MEI Ideas for a More Prosperous Society

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THE MIRACLE OF SUPERMARKETS

THE PERSPECTIVE OF THE AUSTRIAN SCHOOL OF ECONOMICS

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The Miracle of Supermarkets
The Perspective of the Austrian School of Economics

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HIGHLIGHTS

Although we take supermarkets for granted, our access to such a quantity and variety of food products on demand and at any time of year is absolutely remarkable. This "miracle" is all the more impressive given that it is the result of spontaneous and voluntary collaboration between millions of people, most of whom will never meet. This paper will examine the historical evolution and the current operation of supermarkets and the numerous intermediaries that supply them, using the analytical framework of the Austrian School of Economics.

Chapter 1 – The Austrian View of Markets as Transmitters of Knowledge

- The most famous and lasting contribution made by members of the Austrian School is their nearly century-old contention that a decentralized market process will always spontaneously outperform the diktats of central planners in terms of delivering improved standards of living.
- The Austrian economist Ludwig von Mises argued that the main flaw of central planning was the absence of a price system, which makes it impossible for central planners to choose between different combinations of inputs to produce in the most efficient manner.
- Friedrich Hayek argued that no single decision-maker could ever gather and make use of knowledge which is inherently dispersed, contextual, and ever-changing. The greater size and complexity of a modern economy, far from requiring centralized bureaucratic planning, is rather an argument *against* centralized decision-making.
- Prices provide a signal that communicates information about the relative scarcity or availability of goods and services (including the price of labour) deemed desirable by society.
- Through their activities with both potential buyers and sellers, middlemen identify unrecognized opportunities for mutual gain and contribute to the discovery processes of market economies.
- In short, the middleman adds value by buying at a certain price and reselling at an uncertain price, and marketing products to meet consumer demand.
- The computation of quantitative data by a central planner cannot replace the process of prices, profits, and losses in a free market. Human action is not constant and cannot be predicted based on quantitative data from the past, and centralized bureaucratic planning cannot overcome this key pitfall.
- The development of computers, online communication and transactions, and the increased importance of information in our modern economy have actually made Austrian insights into knowledge and decentralized planning more relevant than ever.

Chapter 2 – The Evolution of Supermarkets and the Role of Intermediaries in the Food Supply Chain

- The work of intermediaries eventually made possible the development of a remarkable retail institution, the supermarket, which is just the final link in a long chain of intermediaries that connect commodity producers and final consumers.
- A supermarket can be thought of as a node of intermediaries who coordinate the demands of final consumers and the potential supplies of producers and manufacturers in Canada and abroad.
- The history of food retail in North America over the past two centuries has been one of an ongoing discovery process which led middlemen to come up with ways of reducing transaction costs and acting as conveyers of knowledge so that products would be sold in locations ever more remote from where they were produced.
- The main development in the second part of the 20th century was the emergence of the supermarket format in cities and suburban areas. These stores and their attendant distribution infrastructure benefitted from the development of ever more sophisticated information processing technologies.
- When new products are involved, food brokers often act as representatives for food producers because of their superior knowledge of specific segments and people involved in the distribution and retail market.
- Our modern food supply chain would be unmanageable if every shipment had to be examined in order to assess its value and safety for consumption. Brands and grade names are only two of the numerous innovations developed to create and transmit

bits of information that have become essential for handling food products.

- The story of food retail in Canada over the past century and a half mirrors to a large extent that of the United States, with American chains opening up stores in Canada and Canadian stores copying the latest American innovations.
- One recent trend in food retailing has been online shopping. According to estimates from researchers and consultants in the retail sector, online food sales by Canadian retailers amount to about 2% of total food sales.
- E-commerce has recently taken a new turn with the automatization and the computerization of orders. Instead of employees preparing orders for customers, new automated systems use robots to find and fetch items for employees, which saves a lot of time and reduces the amount of food waste.
- The fact that Amazon recently bought Whole Foods also indicates that the trend toward shopping for food online is likely to continue growing.

Chapter 3 – Turning Back the Clock: Would We Be Better Off with Shorter Supply Chains?

- Calls to eliminate seemingly useless intermediaries and transportation through the promotion of increased local food production for nearby consumers are nothing new.
- Many Canadian food activists have called for various kinds of government interventions, be it the support of co-ops in the retail sector or national planning to deliver greater local food production, as a means of raising farmers' income while fighting alleged increased corporate control.
- The analyses and forecasts of past critics, from predictions of rising food prices to declining competition in retail, have been proven wrong time and time again.
- One way or another, the work done by intermediaries in the food business is simply indispensable, as small producers trying to set up an alternative model quickly realize.
- Another model favoured by activists to shorten supply chains, minimize the role of intermediaries, and bring food producers and consumers closer together is that of urban agriculture.
- Montreal-based Lufa Farms, a rooftop greenhouse and distribution agent, is widely hailed as one of Canada's most innovative and successful urban food producers, yet the cost of groceries remains a challenge for Lufa's model.
- While Lufa is hailed as a model of green urban agricultural practices, a closer analysis suggests that the real value of the business is in its wholesaling division, as its rooftop greenhouse production model is not scalable, and the environmental footprint of its logistics system might negate any advantage gained from closer proximity to consumers.
- The Lufa business model caters to middle and upper-middle class consumers, and gives no indication of ever being able to address the needs of households with lesser means.
- The question of food production and retailing is of particular interest, since Canada's federal government recently tasked its Department of Agriculture and Agri-Food to develop a "Food Policy for Canada" through an extensive process of consultation.
- The fact that significant progress in the production and delivery of ever more affordable and diverse food was achieved in the absence of a government-led food strategy doesn't seem to carry much weight with participants to this process.
- The way forward must not be built around nostalgia for geographical proximity, but around ever more innovative practices, as developments in information technology have made centralized approaches obsolete.
- This is especially true for economic activities such as food distribution and retailing in which market solutions are provided on a daily basis to address the changing tastes of consumers and deal with the complexity of long supply chains.

INTRODUCTION

Even though we visit supermarkets all the time, most of us know very little about how they work, and we take for granted the abundance of products found there. However, seen from a broader historical perspective, our access to such a quantity and variety of food products on demand and at any time of year is absolutely remarkable.

Since their appearance in the 20th century, supermarkets have made enormous progress, which allows us today to access thousands of products from the four corners of the world, at ever more affordable prices. This "miracle" is all the more impressive given that it occurs spontaneously: No authority directs the process by which these products travel to us. It is the result of spontaneous and voluntary collaboration between thousands, even millions of people, most of whom will never meet: from pickers, ranchers, and farmers to truck drivers, train conductors, and ship captains, not to mention buyers, wholesalers, shelf stockers, managers, and others, all the way to the cashier.

How can we explain the miracle of supermarkets that we enjoy daily? And what is the best economic system to encourage innovation and progress in the food distribution sector?

The goal of this paper is to answer these questions by examining the historical evolution and the current operation of supermarkets and the numerous intermediaries that supply them. Our analytical framework is the Austrian School of Economics, which holds that the market must be seen as an entrepreneurial process of trial and error that, over time, coordinates the actions of those who participate in exchanges by making the best use of their specific knowledge.

The food distribution and retailing sector has undergone profound changes in recent years, whether in terms of the growing concentration of certain activities, automation, the development of local agriculture, or online shopping. These issues are particularly relevant in Canada, where the federal government recently launched a consultation process on the adoption of a "Canadian food policy." As we suggest in this paper, however, history and economic theory teach us that the desire to regulate this sector through political interventions that run counter to the results of market processes can only reduce the range of products offered and raise their prices.

The first chapter presents a summary of the main teachings of the Austrian School of Economics that help to understand the development of supermarkets, in particular the role of decentralized markets in communicating relevant information and encouraging innovative behaviour among the different actors involved in the process.[1] By returning to the economic calculation debate that took place from the 1920s to the 1940s, we will show that it is not desirable, or even possible, to centrally manage a complex economy. A market order is better able to coordinate complex societies in which each economic actor possesses just a fraction of all available knowledge. We will emphasize among other things the role of intermediaries in transmitting these bits of information along the supply chain.

Our access to such a quantity and variety of food products on demand and at any time of year is absolutely remarkable.

The second chapter presents a chronology of the development of supermarkets in North America that illustrates how, thanks notably to the services of intermediaries and to technological advances of all kinds, food has become more and more accessible and varied, and of higher quality.

Despite this remarkable progress, numerous voices have for decades denounced the uncertainty produced by the market, or the lack of value added by intermediaries in the supply chain. The Canadian government recently echoed these claims by organizing a broad consultation on the matter. The third chapter therefore shows, using concrete examples, the inevitable problems that result from eliminating intermediaries and market discipline.

Austrian economic analysis has never been more relevant, now that new technologies allow information to circulate more easily. The lessons of the past, which this analysis allows us to understand, are very valuable in the elaboration of current public policies. As we shall see, the most important of these lessons is that decentralized market processes are still the best way to move forward and continue to improve the distribution of food.

1. For a general presentation of the analyses of the Austrian School of Economics on the issue of entrepreneurship, see Peter J. Boettke and Mathieu Bédard, *How to Foster Entrepreneurship in Canada: The Teachings of the Austrian School of Economics*, MEI, Research Paper, September 2017.

CHAPTER 1

The Austrian View of Markets as Transmitters of Knowledge

Since its inception in 1871 with the publication of Carl Menger's *Principles of Economics*,[2] the Austrian School of Economics has developed several themes that distinguish it from other, often better known, schools of economic thought.[3] Some of the main features of the Austrian perspective are:

- its methodological individualism and focus on the subjective perspective of economic actors as the basis for all valuations and costs;
- its method of deducing logical implications from basic concepts describing human behaviour, as opposed to an inductive approach that generates contingent economic conclusions from observed data;
- its skepticism toward the use of mathematical models and aggregate data;
- its view of the economy as a dynamic ongoing process of coordination, rather than a system already in a static state of general equilibrium;
- its view of the central role played by entrepreneurs as economic actors who identify errors and opportunities; and
- its emphasis on constant economic readjustment due to the passage of time, the dispersion of knowledge, and the uncertainty of the future.[4]

Arguably the most famous and lasting contribution made by members of the Austrian School is their nearly century-old contention that a decentralized market process would always spontaneously outperform the diktats of central planners in terms of delivering improved standards of living. The case for the impossibility of economic calculation in a socialist system put forward by Ludwig von Mises, Friedrich Hayek, and their disciples revolved around a) the role played by market prices as a means of transmitting information and b) the fact that the dispersed knowledge held by countless market participants could only ever be tapped efficiently through a spontaneous process of trial, discovery, and error correction that could never be replicated by a few central planners, no matter how brilliant they might be.

The arguments made by Austrian scholars strongly suggest that the outcome of the proposals put forward by planning enthusiasts will be far inferior to those delivered spontaneously in the context of a market economy.

This view of market economies as complex systems spontaneously arising from the decentralized interactions of millions of individuals is no longer as distinctive as it was a few decades ago. Nonetheless, to this day, many politicians, academics, and activists fail to fully grasp this perspective, instead viewing market competition as both inefficient and wasteful, and believing that national policies can deliver better and fairer outcomes. As we shall see, however, the arguments made by Austrian scholars on the impossibility of central planning strongly suggest that the outcome of the proposals put forward by planning enthusiasts will be far inferior to those delivered spontaneously in the context of a market economy.

The Market as an Informational Process

Since at least the days of Adam Smith, two and a half centuries ago, certain thinkers have argued that the market system is not solely based on the division of labour through which individuals specialize in what they do best and trade with one another; it is also a complex social system in which prices convey information, thus facilitating the spontaneous and decentralized social cooperation of millions of individuals.[5] Smith and his followers understood the market economy and its price system as an "indication to all men how they may employ

2. Carl Menger, *Principles of Economics*, Ludwig von Mises Institute, 2007 [1871].

3. Apart from the mainstream neoclassical (or orthodox) school, some of the most influential perspectives include the (new/post-) Keynesian, Chicago, and (neo-) Marxist schools, among others. They differ in methodological approach, definition of concepts, preoccupations, themes, and of course, policy recommendations.

4. For a concise overview of Austrian methodology, see Jesús Huerta de Soto, *The Austrian School: Market Order and Entrepreneurial Creativity*, Edward Elgar, in association with the Institute of Economic Affairs, 2008.

5. Alberto Mingardi, "Dispersed Knowledge and Individual Freedom: The Forgotten Popular Political Economy of Thomas Hodgskin," *Cosmos + Taxis*, Vol. 2, No. 1, 2014, pp. 18-30.

their time and talents most profitably for themselves, and most beneficially for the whole society."[6]

These arguments were developed further in the 1920s and 1930s by Austrian scholars who made the case for the impossibility of rational economic calculation in a socialist (i.e., centrally planned) system. The debate between Austrians and their opponents took place in the aftermath of the First World War, which had seen governments take over much of the economy and manage it through bureaucratic planning. Some socialists proposed that peacetime economies should be organized in a similar fashion.[7]

Mises argued that the main flaw of central planning was the absence of a price system, which would make it impossible for central planners to choose between different combinations of inputs to produce in the most efficient manner.

The Austrian economist Ludwig von Mises immediately pointed out some of the key shortcomings of this approach in his classic paper *Economic Calculation in the Socialist Commonwealth* (1920). Mises argued that the main flaw of central planning was the absence of a price system, which would make it impossible for central planners to choose between different combinations of inputs to produce in the most efficient manner. For instance, what materials should be used to build a bridge, and should it be built in the first place? What crops should be planted and in what quantities? What is the most efficient way of feeding and processing livestock? As he put it: "Where there is no free market, there is no pricing mechanism; without a pricing mechanism, there is no economic calculation."[8]

In his paper, Mises stated that prices act like a compass, allowing producers to determine which resources to use in order to meet the needs of consumers as efficiently as possible. Money and the price system are thus essential for entrepreneurs and managers to be able to make these economic calculations and allocate scarce resources

Carl Menger (1840–1921)

so as to create as much economic value as possible for consumers.[9] In this context, prices (along with their corollary, profits and losses) guide the decisions made by market actors.[10]

Early critics of Mises argued that it would be possible to simulate a price system in a planned economy with a system of equations representing production at an aggregate level.[11] They proposed to satisfy the conditions of a perfectly competitive equilibrium through decentralized socialism which would imitate the capitalist price system.[12]

In his answer to the new challenge offered by proponents of central planning, Friedrich Hayek emphasized what has come to be known as the "knowledge problem,"

6. Thomas Hodgskin, quoted in Alberto Mingardi, *ibid.*, p. 25.

7. Bruce Caldwell, "Hayek and Socialism," *Journal of Economic Literature*, Vol. 35, No. 4, 1997, pp. 1858-1859.

8. Ludwig von Mises, "Economic Calculation in the Socialist Commonwealth," in Friedrich Hayek (ed.), *Collectivist Economic Planning*, Routledge & Kegan Paul LTD, 1963 [1935], p. 111.

9. *Ibid.*, pp. 102-110.

10. Steven Horwitz, "Monetary Calculation and the Unintended Extended Order: The Misesian Microfoundations of the Hayekian Great Society," *The Review of Austrian Economics*, Vol. 17, No. 4, 2004, pp. 307-321.

11. Bruce Caldwell, *op. cit.*, footnote 7, p. 1860.

12. This was the solution proposed by Oskar Lange and Abba Lerner. Israel M. Kirzner, "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach," *Journal of Economic Literature*, Vol. 35, No. 1, 1997, pp. 77-78.

Ludwig von Mises (1881–1973)

in *The Use of Knowledge in Society*,[13] surely his most famous and influential paper.[14] The development of his theory of knowledge contributed to his 1974 Nobel Prize in Economics.[15]

The knowledge problem can be stated briefly as follows: How is it possible to coordinate economic activity when knowledge is widely dispersed among individuals?

Hayek denied the validity of the mathematical approach of would-be central planners not only because of the practical difficulty of collecting sufficient data, but also because much if not most of the relevant knowledge is related to the "particular circumstances of time and place."[16] In other words, much useful knowledge cannot be captured by statistics, because they cannot convey important minor differences between things.[17] On the contrary, much economically relevant knowledge is tacit, highly subjective, qualitative, and cannot be reduced to a simple accumulation of data.[18] Tacit or "inarticulate" knowledge cannot easily be communicated in words or numbers. For instance, consider how difficult it is to describe how to keep one's balance on a bicycle.[19]

Hayek argued that no single decision-maker could ever gather and make use of knowledge which is inherently dispersed, contextual, and ever-changing. The greater size and complexity of a modern economy, far from requiring centralized bureaucratic planning, is rather an argument *against* centralized decision-making. To clarify, the issue is not whether an economy should be planned or not, but who should do the planning and for whom. Should it be market participants who can tap into unique sets of skills and knowledge of the marketplace built up through trial, error, and improvement and who can coordinate activities with one another through the price system? Or instead a few central planners who think they know better than individuals themselves what is good for them?[20]

Prices act like a compass, allowing producers to determine which resources to use in order to meet the needs of consumers as efficiently as possible.

Hayek thus emphasized the informational efficiency of market systems, which not only coordinate but actually give rise to relevant knowledge for decision-making at the individual or local level.[21] Prices provide a signal that communicates information about the relative scarcity or availability of goods and services (including the price of labour) deemed desirable by society. They act as "surrogates for knowledge," conveying past data and experience that entrepreneurs and consumers have at their disposal in making their decisions.[22]

13. Friedrich Hayek, "The Use of Knowledge in Society," *American Economic Review*, Vol. 35, No. 4, 1945, pp. 519–530.

14. Kenneth J. Arrow *et al.*, "100 Years of the *American Economic Review*: The Top 20 Articles," *American Economic Review*, Vol. 101, No. 1, 2011. This article had 16,000 citations on Google Scholar in September 2018.

15. The Royal Swedish Academy of Sciences, "Economics prize for works in economic theory and inter-disciplinary research," Press release, October 9, 1974.

16. Friedrich Hayek, *op. cit.*, footnote 13, p. 521.

17. *Ibid.*, p. 524.

18. Don Lavoie, "The Market as a Procedure for Discovery and Conveyance of Inarticulate Knowledge," *Comparative Economic Studies*, Vol. 28, No. 1, 1986, pp. 1-19.

19. *Ibid.*

20. Friedrich Hayek, *op. cit.*, footnote 13.

21. *Ibid.*, p. 526.

22. Steven Horwitz, *op. cit.*, footnote 10, p. 314.

The "discovery process" inherent in a competitive and decentralized marketplace thus produces better outcomes than a centrally planned one. The price system also has the significant advantage of triggering rapid changes in an economy in response to new scarcities or opportunities.

Mises and Hayek, however, emphasized that to function properly, a market economy needed a few institutional building blocks such as private property rights, freedom of contract, and limited government.[23] Government interventions that artificially lower or increase prices, or discourage long-term investment by not securing private property rights, result in a less rational allocation of resources because they do not allow for knowledge to be used as effectively, and thus cause greater misery than would otherwise exist.

