Since the financial and food price crises of 2007, market instability has been a topic of major concern to agricultural economists and policy professionals. This volume provides an overview of the key issues surrounding food prices volatility, focusing primarily on drivers, long-term implications of volatility and its impacts on food chains and consumers.

The book explores which factors and drivers are volatility-increasing and which others are price level-increasing, and whether these two distinctive effects can be identified and measured. It considers the extent to which increasing instability affects agents in the value chain, as well as the actual impacts on the most vulnerable households in the EU and in selected developing countries. It also analyses which policies are more effective to avert and mitigate the effects of instability.

Developed from the work of the European-based ULYSSES project, the book synthesises the most recent literature on the topic and presents the views of practitioners, businesses, NGOs and farmers’ organisations. It draws policy responses and recommendations for policy makers at both European and international levels.

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FOOD & AGRICULTURE / ECONOMICS / ENVIRONMENT & SUSTAINABILITY
Chapter 5
Transparency of food pricing in the European Union

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Recommended citation:
1 Background: concern about the performance of the food supply chain

The so-called ‘food price crisis’ of 2007–2008 focused attention on the functioning and performance of the food supply chain around the world. In the European Union, the EU Commission began monitoring the situation in 2007 and published an interim report on Food Prices in Europe in 2008 (EU Commission, 2008). In 2009, the Commission communication A Better Functioning Food Supply Chain in Europe concluded that ‘structural weaknesses’ coupled with ‘pervasive inequalities in the bargaining power between contracting parties’ in the food supply chain were contributing to slow and sometimes asymmetric price transmissions that ‘delay necessary adjustments’, ‘prolong market inefficiencies’ and ‘can exacerbate price volatility in agricultural commodity markets’ (EU Commission, 2009, p. 4). Based on this diagnosis, the Commission identified three cross-cutting policy priorities:

1. promote sustainable and market-based relationships between stakeholders in the food supply chain;
2. increase transparency along the chain to encourage competition and improve its resilience to price volatility; and
3. foster the integration and competitiveness of the European food supply chain across Member States.

(EU Commission, 2009, p. 5)

The first of these priorities addresses the possible detrimental impact of unfair trading practices that can arise due to imbalances in the bargaining power of participants in the food supply chain, as well as issues arising from the ability of some participants to exercise market power and distort competition. The second priority addresses the need to improve the quantity, quality and availability of price and market information along the entire food supply chain in particular with a view to ensuring that derivative markets contribute to price discovery and risk management at the agricultural commodity end of the chain. Finally, the third priority is aimed at removing the remaining barriers
that undermine the functioning of the Internal Market and thus reduce resilience to shocks in the food supply chain.

Against this background, the Transparency of Food Prices (TRANSFOP) project brought together researchers from 13 partner institutions in 10 EU Member States between 2011 and 2013 to analyse the transparency of food pricing with a multidisciplinary approach. The main objectives of TRANSFOP were:

1. to address the key aspects of the food supply chain that determine the transmission of price changes from farm to consumer levels, emphasising the role of competition in the intermediate and retail stages of the food supply chain and the regulatory environment in which firms compete;
2. to address how the variation in the structure of the food supply chain across EU Member States contributes to food price adjustment in different countries; and
3. to generate an Action Plan for improving food supply chain performance based on the results of the research.

Members of the TRANSFOP consortium expanded research on the food supply chain throughout the EU in a number of important directions: (a) focusing on comprehensive coverage of price transmission processes across EU Member States; (b) employing new and previously unexplored data sources to understand food price dynamics in the food chain and to assess the pressures underpinning the changing structure of the food supply chain throughout the EU; and (c) developing theoretical insights to assess price dynamics in the context of market frictions. Moreover, throughout the programme, there was close interaction with stakeholders and users of research to ensure that the research was being focused in a way that would have a meaningful impact on policy developments throughout the EU. The aim of this chapter is twofold: first, to outline the main findings of the TRANSFOP research programme in light of the main objectives noted above; and second, to highlight the main issues raised in the form of an ‘Action Plan’ for stakeholders and future research on how to promote more transparency in the food sector in the future. This Action Plan formed the basis of the recommendations from the TRANSFOP consortium which were delivered to the European Commission following the completion of the TRANSFOP project.

