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Competitiveness of Small Farms and Innovative Food Supply Chains: The Role of Food Hubs in Creating Sustainable Regional and Local Food Systems

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Academic Editor: Giuseppe Ioppolo

Received: 17 May 2016; Accepted: 24 June 2016; Published: 1 July 2016

Abstract: Over the last decades, the economic, social and environmental sustainability of the conventional agri-food system has and continues to be contested within both academic and public institutions. For small farms, the unsustainability of the food system is even more serious; farms' declining share of profit and the cost-price squeeze of commodity production has increased barriers to market access with the inevitable effect of agricultural abandonment. One way forward to respond to the existing conventional agri-food systems and to create a competitive or survival strategy for small family farms is the re-construction of regional and local agri-food systems, aligning with Kramer and Porter's concept of shared value strategy. Through a critical literature review, this paper presents "regional and local food hubs" as innovative organizational arrangements capable of bridging structural holes in the agri-food markets between small producers and the consumers—individuals and families as well as big buyers. Food hubs respond to a supply chain (or supply network) organizational strategy aiming at re-territorialising the agri-food systems through the construction of what in the economic literature are defined as values-based food supply chains.

Keywords: food hubs; nested market; alternative agri-food networks; short food supply chains; values based food supply chains; local food systems; small farm competitiveness; food system sustainability

1. Introduction

Over the last decades, the sustainability of the conventional agri-food system has and continues to be contested as both academic and public institutions advocate a transition to "sustainable agri-food systems". As outlined in the 2016 Agriculture's Special Issue "Distributed, Interconnected and Democratic Agri-Food Economies: New Directions in Research" global agri-food systems dominated by vertically integrated, large private enterprises have undoubtedly contributed to achieving higher food output and productivity levels along the food supply chain. This success, however, has resulted in several negative economic, environmental and social externalities [1,2], which caused increased marginalization, inequality and vulnerability of small family farms. Farms' declining share of profit, the cost-price squeeze of commodity production [3] and the unequal bargaining power in the food chain [4] has increased barriers to market access for small family farms [4,5] contributing, together with other structural changes, to the gradual de-agrarianisation, land abandonment and depopulation of areas in which such holdings predominate [6]. Small farms play an important role in supporting rural employment and maintaining the social fabric of rural areas [7] and therefore, as stated by Breustedt and Glauben [8], "the declining number of farms not only has consequences for the agricultural sector but also for rural areas as a whole. The loss of farms might lead to a depopulation of the countryside

which in turn affects the demand of services and infrastructure of local communities". At the same time, industrial agricultural systems have failed in meeting the challenge of feeding a growing global population within the limits of Planetary Boundaries [9]. From a political perspective, meanwhile, the limits of the conventional food system have also been recognized. As stressed by De Schutter [10] (p. 4), "measured against the requirement that they should contribute to the realization of the right to food, the food systems we have inherited from the twentieth century have failed from economic, social and environmental point of view".

In response to the multiple—economic, environmental and social—crises of the conventional agri-food system in the last two decades, rural development practices [11] that embody alternatives to the industrial mode of food production and distribution have emerged, namely "re-territorialisation" or "re-localization" of the food supply chains or networks, into "short circuits" [12] often referred as short food supply chains or alternative agri-food networks (AAFNs) [13–21].

For farms, re-territorialisation of the agri-food system is a threefold competitive strategy in order to create "shared value" [22], especially for those small family farms, which struggle to interface with the conventional markets. This is done through three distinct means:

- (1) "Redefining products and markets,
- (2) Redefining supply chains, and
- (3) Building supportive industry clusters at the company's locations" [22] (p. 65).

The concept of shared value introduced by Porter and Kramer [22] can be defined as "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates. Shared value creation focuses on identifying and expanding the connections between societal and economic progress" [22] (p. 66).

Porter and Kramer's [22] perspective on shared value can be usefully applied to small farms and to create viable economic alternatives to the existing agricultural system. One example of shared value strategy given by Porter and Kramer [22] is gathered from the agri-food industry where "food companies that traditionally concentrated on taste and quantity to drive more and more consumption are refocusing on the fundamental need for better nutrition" [22] (p. 67).

From the perspective of small farms, redefining products, markets and supply chains can help to develop a new value creation strategy based on shared value. In this paper, we explore the shared value's small farms competitiveness strategy with a focus on the creation of new supply chains and particularly on the "regional and local food hubs" (FHs). Through a critical literature review this paper aims at illustrating how "regional and local food hubs" (FHs) are emerging as innovative intermediary organizational forms capable of overcoming the organizational and infrastructural limitations that impede small farms to reach the growing demand of local produce.

As stressed by Koch and Hamm [23] (p. 483), "the recent emergence of the food hub concept and its development [. . .] has garnered much attention. Food hub operations have been framed as a strategy to scale up local and regional food systems, specifically by increasing market access to small and mid-sized farms". A search on Google (21 June 2015) for "food hub"/"food hubs" listed no less than 416,000/93,400 results while in Google Scholar shows 1280/1030 results half of them 560/503 are from 2014 onwards.

Despite the academic interest, there are no literature reviews on FHs. Starting from a critical review of this fragmented and dispersed literature we have identified two dichotomic approaches—the "values-based agri-food supply chain" approach and the "sustainable food community development"—around which we have organized the literature on FHs into a coherent framework. With the aim of exploring the FHs literature from the economic theory perspective we have framed the FHs within "shared value" theory that is very new and never applied to agricultural economic studies.

Furthermore, the paper introduces innovative theoretical economic building blocks like "aggregative scaling" which distinguish FHs from both the economy of scale model of the conventional

food system but also from the cooperative model. Relying on economic theory we introduce also the concept of “strategic coordination” which is at the base of the conceptualization of the FH as a strategic network. The paper also discusses the topic of “power” that is not discussed in the existing literature and the topic of the “digital technologies” which are at the core of the FH as a disruptive business model.

Finally, the paper provides a new definition which broadens the existing definitions of FHs by introducing the two components of Food Hub Intermediary Organization (FH-IO) and Food Hub Strategic Network (FH-SN) that are fundamental for the understanding of what the FHs really are.