Hayek argued that no single decision-maker could ever gather and make use of knowledge which is inherently dispersed, contextual, and ever-changing.

Perhaps the most famous short essay on the extraordinary benefits of spontaneous market coordination is Leonard Read's *I Pencil*.[24] Using the example of the production of a pencil, Read shows how no central authority could ever have gathered all the relevant knowledge to plan its production efficiently because no one individual or small group of individuals could ever know all the various aspects of the production of a pencil, be it the knowledge and skills required to manufacture saws, the know-how to cut down trees, the tinting of the pencil, the knowledge needed to provide the factory with energy, or the expertise required to mine graphite or produce rubber. Of course, these are but a few of the countless inputs and processes required to produce something as mundane as a pencil. In the end, millions of individuals, each specializing in ever more minute activities, nonetheless contribute to a process the complexity of which they could never grasp.

Mostly left out of Read's account, however, is that the coordination of these activities was ultimately made possible by people who specialize in trade and marketing rather than production. Yet the activities of these individuals are no less crucial to the functioning of a modern economy, and should not be taken for granted.

Friedrich A. Hayek (1899–1992)

The Role of Middlemen as Conveyers of Knowledge

Because of their emphasis on knowledge and coordination, Austrian economists have always stood against a long tradition of thinkers who, from Ancient Greeks to modern-day Marxists, have considered middlemen and intermediaries as essentially parasitic in nature, a useless class whose profits come at everybody else's expense.[25] In practice, however, cutting out the middleman means eliminating his specific knowledge of the particular circumstances of time and place that make complex economic coordination possible.

Only in the smallest and most primitive economies is the role played by intermediaries negligible because of the

23. Peter J. Boettke, "Information and Knowledge: Austrian Economics in Search of Its Uniqueness," *The Review of Austrian Economics*, Vol. 15, No. 4, 2002, p. 264.

24. Leonard E. Read, "I, Pencil," Foundation for Economic Education, 2015 [1958].

25. David D. Monieson, "A Historical Survey Concerning Marketing Middlemen as Producers of Value," *Journal of Historical Research in Marketing*, Vol. 2, No. 2, 2010, pp. 218-226.

prevalence of what is known as a "double coincidence of wants," meaning that a producer can deal directly with someone eager to buy his good and pay for it with another one in the buyer's possession. In any reasonably complex economy, however, most people tend to trade through middlemen.[26] Through their activities with both potential buyers and sellers, middlemen identify unrecognized opportunities for mutual gain and contribute to the discovery processes of market economies.[27]

Middlemen provide producers with information about the demands of consumers, and consumers with information about the constraints of production. Middlemen's activities, such as retailing, are thus a "process of transferring goods and information about them from producers to final consumers" while "enabling the flow of information back again."[28] As Mises stated: "The retailer is not just a dispensable intermediary. Retailing is a necessary function within the operation of the market economy. It is one of the devices daily adjusting production anew to the changing demands of the consumers."[29] Retailers and wholesalers inform producers about the ever-changing tastes of consumers, and they inform consumers about the scarcity of some goods. They help solve the knowledge problem by reducing transaction costs, making possible transactions that could not have happened without their services.[30]

In short, the middleman adds value by buying at a certain price and reselling at an uncertain price, and marketing products to meet consumer demand. For instance, a chocolate bar would be less valuable for consumers without the packaging (containing information), the convenience of being able to buy it close to home, the ability to compare it to other products on the same shelf, and its low price thanks to intermediaries' economies of scale.

The activities of middlemen include insuring, transporting, tracking, advertising, and retailing merchandize. In the chain of intermediaries between production and sale, each middleman performs a task that producers could not perform as efficiently themselves. For instance, if a producer retains the services of a transportation company, a marketing agency, and a retailer, it is only because carrying out such activities on his own would be costlier than relying on people who specialize in doing so for a large number of other producers.[31] This is another illustration of the benefits of the division of labour and of individuals specializing in one narrow activity for the benefit of many others who specialize in other things.[32]

The Persistent Pitfalls of Centralized Planning

What would happen to a market economy where intermediaries are eliminated by government intervention and replaced with more centralized planning? For several decades, certain authors have argued that, in theory at least, advances in information technologies would make it possible to solve Hayek's "knowledge problem" by making sufficient information available to central planners.[33]

The informational efficiency of market systems not only coordinate but actually give rise to relevant knowledge for decision-making at the individual or local level.

Austrians have long maintained, however, that such advances do not invalidate their core arguments against central planning. As Mises stated, "technology tells us how a given end could be attained by various means which can be used together in various combinations, or how various available means could be employed for certain purposes. But it is at a loss to tell man which procedures he should choose out of the infinite variety of imaginable and possible modes of production."[34] It is this contextual knowledge of the market which enables economic actors to engage in rational economic calculation. Prices, along with profits and losses, are the guide to choosing the economically efficient option from

26. Walter Block, "Chapter 24: The Middleman," in *Defending the Undefendable*, Ludwig von Mises Institute, 2008 [1976], pp. 179-183.

27. Israel M. Kirzner, "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach," *Journal of Economic Literature*, Vol. 35, No. 1, 1997, pp. 67-73.

28. Claire Walsh, "Retail Trade," in Joel Mokyr (ed.), *Oxford Encyclopedia of Economic History*, Oxford University Press, 2003.

29. Ludwig von Mises, "Observations on the Cooperative Movement," in Richard M. Ebeling (ed.), *Money, Method, and the Market Process*, Ludwig von Mises Institute, Kluwer Academic Publishers, 1990, pp. 259-260.

30. Michael C. Munger, "The Third Entrepreneurial Revolution: A Middleman Economy," Department of Political Science, Duke University, February 24, 2015, p. 22.

31. Walter Block, *op. cit.*, footnote 26.

32. Laurence Vance, "Middlemen, Government, and the Free Market," *The Future of Freedom Foundation*, November 1st, 2017.

33. For an in-depth discussion of these theories which emerged in the 1960s and 1970s, see Don Lavoie, *op. cit.*, footnote 18.

34. Mises, quoted in Peter J. Boettke, "Economic Calculation: The Austrian Contribution to Political Economy," *Advances in Austrian Economics*, Vol. 5, 1998, p. 153.

among the "infinite variety" of technologically possible ones. The computation of quantitative data by a central planner cannot replace this process. Human action is not constant and cannot be predicted based on quantitative data from the past, and centralized bureaucratic planning cannot overcome this key pitfall. The computer (or the "Excel spreadsheet") approach to the economy proposed by central planners is "like building a car without an engine (the entrepreneurs) and without road signs (the market) to signal the right way to go."[35]

An extreme case of central planning within a democratic context was "Project Cybersyn" in Chile. Running on the promise of a "Chilean road to socialism," the Allende government was elected in 1970 and, after having nationalized key industries, attempted to centrally plan the economy with the help of computers. A cybernetics engineer was asked to design a centralized control room in the Presidential palace to determine in real time the production of the factories of the democratic socialist regime.[36] Data from factories was projected in real time to the central planners and was subjected to simulation to predict the economic future. Not only did they attempt to control production, but also measure the proportion of employees present at work.[37] Though the experience was cut short by General Pinochet's military coup, the economic disaster of Allende's experiment,[38] characterized by consumer shortages, is a stern warning against attempts to supplant decentralized market processes involving millions of individuals and replace them with a few central planners.[39]

Of course, the Chilean case is but one of many in which the promise of central planning was soon put to rest. Indeed, even nominally planned central economies had to rely on the use of money along with profit and loss indicators.[40]

New Technologies and Information Theory

The development of computers, online communication and transactions, and the increased importance of information in our modern economy have actually made Austrian insights into knowledge and decentralized planning more relevant than ever.[41] Far from signaling the death of middlemen and the advent of an economy planned from the top down by algorithms, these changes have had the opposite effect, as illustrated by the popularity of online platforms such as Uber, Airbnb, and Amazon that reduce transaction costs, provide information about options and prices, ensure trust in contractors, and operate a reliable transaction system.[42]

Through their activities with both potential buyers and sellers, middlemen identify unrecognized opportunities for mutual gain and contribute to the discovery processes of market economies.

The pricing systems of these platforms often do not rely on the centralization of data, but on decentralized tools that reflect ever-changing circumstances and consumer tastes. "Dynamic pricing" on platforms to book train tickets, hotel rooms, or holidays relies on ever-changing data on availabilities and preferences (i.e., how much you are ready to pay according to your past choices). The best example is Uber, which relies on "surge pricing" that reflects changing demand, taking into account specific circumstances, be it inclement weather or public transit strikes. This price mechanism helps coordinate the activities of drivers, bringing more of them on the road in particular neighbourhoods or at particular times of the day or night so that consumers can use the service.[43]

Even internet tools we use on an everyday basis are related to the Hayekian theory of knowledge. The search algorithm used by Google relies on the decentralized revealed preferences of individuals on the web (website links). Google's algorithm is like a decentralized market

35. Nicolás Cachanosky, "You Can't Run an Economy with Spreadsheets," *The Free Market*, June 2014, p. 5.

36. Evgeny Morozov, "The Planning Machine," *The New Yorker*, October 13, 2014. For a full account of the implementation of this project, see Jessica Eden Miller Medina, "The State Machine: Politics, Ideology, and Computation in Chile, 1964-1973," PhD thesis, MIT, 2005, pp. 204-250.

37. Jessica Eden Miller Medina, *ibid.*, p. 230.

38. To be clear, in criticizing Allende's disastrous central planning experiment, we in no way mean to imply any support whatsoever for General Pinochet's military coup or subsequent brutal regime.

39. According to a 1972 poll, 99% of upper-class and 77% of middle class Chileans viewed buying essential products as difficult; between 1972 and 1973, the prices increased by 183.3%. *Op. cit.*, footnote 37, p. 244.

40. Don Lavoie, *op. cit.*, footnote 18, p. 4.

41. Samuel Bowles, Alan Kirman, and Rajiv Sethi, "Retrospectives: Friedrich Hayek and the Market Algorithm," *Journal of Economic Perspectives*, Vol. 31, No. 3, 2017, p. 217.

42. Michael C. Munger, *op. cit.*, footnote 30, p. 2; Marina Krakovsky, *The Middleman Economy: How Brokers, Agents, Dealers, and Everyday Matchmakers Create Value and Profit*, Palgrave Macmillan, 2015.

43. John Naughton, "Want a cheap Uber taxi? Wait till no one else wants one," *The Guardian*, September 20, 2015.

that takes into account the preferences of individuals, thus helping deliver what Ludwig von Mises called consumer democracy.[44] "Google search works because it relies on the millions of individuals posting links on websites to help determine which other sites offer content of value. We assess the importance of every web page using more than 200 signals and a variety of techniques, including our patented PageRankTM algorithm, which analyzes which sites have been "voted" to be the best sources of information by other pages across the web."[45]

The activities of middlemen include insuring, transporting, tracking, advertising, and retailing merchandize.

Another example is Wikipedia, created by Jimmy Wales. After first attempting to design an encyclopedia based on the knowledge of a handful of scholars in a centralized way, Wales came to adopt the Hayekian view that changes and adaptations of the content of articles was handled more smoothly in a decentralized fashion than by a centralized authority. As Wales himself stated, "Hayek's work on price theory is central to my own thinking about how to manage the Wikipedia project. […] One can't understand my ideas about Wikipedia without understanding Hayek."[46] Indeed, the online encyclopedia can be seen as a metaphor for the price system, as each article is the result of the judgments of many minds possessing decentralized knowledge.[47] Only through this approach could Wikipedia ever have created over 45,800,000 pages.[48]

Websites and applications that rely on the ratings of users (Trip Advisor, Yelp, etc.) are also based on decentralized and highly subjective knowledge. Users share their experience about a specific service, at a specific place and time. No one can control this process of information sharing from a centralized command post, but it provides relevant information to guide consumers in their choices.

The following chapters will apply these Austrian insights to a discussion of the historical evolution of supermarkets and the role played by intermediaries in delivering ever more abundant, diverse, and affordable food to consumers. This perspective will also be used to criticize recent activist calls to supersede these processes through greater government intervention in the context of a national food policy. As will be argued, turning back the clock on the results spontaneously delivered by market processes can only result in less abundant, diverse, and affordable offerings.

44. "When we call a capitalist society a consumers' democracy we mean that the power to dispose of the means of production, which belongs to the entrepreneurs and capitalists, can only be acquired by means of the consumers' ballot, held daily in the market-place. Every child who prefers one toy to another puts its voting paper in the ballot-box, which eventually decides who shall be elected captain of industry." Ludwig von Mises, *Socialism: An Economic and Sociological Analysis*, Yale University Press, 1951 [1922], p. 21.

45. Google, quoted in Peter Van Valkenburgh, "We Are All Hayekians Now: The Internet Generation and Knowledge Problems," PeterVV.com, April 18, 2013.

46. Jimmy Wales, quoted in Katherine Mangu-Ward, "Wikipedia and Beyond," *Reason*, June 2007.

47. For a presentation of the functioning of Wikipedia, see Cass R. Sunstein, *Infotopia: How Many Minds Produce Knowledge*, Oxford University Press, 2006, pp. 147-196.

48. Wikipedia, Size of Wikipedia, consulted September 11, 2018.

CHAPTER 2

The Evolution of Supermarkets and the Role of Intermediaries in the Food Supply Chain

From the early days of markets and civilization, intermediaries have been engaged in assembling, grading, packaging, processing, storing, transporting, financing, distributing and advertising food products of all kinds. Their work eventually made possible the development of a remarkable retail institution, the supermarket, which is just the final link in a long chain of intermediaries that connect commodity producers and final consumers.

And yet, despite the fact that food and other products offered on supermarket shelves have become ever more abundant and affordable over time, generations of social thinkers, activists, and politicians have claimed that the elimination of middlemen would benefit both producers and consumers.[49] These critics, however, misunderstand how intermediaries, whether retailers, wholesalers,[50] or other specialized service providers (see Figure 2-1), are ultimately tasked with anticipating and supplying ever more efficiently an expanding range of goods that consumers want. As such, a supermarket can be thought of as a node of intermediaries who coordinate the demands of final consumers and the potential supplies of producers and manufacturers in Canada and abroad.

As we saw in Chapter 1, far from unnecessarily adding to costs by "taking their cut" for providing easy-to-replace services, intermediaries play a crucial role by making the right quantity of goods available at the right time and place. They actually lower costs because they specialize in services that nobody else could offer as efficiently. From the perspective of Austrian economics, they discover, create, manage and disseminate information without which markets could not function. This chapter will highlight the useful role intermediaries have played in the development of the food supply chain in North America since the 19th century.[51]

From Subsistence Agriculture to the Country Store

In primitive societies where subsistence agriculture prevails, producers and consumers belong to the same household and have no access to valuable inputs produced elsewhere, nor to intermediaries who could sell some of their production to distant consumers. As a result, the number of economic actors, inputs, flows, processes, and outputs involved in food production remains small. By contrast, in more developed economies, the food supply chain becomes ever more complex over time, resulting in an ever greater and more diversified number of inputs and actors involved in the feeding of populations. Today, consumers sit at the end of a much longer chain of interconnected producers, processors, and distributors, and their supporting firms.

A supermarket can be thought of as a node of intermediaries who coordinate the demands of final consumers and the potential supplies of producers and manufacturers in Canada and abroad.

Thanks to this ever more sophisticated division of labour, we now have access to "more adequate nutrition than ever before and acquire that nutrition at the lowest cost in all human history, while the world has more people than ever before—not by a little but by a lot."[52]

At the turn of the 20th century, spending on food represented almost 43% of an average American household's total spending; that proportion is now less than 13%

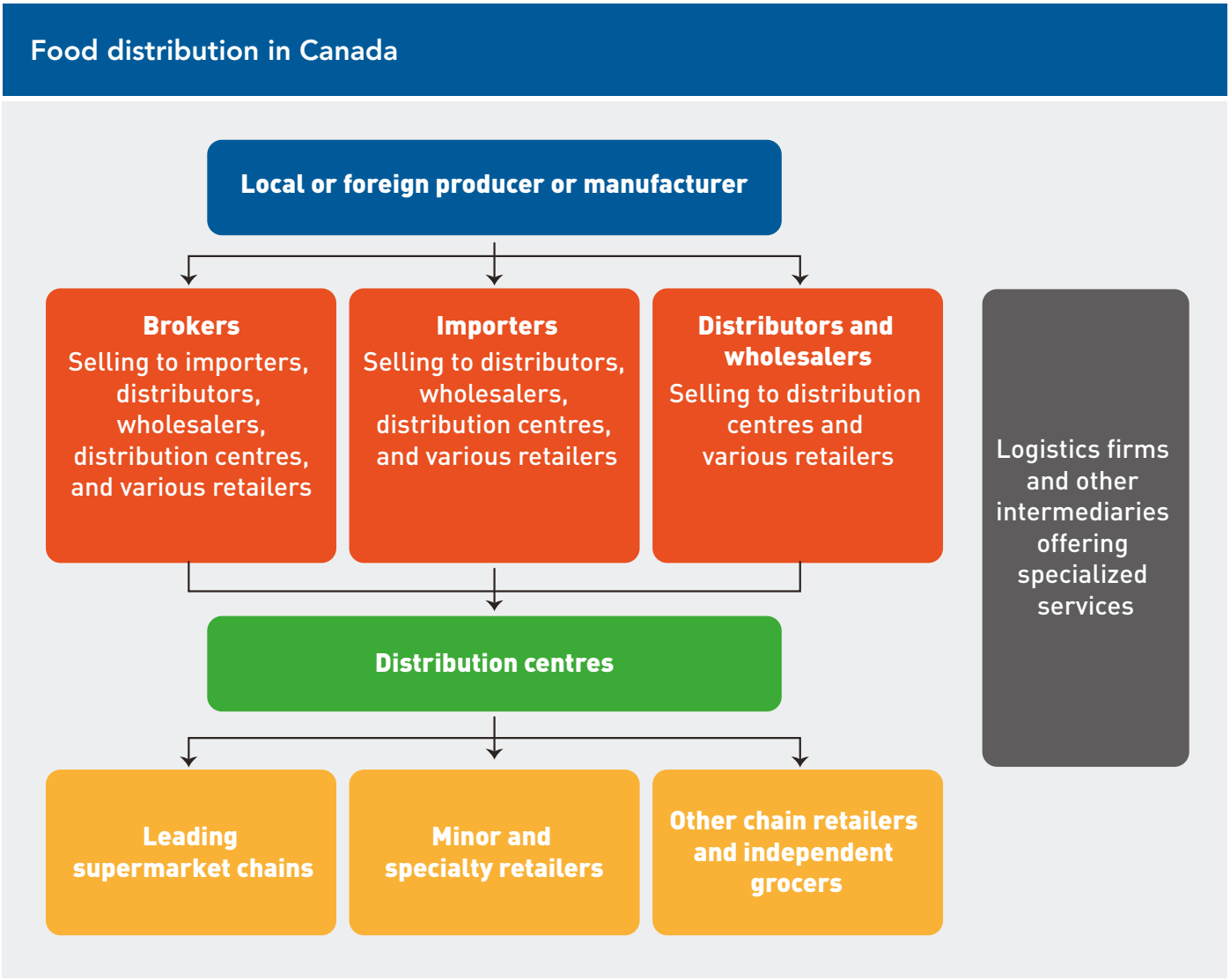
49. David D. Monieson, "A Historical Survey Concerning Marketing Middlemen as Producers of Value," *Journal of Historical Research in Marketing*, Vol. 2, No. 2, 2010, pp. 218-226.