2 Main findings

In the course of our work on TRANSFOP, we confirmed that the nature of price transmission in the food supply chain is highly heterogeneous across Member States and individual branches (e.g. dairy, cereals, fruits and vegetables) within the EU. Common methods of analysis and modelling can be applied to different branches and Member States, but the interpretation of their results
is highly specific to the Member State and branch of the food chain that is being considered. In this context, the EU food supply chain is not a single entity. Instead, the functioning of food supply chains differs across Member States, even when the analysis is focused on the same commodity. These differences may reflect a variety of factors, from sector specific issues (for example, the structure of food supply chains in different Member States) to barriers to competition and macroeconomic factors (such as differences in exchange rate regimes).

One of point of departure for TRANSFOP was the observation that experiences with food price inflation as a result of the 2007–2008 and subsequent food price shocks differed considerably across Member States (Lloyd et al., 2015). Our results indicate that, in general, new Member States tended to have more volatile rates of food inflation than other Member States, but that no other grouping could be identified. For example, despite sharing a common currency, the Euro Zone countries did not share a common food inflation experience. Aside from the experience of new Member States, the food inflation experience differed, most notably for the United Kingdom. In addition, food inflation has been more volatile than nonfood inflation. These issues have an important macroeconomic dimension, since how monetary authorities deal with volatile food inflation can have important implications for inflation targeting, aside from the obvious direct impact on households of high and volatile food prices.

Our analysis of price transmission confirmed that the strength of price transmission varies considerably across products and Member States. ‘One-to-one’ price transmission in the food supply chain is, as predicted by theory, the exception and not the rule. One-to-one transmission is only likely to arise in an ideal world of perfect competition and frictionless transactions between spatially separated markets for a homogeneous product. Vertical price transmission between different processing stages of the food chain will, as a rule, not be one-to-one, and even in the spatial context departures from the competitive, frictionless benchmark will likely result in imperfect price transmission (subject to other considerations). For example, assuming the demand conditions are not too stringent, departures from the competitive benchmark will likely result in less than one-to-one price transmission. This has an important implication, since it implies that we should expect that upstream farm level prices would be more responsive to shocks than downstream retail level prices. However, this observation aside, other aspects of the price transmission process were also investigated.

Specifically, we did not find evidence that asymmetric price transmission is prevalent in the food supply chain (see Hassouneh et al., 2015). Furthermore, it was not possible to establish a robust empirical link between either the strength or the symmetry/asymmetry of price transmission and concentration in the branch being studied. However, this conclusion must be considered tentative as analysis was limited by data availability. Overall, there is evidence that farm prices adjust more strongly to shocks than prices at other stages of the food
supply chain. Theoretical analysis that extends existing models of price transmission to include the costs of vertical coordination, search, monitoring and contract enforcement shows that under realistic conditions price transmission in the food chain can be complex, displaying nonlinearity such as threshold effects and price ranges over which no transmission takes place. This has implications for empirical work on price transmission in the food supply chain that remain to be explored.

Analysis in TRANSFOP using highly disaggregated scanner data on retail food prices generated insights into retailers’ pricing strategies. Elements of the research programme focused on retailers’ use of sales (i.e. temporary price reductions) which characterises the pricing practices of many retailers and is an important dimension of how retailers compete. We found that sales make a significant contribution to overall retail price variation. In the UK, only a small proportion of the observed price variation is common across the major retailers, suggesting that cost shocks originating at the manufacturing level are not one of the main sources of price variation (Lloyd et al., 2014).

We also found that once sales had been accounted for, retail prices can be ‘sticky’. While this is consistent with the price transmission analysis reported above, the sticky nature of food prices relates to the underlying pricing strategies of retailers. The results revealed substantial heterogeneity in retailer pricing strategies, even for identical products. This is an important dimension of the functioning of the food-retailing sector that had not been observed to date.

The penetration of private label products is an increasingly important feature of the retail food sector, and several TRANSFOP consortium members analysed the price dynamics of private label versus nationally branded products. This perspective enables us to observe differences that relate to the structure of the food supply chain, since private labels suggest some vertical control over pricing as distinct from the manufacturer–retailer relationships that characterise the pricing of branded products (Bonnet et al., 2015). Important differences in the pricing of national brands compared with private labels were found. Cost pass-through is different for private labels and national brands, and for some national brands it can even exceed 100% (i.e. retailers sometimes amplify cost variations to consumers). Sales are more relevant for national brands than for private labels, and brand loyalty by consumers tends to reduce the magnitude and the frequency of price promotions, especially for the strongest brands. We find no evidence that stronger brands use asymmetric cost–price adjustments to generate higher margins, but it appears that national brand prices tend to increase with increasing private label shares. This may be evidence that retailers use private labels to discriminate prices among different groups of consumers.