1.1. Redefining Products and Markets

In traditional marketing and management theories and specifically in the food value chains and food supply chain management theories, a “differentiated product” is a product with incremental value in the market determined by its specific attributes that distinguish it from other products [24,25]. In the re-territorialisation approach, product differentiation unfolds mainly along three distinct dimensions, each of them with distinct attributes:

- (1) Quality, safety and healthiness: freshness, nutritional values, flavour, consistency, composition and texture, modes of production (inputs and farming practices), authenticity means, tenderness, colour, preparation, tradition, handcrafting, etc.;
- (2) Sustainability and healthiness: organic, biodynamic, waste management practices, water management practices, biodiversity/local species, antibiotic and/or hormone free meat; ecosystem services provided with the agricultural production, animal welfare, etc.;
- (3) Locality: distance between place of production and selling point, administrative boundaries, identity, tradition, biodiversity/local species.

This also implies a reconfiguration of the farm business model and operations in the direction of multifunctional diversification [11,26,27] and agroecology [28]. In particular, it implies a redefinition of how small farms may engage with markets.

Re-territorialisation is strictly connected with developing or engaging with new shorter food supply chains aimed at building new “Nested Markets” (NM), that according to Van der Ploeg et al. [11] can occur by an interactive mixture of four processes:

- (1) The demonopolization of existing markets,
- (2) The construction of new connections between existing markets,
- (3) The creation of new markets,
- (4) The development of new governance structures for both existing and new markets.

Van der Ploeg et al. [11] define NMs as “specific places where specific transactions take place between specific suppliers and specific consumers. These producers and consumers are linked through specific networks and commonly shared frames of reference”. Although they are specific markets segments that are nested in the wider commodity food markets, they have a different nature and different dynamics:

- They are associated with “distinctive” products or services in contrast with standard, undifferentiated and placeless products available in the conventional agri-food markets, whose “value” drives to a premium price for producers;
- They presents different market governance mechanisms which are at the base of a more distributed power and equal distribution value added along the supply network;
- They are organised around different organisational platform and physical infrastructures and logistics that are constituted by short circuits;
- They are strictly intertwined with the physical space of production and they unfold on a local and regional scale but they can also be extended to extra regional scale [11,29].

From a Nested Market perspective, AAFNs can be conceptualised as socio-material and technical patterns and coordinative forms that aim at re-modelling the productive, distributive and redistributive mechanisms for products, services and economic value. Through the development of new markets, AAFNs aim at creating economic viability for small and family farms that cannot access the conventional food market. Markets are not just economic institutions (formal/nominal space) but also socio-material networks of relationships that allow transactions (of good and services) to occur; but in some scenarios these transaction between producers and consumers might not take place due to disconnection that can be identified as “structural holes” in the market structure [29]. Burt [30] (p. 208) defines the “structural hole” as “a buffer, like an insulator in an electric circuit” and conventional agri-food markets exhibit structural holes that impede small farms from connecting with consumers due to a lack of material infrastructure on behalf of small farms, as well as the unequal redistribution of the economic value produced which impede small farms accessing the food market.

1.2. The Challenge of Scale and the Redefinition of Food Supply Chains

In response to these structural holes, over the last 30 years, alternative models of “farm to fork” chains have developed including: direct (on farm) sale, pick your own or u-pick; box schemes; farmers’ markets; collective farmer shops, community-supported agriculture, solidarity purchasing groups, collective buying groups. All these models refer to new food production, distribution and consumption networks of small size and scale farms, consumers, retailers, logistics and other actors built upon the re-connection or close communication between producer and consumer, allowing for the development of new forms of relationship and governance of the actors’ network enabling a re-distribution of value for primary producers. Those new organizational forms are based on:

- Transparency: provenance, traceability, composition of products, modes of production;
- Democracy: producers reconfigure power relations along the supply chain or network with reaffirmed control;
- Equity: fair income for the small scale producers, equitable distribution of added value along the food network, reasonable price for consumer, accessibility also for lower income groups;
- Access: organisational and physical structures of the appropriate scale for moving locally grown food to consumers.

Alternative agri-food chain literature focuses on “cutting out the middleman” in markets to change unsustainable conventional food chains [31,32]. Indeed, Kneafsey et al. [13] (p. 15) define short food supply chains as those where “the foods involved are identified by, and traceable to a farmer. The number of intermediaries between farmer and consumer should be ‘minimal’ or ideally nil”.

Studies on short agri-food supply chains and comparative analysis between conventional and local food systems show their beneficial impact from environmental, social and economic points of view [13,33,34]. At the same time, it has been argued that alternative agri-food networks or short food supply chains are about morality and voluntarism [11] with an ideological flavour [35] which risk creating a “local trap”—i.e., the assumption of solely positive impacts as a result of working at a local scale [36,37] or finally as “defensive localism” [14,38,39]. Furthermore, these initiatives have been labelled as elitist, exclusive, and inequitable [40,41]. As stressed by Du Puis and Block “some have critiqued food-localism movements as unreflexively utopian, depending upon a romantic and unquestioned communitarian vision of social justice” [42] (p. 1988).

A major area of research required for these initiatives is therefore how to scale them—both out and up in order to achieve their transformative capacity in the existing unsustainable agri-food system. Wiskerke [43] (pp. 430–431) highlighted that despite impressive growth of new or “alternative” food supply chains and networks that incorporate claims of sustainability and quality, the market share of these alternative supply chains and networks in agricultural production and food consumption were incomparably small compared to conventional supply chains. After 10 years, according to Woods et al. [44], in the US, despite growth in consumer interest in locally produced food, 97% of food still travels through conventional market structures dominated by established and increasingly concentrated

nationally and globally organized food supply chains. In the UK, according to Willis [34], national supermarket chains dominate grocery spending—accounting for 77% of all main shopping trips.

Scaling (up and out) is therefore the next challenge facing the short agri-food supply chains or AAFNs [1,45–54]. Simultaneously, there is growing interest in methods of scaling up for AANs that do not erode their authenticity or detract from the overarching objective of contributing to a more sustainable and socially just food system [1,31,32,46,47]. In short, the AANs need to scale up and out without losing their social, environmental and positive localised economic impact.

There are three main challenges in the scaling process, which should be pursued while preserving the environment and social justice [50]:

- (1) Providing the right quantity and consistency of products and at the same time maintaining the quality for individuals, family and big buyers (restaurants, pubs, schools, hospitals, hotels, etc.) needs; i.e., matching supply with large-scale demand,
- (2) Providing a more varied range of products and therefore overcoming the existing tension between variety and locality,
- (3) Improving accessibility and convenience for meeting consumers' needs for healthy and fresh food, especially for low-income communities.

Direct marketing approaches suffer from a lack of capacity both in terms of the volume of available produce but also the required infrastructure to meet the growing demand for local, sustainable food [31] (p. 144). The major obstacle to localisation is lack of economic, organisational and physical structures of the appropriate scale for moving locally grown food to local eaters [45,51,55]. One of the most commonly recognised responses to the challenge of scale within the alternative foods systems is the Food Hub.