50. Wholesalers include wholesale merchants who buy and sell goods they take legal title to and brokers who buy and sell goods for others on commission.

51. For a more detailed analysis of the European case, see Jean-Joseph Cadilhon *et al.*, *Wholesale Markets and Food Distribution in Europe: New Strategies for Old Functions*, Discussion Paper, Centre for Food Chain Research, 2003; Jim Quinn and Leigh Sparks, "The Evolution of Grocery Wholesaling and Grocery Wholesalers in Ireland and Britain since the 1930s," *International Review of Retail, Distribution and Consumer Research*, Vol. 17, No. 4, 2007.

52. D. Gale Johnson, "Population, Food, and Knowledge," *American Economic Review*, Vol. 90, No. 1, March 2000, p. 1.

Figure 2-1



Source: Adapted from Maria A. Arbulu, *Retail Foods: The Retail Landscape of Canada*, United States Department of Agriculture, February 2017, p. 27.

(see Figure 2-2).[53] In Canada, the share of personal spending on food has also declined significantly over the years, and is now essentially at the same level as in the United States.[54]

As every casual shopper of a certain age knows, food is not only much cheaper in relative terms, but the range

In more developed economies, the food supply chain becomes ever more complex over time, resulting in an ever greater and more diversified number of inputs and actors involved in the feeding of populations.

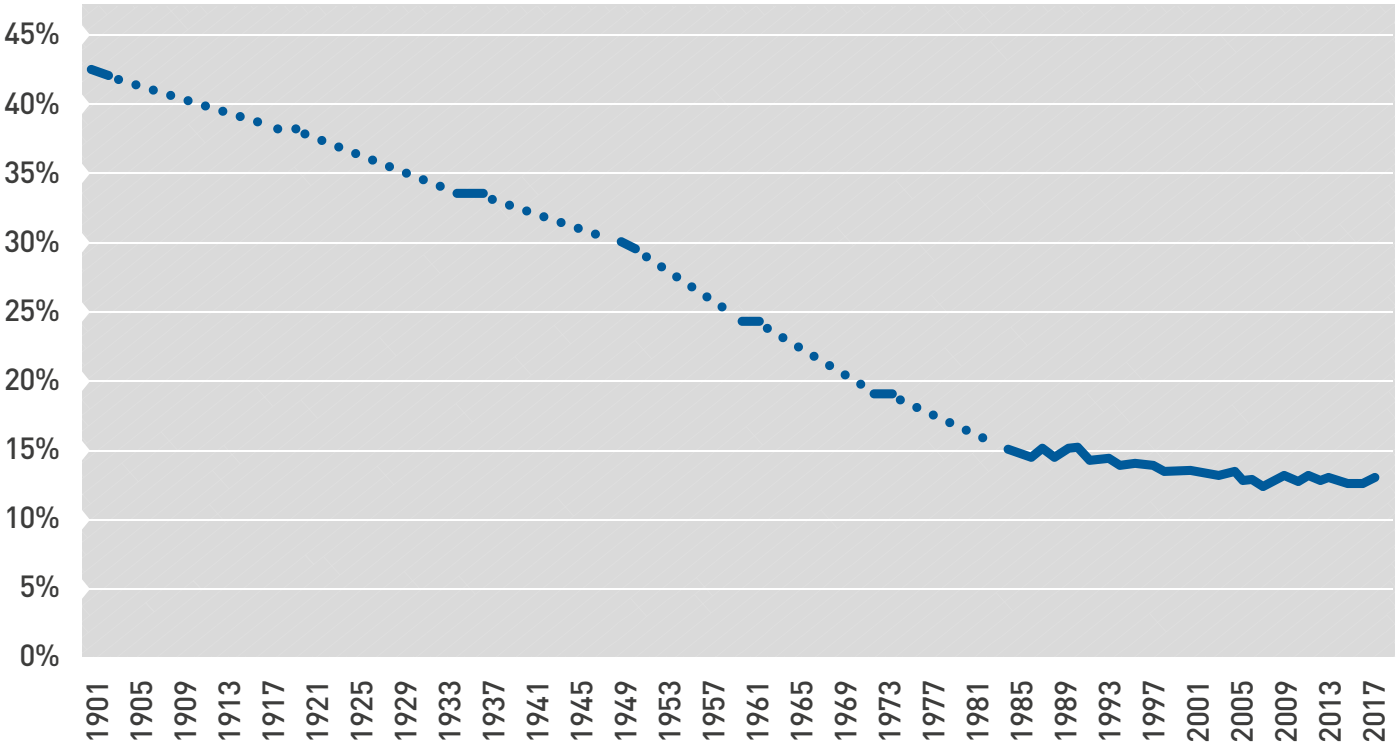
and quality of products offered in a typical supermarket is far greater than even a few decades ago. As the food policy analyst Robert Paarlberg observes, the claim that "junk-food prices […] have fallen while fruit and vegetable prices have not" is bogus, for the price of traditional

53. For a broader overview of the relevant issues and data, see among others, Max Roser and Hannah Ritchie, "Food Prices," Our World in Data, 2018; Hannah Ritchie and Max Roser, "Diet Compositions," Our World in Data, 2018; Max Roser and Hannah Ritchie, "Food per Person," Our World in Data, 2017. See also Human Progress, "Food Consumption," "Food Production," and "Malnutrition," 2018.

54. The latest figure is 12.7% in 2016. Total spending is calculated before income taxes and includes property taxes. Statistics Canada, CANSIM Table 11-10-0222-01: Household spending, Canada, regions and provinces, 2016.

Figure 2-2

Household spending on food as a share of total household spending in the United States, 1901-2017



Note: Total spending is calculated before income taxes and includes property taxes. For the period between 1901 and 1984, only a few data points are available, and the time series was completed using the average annual growth rate. The dotted line is therefore an estimation.
Sources: Elaine L. Chao and Kathleen P. Utgoff, *100 Years of U.S. Consumer Spending Data for the Nation, New York City, and Boston*, U.S. Bureau of Labour Statistics, May 2006, pp. 6-55; U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 1984-2017.

in-season fruit and vegetable products has fallen, while the variety and year-round availability of fresh products have increased dramatically.[55] How has this come about?

As with other aspects of economic development, greater specialization and innovation in retail trade first occurred in cities. Much archeological evidence confirms the universal and important presence of open air and covered markets, temporary stalls, and permanent shops in the cities of the ancient world. For instance, the ancient Roman city of Pompeii contained "hundreds of examples of fixed shops with counters and open, street-fronting windows, including some large shops on two floors and even 'fast-food' outlets."[56] Historically, open air urban marketplaces offered, among other things, a wide variety of raw and processed foods, while bakers,

These general stores were already playing a key role, in their localized setting, as intermediaries between sellers and buyers of food, not just by providing a place where sales can happen, but by allowing crucial information about markets to be transmitted in both directions.

55. Robert Paarlberg, *Food Politics: What Everyone Needs to Know*, Oxford University Press, 2010, p. 86. Of course, as in the past, the situation of lower income households and of people living in remote communities remains problematic, but this does not negate the substantial progress accomplished in the past four decades.

56. Claire Walsh, "Retail Trade," *Oxford Encyclopedia of Economic History*, Oxford University Press, 2003.

butchers, and fishmongers practised their specific trades nearby.[57]

The history of food retail in North America over the past two centuries has been one of an ongoing discovery process which led middlemen to come up with ways of diminishing transaction costs and acting as conveyers of knowledge so that products would be sold in locations ever more remote from where they were produced. Fixed-shop retailing—including both general stores and speciality shops—took over from markets, fairs, and peddlers in the nineteenth century. As most people travelled on foot at the time, these stores were numerous, were located in close proximity to consumers, and often delivered what was purchased. Most were small and because of the limited volumes they handled, charged sizable markups on the goods they had purchased from a large number of intermediaries. Although some evidence suggests that small chains have existed for centuries, perhaps even millennia, in most cases these businesses were sole proprietorships.[58]

In a competitive marketplace, intermediaries who failed to deliver value would have lost market shares either to other intermediaries or to firms that integrated upstream and downstream activities.

Outside of urban areas, retail trade in Canada and the United States was first characterized by trading posts and general stores that sold a few food items and other basic necessities of life. The following description of northeastern Ohio in the early 19th century is representative of the situation.

Since transportation was then slow and expensive, the products of each district were mostly consumed locally. The typical "thrifty 100-acre farms" of this region were made up mostly of jacks of all trades. Surpluses of meat were sold to neighbours and nearby villagers. Farmers brought their grain to the local mill and the leather of the cow killed for family consumption to the local tanner; sold their extra eggs, butter, and maple syrup to the local store; and bought their few good pieces of clothing from the local tailor or general store. The small surpluses of local farmers which accumulated slowly found their way to the seaboard in exchange for the necessary products local inhabitants could not produce themselves. In this context, the local farmer "received very little money, and kept it almost no time at all."[59]

The main nexus of trade and knowledge intermediation in such a setting was the general store.[60] Drawing on surviving account books from nearby southern Ontario, the historian Doug McCalla documents how general store owners sold mostly goods that came from elsewhere, such as tea, rum, and cotton. They also acted as intermediaries between local people by facilitating the sale of eggs, butter, apples, pork, and oats, among other locally produced goods.[61] According to McCalla, the general store was "a source of local information about who had something to sell and who needed something"[62] while some sales "might be of goods the merchant accepted from customers as payments on their accounts,"[63] implying he would not use them himself, but knew who might buy them.

These general stores were therefore already playing a key role, in their localized setting, as intermediaries between sellers and buyers of food, not just by providing a place where sales can happen, but by allowing crucial information about markets to be transmitted in both directions.

The Advent of Large-Scale Retailing and Wholesaling

Large-scale retailing emerged in the middle of the 19th century. With the advent of coal-powered steamships and railroads, the products offered at general stores became

57. Colin Stephen Smith, *The Market Place and the Market's Place in London, c. 1660-1840*, PhD thesis, University College London, 1999, p. 33.

58. Paul B. Ellickson, *Handbook on the Economics of Retailing and Distribution*, Edward Elgar Publishing, 2016, p. 370. On the physical evolution of food retail stores, see James M. Mayo, *The American Grocery Store: The Business Evolution of an Architectural Space*, Greenwood Press, 1993.

59. Edward Francis Adams and Louis Adelbert Clinton, *The Modern Farmer in His Business Relations: A Study of Some of the Principles Underlying the Art of Profitable Farming and Marketing, and of the Interests of Farmers as Affected by Modern Social and Economic Conditions and Forces*, NJ Stone Company, 1899, pp. 11-17.

60. For a discussion of the nature and functioning of general merchandise stores in America at the time, see among others, Paul H. Nystrom, *Economics of Retailing, Volume I: Retail Institutions and Trends*, The Ronald Press Company, 1930, pp. 79-83; James M. Mayo, *op. cit.*, footnote 58. For a survey of past debates on self-sufficiency/barter vs. market trade in rural contexts at the time, see among others Allan Kulikoff, "The Transition to Capitalism in Rural America," *William and Mary Quarterly*, Vol. 46, No. 1, January 1989, pp. 120-144.

61. Other local products traded at the time included lumber, firewood, fodder for animals, and leather.

62. Quote from Teresa Pitman, "Pre-Confederation Farmers Weren't Really Self-Sufficient: Historian Challenges Myths about Simpler Times of the Past," *University of Guelph*, February 15, 2011.

63. Douglas McCalla, *Consumers in the Bush: Shopping in Rural Upper Canada*, McGill-Queen's University Press, 2015, p. 116.

more diverse in nature and more global in origins.[64] From then on, food retail activities were impacted by new food production, processing, transportation, and distribution technologies; by the presence or removal of political constraints on everything from international trade to opening hours; by new competition from generalist retailers; and by the changing tastes of an ever larger, wealthier, and more diverse consumer base. Food retailers tried to cope with these changes in various ways, from the ownership structure, format, and size of stores to the range and quality of products offered, as well as service levels and pricing strategies.[65]

To give a sense of how much less integrated the food wholesale business once was, "in 1929, a national survey found 585,980 food stores in the United States—one for every 51 American families"—supplied by 13,618 wholesale distributors of groceries (one wholesaler for every 43 food retailers). Wholesalers, "in turn, distributed the products of nearly sixty thousand canneries, sugar-beet mills, slaughterhouses, soap factories, and other plants making everything from brooms to baking powder."[66] In the 1930 edition of his classic *Economics of Retailing*, Columbia University Professor Paul Nystrom described the main food distribution channels of his time as follows:

> Fruits and vegetables are commonly sold by producers to local buyers who in turn ship their goods to wholesalers in the larger markets. Sales are made by wholesalers to jobbers and they in turn make their sales to retailers who finally supply the consumers.
>
> Fresh meats pass through similar channels. Cattle raisers make their sales of stock to local buyers who in turn sell to the packing houses. The larger packing houses distribute through branch houses which in turn sell to retail meat dealers who take care of the requirements of consumers.
>
> Manufactured groceries are usually sold by the producers either to brokers or directly to wholesalers who in turn sell to retailers. A number of large manufacturers each making many consumer products sell directly to retailers. Still other manufacturers, particularly of branded goods, make their own sales to wholesalers but help stimulate the demand from retailers by means of specialty salesmen who visit the retail trade.[67]

In a competitive marketplace, intermediaries who failed to deliver value would have lost market shares either to other intermediaries or to firms that integrated upstream and downstream activities. For instance, a pioneer of vertical integration in the food trade was Thomas Lipton who, in the late 19th century, successfully created an integrated tea business that combined the functions previously handled by buyers, importers, brokers, wholesalers, blenders, and retailers.[68] While Lipton was an extreme case, over time many large retailers found it more advantageous to procure much if not most of their merchandise directly from manufacturers, a recent example being Costco.

The 1990s saw the creation of retail supercentres and big box stores that continued the trend of greater product variety and differentiation, affordability, and convenience.

The pioneering organization in the "chain store" revolution was The Great Atlantic & Pacific Tea Company, better remembered as A&P. As suggested by the name, the company's beginning in 1859 was in the mail-order tea business, but it branched out to grocery stores a few decades later, revolutionizing the trade. Among other innovations and refinements of older practices, A&P management standardized both store layouts and product offerings, including store brands and private labels produced in A&P-owned factories. In a model still typical of most large supermarket chains today, "it owned a vertically integrated supply chain of factories, warehouses, and trucks."[69] A&P became the largest coffee importer in the United States, as well as the largest wholesale produce dealer and butter buyer, and the second-largest baker.[70]

A&P further abandoned long-established practices such as customer delivery and providing credit to customers, and converted the grocery sector to a cash and carry

64. Claire Walsh, *op. cit.*, footnote 56.

65. Royal Commission on Price Spreads of Food Products, *Report of the Royal Commission on Price Spreads of Food Products*, Government of Canada, Vol. 1, 1959; Claire Walsh, *op. cit.*, footnote 56.

66. Marc Levinson, *The Great A&P and the Struggle for Small Business in America*, Hill and Wang, p. 7.

67. Paul H. Nystrom, *op. cit.*, footnote 60, p. 5. For another detailed discussion of this system at the time, see Theodore N. Beckman and Nathanael H. Engle, *Wholesaling Principles and Practice*, The Ronald Press Company, 1937, pp. 126-139.

68. Denys M. Forrest, *Tea for the British: The Social and Economic History of a Famous Trade*, Chatto & Windus, 1973.

69. Paul B. Ellickson, *op. cit.*, footnote 58.

70. Marc Levinson, *op. cit.*, footnote 66, p. 8.

Shopping cart in supermarket aisle

business model. A&P management also conducted careful studies of efficient store design and site selection while constantly aiming to streamline logistical operations and improve quality control and inventory management. Needless to say, the company's massive scale for the time resulted in discounts from its suppliers. But while it gained significant market share as a result of lower prices and more diverse offerings, it also had to withstand the kind of backlash that would later plague Walmart.[71]

Although A&P is no longer with us, in the last few decades in the United States, large food retail companies (those with more than 100 stores) have increasingly adopted the self-distribution centres model. This has prompted wholesalers whose business model revolved around holding inventory in their warehouses to either go out of business, shrink the size of their operations as their customer base became limited to smaller stores, develop new market niches among institutional customers (restaurants, hospitals, hotels, catering firms, educational institutions), or re-invent themselves as logistics companies that shrank their inventory and switched to a faster turnover model.[72]

When new products are involved, food brokers often act as representatives for food producers because of their superior knowledge of specific segments and people involved in the distribution and retail market.

71. Paul B. Ellickson, *op. cit.*, footnote 58, pp. 370-372. On the campaign and governmental actions against the company, see also Sandeep Vaheesan, "The Great A&P and the Struggle for the Soul of Antitrust," *Iowa Law Review Bulletin*, Vol. 98, No. 55, 2013.

72. Committee on a Framework for Assessing the Health, Environmental, and Social Effects of the Food System, Food and Nutrition Board, Board on Agriculture and Natural Resources, Malden C. Nesheim, Maria Oria, and Peggy Tsai Yih, *A Framework for Assessing Effects of the Food System*, National Academies Press, 2015, Chapter 2.

And yet, vertical integration or direct transactions between producers and retailers can never entirely eliminate the work formerly performed by intermediaries, which must then be handled by the two parties to a transaction. Historically, it has also often happened that direct transactions that made sense at one point in time were no longer so profitable at a future date because of changing technologies and markets. In such cases, either the producer or the retailer might revert to outsourcing some of these functions to a third party with specific know-how and well-established networks. Furthermore, as long as there are small retailers, there will be a need for wholesalers.

The main development in the second part of the 20th century was the emergence of the supermarket format in cities and suburban areas. As noted by the authors of a 1959 Canadian government report, food retailing became more concentrated and there was a "pronounced move towards integration of wholesaling and retailing functions."[73] These stores and their attendant distribution infrastructure benefitted from the development of ever more sophisticated information processing technologies, which in turn made it possible for large chains to "improve demand forecasts and thus plan inventories and site selection more effectively. They were also able to centralize accounting." [74] The result was cost savings passed on to consumers in the form of lower prices.

