing will lead to lower profits for them and will eventually cost them their jobs. The liberalisation of the Indian retail sector so far has spurred strong resistance – even violent protest – by civil society actors over the past years. Resistance has not only targeted foreign companies but also modern retailers of Indian origin, for instance, Reliance Fresh (Franz, 2010).

In the arising competition between traditional and modern retailers, studies point to modern retailers having larger profits than traditional retailers (Baskaran, 2012; Dholakia et al., 2012). However, in the Indian case, empirical data indicate that only a very small portion of traditional Indian retailers − about 1.7 per cent − have had to close down their businesses due to decreasing profits in the face of competition from modern retail (Joseph & Soundararajan, 2009). Against this background, it is hypothesised that:

H3(c) (relating to profits): In general, modern retailers make larger profits than traditional retailers.

3 Methodology

The research has been conducted using a triangulation of information, documentary research, field research and market observation. The literature used for desk research stems mainly from journals, books, reports and other academic publications, government memoranda, monographs and literature available from the internet. Field research was conducted in India from 8 February to 24 April 2014 by conducting structured interviews with researchers, government officials, the private sector, and stakeholders in the agrifood value chain. The interviews took place in Delhi and various other cities in Andhra Pradesh with supplementary market observation visits to Bengaluru (Bangalore) and Mumbai (Bombay). The following subsections provide more detail on the methodology employed by the study.

3.1 State and city selection

The southern Indian state of Andhra Pradesh (AP) was selected as the main research area following developments in Indian retail FDI and a series of conditions set by the Indian FDI policy. The decision-making steps that enabled this selection are explained in detail in the following paragraphs.

Discussions in Section 2 described how domestic retailers in India have flourished alongside international retailers. Against this background, the research made a further distinction between modern retailer "Indian domestic" and modern retailer "international supermarket". Thus, three types of value chains were identified for analysis in the research: **traditional**; **modern (domestic)**; and **modern (international).** To effectively compare these three stylised value chains, an Indian state where all types of retailers and their value chains co-exist was identified. For this reason, from the pool of all Indian states and territories, the sample was reduced to ten states and two Union Territories that had adopted the Consolidated Retail FDI Policy of 2012 with its amendments regarding multi-brand retailing (Tambe & Menon, 2013). In 2014, the states of Delhi and Rajasthan withdrew their consent to the retail FDI policy, further reducing the sample to eight states and two Union Territories (see Table 3).

Table 3: States that adopted the consolidated FDI Policy of 2012 (as of June 2013)

	State/Union Territory	Cities >1 million inhabitants	Total state population (2011)
S1	Andhra Pradesh	3	84,580,777
S2	Assam	0	31,205,576
S3	Delhi*	1	16,787,941
S4	Haryana	1	25,351,462
S5	Himachal Pradesh	0	6,864,602
S6	Jammu & Kashmir	1	12,541,302
S7	Maharashtra	10	112,374,333
S8	Manipur	0	2,570,390
S9	Rajasthan*	1	68,548,437
S10	Uttarakhand	0	10,086,292
UT1	Dadra Nagar Haveli	0	343,709
UT2	Daman Diu	0	243,247
	Total	**17**	**371,498,068**

Note: *Withdrew consent to retail FDI policy in 2014.
Source: GoI, 2011a

Zoning regulations for retail FDI prescribe that international retail chains can only establish outlets in cities with a population of more than 1 million inhabitants.[9] Under this condition, only four states from the initial reduced sample have cities with inhabitants totalling more than 1 million, namely: Andhra Pradesh, Haryana, Maharashtra and Rajasthan. Inspecting the economy of these four states shows that only in Andhra Pradesh does agriculture play a key role in the state economy. The rest of the states depend on other industries such as tourism, manufacturing, and the film industry. GoI reports that the AP agricultural sector provides employment

9 Retail sales outlets are only allowed to be set up in cities with a population of more than 10 lakh (1 million) inhabitants as per the 2011 Census. This criteria is fulfilled in 53 cities in India (Badrinath & Chitra, 2012, p. 25; GoI, 2012b).

for nearly 60 per cent of the state's population and is a major contributor to the state's GDP.

Following zoning regulations and value-chain consideration at state level, the 48 cities of Andhra Pradesh were further narrowed down to those cities with a population of more than 1 million and where all the three actor groups – international retailers, domestic retailers, and traditional retailers – co-existed. The cities of Hyderabad, Vijayawada, and Guntur were identified.

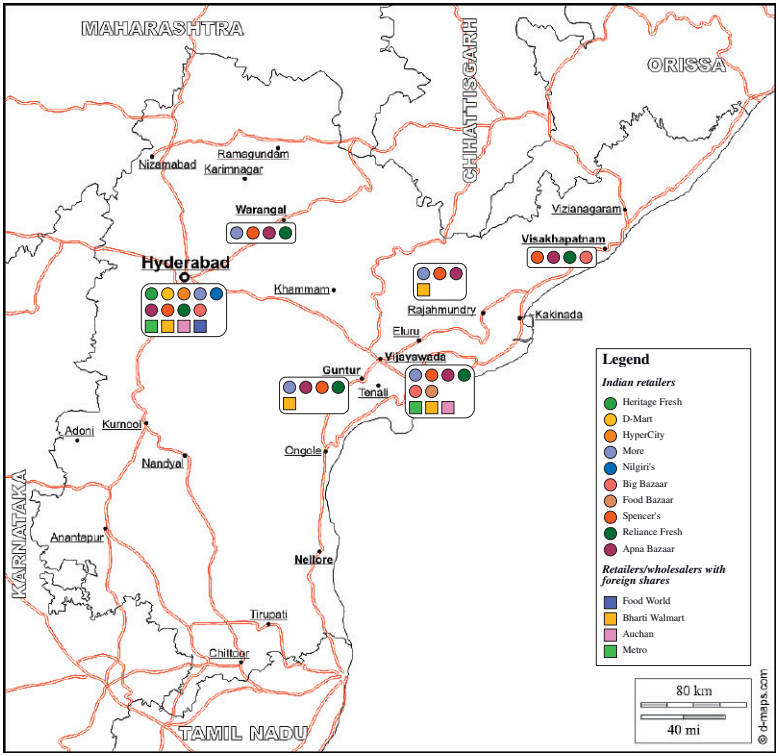
The final interviews were conducted in Hyderabad, Vijayawada, and in the district of Chittoor, instead of Guntur. It was decided not to include Guntur among the study areas due to time and logistical constraints. Instead, the district of Chittoor − particularly the areas surrounding the city of Madanapalle − was selected. Chittoor is currently the largest tomato-cultivating region in AP with a large number of wholesale markets specialising in tomato trading. The city of Vasakhapatnam, although the second largest city of AP, was not selected since none of the retailers in the city are international or have substantial international shares. The map in Figure 3 shows the presence of domestic and international retail chains in the state of AP.

Hyderabad, the capital city of Andhra Pradesh, is a large city with about seven million inhabitants. Three different types of international supermarkets (or supermarkets with substantial foreign shares) operate in the city:

- Best Price Modern Wholesale as a joint venture until 2013 with the 50 per cent foreign participation of the US company Wal-Mart, now fully owned by Wal-Mart India,
- Auchan under a franchise agreement with Max Hypermarket India Pvt. Ltd. of the Landmark Group from the United Arab Emirates, and
- Nilgiri's, an old Indian retail chain with 66 per cent ownership of its shares by Actis, a UK-based private equity investor, since 2006.

Metro, a 100 per cent foreign-owned wholesaler from Germany, also operates a branch in Hyderabad.

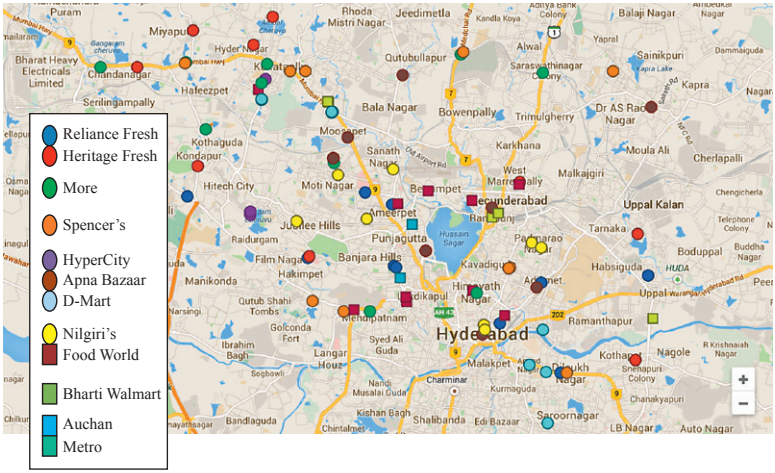
Figure 3: Map of domestic and international retail chains in AP



Source: Authors

Concurrently, Indian supermarket chains are also operating in Hyderabad. The domestic supermarket chain More has over 90 stores in operation in the state, followed by Reliance Fresh, Heritage Fresh, and D-Mart, all having between 20 to 60 stores in operation. This detailed map of Hyderabad (see Figure 4) distinguishes domestic chains (circles) from international chains (squares) in operation in the state.

Figure 4: Map of domestic and international retail chains in Hyderabad



Source: Authors

3.2 Crop selection

Note here that the state and city selection where retail FDI and domestic supermarkets are both in operation was the primary consideration. This is because the pool of states in India where this situation could be found is rather limited. Against this background, state pre-selection impacted the kind of fruit and vegetable value chains that could be analysed on the ground.

Andhra Pradesh is considered the "tomato" capital of India, with bountiful harvests each year between February and April (GoI, 2011c). Tomatoes play a central role in the Indian diet as tomatoes are a common component of traditional cuisine, both in Andhra Pradesh and nationwide. The consumption of unprocessed tomatoes transcends social boundaries because tomatoes are consumed across all income and social groups (GoI, 2011c; Gulati, 2007). Since they do not constitute a staple food, tomatoes are excluded from price-distorting policies that rice and pulses are often subject to. Most importantly, tomatoes are sold by all types of retailers, modern (domestic and international) as well as traditional sellers.

In addition to these characteristics, it is important to note that tomatoes have short storage periods (they can last up to three weeks if stored in cold storage) and are fragile, particularly in warm climates such as that of AP. This attribute is important because again, it excludes tomatoes from extreme price distortions in the market. Detailed fact sheets on storage conditions, harvesting seasons, main producing belts, production, and average prices for tomatoes can be found in the Annex (Annex Tables 1-3).

3.3 Respondent selection and sampling procedure

Empirical value-chain analysis examines three general types of actors within the value chain, namely: farmers, intermediaries and retailers, within each of the three typologies of value chains that were introduced (modern domestic, modern international, and traditional). Qualitative and quantitative interviews with all relevant stakeholders in the various different value chains were conducted in Hyderabad, Vijayawada and Chittoor. The total number of interviews with each type of actor in the value chain is shown in Table 4.

Table 4: Main groups of respondents and number of interviews

Farmers		**Intermediaries**		**Retailers**	
Marginal (below 1 ha)	20	Commission agents	9	Large Indian chains	9
Small (1 – 2 ha)	36	Traders	7	Large chains with foreign shares	3
Semi-medium (2 – 4 ha)	24	Collection centre officers	6	Franchisees of large foreign chains	1
Medium (4 – 10 ha)	24			Traditional retailers	12
Large (above 10 ha)	2				
Total	**106**	**Total**	**22**	**Total**	**25**

Source: Authors

The initial plan to employ random sampling for farmer respondents using farmers' registers at the Block Development Offices (BDO), located at the *Panachayat Samiti* level of local government proved to be challenging (see,

for instance, Jha, 2012). Farmers' lists were difficult to obtain, and were, moreover, incomplete. This predicament, together with logistical, time and budget considerations resulted in the decision to use 'snowball sampling' and 'convenience sampling' procedures.

For the qualitative part − which was extensively drawn upon to explain estimation results − snowballing offered the advantage that more in-depth discussions within the stakeholder groups could be achieved (Verschuren & Doorewaard, 2010) and allowed the researcher to access interview partners who were difficult to reach and with whom a particular level of trust was a prerequisite (Atkinson & Flint, 2001). Snowball sampling started at the APMC-regulated markets where APMC officials referred the research team to intermediaries in the selected value chains. Moreover, snowball sampling was also employed at *rythu* bazaars. The farmers that were interviewed also referred the team to other farmers in their particular villages and allowed the team to contact other farmers in their home areas.

Nonetheless, snowballing as a sampling method also has its disadvantages: Primarily, the interviewee is indirectly connected to a chain of reference persons leading up to the interviewer. This poses potential problems with representativeness, and the (unwanted) involvement of respondents as informal research assistants (Atkinson & Flint, 2001). As such, however, the snowball method is particularly appropriate for tracing back the value chains from either end of the chain, or from the centre (that is, the APMC markets) where many of the relevant stakeholders come together.

To generate data on the potential of farmers to participate in or gain access to the different types of value chains, the research team also conducted a number of brief quantitative interviews. The quantitative questionnaires with farmers are extracts of the longer qualitative farmers' interviews that were used for the study. They consisted of 25 out of the 58 original items from longer questionnaire.[10] The team interviewed roughly 30 farmer respondents who fell into each value-chain category (modern domestic, modern international, and traditional). Data that was gathered included socio-economic information, information on the farmer, farm characteristics

10 Four questionnaires (modern retailers; traditional retailers; farmers; middlemen) are presented in the Annex (Annex Tables 6-9).

and transaction characteristics.[11] After five weeks of data collection, a total of 101 valid farmer interviews (n = 101) had been obtained.

Interviews with intermediaries (that is, commission agents and traders) were conducted in *mandis* in Andhra Preadesh. Foremost, a courtesy call and expert interview with *mandi* officials was conducted, after which the group conducted interviews with market intermediaries. While some interviews were facilitated by *mandi* officials, the majority of intermediaries were interviewed without the assistance of market officers. A total of 22 intermediaries were interviewed, consisting of 9 commission agents, 7 traders, and 6 collection centre officers.

Interviews with the representatives of domestic and international retail supermarkets were based on purposive sampling. This is because of the limited number of large retail chains and wholesalers in Hyderabad and Vijayawada. Modern retailers in the two sample cities and the locations of their stores were identified and store managers of supermarket chains were interviewed. Since not all store managers were willing to be interviewed, the sample size was determined in situ. A total of 25 retailers were interviewed consisting of 9 store managers of domestic supermarket chains, 4 store managers of international chains (both retail and wholesale), and 12 traditional retailers. The sample of traditional retailers consisted of *kirana* shop owners, pushcart sellers and market stall vendors, but did not include *rythu* bazaar farmers, even if these farmers were technically selling their produce in retail.

To complement value-chain analysis, qualitative expert interviews with policy stakeholders at the central and state levels, with representatives of relevant research institutions, and with managers at supermarket headquarters in Hyderabad, Bengaluru (Bangalore) and Mumbai (Bombay) were also conducted. Moreover, from interviews with well-connected and

11 The team interviewed five farmers who supplied their goods through an innovative new channel, a combination of APMC-style marketing (spot market) but with the produce being weighed and packed at the village level. This new marketing channel derived from the Andhra Pradesh Department of Agricultural Marketing's pilot project called "Manakuragayalu", which was launched in January 2014. These five farmers were not included in the final sample pool for two reasons: Firstly, the "Manakuragayalu" project only began at the time of field research, and many of its innovative elements were still in their pilot phases. Secondly, the project farmers that we interviewed previously sold produce exclusively to *mandis*, and the change brought about only an additional link to their *mandi* marketing channel.

well-informed stakeholders, endorsements and references for additional interview partners via snowballing were obtained.

3.4 Questionnaire structure and interview strategy

Six questionnaires were developed for the fieldwork phase.[12] These were: two types of farmers' questionnaires (long and short version); one questionnaire for intermediaries; two types of questionnaires for retailers (modern and traditional); and one questionnaire for expert interviews.

Farmers' questionnaires covered all aspects of value-chain analysis relevant to the study. The long version of the farmer questionnaire consisted of closed and open-ended questions, and a short version, consisting only of closed questions. Similarly, a semi-structured questionnaire that probed intermediaries' value-chain activities and profits was compiled. For retailers, an in-depth instrument for representatives of modern (domestic and international) retail/wholesale chains was developed, and at the same time, a modified questionnaire for traditional retailers (that is, *kirana* shops and pushcart vendors) was prepared. Finally, a questionnaire for expert interviews with government officials, donors, researchers, and policymakers was prepared. Each expert questionnaire was modified depending on the interviewee's background and job description. As expert interviews were conducted primarily at the beginning of the research phase, these interviews were mostly exploratory in nature and covered general aspects such as regulatory influences and recent policy developments at the federal and state levels. The questionnaire for farmers was pre-tested among tomato and potato growers/sellers at Kukutpally Model *rythu* bazaar and was revised twice before the final version was completed.

Interview instruments with retailers (domestic and international) consisted of questions about their suppliers, the volumes they purchased, prices, standards and who set them, their costs, and whether they offered support to their suppliers (wholesalers or farmers were). From there, intermediaries were traced and inquires made about their sources of produce and other channels of sales. Questions that were asked included purchase volumes, the physical flow of the produce, the flow of services, whether they had consultants, and what skills the intermediaries possessed (for example,

12 Four questionnaires (modern retailers; traditional retailers; farmers; middlemen) are presented in the Annex (Annex Tables 6-9).

we asked "Did farmers receive training, credit, or other support from the intermediaries or others? Did they themselves receive support?"). The objective was to trace parameters such as standards, prices, costs, and destination of sales along each of the chain types. The approach allowed the value chain to be traced in its entirety where possible.

To verify the data collected, information was cross-checked with secondary data and with primary data from other respondents. For example, the same questions were provided to both the suppliers and the buyers in a market transaction, thereby triangulating the data and also assessing the information flow in the value chain (Kaplinsky & Morris, 2001). Market data – including prices and trade volumes – was obtained from various *mandi* and *rythu* bazaar officials to verify the information provided by the interviewees.

3.5 Value-chain analysis: operationalisation

To test the hypotheses and to provide a clear picture of existing value chains in Andhra Pradesh, the theoretical value-chain analysis approach was operationalised in two steps. First, the different types of value chains that co-existed in Andhra Pradesh were mapped and analysed according to the parameters that were discussed in Hypotheses 1 to 3. Second, a simple logit analysis of the factors determining smallholder participation in the various different types of value chains was conducted. For this purpose we developed a research design based on Milagrosa (2007) using variables also proposed by Emongor and Kirsten (2009) and Blandon et al. (2009). These two steps are further explained in the subsection below.

3.5.1 Comparison of modern and traditional value chains

Table 5 summarises the indicators that were used to operationalise value-chain analysis within the context of this research.