In the last few years, FHs have experienced growing interest from academia, consultancy and institutional studies as innovative business solutions or community based organisations designed to meet both the rise of the local foods market demand and the need for sustainable local food value chains and also to promote healthy and sustainable local communities [1,23,44,45,53–57].

FHs respond to a supply chain (or supply network) organisational strategy aiming at re-territorialising the agri-food systems through the construction of what in the economic literature are defined as values-based food supply chains (VBFSCs). The VBFSCs theory developed by American agricultural economists tries to capture new models of organization in the agribusiness sector that seek to merge social-environmental mission objectives with efficiency gains resulting from close coordination among supply chain partners [1,58–67]. Within this framework, FHs act as brokers—or a “connection channel” as stressed by Berman [68] (p. 7)—to bridge the structural holes in agri-food markets between small producers and consumers—from individuals and families to big buyers.

As discussed by Diamond and Barham [67] (p. 101), values-based food supply chains “have emerged in the last decade as strategies for differentiating farm products and opening new, more financially viable market channels for smaller farmers. These business networks incorporate strategic coordination between food producers, distributors, and sellers in pursuit of common financial and social goals”. In contrast to centralized cooperatives [69] or conventional food supply chains where farms are vertically integrated under bigger organizations, FHs allow for the creation of strategic networks, which act as coordinating structures. Based on a federative principle, farms are able to retain their individuality, organisational independence, control their own brand identities and their economic strategies. At the same time, through FHs, farms are able to act collectively at different levels of integration from the low to the high levels of collaboration [70,71] with a shared strategic agenda.

VBFSCs have several differences to conventional supply chains, which according to Stevenson and Pirog [25] (p. 120) can be characterized as follows:

- (1) Rather than homogenization of products and economies of scales typical of the conventional food chains, products in a VBFSC possess unique stories that identify where the food comes from, how it is produced, and how it reached the market-place via transparent supply chains;

- (2) The capacity to combine cooperation with competition to achieve collaborative advantages and to adapt relatively quickly to changes in the market;
- (3) Emphasis on high levels of performance and high levels of trust throughout the network;
- (4) Emphasis on shared vision, shared information (transparency), and shared decision-making among the strategic partners;
- (5) Within the alliances, the farmers function as strategic partners, rather than as interchangeable input suppliers;
- (6) Commitment to the welfare of all participants in the value chain, including fair profit margins: they receive prices based on reasonable calculations of their production and transaction costs and fair wages and business agreements of appropriate extended duration.

While FHs are often referred to as having the capacity to increase the scale and scope of Alternative Agri-Food Networks [1,23,54,55], the topic has as yet received little attention from academia and policy makers. Within the United States (US), most of the literature has been developed by consultancies that have deeply analysed many case studies and the USDA. The topic is starting to receive attention at both a state and local level in the US, with new initiatives designed to support these types of initiatives. Within the UK and Europe, research is needed in order to ensure that context-specific policies and management approaches are taken into account. Morely et al. [72] provide an exploration of the different FH models in UK, while Franklin et al. [45,73] analyses the experience of Stroudco Food Hub, and Sustain [74] developed a review of small-scale food hubs. Research is therefore required in order to inform policies, strategies, and programs that would ensure success in delivering long-term sustainable outcomes.

2. Approaches and Definitions of Food Hubs

According to Barham et al. [57], it is clear that there is growing interest in regional FHs from a wide array of food systems funders, planners, businesses, researchers, and service providers, but also some confusion about what a regional food hub is—and what it is not—has emerged. In addition, a shared understanding of what the FHs and their functions and purposes are is coalescing and also disputes exist about how to classify FHs.

Regional FHs can be classified by either their structure or their function [57] (p. 7). In the first case, the classification focuses on legal business structures that can include: non-profit organizations; privately held food hubs; cooperatives and publicly held FHs. The legal structure of a food hub often influences its operation and function, particularly in such areas as capital investment, risk management, and liability exposure. From a function perspective, the primary market that they serve can categorize FHs, for example: farm-to-business/institution model, farm-to-consumer model, or hybrid model.

Alternatively, Lerman et al. [75], relying on the work of Melone et al. [76], identified organizational type, management, operation practices, and governance as methods of classification, while Cheng and Seely [77] also recognise target customers, infrastructure, logistics, services offered, and structure as criteria by which it is possible to determine differences among FHs.

According to Morely [72], there are different types of FHs, which can be distinguished on the base of different dimensions: functionality, purpose, type of products, how the function and operation of the FH affects other actors in the food system, differing levels of control of the producers over their market relations, legal structure, and markets in which the FH operates.

In their work Horst et al. [78] identified nine typologies of FHs on the basis of five specific characteristics: audience, ownership, purpose, design and siting, and scale.

FHs are classified in different ways and therefore it is very difficult to identify a coherent frame of investigation that can help with the theorization of FHs. Despite the fact that some scholars argue that FHs have become a popular method of supporting local food systems, a shared definition is still missing and understanding of the organizational characteristics of different FH models is limited [1,55,79]. As stressed by Blay Palmer et al. [57] (p. 523), the concept of FHs is not uniquely understood and it is used in multiple ways across diverse communities and this diversity responds to the substantive

characteristics of the FHs experiences that are prioritized differently according to circumstances and the type of practitioners and their objectives [78] (p. 210).

According to Barham et al. [57] (p. 4) and Morely et al. [72], emerging definitions of FHs can be grouped into two distinct approaches, depending on the goals or expectations attached to FH:

- (1) Those that narrowly define FHs in terms of market efficiency functions, and
- (2) More expansive definitions that incorporate FHs into wider visions of building a more sustainable food system.

Other scholars suggest the same dualistic conceptualisation of FHs while adopting different terms: for Cleveland et al. [1] is it possible to distinguish between instrumentalist vs. idealistic approaches, Franklin et al. [45] identify the conventional vs. the sustainability-oriented community and Horst et al. [78] suggest a dichotomy between the instrumental producer-oriented and humanist people-oriented approaches. We outline the different approaches in Table 1.

Table 1. Dichotomic approaches to Food Hubs.