The 1990s saw the creation of retail supercentres and big box stores that continued the trend of greater product variety and differentiation (for example, organic and private labels), affordability, and convenience. Other lasting trends that began at the time include an increase in the number of retailer-owned distribution centres, greater offerings of non-food products in supermarkets, and a significant increase of food market shares by retailers who were not primarily in the food business, like Walmart and Costco.[75]

Numerous innovations have impacted knowledge management in the food retail sector over the last century and a half. For instance, the cash register played a role in the development of both large chains and the self-service store format.[76] Launched in the 1970s, universal product codes (UPCs) and scanners not only allowed supermarket checkout queues to move more quickly (thus delivering faster and more productive service, which translated into greater profits), but they also greatly simplified and cut down the cost of inventory tracking. Until then, a retailer who had to check inventory manually had to close shop for as long as was required to do it. Together, UPCs and scanners provided "hard, statistical evidence for what sells and what does not […], transformed market research, providing a rich picture of people's tastes, and […] made production lines more efficient."[77]

Like brokers, a logistics firm does not actually assume ownership of food products, but is paid to provide the service of logistical distribution and inventory coordination.

Of course, UPCs also immediately impacted inventory management in a warehouse setting by helping employees find products quickly[78] while allowing large retailers and wholesalers to develop private computer networks. Later innovations that impacted data gathering and stock management while paving the way for "walk-out" technologies (that is, entering a store and then just walking out with products without having to wait in line or check out) include cameras, sensors, and advances in artificial intelligence.[79]

Managing Information: Brokers and Logistics Firms

Today's wholesale/retail supply chain is both more elaborate and leaner than the one described by Nystrom nearly a century ago, as intermediaries in the food sector now come in "different shapes and sizes with respect to business portfolios, geographic presence, degree of

73. Royal Commission on Price Spreads of Food Products, *op. cit.*, footnote 65, p. 10.

74. Paul B. Ellickson, *op. cit.*, footnote 58, p. 371. For a more detailed discussion, see Craig Leadley (ed.), *Innovation and Future Trends in Food Manufacturing and Supply Chain Technologies*, Elsevier Science & Technology, 2015. For a concise and open access discussion of some of these new technologies, see Mary Shacklett, "How Technology is Transforming the Food Supply Chain: Software and Tech Is Changing the Way the Food and Beverage Industry Maintains Compliance, Improves Visibility and More," *Food Logistics*, July 14, 2017.

75. Committee on a Framework for Assessing the Health, Environmental, and Social Effects of the Food System, Food and Nutrition Board, Board on Agriculture and Natural Resources, Malden C. Nesheim, Maria Oria, and Peggy Tsai Yih, *op. cit.*, footnote 72.

76. Emek Basker (ed.), *Handbook on the Economics of Retailing and Distribution*, Edward Elgar Publishing, 2016, p. 39.

77. Gavin Weightman, "The History of the Bar Code," *Smithsonian Magazine*, September 23, 2015.

78. For a brief introduction to the topic, see Andrew Marder, "What Is an Inventory Management System, and What Features Do I Need?" *Logistics Technology*, July 5, 2017.

79. Naomi Nishihara, "'Just Walk Out' with Amazon and the Internet of Thinking," *Accenture*, May 8, 2018.

Table 2-1

Examples of broker services	
Represent new products to prospective buyers	Handle computerized ordering
Make presentations to prospective buyers and existing customers thereby establishing key accounts	Collect sales data
Liaison between suppliers, head and regional offices of customers	Handle complaints
Establish distribution channels	Rush unplanned orders
Advise on packaging, sizing, and labelling	Monitor competitor activity and provide market intelligence
Negotiate product listing in procurement catalogues	Facilitate and support logistics and distribution warehouse services
Take care of merchandising	

Source: Melissa Plotogea, "Canada: Ontario's Food and Beverage Distributor Directory," Ontario Ministry of Agriculture, Food and Rural Affairs, November 2015, p. 4.

vertical integration and ownership," while some also have significant food processing operations.[80]

As in the past, although some large food producers and manufacturers may generate the volume and quality control necessary to sell directly to large retailers, for most smaller producers, better results can be achieved when their products are handled by importers, brokers, logistics firms, distributors, and wholesalers who already possess the required contacts and marketing knowledge. At the other end of the supply chain, smaller and more specialized retailers also typically rely on brokers, importers, and distributors to identify more unique products from less well-known suppliers.

Most distributors and importers will take title of a product, store it in their warehouses, and then sell it to various store units. Brokers (also called agents) offer a different type of service. Rather than taking title of the goods, they "act as your sales persons pitching the unique product features to potential buyers and possibly setting up a network of various food distributors. Usually they charge a percentage of the product sales revenue, ranging from 3% to 10%. The percentages are influenced by several factors: the type of product line, expected sales volume, additional special services such as planning promotions or data collection."[81]

When new products are involved, food brokers often act as representatives for food producers because of their superior knowledge of specific segments and people involved in the distribution and retail market (see Table 2-1).[82] They must typically train a sales force, prepare sales presentations, deliver samples to potential buyers, and facilitate packaging and logistical support. This specialized knowledge of markets and of the particular circumstances of time and place, which can only be acquired on the job, cannot easily be replicated, and allows them to add value to the food supply chain as intermediaries.

80. KPMG International, *The Agricultural and Food Value Chain: Entering a New Era of Cooperation*, KPMG, May 2013, p. 31.

81. Maria A. Arbulu, *Retail Foods: The Retail Landscape of Canada*, United States Department of Agriculture, February 2017, p. 28.

82. Melissa Plotogea, "Canada: Ontario's Food and Beverage Distributor Directory," Ontario Ministry of Agriculture, Food and Rural Affairs, November 2015, pp. 3-4.

Table 2-2

Summary of the typical trade-offs in the logistics of the food supply chain

Food Transport Service-Level Pecking Order					
	Pecking order				
	Low				High
Example products	Grains, grain products	Some grain products, non-perishable packaged food	Some fruits, frozen meat, some fresh meat	Some fresh meat (pork, poultry)	Fresh fish, high-value fruit
Product attributes	Low value, low perishability	Medium to low value, low perishability	Medium perishability, medium value	Medium value, high perishability	High value, high perishability
Transport mode	Rail to port, bulk ocean carriers, rail hopper cars	Rail to port, intermodal containers, container ships	Rail to port, reefer ships, or intermodal reefer containers on container ships	Truck to port, reefer trailer transload, or intermodal container	Truck to air, reefer trailer to air transport container
Inventory levels	Very high	High	Medium	Medium/low	Low
Transit time	Very slow	Slow	Slow/medium	Medium	Fast

Source: Vijay Gill, *Fast and Fresh: A Recipe for Canada's Food Supply Chains*, Conference Board of Canada, July 2013, p. 12.

Another segment of the food supply chain where knowledge of the particular circumstances of time and place is crucial is logistics. Like brokers, a logistics firm does not actually assume ownership of food products, but is paid to provide the service of logistical distribution and inventory coordination. The nature of the product being moved (for example, high weight/value and perishable/spoilage vs. low weight/value and long shelf life) and the distance covered will obviously impact the selection of the transportation mode, be it by container ship, airplane, train, or truck (see Table 2-2).

For instance, while shipping by rail is more affordable, especially over very long distances, it typically involves a large minimum shipment size while providing less flexibility.[83] This may not matter in the case of non-perishable goods that are easily bundled and de-bundled, and for which there is a large demand, like canned goods, snacks, and breakfast cereals, but problems are more likely in the case of the cool/cold chain. Refrigerated container failure can be much more easily addressed in the case of trucking (that is, making alternative arrangements to save the shipment from spoilage) than if it involves stopping and servicing a train. Of course, one must also distinguish between products and categories. Kiwis, for example, have a much longer cold shelf life than strawberries, which is why they are typically transported by container ship while strawberries are more likely to be moved by air.[84]

Technological changes, market conditions, and the cost of available options will also impact logistical choices. The economic downturn of 2008 suddenly afforded the opportunity to Western Canadian pulse producers to ship their products to China on bulk vessels rather than container ships as the steel trade collapsed,[85] while advances in the cold chain made it possible to transport

83. Vijay Gill, *Fast and Fresh: A Recipe for Canada's Food Supply Chains*, The Conference Board of Canada, July 2013, p. 11.

84. *Ibid.*, p. 23.

85. Sean Pratt, "What's Behind Pulses' Shift to Bulk Exports?" *The Western Producer*, July 7, 2016.

pineapples and melons by ocean shipping rather than by air.[86] Intermediaries that are experts in these various options and have specific knowledge of changing circumstances are ideally situated to make these decisions. Their services do not increase the cost of moving goods from producers to consumers; on the contrary, by ensuring that this is done more efficiently on the basis of their unique knowledge, they decrease this cost.

Managing Information: Food Fraud and the Development of Brands, Standards, and Grades

Complaints about food fraud, such as substituting a cheaper substance or ingredient for a more expensive one or adding substances in order to mimic a desired appearance or taste while using cheaper inputs, go back thousands of years.[87] To give just a few simple examples, some producers were once accused of adding water to milk, wine, and beer; ground nutshells, seeds, pits, and juniper berries to spices; leaves of all kinds to tea; roasted chicory roots, peas, beans, and other grains to coffee; alum, chalk, white clay, and bone ash to flour; Spanish liquorice, hartshorn shavings, orange powder, caraway seeds, ginger, and coriander as substitutes for malt and hops in beer preparation; rice powder and arrowroot to cream; crushed olive stones to pepper; and starch to sausages.

Today, product misrepresentation, as opposed to the addition of unapproved or undisclosed substances, is arguably most common when it comes to fish and seafood, where lower valued species are passed off as more highly valued ones.

Historically, attempts to thwart food fraud included government and religious regulations and oversight. By the turn of the 19th century, however, advances in chemistry allowed the development of analytical methods and reproducible techniques that permitted accurate measures of purity, identity, and detection of undisclosed substances. One landmark was the publication of chemist Friedrich Accum's 1820 *Treatise on Adulterations of Food, and Culinary Poisons*.[88] Numerous analytical methods to detect food fraud were developed over the next two centuries,[89] along with traceability (including, in recent years, blockchain)[90] and anti-counterfeiting packaging technologies.[91] Governments also came to play a greater role in food inspection.[92]

Intermediaries that are experts in these various options and have specific knowledge of changing circumstances are ideally situated to make these decisions.

Of course, poisoning customers is never a good way to promote repeat business, and many innovative entrepreneurs in the private sector sought ways to get recognized for the quality and safety of their products long before government became involved in food inspection. Their main strategy was the development and advertising of credible brands that offered not only convenience, but also quality, consistency, and purity in sealed (as opposed to bulk) products. Pioneers among American national brands include National Biscuit, Swift, Armour, Heinz, Quaker Oats, Campbell Soup, Borden, Pillsbury Flour, and Libby.[93] Marketers were keen to combine technological novelty and high standards with nostalgia to promote their products. The Quaker Oats man thus came to symbolize a firm with no connections to the Society of Friends, but consumers who purchased Quaker Oats products could be assured of their quality, uniformity, and reliability.

86. Vijay Gill, *op. cit.*, footnote 83, p. 13.

87. For more detailed discussions of the issue, see among others John Burnett, *The History of Food Adulteration in Great Britain in the Nineteenth Century, with Special Reference to Bread, Tea and Beer*, PhD thesis, London School of Economics and Political Science, 1958; Bee Wilson, *Swindled: The Dark History of Food Fraud, from Poisoned Candy to Counterfeit Coffee*, Princeton University Press, 2008; Renée Johnson, *Food Fraud and "Economically Motivated Adulteration" of Food and Food Ingredients*, Congressional Research Service, January 2014; Sylvain Charlebois, "For the food industry, fraud is the elephant in the room," *The Globe and Mail*, March 15, 2016.

88. Friedrich Christian A. Accum, *A Treatise on Adulterations of Food, and Culinary Poisons*, Longman, Hurst, Rees, Orme, and Brown, 1820.

89. See among others, Eunyoung Hong *et al.*, "Modern Analytical Methods for the Detection of Food Fraud and Adulteration by Food Category," *Journal of the Science of Food and Agriculture*, Vol. 97, No. 12, April 2017.

90. Elliot Maras, "F&B Tackles Supply Chain Traceability Head On," *Food Logistics*, March 28, 2016; Geoffrey Mohan, "Could blockchain have solved the mystery of the romaine lettuce E. coli outbreak?" *Los Angeles Times*, May 27, 2018; Sylvain Charlebois, "How blockchain could revolutionize the food industry," *The Globe and Mail*, December 12, 2017.

91. See among others, Ruchir Shah, Prajesh Prajapati, and Y. Agrawal, "Anticounterfeit Packaging Technologies," *Journal of Advanced Pharmaceutical Technology & Research*, Vol. 1, No. 4, 2010.

92. Canadian Food Inspection Agency, Organizational Information, August 30, 2017.

93. See among others, Nancy F. Koehn, "Henry Heinz and Brand Creation in the Late Nineteenth Century: Making Markets for Processed Food," *Business History Review*, Vol. 73, No. 3, 1999, pp. 350-352; Diana Twede, "History of Packaging," in D.G. Brian Jones and Mark Tadajewski (eds.), *The Routledge Companion to Marketing History*, Routledge, 2016, pp. 115-129.

Many food retailers also developed their own brands in the hope of capturing higher margins. For instance, Loblaw brands cover the quality spectrum and include President's Choice, No Name, Joe Fresh, T&T, Exact, Seaquest, Azami, and Teddy's Choice. Over time, many store labels proved successful and gained market share at the expense of national brands,[94] but the ultimate winners were consumers who were offered an ever wider range of reliable products. Large corporations that put their credibility on the line through their brands are worth suing and therefore have every incentive to maintain high standards.

Poisoning customers is never a good way to promote repeat business, and many innovative entrepreneurs in the private sector sought ways to get recognized for the quality and safety of their products long before government became involved in food inspection.

Not all products, however, could be sold in sealed containers. For bulk or fresh products such as produce, meat, and seafood, another strategy had to be developed to reduce the cost of inspection and help assess the value of shipments. The answer was food standards, meaning a set of criteria, including source, freshness, composition, appearance, and bacterial content, that must be met to qualify for various grade names for certain commodities.[95]

As described in a 1977 pamphlet of the United States Department of Agriculture, the motivation behind the development of grade standards for food was to "aid in the marketing of farm products by providing a common language for wholesale trading and a means of measuring value or a basis for establishing prices. The end aim was to bring to consumers the quality of product they wanted."[96] Another consideration that soon became significant was that uniform produce (that is, of specific size and shape) can be weighed and transported more easily and securely.

In Canada, food grading began at the turn of the 20th century when grades for apples were first established for export, and subsequently applied to the domestic market. In short order, grades were developed for commodities such as butter, instant skim milk powder, cheddar cheese, fresh and processed fruits and vegetables, eggs, honey, maple syrup, meat, and poultry.[97]

The benefits of this system can be illustrated with the case of apples, which differ not only in terms of varieties, but also in terms of quality (even if picked from the same tree). Apples are classified according to quality and consistency as being either Canada Extra Fancy, Canada Fancy, Canada Commercial, Canada Hailed, Canada Commercial Cookers, Canada No. 1 Peelers, or Canada No. 2 Peelers.[98]

Depending on their grade, apples will either be sold directly to consumers or to manufacturers who need only "good enough" (and therefore cheaper) apples to produce juice, pie and pastry fillings, jelly, and other products. Standards and grades thus help ensure that producers of quality output obtain maximum value, that buyers of agricultural commodities know exactly what they are getting without having to inspect every shipment, that handling and transportation is done more efficiently by combining the production of similar goods from different producers, and that commodities unsuitable for human consumption are put to other valuable uses such as animal feed or industrial alcohol.

Our modern food supply chain would be unmanageable if every shipment had to be examined in order to assess its value and safety for consumption. Brands and grade names are only two of the numerous innovations developed to create and transmit bits of information that have become essential for handling food products. While this "commodification" of food has long been decried by activists who deplore its alleged unnatural character and the loss of direct connection with agricultural producers, it is a necessary step in the rationalization of production, the minimization of search and verification costs, and the provision of more abundant, more affordable, and safer food to consumers.

94. Sylvain Charlebois, "The never-ending battle for space on Canadian grocery-store shelves," *The Globe and Mail*, May 22, 2017.

95. For various links to Canadian agricultural product grades, see Canadian Food Inspection Agency, Grades, June 8, 2018; Canadian Food Inspection Agency, Dairy Product Grade Requirements, January 21, 2017.

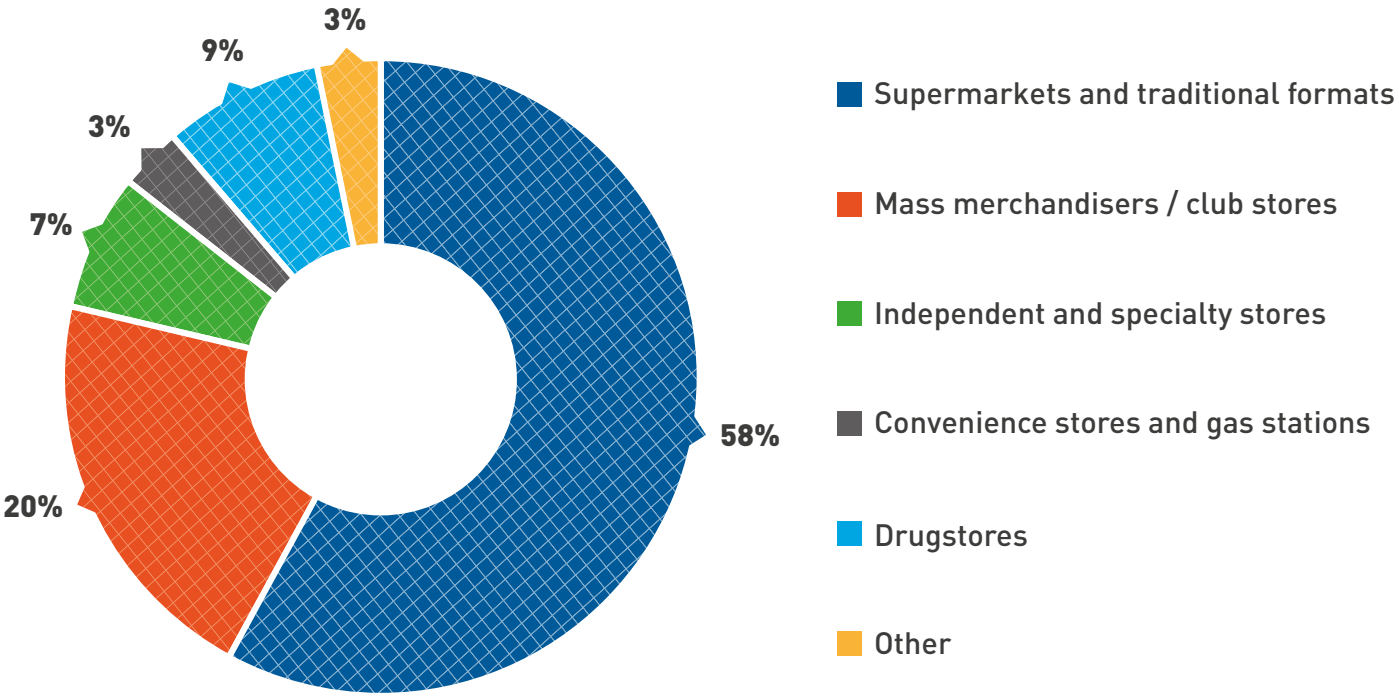
96. United States Department of Agriculture, *USDA Grade Standards for Food: How They Are Developed and Used,* November 1977, p. 4. A discussion of the transition in wholesale activities from the absence to the development of standardized grain grading is offered in Mary Eschelbach Hansen, "Middlemen in the Market for Grain: Changes and Comparisons," *Essays in Economic and Business History,* Vol. 18, No. 1, 2000.