Structures of the various different supply chains were mapped following Trienekens' (2011) concept of the supply chain network structure. However, instead of the intricate web of supply chain, the focus of this research is on the vertical dimension that describes the flow of products and services from primary producer to end-consumer (that is, the value

Table 5: Comparison of traditional and modern fresh fruit and vegetable value chains	
Aspects of value chains	**Indicators used (quantitative and qualitative)**
Structure of the value chain	Number and function of actors in a specific value chain, volumes produced, the physical flow of the produce, flow of services, destination of sales
H1: Value chain governance	Price-setting, payment, credit, standards and training provision
H2: Value-chain efficiency	Marketing margin, length of the value chain, post-harvest losses
H3: Profit/crowding out	Profit distribution along the chain (profits of farmers, middlemen, retailers) and whether crowding out has occurred or is observed
Source: Authors	

chain).[13] Taylor (2006) supports this approach and recommends focusing on specific value streams for investigation (Taylor, 2006). Information on volumes produced, the physical flow of the produce, flow of services, consultants and skills along the chain, and destination of sales (to wholesalers or retailers) (as recommended by Kaplinsky & Morris 2001) were gathered in extensive qualitative interviews with farmers, intermediaries and retailers.

Governance of the chain was analysed with a focus on decision-making power over prices and the setting of standards following Henson and Humphrey (2010) and Reardon, Codron, Bush, Bingen, & Harris (2001). These two indicators were complemented by additional indicators in order to more comprehensively describe the level of governance, namely: payment and credit. Payment periods − the time it takes for the supplier to be paid by his buyer − were used as in indicator because a long payment period is, ceteris paribus, indicative of the buyer's power over the supplier. Providing credit to the other party also enhances a supplier's power over a buyer or a buyer's power over a supplier. Trainings offered to suppliers and employees

13 The horizontal dimension − the relationships between actors in the same link of the chain (Trienekens, 2011, p. 61) − was not included because product flows and relationships between actors in *subsequent* links in the chain were the main point of interest.

were introduced as a second indicator because trainings are often used by modern retailers to ensure their quality and safety standards.

To estimate **value-chain efficiency**, marketing cost and marketing margins (Acharya & Agarwal, 2011) and post-harvest losses (Gomez et al., 2011) were chosen as indicators of value chain efficiency. Also, the length of the value chain was expected to be shorter in a more efficient value chain (Trienekens, 2011) and thus was also included to examine differences between different types of chains. Margins and wastes were estimated by triangulating farmer responses with interviews with experts. Interviews also obtained details on operational costs wherever possible.

Retailers were interviewed on their financial situation and on their future prospects while information on the **distribution of profits** was obtained by triangulating qualitative responses from with experts and retailers.

4 An overview of value chains in Andhra Pradesh

This section presents research findings on the three types of value chains that exist in Andhra Pradesh. Results show that the most dominant type of value chain is the traditional value chain, followed by the modern value chain (for domestic and international retailers), followed by the *rythu* bazaars supply chain. Traditional value chains consisted of several actors between farmer and final consumer, with very little value addition in between. Modern value chains had fewer nodes between farmer and consumer but with value addition in the form of the grading/sorting of produce at the village level. *Rythu* bazaars were small "wet" markets (markets for fresh products rather than for durable goods that are sold in "dry" markets) in the city centres where farmers bring their produce to directly sell to final consumers. In practice, these three types of chains were found to be strongly interlinked.

4.1 Value chains and agricultural marketing in Andhra Pradesh

4.1.1 Traditional value chains

Traditional retailers, that is, "mom-and-pop" store (*kirana*) owners, pushcart sellers and market vendors, mostly bought their produce from the state-regulated markets, called Agricultural Marketing Committee (AMC)-

regulated *mandis* in Andhra Pradesh.[14] In the AMC-regulated *mandis*, there were two major types of actors, namely commission agents and traders. The secretary of the main AMC *mandi* for fresh vegetables in Hyderabad confirmed that both commission agents and traders have to be officially registered at the AMC office in order to operate, but no fixed number of licences had been set for any type of actor. On top of licensing and its associated fees, a 1 per cent market fee was charged for all transactions in the *mandi* to finance the ongoing expenses of the AMC and to enable the committee to invest in market facilities, such as toilets or market stalls.

Traders in the *mandi* bought from commission agents or from other traders. It is also possible for traders to purchase agricultural produce in one *mandi*, transport it to another *mandi* and sell it there. For example, tomatoes from the district of Chittoor are transported and sold in the Bowenpally *mandi* in Hyderabad during the off-season because tomatoes tend to be scarce in Hyderabad in the dry months between May and July. Moreover, in theory, the AMC market rules also allow traders to buy directly from farmers in the *mandi*. But in practice, the transactions between farmers and traders are almost always facilitated by a commission agent.

Commission agents often aggregated the agricultural produce of several farmers or bought from a consolidator, for example, a village's lead farmer. Commission agents did not buy the farmers' produce themselves. Instead, they charged the farmers a commission fee (technically, a finder's fee) for finding buyers for their produce at the AMC *mandi*. Seen this way, commission agents did not bear any financial risks. In addition, if commission agents were unable to sell the farmer's produce to any buyer, the produce often had to be thrown away, due to the perishable nature of many fruit and vegetables and the lack of adequate storage facilities in most *mandis*. Any post-harvest losses, including transport damages or weight losses that were incurred before final sale to a buyer, remained the farmer's risk.

Commission agents were obliged by the AMC market rules to issue a sales slip to the farmer and to pay him/her the amount as stated on the slip. A duplicate had to be given to the buyer and additional copies had to be issued for the office of the market committee and for the commission agent's own personal records. In practice, however, commission agents had many ways of capitalising on their position of power to circumvent the transparent

14 These committees are called Agricultural Produce Marketing Committees (APMC) in other states and in the Model APMC Act of 2003.

conduct of market transactions and to profit from the asymmetric power structures in the *mandi*.

Commission agents were found to commonly provide farmers with credit. This means, by providing advance payments, they created a strong path dependency for farmers to stay in the traditional value chain, even if the prices were higher in other marketing channels.

4.1.2 Modern value chains

In general, modern retailers in India had a very low share of the market. Although reliable data are not available, one can estimate the share of modern organised retail in India to be between 2 and 10 per cent (Deloitte, 2013; Dholakia et al., 2012; Mukherjee & Patel, 2005). In Hyderabad, however, the participation of modern supermarket chains was estimated at approximately 25 per cent according to managers of modern retailers that were interviewed. Even with a market share far above the Indian average, the value chains of modern retailers in Hyderabad had not substantially altered the features of the other marketing channels, especially traditional ones. Foreign direct investment (FDI) in multi-brand retail (MBR) played an even smaller role in AP, because hardly any international investors had entered the Indian multi-brand retailing market yet.

Most modern retailers in AP still procured their goods – at least partially – from traditional supply chains. Some supermarket chains were simply not large enough to economically justify an integrated supply chain. Also, modern retailers who practiced direct procurement from farmers complemented purchase volumes with additional fruit and vegetable purchases from the *mandis*. This enabled supermarket chains to react to short-term changes in demand and to maintain a conservative approach towards investment in back-end infrastructure. Some of the modern retailers, who sourced fruit and vegetables from the traditional value chain, have employed "procurement officers" who visited the *mandis* and purchased the required agricultural produce from commission agents or traders. Other modern retailers used traders as external service providers to source fruit and vegetables from *mandis* and to deliver it to their outlets and/or to their distribution centres.

Nevertheless, a number of modern retailers were observed to directly procure from farmers. They normally used so-called "collection centres" in rural areas to aggregate the deliveries from multiple farmers before

transporting the fruit and vegetables to their outlets in urban areas close-by. If supermarket chains have numerous outlets in one city, they tended to additionally establish so-called "distribution centres". In that case, modern retailers first transported the fruit and vegetables from the collection to the distribution centre before loading the produce onto smaller trucks and dispensing it to the outlets. Sorting and grading was mostly done at the collection centres and, in rare cases, separate packing facilities were used. Since hardly any domestically produced fruit and vegetables were sold as packaged or branded products, a separate packing house was seldom required. Some supermarket chains had even more integrated supply chains, allowing them to exchange fruit and vegetables between different regions – depending on demand – through their own backend infrastructure.

Farmers in the proximity of collection centres sometimes brought their produce to the centres by using their own vehicle but mainly by hired auto-rickshaw. Some modern retailers registered the names of farmers that supplied to a specific collection centre. They then called the farmers in advance to inform them about the volume of produce required by the collection centre for the following days. For fruit and vegetables that were intended for domestic consumption, no evidence for the practice of contract farming could be found in Andhra Pradesh.

4.1.3 *Rythu* bazaars (farmers' markets)

In Andhra Pradesh, farmers had the option to sell their produce directly to the end-consumer by means of so-called *rythu bazaars* (or *rythu*s). In Telugu, the main language of the state, *rythu* means "farmer" while *bazaar* can be literally translated as market. The model of these farmers' markets was introduced by the AP government back in 1999 to create a direct link between farmers and consumers. Through fixed retail prices that were visible on numerous announcement boards distributed throughout the *rythu* bazaar, farmers were assured of prices consistent with actual market price, while price transparency for both farmer and consumer was achieved (Rao, Joshi, Kumar, & Ganguly, 2008).

While the literature review prior to empirical data collection estimated *rythu*s as an insignificant part of the retail market, our field research showed that this was a vast underestimation. According to the Agricultural Marketing Department of the state, a total of 109 *rythu* bazaars currently operated throughout Andhra Pradesh, including 9 *rythu* bazaars in the capital city of

Hyderabad. Altogether, *rythu*s were estimated to be currently responsible for 18 per cent of the vegetables arriving in Hyderabad (Singh, 2014a). This implied that *rythu* bazaars constituted an additional value chain with major relevance for the fresh fruit and vegetable sector in Andhra Pradesh.

In order to maintain the integrity of a farmers' market and to prevent intermediaries from encroaching into this channel, farmers had to obtain licenses in order be permitted to sell their produce at the *rythu* bazaar. To obtain a licence, farmers had to prove that they held a land title for agricultural land. Apart from farmers, only certain self-help groups were allowed to operate market stalls in the *rythu* bazaars.

Farmers transported their produce from their farm to the *rythu* bazaar primarily via two means: hiring auto-rickshaws or hiring government-provided small trucks that were specifically dedicated to transport market-bound produce.

Despite its seemingly ideal set-up, the *rythu* bazaar concept suffered from several drawbacks: Firstly, *rythu* bazaars could only cater to farmers whose farms were relatively close to the bazaars. Most of the farmers that sold to *rythu*s were notably smallholders, because farm parcels nearer to cities were more highly segmented. Secondly, due to the limited space at the bazaars, farmers could only sell a limited amount of produce and similarly, only a limited number of farmers could be accommodated at the farmers' markets. Limited space also posed garbage disposal and sanitation issues. Thirdly, the limitation in space and, respectively, limitation in licenses have resulted in cases of bribery between farmers and *rythu* bazaar officials. This was often to the disadvantage of other farmers who were perhaps in greater need of the services the market offered than those who already received *rythu* licences through bribes. Fourthly, fruit and vegetable standards were neither recognised nor implemented in the *rythus*. There was no sorting or grading of produce at *rythu* bazaars and, at the time of the survey, no cold-storage facilities were found. Therefore, consumers who bought at these markets were aware that the produce which they purchased was not entirely of high quality. A fifth drawback that was discovered – particularly from interviews with farmers who did not deliver to *rythu* bazaars – was that some farmers could simply not afford to leave the farm to sit all day at the bazaar to sell their produce. Farmers selling produce at *rythu*s have therefore foregone the opportunity to work on the farm for that day. Finally, experience has shown that although one of the driving ideas behind the concept of *rythu* bazaars was to circumvent intermediaries, new "middlemen" had been observed to

enter the farmer's market scene. For instance, some farmers had collected other farmers' produce and sold it along with their own at the market while charging fees for this service (Singh, 2014a).

The "Manakuragayalu" Pilot Project

In order to resolve some of the issues linked to the original *rythu* bazaar concept, the Andhra Pradesh Department of Agricultural Marketing launched a pilot project called "Manakuragayalu" in January 2014. The envisaged timeframe for this pilot phase was a two-year period. The new project's overall goal was to "increase the margins and net income for vegetable farmers and provide high quality vegetables at affordable prices to the consumers" (Singh, 2014b). The project targeted farmers who lived further away from the markets and who previously sold their produce only to wholesale *mandis*. In this model, farmers were expected to receive 80-90 per cent of the profits. The project aimed at bringing farmers closer to the market by introducing mobile *rythu* bazaars (Singh, 2014a).

The "Manakuragayalu" Pilot Project partly emulated the concept of modern retailers' collection centres because farmers could deliver their crops to specific *rythu* bazaar collection centres. These crops were then sorted and put into crates. From there, they were delivered to the *mandis* where they were graded and put into cold storage if necessary. From the *mandis*, the produce was then distributed to other *rythu*s where it was sold on behalf of the *rythu* bazaar administration at a marginally higher price than *rythu* levels. The prices obtained at the *rythu* bazaars were about Rs 2.00[15] higher than the wholesale price. According to the new model, *rythu* bazaar prices were fixed every morning. The rationale behind this price difference was that farmers would have no incentive to sell at *rythu*s if the price were the same as at the wholesale markets. On the other hand, the prices should be lower than at local retail outlets because only this price difference would incentivise consumers to cover their daily requirements of fresh fruit and vegetables from the *rythu* bazaars (Singh, 2014b). Moreover, the model assured farmers a secured buyer for their produce and gave them the possibility of obtaining higher prices because of the provision of cold storage.

The envisaged organisational structure of the model-type *rythu* bazaars is another innovative component of the project. The structure comprised three

15 In March 2017: 1 Indian rupee = 0.014 euros.

levels at which the farmers played the main role. At the village level (on average, 30-70 km from the *rythu* bazaars), farmers were organised into farmers interest groups (FIGs). At the intermediate level, the FIGs formed six farmers' producer organisations (FPOs). At the top level, the FPOs then constituted a farmers' producer company (FPC) which was intended to run the collection centres. Since the FPOs were already constituted as societies, a general meeting was held every month. In its initial phase, the pilot project was assisted by a domestic private consulting firm (Singh, 2014a).

4.2 Interlinkages among value chains

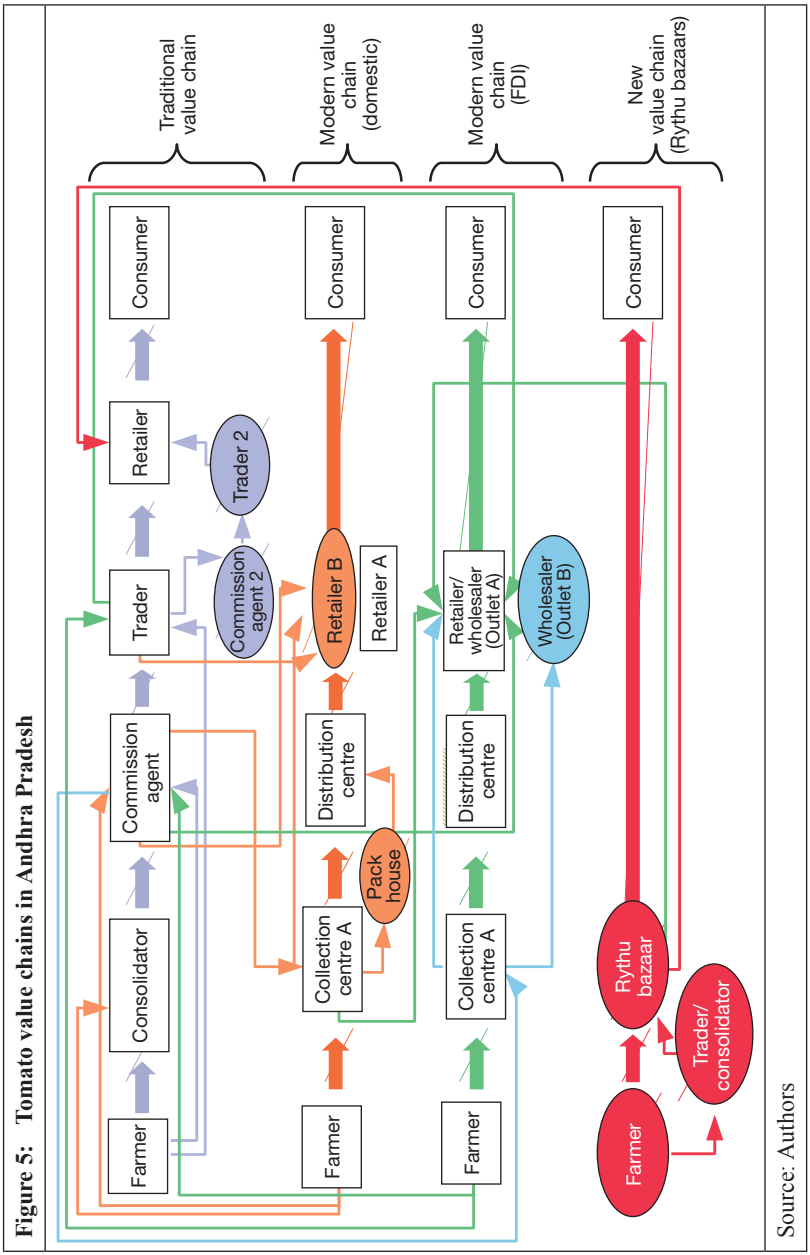
The study revealed that the fresh fruit and vegetables market in Andhra Pradesh is characterised by complex interlinkages and by deviation from straightforward value-chain structures. While desk research led the authors to assume that there were three main marketing channels for tomatoes in the State, the field study showed that these idealised types of value chains actually formed a web of interlinkages between the value chains and their respective actors. Farmers, intermediaries and supermarkets often participated in more than one supply chain. One of the modern retailers interviewed sourced part of his selection of product from the *rythu* bazaars, while some supermarket chains sourced significant shares of their fresh fruit and vegetables from the wholesale markets of traditional value chains. Further, some modern retailers with a non-integrated supply chain purchased fresh fruit and vegetables from the collection centres of supermarkets with an integrated supply chain. *Rythu* bazaars were found to play a much larger role on the fresh fruit and vegetables market in Andhra Pradesh than anticipated.

As Figure 5 illustrates, this indicates that there are currently four primary types of fresh fruit and vegetable value chains in Andhra Pradesh:

- the "traditional" value chain,
- the "modern" domestic value chain,
- the "modern" value chain with shares of FDI, and
- the new value chain of the *rythus*.

However, although one can theoretically distinguish four ideal types of fresh fruit and vegetable value chains, due to the large number of interconnections and because of the diversity within each value chain, the distinction between these chains becomes rather blurry in practice. Nonetheless, it

Figure 5: Tomato value chains in Andhra Pradesh



Source: Authors

can have analytical advantages to utilise the ideal types as models as this illustrates broader trends in fresh fruit and vegetables retail. For the rest of the analytical work that we will conduct in this document, we grouped the two types of modern value chains together to form one type "modern" and compare it with the most common value chain, the "traditional". We focus on these two stylised types of value chains where our research offered the most data and information available.