Narrow	Expansive	Authors
FHs are understood in terms of market efficiency functions.	FHs are conceptualised into wider visions of building a more sustainable food system.	Barham et al. (2012) [57] and Morely et al. (2008) [73]
Instrumentalist	Idealistic	Authors
FHs aim at responding to ‘consumer demand for local’ adjusting the mainstream food system by reducing what have become ‘unacceptable externalities’.	FHs aim at challenging the basic assumptions of the mainstream by prioritising environmental and social goals.	Cleveland et al. (2014) [1]
Conventional	Sustainability-Oriented Community	Authors
FHs are designed primarily for the economic advantage of the commodity producers and the entities that provide middleman services.	FHs have social motivations relating to community cohesion, social gain, increasing healthy eating options, and improving local food access options. At the same time, they seek to enhance the economic viability of local farmers to promote environmental protection and wellbeing.	Franklin et al. (2011) [45]
Instrumental Producer-Oriented	Humanist People-Oriented	Authors
FHs aim at aggregating products from local small and mid-sized producers and providing source-identified locally grown products to wholesale buyers.	FHs aim at providing easy access, opportunity, and viability for small producers and low-income consumers with the main purpose of contributing to a healthier, more vibrant, and equitable system.	Horst et al. (2011) [78]

Rather than contrasting interpretations, we have instead identified two distinct lines of conceptualisation that respond to the two approaches summarized in Table 1. This dichotomy is too clear cut to grasp the full complexity of FHs’ experiences and oversimplifies the existing reality where there are many overlapping features between what we have defined as the “values-based agri-food supply chain” and the “sustainable food community development” approaches, these approaches represent two Weberian “ideal types”.

Cleveland et al. [1] (p. 27) stress that the hybrid nature of FHs goes beyond the dichotomy between “conventional” and “alternative” food systems. According to the authors, it is in this hybridity that FHs have the potential to capture many of the advantages of both alternative direct marketing and the mainstream large-scale distribution systems, while minimizing the disadvantages of each. Recognising that hybridity is the natural state of FHs’ experiences and that there are no clear boundaries between the opposite sides of the dichotomy, we consider this dualistic conceptualisation as a powerful tool to support the analysis of the literature, empirical analysis and also for a grounded process of theorisation

Relying on this conceptual dichotomy, we have developed a deep analysis and comprehensive overview of the existing literature aiming at understanding what the theoretical foundations of the

two approaches at the base of the different FH definitions are. In Table 2, we have grouped the different definitions found in both the academic and other literature according to the two approaches of values based agri-food supply chain and sustainable food community development.

Table 2. Food Hub definitions.

Approaches	Definitions	Authors
Values-based agri-food supply chain	FH is a mechanism by which small producers can collectively access a middleman facility that enables them to trade with large customers—be they supermarkets, food service vendors or public procurement consortia—that none of them would be able to trade with by acting alone.	Morley et al. (2008) [73]
	FH is a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand.	Barham et al. (2012) [57], also referred in Bloom and Hinrichs (2011) [31], Woods et al (2013) [44], Clark and Inwood (2015) [51]; Klein (2015) [61]
	FH is a way to connect multiple producers to mid- and large-scale wholesale purchasers as well as individual customers more efficiently. The food hub concept has blossomed and has emerged as a logistical vehicle that facilitates a local food supply chain.	Matson and Thayer (2013) [79]
	FHs are, or intend to be, financially viable businesses that demonstrate a significant commitment to place through aggregation and marketing of regional food.	Fischer et al. (2015) [80]
	Local FHs are a means of aggregating and distributing food by pooling food products from a number of smaller farms and delivering them to grocery stores, schools, hospitals and restaurants.	Cleveland et al. (2014) [1]
Sustainable food community development	A food hub is a business or organization that actively coordinates aggregation, storage, distribution, and marketing of locally or regionally produced food to strengthen small producers' abilities to satisfy wholesale, retail, and institutional demands. By aggregating the products of many individual farmers and providing economies of scale, food hubs help small producers reach a wider range of markets, including large regional buyers.	Reynolds-Allie et al. (2013) [81]
	FH is an intermediary led by the vision of one or a small number of individuals which by pooling together producers or consumers adds value to the exchange of goods and promotes the development of a local supply chain. This added value may be gained through economies of scale, social value, educational work or services. In other words, the pure function of distribution is only one element of the hub and the distribution function may be contracted out to a third party. The hub may also provide a means for public sector services to reach disadvantaged communities, provide a space for innovation and act as a focal point for developing a political agenda around an alternative food system.	Sustain (2009) [74]
	FH is an intermediary between many market actors in the aggregation and distribution of local or regionally produced food, with a civic agriculture mission. Within this general definition it is possible to identify varying typologies of FHs.	Le Blanc et al. (2014) [54]
	A FH serves as a coordinating intermediary between regional producers and suppliers and customers, including institutions, food service firms, retail outlets, and end consumers. Food hubs embrace a spectrum of functions, purposes, organizational structures, and types, each of which can be tailored to achieve specific community-established objectives. Services provided by a food hub may include and are not limited to aggregation, warehousing, shared processing, coordinated distribution, wholesale and retail sales, and food waste management. Food hubs contribute to strengthening local and regional food systems as well as to broader community goals of sustainability and health.	Horst et al. (2011) [78]
	A FH is a as networks and intersections of grassroots, community-based organisations and individuals that work together to build increasingly socially just, economically robust and ecologically sound food systems that connect farmers with consumers as directly as possible.	Blay-Palmer et al. (2013) [56]
	FHs are defined as community-based initiatives that link producers and consumers as directly as possible.	Stroink and Nelson (2013) [82]
Community food hubs can be broadly defined as coordinating alternative sourcing, supply, and/or marketing on behalf of producers and consumers, and providing technical as well as infrastructure support for product distribution. In addition to having clear environmental goals, they are also often founded on social motivations relating to community cohesion, social gain, increasing healthy eating options, and improving local food access options. At the same time, they seek to provide an alternative source of economic income for local farmers.	Franklin and Morgan (2014) [73]	

By analysing the literature, we can argue that “values-based agri-food supply chain” approach is mainly market and supply side driven and focuses attention on supply chain and market efficiencies [56,72,75]. FHs are understood as innovative business models to pursue the scaling up for local food through matching the demand of wholesale buyers by coordinating small and medium-size

producers [79,83]. This approach differs to “sustainable food community development”, which is mainly not-for profit, consumer and civil society driven. Within this approach, FHs are understood as community based organizations or enterprises with primarily social motivations related to the building of sustainable food communities. Within this perspective, FHs are understood as an emerging type of AAFNs, which have the potential to scale out the capacity to expand the reach of AAFNs beyond direct markets but to supply mainly to multiple consumers or consumer groups [23,55].