Access to scanner data also highlighted some other features of the retailing sector across the EU that had not been accounted for in research that exists to date. Thus, while national data sources typically report a single price for a commodity aggregate (e.g. bread), we also note that prices and retailer strategies can also vary according to retail outlet: our analysis for Germany and Italy where
TRANSFOP researchers had access to detailed data shows that price levels, price changes and the use of sales can vary according to whether the product is on sale at a hypermarket, supermarket or convenience store. This, in turn, also matters for addressing price transmission, which can therefore vary by outlet. In addition, and following some recent research in macroeconomics, scanner data can be used to derive more appropriate price indices to derive inflation measures which will therefore vary by outlet (and commodity chain) as well (see Castellari et al., 2015).

Regarding concentration in the food supply chain and its possible implications for price transmission, our analysis identified several, sometimes counteracting, effects. This issue is complex. Generally, increasing concentration can be expected to reduce price transmission. However, in the context of a vertically related food supply chain, concentration has both horizontal and vertical effects. As a result, there is no clear expectation as to how increasing concentration will affect price transmission. Furthermore, increased concentration may not be harmful for consumers if it affects bargaining power which, in turn, has an influence on upstream suppliers. This is an issue that requires further attention, both from the research communities and competition authorities.

In large part, the difficulty with concentration measures is that they may not be accurate means via which to gauge the intensity of competition in the food sector (or any other sector for that matter). As is well known in industrial organisation, it is behaviour rather than firm numbers that really matters for addressing competition. Thus, while the UK has a relatively concentrated retail food sector, a prolonged investigation by the UK Competition Commission did not find that the food retailing chains acted against the consumer interest. However, addressing competition issues is complex, with both horizontal and vertical dimensions noted above, and where the nature of the links between stages in the food supply chain may give rise to anticompetitive concerns that easily accessible concentration ratio data will not pick up. Understanding competition in the food chain and how it relates to price transparency across EU Member States will be an ongoing policy and research issue for many years to come.

How consolidation in the food sector occurs and what form it takes is another issue that was addressed in the TRANSFOP programme. The focus here was on distinguishing between horizontal and vertical mergers. These two alternative forms can have different implications for the price transmission process and there are offsetting influences on how price transmission will be affected. Specifically, increasing horizontal concentration due to mergers and acquisitions can allow enterprises to realise economies of scale which, in turn, can lead to offsetting increases in price transmission. Similarly, a vertical merger or acquisition that eliminates the problem of double marginalisation in a particular food supply chain can increase price transmission. Vertical mergers and acquisitions can also reduce vertical coordination cost and the risk of ‘hold up’ and other market failures. To the extent that this is true, increasing
vertical concentration need not lead to weaker price transmission in the food supply chain (Swinnen and Vandeplas, 2015). The food sector throughout the EU is characterised by both forms of consolidation, and future research should address this issue in greater detail. Importantly, to the extent that consolidation may improve the functioning of the supply chain, removing barriers to promoting an active market for corporate control is an important consideration for providing a more unified policy space throughout the EU.

TRANSFOP also identified a number of important gaps in our current understanding of processes in the food supply chain and issues that will require additional research in the future. One of these issues concerns the need to carefully disentangle static concerns, such as a low farm share in the food retail bill, from dynamic developments, such as technical change and growing consumer preferences for convenience and variety that lead to increasing value added in downstream stages of the food supply chain.

Another issue with potentially critical implications for the analysis of price transmission and food supply chain performance is the need to account for the multi-product nature of pricing behaviour, especially at the processing and retail levels; retail chains may have thousands of products on sale in a given outlet at any point in time. Hence, inter- and intra-substitutability between products is a further issue for the researcher to address. Price transmission analysis that follows individual components of the food supply chain (e.g. fluid milk from the farm gate to the retail store) fails to account for the fact that processors transform farm products into broad ranges of differentiated products and that retailers pursue pricing strategies that encompass groups or baskets of final products. This therefore has implications for studying price transmission and poses a wider range of challenges that do not appear in more traditional time series econometric approaches to the transmission process.