5 Comparing value-chain governance

In this section we evaluate governance within the value chain and discovered that although modern retailers are generally associated with higher levels of governance, in Andhra Pradesh this association does not apply. H1, the hypothesis that is based on our review of literature, is that**: Modern retailers have more decision-making power over prices and set more standards in their supply chain than traditional retailers.** Here we compared the power to set prices and the power to set standards between traditional and modern value chains. In addition, we investigated three more indicators to compare the levels of governance between traditional and modern value chains: occurrence of delayed payment, availability of credit, and provision of training.

Results show that, compared to traditional retailers, modern retailers possess more price-setting powers in their value chains although they are unable to dictate prices due to low volume procurement. Modern retailers were found not to dictate nor apply standards for growers in their value chains except for grading according to size and colour. With regard to payment, farmers rarely experienced delayed payments, regardless of the kind of value chain they were in. Credit, however, was more readily available from actors in the traditional value chain than from modern value chains. Very few modern retailers were found to offer training to farmers to ensure compliance. Those who did offer training did so in conjunction with private seed or fertiliser companies.

5.1 Price-setting, payment and credit

Expert interviews exhibit a mixed picture with regard to price-setting. Some experts suggested that modern retailers have more decision-making power over prices due to their ability to buy in bulk (Representative of CII FACE,

personal communication, February 2014). Others said that modern retailers' price-setting does not differ from that of traditional retailers because their market shares in India as well as their procurement volumes are still too small: "The prices are dictated by the prices, they will be similar in both value chains. The prices will not be dictated by modern retailers because they have such a small share" (Representative of Global Agrisystem, personal communication, February 2014). One expert even remarked that one big domestic chain switches suppliers according to prices so it merely responds to market developments instead of exerting influence (Representative of APMC of Madanapalle *mandi*, 2014). Data gathered during interviews with the three stakeholder groups seems to support this view, but there are still salient differences between modern domestic and international chains.

Modern domestic retailers have a certain bargaining power but still have to benchmark to the *mandi* price. When sourcing from *mandis*, domestic retailers' buyers negotiate with commission agents. Out of 6 supermarket buyers that were sourcing from *mandis*, only 1 received market information from the corporate headquarters. All the other buyers were allowed to negotiate prices freely. 2 out of 6 said that they set the prices themselves while 1 said that "the mandi price is the benchmark price". In the case of direct sourcing through a collection centre, modern domestic retailers also referred to the *mandi* price. Out of 5 domestic supermarkets that operated a collection centre, 3 bargained with the farmers over prices but always benchmarked on the *mandi* price. From these 3 supermarkets, 2 never paid less than the *mandi* price; 1 of the supermarkets followed the corporate policy of a "minimum support price" that was always to be paid to the farmer. The third supermarket's prices were unpredictable: sometimes they paid more, sometimes they paid less.

Out of the 2 supermarket chains that did not bargain with farmers, 1 simply always paid the *mandi* price while the other one did not negotiate but received the prices from their headquarters. In this case, however, the collection centre encountered problems: because headquarter quotations were never higher than *mandi* prices, farmers would rather not sell their A-grade produce to them. Trying to impose their own prices thus put the domestic supermarket chain in a position in which it could not acquire the quality produce it needed. Another modern domestic retailer's employee said that their influence on the price was very limited due to price fluctuations. Selling-prices were fixed by headquarters in three cases; others did not give details.

International retailers seem to enjoy more price-setting power than domestic supermarkets although they still observe the *mandi* price. When sourcing from the *mandi*, 2 of the 3 international supermarkets we interviewed observed the *mandi* price but then set prices for their suppliers without negotiating with them. One international supermarket negotiated with its suppliers; however, its buyer was not completely independent in the negotiations but received certain information and advice from the category manager. In the case of direct sourcing through a collection centre, the results were mixed: international supermarkets observed the *mandi* price but then set their own price; some put a premium to get higher quality; others paid less than the *mandi* price. Respondents underscored that selling to a collection centre below the *mandi* price could still be profitable for farmers because transport costs were less and no commission applied.

Of the traditional retailers interviewed that sourced from the traditional value chain, none had any influence on the price. In this supply chain, the produce goes from farmer to commission agent to traditional retailer or to another trader before reaching the retailer. Prices are set in negotiations between commission agents and farmers depending on supply and demand (and often, based on yesterday's price) and traditional retailers simply have to take the price that they find at the *mandi* or *rythu* bazaar that they source from.

On the whole, modern retailers in India have more price-setting power compared to traditional retailers who mostly do not negotiate at all; but retailers are far from dictating prices. Hypothesis 1 thus cannot be fully accepted with regard to price-setting. According to expert interviews, the lack of broad decision-making power with regard to price is due to the small quantities that are currently procured by modern retailers. The market share of modern retail is still too small to have significant influence and the volumes sold and procured are not sufficient for bulk buying. In addition, contract farming, which enhances retailers' influence on farmers, is not conducted for tomato retail in India. It became clear in the expert interviews that, because of high price fluctuations and because of small farm sizes in general, long-term contract farming was impossible to negotiate. Some modern retailers engaged in modified "contact farming": farmers were registered with them, farmers received purchasing orders and certain support from them, but were not obliged to sell to them just as the retailer is not obliged to buy from farmers. The reported phenomenon of farmers

being "locked" in contracts with retailers who then dictate prices below market price thus does not exist, at least for tomatoes in India.

Modern retailers in India cannot procure at prices below market price. The only exception is when retailers establish collection centres in remote villages that tend to be more attractive for farmers because of lower transport and marketing costs. They also cannot procure at considerably higher prices because Indian consumers are very price-sensitive[16] so they would not be able to cover their costs.

With regard to payment periods, farmers – irrespective of the chain they sold to – very rarely reported delayed payments and if so, only in one case did the delay exceed three days. Farmers delivering to the *mandi* normally received their money in cash and within two days. With regard to credit, commission agents can easily provide credit and advance payments to farmers. They also provide credits to their own customers, that is, traditional retailers, which considerably increases their power in the chain. In the traditional value chain, commission agents are thus probably the most powerful actors. For traditional traders payment periods vary considerably between 1 and 45 days; they pay their suppliers in cash, via cheque or bank transfer.

During the interviews, modern retailers stressed the fact that, in contrast to commission agents, they provided secured payment to farmers. Domestic supermarkets paid farmers within two days to one week in cash, via cheque or bank transfer. One international wholesaler even developed a special credit card system (called PD Card) to pay its farmers without the involvement of any intermediary. As farmers did not mention reliable payment periods as an advantage however, the attractiveness of modern retailers probably results more from stable prices and reliable weighing systems as well as less transport and marketing costs for the farmers.

5.2 Standards and training

With regard to standards, experts had positive opinions about the future impacts of the private standards of international retailers. Once FDI enters India on a greater scale, stricter standards may be introduced and may lead to improvements in the sector as a whole (Representative of Global Agrisystems, personal communication, 2014). However, in the

16 According to expert and retailer interviews.

current situation, experts did not see a big influence of modern retail on standard setting. Some remarked that international retailers generally do have higher standards but do not apply them in India (Representative of IFPRI, personal communication, February 2014). Most modern retailers currently operating in the country were found to not apply standards other than grading according to size and colour. This means that product quality in modern Indian retail is not necessarily better than in traditional retail according to the expert interviews. In fact, many experts said that, in terms of product quality, traditional retail was much better because of the "fast" supply chain and daily restocking; modern retailers often stored their produce which led to quality loss (Representative of CII FACE, personal communication, February 2014; Representative of APEDA Hyderabad, personal communication, March 2014).

The field research we conducted supports this impression. Of the 26 farmers interviewed on this topic, only 13 said they had to comply with standards set by their customers. Moreover, those who did comply with standards did not mention any standards other than size and colour. Of the 13 farmers who complied with standards, 5 delivered to supermarkets, another 5 to a new project initiated by the Andhra Pradesh Department of Agricultural Marketing, which required grading in order to be able to compete with supermarkets, and 3 delivered to the *rythu* bazaar and *mandi*. Of the traditional retailers interviewed, only 2 said that they sold graded tomatoes. So, although standards like size and colour are not the sophisticated quality standards that are expected to be introduced by modern retail, traditional retail in most cases does not conduct any type of grading. Thus, modern retail at least seems to support the introduction of very basic quality standards such as size and colour.

In general, modern retailers, both international and domestic, accept only A-grade tomatoes,[17] where grading is based according to size and colour. When modern retailers source from a *mandi*, grading is carried out either by the commission agent (1 of 6 commission agents that were interviewed conducted grading), or at the supermarket's collection centre (observed in 5 cases) or in a packaging house (observed in 1 case). When tomatoes are sourced directly from farmers, grading is carried out at the collection centre. One buyer working for a modern domestic retailer described grading

17 Wholesalers who also operate "business-to-business" also accept B-grade tomatoes to sell to hotels and restaurants.

as a competitive advantage: He said: "*Rythu* bazaars are no competition for supermarkets because they do not do grading and packing at all." All these activities, however, are only based on the produce's appearance and involve no sophisticated testing such as for chemical residuals. With regard to quality standards, some retailers in addition to size and colour (grading) also check for pest infestation (found in 3 domestic retailers, 1 international) and calcium deficiency and firmness (found in 1 domestic retailer).

In the sample of **modern domestic retailers,** 1 respondent said there were no standards at all, 3 respondents selected only based on size and colour and 2 respondents seemed to have private standards but refused to share the information. One respondent, however, followed not only international sanitary standards ("Johnson Diversey initiative for food safety"), food-safety standards (Hazard Analysis and Critical Control Point (HACCP) hazard assessment), and tested for residual pesticides[18] but also trained his staff on food safety and hygiene. In this supermarket, there were quality inspectors at store level. When sourcing from *mandis*, this retailer checked his vendors for quality from time to time. This domestic chain's standards were thus stricter than what the government required and the company did this strategically to differentiate itself from competitors. Out of 7 modern domestic retailers interviewed on this topic, only 1 seemed to implement standards other than grading based on appearance. Yet, judging from the tomatoes displayed in stores, grading standards also seem to differ considerably across different retailers.

With regard to the freshness of the produce, modern domestic retailers restock daily or every second day; one retailer re-stocks up to twice a day. None of the domestic retail chains had cold storage exclusively for tomatoes (if they owned cold storage, they did not use it for tomatoes) and transport facilities were mostly the same as in traditional retail with some exceptions: 1 modern domestic retailer packed the tomatoes at the collection centre so they were more protected during transport; 2 modern domestic retailers said there were special standards with regard to transport and handling (for example, ripening with better chemicals).

International chains also mostly selected tomatoes according to appearance. One international wholesaler had started to test for residual pesticides in vegetables using authorised residues limits used in the United

18 At the present time, testing for chemical residues is not required by law.

States and Europe and planned to continue to do so at regular intervals. For the same wholesaler, it was said that especially for quality, the company imposed more standards than what was legally required. The respondent however, did not give further details. None of the international modern retailers had cold storage for tomatoes in store (again, they might have cold storage but they did not use it for tomatoes). Regarding freshness, of the 3 international retailers, 2 restocked daily and 1 once a week (buying tomatoes semi-ripened).

Traditional retailers did not follow any standards, had no cold storage for tomatoes, and mostly sold ungraded tomatoes (with the exception of 2 comparably large ones who sold different grades). They restocked mostly daily, some restocked every second day, 1 retailer restocked every third day. The shelf life of the tomatoes was usually around 2 to 3 days.

It can thus be concluded that modern retailers, domestic and international, have introduced grading according to size and colour and thus set more standards in their supply chain than traditional retailers. However, the standards they use are in most cases not as sophisticated as expected, especially of international retailers. One trader selling to many supermarkets said: "All supermarkets have almost the same standards and requirements […]. The internationals do not differ from the domestic supermarkets." The reason for this might be that quality awareness among Indians is not yet very far developed and competition between supermarkets manifests itself mostly through price wars, not wars about quality. This point was mentioned in many expert interviews (for instance, with a representative of IFPRI, personal communication, 2014, and with a representative of Global Agrisystem, personal communication, 2014).

However, a point frequently mentioned in the interviews was that the newly introduced Food Safety and Standards Authority of India, FSSAI, might change the situation regarding standards. The new FSSAI Act requires all food businesses to follow one general standard and is believed by many to speed up the transformation of vegetable supply chains (Representative of FSSI, personal communication, February 2014; Representative of Hypercity, personal communication, March 2014; Representative of FMC, personal communication, February 2014). One modern domestic retailer's representative mentioned during the interview that FSSAI would be a good filter, enabling the ones who comply to conduct better business and forcing the others to leave. The representative expects that increased traceability

will become part of every retailer's way of working and that the FSSAI will be fully implemented between 1 and 10 years. Large-scale retailers are expected to have the advantage of economies of scale in implementing it.

With regard to the provision of training, the concept of organised training as part of the implementation of company standards does not appear to be very far developed, with few exceptions. The lack of organised training is probably not surprising considering the minor role that standards currently play in modern retail in India. From all the interviews, only 1 international and 2 domestic chains offered special training for farmers. These training courses were often conducted in partnership with seed or fertiliser companies. Modern retailers also trained their employees: all international retailers and some domestic ones mentioned some type of special training for their employees. Also, many retailers who were engaged in direct sourcing offer support to farmers and have experts in the field who can assist them with production practices and similar matters. A certain support and influence on farmers' production practices and product selection may thus exist; it just rarely appears in the form of organised training programmes.

Looking at the total sample of farmers interviewed, 10 out of 32 farmers who delivered to supermarket collection centres had received training, compared to 2 out of 31 farmers that deliver to *rythu*s and 7 out of 39 farmers that delivered to *mandis*. Farmers that delivered their produce to supermarket collection centres were thus more likely to receive agricultural training. The training that supermarket farmers received was provided by the supermarkets or seed/fertiliser companies they partnered with. *Mandi* farmers ranked second in terms of receiving training, with the training stemming mostly from government institutions, from NGOs or from private processing company. The two *rythu* bazaar farmers that received training also delivered their goods to the *mandi*, while farmers exclusively selling to *rythu* bazaars did not receive any type of training.

6 Comparing value-chain efficiency

In this section, we tested our second hypothesis pertaining to value-chain efficiency and found that, although modern value chains were often associated with overall higher levels of efficiency than traditional value chains, this association did not hold true in Andhra Pradesh. We used three parameters to measure value-chain efficiency: marketing margins; length

of value chain; and amount of post-harvest losses. In addition, two other elements were investigated: extent of procurement area; and investments in cold storage and transport. Hypothesis 2 (H2) assumes that: **Value chains of modern retailers are more efficient than value chains of traditional retailers in terms of lower marketing margins, a broader procurement area, more investment in cold storage and transport, lower post-harvest losses in the value chain.**

Results show that modern retailers and traditional retailers incur almost similar marketing margins (at 46 per cent and 42 per cent respectively). Despite these similarities, additional actors in traditional value chains were found to increase marketing margins without adding value to the produce. Supermarkets, by way of their collection centres within villages, have shorter value chains (fewer actors) yet incur almost similar marketing margins as traditional value chains. However, modern retailers added value to the produce by way of grading/sorting and packing. We found that some modern retailers invested in cold-storage facilities although these were not used to full capacity and were not used for tomato storage at all. Traditional value chains tended to cover a wider procurement area, serving growers whose farms were up to 380 kilometres away, whereas modern value chains focused on the immediate areas around cities. In terms of post-harvest losses, both modern and traditional retailers incurred losses (at 1 per cent to 5 per cent respectively of total harvest), but not as high as what the literature assumes.

6.1 Marketing margins

According to ul Haq (2012, p. 2) marketing margins are the "differences between prices at two levels in a market". In this study, marketing margins were used to define the difference between the buying price and the selling price of the three different classifications of retailers. It was hypothesised that modern retailers have a lower margin than traditional retailers and therefore that modern value chains are more efficient than traditional value chains. Some of the expert interviews in Delhi confirmed this hypothesis. The National Secretary General of the Confederation of All India Traders (CAIT), Mr Praveen Khandelwal, for example, stated that commission agents and traditional traders only have a margin of maximum 12 per cent (of selling price) while domestic and international chains have a margin of more than 100 per cent (of selling price).

The results of the interviews with modern retailers in Andhra Pradesh showed a different picture, however. Depending on the type of supermarket in question, margins were found to be very different (see Table 6). Beginning at 20 per cent of marketing margins for the very competitive and low-price supermarkets, the margin goes up to 70 per cent for the high-quality and luxury supermarkets. It is important to mention, that high-end supermarkets purchase their tomatoes at the same wholesale market (*mandi*) as all other retailers, whether modern or traditional. Four of the 8 domestic chains we interviewed bought one kilogramme of tomatoes for approximately 3-5 rupees and sold it for 6-7 rupees.[19] This is a margin of two to three rupees. The average margin was 46 per cent, and it should be noted that tomato prices were very low while the field interviews were being conducted. Therefore, when one takes the prices of tomatoes during the field work into consideration, a marketing margin difference of only 1 rupee already has a strong impact, resulting in unusually higher marketing margins overall.

Comparing this margin with that of international retailers, 3 supermarkets with an international share in the sample exhibited lower marketing margins. Their margins ranged between 15 per cent and 35 per cent. The international wholesale supermarket we interviewed only had an average margin of 15 per cent, which can be explained by the fact that, although a wholesaler provides lower prices, he sells in larger quantities. Table 6 provides an overview of the buying and selling prices of traditional and modern retailers.

Evaluating the marketing margins of traditional retailers, we find a range of margins from 0 per cent up to 50 per cent in a sample of 12 traditional retailers. Seven of the traditional retailers bought 1 kg of tomatoes for 5 to 6 rupees and sold them for 10 rupees, others bought 1 kg of tomatoes for 3 and 4 rupees and sold them again for 6 or 7 rupees. This results in a margin between 30 per cent and 45 per cent. The average margin is therefore 42 per cent.