As stated by Van der Ploeg [29] (p. 17), the extensive and rich literature on AAFNs shows its analytical and theoretical limits by way of the lack of market analysis. This literature focuses mainly on community building as an outcome of the re-socialisation and re-spatialisation of food [15] (p. 398) through supposedly “closer” and more “authentic” relationships between producers and consumers [84] while the “crucial point is the creation of new markets” [29] (p. 17). The AAFNs are described as initiatives driven by a voluntarist community spirit as opposed to individualistic and competitive liberal food markets. As stressed by McKeon [85], this anti-market position is typical also of the food sovereignty movement, which tends to denounce the market rather than to seek to recuperate it as a basic aspect of human life (p. 134). Little attention has been paid to how markets could and should be built in order to serve small-scale food producers and the efficiency and organizational forms of short food supply chains. The “sustainable food community development” approach suffers from the same limitations; for example, the literature on FHs does not include the concept of “market” and “supply chain organization”. Porter and Kramer [22] point out that businesses acting as businesses and not as charitable donors are the most powerful force for addressing the unsustainability of the economic system and for a new conceptualisation of capitalism (p. 64). While the “sustainable food community development” approach is driven by ideological communities or social cooperativism, the “values-based agri-food supply chain” suggest a business led approach rooted in the economic literature of the food supply chain and food value chain theories. For these reasons, while presenting the “sustainable food community development” approach, the paper focuses on the “values-based agri-food supply chain” approach.

3. Sustainable Food Community Development Approaches to Food Hubs

On the one side of the dichotomy, we encounter what we define the “sustainable food community development” approach where FHs are considered community-based organizations or social enterprises.

This approach derives from the “community-led grassroots innovations” theory, which emphasises predominantly social innovations developed at the community level as opposed to market-led innovations in the transition process to sustainability [86] (p. 382).

Indeed, according to Seyfang and Smith [87], sustainable innovation traditionally deals with niches within the market economy while grassroots innovations exist within the social economy of community activities and social enterprise and the authors define social economy as opposed to the market economy: “appropriation of profits by capital under the latter is suspended in favour of reinvesting any surplus into the grassroots under the former” [87] (p. 591).

This literature focuses on transition to sustainability as community resilience—that is the community’s ability to maintain, renew, or reorganise social system functions [45]. In this approach, according to Blay-Plamer et al. [56] (p. 521), there is a “well-established literature on the merits of using a localised food system as a cornerstone for building sustainable communities and improving local ecologies as part of the social economy”. According to Sonnino and Griggs-Trevarthen [88] (p. 273), the community food sector in the UK, where initiatives such as community gardens, co-ops, community supported agriculture, city farms, community growing groups and farmers’ markets are explicitly associated with serving local communities, provides an excellent context to explore the “alternativeness” of the social economy, its scaling-up potential and its capacity to contribute to the resilience of local communities. The term social economy, according to the authors, “refers to a wide range of organizations that engage in economic activities with social and ethical goals” [88]

(p. 273). The experiences of AAFNs are therefore conceptualised as community food initiatives, organizations or enterprise [45,47,48,50,73,88,89]. Crabtree et al. [50] (p. 10) define “food community enterprise” as “an organization that receives income through trading or contracts, is involved in the growing, harvesting, processing, packaging, marketing, distribution, wholesaling, retailing or serving of food, and which has at least some degree of local ownership and control”. According to Crabtree et al. [50], this enterprise is a “social enterprise” since it is a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximize profit for shareholders and owners (p. 10). Accordingly, Beckie et al. [47] (p. 334) state that “farmers’ markets are part of the social economy that engages in economic activity with a social remit and through a long and rich history, the social economy has demonstrated a capacity to respond to social need through groups of citizens acting in collaborative and democratic ways to achieve common goals”.

Within the “sustainable food community development” approach, FHs are considered as community-based initiatives that link producers and consumers as directly as possible to advance “civic agriculture” [55,90,91] and to “foster resilient, regenerative local ecologies through just, equitable, healthy food communities” [57] (p. 522). FHs represent a new model of “community-based organisations” focused on “social change corresponding to community cohesion, social gain, increasing healthy eating options, and improving local food access options more than economic profit” [73] (p. 177). Matson et al. [79] (p. 9) define “community-based organisations” as a “public or private not for profit organizations of demonstrated effectiveness that is representative of a community, or significant segments of a community. They provide educational or related services to individuals in the community, they play a leading role in involving new or different groups of people in the civic life of local communities and in agriculture these organizations make long-term commitments to developing the capacity of the producers they support, and creating infrastructure that supports and maintains market access for them”. According to Le Blanc et al. [54] and Izumi [52], FHs represent an emerging type of AAFNs, and they have the potential to expand the reach of AAFNs beyond direct markets by providing supply chain services such as aggregation and distribution of products from multiple suppliers to multiple consumers or consumer groups. The potential of FHs is to overcome the limits of the traditional AAFNs in delivering adequate and reliable quantities of food to mass markets while still maintaining the farmers’ identities and connections to consumers.

“Community food hubs” are broadly defined by Franklin and Morgan [73] (p. 166) as “coordinating alternative sourcing, supply, and/or marketing on behalf of producers and consumers, and providing technical as well as infrastructure support for product distribution. In addition to having clear environmental goals, they are also often founded on social motivations relating to community cohesion, social gain, increasing healthy eating options, and improving local food access options. At the same time, they seek to provide an alternative source of economic income for local farmers”.

“Community food hubs” [73] correspond to the not-for-profit FHs analysed by Le Blanc et al. [54]. These initiatives and research are just beginning; it is not therefore possible to say if they can be considered successful or not, but on the basis of the existing literature, it is possible to identify the main issues encountered by not-for-profit FHs that have a primarily social and environmental mission. According to Le Blanc et al. [54], although this typology of FHs has demonstrated success they present some vulnerabilities. Within the literature, we see three emerging areas of vulnerability:

- (1) Long-term financial viability
- (2) Dependence on volunteers
- (3) Trade-off between environmental goals and economic equity

Firstly, with regards to long-term financial viability, this type of FH is often dependent on donations and grant funding for continuance of operations, which threatens the model’s overall resilience and potential impact. This financial fragility and dependence on low income streams is closely connected with another issue—the investment capacity of the FH, especially its ability to

invest in the necessary infrastructure. Since the success of FHs is related to scaling up and out local food initiatives to advance alternative goals into a broader social space, scholars have identified the lack of physical infrastructures as a key limit to efficiently increasing the volume of local food consumption [92,93].