97. Canada Department of Agriculture, *Food Grading in Canada*, Minister of Supply and Services Canada, 1977, p. 4.

98. Canadian Food Inspection Agency, Fruit Inspection Manuals, Apples, April 24, 2011.

Figure 2-3

Share of food market by retail channels in Canada, 2017



Source: Maria A. Arbulu, "Canada Retail Foods: Retail Sector Overview – 2017," USDA Foreign Agricultural Service, June 3, 2018, p. 6.

Food Retailing and Wholesaling in Canada

The story of food retail in Canada over the past century and a half mirrors to a large extent that of the United States, with American chains opening up stores in Canada and Canadian stores copying the latest American innovations. As such, the country witnessed much creative destruction as some chains like Steinberg died and others like A&P, Loeb, and Dominion were acquired by other industry actors.[99] Among those that survived are the so-called "Big 3," namely Loblaw Co. Ltd, Sobeys Inc., and Metro Inc.

Today, Canadians still buy most of their food at grocery stores and supermarkets (see Figure 2-3). Although dominated by the Big 3, a few independent chains have been able to grow or maintain market shares (Rabba Fine Foods, Longo's, M&M Food Market, Save-On-Foods,[100] and Co-op[101]), while a number of specialty stores still cater to specific niches such as ethnic grocers,[102] delicatessens, bakeries, health food stores, etc.

Other retail models that have emerged or expanded significantly over the past few decades include discount stores owned by large supermarket chains (e.g., No Frills, FreshCo., Food Basics, and Super C); convenience stores, mini marts, and gas station convenience stores (Couche-Tard, 7-Eleven, and Needs); drugstores (Shoppers Drug Mart, Rexall, and Jean Coutu); and mass merchandisers—including discount retailers (Walmart, Giant Tiger, and Dollarama) and membership/club warehouse stores (Costco and Wholesale Club).

In short, over the past few decades, Canadian stores of all types began "to practise mass merchandising in a movement toward high-volume, low-margin

99. For a relatively detailed list of such concerns, both active and long gone, see Wikipedia, List of Supermarket Chains in Canada.

100. Save-On-Foods is the main banner of the Overwaitea Food Group.

101. Various western Canada Co-op operations are affiliated with the Federated Co-operatives.

102. Some of the most successful ethnic grocers such as T&T (Loblaw) and Adonis (Metro) have been purchased by larger chains.

operations."[103] Canadian supermarkets thus added items such as automotive supplies, clothing, hardware, and pharmaceuticals to their traditional food offerings, while department stores began to sell some food items along with automotive accessories and repairs and various services such as banking, insurance, and travel.

To summarize some recent retail and wholesale trends:[104]

- In 2016, about 58% of food sales were made at supermarkets and traditional grocery stores, a sector dominated by Loblaw, Sobeys, and Metro. These chains operate a range of banners. For instance, in addition to its national drug chain Shoppers Drug Mart, Loblaw operates 24 banners that cover the complete retail spectrum, from large superstores selling one third general merchandise products and conventional supermarkets to discount units and convenience and club stores.[105]
- "Increased competition has led to significant store rationalization and consolidation over the past two decades, with a trend toward larger buildings. […] The total number of Canadian food stores declined by 871 per year on average while sales increased by an average of 3.1% per year between 1990 and 2016. The consolidation trend is expected to continue as supermarket chains compete with non-traditional food retailers."
- Food retailers are increasingly competing with the already extremely competitive restaurant industry by offering a growing array of take-home meals and prepared foods.
- Despite overall growth in most regional markets, conventional supermarkets face ever more intense competition from discounters, ethnic stores, and drugstores with improved food offerings. Non-grocery retailers, particularly Costco and Walmart, have gained market share and now account for 20% of the retail grocery market in the country.

The evolution of the wholesale food sector in Canada over the past several decades mirrors developments elsewhere. In Canada in the 1970s, Weston (now Loblaw) had direct ownership of several wholesale firms that operated across the country (e.g., Kelly, Douglas & Co., Westfair Foods, National Grocers, and Atlantic Wholesalers) while Dominion Stores did not, but operated large distribution centres from which it serviced its stores in Ontario, Quebec, and Nova Scotia. Meanwhile, A&P and Steinberg did not own wholesalers and dealt instead with independents.[106]

Brands and grade names are only two of the numerous innovations developed to create and transmit bits of information that have become essential for handling food products.

Today, however, all the large chains are involved in wholesaling operations and maintain sizable distribution centres across the country that not only supply their own stores, but also often supply franchised stores and independent grocers. Among the Big 3, Loblaw operates the largest grocery distribution operations, including broadline grocery distribution centres across the country through wholly-owned subsidiaries or by outsourcing management to third-party logistics services. The other major players in wholesaling operations are US-based Sysco Corporation and Gordon Food Service, whose Canadian presence has become significant over the past two decades. Taken together, these three firms represent about 30% of the Canadian market for wholesale grocery and food product distribution.

The rest of the market is divided between the other two members of the Big 3, the many smaller companies that typically serve regional markets, and the multinational companies that have entered the Canadian market through mergers and acquisitions. As elsewhere, some wholesalers who lost market share at the hands of vertically integrated corporations were able to reinvent themselves by maintaining or growing their operations in new directions such as processing or logistics, and by focusing increasingly on serving smaller retailers and institutional customers (e.g., restaurants, hotels, catering firms, and hospitals).[107]

103. Ronald Savitt and Dennis Johnson, Retail Trade, Canadian Encyclopedia, March 4, 2015.

104. Based on Agriculture and Agri-Food Canada, *An Overview of the Canadian Agriculture and Agri-Food System 2017*, Government of Canada, 2017, p. 89; and Maria A. Arbulu, *Retail Foods: The Retail Landscape of Canada*, United States Department of Agriculture, February 2017.

105. Loblaw Companies Limited, Stores, 2016.

106. John W. Warnock, *Profit Hungry: The Food Industry in Canada*, New Star Books, 1978, p. 213.

107. Ediz Ozelkan, "Grocery Wholesaling in Canada," IBISWorld Industry Report 41311CA, October 2017.

Recent Trends and Looking Ahead

One recent trend in food retailing has been online shopping. According to estimates from researchers and consultants in the retail sector, online food sales by Canadian retailers amount to about 2% of total food sales. While this small proportion might suggest that instant gratification and the desire to see before buying remain stronger than anticipated by many analysts, the volume of online sales has been growing for years, and it is expected to continue to grow significantly. For one thing, Canadian online purchases are still well below those in some leading European countries such as France and the UK, thus suggesting that there is room for growth.[108]

E-commerce has recently taken a new turn with the automatization and the computerization of orders. Instead of employees preparing orders for customers, new automated systems use robots to find and fetch items for employees. These new systems save a lot of time: They only require 10 minutes for a 50-item online system, compared to 40-60 minutes previously. Additionally, they reduce the amount of food waste by more than 75% compared to the industry average (down to only 0.7% of sales). There are also sophisticated systems for the efficient delivery of orders to consumers, which will soon involve driverless delivery vans. This kind of system has recently arrived in Canada, as Sobeys signed a deal to bring this high-tech concept to Toronto.[109]

The fact that Amazon recently bought Whole Foods also indicates that the trend toward shopping for food online is likely to continue growing. Food retailing has become an important part of the long-term plans of the American giant. Amazon Go also allows customers to do their shopping with their smartphones without having to queue and interact with a cashier.[110]

The modern food supply chain is the result of a lengthy process of trial and error through which countless experiments were conducted and entrepreneurial ventures launched over the past century and a half. Although often hampered by opposition from established interests and price-distorting government interventions, the result over time has been more abundant, diversified, and affordable food delivered by ever larger and more efficient producers, intermediaries, and retailers. Despite these achievements, however, critics have long argued that the system is unfair and unsustainable. As will be discussed in Chapter 3, their criticism and proposed alternatives do not withstand scrutiny.

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108. One researcher at Forrester Research estimated online sales at less than $2 billion in 2016 out of total food sales of about $96 billion. Hollie Shaw, "Canadians not yet buying into idea of online grocery shopping as retailers try to change behaviour," *Financial Post*, October 19, 2016; Statistics Canada, Table 20-10-0008-01: Retail trade sales by province and territory (x 1,000), 2016. See also Kevin Grier, "Grocery Trade Report," *Kevin Grier Market Analysis and Consulting Inc*, April 2018, pp. 2-4.

109. Paul Waldie and Marina Strauss, "The Ocado way: The British future of grocery e-commerce is coming to Canada," *The Globe and Mail*, April 27, 2018.

110. Sylvain Charlebois *et al.*, *Canada's Food Price Report 2018*, Dalhousie University and University of Guelph, pp. 11-12.

CHAPTER 3

Turning Back the Clock: Would We Be Better Off with Shorter Supply Chains?

Today as in the past, intermediaries get little sympathy from certain food activists who promote alternatives to a market system based on the international division of knowledge and labour. Many devote their energy to objectives such as the creation of shorter supply chains, meaning short geographical distances and/or fewer intermediaries between producers and final consumers than are found in a competitive market. They promise greater profits for farmers and similar end-prices for consumers, to say nothing of the economic wealth that would derive from the (re)creation of local food systems; greater food quality, safety, and nutrition; and environmental benefits.[111]

Economic theory and the available evidence suggest the exact opposite, which can be easily demonstrated.[112] As we saw in Chapter 1, the Austrian School of Economics theorized that getting rid of the compass of prices in a competitive market system, and of intermediaries which are conveyers of knowledge, can only result in less satisfying outcomes for consumers. At the end of the day, supply will fail to meet the demand of consumers, resulting in less variety, higher prices, and more waste.

This chapter will explore in greater detail why discarding spontaneously evolved complex supply chains and replacing them with government-mandated and -subsidized shorter ones can lead to such results. After providing an overview of the arguments of proponents of shorter supply chains, the shortcomings of such models will be discussed using Canadian cases. In light of economic theory and of the issues discussed in this chapter, it will then be argued that recent calls for a Canada-wide food policy are similarly flawed.

111. SpendEdge, Blogs, 7 Benefits of Short Food Industry Supply Chains, 2018. For more detailed introductions to variations on this theme, see Canadian Co-operative Association, "Local Food Initiatives in Canada – An Overview and Policy Recommendations," June 18, 2018; Annette Aurélie Desmarais, Nettie Wiebe, Hannah Wittman (eds.), *Food Sovereignty in Canada: Creating Just and Sustainable Food Systems*, Fernwood Publishing, 2011; Jessica Edge, *Cultivating Opportunities: Canada's Growing Appetite for Local Food*, The Conference Board of Canada, August 2013; Sarah Elton, "Local Food Movement," *The Canadian Encyclopedia*, April 23, 2015.

112. See Pierre Desrochers and Hiroko Shimizu, *The Locavore's Dilemma: In Praise of the 10,000-mile Diet*, PublicAffairs, 2012. For a more concise and freely accessible discussion, see Pierre Desrochers, "The Locavores' Delusion: Truer Advertising for the Local Food Debate," *Fair Observer*, September 21, 2013.

A Long History of Activism for Shorter Supply Chains

Calls to eliminate seemingly useless intermediaries and transportation through the promotion of increased local food production for nearby consumers are nothing new. Among many examples, a century ago, Morris Llewellyn Cooke, then a former Director of Public Works of the City of Philadelphia, typically asked:

> Why, for instance, do strawberries go from Selbyville, Delaware (the largest strawberry-shipping point in the United States [at the time]), to Philadelphia, 104 miles distant, to be resold and go back again over the same route as far as Wilmington, Delaware, 27 miles away, to be hauled to the storage house of the commission man, again sold, and hauled by huckster's team fourteen miles to reach the consumer at Kennett Square, Pennsylvania?[113]

Today as in the past, intermediaries get little sympathy from certain food activists who promote alternatives to a market system.

"Any quality left in the berries after the last leg of this roundabout journey," Cooke argued, was due "rather to the providence of God than to the wisdom of man." He believed that the berries lost between 25% and 35% of their value during the trip, a "relatively simple and obvious example of the want of organization in the marketing of our local products." To his amazement, however, the railroad managers of the time "ridiculed all proposals to effect any advantageous changes in the cities' food supply through the encouragement of local shipments and the local consumption of locally grown foods."[114]

Several other scholars, consultants, and activists of the time made similar observations and proposals. The political scientist Clyde Lyndon King thus argued in a 1913 study that perhaps as much as a third of the price of foodstuffs in New York City could be traced back to

113. Morris Llewellyn Cooke, *Our Cities Awake: Notes on Municipal Activities and Administration*, Doubleday, Page & Company, 1918, p. 269.

114. *Ibid.*, pp. 269-270.

Interior of the Boise Basin Mercantile store, Idaho City, Idaho, ca. 1900

"cartage and delivery costs" and "retailers' profits."[115] In 1916, Henry W. Collingwood, then editor of the *Rural New Yorker*, described the distribution system as "so costly, cumbersome, and complicated that it is little short of robbery of both producer and consumer."[116] The future American President Herbert Hoover similarly blamed high food prices on "faulty transportation" and the multiplicity of "wholesaler, transportation agent, commission man, cold-storage warehouser, food manufacturer [and] retailer."[117]

Early 20th century American local food activists were given the opportunity to test their ideas during the First World War when Hoover was put in charge of the US Food Administration where he soon promoted a "policy

Calls to eliminate seemingly useless intermediaries and transportation through the promotion of increased local food production for nearby consumers are nothing new.

of local consumption of vicinity-grown produce."[118] Clyde Lyndon King believed this would demonstrate that "to clear the way from the farm to the city and from the city to the farm" would "decrease the farmer's transportation costs and the amount of time spent in marketing his goods," "enhance the facilities through which the stores in the small towns can handle more economically both their incoming and outgoing freight," and "extend the bounds of social life in each agricultural district." "Efficient trolley freight service to outlying districts," he further added, would "give to the retail stores

115. Clyde Lyndon King, "Can the Cost of Distributing Food Products Be Reduced?" *Annals of the American Academy of Political and Social Science*, Vol. 48, p. 206.

116. Quoted by Joseph Russell Smith, *The World's Food Resources*, H. Holt & Company, 1919, p. 567.

117. Quoted in Oscar Diedrich von Engeln, "The World's Food Resources," *Geographical Review*, Vol. 9, No 3, 1920, pp. 185-186.

118. Morris Llewellyn Cooke, *op. cit.*, footnote 113, p. 270.

a smaller transportation charge; give to Philadelphia's manufacturing establishments and stores increased facilities for sales; and give to Philadelphia's consumers fresher produce at better prices."[119]

Meanwhile, a Pennsylvania agricultural extension employee by the name of A. B. Ross proposed a "point of origin plan for marketing" whose key objective was to "reduce transportation to a minimum." This, in turn, would allow

> the feeding of each community, as far as possible, with food from within its own natural trading area, and the laying by of dried, canned and stored reserves of food from local sources; the keeping of community money within the community area, and using it for community development; the making of each community a self-contained, self-sustaining, compact trading unit; the development of the smaller community centers into exporters of food to the larger cities, reversing the present system whereby natural food-producing areas are importing food.[120]

As is obvious in retrospect, nothing ever came out of these proposals, as American consumers always insisted on maximum value for their dollars. Indeed, in 1925, the Deputy Secretary of Agriculture of Pennsylvania observed that chain stores had from their beginning been "more inclined to buy in carload lots from the large producing centers, where they can get a standard grade of product which will run more uniform than the seasonal output of local producers" and that only local producers who could supply a "substantial quantity of graded, dependable products" could hope to thrive.[121]

Many Canadian food activists have similarly called for various kinds of government interventions, be it the support of co-ops in the retail sector or national planning to deliver greater local food production, as a means of raising farmers' income while fighting alleged increased corporate control.[122] However, "buy local" food policies are probably as ancient as the long distance trade in food. In the Canadian context, initiatives such as local food hubs, branding/marketing initiatives, agri-tourism, farmers' markets, community gardens, and community-supported agriculture have benefitted from the support of many provincial and municipal governments.[123]

Many Canadian food activists have similarly called for various kinds of government interventions, be it the support of co-ops in the retail sector or national planning to deliver greater local food production.

While 1970s activists were somewhat more concerned with high food prices, they also denounced increased corporate concentration and lack of diversity in store and product options. In his 1978 book *Profit Hungry: The Food Industry in Canada*, the academic, commercial orchardist, and long-time social activist John Warnock blamed the inefficient and costly nature of the country's food wholesaling and retailing industry, including its wasteful use of "massive advertising and promotion."[124] While he acknowledged that Canadians spent less of their "take-home pay on food purchases than do people in any country of the world outside the United States," Warnock deplored how this was largely achieved by brokers, food processors, wholesalers, and retailers importing cheaper food from other countries at the cost of driving numerous Canadian processors and farmers out of business. Like many other activists, Warnock's solutions included increased food self-reliance.[125]

In his 1974 farm-to-fork critique of the Canadian food system *Hard to Swallow: Why Food Prices Keep Rising – and What Can Be Done about It,* the journalist Walter Stewart's chief villain was increased corporate concentration.[126] He suggested that the

> [g]rocery shelf may be regarded as a battleground, a place where wholesalers, retailers, processors, and yes, even farmers, meet in vigorous, wholesome

119. *Idem.*

120. A. B. Ross, "The Point of Origin Plan for Marketing," *The Annals of the American Academy of Political and Social Science*, Vol. 74, No. 1, 1917, p. 206.

121. John M. McKee, "The Relation of Local Farm Output to the Local Product," *The Annals of the American Academy of Political and Social Science*, Vol. 117, No. 1, 1925, p. 282.

122. Cathleen Kneen, "The People's Food Policy Project: Introducing Food Sovereignty in Canada," Food Secure Canada, August 2012, pp. 1-6; Ann Hui, "Why a new national strategy on food can't satisfy all," *The Globe and Mail*, November 12, 2017; Sarah Elton, *op. cit.*, footnote 111; Jon Steinman, "Who Owns Your Grocery Store? In the age of monolithic grocery giants, food co-ops offer a promising alternative," *The Tyee*, July 28, 2017.

123. See, among others, Ontario Ministry of Agriculture, Food and Rural Affairs, Ontario's Local Food Strategy, June 4, 2018; Jessica Edge, *op. cit.*, footnote 111; Virginie Lavallée-Picard, "Planning for Food Sovereignty in Canada? A Comparative Case Study of Two Rural Communities," *Canadian Food Studies*, Vol. 3, No 1, 2016, pp. 71-95; Sarah Elton, *op. cit.*, footnote 111.