When values are analysed strictly, the margins of modern domestic retailers and traditional retailers are roughly similar at approximately 45 per cent, whereas the margins of international chains seem to be lower, indicating higher efficiency. However, considering the empirical evidence from both modern retailers and experts, we know that the operational costs of

19 As of March 2017, 1 Indian rupee = 0.014 euros.

Table 6: The buying and selling price of modern retailers

Quantity sold per day	Buying price/selling price from traditional retailers	Quantity sold per price	Buying price/selling price from modern retailers
1: Traditional store 166 kg	12 Rs/kg Bought for: 6 Rs/kg Margin: 25-50%	**Supermarket 1** 100 kg	7.90 Rs/kg (26 April 2014 in Vijayawada) Bought for 6 Rs Margin: 25%
2: Traditional store 1,250 kg	For supermarkets 8 Rs/kg (Grade A) Direct sale: 5-6 Rs/kg (Grade B) Hotels: 4 Rs/kg (Grade C) Bought for 4.8 Rs/kg Margin supermarket: 40% Margin direct sale: 10% Margin: hotels: 0%	**Supermarket 2** **100 kg**	16 Rs/kg for hybrids (13 March 2014) Bought it for: n/a
3: Traditional Store 10 kg	10 Rs/kg Bought for 5 Rs/kg Margin: 50%	**Supermarket 3** 300 kg	6 Rs (13 March 2014) Bought for 3-5 Rs Margin: 20-50%
4: Kirana 75 kg	7 Rs/kg Bought for 4-5 Rs/day Margin: 30-40%	**Supermarket 4** 50 kg	7.90 Rs/kg (12 March 2014) Bought for 3-5 Rs Margin: 40-60%
5: *Kirana* 6kg	10 Rs a kg Bought for 6 Rs a kg Margin: 40%	**Supermarket 5** 50 kg	6 Rs/kg (12 March 2014) Bought for 5 Rs Margin: 1 Rs Margin: 17%
6 : *Kirana* 50 kg	10 Rs/kg Bought for 5 Rs/kg Margin: 50%	**Supermarket 6** 140 kg	8 Rs/kg (13 March 2014) Bought 3-5 Rs Margin: 40-60%

Table 6 (cont.): The buying and selling price of modern retailers			
Quantity sold per day	**Buying price/selling price from traditional retailers**	**Quantity sold per price**	**Buying price/selling price from modern retailers**
7: Street vendor 12 kg	10 Rs/kg Bought for 4-5 Rs Margin: 50-60 %	**Supermarket 7** 20 kg	14 Rs/kg (12 March 2014) Bought for *mandi* price: 3-5 Rs Margin: 70 %
8: Street vendor 20 kg	10 Rs/kg Bought for 6-7 Rs/kg Margin: 30-40 %	**Supermarket 8:** 120 kg	6.90 Rs/ kg (12 March 2014) (but buy one; get one free) Bought for 3-5 Rs Margin: 30-60 %
9: Pushcart 20 kg	10 Rs/kg Bought for 4 Rs/kg at *rythu* Margin: 60 %	**Supermarket with international share 1**	6.50 Rs/kg 5.50 Rs/kg if more than 3 kg Bought for 5 Rs (25 March 2014) Margin: 15 %
10: Street stall 20-30 kg	8 Rs/kg Bought for 5-6 Rs/kg Margin: 25-25 %	**Supermarket with international share 2**	9 Rs/kg (24 March 2014) Bought for 6 Rs Margin: 35 - 45 %
11: Street Vendor 66 kg	10 Rs/kg Bought for 5 Rs/kg Margin: 50 %	**Supermarket with international share 3**	9 Rs/kg (13 March 2014) *Mandi* price that day: 6 Rs Margin: 35 %
12: Street Vendor 25 kg	8 Rs/kg Bought for 5 Rs/kg Margin: 35 %		
Source: Authors			

supermarkets are higher and that most of the supermarkets are operating vegetable sales at a loss. Experts, such from Champion Agro Fresh Pvt. Ltd. and from the *Indian Council for Research on International Economic Relations* (*ICRIER), argue that modern supermarkets* currently do not have any margin in the fresh fruit and vegetables sector. Supermarket managers call tomatoes "loss leaders": although their sales do not contribute to profits, they are an enticement for consumers to come into retail stores, since vegetables – and tomatoes in particular – comprise a fundamental ingredient of Indian cuisine and thus an everyday purchase. Hence, the hypothesis that the value chains of modern retailers are more efficient than the value chains of traditional retailers cannot be confirmed on the basis of marketing margins alone.

Having said this, a critical aspect in marketing margins and efficiency is the number of actors involved in the value chain as these actors may actually lead to increased margins. Quite simply, the more actors absorbing a margin, the less efficient the value chain is. Since 8 out of the 12 retail chains that were included in the study had their own collection and distribution centres, their value chains were considered "integrated". In their value chains, modern retailers themselves were the only actors adding a margin to the produce's value. Although there were several stations in between which increased transaction costs (for example, collection centres, packaging centres, distribution centres), the selling price of the product remained the same. Value was added but the product was retained within the confines of only one chain. In contrast, the price for tomatoes in the traditional value chain rose at the *mandi* because the commission agent added a commission (and an additional fee) on top. This commission was at least 10 per cent of the farmer's price. The next actor − for example, the retailer − added another margin for himself on top. Sometimes, there was an additional trader in between the commission agent and the traditional retailer who also wanted his "slice of the pie". In this perspective, the traditional value chain was less efficient than the modern one. In retrospect, not all retail chains had their own collection centres. There were 4 retail chains that purchased tomatoes from the *mandi* or another retailer that purchased through a trader, thereby suffering the same inefficiency as the traditional value chains.

In short, the important question is whether these different actors add value to the product or not. The respondent from CAIT (2014) contested this claim: "The traders invest their money into the value chain to add value; they ensure free flow from farm to fork." According to him, commission agents

protected farmers from exploitation at the market and conducted marketing activities for farmers because farmers lacked information and the education to carry out these marketing activities on their own. Commissioners provided farmers with credit facilities and advance payments. Especially during the growing period, farmers relied on commission agents to get money in order to buy the necessary inputs. Many others, such as the expert from ICRIER, disagreed, pointing out that commission agents did not add any value, but instead merely benefitted from the dependence of farmers. The agents made the value chain inefficient since they added a margin without adding value. In other words, when we only consider the number of actors adding an extra margin, the value chains of modern retailers seem to be more efficient than the value chains of traditional retailers, thereby confirming the hypothesis.

6.2 Length of value chain

The literature assumes that modern domestic and international retail chains tend to reduce transaction costs. Transaction costs can arise from the number of times loading and unloading is conducted or from the actual transport costs themselves. By building collection centres and distribution centres, modern retailers can circumvent the *mandi* and source tomatoes directly from farmers. Still, the number of loading and unloading of tomatoes is the same or even higher in modern value chains than the number of loadings and unloading in the traditional value chain. The following explains why: The retail chains with collection centres have three loading and unloading stations during the harvest season.[20] Farmers load their produce at the farm and unload it at the collection centre (CC). At the CC, produce is consolidated and graded, and from there it gets loaded again to go to the distribution centre (DC). The third loading takes place at the distribution centre making its way to the outlet where it is unloaded.[21] In the same vein, traditional value chains include between 2 and 3 loading and unloading stations. The fast chain variant goes from the farmer to the *mandi* to the street stalls, "mom-and-pop" stores or pushcarts (resulting in a total of 2 loading and unloading stations). The longer chain variant goes from the farmer to the *mandi* to another trader and then to the traditional retailer

20 A total of 6 out of 8 domestic supermarkets and 2 out of 4 international supermarkets have collection centres and distribution centres.

21 Of course, this does not apply to the off-season, since tomatoes then come from South-Andhra and Maharashtra and Karnataka requiring more loading and unloading processes.

(resulting in 3 loading and unloading stations). Thus, there is no difference in the efficiency of the value chains of the traditional and modern (domestic or international) retailers in terms of frequency of loading and unloading.

Having built the collection centres closer to the farms, modern retailers also shorten the distances and transport costs for the farmer. Those supermarkets which are big enough to have their own collection centres have tended instead to build several small collection centres at several locations around Hyderabad which also explains the short distance to the farmers they are buying from (Reardon, Chen, Minto, & Adriano, 2012, p. 4). On average, the 30 farmers delivering to collection centres only have a transport distance of 9.3 km, many of them living merely 1 or 2 km away. Thus, the procurement catchment area of the modern chains is smaller than the catchment areas of traditional *mandis*. In traditional marketing channels, the 30 farmers that were interviewed lived approximately 90 km away from the *mandis* where they sold their tomatoes. Five supermarkets out of 39 were further than 100 km away from the *mandis* in Andhra Pradesh (Bowenpally, Madanapalle). Three farmers even drove up to 380 km to the *mandis* to market their produce there. These were farmers with comparatively large farms (from 18 to 20 acres). Interviews with representatives from the *mandi* confirmed this figure. However, during the off-season, modern retailers procured their goods from the same traditional *mandis* as did traditional retailers. For example, large quantities of the tomatoes that were traded in Chitoor during the off-season were found to originate from Maharashtra and Karnataka, which represented a distance of up to 600 km. The large commission agents mobilised their organised trucks and transport system from Madanapalle *mandi* to Bowenpally *mandi*. In this season, modern retailers also sourced from the *mandi* due to their very small catchment area and their own collection centres becoming useless for tomatoes in the off-season. Hence, modern retailers indeed reduced the length of the value chain, but not during the off-season.

6.3 Post-harvest losses

The next indicator for market efficiency is post-harvest losses. Post-harvest losses are one of the major problems of the Indian vegetable supply chain. Especially for tomatoes, this turned out to be a huge challenge because tomatoes decompose fairly fast. Reardon (2005) and other authors claim that modern retailers experience less post-harvest losses because of the

aforementioned investment into infrastructure such as cold storage and transport systems (Rao et al., 2008, p. 61). Earlier studies showed that up to 30 per cent of tomatoes were wasted during the marketing process (Rao et al., 2008, p. 61)).

Evaluating research findings with regard to investment in infrastructure in order to reduce post-harvest losses, there was not much difference between the modern and the traditional value chains. Although experts such as those from the Federation of Indian Chambers of Commerce and Industry (FICCI) and from the Confederation of Indian Industries (CII) looked at neighbouring countries and believed that international chains would bring investment into infrastructure, this was not observed for tomatoes in India. What the research found is more what the National Secretary General of CAIT claimed, namely that neither domestic nor international chains had built up any kind of infrastructure in transport, communication or cold-storage systems. As mentioned in Section 5 on governance, the assumption made regarding cold storage can be completely rejected in the case of tomatoes. Only 1 single supermarket chain among all the 14 that were interviewed stored its tomatoes in cold storage. Some of the other supermarkets did have cold storage but did not use it for tomatoes but rather for high-value produce such as apples and other imported products. "Tomatoes are too cheap to store them in cold storage" was the explanation of the Joint Secretary of the Ministry of Agriculture, Sanjeev Chopra (interview, 2014).

Likewise, there were very little differences between traditional and modern chains in terms of the transportation of tomatoes. Modern chains used the same vehicles (such as auto-rickshaws or trucks) and the same roads as traditional retailers. Farmers brought the produce to the collection centres in the same vehicle they use for bringing it to the *mandi*. Packing and transport methods were essentially the same: tomatoes were stored in crates of 25 kg each and transported in small trucks. The roads to some collection centres were not paved while the roads from the farms to the *mandi* were similarly unpaved.

Nevertheless, having asked all interviewees about unsold produce and about how much tended to be thrown away, modern retailers seemed to experience lower post-harvest losses than traditional retailers.[22] Where modern retailers

22 The timing for viable results with regard to this question was perfect: the prices were very low at the time of the interviews and we arrived in the middle of the harvest period. This is most probably a period in which post-harvest losses rise to a comparatively high share.

were concerned, supermarkets reportedly threw away up to 7 per cent of the produce at the end of the day. The numbers were very similar among all 8 domestic chains that were interviewed. Five domestic retailers incurred post-harvest losses of between 6 and 8 per cent. Retail chains with international shares had a wastage of 6 to 10 per cent. The international wholesalers only experienced 2 per cent of post-harvest losses based on the fact that they sold different grades of tomatoes to different customers and could therefore sell all the low-quality produce to hotels and restaurants.

The picture for traditional value chains is much more diverse. While traditional retailers with all their different formats sold between 1 and 166 kg of tomatoes a day, their wastage also ranged between 2 and 50 kg a day. Calculating this in percentages, traditional retails threw away between 4 per cent and 30 per cent of their purchased tomatoes. On average, the 12 traditional retailers interviewed had 13.5 per cent post-harvest losses. To sum up, the traditional retailers experienced around 6 per cent more post-harvest losses than the modern ones.

The next actor group, the traders, experienced comparatively less wastage. According to them, they were able to sell everything to different types of customers based on different types of quality. Since domestic and international chains required only A-grade tomatoes from traders, traders could sell the rest of the produce to other customers. Out of the pre-selected produce they brought to the supermarkets, around 10 to 15 per cent was rejected because it did not belong to the standards of size and colour the supermarkets required. This was then sold through the traditional value chain or went to hotels, restaurants and canteens. The actual waste which took place in the middle of the supply chain was mostly damage caused by loading, unloading and transport. This amount ranged from 1 to 5 per cent in the value chain for domestic and international retailers.

Looking at the traditional value chain we asked the commission agents how much of the produce they could not sell and had to throw away. According to their answers, their marketing strategy was highly efficient since they also sold different qualities to different customers. They could even sell the worst quality tomatoes to buyers who intended to process them for non-human consumption, such as animal fodder. Thus, in the same way as traders, their wastage also ranged again between 1 and 5 per cent.

All in all, we found that, while investment in infrastructure did not differ among the various chains, the outcome of post-harvest losses indicated a

huge difference. This incoherence most probably occurred because we are unable to see the accumulated post-harvest losses within one chain. It is known that supermarkets select only A-grade tomatoes and leave at least 20–30 per cent of the tomato produce of a farmer behind whereas traditional chains accept all kinds of grades. The B-grades and C-grades, which supermarkets do not accept, are more likely to be post-harvest losses but these grades were not included in the analysis and therefore not accounted for in the calculations. Also, several other links exist in the value chain (for example, processing; or produce for non-human consumption) that were also not included in the analysis. Hence, although we found evidence for modern retailers producing less post-harvest losses, we cannot confirm – without doubt – that there are less post-harvest losses in the modern value chain.

Another important finding on the issue of post-harvest losses is the refutation of the persistent belief that post-harvest losses in Indian fresh produce marketing amount to 30 per cent. The data showed that actual post-harvest losses ranged between 1 and 10 per cent in both modern and traditional chains. Experts confirmed that the 30 per cent wastage often mentioned in the literature is based on only one oft-cited McKinsey study[23] and that the actual wastage is much lower than this figure. An expert from the think tank Agro Fresh argued that post-harvest losses in the traditional value chain actually come closer to zero, because everything, even the worst quality produce, can be sold for extremely low prices or for animal consumption: "Every [sic.] produce which is not rotten finds its place in these huge markets".

Empirical research has shown that what literature cites as the key drivers for more efficiency – investments in infrastructure, better roads and cold storage – are not fully in place in India and that, so far, the entry of modern retailers has not affected the current situation.[24]

23 The McKinsey Global Institute (2011): "Resource evolution: meeting the world's energy, materials, food and water needs" study refers to 30 per cent post-harvest losses on oilseeds and pulses in South and Southeast Asia.

24 GIZ expert interviews.

Box 1: The efficiency of traditional retailing
Many of the experts we interviewed argued that the traditional value chain was actually very efficient. The reason was that many street vendors brought the produce to their customer's doorstep. No further transaction costs were incurred and no further unloading onto the store shelves necessary. Shilpa Gupta from the FICCI agrees with this and says that "Indians like the traditional retailing system with their personal vendors. That's why 94 per cent of the retailing market still takes place in traditional value chains". Even Arpita Mukherjee from ICRIER agrees that traditional value chains are efficient and very sophisticated, since traditional retailers provide tomatoes fresh and, selling at the doorstep, provide a better service than modern retailers. According to her, the system of placing product orders by telephone and bringing delivery services to the homes is well-developed in India. "Traditional retailing is easier and does not require waiting and bar-coding and, finally, it also allows bargaining and therefore ends up with the most efficient price."
Source: Personal interviews, 2014

7 Comparing profits and crowding out

This section tested the study's third hypothesis concerning profits and crowding out. Our findings show that although the entrance of modern retailing into an economy is commonly associated with a reduction in the profits and eventual crowding out of farmers, intermediaries and retailers, this association does not hold true in Andhra Pradesh.

We divided the hypothesis into three smaller statements: H3(a) assumes that **farmers integrated into value chains of modern retailers make larger profits than farmers who remain in the value chains of traditional retailers.** Empirical evidence shows that this is indeed the case: farmers who supply to supermarkets tend to have higher profits than farmers who use other marketing channels. H3(b) states that **the modern value chain of fruit and vegetables will cut out some middlemen as a result of the direct purchasing activities of modern-type retailers. The remaining intermediaries in the chain will tend to enjoy larger profits.** The two types of middlemen under consideration are commission agents and traders. Research results show that, due to the diverse buying sources of commission agents, their incomes and their current function in the market will not be as negatively affected by the entry of supermarkets as the

literature assumes. The same result was found for traders: their incomes and their current functions in the value chain will not be negatively affected by the purchasing activities of modern value chains. Finally, H3(c) assumes that **in general, modern retailers make larger profits than traditional retailers**. We reject this hypothesis because empirical evidence shows that modern retailers incur losses in their fresh fruit and vegetable portfolios and incur profits through other non-fresh food product segments. The following subsections provide more detail about the results.

7.1 Farmers' profits

In interviews with researchers, government officials and other experts, various different opinions were put forward about the effect that the purchasing activities of modern retailers had on farmers' profits. Experts from the Confederation of Indian Industry (CII), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the International Food Policy Research Institute (IFPRI), the National Bank for Agriculture and Rural Development (NABARD) and the Ministry of Agriculture of Andhra Pradesh argued that farmers who sold their goods in modern value chains had higher profits. But the Confederation of All Indian Traders (CAIT) voiced the opinion that a complete control of the value chain by modern retailers would lead to lower prices for farmers, because the supermarkets could dictate the prices.

In Andhra Pradesh many supermarkets still source from traditional value chains − such as *mandis* – at least partially. In this case, our research did not reveal any significant effect on farmers' profits. However, data showed that, if supermarkets procured directly from farmers, the said farmers supplying tomatoes to modern retailers would make 22 per cent higher profits on average than farmers in traditional value chains.

According to the literature, modern retail chains tend to procure produce straight from farmers, often by means of contract farming, instead of buying from wholesale markets. Yet, according to interviews, contract farming has not been successful for fresh fruit and vegetables in India. One reason is because of difficulties in contract enforcement due to the weak legal framework in India. Experts from Global Agrisystems told us that farmers are generally receptive to contract farming because it would reduce their marketing risks. However, in practice, farmers could simply walk away from a contract if market prices were higher during harvest.

Domestic supermarket managers indicated that contract farming was not a suitable instrument in an environment with strong price swings, such as the fresh fruit and vegetable market in India. In addition, setting up an individual contract with numerous small farmers entailed high transaction costs that supermarkets were not keen on shouldering. Nevertheless the non-government organisation FDI Watch is convinced that farmers would still have lower profits even if they entered into contract farming agreements with supermarket chains. The actual effect of contract farming on farmers' profits could not be measured as part of this research because none of the farmers interviewed had engaged in such an agreement.

The only method of direct sourcing that was employed by supermarket chains in Andhra Pradesh was the use of collection centres in rural areas (see Section 6 on efficiency). But as the previous discussion shows, the catchment area tends to be small, with only 9.3 km average distance between farms and supermarket collection centres. By comparison, the average distance between farms and the *mandis* is much larger, but this results in 2.4 times more transportation costs. The reason for the small size of the catchment area of supermarket collection centres is that, due to their limited number of outlets, supermarkets require only small quantities of fresh fruit and vegetables. Particularly farmers growing large quantities of tomatoes therefore answered that they did not supply directly to supermarkets. Farmers with large crops could potentially still supply indirectly to supermarkets via the *mandis*; in this case however, we did not find any effect on their profits.