To the extent that aspects of the competition process underpin many of the issues associated with food price dynamics across the EU, further research into the complex nature of the competition process in food supply chains is also a prerequisite for more meaningful insights. In this regard, it is important to address not only horizontal competition issues in the food supply chain, but also vertical issues. These are not unrelated, since the horizontal dimension of competition interacts with the vertical dimension; i.e. reducing the number of firms or outlets at one stage also reduces the number of buyers or sellers at other stages. Similarly, vertical control also affects the intensity of horizontal competition. More specifically, addressing in detail competition between stages in the food supply chain is important in assessing the form and extent of potentially unfair business practices and gauging the extent of buyer power. It should be noted here that pioneering work by TRANSFOP researchers used a structural model employing scanner data to identify how alternative forms of contracts between retailers and food manufacturers affected the price transmission process, using data for the sugar and dairy sectors in France. From the policy end, some attention to these issues has already been alerted in the recent
report by the High Level Forum for a Better Functioning Food Supply Chain (EU Commission, 2014). The increasing concerns associated with vertical relations in the food supply chain call for further focused research on these issues.

A final finding that emerged from TRANSFOP is that the available data do not permit us to address and answer many of the most pressing questions about food prices and the performance of the food supply chain in a consistent manner across commodity sectors and across EU Member States. Data are especially lacking at the intermediate stages of the food supply chain between the farm and consumer ends. It is precisely at these intermediate stages – for example, where large processors contract with large food distributors and retailers – that transparency is most lacking but critically necessary if research is to cast light on questions of concentration, competition and price transmission. But even at the farm gate and consumer levels, homogeneous data across a larger set of Member States and key food products are required to broaden the basis for robust results on the nature and patterns of price transmission. While price data are clearly of special importance in this regard, data on quantities transacted, market structures and contractual arrangements are required to link price transmission results to underlying structural causes and distributional implications.

3 Elements of an action plan

Drawing on the results outlined above, we drafted a four-part Action Plan. These actions should also be seen in connection with the recent Report of the High Level Forum on the functioning of the food supply chain (EU Commission, 2014).

1) Maintain and strengthen the current commitment to monitor prices. Instruments such as the European Food Prices Monitoring Tool8 and the Commodity Price Dashboard9 have made an important contribution to increasing the transparency of food pricing in the EU. However, the coverage that these instruments provide across Member States and food products is uneven. Many Member States established or scaled up national price monitoring instruments in the aftermath of the 2007–2008 and subsequent food price crises.10 These national instruments often include more detail and analysis than can be found in the EU instruments, but they are very heterogeneous. As a first step, Member States could contribute to a meta-dataset that contains a comprehensive descriptive inventory of the data that are already available at the national level. Second, this inventory could be used to identify a series of steps to harmonise and extend national price monitoring instruments, beginning with relatively easy measures (e.g. publishing weekly data that are used to calculate the monthly averages that have been published to date) and progressing to more ambitious steps (e.g. persuading Member States to agree on a core set of products for which all will publish comparable price data).

To improve the empirical basis for analysis that can inform policies for the food supply chain, we also recommend that the coverage of prices at
intermediate stages of the chain be enhanced. In addition, the temporal and spatial resolution of the data that are collected should be increased for a set of key products across all Member States. For the most part, EU price monitoring tools provide information on monthly national average prices. The aggregation (averaging) that takes place to produce these data can obscure underlying price transmission processes. This is especially the case in large Member States, where spatial averaging purges data of information about regional differences. Furthermore, research has demonstrated that temporal averaging (i.e. converting daily or weekly observations into monthly averages) systematically distorts the speed of price transmission that is estimated using price data. For this reason, we recommend that regionalised weekly price data be collected and monitored at initial, intermediate and terminal stages of the chain for a set of critical food products.

2) **Enhance monitoring of the structure and the functioning of the food supply chain** in different Member States and for critical food products. Information on prices in the supply chain is important but only part of a larger equation. Theory shows that food prices depend in a complex manner on other input prices and contractual arrangements, factors that are not static but rather subject to change over time. Information on these factors is needed to inform price transmission analysis, to interpret the results of this analysis and to derive robust conclusions for policy. For example, as reported above, we were not able to establish a clear link between either the speed or the symmetry/asymmetry of price transmission and concentration in different branches of the food supply chain. However, this result may be due to the fact that homogeneous information about concentration at various stages of the food chain for a representative set of products and Member States is not available. Hence, we were obliged to work with proxy measures of concentration that may have distorted the results; as we have noted above, these proxy measures do not necessarily reflect the nature or intensity of competition throughout the food supply chain.

We condition this call for improved monitoring with the caveat that transparency does not always have unambiguously beneficial effects on the performance of the food supply chain. Enterprises have a legitimate interest in protecting confidential information, and in some cases increased transparency might even foster collusion between actors in the food supply chain. It is therefore important to distinguish between public transparency, which may be constrained to limit such negative effects, and controlled access to more detailed, confidential information that can be analysed to support policymaking and regulatory efforts. Increased cooperation between research and competition authorities to permit an in-depth analysis of specific cases of conduct and performance in the food supply chain could prove extremely fruitful for both parties, and should therefore be developed and tested.