124. John W. Warnock, *Profit Hungry: The Food Industry in Canada*, New Star Books, 1978, pp. 267-269.

125. *Ibid.*, pp. 273-274.

126. Walter Stewart, *Hard to Swallow: Why Food Prices Keep Rising – and What Can Be Done about It*, Macmillan of Canada, 1974.

Vintage photo of a grocer in his general store

> unfettered competition for Mrs. Consumer's dollar. That, indeed, is the grocery industry's view of the shelf. But it may be seen in another way, as a jam-pot, from which everyone along the line can extract something sweet and sticky if he has a long enough spoon. I hold to the second view; it seems to me that one of the reasons we pay so much for food has to do with the manoeuvres—legal, quasi-legal, and downright illegal—through which it arrives in the stores.[127]

Stewart denounced the "make-believe world" of the free-market economist in which "smaller, less efficient operators are squeezed out" of the market because of consumers' decisions to patronize more efficient and cheaper stores supplied by ever more competitive producers and wholesalers. In practice, Stewart argued, this process had delivered increased concentration accompanied by a "growth in oligopoly, a decline in price competition and a steady upwards surge in the cost of living."[128] His suggested solutions revolved around price control policy, cutting down on wasteful advertising and packaging, and promoting warehouse stores and food co-ops.[129] Interestingly, Stewart believed that whatever measures were taken, the price of food would not go down and food shortage would remain a reality. Indeed, he wrote, Canadians "cannot bring back the era of cheap food, and it is doubtful that we should try; but we can re-order the system into a more efficient and responsive one."[130]

The People's Food Commission decried how little of consumers' money ended up in the pockets of struggling primary producers such as farmers and fishermen.

127. *Ibid.*, p. 105.

128. *Ibid.*, p. 118.

129. *Ibid.*, pp. 185 and 194-197.

130. *Ibid.*, p. 198.

Most fondly remembered by present-day activists, however, is the People's Food Commission of the late 1970s and its 1980 report, *The Land of Milk and Money*. Although its authors acknowledged that the Canadian food system appeared to be "one of the most efficient and productive in the world,"[131] they decried how little of consumers' money ended up in the pockets of struggling primary producers such as farmers and fishermen, how much was wasted on advertising, and how a few large chains were dominating the retail landscape, "leaving people nowhere else to shop."[132] Another common complaint was that Canadians were becoming "more dependent on imported food, and almost all regions are becoming more dependent on food brought in from other regions." This was bad because when "people in local areas stop producing food to be used in those areas, they also stop making decisions about the production, processing, price and quality of the food."[133]

The analyses and forecasts of past critics, from predictions of rising food prices to declining competition in retail, have been proven wrong time and time again.

Activists furthermore didn't see the rationale behind shipping food to a processing facility in a large city only to have it shipped back out to where it had been produced in the first place.[134] Especially problematic for small local producers was the desire by processors, wholesalers, and retailers for "steady, large-volume supplies of uniform products" that resulted in "long, complex, centralized supply lines." Other concerns included excessive packaging and advertising, unnecessary food processing, and a reduction in the number of food retail stores.[135] Canadians across the country were said to struggle with "health [problems], lost employment, damage to the soil, pollution, increased transportation of goods and the [attendant] tax burden."[136] As the People's Food Commissioners saw things, monopolistic large firms managed to cut prices by pushing true costs "onto consumers, farmers, the environment [and] the government."[137]

One interesting aspect of current debates is how remarkably similar activists' demands have remained over the past few generations, in spite of the fact that the analysis and forecasts of past critics were proven wrong by later developments. Writing in 1990, food activist Philip White argued that the apparent benefits of the modern food system came at the terrible cost of "producer exploitation, loss of control, environmental degradation, consumer manipulation, declining food quality, and the destruction of our national food security."[138] Instead of asking for convenience and cheap food, he argued that consumers should rise up against corporate power and support an "ecologically sustainable food system that puts human needs ahead of private profit and market forces."[139] One of his solutions was increasing the purchase of locally produced food.[140]

The Shortcomings of Short Supply Chains: Direct Food Marketing in Canada

The analyses and forecasts of past critics, from predictions of rising food prices to declining competition in retail, have been proven wrong time and time again. An argument that persists, however, is the alleged benefits of shorter food supply chains, with fewer intermediaries between producers and consumers, over our current market-tested system. One alternative model promoted by food activists to get rid of middlemen and bypass supermarkets is direct marketing, whereby farm operators sell their products directly to consumers.

Direct marketing channels such as farm stands, pick-your-own, farmers' markets and community-supported agriculture, however, are too insignificant in scope to be of interest to large commodity producers. In most cases, reasonably successful medium-sized operations can at best unload a small fraction of their output this way. As such, the primary beneficiaries of direct marketing will be smaller concerns that cannot produce the volume and stability of supply sought by wholesalers and retailers.

According to Statistics Canada, the median annual sales of farms that reported direct marketing in 2015 was $20,000. Only 1 in 8 Canadian farm operations is involved

131. People's Food Commission, *The Land of Milk and Money*, Between the Lines, p. 55.

132. *Ibid.*, pp. 13-14.

133. *Ibid.*, p. 39

134. *Ibid.*

135. *Ibid.*, p. 63.

136. *Ibid.*, p. 40.

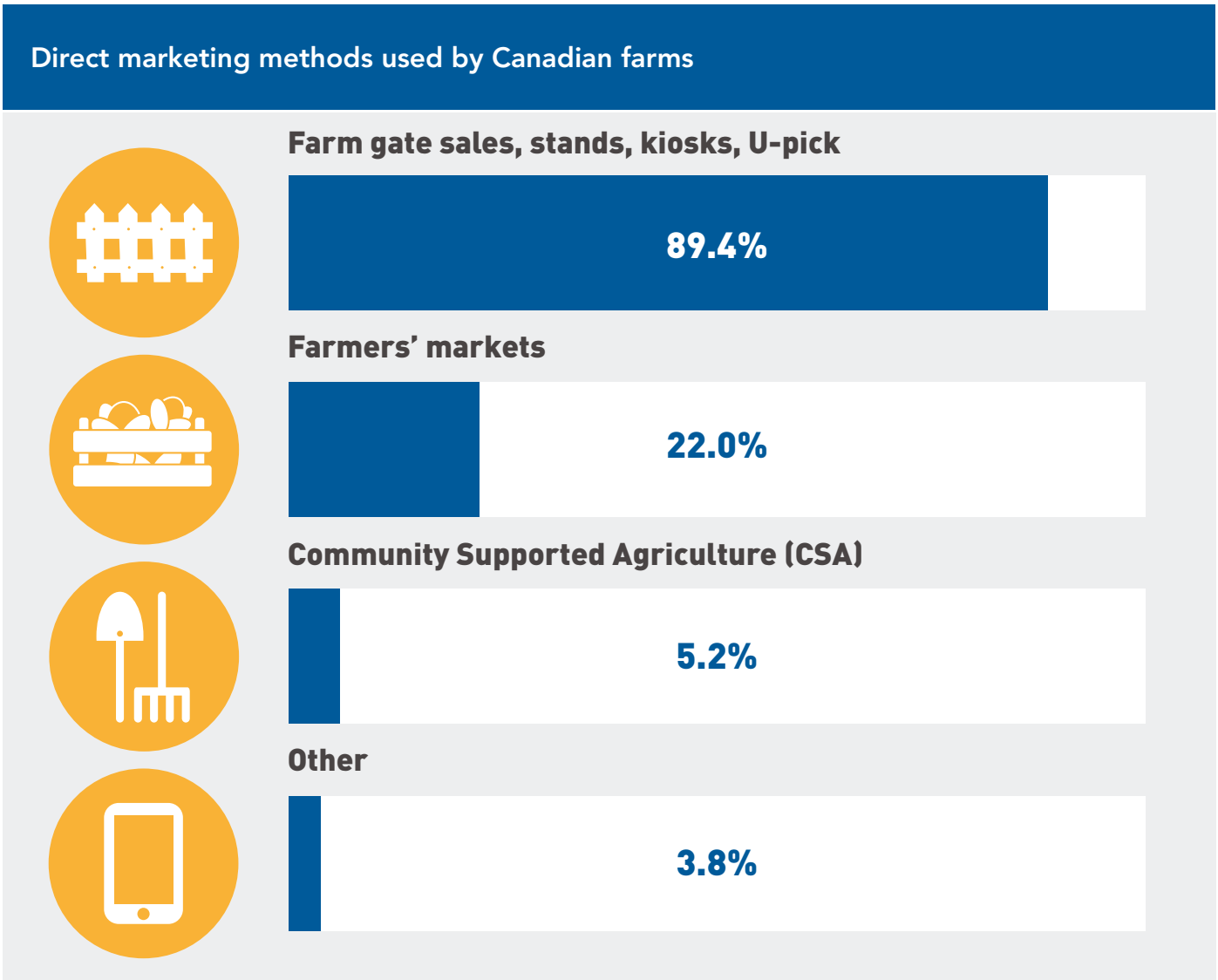
137. *Ibid.*, p. 63.

138. Philip White, *The Supermarket Tour*, Ontario Public Interest Research Group, 1990, pp. 1-2.

139. *Ibid.*, p. 7.

140. *Ibid.*, p. 14.

Figure 3-1



Source: Statistics Canada, Direct Marketing in Canada, June 21, 2017.

in some form of direct marketing.[141] By far the most common forms are U-pick and farm gate/stands/kiosks, with only a small fraction of farms, typically very small and located close to urban markets, using the trendier farmers' markets and community-supported agriculture channels (see Figure 3-1).

–Farmers' markets

In theory, farmers' markets are public markets where farmers and other vendors sell locally produced food directly to consumers. When self-financed, they are obviously unobjectionable. Under ideal conditions, they can provide enjoyable shopping experiences for (typically wealthier than average) consumers with leisure time. On the downside, they are often limited in terms of convenience, the goods on sale are not necessarily offered at lower prices than conventional alternatives

Farmers' markets are often limited in terms of convenience, the goods on sale are not necessarily offered at lower prices, and the number and quality of offerings is often poor at the beginning and end of growing seasons.

141. Statistics Canada, Direct Marketing in Canada, June 21, 2017.

(unless perhaps one shows up near closing hours and is willing to buy in large quantities), and the number and quality of offerings is often poor at the beginning and end of growing seasons.

Moreover, one recurring problem with farmers' markets is the abundant anecdotal evidence demonstrating that many vendors are resellers who occasionally or systematically peddle products obtained from wholesalers under false pretenses such as being "local," "organic," or "pesticide-free." For instance, in 2017, CBC journalists uncovered five different vendors operating at four Ontario markets (out of the eleven they visited) who falsely claimed to be selling fresh produce they had grown themselves, but were instead reselling wholesale goods purchased at the Ontario Food Terminal (Toronto). Some of it was Ontario-grown Sunset tomatoes produced on an industrial scale in greenhouses near Windsor that were sold under false pretenses 500 kilometres away in the Peterborough farmers' market. In another market, the investigative team discovered Mexican produce being passed off as Ontario-grown.[142]

Such schemes might become even more common as some large retail chains are now marketing or planning to market imperfect products at discounted prices, tapping into both consumers' quest for lower prices and perceptions that imperfections are somehow more "natural" and therefore indicative of healthier produce.[143]

Commenting on similar stories a few years earlier, an American food activist acknowledged that such problems were then "happening all over the country" and made the following recommendations to address the issue:

- *Research, research, research*. Try to get to know a few vendors really well. Ask where their farm is located, how long they've been farming, how they handle pest and disease issues. See if they're listed on sites like LocalHarvest—not all farmers are, but it doesn't hurt to check. Ask them the specific variety of whatever produce they're selling. If they really grew it, they should be able to tell you that those are 'Emerite' filet beans, not just "green beans."
- *Look over the display*. Really look... Are all of the tomatoes the exact same shape and size? Do the apples have that waxy supermarket look? Are the cucumbers all perfectly uniform? Are they selling "local" watermelon in Detroit during the first week of May? If so, they probably went to the warehouse club and bought produce to sell at a premium at the farmers' market. Steer clear.
- *Know what's in season!* If you see watermelon in April or peppers in December in Minnesota or Michigan, chances are good that they have not been grown locally. While some farmers have large heated greenhouses to grow produce year-round, not all do, and it pays to ask questions if the vendor is displaying a lot of out-of-season produce.[144]

Community-supported agriculture is an arrangement by which consumers have no guarantee in terms of the amount, quality, or even variety of food that will be delivered to them.

Research, look, know, check, ask: While this is undoubtedly good advice to people who can spare the time, it means asking consumers to do the work of managing, validating, and transmitting crucial information about products, work that intermediaries typically do and which allows markets to function more smoothly. This information has a cost, and the cost will likely be higher if consumers are tasked with discovering it instead of paying for products into which it has already been integrated. This story certainly exemplifies how difficult it is to give consumers the food they want without the advantages of large-scale production and the services of intermediaries.

Economic journalist Peter Taylor might have the best take on the topic when he observes that food resellers are "true economic heroes" if they can travel a few hundred kilometers to the Ontario food terminal, buy products from middlemen who have themselves bought it from operations located far away, pass it off as fresh and local to consumers who cannot tell the difference, and still be able to undercut the prices charged by local farmers who have none of these additional expenses.[145]

142. Luke Denne and Tiffany Foxcroft, "'People are Being Duped': CBC Exposes Homegrown Lies at Farmers Markets," CBC News, November 30, 2017. See also Richa Syal, "Fruits of their labour: Ontario deals with growing tensions between farmers' market vendors," *The Globe and Mail*, November 12, 2017.

143. See, among others, Aleksandra Sagan, "More ugly fruit and vegetables coming to Loblaw stores," *The Globe and Mail*, May 16, 2018; Pierre Desrochers and Hiroko Shimizu, *op. cit.*, footnote 112.

144. Colleen Vanderlinden, "Scammers at the Farmers' Market: How to Make Sure You're Supporting Local Farmers," *PlanetGreen.com*, September 29, 2010.

145. Peter Taylor, "Going bananas at the farmers market," *The Waterloo Region Record*, October 12, 2017.

After packing table grapes in the field, farm workers load the boxes onto trucks for transporting to market.

–Community-supported agriculture

The community-supported agriculture format, for its part, requires a significant marketing effort while appealing primarily to individuals, both producers and consumers, who are committed to alternative agricultural models (organic, biodynamic, polycultures, etc.).

Community-supported agriculture is an arrangement by which consumers pay up front for a share of a growing season's harvest by a local farmer or group of farmers. In doing so, they have no guarantee in terms of the amount, quality, or even variety of food that will be delivered to them. This arrangement is justified on the grounds that consumers "share the risk" of food production with farmers, be they flood, drought, pests, or other problems.

In most cases, the food is delivered either directly to consumers, to a relatively nearby drop-off point on a regular (typically weekly) basis, or else the consumer is expected to pick it up at the farm (and perhaps even literally pick it from the field) throughout the growing season. Most community-supported agriculture projects are based in relative proximity to large urban centres, have between 35 and 200 members, and are by design much more diverse in terms of output than conventional agricultural operations.[146]

The seasonal character, inflexibility, and unpredictability of food deliveries typically result in greater waste than if food had been bought on an as-needed basis at supermarkets.

Common complaints by former community-supported agriculture customers include the seasonal character, inflexibility, and unpredictability of food deliveries that typically result in greater waste than if food had been

146. Ontario CSA Farm Directory, What are CSA farms?; Mary Holz-Clause, "Community Supported Agriculture," *Ag Decision Maker*, May 2010.

bought on an as-needed basis at supermarkets. As the journalist Leigh Phillips observes, not only is there a "mountain of anecdotal evidence" (if no systematic study) on this issue, but the subtitle of *The CSA Cookbook* by Linda Ly is, tellingly, *No-Waste Recipes for Cooking Your Way Through a Community Supported Agriculture Box*.[147]

Another recurring issue is that, as with shoppers at farmers' markets, people who enter into these types of arrangements tend to be at least middle-class and more educated than average.[148] This reality is unavoidable, as the food produced on a small and diversified operation will necessarily be significantly more expensive than items produced in a context that allows for the creation of economies of scale.

Not surprisingly, customer retention is a significant challenge, with a leading cause of member attrition being "supermarket withdrawal" syndrome, a problem characterized as "receiving the wrong vegetables in the wrong quantities at the wrong times." As policy analyst Marcia Ruth Ostrom observed based on detailed fieldwork: "CSA clearly cannot compete with supermarkets when it comes to providing the staples people are accustomed to having on demand. The unprepared found it onerous to adapt their menus to the vagaries of seasonality and the midwestern weather instead of seeing each week's share as the 'wonderful surprise offered up by the soil' referred to by more positive members."[149] Many leafy greens like chard and root crops like rutabagas, Jerusalem artichokes, and parsnips that are well-suited to local growing conditions were both unfamiliar and unpopular.

Customers also often complained about quality, quantity, and selection as inexperienced farmers brought them "wormy corn, rotten melons, dirty carrots, unripe fruit, wilted greens" and a general lack of variety. One woman coined the term "vegetable anxiety" to describe the way she felt when a delivery showed up before she had used up the vegetables from the last one.[150]

On the producers' side, typically small and often inexperienced farmers soon realize that the amount of time devoted to marketing their products (finding customers, building loyalty, delivering produce—in other words, exactly what intermediaries have always specialized in) is no longer available to them to produce more and improve their operation. Not surprisingly, community-supported agriculture farmers complain about low income for themselves and their workers,[151] an outcome similar to that of urban farmers with low production volumes.[152]

As could be expected in light of these difficulties, a growing trend among leading producers is to act as middlemen, often by offering a wider range of non-local products through online hubs, even though the original goal of community-supported agriculture was to avoid them. Some real wholesalers have also become involved in these activities as the use of the term "CSA" is not regulated in most jurisdictions.[153] For instance, in the Netherlands, several businesses (HelloFresh, BeeBox, Willem & Drees) fill boxes with local produce and deliver them to consumers without being involved in crop production themselves.[154]

Food produced on a small and diversified operation will necessarily be significantly more expensive than items produced in a context that allows for the creation of economies of scale.

One way or another, the work done by intermediaries in the food business is simply indispensable, as small producers trying to set up an alternative model quickly realize. This was the case for eight small producers of ethically raised meat and locally grown vegetables in the southern Quebec region of Brome-Missisquoi. They formed a cooperative, Le Terroir Solidaire, to pool their resources for various functions typically performed by intermediaries. As Laurence Levasseur of Selby Farm explained to a local paper: "Our Brome-Missisquoi businesses and farms collaborate in order to spread out and therefore reduce costs related to product distribution and transformation, insurance, storage and warehousing, marketing and online visibility. The costs can be pretty steep,

147. Leigh Phillips, *Austerity Ecology and the Collapse-Porn Addicts: A Defence of Growth, Progress, Industry and Stuff*, Zero Books, 2015, p. 123.

148. Marcia Ruth Ostrom, "Community Supported Agriculture as an Agent of Change: Is It Working?" in C. Clare Hinrichs and Thomas A. Lyson (eds.), *Remaking the North American Food System*, University of Nebraska Press, 2007, p. 109.