Farmers supplying supermarkets also have significantly lower total land holdings compared to the sample average. They responded that they preferred supermarket collection centres because the centres were close to their farms and they received a higher price for their produce there. The collection centre managers we interviewed replied that modern retailers took *mandi* prices as a benchmark for their own purchasing price. Nevertheless, on average, farmers received 14 per cent more per kilogramme of tomatoes if they supplied to supermarket collection centres, compared to the price at the *mandi*.

According to empirical data, an average of 9.24 per cent commission is charged on average at the *mandis*, whereas there is no commission to be paid for supplying to the supermarket collection centres or the *rythu* bazaars. When adding the commission, the average price at the collection centre is now 22 per cent (instead of 14 per cent) higher than in the *mandis*.

Farmers explained that they received less from the *mandis*, if they first sorted out and sold their best produce (namely grade-A tomatoes) to the collection centres and then afterwards brought the rest of the produce to the *mandis*. So, a wider choice of marketing channels does not automatically lead to higher overall prices for the farmers. Apart from sorting and grading, which is mostly done in the collection centres, hardly any supermarket requires farmers to comply with product quality standards such as limitations on residual levels of chemicals. Supermarket representatives commented that the Indian consumer was very price-sensitive. Therefore, charging a price premium for better quality, especially through quality standards that are not directly apparent to the consumer, is hard to establish. Compliance with quality standards, which commonly present a constraint for small farmers when supplying to supermarkets, is thus not a substantial problem for tomato farmers in Andhra Pradesh. Nonetheless, farmers in modern value chains have on average 77 per cent higher input costs in terms of labour, chemicals, electricity and especially machinery compared to farmers who do not supply to supermarkets. This may indicate that the prospect of getting a better price for high-grade produce gives farmers an incentive to invest more in their production, compared to supplying tomatoes to the *mandis*, where most of the produce is sold ungraded. It could also mean that farmers have more disposable income to spend on better machinery and other inputs because they earn more profits when they sell to supermarket collection centres. However, a manager at an international wholesaler also replied that farmers in traditional value chains used excessive amounts of chemicals such as fertilisers and pesticides because they lacked the know-how about the correct use of these substances. This would mean that farmers in traditional value chains reduced their profits by unnecessary spending on inputs.

Unlike the trend observed in many other developing countries, results of our research show that especially small farmers delivered their tomatoes to supermarkets in Andhra Pradesh via collection centres, as shown in the following table:

Table 7: Tomato farmers supplying to supermarket collection centres			
Tomato production (acres)	**No. of tomato farmers interviewed**	**Farmers directly supplying to supermarkets**	**Farmers directly supplying to supermarkets**
≤1	58	27	47%
Between 1-2	27	6	22%
Between 2-3	12	1	8%
>3	9	0	0%
Total	**106**	**34**	
Source: Authors			

7.2 Middlemen's profits and crowding out

As in other developing countries, the literature suggests that numerous organised modern-type retailers in India attempt to cut off traditional middlemen – such as village merchants or commission agents – and source directly from wholesalers or cooperatives (Reddy et al., 2010). Therefore, among all three actor groups in the vegetable value chain, the transformation is seen to disadvantage middlemen the most. We distinguish between two main types of middlemen in India: commission agents, and traders. We will evaluate their current situation, their vulnerability and their ability for adaptation for each type. Their current profit share in the value chain will also be analysed before taking a look at their perception of their future situation and of their risk of being crowding out.

7.2.1 Commission agents

Commission agents are diversely impacted by the development of modern retailers. Some modern retailers buy their tomatoes from the *mandis*, directly from a commission agent (CA) or through a trader. Other modern retailers have an integrated supply chain and source as much as possible directly from farmers. In the first scenario, no significant difference in the profit distribution has been noted between commission agents supplying to traditional retailers and commission agents supplying to modern non-integrated retailers.

All commission agents interviewed were full owners of their businesses. Their activities primarily involved limited fixed investments: their license fees were not very expensive, they rented their trading stands in the *mandis* on a monthly basis and they had basic facilities at their stands; in general they did not have a transportation vehicle or used rented ones when needed; also they did not own any real storage facility. Their main source of income was the commission charged for each transaction facilitated between a farmer and a buyer. They had in general no other source of income, selling only fresh fruit and vegetables or, in the case of rural *mandis* in Madanapalle region, only tomatoes. As such, commission agents were highly dependent on the fresh fruit and vegetable market and on the current prices. However, as their fixed costs were very low, they did not face constraints that limited their capacity to abruptly abandon the business. Their risk-taking was also low.

Commission agents are traditionally considered to be powerful and rich. Interviews show that the commissions they collect range between 4 per cent and 10 per cent, while having little fixed and operational costs, as mentioned above. Some experts interviewed indicated clearly that they "make high profits at the moment, and the largest part of the profits go to them" (Representative of APCOB, personal communication, March 2014). Other experts stressed that the fees of commission agents had to be reduced because commission agents were "involved in farmers' activities" anyway (Representative of CII FACE, personal communication, February 2014).

When asked about their future perspectives, the commission agents interviewed gave a widely different forecast than that of the experts. Overall, commission agents were optimistic about the future − which was an excellent indicator of their current well-being. They did not consider supermarkets as competitors, rather as potential new customers. In parallel, the total number of commission agents was still increasing, even if many agents had reportedly left the business because of losses and because according to them the market was generally "badly designed".

Many experts predict that commission agents will be the main losers of the retail transformation in India, considering that there are "way too many of them" (Representative of UNESCAP, personal communication, February 2014; Representative of ICRIER, personal communication, February 2014). Nevertheless, middlemen are said to be very adaptive: they "may lose at one place if they are driven out of their current place, but they will find a place

somewhere else" (Representative of NABARD, personal communication, February 2014). An FDI Watch expert explains further that

> with the concentration of retailers in bigger orders, fewer middlemen are required but these last ones will become more powerful in the village. Some middlemen will be kicked out; the rest will work for the retailers as traders and buyers. (Representative of FDI Watch, personal communication, February 2014)

In short, commission agents are making high profits at the moment with apparent little risk-taking. Evidence shows that there is (currently) no difference in terms of profits between commission agents who are part of traditional value chains and those who are part of modern value chains. In respect to crowding out effects, the share of the commission agents in the total trade of vegetables may decrease, but their absolute number may continue to increase. There are two possible reasons for this: the first is the increase of fresh fruit and vegetable consumption in the Indian diet as the middle classes' budgets for healthier food is increasing; and second, because of the general increase in disposable incomes among Indian households.

7.2.2 Traders

We interviewed one independent trader from an international retail chain, as well as two commission agents selling mainly to international retailers (and acting as such, as traders). Their answers regarding profit distributions were similar to those of traders in traditional supply chains. All these independent traders, as well as those working in rural *mandis* and as those in city *mandis*, purchase from commission agents. They sell either to hotels/restaurants/cafés, to traditional retailers, or to modern retailers. Similar to commission agents, traders generally have neither high fixed costs nor high investments. The vehicles they use are often rented and they do not own personal storage facilities. Their main difference vis-à-vis commission agents is in the number of their regular customers. For traders working with traditional retailers, the total number of customers is high while the opposite is true for traders working with modern retailers (the total numbers of customers is lower). The dependency and vulnerability of traders working in modern value chains is therefore higher.

On profit distribution, a distinction has to be made between rural and urban traders. A rural trader buys the produce from a commission agent in a rural *mandi*, such as Madanapalle, transports it over hundreds of kilometres to

a *mandi* in a big city, such as the 550 km-distant Bowenpally *mandi* in Hyderabad, where he sells it to another commission agent.

The urban trader buys the produce from one urban commission agent and sells it directly to one or more local retailers. Numerically, margins estimated through interviews are higher for rural traders; but these margins are figures that include transportation costs, which are naturally much higher than for urban traders. As such, no clear conclusion can be made on profit distribution among rural and urban traders, and among independent traders selling to traditional or to modern retailers.

As far as the risk of crowding was concerned, interviews indicated that in general traders considered their situation to be stable despite the entry of modern value chains. Some traders we interviewed knew of other traders that had left the business but their reasons were due to factors other than modern retailing growth. The main losses of traders are said to be due "to high costs, weather, damages, and falling prices". Supermarkets as well as *rythu* bazaars were not perceived as being dangerous competitors that would worsen traders' situation.

Traders who are actually employed by a modern retailer must be considered separately. They are not middlemen but part of an integrated retailer chain, and are paid by their employer, the modern retailer. It is hence not possible to compare profits across traders. On crowding out effects however, it can be concluded that − as with the commission agents − even though their current situation is stable, the relative share of independent traders in the business is decreasing and will continue to do so with the growth of modern retailing.

7.3 Modern retailers' profits

Traditional retailers were found to purchase fresh fruit and vegetables by themselves, every day or every second day. They purchased from the *mandis*, where they dealt with commission agents or with traders, or from a *rythu* bazaar. They used public transportation or relatively simple rented or owned vehicles (motorbike, three-wheeled rickshaw, car or small truck), depending on the purchase volume. They usually did not have a storage facility or only very limited space inside the *kiranas*. The shop was usually run by the owner and his family, with (usually) no employee. Some bigger shops employed up to 4 workers and even up to 10 in one case out of the 12

traditional shops we interviewed. Their activities were often informal, and hired employees, if any, did not receive any specific training. Labour costs were expectedly low for traditional retailers. In addition, as mentioned in Section 6, their post-harvest losses (average of 13.5 per cent) were much higher on average than those of modern retailers (average of 6 per cent).

Four traditional retailers reported that their finances were stable and that they were currently in a good situation. Another 4 cases reported difficulties or losses in terms of profit. Those having difficulties indicated that their problems originated from a variety of factors, with only 1 mentioning supermarkets as the main obstacle. Traditional retailers' margins per kilogramme of tomatoes is calculated to be around 42 per cent (as discussed in Section 6) and thus quite similar to those of modern retailers, as described below. Their absolute operating costs are quite evidently much lower, but available data do not allow comparing relative costs and relative margins**.** Their absence of economies of scale, their higher post-harvest losses, and anecdotal evidence indicate that traditional retailers' profits are quite low. Furthermore, they were found to be mostly pessimistic about the future. The 4 retailers that were explicitly pessimistic about their future mentioned considering closing their own shops, similar to what many of their peers did. One retailer explicitly mentioned that he was "scared by supermarkets". Only one *kirana*-owner remained optimistic about their future.

Estimating the relative operational costs of modern retailers and identifying trends is difficult. Most domestic modern retailers have their own buyers and purchase mostly directly from farmers, at prices slightly higher than the *mandi* prices. In some cases they buy from the *mandis* or from a mix of both *mandis* and directly from farmers. Most of those international modern retailers interviewed however did not have their own buyers. but dealt with independent traders and wholesalers or directly with commission agents. Where storage and transport were concerned, there were no significant differences between domestic and international retailers. Both used various classical means of transportation and, except for 1 international retailer, never used cold storage for tomatoes (even when cold-storage facilities may have been available for imported exotic fresh fruit and vegetables). Labour costs tended to be high for modern retailers. Between 12 and 189 people were working in each outlet, depending on the size of shop. Moreover, the staff of modern retailers often received training opportunities. One international wholesaler even provided regular training to farmer-suppliers.

The average of 6 per cent waste of modern retailers is lower on average than the waste incurred by traditional retailers.

On the profit side, the situation was quite mixed. Margins calculated from estimations received in the interviews amounted to high margins of 15 to 75 per cent, with an average of 46 per cent. One individual statement however explained that usually margins were closer to 10 per cent when tomatoes were not in peak season. The value added to tomatoes may then in fact be rather a fixed added amount, between 1 and 5 rupees per kilogramme, rather than a purely proportional amount. Many expert interviews clearly claimed that "modern retailers are selling at losses" (personal communication with representatives of IFPRI, CII FACE, CAIT and Global AgriSystems, 2014). Yet their market share is still growing.

Some specific modern retail chains have closed (for example Walmart with Bharti in India), but at the same time the total number of modern retail outlets has increased, as a response to the increase in the total number of customers. Modern retailers did not comment explicitly on their current financial situation in the fresh fruit and vegetable segment, but one respondent did say that they were "having some profits in this segment", presenting it as an achievement. Having said that, all reported optimism as regards a stable or better situation in the future, both for them themselves and for their modern competitors, including higher profits from tomato sales.

Evaluating the validity of the hypothesis H3(c) is thus a complicated matter. The expert interviews suggested that modern retailers were selling at a loss and had fewer profits than traditional retailers. They were said to balance their losses through higher profits in other product segments and via diversification in the non-food section. The fresh fruit and vegetable segment was merely kept in the supermarket's portfolio in order to attract consumers and not as their main profit source. One modern retailer, for instance, indicated selling tomatoes at promotional prices or even "offering 1 kg of tomato for every total purchase above 75 Rs" (nearly 0.90 euros, as of March 2017). In parallel, the number of traditional retailers was very high and they reported many losses for their activities as a whole causing them to be pessimistic. The hypothesis could be – cautiously – rejected: modern retailers do not have a larger profit *per se* than traditional retailers in the fresh fruit and vegetable segment, although traditional retailers have commonly indicated low profits, they do not sell at a loss as modern retailers do.

8 Conclusions and recommendations

The research set out with the objective of evaluating the transformation of agrifood value chains in India as a result of the entry of international retail chains into the domestic retail scene. This entry was made possible with the 2012 retail FDI liberalisation policy that allowed 51 per cent majority foreign ownership in multi-brand retailing. The study is especially relevant because understanding the possible impact of retail chain modernisation on farmers, middlemen and traditional retailers contributes to a wider discussion on policies that foster inclusive growth.

This study was conducted in 2013/2014, at the very early stage of retail FDI liberalisation in India. Based on our early empirical evidence from Andhra Pradesh, we can conclude that − **so far** − retail FDI liberalisation has not negatively impacted traditional agricultural value chains in the state and in fact, in its current condition, actually provides financial benefits to producers who can meet supermarkets' standards of size and colour. Currently the presence of modern retail chains does not pose a threat to traditional retailers and has not created the dreaded wave of unemployment in fresh fruit and vegetable value chains. Our early results showed that Indian society – not only consumers but all actors across agricultural value chains as well – is seen to largely benefit from the modernisation of the retail trade.

For this reason, the central recommendation of this report is for the Indian government to **carefully continue with the liberalisation of retail FDI while ensuring adequate policy space to shape the liberalisation process in an inclusive manner.** As of the time of writing, the debate around retail FDI liberalisation has not diminished; in fact, news reports of a possible government reverse of the decision sporadically come up. This creates unease among foreign investors and uncertainty among policymakers within the states:

- Along this vein, the government should in particular aim for wide-ranging **information dissemination campaigns** that would clarify misconceptions and assuage fears about the impact of the entry of foreign modern retail chains into the country.
- Furthermore, the creation of **sufficient policy space** in which to tailor retail FDI to be more inclusive and sustainable should be on the governments' primary agenda.

It goes without saying that, in order to fully reap the benefits of retail FDI liberalisation, policy approaches to retail modernisation have to be inclusive and sustainable. There are a host of policy options that allow governments to shape retail modernisation in order to allow smaller farmers and traditional retailers to be actively linked to modern value chains. In what follows, we present conclusions and specific policy recommendations that will allow the economy to fully realise the benefits of retail modernisation, based on our research findings in the case of Andhra Pradesh.

Summing up the results on **the overview of value chains**, the research comes to the following conclusions and recommendations:

Traditional value chains continue to dominate the Andhra Pradesh agrifood market because the expected investments in retail have not arrived (yet). Traditional value chains are composed of collectors, intermediaries (commission agents and traders), wholesalers and retailers who serve as additional actors between the farmer and the consumer. These informal channels tend to have more actors who do not add value to the produce but are often easy sources of credit for farmers. Collectors, especially, tend to cover a geographically wider set of farmers as compared to buyers for modern value chains. Traditional modes of retailing (in the form of *kiranas* and pushcarts) are deeply entrenched in Indian society as sources of income and credit and as a social hub for many neighbourhoods. Elements of personalised vending, bargaining, door-to-door deliveries and phone orders are some of the services that traditional retailers offer that modern supermarkets will find it difficult to compete with (see subsection 4.1.1).

Modern value chains that supply to supermarket retail chains are the minority in India, confirming earlier findings by Deloitte (2013). Their market share and market command is very low such that many modern retailers still continue to source from traditional value chains in order to stabilise their own supply. This means using *mandi* infrastructure and *mandi* actors, but purchasing only selected red grade-A tomatoes. Some retailers have set up collection centres at the villages. For these retailers, value addition to the produce occurs at the village level through grade sorting and packing activities in collection centres of supermarkets' value chains. Such sorting and packing activities at the village level are not conducted in traditional value chains; there is simply no infrastructure for this activity and there is little awareness of the importance of quality standards among many farmers and consolidators.

Unique to Andhra Pradesh is a third general type of value chain with a similarly very low market share, the *rythu* bazaar or farmers' market. The *rythu* is a pilot marketing channel designed to eliminate all types of middlemen between farmers and consumers (see subsections 4.1.2 and 4.1.3).

Due to the vast size of the Indian agrifood market, we observed not only co-existence and interlinkages but also synergy among these three stylised types of value chain. It is not uncommon to find traditional value chains and *rythu* bazaars that supply to the modern value chains of supermarkets. In fact, supermarket collection centres that are present in some villages do not have an exclusive set of farmers from whom they source; rather, they open up their value chains to traditional suppliers.

Hence we conclude that, although there is a strong difference between traditional and modern value chains in terms of value-chain structure and value addition, the difference ends there. In India, traditional value chains are not inferior to modern value chains as the literature suggests. The interlinkage between traditional and modern value chains implies that a slow transformation of the value chains is already occurring. Slow but mutual learning is happening between modern and traditional value chains even if it is as simple as sorting tomatoes based according to size and colour or invoking the powerful network of middlemen when no sophisticated system of logistics are present.