Secondly, although FHs work toward strengthening their community, Le Blanc et al. [54] state that the sustainability of their operations is in jeopardy not just without fully developed revenue sources but also reliable staff. Often FHs are limited by the dependence on volunteers, who can be unreliable or unskilled in the tasks needed. Furthermore, FHs rely on what in mainstream logic would be classified as “self-exploitation” but in order to evaluate this condition it is necessary to consider the motivations of the producers, consumers, FH organizations and the other actors involved in the food networks. What appears as self-exploitation through the logic of the conventional food system, under the lenses of the motivations to achieve goals of alternative food systems could be classified as “increasing personal well-being via social contribution, thus expanding the definition of personal well-being in time and space” [1] (p. 35).

In their analysis of Stroudco Food Hub, Franklin et al. [45] stress another issue related to the trade-off between environmental goals and economic equity for the producers on the one side and social justice goals on the other. According to the authors, while Strudco is a not-for profit organization that has adopted specific initiatives to realize their goal of increasing sustainable local food consumption among the lower income groups, the results of these measures are not those expected as a result of supplying mainly the “greener” residents with the risk of attracting the same label of elitism as is being attached to many other “contemporary local” food initiatives [45] (p. 780). This experience contrasts with the Corbin Hill Road Farm Share experience analysed by Choen and Derrick [59] which is considered a very promising example of a hybrid food value chain designed to supply fresh, regionally grown produce to extremely low-income consumers in New York City. Also, Le Blanc et al. [54] (p. 8) stress that the results of their research on nonprofit FHs in Vermont show that they play an important role in working to ensure that lower income consumers, or consumers who are not already accessing local foods, are not left out of civic agriculture efforts. According to them, the vulnerabilities associated with financial instability of FHs’ organization are more critical than the capacity to cope with social justice.

Given these contrasting results and a very scarce literature, we posit that more research should be conducted to explore successful and unsuccessful FH experiences in overcoming the trade-off between economic equity for producers and food justice. This research should necessarily differentiate between different types of measurements according to the different functions and missions of the FHs. As stated by Matson and Tayer [79] (p. 47), “no single measurement can be applied to all food hubs, as each must be measured by its success or failure in achieving its own underlying goals”. The literature associated with the “sustainable food community development” approach has mainly focused on FHs formed as not-for-profits organizations with a social and environmental mission. When evaluating the success of these initiatives, it is therefore necessary to consider the impact on community revitalization, the contribution to the transition to organic agriculture, reduction in food waste and other dimensions of food system sustainability.

4. The Values-Based Food Supply Chain Approach to Food Hubs

On the other side of the dichotomy, the “values-based agri-food supply chain” perspective is routed in the food supply chain and food value chain theories and particularly into the values-based supply chain (VBSC) theory [57,58].

From this perspective FHs are conceptualised as new business model able to support small and mid-size producers to meet the growing demand of local grown food especially from wholesale buyers like public institutions (hospitals, schools, etc.), restaurants, wholesalers, supermarket and others. For those buyers, direct selling is not able to guarantee the volume, consistency, quality, security and

also processing of fresh produce required. FHs therefore serve as necessary intermediaries able to match demand and supply [1,44,54,57,79,94].

The literature on FHs based on the VBFSCs is mainly focused on their capacity to bridge the structural hole existing between the small and mid-size farmers and the wholesale buyers, but it is argued that the mid-scale values based food supply chains model “plays out in two distinct versions based on marketing strategies: (1) Direct-to-wholesales marketing to regional supermarkets and food service companies; and (2) Direct-to-consumer food marketing to customers who are the eaters of the products” [62] (p. 31).

This approach is grounded in supply chain management theory and it is strongly market- and supply- driven. It focuses on the re-localization of the agri-food system by moving locally produced food into mainstream markets in an effective and cost efficient manner. Organizational and production capacity is required across the local food supply chain and specifically mid-scale regional aggregation, and distribution systems capable of filling the gap between small and medium-size and the wholesale demand are required [33,57,94]. For these reasons, FHs represent aggregation and distribution centers that can help to address the scale efficiency and other supply chain disadvantages faced by smaller producers seeking to link with conventional retail and food service markets [44] (p. 2). From this perspective, attention is given to the different aspects of the food supply chain management: the improvement of production and improvement in logistics and infrastructures to guarantee the required demanded in terms of volume, consistency, quality, security, aggregation but also the building of lasting supply chain partnerships and of course much attention is paid to the efficiency in the supply chain management [94].

In this framework, FHs are conceptualised as specific business model [77] or a subset within a VBSC [52]. As stated by Barham et al. [57] (p. 12), FHs are often at the heart of VBSCs that represent an alternative to both the conventional food supply chain and direct selling, while at the same time share key characteristics with both of them: “as with direct marketing, value chains share an emphasis on high-quality food products and identification of producers. In common with commodity marketing, value chains recognize the importance of efficient supply-chain management and logistics” [60] (p. 21).

4.1. From Economic Value to Shared Value

In the SCM theory, the concept of value is strictly economic in approach, focusing on production costs/price relationship and the focus is the efficiency. Although the VBFSC approach relies on supply chain management theory, conceptualising FHs provides a broader vision than the narrow supply chain and market efficiency necessary to move local produced foods from small and medium farms to wholesale buyers or consumers.

In VBSCs, the term “value” is not strictly economic but involves the assemblage of different values: locality; economic democracy, sustainability and quality and these networks seek to maximize the value of products and the ability of producers to extract financial value through product differentiation by highlighting the distinctive characteristics of the produce [25,44,59]. At the same time, VBSCs’ theory underlies the co-productive process of value creation that involves producers, other actors in the processing and distribution and consumers in order to achieve a set of shared goals which go beyond financial return and are strictly connected with sustainable local development [25,32,94]. In doing so, FHs actively facilitate relationships along local food value chains and seek to bring added value, or “shared value” to farmers and local communities according to the Porter and Kramer theory [95] (p. iii).

In their introduction of midscale food value chains, Stevenson et al. [60] explain from an economic and business theory perspective how the co-production of value along VBSCs occurs and that is very helpful for the understanding of the FHs’ nature. The authors refer to the business and strategic management literature where value chains are defined as “strategic alliances” that are long-term networks of partner business enterprises that work together to maximize value for the partners and end customers of a particular product or service [96,97]. The shared value is therefore not produced

solely inside the boundaries of the enterprises but rather emerges both from the interaction occurring in the “strategic alliance” and from the direct activities of the FH organization or business which leads to the product differentiation.