149. *Ibid.*, pp. 110-111.

150. *Ibid.*, pp. 111 and 113.

151. Mark Paul, *Community Supported Agriculture: A Model for the Farmer and the Community?* Ecotrust and Economics for Equity and Environment, February 2015, p. 8; Marcia Ruth Ostrom, *op. cit.*, footnote 148.

152. Carolyn Dimitri, Lydia Oberholtzer, and Andy Pressman, "Urban Agriculture: Connecting Producers with Consumers," *British Food Journal*, Vol. 118, No. 3, 2016, pp. 603-617.

153. Julia Moskin, "When Community-Supported Agriculture Is Not What It Seems," *The New York Times*, July 19, 2016.

154. Melika Levelt and Aleid van der Schrier, "Logistics drivers and barriers in urban agriculture," Paper presented at the 7th International AESOP Sustainable Food Planning Conference, October 8-9, 2015, p. 5.

A rooftop greenhouse growing organic greens in Montreal

especially for small but rapidly blossoming businesses like ours."[155]

The work done by intermediaries in the food business is simply indispensable, as small producers trying to set up an alternative model quickly realize.

The costs can indeed be steep, but even producers trying to develop alternative production models have no choice but to find ways to disburse them. Of course, in a normally functioning market, these intermediaries become specialized businesses, they have economies of scale, and they are a lot more productive—and consequently can offer services at lower costs—than farmers who take some time off the field to do this work for themselves and for colleagues in their cooperative.

155. Olivia Enns, "The Coop Le Terroir Solidaire hits the markets," *Le Tour*, Vol. 35, No. 4, Summer 2018.

The Shortcomings of Short Supply Chains: The Case of Lufa Farms[156]

Another model favoured by activists to shorten supply chains, minimize the role of intermediaries, and bring food producers and consumers closer together is that of urban agriculture. This model aims to reverse some of the most fundamental developments of the past centuries

156. For more detailed case studies, see Jose B. Alvarez *et al.*, "Lufa Farms," *Harvard Business School Case 514-008*, October 2013; Natalia Lafforgue, *Les freins et les motivations des principaux acteurs d'un système de distribution en circuits courts d'aliments locaux en milieu urbain : Le cas des fermes Lufa*, Master's Thesis (Marketing), HEC Montréal, 2015; Karine Balogh-Jobin, *Collaborer pour le développement durable à l'ère du 2.0 : Le cas d'une entreprise innovante du bioalimentaire et de sa chaîne d'approvisionnement locale*, Master's Thesis (Management), Université du Québec à Montréal, 2016. For generally uncritical coverage that nonetheless contains additional information, see, among others, Ellen MacArthur Foundation, "Lufa Farms: High Yields, high above the city," 2017; Genevieve Fullan, "Are Rooftop Greenhouses the Food Solution We've Been Waiting for?" *Alternatives Journal*, September 18, 2014; Emie Lamoureux, "Sustainability Storytelling: The Lufa Farms," *Medium*, January 29, 2015; Étienne Plamondon Émond, "Les serres des Fermes Lufa gagnent du terrain," *Les affaires*, September 17, 2016; Kieran Jefferson, "Rooftop Farming in Canada – Lufa Farms," *Locavore*, May 29, 2018; Catherine Sherriffs, "Garden Culture Tours World's First Commercial Rooftop Greenhouse," *Garden Culture Magazine*, June 6, 2018.

in agriculture. Instead of large-scale production in rural areas that is aggregated by wholesalers and then distributed and sold by grocery stores and supermarkets, as we saw above, this model focuses on small-scale production that is readily available to surrounding populations. Its proponents claim that it will be more environmentally friendly and cheaper. A more detailed discussion will give us the opportunity to highlight some of the main problems inherent in short supply chains.

Montreal-based Lufa Farms, a rooftop greenhouse and distribution agent, is widely hailed as one of Canada's most innovative and successful urban food producers. Founded in 2009, Lufa operates three rooftop greenhouses in the Montreal area, acts as a niche wholesaler for small-scale producers located in both nearby and distant (tropical) locations, and uses a weekly direct-to-consumer delivery model inspired by community-supported agriculture. Lufa defends an ideal of food independence for cities and a new way of feeding large populations.[157] While this objective is laudable, it appears to be unattainable, as the cost of groceries remains a challenge for Lufa's model.

Lufa now features over 1,500 products[158] for weekly delivery to approximately 13,000 "lufavores" in some 450 locations in southern Quebec.[159] In a nutshell, a lufavore is offered a basket made up of approximatively $30 worth of food and has until midnight before the day of delivery to customize it (that is, change its content, with a minimum purchase of $15).[160] Once the online marketplace is closed and credit cards are billed, baskets are prepared overnight and delivered to one of a few hundred pre-selected pick-up points (office towers, NGOs, educational institutions, corner stores, coffee shops, bookstores). In addition to delivery by (fossil fuel-powered) trucks to pick-up points, home delivery by electric car has also been available since 2015 for an additional $5 fee. Lufa's customer base seems to be mostly made up of wealthy 20- to 50-year-old urbanites.[161]

As one of the founders put it, "We decided that we needed to give people the option to order what they wanted, and that we would figure out how to get those items to them."[162] The Lufa model is thus designed to address the main causes of defections from community-supported agriculture, namely the lack of offerings during the off-season and unreliability during the growing season. The business is said to have first broken even in 2016 and was expected to be profitable in 2017.[163]

By 2013, Lufa had become an intermediary between its clients and approximately 120 producers. This number has since grown.[164] Lufa's distribution system obviously offers a useful service to these small alternative producers.[165] To take just one case, Quebec-based organic-potato grower Mario Bessette explains that "Lufa Farms gives us visibility and market access which would be almost impossible to establish ourselves."[166]

On the producers' side, typically small and often inexperienced farmers soon realize that the amount of time devoted to marketing their products is no longer available to them to produce more and improve their operation.

Over time, Lufa also incorporated a wide range of locally processed (honey, chocolate, bread, cereal, syrup, cheese, seasonings)[167] and imported (citrus fruits and avocadoes from Florida, coffee from Nicaragua, tea from China) goods sourced from premium or organic (in some cases biodynamic) small-scale suppliers.[168] The wholesale division operates on the basis of an average 50% markup and generates most of the business's income. As Lufa's corporate development manager observed in 2013: "People [get] really excited about the farm, but our core business is actually as an aggregator

157. Lufa Farms, About, August 2018; Mohamed Hage, "How a rooftop feeds a city," *TEDx Talks*, May 13, 2012.

158. Marie-Ève Fournier, "Stratégies Fermes Lufa : Le bonheur est sur le toit," *La Presse*, January 25, 2017.

159. These latest numbers at the time of writing are from Catherine Sherriffs, *op. cit.*, footnote 156.

160. Lufa Farms, A customizable weekly food basket, August 2018.

161. Natalia Lafforgue, *op. cit.*, footnote 156, p. 47.

162. Sarah Treleaven, "Is Personalized, Next-Day Delivery the Future of Urban Farming?" *Citylab*, February 9, 2018.

163. Marie-Ève Fournier, *op. cit.*, footnote 158.

164. La Coop fédérée, "La Coop fédérée et Les Fermes Lufa concluent une entente de partenariat," Press release, February 16, 2018.

165. For a more detailed discussion of Lufa's suppliers, including some positive and negative comments about the business, see Natalia Lafforgue, *op. cit.*, footnote 156.

166. Lufa Farms, "With Second Rooftop Greenhouse, Lufa Farms Harvests More Tomatoes, Vegetables for Same-Day Delivery to Montreal Consumers," Press Release, September 16, 2013.

167. Local suppliers of processed food include some of Montreal's finest, such as Le Fromentier, Joe Beef, Gourmet Sauvage, La Maison du ravioli, and Chocolaterie Bonneau.

168. See the company website for a more detailed description of the nature and philosophy of their Florida suppliers: Lufa Farms, Blog, Articles, Sustainable bananas, avocados, and citrus in Montreal, 2018.

Merchant and customer doing business at a market

of goods. That's how we make our money."[169] This is still the case today.[170]

The financial soundness of Lufa's production approach was always perilous, if for no other reason than that a rooftop greenhouse costs twice as much as a conventional one,[171] and that generating economies of scale between separate and distant units in the city is much more challenging than doing so in a rural location with adjacent installations.

Lufa's greenhouse production has come to specialize for the most part in herbs, leafy greens, and produce that is somewhat unconventional because it does not travel well or is exotic by Montreal standards. The latter produce commands a higher price and is typically unavailable at most grocery stores (heritage tomatoes, rainbow chard, Chinese flat cabbage, varieties of bok choy, herbs, mustard greens). In other words, Lufa's output is not and will likely never be produced for people of lesser means, thus contradicting the stated goal of many urban food activists.

Another model favoured by activists is that of urban agriculture. This model aims to reverse some of the most fundamental developments of the past centuries in agriculture.

Lufa's performance in terms of logistics is widely deemed the most problematic aspect of the business.[172]

169. Jose B. Alvarez *et al.*, *op. cit.*, footnote 156, p. 7.

170. Étienne Plamondon Émond, *op. cit.*, footnote 156.

171. Marie-Ève Fournier, *op. cit.*, footnote 158.

172. In short, because of its last-minute structure, Lufa's model puts a lot of pressure on producers. There have also been complaints about the high turnover rate and about mistakes made by Lufa employees that must ultimately be shouldered by suppliers. For a more detailed discussion, see Natalia Lafforgue, *op. cit.*, footnote 156, pp. 68-70; Karine Balogh-Jobin, *op. cit.*, footnote 156; Marie-Ève Fournier, *op. cit.*, footnote 158.

It is an issue that can arguably be traced back to the lack of reliability of its small-scale organic producers in terms of both quality and timing of delivery.[173] Nevertheless, Lufa has succeeded in being an intermediary for these producers, as their products are now reaching consumers. This process is ultimately the result of Lufa's diffusion of information between consumers and producers.

Another concern is about the way Lufa plays its role as intermediary. Their logistics chain involves small amounts of products, numerous providers, and numerous delivery points. These several short trips involving small quantities of goods (delivered via small trucks from producers to the warehouse and then to the delivery points) raise concerns about a greater environmental footprint. Fewer trips of larger quantities of goods, as is the case in a conventional wholesale/retail context, can result in a smaller environmental footprint per unit of produce, even when the distances travelled are greater. As analysts who have compared models of food distribution in Europe put it: "In summary, in comparison with a direct supply chain from the producers to the independent retailers (the latter are still widespread in Southern Europe), the intermediary wholesalers transform several shipments of small quantities into fewer shipments of larger quantities. Wholesaling activities thus provide economies of scale and contribute to the reduction of the number of vehicles on the already congested European road networks."[174]

A rooftop greenhouse costs twice as much as a conventional one, and generating economies of scale between separate and distant units in the city is much more challenging than doing so in a rural location.

In sum, while Lufa is being hailed as a model of green urban agricultural practices, a closer analysis suggests that the real value of the business is in its wholesaling division; that its rooftop greenhouse production model is not scalable, as it is based on limited volumes of mostly unconventional and/or pricier produce; and that the environmental footprint of its logistics system might negate any advantage gained from closer proximity to consumers.

173. Jose B. Alvarez *et al.*, *op. cit.*, footnote 156.

174. Jean-Joseph Cadilhon *et al.*, *Wholesale Markets and Food Distribution in Europe: New Strategies for Old Functions*, Discussion Paper, Centre for Food Chain Research, London: Imperial College, 2003, p. 13.

A Consumer's Perspective on Lufa[175]

How does Lufa perform as a producer, wholesaler, and retailer when viewed from the perspective of a consumer? Is it really comparable, as some have suggested, to "community-supported agriculture (CSA) or a farm share merged with the personalization and convenience of Uber Eats or Amazon Prime"?[176] Or is it rather less convenient than much of the hype surrounding the business would suggest? While the single experience that follows does not pretend to be a scientific analysis, it nonetheless illustrates some of the main problems of short supply chains.

To summarize, one of us registered with Lufa on a Friday. By Sunday, he received an email informing him that the market was open until Tuesday midnight, by which time he should have made his choices and personalized his basket. The website automatically prepares a basket entirely composed of food produced in the urban greenhouses, mostly made up of herbs, which are often more expensive, but also less calorific, than a common food basket. This is one way of encouraging consumers to choose Lufa's own products over those of other producers.

The consumer can choose from two main categories: products coming directly from Lufa's greenhouses (approximately 100 of them, depending on the season) and products from other suppliers (approximatively 1,400 of them).

Of the 38 everyday consumer food products such as bread, milk, and pasta listed by Quebec-based consumer protection magazine *Protégez-Vous*, only 28 were available in late May 2018,[177] and only 5 were produced in Lufa's greenhouses,[178] thus making additional grocery shopping trips essential. While this was to be expected,

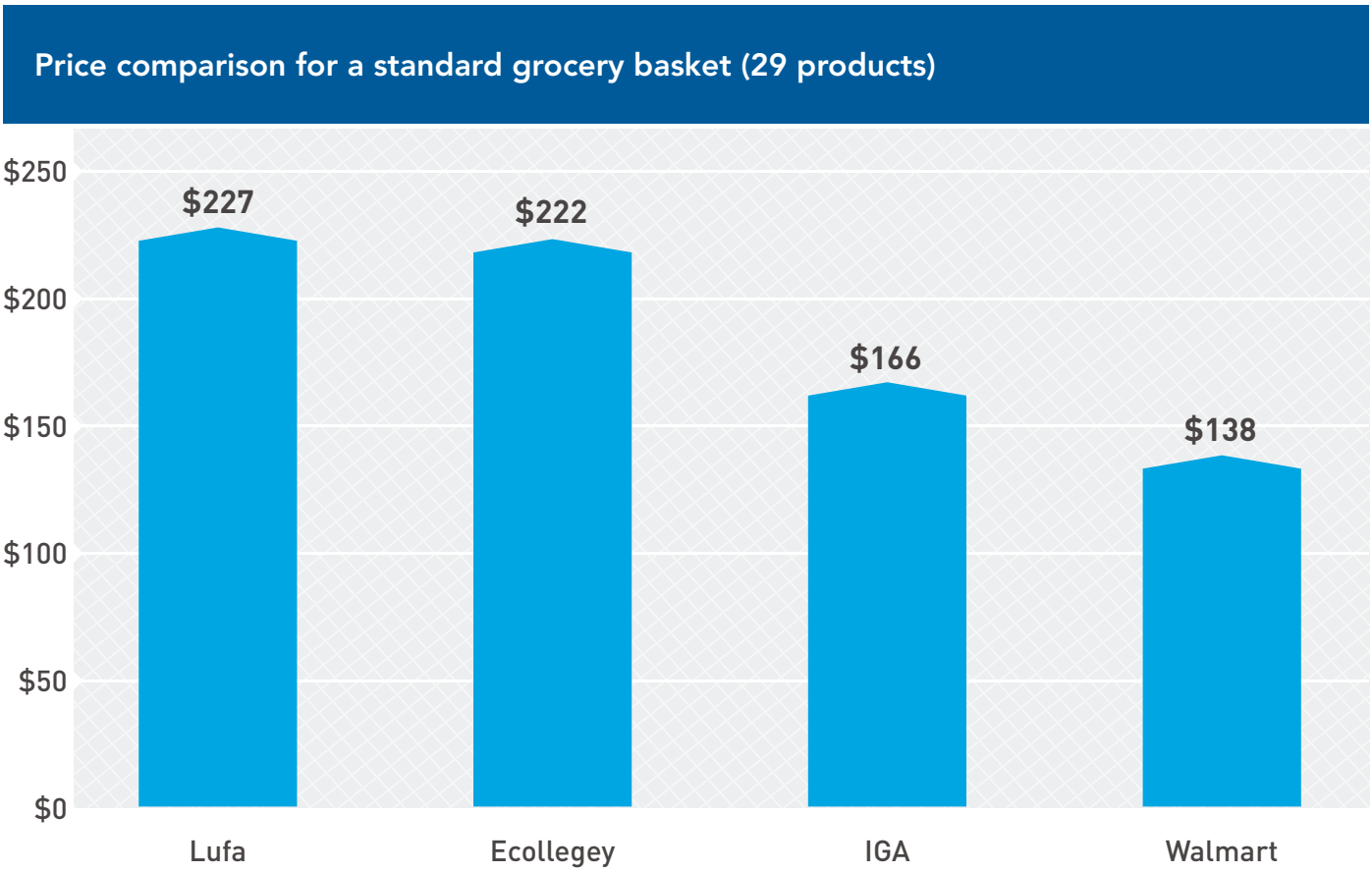
175. Our goal in this section is to illustrate some of the issues discussed previously through the eyes of a regular consumer. For a more detailed analysis of customers' complaints, see Natalia Lafforgue, *op. cit.*, footnote 156; and Karine Balogh-Jobin, *op. cit.*, footnote 156. Among problems not discussed in this section are the fact that some lufavores only use the service in the winter because better alternatives such as farmers' markets are available in the summer, the lack of direct interactions with producers and consumers, and the high cost of processed goods offered by Lufa. Among business owners that act or have acted as Lufa's pick-up points, the additional work inherent in distributing baskets that over time became larger, heavier, uglier, and less convenient in terms of storage seems to be the main, although certainly not the only, complaint.

176. Sarah Treleaven, *op. cit.*, footnote 162.

177. The *Protégez-Vous* list included 49 products, but we excluded the 11 products from the "other" and "household products" sections because they do not correspond to Lufa's range of offerings.

178. Cucumber, cabbage, eggplant, green pepper, and broccoli. Among basic products missing from the list were orange juice, canned tomatoes, vanilla ice cream, and cheddar cheese. See Protégez-Vous, Santé et alimentation, Supermarchés, Méthodologie.

Figure 3-2



Source: Authors' calculations, based on prices gathered online.

another problem was that many products listed on Lufa's website were unavailable. Among Lufa-grown products, a majority were herbs and lettuces that are not main components of a meal.[179] Somewhat surprisingly, the supply of distant products seemed less problematic than the supply of products from Lufa's greenhouses.

The suggested basket also listed products advertised as "not pretty, but quite tasty" which are defined as "misfit fruits & vegetables from our third-party suppliers" that do not match Lufa's "high quality standard," but are still deemed great for eating, and are offered at a significantly discounted price.[180] The basket also contained slightly discounted "surprises" that, according to the company's website, are typically surplus production from Lufa's greenhouses, trial products, samples, and products nearing their "Best Before" date. These surprises are further presented as a "bundle against waste" in which "you'll never really know what you're going to get. Think of it as a cooking challenge and a way to do your part in making our food system more sustainable."[181]

Fewer trips of larger quantities of goods, as is the case in a conventional wholesale/retail context, can result in a smaller environmental footprint per unit of produce, even when the distances travelled are greater.