The provision of basic and backend infrastructure forms the basis of a thriving and profitable agricultural production and marketing network and is a means to attract retail FDI. Examples of basic infrastructure include electricity, good farm-to-market roads, a centralised collection centre at the village level with equipment for weighing and sorting, and provision (or even renting out) of proper packing materials for vegetables. These will not only add value to the produce at the farmers' level but also contribute to a reduction of post-harvest losses. Backend infrastructure includes investment made towards processing, manufacturing, distribution, design improvement, quality control, packaging, logistics, storage, warehouses and agriculture market produce infrastructure. Since the infrastructure in Andhra Pradesh is not very far developed yet, international retailers still need to invest in electricity supplies, transport and communications on top of their own investments in backend infrastructure. As our research shows, even with the new retail FDI policy, the expected investments in backend infrastructure and value-chain transformation has not yet occurred and *mandis* continue

to host the bulk of vegetable transactions for the state. In this context, the provision of better basic and backend infrastructure to facilitate vegetable marketing is critical. Against this background, the original mandate of the Agricultural Produce Marketing Committee,[25] that is, **to provide farmers with infrastructure** and to protect them from exploitative middlemen, becomes more imperative. The Model APMC's design has a huge potential for change if implemented properly:

- The state's Ministry of Agriculture could ascertain that a fixed portion of the fees that the *mandi's* Agricultural Produce Marketing Committee collects from commission agents and traders should be allocated to infrastructure investments in the *mandis*.
- Within *mandis*, proper storage facilities or warehouses, adequate parking bays for vehicles used for vegetable transport, proper drainage, proper garbage disposal system and the provision of proper crates for vegetable packing would not only facilitate the vegetable trade but also prevent huge post-harvest losses.
- Although *mandi* vegetable prices are easily set for the day, the dissemination of information to farmers is weak, resulting in farmer exploitation. A system of efficient and transparent dissemination of information with regard to price needs to be implemented. Since many farmers in Andhra Pradesh own mobile telephones, digital means for price information dissemination could be explored.

The state could also explore the levelling up of the *rythu* bazaar system (or the "Manakuragayalu" *rythu*, with its village collection centres and three-tiered, farmer-led structure) beyond its pilot phase and establish it as a real alternative market to the *mandis,* including exploring opportunities for introducing standards. To do this, the same infrastructural investments mentioned for *mandis* are needed to improve *rythu* bazaars, that is: storage facilities and warehouses, adequate parking bays, drainage, garbage disposal, and so on:

- As mentioned in subsection 4.1.3, one of the major drawbacks of the *rythu* bazaar is its limited physical space, thereby delimiting the number of farmers who can potentially sell their produce at the bazaar. In order to be able increase the number of farmers − and thereby increase the

25 Later relaunched as Model APMC in 2003.

volume traded that *rythus* could absorb − investments on more physical market space is critical.

- When *rythu* bazaars have enough physical space, investments in warehouses and storage facilities within the *rythu* markets are imperative. Farmers who have transported their produce to the *rythu* market to be sold do not have the capacity to properly store their unsold produce nor are they able to return produce to their farms and back again to the bazaars the next day without a loss.
- Finally, *rythus* could be linked to modern retailers. This would be a means to connect *rythu* vegetable supply to supermarkets without the middlemen and at the same time a means to introduce the concept of standardisation to *rythu* farmers/sellers.

Summing up the results concerning **value-chain governance**, we come to the following conclusions:

Our study results indicate the lack of asymmetrical power relations in modern value chains in Andhra Pradesh. Supermarkets have the power to set the price for tomatoes that they purchase directly from farmers at village collection centres as well as from middlemen such as commission agents and traders. However, because of their limited market share, they base their quotations on *mandi* prices and cannot deviate much from these *mandi* prices. Supermarkets were found to have power to set standards for their tomato purchases, but these standards are based solely on appearance and refer only to size (A-grade) and colour (see subsection 5.1 and 5.2). Modern retailers have no ability to either control suppliers or to set the terms for others in the chain, and therefore do not have enough force to initiate a rapid modernisation of the value chains.

Although the literature suggests that farmers tend to be exploited in terms of delayed payments from middlemen, we did not find evidence to support this. Traditional and modern value chains were found to pay farmers at the same rates and without delay. One advantage that makes middlemen indispensable in value chains is their being easy sources of credit for farmers, requiring no collateral and no guarantee. In the Indian context, this is a strong feature of traditional value chains that supermarkets cannot compete with.

Historically, the inherent advantage of modern retailers over traditional ones is the **implementation of strict agrifood safety and quality standards in their own value chains**. In the case of Andhra Pradesh, this was found to

be lacking because only standards of size and colour were used by modern retailers. Food safety and quality standards are mechanisms that add further value to the produce and allow modern retailers to distinguish themselves from traditional retailers. Historically, except for a handful of processed food products, regulation of food safety and quality has been lax in India. The recent establishment of the Food Safety and Standards Authority of India (FSSAI) has increased awareness of the importance of food safety and the role that standards play in safeguarding public health. This is an excellent opportunity for modern retailers to review their own private standards, align them with national objectives, and introduce international quality standards beyond standards of size and colour. Meeting supermarket standards also presents an opportunity for farmers to acquire a premium for their produce, leading to higher incomes:

- Supermarket standards that align with **good agricultural practices (GAP)** which attempt to reduce chemical residues on produce, check for the sustainability of the production process, or verify whether a crop has been produced with socially conscious methods are standards that appeal to the middle class with a higher willingness-to-pay.
- Introducing **certification** for organic production, for goods produced by a specific cooperative, for those produced by women, or for local/regional sourcing are other standards that could increase consumer demand for fresh fruit and vegetable products from modern retail chains and increase producers' premiums.

In India, a successful business example of certification is Amul Dairy, a brand consumed across social classes and sold in traditional and modern value chains alike. Amul is a three-tiered dairy cooperative based in Gujarat with 70 per cent membership among tribal folk, scheduled castes and women, a unique marketing story that captured the attention of millions of consumers. Similar success cases exist outside India and provide policy lessons. In Ghana, the Kuapa Kokoo is a farmers' union that supplies Fairtrade-certified cocoa to supermarkets and reinvests the premium in credit to 1,300 partner villages. This story has not only captured buyers in Ghanain supermarkets but international retailers as well (Hystra, 2015).

An area that needs intervention is the **provision of training** to farmers, since results showed that very few farmers were up-to-date in terms of proper methods of production and crop/pest management, as well as harvest and post-harvest handling methods (see subsection 5.2). This lack of training

results in poor quality harvests and even greater post-harvest losses. In order to improve harvests and to reduce post-harvest losses, **opportunities for farmer training should be increased**:

- Training could be provided independently by state-level agricultural extension offices or jointly together with modern retail chains. Joint training with supermarkets would create an opportunity for retail chains to introduce their own private standards to farmers. Farmers would be able to supply to supermarkets while supermarkets would have steady sources for their produce.
- Evidence suggests that farmer training in a trilateral cooperation agreement with private seed, chemical or fertiliser companies are alternative schemes that provide farmers with subsidised inputs but would also lead to better crop management practices and improved farm outputs.

An excellent example of joint training is the "Samruddhi" project where BASF cooperates with the state of Madya Pradesh (Hystra, 2015). The project provided agricultural training to over 325,000 soybean farmers in the state and advised them on ways to increase yields and productivity in exchange for the use of BASF products. In the long term, this type of partnership will not only increase harvest quality and quantity but will also increase farmer compliance with standards set by supermarkets in modern value chains.

Regarding the comparison between the **value-chain efficiency** of traditional and modern value chains in Andhra Pradesh, we come to the following conclusions:

While modern value chains are often associated with higher formalisation and a higher degree of regulation than traditional value chains in the way the chain is governed, in our case this did not hold true. Based on the parameters we used to analyse them (marketing margins, length of value chain, amount of post-harvest losses), we found that modern and traditional value chains in Andhra Pradesh had the same level of efficiency. In terms of marketing margins, our results showed that regardless of the length of the value chain, modern retailers and traditional retailers incurred almost similar marketing margins. However, traditional value chains involved more actors and this tended to increase and absorb marketing margins without adding value to the produce. In terms of length of value chains, supermarkets − by way of their collection centres within villages − have shorter value chains (meaning less

actors) as compared to *mandis*. *Mandis*, however, were found to host tomato producers and serve as markets/vegetable trading centres for growers who lived as far as 380 kilometres away (see subsections 6.1, 6.2 and 6.3). In terms of post-harvest losses, both modern and traditional retailers incurred similar losses of around 1 to 5 per cent of the total harvest. Although some modern retailers invested in cold-storage facilities, these were not used for tomato storage at all since the tomato is not a high-value crop. In addition, none of the modern retailers used their cold-storage facilities to the full capacity.

Anecdotal evidence from experts suggests that most Indian consumers take another − totally different − aspect into consideration when it comes to determining which type of retailer is more efficient. For most Indians, freshness of the produce and a personal selling touch are strong determinants of efficiency. For this reason, most Indian consumers consider traditional value chains to be more efficient because of the frequent turnover of produce and, most importantly, because of the added service that traditional retailers put into sales activities. It is not uncommon for *kirana* owners and pushcart vendors to deliver produce to the doorstep of their buyers, to sell on credit, or to accept orders via the telephone. According to consumers, these are efficient sales strategies that modern retailers find difficult to compete with at the moment.

Summing up the results concerning **profits and crowding out** as a result of the entry of modern retailers in India, we come to the following conclusions:

The entrance of modern retailers into an economy is commonly associated with a reduction in profits and the eventual crowding out of farmers, intermediaries and retailers but our results showed that, so far, this was not the case in Andhra Pradesh.

Focusing first on farmers, our empirical evidence shows that farmers who supply to supermarkets tend to have higher profits than farmers who use other marketing channels. The reason is that farmers who supply to supermarkets tend to receive higher prices for their sorted grade-A tomatoes than they would normally do if the produce were sold in bulk at the *mandis*. Thereafter, farmers who sell grade-A tomatoes to supermarket collection centres at the village level proceed to *mandis* to sell the rest of their tomatoes. This small price segmentation already makes a significant difference to farmers' incomes. However, we could not find any evidence of crowding out. *Mandis* were found to absorb all produce that farmers or village-level consolidators brought in.

As a basis on which to compare profits, we considered two types of intermediaries, the commission agents and the traders. Our research results showed that, due to the diverse buying sources of commission agents, their incomes and their current function in the market was not as negatively affected as expected by the entry of supermarkets. The same result was found for traders: their incomes and their current function in the value chain were not as negatively affected as expected by the purchasing activities of modern value chains. When asked about whether the activities of modern retailers posed a threat to their livelihoods, intermediaries replied to the negative. In other words, modern retailers do not appear to have affected intermediaries' current livelihoods in any way and are not expected to pose a threat in the future.

Finally, we focus on traditional retailers and compare their profits to those of modern retailers in the case of fresh fruit and vegetables. Traditional retailers were found to incur more profits in the sales of fresh fruit and vegetables than modern retailers for the same product portfolio. Part of the reason for this is the enduring consumer preference for the convenience of traditional retailing, but another reason is because of the low operational costs involved in running unorganised family-owned businesses such as *kiranas* and pushcarts as compared to air-conditioned retail stores with additional sales people. Nevertheless modern retailers continue to offer fresh food in their product portfolio as a means to entice shoppers into their stores (see subsections 7.1 and 7.3).

Due to the entrenchment of middlemen in traditional value chains – commission agents and traders alike – their outlook in terms of their profits and positions remains positive (as discussed above and in subsections 7.2.1 and 7.2.2). This optimistic assumption stems from the belief that the transformation of value chains towards modernised types may result in *some* middlemen being crowded out but that the remaining ones will rise in power, while others will be reabsorbed into the service sectors. Traders and experts believe that this will result in the reorganisation of the structure of traditional value chains: some traders will eventually work in the service sector for retail chains as buyers, while others will be reabsorbed by the remaining middlemen to source for them at the village level.

Then again, taking into account the increasing trends of urbanisation, converging consumer preferences and higher disposable incomes on the part of the growing middle class, we expect that the status quo is bound to

change. We believe that the supermarket revolution will eventually catch up with India and result in a rapid transformation of the retail sector such that modern retailers will surface and become permanently dominant in the sector. This supermarket revolution has been observed to occur in waves in Africa, Latin America and Asia and its impact has been well documented in the literature. Consequently, policy will play a strong role in preparing actors in the traditional value chain who will be impacted by change, and policy can ensure that the retail modernisation process will unfold in an inclusive manner.

Modern retailers prefer to negotiate with groups of farmers rather than with a multitude of small producers in order to reduce transaction costs. Along this vein, **creating and strengthening small-farmer organisations** would help smallholders link up with supermarkets:

- The creation of **cooperatives and producer organisations** will increase farmers' leverage for better prices against supermarkets and could lead to better harvests due to common learning and technological exchange within the group.
- Cooperatives are also in **a better position to obtain access to finance** that could be used for production inputs.

Specific retail FDI policies will have a much greater role to play in shaping a more inclusive transformation process. There is a **need to monitor the implementation of retail FDI provisions** that the Indian government has laid out for interested investors. Two provisions are highly relevant in the context of our study in Andhra Pradesh: zoning regulations (see subsection 3.1) and minimum local sourcing requirements (see subsection 2.3.2):

- **Zoning regulations** prescribe that retail outlets may only be set up in special zones and cities with a population of more than 1 million citizens. This provision will provide a niche for smaller retailers to thrive in the inner cities and, at the same time, preserve the cultural integrity and social structure of city centres.
- The Indian FDI policy also requires international investors to procure at least one-third of their product portfolio from small farms or agricultural co-operatives whose investment in plant and machinery does not exceed USD 2 million. This important **minimum local sourcing requirement** provision will help link smaller farms directly to supermarkets.

Bibliography

Acharya, S. S., & Agarwal, N. L. (2011). *Agricultural marketing in India* (Fifth Edition). New Delhi: Oxford and IBH Pub. Co. Pvt.

Altenburg, T. (2006). Governance patterns in value chains and their development impact. *The European Journal of Development Research 18*(4), 498–521. doi:10.1080/09578810601070795

Altenburg, T., Kulke, E., Hampel-Milagrosa, A., Peterskovsky, L., & Reeg, C. (2016). *Making retail modernisation in developing countries inclusive. A development policy perspective* (Discussion Paper 2/2016). Bonn: German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE).

Andersson, C. I., Kiria, C. G., Qaim, M., & Rao, E. J. (2013). *Following up on smallholder farmers and supermarkets* (GlobalFood Discussion Papers 23). Göttingen: University of Göttingen.

Aparna, B., & Hanumanthaiah, C. V. (2012). Are supermarket supply chains more efficient than traditional market channels? *Agricultural Economics Research Review. 25*(2), 309-316.

Aramyan, L. H., Lansink, A. G. J. M. O., van der Vorst, J. G. A. J., & van Kooten, O. (2007). Performance measurement in agri-food supply chains: A case study. *Supply Chain Management: An International Journal 2007 12*(4), 304-315.

AT Kearney. (2006). *Emerging market priorities for global retailers. The 2006 Global Retail Development Index*. Chicago, IL: Author.

Atkinson, R., & Flint, J. (2001). *Accessing hidden and hard-to-reach populations: Snowball research strategies* (Social Research Update 33). Guildford: University of Surrey, Department of Sociology.

Babu, H. S. (2012). SWOT analysis for opening of FDI in Indian retailing. *European Journal of Business and Management 4*(3), 53-64.

Badrinath, V., & Chitra, K. (2012, March). *FDI in Indian multi brand retail sector: Should the government hold back or roll back the proposal?* Presented at the International Conference on Advances in Engineering, Science and Management (ICAESM), Nagapattinam, Tamil Nadu.

Baskaran, K. (2012). The FDI permit for multi brand retail trading in India – Green signal or red signal. *Business Intelligence Journal 5*(1), 175–186.

Blandon, J., Henson, S., & Cranfield, J. (2009). Small-scale farmer participation in new agri-food supply chains: Case of the supermarket supply chain for fruit and vegetables in Honduras. *Journal of International Development 21*(7), 971–984. doi:10.1002/jid.1490

Chakrabarty, D. (2000). *Provincializing Europe: Postcolonial thought and historical difference*. Princeton, NJ: Princeton University Press.

Chari, A., & Madhav Raghavan, T. C. A. (2012). Foreign direct investment in India's retail bazaar: Opportunities and challenges. *The World Economy 35*(1), 75-90.

Coe, N., & Wrigley, N. (2007). Host economy impacts of transnational retail: The research agenda. *Journal of Economic Geography 7*(4), 341–371. doi:10.1093/jeg/lbm012

Cohen, A. J. (2013). Supermarkets in India: Struggles over the organization of agricultural markets and food supply chains. *University of Miami Law Review 68*(4), 19–86.

Corporate Europe Observatory. (2010). *Trade invaders: How big business is driving the EU-India free trade negotiations*. Delhi: India FDI Watch.

Das Gupta, S., Reardon, T., Minten, B., & Singh, S. (2010). *The transforming potato value chain in India: Potato pathways from a commercialized-agriculture zone (Agra) to Delhi.* Report of the Value Chains Component of ADB RETA (13th) IFPRI Project on Policies for Ensuring Food Security in South and South East Asia. IFPRI-ADB, mimeo.

Deloitte (Eds.). (2013). *Indian retail market: Opening more doors*. Retrieved from http://rasci.in/downloads/2013/Indian_Retail_Market_Opening.pdf

Dholakia, N., Dholakia, R . R., & Chattopadhyay, A. (2012). India's emerging retail systems: Coexistence of tradition and modernity. *Journal of Macromarketing 32*(3), 252–265.

Emongor, R., & Kirsten, J. (2009). The impact of South African supermarkets on agricultural development in the SADC: A case study in Zambia, Namibia and Botswana. *Agrekon 48*(1), 60–84.

Fischer, A. G. P. (1939). Production, primary, secondary and tertiary. *Economic Record, 15*(1), 24-38.

Franz, M. (2010). The role of resistance in a retail production network: Protests against supermarkets in India. *Singapore Journal of Tropical Geography. 31*(3), 317–329.

Franz, M. (2012). Resistance and strategic responses in food supply networks: Metro cash & carry in Bangalore. *Geografiska Annaler: Series B, Human Geography 94*(2), 161–176.

Gereffi, G. (1994). The organization of buyer-driven global commodity chains: How US retailers shape overseas production networks. In Gereffi, G., & Korzeniewicz, M. (Eds.), *Commodity chains and global capitalism*. London: Praeger.

Gomez, M. I., Barrett, C. B., Buck, L. E., De Groote, H., Ferris, S., Gao, H. O., …Yang, R. Y. (2011). Research principles for developing country food value chains. *Science 332*(6034), 1154–1155. doi:10.1126/science.1202543

GoI (Government of India). (2011a). *Census of India.* New Delhi: Ministry of Home Affairs, Office of the Registrar General & Census Commissioner. Retrieved from *censusindia.gov.in (accessed June 2014).*

GoI. (2011b). *National Horticulture Database*. New Delhi: Ministry of Agriculture and Farmers Welfare, National Horticulture Board.

GoI. (2011c). *Report of the working group on agricultural marketing infrastructure, secondary agriculture and policy required for internal and external trade for the XII five year plan 2012-17*. New Delhi: Government of India Planning Commission, Agriculture Division. Retrieved from http://planningcommission.nic.in/aboutus/committee/wrkgrp12/agri/weg_rep_market.pdf

GoI. (2012a) *Agriculture census 2010-11. All India report on number and area of operational holdings* (provisional). Agriculture Census Division. New Delhi: Government of India, Ministry of Agriculture.