Strategic alliances or strategic networks “represent an attempt to achieve shared goals through collective efforts by multiple participants, each of which also have their own strategic interests that are not necessarily always aligned” [98] (p. 599). The co-production of shared value as assemblage of different values thus is determined not by a communitarian ideological and unrealistic sentiment of mutual aid referable to Kropotkin theory [99] but from the strategic convergence into coordinated activities (at different levels of joint endeavour) of different participants for their individual mutual advantage, what Handfield and Nichols [96] and Dyer [97] define the “collaborative advantage”.

In VBFSCs, mutual advantage takes several forms: from a narrow economic perspective, producers obtain a premium price generated by product differentiation and a more equal distribution of profit margins due to a more democratic governance of the chain. From the demand side, meanwhile, consumers can have efficient access to local products, with specific quality characteristics at reasonable prices and FH organisations or businesses derive income from their intermediary service. This is what VBFSC theory describes as the shift from a win–lose relationship between producers and consumers from one side and conventional distributor on the other to a win–win solution. FHs distribute more than food, they distribute social connections, relationships, and education [1,72], and the economic mutual advantage of producers and consumers in retaining food expenditure at local level results in broader positive impacts: local socio-economic vibrancy, health, community building and environmental sustainability which demonstrate that in building new agri-food economies there is no trade-offs between economic and socio-environmental benefits but “the competitiveness of a company and the health of the communities around it are closely intertwined” [22] (p. 66). This necessarily drives to a shift from a narrow conceptualisation of economic performance in terms of short term profit maximisation of companies to what we define “economic sustainability”—long-run shared value maximisation that allows keeping the agri-food systems within the safe operating space for humanity [9].

4.2. Aggregative Scaling and Strategic Coordination

Another element of strong interest in the VBSC theory is the approach to scale. As stated by Woods et al. [44], the economies of scale which are “indissolubly intertwined with process of standardization do not fit in markets where consumers are specifically looking for diversity, uniqueness, locality and quality”. Furthermore, economies of scale can be achieved only with huge amounts of capital investments at farm level that are not affordable by small and medium-size producers. Simultaneously, expanding scale is needed to cope with the increasing demand of local produce from both individual or group of consumers (scale-out) and wholesale buyers and also in order to effect broader systemic impacts (scale-up) [46].

According to the VBFSCs approach, scale is achieved via “aggregation” and “strategic networking” which differs to both the traditional “economies of scale” and what we call “cooperativist scaling”.

Traditional economies of scale are cost advantages obtained due to size at the individual farm level and at the level of supply chains. These economies are reached through highly intensive capital investments in expanding land, buildings and improving technologies and machineries to increase the production and productivity strictly conceptualised in terms of the input–output relationship. These economies are combined with the vertical integration of the farm within centralised large scale and global supply chains that improve efficiency and reduce transaction costs.

In contrast, however VBSC “are based on business models and organizational structures that achieve the necessary volumes of high-quality, differentiated food by aggregating product from multiple farms or ranches. Scale is achieved through collective action rather than through increasing the size of individual farms” [56] (p. 31). Similarly, FHs are considered by Schmidt et al. [66] as “aggregated models” which “allow small-scale farmers to ‘scale up’ by combining their products with

that of other growers to gain access to larger markets that require a larger and/or more consistent volume of products than they are able to supply alone". The scaling process through aggregation and efficiencies in the food supply chain inevitably brings to some economies of scale but the nature of the process redefines the nature of the economies of scale themselves.

By unifying agricultural producers, farmer cooperatives can provide the scale, coordination and improved marketing system needed to help their members succeed as well as the FHs whose aggregation functions allow producers to band together and to develop businesses to meet new opportunities to supply food to mid-sized wholesale operations—including institutions, restaurants and grocery stores—as well as individual customers. Therefore, according to Matson et al. [92] (p. 5), FHs should be considered as a "natural progression in the application of the cooperative spirit of producers working together to provide outlets for their products, while also addressing the concerns of workers, consumers and the community and of the cooperatives principles and ideals".

As stressed by Matson et al. [92] (p. 4), FHs represent a continuation of these principles but they expand the traditional concept of agricultural cooperatives to include other stakeholder groups in addition to producers: "They not only address the needs of producer-members, similar to the way agricultural cooperatives do but they also address the needs and concerns of consumers through their inclusion as primary stakeholders".

In what we have defined as "cooperativist scaling", scale is achieved through a collective aggregative action that responds to vertical integration within one organization (the cooperative). Here, the idea of collective relates to Tönnies notion of 'Gemeinschaft' [99] and the Krapotkinian image of 'mutual aid' and solidarity [100,101]. Within this perspective, the collective substitutes the individual: the products lose their identification with producers and they are sold as products of the cooperative. Furthermore, individual enterprises lose their autonomy in the business strategy and individual strategies are subsumed into the collective strategy that is developed by the cooperative and that is alleged to be the outcome of a democratic process of decision making, where producers own and manage this independent organisation or business that is the cooperative.

Compared to the cooperative, the FH represents a different business model based on the principle of strategic co-opetition [102–109] and it corresponds to a different hybrid organisational arrangement [110], namely the strategic network or strategic alliance [111–115] because they are inherently profit-driven and not driven by the principle of solidarity and mutual aid that are at the core of the cooperative. In this sense, FHs are horizontal patterned forms of coordination for the aim of constructing and distributing shared value through aggregation and product differentiation, among different typologies of participants which are independent units maintaining a complexity of individual strategic interests not necessarily always convergent. The FHs could represent just one of the marketing channels established by the producers and processors which can at the same time operate also through direct selling or by supplying conventional distributors. Furthermore, through FHs, products do not dilute producers' or processors' identities, rather they represent a plus in the product differentiation strategy.

The "strategic coordination" is a key feature of FHs and at same time it constitutes a primary conceptual building block for the FHs' theorization. It encloses the FHs in the post-corporation [116], post-capitalist [117] and distributed capitalism [118] theories. Within development theory, it is argued that "development is no longer seen primarily as a process of capital accumulation but rather as a process of organizational change" needed to overcome "coordination failures" [119] (p. 389). According to Davis [116] (pp. 298–299), the building blocks for organisations are distributed around the societal landscape and it takes only a little entrepreneurial energy to assemble them into a structure. FHs represent this entrepreneurial energy through which dispersed and disconnected building blocks of the agri-food markets as producers, processor, retailers and consumers are assembled together through strategic horizontal coordination rather than vertical integration within one organisation.