3) **Explore the potential of scanner data** to increase the transparency of food pricing in the EU. Scanner data can generate valuable insights into price transmission for private labels as opposed to national brands; they can help us understand the role of sales and promotions in retail price variability; and they can
cast light on food pricing behaviour in different types of retail outlets. Scanner
data on prices and quantities sold can also be used to analyse the implications
of food price volatility for consumer welfare.

However, there are also many challenges associated with the use of scanner
data to analyse food price transmission and food chain performance. These
challenges include the high cost of scanner data and the fact that they are col-
lected by private enterprises that do not appear to have clear and consistent
policies for making these data available for public or research use. Questions
regarding the coverage provided by scanner data in different Member States
and for different product groups, and whether and how these data can be used
to generate representative insights into food pricing, need to be addressed. The
sheer size of scanner datasets and the volume of data that would accumulate
and require processing if scanner data from most or all Member States were
collected systematically also give rise to questions. More research into the chal-
lenges and the potential uses of scanner data is required to provide a basis for
informed decisions and productive use.

4) Continue to improve the functioning of the food supply chain. In its 2009 Com-
munication, the Commission stated that ‘significant imbalances in bargaining
power between contracting parties are a common occurrence and . . . may
lead to unfair trading practices, as larger and more powerful actors seem to
impose contractual arrangements to their advantage’ (European Commission,
2009, p. 5). However, as outlined in the Report of the High Level Forum,
getting stakeholders to agree on precise definitions of what constitutes ‘unfair trading
practices’ and on Principles of Good Practice that reflect a common under-
standing of fairness in business-to-business relations has proven difficult (EU
Commission, 2014). Our results indicate that with appropriate safeguards in
place, mergers and acquisitions that increase concentration in the food supply
chain can also improve its functioning, for example by allowing firms to cap-
ture economies of scale or by reducing double marginalisation in the chain.
Although there are exceptions in some Member States and branches of the
food chain, in general it appears that food retailers have more market power
than processors and wholesalers. Hence, there is a pronounced need to ensure
appropriate monitoring and regulation of the food retail sector.

Some stakeholders and policy makers hope that allowing and encouraging
producers of agricultural commodities to organise themselves could reduce
imbalances in bargaining power vis-à-vis processors and thus make produc-
ers less susceptible to unfair trading practices. For historical reasons, producer
organisations are, however, less prevalent in new than in old Member States,
and it is unclear whether policies to encourage such organisations will succeed
in the new Member States. More detailed research on the forms and impact
of unfair trading practices and how they can be effectively monitored and
appropriately regulated will require further research with strong collaboration
between stakeholder and research communities.
Notes

1 FP7 Grant KBBE-265601–4.
2 Details of the analyses which we report on here can be found on the TRANSFOP website: www.transfop.eu. In addition, a summary of the issues pertinent to recent research on price dynamics across the EU food sector can be found in McCorriston (2015).
3 More specifically, recognising that raw agricultural commodities are only one input into the production of final retail food products, ‘perfect’ price transmission should reflect the share of the agricultural input in total cost of producing the final product.
4 Essentially, that the slope of the demand function is not ‘too’ convex’. See Lloyd et al. (2015) for a more detailed exposition of the theory of price transmission.
5 Private labels refer to the retailer distinguishing the product as being produced under the instruction of and marketed within its stores as the specific retailer’s brand, while national brands relate to products produced by food manufacturers and sold nationally and, in most cases, in all retail chains. The growing penetration of private labels has been one of the main features of the food-retailing sector in recent years.
6 The role of brands in spatial and temporal pricing decisions is discussed in Loy and Glauben (2015).
7 The risk of hold-up is related to a bargaining power situation that arises from verbal or nonstandardized contracts.
8 See http://ec.europa.eu/enterprise/sectors/food/competitiveness/prices_monitoring_en.htm
10 See, for example France’s Observatoire de la formation des prix et des marges des produits alimentaires (https://observatoire-prixmarges.franceagrimer.fr/Pages/default.aspx); Belgium’s Prizenobservatorium (http://economie.fgov.be/nl/fod/structuur/Observatoria/Prijzenobservatorium/#.Uu5sL7Q5sXc); and Italy’s Osservatorio Prezzi e Tariffe (http://osservaprezzi.sviluppoeconomico.gov.it/).

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