GoI. (2012b). *Consolidated FDI policy (effective from April 10, 2012)*. New Delhi: Ministry of Commerce and Industry, Department of Industrial Policy and Promotion. Retrieved from *dipp.nic.in/English/Policies/FDI_Circular_01_2012.pdf*

Grewal, B., Malhotra, P., & Ahmed, A. (2011). Inclusive growth in India: Past performance and future prospects. *The India Economic Review, VIII*(15 May), 132-141.

Gulati, A. (2007). *Re-energizing agricultural sector of Andhra Pradesh: From food security to income opportunities*. New Delhi: International Food Policy Research Institute (IFPRI).

Gulati, A., Minot, N., Delgado, C., & Bora, S. (2005, December). *Growth in high-value agriculture in Asia and the emergence of vertical links with farmers*. Presented at the World Bank workshop "Linking Small-Scale Producers to Markets: Old and New Challenges", Washington DC.

Gupta, S. (2012). *FDI in retail: How can it benefit India's farm sector?* Retrieved from https://csis-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/121114_WadhwaniChair_IssuePerspective.pdf

Hanumanthaiah, C. V. (2010). *Estimating market efficiency of horticultural commodities under different supply chains in India with a special reference to Andhra Pradesh*. In M. B. Dastagiri, C. V. Hanumanthaiah, P. Paramasivsm, R. S. Sidhu, M. Sudha, K. Chand, B. Singh, & S. Mandal (2010), *Estimation of marketing efficiency of horticultural commodities under different supply chains in India*, (pp. 55-121). New Delhi: National Institute for Agricultural

Economics and Policy Research (formerly National Centre for Agricultural Economics and Policy Research, NIAP).

Henson, S., & Humphrey, J. (2010). Understanding the complexities of private standards in global agri-food chains as they impact developing countries. *Journal of Development Studies 46*(9), 1628–1646.

Humphrey, J. (2006). Policy implications of trends in agribusiness value chains. *European Journal of Development Research 18*(4), 572-592.

Humphrey, J. (2007). The supermarket revolution in developing countries: Tidal wave or tough competitive struggle? *Journal of Economic Geography 7*(4), 433–450.

Humphrey, J. (2010). *European Development Cooperation in a changing world: Rising powers and global challenges after the financial crisis* (Working paper No. 8). EDC2020.

Humphrey J., & Schmitz, H. (2001). *Governance in global value chains* (IDS Bulletin 32(63), pp. 19-29). Brighton: Institute of Development Studies (IDS).

Humphrey, J., & Schmitz, H. (2002). How does insertion in global value chains affect upgrading in industrial clusters? *Regional Studies 36*(9), 1017–1027.

Hystra (Hybrid Strategies Consulting). (2015). *Smallholders farmers and business. 15 pioneering collaborations for improved productivity and sustainability*. Retrieved from www.hystra.com

Jairath, M. S. (2008). Trends in private and public investments in agricultural marketing infrastructure in India. *Agricultural Economics Research Review, 21* 371-376.

Jha, R. K. (2012). *Fundamentals of Indian political system*. Delhi: Pearson.

Joseph, M. (14 October 2013). Why freeing up of food market is so crucial. *The Financial Express*. Retrieved from http://www.financialexpress.com/news/why-freeing-up-of-food-market-is-so-crucial/1177996

Joseph, M., & Soundararajan, N. (2009). *Retail in India: A critical assessment*. New Delhi: Academic Foundation.

Joseph, M., Soundararajan, N., Gupta, M., & Sahu, S. (2008*). Impact of organised retailing on the unorganised sector* (ICRIER Working Paper 222). New Delhi: Indian Council for Research on International Economic Relations (ICRIER). Retrieved from http://icrier.org/pdf/Working_Paper222.pdf

Kaplinsky, R. (2000). Globalisation and unequalisation: What can be learned from value chain analysis? *The Journal of Development Studies 37*(2), 117-146.

Kaplinsky, R., & Morris, M. (2001). *A handbook for value chain research.* Ottawa: International Development Research Centre (IDRC).

McKinsey Global Institute. (2011). *Resource revolution, meeting the world's energy, materials, food and water needs.* Retrieved from http://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/resource-revolution (accessed December 2015).

Milagrosa, A. (2007). *Institutional economic analysis of vegetable production and marketing in northern Philippines: Social capital, institutions and governance.* PhD Thesis. Wageningen University, Hoogleraar Agrarische Economie en Plattelandsbeleid.

Mukherjee, A., & Patel, N. (2005). *FDI in retail sector India*. New Delhi: Ministry of Consumer Affairs, Food and Public Distribution, Department of Consumer Affairs, and Indian Council for Research on International Economic Relations (ICRIER).

Mukherjee A., Satija, D., Goyal, T., Mantrala, M. K., & Shouming, Z. (2011). *Impact of the retail FDI policy on Indian consumers and the way forward* (ICRIER Policy Series 5). New Delhi: Indian Council for Research on International Economic Relations (ICRIER).

Nandal, S. (2013). Impact analysis of FDI on retail industry in India. *International Journal of Marketing, Financial Services & Management Research 2*(1), 2277-3622.

Nandi, T. K. N., & Sahu, R. (2007) Foreign direct investment in India with special focus on retail trade. *Journal of International Trade Law and Policy 6*(2), 40-53.

Rajput, N., Kesharwani, S., & Khanna, A. (2012). FDI and Indian retail sector: An analysis. *Journal of Business Administration. Research 1*(1). doi:10.5430/jbar.v1n1p53

Rao, P. P., Joshi, P. K., Kumar, S., & Ganguly, K. (2008). *Agricultural diversification in Andhra Pradesh, India: Patterns, determinants and implications* (Research Report 2, Institutions, Markets, Policy and Impacts). New Delhi: International Food Policy Research Institute (IFPRI) and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).

Reardon, T. (2005). *Retail companies as integrators of value chains in developing countries: Diffusion, procurement system change, and trade and development effects*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GTZ).

Reardon, T., Chen, K., Minten, B., & Adriano, L. (2012). *The quiet revolution in staple food value chains: Enter the dragon, the elephant, and the tiger*. Manila: International Food Policy Research Institute (IFPRI).

Reardon, T., Codron, J.-M., Busch, L., Bingen, J., & Harris, C. (2001). Global change in agrifood grades and standards: Agribusiness strategic responses in developing countries. *The International Food and Agribusiness Management Review 2*(3), 421–435.

Reardon, T., & Gulati, A. (2008). *The rise of supermarkets and their development implications: International experience relevant for India* (IFPRI Discussion Paper 752). New Delhi: International Food Policy Research Institute (IFPRI).

Reardon, T., Henson, S., & Berdegué, J. A. (2007). Proactive fast-tracking' diffusion of supermarkets in developing countries: Implications for market institutions and trade. *Journal of Economic Geography 7*(4), 399–431.

Reardon, T., & Hopkins, R. (2006). The supermarket revolution in developing countries: Policies to address emerging tensions among supermarkets, suppliers and traditional retailers. *European Journal of Development Research 18*(4), 522–545.

Reardon, T., & Minten, B. (2011). *The quiet revolution in India's food supply chains* (IFPRI Discussion Paper 01115). New Delhi: International Food Policy Research Institute (IFPRI).

Reardon, T., Timmer, C. P., Barrett, C. B., & Berdegué, J. A. (2003). The rise of supermarkets in Africa, Asia, and Latin America. *American Journal of Agricultural Economics 85*(5), 1140–1146.

Reddy, G., Murthy, M., & Meena, P. (2010). Value chains and retailing of fresh vegetables and fruits, Andhra Pradesh. *Agricultural Economics Research Review 23*, 455–460.

Romo, G. D., Digal, L., & Reardon, T. (2009). The transformation of food retail in the Philippines. *Asian Journal of Agriculture and Development, 6*(2), 51.

Sanogo, I. (2010). *Market analysis tool: How to conduct a food commodity value chain analysis*? World Food Programme (WFP). Retrieved from http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp226670.pdf

Sharan, S. (2013, March). *Agricultural marketing policy road map*. Presentation given at the India Maize Summit 2013, New Delhi.

Sharma, V. P. (2012). Accelerating agricultural development for inclusive growth: Strategic issues and policy options. *Vikalpa 37*(1), 1-17.

Schmitz, H. (2005). *Value chain analysis for policy-makers and practitioners*. Geneva: International Labour Office (ILO).

Singh, M. K. (2014a). *Andhra Pradesh Agricultural Marketing Department*. Andhra Pradesh Agricultural Marketing Department, mimeo.

Singh, M. K. (2014b). *Linking farmers to consumers through Rythu Bazars (RBZ) in Andhra Pradesh*. Andhra Pradesh Agricultural Marketing Department, mimeo.

Singh, N., & Gupta, M. (20 November 2008). FMCG cos plan to fight retailers. *The Times of India*. Retrieved from http://timesofindia.indiatimes.com/business/india-business/FMCG-cos-plan-to-fight-retaiilers/articleshow/3733689.cms

Singh, S., & Singh, M. (2012). *Can FDI in retail change the life of farmers? A Case of North India*. Retrieved from https://ssrn.com/abstract=2187425

Singh, S., & Singla, N. (2010). *Fresh food retail chains in India: Organisation and impacts* (CMA Publications 238). Ahmedabad: Centre for Management in Agriculture (CMA) and Indian Institute of Management (IIM).

Tambe, A., & Menon, A. (2013). *India's policy on FDI in multi-brand retail trade*. Retrieved from http://www.iflr1000.com/LegislationGuide/958/Indias-policy-on-FDI-in-multi-brand-retail-trade.html.

Taylor, D. H. (2006). Strategic considerations in the development of lean agri-food supply chains: A case study of the UK pork sector. *Supply Chain Management: An International Journal 11*(3), 271–280. doi:10.1108/13598540610662185

Trienekens, J. H. (2011). Agricultural value chains in developing countries: A framework for analysis. *International Food and Agribusiness Management Review 14*(2), 51–82.

Uttam, P., & Kumar, R. S. (2013). The Indian government and FDI in retail sector in India. *Advances In Management 6*(1), 1-15

ul Haq, Z. (2012). *Food value chain analysis: A review of selected studies for Pakistan and guidelines for further research* (Pakistan Strategy Support Program (PSSP) Working Paper 10). Washington, DC: International Food Policy Research Institute (IFPRI).

UNIDO (United Nations Industrial Development Organization), NORAD Norwegian Agency for Development Cooperation), & IDS (Institute of Development Studies). (2015). *Meeting standards, winning markets. Trade standards compliance. Vienna.* Retrieved from https://www.unido.org/fileadmin/user_media_upgrade/.../TSCR_2015_final.pdf

USITC (United States International Trade Commission). (2009). *India: Effects of tariffs and nontariff measures on U.S. agricultural exports* (USITC Publication 4107, Investigation No. 332-504). Author.

Wallerstein, I. (1997). Eurocentrism and its avatars: The dilemmas of social science. *New Left Review I*(226), 93–107.

Verschuren, P., & Doorewaard, H. (2010). *Designing a research project* (2nd edition). The Hague: Eleven International Publishing.

Annexes

Unless otherwise indicated, all data in this Annex are for 2010-2011 and are from GoI, 2011b ("Indian Horticulture Database").

Annex Table 1: Tomato facts: production

Production					
	Area (thousand ha)	Production (thousand MT)	Productivity (MT/ha)	Exports (thousand MT)	Ratio exported
All India	865	16,526	19	681	4.12%
Andhra Pradesh	296	5,926	20		

Notes: ha: hectare
MT: million tonnes

Andhra Pradesh is the leading producer of tomatoes in India, supplying 36 per cent of all tomatoes.

Annex Table 2: Tomato facts: harvesting

Harvesting season of tomatoes in Andhra Pradesh								Lean season			Peak season
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes: Lean season yellow; peak season green

Tomatoes are stored in cold-storage units especially for fresh fruit and vegetables – except potatoes − or in multi-purpose units. As of 2006, there were 144 cold-storage units for fresh fruit and vegetables (except potatoes) in the south Indian state of Andhra Pradesh, (2.8 per cent of the total number of cold-storage units in India), reaching a capacity of 0.08 million tonnes (0.4 per cent of the Indian total). There were also 1,337 multi-purpose cold-storage units (26.2 per cent of the total number), reaching a capacity of 4.27 million tonnes (019.7 per cent of the Indian total) (Acharya & Agarwal, 2011).

Annex Table 3: Tomato facts: postharvest			
	Mature green	**Pink**	**Ripe**
Temperature	13 – 18°C	10 – 13°C	7 – 10°C
Relative humidity	85 – 90%	–	–
Storage period	2 – 3 weeks	7 – 10 days	3 – 5 days

Annex Table 4: Major domestic supermarket chains in Andhra Pradesh		
	Retail chain/company	**Location and number of stores**
1	Big Bazaar (Future Group) http://www.futureretail.co.in	Hyderabad: 4 stores Vijayawada: 2 stores Visakhapatnam: 1 store
2	D-Mart (Avenue Supermarts Ltd.) http://www.dmartindia.com	Hyderabad: 9 stores
3	Food Bazaar (Future Group) http://www.futureretail.co.in	Vijayawada: 1 store
4	Heritage Fresh (Heritage Group) http://www.heritagefoods.co.in	Hyderabad and Secunderabad: 36 stores
5	HyperCity (K. Raheja Corp. Group) http://www.hypercityindia.com	Hyderabad: 1 store
6	More (Aditya Birla Retail Ltd.) http://morestore.com	Hyderabad: 3 stores (hypermarkets) Supermarkets in 48 cities in Andhra Pradesh
7	Nature's Basket (Godrej Group) http://www.naturesbasket.co.in	Hyderabad: 2 stores
8	Ratnadeep (Ratnadeep Super Market Pvt. Ltd.) www.ratnadeepsupermarket.com	Hyderabad and Secunderabad: 19 stores

Annex Table 4 (cont.): Major domestic supermarket chains in Andhra Pradesh		
	Retail chain/company	**Location and number of stores**
9	Reliance Fresh (Reliance Industries Ltd.) http://www.ril.com	58 stores in Andhra Pradesh
10	Spencer's (RP-SG Group) http://www.spencersretail.com	7 hypermarkets: – Guntur: 1 store – Hyderabad: 2 stores – Kakinada: 1 store – Vijayawada: 1 store – Visakhapatnam: 1 store – Kunrool: 1 store 36 neighborhood stores: – Hyderabad: 24 stores – Rajahmundry: 1 store – Tanuku: 1 store – Vijayawada: 1 store – Visakhapatnam: 6 stores – Vizianagaram: 1 store – Bhimavaram: 1 store – Warangal: 1 store
11	Srikaar (Srikaar Retail Pvt. Ltd.)	Hyderabad: 2 stores

Annex Table 5: Retail and wholesale chains with foreign majority shares in Andhra Pradesh			
	Retail chain/company	**Location and number of Stores**	**Type of business/ comments**
1	Auchan (Max Hypermarket India Pvt. Ltd. / Landmark Group, U.A.E.) http://www.auchanindia.com	Hyderabad: 2 stores	Franchise Hypermarkets
2	Best Price Modern Wholesale (Walmart India Pvt. Ltd., U.S.) http://corporate.walmart.com/our-story/our-business/international/walmart-india	Hyderabad: 1 store Rajahmundry: 1 store Vijayawada: 1 store Guntur: 1 store	Cash & carry wholesale Until 2013: joint venture (50%) with Bharti Enterprises
3	Metro Cash & Carry (Metro Group, Germany) http://www.metro.co.in	Hyderabad: 2 stores Vijayawada: 1 store	Cash & Carry Wholesale
4	Nilgiri's (Actis LLP, U.K.) http://www.nilgiris1905.com	Hyderabad: 1 store Secunderabad: 1 store	Franchise Supermarkets Actis LLP Management buy-in in 2006 (66% shareholder)

Annex Table 6: Modern retailer questionnaire		
German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) Modern Retailers: Questionnaire **Place:** **Date + Hour:** **Team:**		
No.	**Question**	**Answer**
Shop Characteristics		
1	How many square feet does your shop have?	
2	Do you own the shop?	□ yes □ no
3	How many kg of tomato do you sell per week?	
4	How much do you charge per kg of tomato?	
5	How many years have you been selling tomatoes?	
6	Do you use cold storage facilities? If yes, do you use these facilities for tomato storage?	□ yes □ no tomato: □ yes □ no
7	Do you have any other storage facilities (non-CA)?	□ yes □ no
8	How many people do you pay for working in your shop?	
9	Please estimate the operational costs for your business. • labour: • rent: • transport/delivery: • electricity: • other: TOTAL:	
10	Do or did you receive business training? If yes, from whom? (e.g. accounting, advertisement, etc.)	□ yes □ no
Marketing		
11	Where do you buy your tomatoes?	
12	Do you have vehicles to transport products at your disposal? If yes, what kinds of vehicles?	□ yes □ no
13	What is the distance between your shop and the place where you buy your products (km)?	
14	Why do you buy your products from this place (refer to answer above)?	

Annex Table 6 (cont.): Modern retailer questionnaire		
German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) **Modern Retailers: Questionnaire** **Place:** **Date + Hour:** **Team:**		
No.	**Question**	**Answer**
15	How much do you pay per kilo of tomato on average? How many times a week do you restock your tomato supplies?	
16	What is the share of tomatoes of your total sales in this shop?	
17	What is the average shelf life of your tomatoes?	
18	On which criteria do you base your selection of suppliers?	
19	Do your selection criteria differ from your customers' selection criteria? If yes, how?	□ yes □ no
20	Do you have any influence on purchase prices of the tomatoes? Please explain.	□ yes □ no
21	Do you require your suppliers to comply with any quality standards regarding tomatoes? If yes, please elaborate.	□ yes □ no
22	Did you buy from other suppliers 3 years before? If yes, please identify and give reasons.	□ yes □ no
23	Who are the actors in the market where you commonly buy your products from?	□ farmers □ wholesalers □ mandi "operators" □ retailers □ other:
24	Who are the most powerful? Why do you say they are powerful (e.g. prices/standards)?	
25	How much of your tomatoes (%) do you have to throw away per day?	
26	Are there any sanitary standards you need to comply with? If yes, what kind of standards are these?	□ yes □ no
27	Who sets these standards?	
28	How much of grade A,B,C do you sell (in kg/tons)? Grade A= Grade B = Grade C=	

Annex Table 6 (cont.): Modern retailer questionnaire		
German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) **Modern Retailers: Questionnaire** **Place:** **Date + Hour:** **Team:**		
No.	**Question**	**Answer**
29	How do you pay for your supplies? (Payment methods of different sellers = Cash or credit/Immediate or advance or after delivery)	
30	What services do you provide to your customers? (e.g. home delivery, extended payment periods)	
31	Where do you get your market information from (prices, etc.)?	
Changes in the market		
32	Did you adapt your product selection because of customer requirements in the past 3 years? If yes, how?	□ yes □ no
33	What effect did this adaptation have?	
34	Do you know retailers in this area that went out of business?	□ yes □ no Please explain:
35	What role is there for women in retailing?	
36	Did your situation improve or worsen in the last three years?	
37	How do you think your situation will develop in the next three years?	
Retailer Questions		
38	Age:	
39	Gender:	□ m □ f
40	Years of schooling:	
41	How many years have you been in retail?	
42	Does your household have sources of income other than retailing?	□ yes □ no If yes, please list:

Annex Table 7: Traditional retailer questionnaire

German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE)

Traditional retailer Questionnaire

Thank you very much for agreeing to the interview. The German Development Institute, one of the world's top Think Tanks in development policy, is conducting a 3-month comparative research in Andhra Pradesh. The research's objective is to look at the differences in efficiency and income impact of different modalities of agricultural marketing and the value chain on stakeholders in the sector. Your answers will be very useful for us in creating policies that would lead to inclusive growth for all. Please rest assured that your identity will remain anonymous in our report.