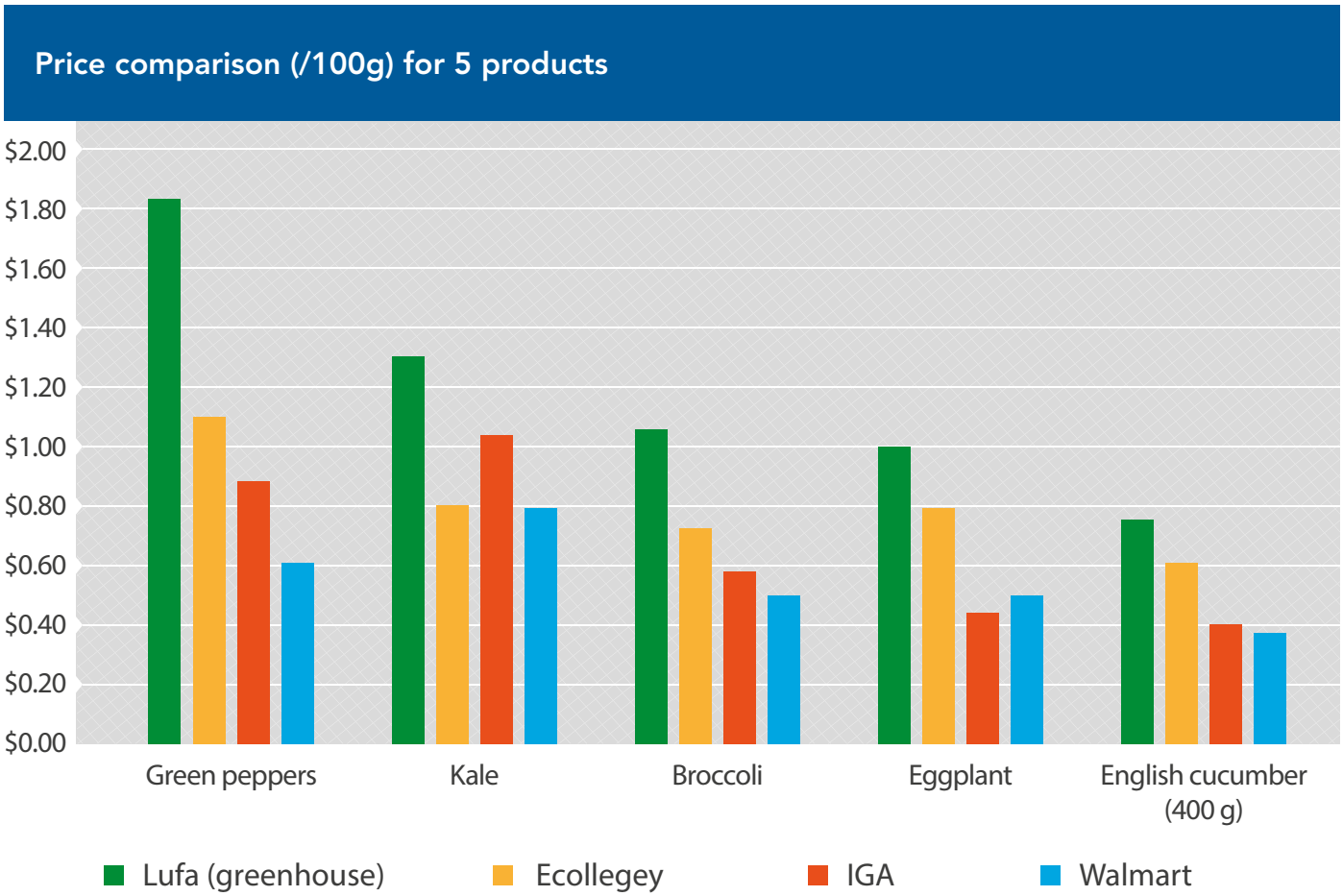
Other problematic issues included the pick-up location where baskets were piled on top of each other in a remote corner. Although each basket displayed a sticker with the customer's name, the experience was akin to an honour system in which people were expected to resist the temptation of helping themselves to the content of other customers' baskets. Some of the products delivered

179. Lufa Farms, Marketplace.

180. *Idem.*

181. *Idem.*

Figure 3-3



Source: Authors' calculations, based on prices gathered online.

also failed to meet professional standards by being above or below the expected weight, with the price difference being charged or subtracted on the next bill.

Even assuming all products listed were available, their price compared to available alternatives ranged from significantly higher for conventional products found in supermarkets to slightly higher for comparable items found in more specialized retail outlets. Using the standard *Protégez-Vous* grocery basket for food,[182] we created a basket with 29 items in order to establish price differentials between identical or similar items among four retailers (including Lufa), with the price adjusted by weight or volume. We compared Lufa products to those of a Montreal-based organic supermarket (Ecollegey) that also offers a delivery service; to the supermarket chain deemed the most expensive by *Protégez-Vous* (IGA); and to the retailer offering the lowest prices (Walmart).[183]

It is through its role as middleman rather than as a local producer that Lufa manages to generate profit, and it is therefore in this role that it best answers consumer needs.

As illustrated in Figure 3-2, the Lufa basket was more expensive than that of its competitors: 2% more expensive than Ecollegey's, 37% more than IGA's, and 65% more than Walmart's. The price differential was even more significant when looking at the five products included in

182. Specifically, the "fruits and vegetables," "milk and substitutes," "grain products," and "meats and substitutes" sections. Protégez-Vous, Santé et alimentation, Supermarchés, Méthodologie.

183. Protégez-Vous, Santé et alimentation, Supermarchés, Enquête de prix: nos résultats.

the *Protégez-Vous* list and grown in Lufa's greenhouses (see Figure 3-3).[184]

In conclusion, the Lufa business model caters to middle and upper-middle class consumers, and gives no indication of ever being significantly scalable or, more importantly, of being able to address the needs of households with lesser means. Ironically, it is through its role as middleman rather than as a local producer that Lufa manages to generate profit, and it is therefore in this role that it best answers consumer needs.

Far from proving the case made by food activists on behalf of the value of short supply chains, Lufa Farms instead is a good illustration of the reasons why food production long ago moved out of cities and into the countryside, in the process benefitting from lower costs and significant economies of scale. Most importantly, it demonstrates once again the useful role played by numerous intermediaries that are better able to match consumers' demand and producers' offerings by delivering quality, reliability, convenience, and affordability, while minimizing waste.

The Case against a National Food Policy

The French economist Frederic Bastiat, a forerunner of the Austrian School of Economics,[185] observed almost 200 years ago that the one million inhabitants of Paris had to rely on the rest of the country for most of their sustenance, and that they would "die in a short time if provisions of every kind ceased to flow toward this great metropolis." And yet, Bastiat commented, every night Parisians slept peacefully, undisturbed "for a single instant by the prospect of such a frightful catastrophe." This was possible because all regions of the country had laboured "without concert, without any mutual understanding, for the provisioning of Paris." The key to this astonishing feat, Bastiat wrote, was "the principle of freedom in transactions" that each day delivered "what is wanted, nothing more, nothing less, to this gigantic market."[186]

The wonders of a free-market in food described by Bastiat have since been extended—albeit imperfectly—to most parts of the world, in the process delivering the advances described in previous chapters. In spite of these undeniable successes and the poor track record of government planning throughout history, however, calls for greater government involvement in the production, regulation, and distribution of foodstuffs never go away. A case in point is Canada's federal government recently tasking its Department of Agriculture and Agri-Food to develop a "Food Policy for Canada" through an extensive process of consultation.[187]

The fact that significant progress in the production and delivery of ever more affordable and diverse food was achieved in the absence of a government-led food strategy doesn't seem to carry much weight.

Remarkably, though, the fact that significant progress in the production and delivery of ever more affordable and diverse food was achieved in the absence of a government-led food strategy doesn't seem to carry much weight with participants to this process. Neither does the fact that some basic food items would be even more affordable in the absence of government policies such as supply management in the dairy, egg, and poultry sectors.[188] Indeed, the notion that Canadians can, just like Parisians two centuries ago, sleep peacefully, confident in the knowledge that free markets will deliver plentiful food at a price they can afford, is anathema to supporters of a national food policy. Not surprisingly, the report of the House of Commons Standing Committee on Agriculture and Agri-Food contains 21 vague recommendations that, for the most part, call for greater government intervention in food markets.[189]

While many of the individuals consulted in preparing this report acknowledged the complexity of our food system, other groups clearly favour solutions consistently tending toward greater simplicity and one-size-fits-all government interventions.[190] For example, certain activists and producers took this opportunity to suggest the creation of a national "food policy council" in order to

184. When it was possible, we selected substitutes for products on the *Protégez-Vous* list to allow comparison across retailers. For example, we replaced romaine lettuce with kale and orange juice with apple juice.

185. Mark Thornton, "Frédéric Bastiat as an Austrian Economist," *Journal des Économistes et des Études Humaines*, Vol. 11, No. 2, 2001.

186. Frédéric Bastiat, *The Bastiat Collection*, Volume 2, Ludwig von Mises Institute, 2001, pp. 272-273.

187. Government of Canada, Consulting with Canadians - A Food Policy for Canada, September 5, 2017.

188. Pierre Desrochers, Vincent Geloso, and Alexandre Moreau, "Supply Management and Household Poverty in Canada," *International Review of Economics*, Vol. 65, No. 2, 2018, pp. 231-240.

189. Pat Finnigan (Chair), *A Food Policy for Canada*, Report of the Standing Committee on Agriculture and Agri-Food, House of Commons of Canada, December 2017.

190. *Ibid.* p. 8.

The frozen food aisle in a supermarket

improve the coordination of the various component of the country's food supply chain.[191] In their view, this "would help build collaboration, elevate and coordinate programs, and drive change among these diverse stakeholders to accelerate progress towards the food policy's objectives."[192] In other words, their goal is to replace present-day practices that emerged through a constant process of trial, error, and improvement with simpler ways of doing things that could in theory be managed by a bureaucratic apparatus. What eludes these food activists is that, as both economic theory and the historical evolution of retailing demonstrate, depriving market forces of their "compass" (i.e., market-generated prices, profits, and losses) can only result in less satisfactory outcomes. While turning back the clock might seem appealing to some, we need to remember the limited

Local food for local people can only deliver yesterday's less diverse offerings and higher prices.

offerings and higher prices of past supermarkets and grocery stores.

Another case in point is the call for greater government support "for the growth and development of local and regional agriculture."[193] Those who promote such a policy fail to appreciate how historically, efficient middlemen and the price signals relied upon by producers, processors, and retailers resulted in the spontaneous development of regional specializations in food production and of economies of scale in the production, processing, delivery, and retailing of foodstuffs. Local food for local people can only deliver yesterday's less diverse

191. Arrell Food Institute, "The Case for a National Food Policy Council," Report by the ad hoc Working Group on Food Policy Governance, University of Guelph, October 2, 2017.

192. *Ibid.*, p. 4.

193. Pat Finnigan, *op. cit.*, footnote 189, p. 14.

offerings and higher prices.[194] This is not to say, of course, that some local production cannot find a niche market among predominantly well-off consumers. That being said, favouring one type of agriculture through the use of subsidies would probably reduce the purchasing power of other consumers.

The Standing Committee on Agriculture and Agri-Food also recommends that the government take action to reduce industry food loss.[195] While the aim is laudable, policy-makers should keep in mind that market processes are inherently hostile to waste, since everyone who has paid for valuable inputs and final products always tries to extract the most value out of them. While our current system is not perfect, it has nonetheless resulted in a better use of agricultural inputs, reduced food loss and waste, improved food security, and provided useful science-based information to consumers.[196] The models they propose are less efficient economically because of their tendency to get rid of middlemen, contributing to a loss of some of the market signals that enable producers and retailers to meet consumer demand at a reasonable price. The fact that local food production and short supply chains were increasingly discarded over time is not something that should be mourned; if one cares primarily about food availability and affordability, it should on the contrary be celebrated.

The way forward must not be built around nostalgia for geographical proximity, but around ever more innovative practices. As discussed in Chapter 1, developments in information technology have made centralized approaches obsolete. This is especially true for economic activities such as food distribution and retailing in which market solutions are provided on a daily basis to address the changing tastes of consumers and deal with the complexity of long supply chains. For instance, a British supermarket introduced dynamic pricing through electronic price tags that reflect changing factors such as the availably and the expiry date of products and competitors' prices. This system, based on decentralized knowledge, also helps prevent waste.[197]

Blockchain technology and its capacity to convey much larger volumes of information will also likely soon result in higher levels of transparency in the supply chain, for instance by providing consumers with much more information about the history of a product through the scanning of a QR code. This technology should also allow the entire food supply chain to further reduce waste and to track contaminated or mislabelled items even more efficiently than is presently the case. Indeed, Walmart, among others, has already completed pilot projects to this effect, testing blockchain technology on its mangoes with promising results. It was able to trace them and provide all the information consumers want in two seconds, compared to almost a week without blockchain.[198]

Market processes are inherently hostile to waste, since everyone who has paid for valuable inputs and final products always tries to extract the most value out of them.

Perhaps because it happened gradually and without any single authority being in charge, the quasi-miraculous nature of our modern food supply chain and supermarket network is not only taken for granted, but also constantly criticized by activists who fail to appreciate the true virtues of decentralized market processes. But while the superficial appeal of putting someone in charge of taming a complex system is understandable, the outcome of such a strategy can only be negative, and could even be catastrophic.

194. Pierre Desrochers and Hiroko Shimizu, *op. cit.*, footnote 112.

195. Pat Finnigan, *op. cit.*, footnote 189, p. 20.

196. For a discussion of the activists' goal, see Minister of Agriculture and Agri-Food, *What We Heard: Consultations on a Food Policy for Canada*, Government of Canada, 2018, pp. 12-24. For a more detailed discussion of how historically the long-distance trade in food has considerably reduced food waste while dramatically improving food security, see Pierre Desrochers and Hiroko Shimizu, *op. cit.*, footnote 112.

197. Tim Adams, "Surge pricing comes to the supermarket," *The Guardian*, June 4, 2017.

198. Sylvain Charlebois, "How blockchain could revolutionize the food industry," *The Globe and Mail*, December 12, 2017.

CONCLUSION

What Might the Future Have in Store?

As economic geographer James E. Vance Jr. observed two generations ago in his study of wholesaling, "Perhaps the central condition in the development of trade over the centuries has been the slow emergence of consistency and specialization."[199] In Canada as elsewhere, standardized food commodities and branded manufactured products reached final consumers through complex distribution channels whose activities ultimately aimed to match, as closely as possible, consumer demand and producers' outputs. Along the way, this led to a reduction in the costs related to waste and inefficiency.

It is therefore entirely rational to expect that, if Canada can be spared a "national food policy" and the various layers of efficiency-killing regulations that would likely accompany it, future food offerings will be more abundant and varied, and also cheaper and safer, than in the past. As argued in this paper, theory and empirical evidence strongly suggest that government promotion of short supply chains can only deliver higher prices and less variety, entailing as it does a less efficient use of scarce resources. As explained by the Austrian economist Friedrich Hayek, only market processes can effectively tap into the particular circumstances of time and place. Even motivated bureaucratic planners can never outperform the multitude of middlemen and entrepreneurs who deal with practical problems on a daily basis, periodically coming up with highly original and profitable solutions.

While we can confidently predict the principal results of adopting a national food policy, trying to anticipate the future forms of private sector retail and of the food supply chain is obviously a more speculative endeavor. Yet one can take inspiration from the words of the Marquis of Halifax (1633-1695) who said that "the best qualification of a prophet is to have a good memory." In other words, any attempt to predict the future of food retail and wholesale requires not only some insight into the latest technologies, overall economic and demographic conditions, and evolving shopping behaviours, but arguably also some perspective on past transitions.

Many recent developments now suggest something of a return of the "credit and delivery" model, albeit with a 21st century digital twist. As some industry analysts put it, the "milkman is back, but this time he's gone digital."[200] With the proviso that most past experts proved incapable of anticipating the most significant developments in 20th century food retail, we would now like to synthesize and speculate somewhat on the possible shape of future developments—although not their timing. (For instance, while the Amazon Go model of selling goods without physical checkouts is certainly an indication of things to come, it is arguably too expensive at the moment to be implemented on a large scale.)

It is entirely rational to expect that future food offerings will be more abundant and varied, and also cheaper and safer, than in the past.

Developments in the short, medium, and long run will likely include the following:[201]

- The way food gets from producers to consumers will continue to evolve, with businesses finding new ways to adapt to particular circumstances of time and place.
- Humans will increasingly be replaced by various machines or software programs in food production, inventory management, retail stores, and delivery. The cost savings resulting from these developments will, as in the past, release additional purchasing power and further reduce the proportion of household budgets devoted to food.
- Big data analytics, mobile apps, in-store equipment, and other technological developments will result in an ever more customized shopping experience, including more personalized online and in-store offers to consumers. Competing retailers will keep on trying to foster customer loyalty to their brands.
- Blockchain technologies that provide much information on the provenance, transformation, and handling of particular products will reduce the incidence of food fraud.

199. James E. Vance Jr., *The Merchant's World: The Geography of Wholesaling*, Prentice Hall, 1970, p. 61.

200. The Nielsen Company, *The Future of Grocery E-Commerce: Digital Technology and Changing Shopping Preferences Around the World*, April 2015, p. 6.

201. See, among others, The Nielsen Company, *ibid.*; Jessica Moulton, *The Future of Grocery—in Store and Online*, McKinsey and Company, Podcast transcript, June 2017; Inmar Inc., *2017 Future of Food Retailing*, 2017.

- Retailers of all kinds will keep investing in eCommerce and develop variations of "click-and-collect" (including in-store, drive-through, or curbside pick-up) and home delivery models in order to cater to various needs, be they those of older people with reduced income and mobility or those of busy young couples pressed for time.
- While consumers are likely to order ever more standard products online, until the day all products are really interchangeable and the total price (including delivery fee) and speed of fulfillment of on-site and online shopping are almost identical, many consumers are likely to visit some form of brick-and-mortar stores for a portion of their purchases.
- Factors suggesting the continued presence of physical markets include the opportunity to socialize and the fact that many people enjoy shopping for food in person, not only to see products before purchasing them, but also to discover new offerings through taste, touch, and smell. One can thus expect food retailers to continue making the in-store experience ever more attractive.

As Austrian economists have taught us, there is no shortcut around the dreaded "middlemen." The services they provide are indispensable to making quality food available to consumers, when and where they need it, at a reasonable price.

Finally, we also suspect that, in the future as in the past, food activists will complain about the unsustainability of current practices and increased corporate power, and will advocate for fewer intermediaries and shorter supply chains.

But as Austrian economists have taught us over the past century, there is no shortcut around the dreaded "middlemen." The services they provide are indispensable to making quality food available to consumers, when and where they need it, at a reasonable price. The institution of the supermarket testifies to their usefulness. Although their presence does have the effect of lengthening the supply chain, they are the ones actually providing the logistical shortcuts without which it would be impossible to feed millions of people. That work needs to be better understood, and instead of being disparaged, celebrated for the economic miracle that it is.

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