No.	Question	Answer
Shop Characteristics		
1	How many square meters does your shop have?	
2	Do you sell tomatoes?	□ yes □ no
3	How many kgs of tomato do you sell per week?	
	How much do you charge per kilo of tomato?	
4	Do you sell potatoes?	□ yes □ no
5	How many kgs of potato do you sell per week?	
	How much do you charge per kilo of potato?	
6	How many years have you been in retail?	
7	Do you use cold storage facilities?	□ yes □ no
8	Do you have a bank loan for your shop?	□ yes □ no
9	If yes, what do you use the credit for?	
10	If no, is it because you don't need one or because nobody gives you credit?	
14	How many people do you pay for working in your shop?	
15	Did you adapt your product selection because of customer requirements? If yes, how?	□ yes □ no
16	What effect did this adaptation have?	
	Do you conduct bookkeeping?	□ yes □ no
	Do you pay any taxes for your business?	□ yes □ no

Annex Table 7 (cont.): Traditional retailer questionnaire		
No.	**Question**	**Answer**
17	Do or did you receive business training? If yes, from whom? (e.g. accounting, advertisement, etc.)	□ yes □ no
	Are you a member of a retailers' organization? □ cooperative □ self-help group □ trade union □ other	
Marketing		
18	Where do you buy your tomatoes/potatoes?	
19	Do you have a vehicle to transport products at your disposal? If yes, what kind of vehicle?	□ yes □ no
20	What is the distance between your shop and the place where you buy your products (kms)?	
30	Why do you buy your products from this place (refer to answer above)?	
	How much to you pay per kilo of tomato on average?	
	How much to you pay per kilo of potato on average?	
31	What are the most important and second most important selection criteria for purchasing your tomatoes/potatoes? □ Price □ Quality □ Quantity □ Timeliness □ Relationship □ Other:	
	How much power do you have over purchase prices and quality standards?	
	What are the quality standards that you require from your suppliers regarding tomatoes/potatoes?	
32	Did you buy from other suppliers 5 years before? If yes, please identify and give reasons	□ yes □ no
39	In case you buy your products from a mandi. Who are the actors in the mandi, that you commonly buy your products from?	□ farmers □ wholesalers □ mandi "operators" □ retailers □…?
	Who are the most powerful? Why do you say they are powerful? (e.g. Prices/standards)?	

Annex Table 7 (cont.): Traditional retailer questionnaire		
No.	**Question**	**Answer**
41	How much of your tomatoes (%) do you have to throw away?	
	How much of your potatoes (%) do you have to throw away?	
42	Are there any sanitary standards you need to comply with? If yes, who sets them?	□ yes □ no
	What kind of standards are these?	
	How much of grade A,B,C do you sell (in kg/tons)? Grade A=Grade B = Grade C=	
45	How do you pay for your supplies? (Payment methods of different sellers = Cash or credit/Immediate or advance or after delivery)	
46	What services do you provide to your customers? (e.g. home delivery, extended payment periods)	
47	Where do you get your market information from (prices etc)?	
Changes in the market		
68	Do you know retailers in this area that went out of business?	□ yes □ no Please explain:
71	What role is there for women in retailing?	
72	Did your situation improve or worsen in the last five years?	
73	How do you think your situation will develop in the next five years?	
Retailer Questions		
1	What is your age?	
2	Gender	□ m □ f
3	Years of schooling in years?	
4	Household/Family size (number): How many dependants do you have?	
5	How many years have you been in retailing?	
7	Does your household have sources of income other than retailing?	□ yes □ no If yes, please list:

Annex Table 8: Farmer questionnaire

German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE)

Farmers' Questionnaire

Thank you very much for agreeing to the interview. The German Development Institute, one of the world's top Think Tanks in development policy, is conducting a 3-month comparative research in Andhra Pradesh. The research's objective is to look at the differences in efficiency and income of different value chains in the sector in the light of FDI. Your answers will be very useful for us in creating policies that would lead to inclusive growth for all. Please rest assured that your identity will remain anonymous.

No.	Question	Answer
Farm and Farming Characteristics		
1	How many acres of land do you cultivate?	
2	Do you own the land you cultivate?	□ yes □ no
3	>> If no, how many acres of land do you own?	
4	If Q1>Q3: What is the ownership type of the residual cultivated land?	
5	What crops do you plant (pls. list)?	
6	How much of the land (acres) do you use for tomato/ potato farming?	
7	How many years have you been in tomato/potato farming?	
8	For tomato/potato, how long is your cropping period?	
9	How many quintals/tons of tomato/potato do you produce per cropping period?	
10	Do you use machinery?	□ yes □ no
	>> If yes, what kind of machinery?	
11	Do you irrigate?	□ yes □ no
	>> If yes, is it from a:	□ well □ borewell (with pump)
12	On <u>average</u>, how many people do you pay for working on your farm (number)?	

Annex Table 8 (cont.): Farmer questionnaire		
No.	**Question**	**Answer**
13	Estimate your average production cost per unit of tom./ pot. for this cropping season • labour: • inputs (pesticides, fertilizers, seeds...): • irrigation electricity costs: • machinery: • others (eg: rent) : • Total:	
14	Household size (number):	
15	How many dependents do you have?	
16	Does your household have sources of income other than farming?	□ yes □ no
	>> If yes, please list:	
17	Do you currently have a loan/ credit for your farm?	□ yes □ no
	>> If yes, who is lending you the money?	□ Bank □ Buyer/Commission Agent/Aggregator □ Others:
	>> If no, is it because you don't need one or because nobody gives you credit?	
Marketing Characteristics		
18	Please describe how do you market/deliver your product? □ rythu bazar □ aggregator □ contract farming □ commission agent (mandi) □ other:	
19	Estimate your average selling price per unit of tomato/ potato for this cropping season in the main channel	
	>> *Same for second channel ...*	
20	Estimate your average marketing cost per unit of tomato/ potato for this cropping season for the main channel	
	>> *Same for second channel ...*	
21	Why do you sell your produce to this/these channels?	

Annex Table 8 (cont.): Farmer questionnaire		
No.	**Question**	**Answer**
22	Are there any standards you need to comply with?	
	>> If yes, who sets them?	
	>> What kind of standards are these?	
23	How much of grade A,B,C do you sell (per unit or %)? Grade A= Grade B= Grade C=	
24	How much of your produce (%) could you not sell?	
	>> Why?	
25	How much of this (%) do you have to throw away?	
For ALL FARMERS		
26	Do you have a vehicle to transport agricultural produce at your disposal?	□ yes □ no
	>> If yes, what kind of vehicle?	
27	What is the distance between your farm and the market where your produce is sold (kms)?	
28	What are the most important and second most important selection criteria for the buyer? □ Price □ Quality □ Quantity □ Timeliness □ Relationship □ Other:	
29	How do you receive your payments? (Payment methods of different buyers= Cash or credit/Immediate or advance or after product delivery)	
	>> What is the payment period?	
30	Have you experienced delayed payments? If yes, how late and why?	□ yes □ no
31	Where do you get your market information from (prices etc)?	
Changes in the market (in the last 3 years)		
32	Did you adapt your production because of buyer requirements? If yes, how?	□ yes □ no
33	What effect did this adaptation have on you?	

Annex Table 8 (cont.): Farmer questionnaire		
No.	**Question**	**Answer**
34	Did you change the marketing channel within the last 3 years?	□ yes □ no
	>> If yes, please identify and give reasons	
35	Do you know farmers who left farming? Why?	
36	Are there farmers who used to sell through the same channel and who have now changed the channel? Please explain	
37	Do women have a role in production or marketing?	
38	Did your economic situation improve or worsen? Please explain	
39	How do you think your situation will develop in the next 3 years?	
Farmer Questions		
40	What is your age?	
41	Gender	□ m □ f
42	Years of schooling (in years)?	
43	How many years have you been in farming? (number)	
44	Do you or did you receive agricultural training in the last 3 years? If yes, from whom?	□ yes □ no
45	Are you a member of a farmers' organization? □ cooperative □ producer group □ farmers' club □ self-help group □ other:	

Annex Table 9: Middlemen questionnaire		
German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE), India LAG **Trader Questionnaire**		
Date/Hour: **Place:** **Interviewee:** **Interviewer:**		
No.	**Question**	**Answer**
Role of Middlemen		
1	What kind of business do you do?	□ Aggregator □ Commission Agent □ Wholesaler □ Trader
2	Are you registered in any mandi?	□ no □ if yes, where?
3	Is it your own business or do you work for someone?	
4	How many years have you been doing the trading?	
5	What kind of products are you trading? Please list	□ Tomato
6	How big is the share of tomato in your trade activity? (% of income)	
7	How many quintals/tons of tomato do you sell a week?	
8	Where do you buy it from? (Directly from the farmer, mandi, other traders..)	
9	How big is your procurement area?	
10	Do you pick up the produce or do the farmers bring it?	
11	Do you bring the produce to your customers or do they pick it up?	
12	Do you own your transport vehicle?	□ no □ if yes, how many
13	Do you have storage facilities?	□ no □ yes
14	Do you have cold storage facilities?	□ no □ yes
15	How much are the fees? (in % of income)	Market fee: Trader license fee: Other:

Annex Table 9 (cont.): Middlemen questionnaire		
No.	**Question**	**Answer**
16	What are your operational costs?	Transport: Rent: Other:
17	Do you provide credits or advanced payments for farmers or customers?	□ no □if yes, to whom?
18	→If yes, for how many farmers? →If yes, for how many customers?	
19	→If yes, what is the average volume of the credits/ advance payments?	
20	Do you have a bank loan or credit yourself?	□ no □ if yes, where from?
21	Are you a member of the Agricultural Market Committee?	□ no □ yes
22	→If yes, please tell us about the influence of commission agents on committee decision making:	
23	Do you do sorting and grading?	□ no □ if yes, where
24	→If yes, how much of grade A,B,C do you sell?	Grade A= Grade B= Grade C=
25	How much of the commissioned produce can you not sell?	
26	How much of this (%) needs to be thrown away?	
Marketing		
27	How much do you pay for tomatoes to the farmer (per kg)?	
28	For how much do you sell tomatoes (per kg)?	First channel: Second channel:
29	What are the criteria for you to choose the farmers?	
30	What are the most important and second most important selection criteria for your buyer? □ Price □ Quality □ Quantity □ Timeliness □ Relationship □ Other:	

Annex Table 9 (cont.): Middlemen questionnaire		
No.	**Question**	**Answer**
31	Are your buyers requiring standards you need to follow? What kind of standards are these (size, quality)?	□ yes □ no
32	How do you pay your suppliers?	
33	How do you receive your payments?	
34	Where do you get your market information from (prices etc)? How do you share the information?	
Changes in the market		
35	Did your situation improve or worsen in the last five years?	
36	What role is there for women in production and marketing?	
37	How do you think your situation will develop during the next three years?	
38	Do you know traders that left the business?	□ yes □ no Please explain:
39	Did you sell to other buyers 5 years ago? If yes, please identify and give reasons	□ yes □ no
40	Do you perceive the emergence of supermarkets and Rythu Bazaars as a competition?	
Traders Questions		
41	Age	
42	Gender	□ m □ f
43	Years of schooling?	
44	Household/Family size (number): How many dependants do you have?	
45	Does your household have sources of income other than trading?	□ yes □ no If yes, please list:
46	Do you consider yourself a risk taker?	

Publications of the German Development Institute/ Deutsches Institut für Entwicklungspolitik (DIE)

Studies

94 Altenburg, Tilman, Cecilia Fischer, Kerstin Huck, Anna Kruip, Sören Müller, & Stefanie Sörensen. (2017). *Managing coastal ecosystems in the Philippines: What Cash for Work programmes can contribute* (108 pp.). ISBN 978-3-96021-033-7.

93 Cottrell, Jacqueline, Kai Schlegelmilch, Matthias Runkel, & Alexander Mahler (2016). *Environmental tax reform in developing, emerging and transition economies* (113 pp.). ISBN 978-3-96021-017-7.

92 Berger, Axel, Dominique Bruhn, Andrea Bender, Julia Friesen, Katharina Kick, Felix Kullmann, Robert Roßner, & Svenja Weyrauch. (2016). *Deep preferential trade agreements and upgrading in global value chains: The case of Vietnam* (119 pp.). ISBN 978-3-96021-016-0.

91 Ströh de Martínez, Christiane, Marietta Feddersen, & Anna Speicher. (2016). *Food security in sub-Saharan Africa: A fresh look on agricultural mechanisation; how adapted financial solutions can make a difference* (171 pp.). ISBN 978-3-96021-009-2.

90 Brüntrup, Michael, Katharina Becker, Martina Gaebler, Raoul Herrmann, Silja Ostermann, & Jan Prothmann. (2016). *Policies and institutions for assuring pro-poor rural development and food security through bioenergy production: Case studies on bush-to-energy and Jatropha in Namibia* (204 pp.). ISBN 978-3-88985-681-4.

89 von Haldenwang, Christian, Alice Elfert, Tobias Engelmann, Samuel Germain, Gregor Sahler, & Amelie Stanzel Ferreira. (2015). *The devolution of the land and building tax in Indonesia* (123 pp.). ISBN 978-3-88985-673-9.

88 Abdel-Malek, Talaat. (2015) *The global partnership for effective development cooperation: origins, actions and future prospects* (409 pp.). ISBN 978-3-88985-668-5.

87 Ashoff, Guido. (2015). *Die Global Governance-Qualität der internationalen Aid Effectiveness Agenda: eine theoretische Analyse und Bewertung der Systemreform der internationalen Entwicklungszusammenarbeit* (220 pp.) ISBN 978-3-88985-663-0.

[Price: 10.00 Euro; books may be ordered from the Institute or through bookshops.]

Discussion Papers

18/2017 Picciotto, Sol. *The G20 and the "Base Erosion and Profit Shifting (BEPS) Project"* (60 pp.). ISBN 978-3-96021-041-2.

17/2017 Li, Xiaoyun. *Should China join the GPEDC? The prospects for China and the Global Partnership for Effective Development Co-operation* (11 pp.). ISBN 978-3-96021-040-5.

16/2017 Mockshell, Jonathan, & Josey Kamanda. *Beyond the agroecological and sustainable agricultural intensification debate: Is blended sustainability the way forward?* (34 pp.). ISBN 978-3-96021-039-9.

15/2017 Beierl, Stefan, Francesco Burchi, & Christoph Strupat. *Economic empowerment pilot project in Malawi: Qualitative survey report* (35 pp.). ISBN 978-3-96021-037-5.

14/2017 Ali, Murad. *Implementing the 2030 Agenda in Pakistan: The critical role of an enabling environment in the mobilisation of domestic and external resources* (37 pp). ISBN 978-3-96021-036-8.

13/2017 Kappel, Robert, Birte Pfeiffer, & Helmut Reisen. *Compact with Africa: Fostering private long-term investment in Africa* (50 pp.). ISBN 978-3-96021-035-1.

12/2017 Serdeczny, Olivia. *What does it mean to "address displacement" under the UNFCCC? An analysis of the negotiations process and the role of research* (40 pp.). ISBN 978-3-96021-034-4.

11/2017 Houdret, Annabelle, & Astrid Harnisch. *Decentralisation in Morocco: The current reform and its possible contribution to political liberalisation* (39 pp.). ISBN 978-3-96021-032-0.

10/2017 Mahn Jones, Timo. *Accountability for development cooperation under the 2030 Agenda* (41 pp.). ISBN 978-3-96021-031-3.

9/2017 Camacho, Luis A., & Merle Kreibaum. *Cash transfers, food security and resilience in fragile contexts: General evidence and the German experience* (20 pp.) ISBN 978-3-96021-029-0.

8/2017 Weigel, Moritz, & Alexander Demissie. *A new climate trilateralism? Opportunities for cooperation between the EU, China and African countries on addressing climate change* (28 pp). ISBN 978-3-96021-030-6.

7/2017 Öhler, Hannes. *A micro-level analysis of the effects of aid fragmentation and aid alignment* (24 pp.). ISBN 978-3-96021-028-3.

[Price: EUR 6.00; publications may be ordered from the DIE or through bookshops.]

Analysen und Stellungnahmen (ISSN 1434-8934)

12/2017 Müller, Corinna, Christiane Ströh de Martínez, & Michael Brüntrup. *Erfolgreiche landwirtschaftliche Mechanisierung in Subsahara Afrika und die Bedeutung der Agrarfinanzierung.*

11/2017 Holzapfel, Sarah, & Michael Brüntrup. *SDG 2 (kein Hunger) in der Deutschen Nachhaltigkeitsstrategie: lassen wir die Hungernden zurück?*

10/2016 Scheumann, Waltina, Annabelle Houdret, & Michael Brüntrup. *Mehr Bewässerungslandwirtschaft in Subsahara-Afrika: durch öffentlich-private Partnerschaften?*

9/2016 Brandi, Clara, Merran Hulse, & Niels Keijzer. *Wie weiter mit den Wirtschaftspartnerschaftsabkommen? Gedanken zu einer vertieften EU-Afrika-Handelspartnerschaft.*

[Analysen und Stellungnahmen free of charge available from the DIE.]

Briefing Papers (ISSN 1615-5483)

10/2017 Groß, Lisa. *Negotiating the implementation of peacebuilding: A challenge for the transition to peace and democracy.*

9/2017 Brandi, Clara, Merran Hulse, & Niels Keijzer. *What next for the Economic Partnership Agreements? Thoughts on deepening the EU-Africa trade partnership.*

8/2017 Henökl, Thomas. *Brexit: Impact, risks and opportunities for European development policy.*

7/2017 Scheumann, Waltina, Annabelle Houdret, & Michael Brüntrup. *Unlocking the irrigation potential in sub-Saharan Africa: Are public-private partnerships the way forward?*

6/2017 Rodríguez de Francisco, Jean Carlo, Annabelle Houdret, & Ines Dombrowsky. *Proceeding with River Basin Management: Legal, financial and political dimensions in Mongolia.*

5/2017 Castillejo, Clare. *The European Union Trust Fund for Africa: What implications for future EU development policy?*

[Briefing Papers free of charge available from the DIE.]

For a complete list of DIE publications:
http://www.die-gdi.de