Matson et al. [120] stress that capital availability can be a significant barrier to starting local aggregation and distribution businesses since a certain level and type of infrastructure is necessary to

operate a FH, such as vehicles, storage facilities, and retail locations, etc. Other studies identify physical capital constraints that create a limitation for the scaling process [57,63,67,94]. For Connelly et al. [89], both investment in physical infrastructures and social infrastructures is needed to scale-up the impact of local food systems. Similarly, Cleveland et al. [1] (p. 27) stress that the limits are both physical and organizational: “a major obstacle to localization is lack of economic, organizational and physical structures of the appropriate scale for moving locally grown food to local eaters” and Woods et al. [44] (p. 1) stress that the greatest challenge for local food is the coordination of marketing functions with production particularly concerning efficiently managing distribution and promotion.

In our opinion, the disruptive impact of the FHs resides primarily in the organisational change that FHs bring to local food systems. Following the “markets-as-networks” [121] and Burt’s theories, it is possible to argue that in the local produce marketplaces, we find “structural holes” [30] where connections between small and medium-size producers and processor, on the one side, and individuals, group of individuals consumers and especially big buyers, on the other, have failed due to the “disaggregation” of the different actors involved in the farm-to-table chain [44]. FHs exert their brokerage function occupying these structural holes in local produce marketplaces offering a new organisational and logistic platform around which dispersed small and medium-size producers are coordinated through a process of aggregation and that are able to distribute their food to a dispersed and diverse typologies of consumers (individuals, groups and big buyers).

This strategic coordinative function of FHs materialises through aggregation and distribution occurring via one transaction point, which creates efficiencies and reduces transaction costs, allowing producers to achieve critical mass, but at the same time to preserve the farm identity and traceability.

4.3. Economic Democracy: From Centralization to Distributed Power

A key characteristic of the VBFSC is the distribution of the economic power among the actors involved. According to Stevenson and Pirog [25], the great peril of the increasing concentration in the processing and retail sectors in the conventional food supply chains is the power imbalances created in market relationships. According to the authors, such disadvantages affect the least powerful participants most, notably farmers/ranchers and other food enterprises in the middle such as regionally-based food processors, distributors, and retailers [25] (p. 119). VBFSCs aim to restore fairness along the food supply chains or networks. This refers to two type of justice: the distributive justice which regards the redistribution of the value long the chain and the procedural justice that refers to the management of processes and relationships.

On the bright side of the intermediary position of FHs, they are also market gatekeepers. The powerful corporate processors and retailers that are the gatekeepers of the access to the consuming public in the conventional food systems [122] (p. 1815) are substituted by necessary but potentially not less powerful FHs. As it is in the literature on AAFNS, the risk is a tendency to conflate the spatial or structural characteristics of FHs with specific desirable outcomes or actor behaviours [17]. The issue of power, which has not been explored in the FHs’ literature yet, is very important, since in their position of gatekeepers, FHs have potential to exercise complete control over the nested market. As a strategic networks of small business, FHs are alleged to be more democratic compared to the vertically integrated conventional food systems but beyond a declaration of intents and commitment to the welfare of all participants in the value chain, including fair profit margins to the producers, the actual structure of power relations and associated market governance mechanisms have not yet been investigated.

In some cases, producers are price makers in the FHs but generally they are positioned as “price negotiators”, as distinct from “price setters” in direct marketing, and as “price takers” in commodity marketing systems [60] (p. 30); but what is the real negotiation power of the producers? Which are the mechanisms of negotiation?

In their analysis of the nonprofit FHs in Vermont, Le Blanc et al. [54] distinguish between two categories: FHs with high farmer involvement which embrace the uniqueness of the specific

farmers they worked with, spending time to develop strategies that worked for the farmers involved and they actively include farmers in decision-making processes through board representation and annual meetings. On the other side, the authors identify FHs with moderate farmer involvement which view farmers mainly as market actors mainly who would utilize the FH and they involve farmers informally in their structure and operations and are not involved at a high level of FH planning.

Another important dimension in the power relations is information. In the FHs, it is argued that together with aggregation and distribution one of the main function of FHs is to build effective information flows and transparency along the values chain to both enhance efficiency and profitability among all segments of the chain and to re-socialize food through a reconstituted trust between suppliers and consumers. In this sense, FHs work as guarantor of transparency but this should be a characteristic that is taken for granted. It is necessary to build a system of monitoring and communication to make information available about:

- costs and remunerations. According to Barham et al. [57] (p. 12), FHs “play an essential role in building effective information flows and transparency among the value chain partners, enabling every partner in the supply network to fully understand the operating costs of production, processing, transportation, and marketing, all of which helps to ensure that value chain partners can negotiate acceptable returns”.
- products quality (organoleptic properties, freshness, etc.) and products sustainability (organic, seasonality, agroecology, biodynamic agriculture, biodiversity) and products provenience;
- waste management reduction.

4.4. Supermarket in VBSC and Food Hubs

Since FHs serve to fill the gap between small and medium-size producers and wholesaler buyers and FHs can enhance the re-localization strategy of the agri-food system through a double process by supporting both the scaling up of alternative distribution systems and the scaling down of conventional food distributors like Tesco, Walmart or Sysco which are have moved toward sourcing local food in response to increasing consumer demand [1,31]. In the scaling up case, Bloom and Hinrichs [31] (p. 144) refer to “hybrid” VBSCs as arrangements where conventional food distributors handle local food. They are defined as hybrid since they include both local and global resources, and combine conventional food system infrastructure with the alternative goal of building local food systems. According to many scholars, the scaling down strategy is difficult to pursue since the pure economic commercial motivations of conventional distributors, even when alternative goals are explicitly stated, may not be compatible with other sustainability goals of local food systems [1,31].

According to Stevenson and Pirog [25], the supermarket sector appears to be a less friendly environment for VBSCs, in particular the larger national and international companies. The main reasons for which tensions can rise in the attempt to scale down conventional distributors are the following:

- Supermarket chains tend to compete on volume and price associated with food products manufactured from a very few ingredients uniformly produced;
- These supermarkets often have centralised purchasing systems that do not interface well with more regional supply chains;
- These supermarket companies are noted for maintaining adversarial relationships with their suppliers, a very different business paradigm than the collaborative approach taken by value chains [25] (pp. 121–122).

Accordingly, Matson et al. [92], FHs are considered mid-sized wholesale operations where “producers are banding together and developing businesses to meet new opportunities to supply food to mid- sized wholesale operations — including institutions, restaurants and grocery stores—as well as individual customers” (p. 5). Although FHs are conceptualised as a bridge to connect small and

mid-size producers with wholesale buyers, within the values-based agri-food supply chain approach their distribution function is also extended to individuals or group of consumers, allowing them to function as a distributed supermarket.

4.5. Product Differentiation and Food Justice

Choen and Derrick [59] try to identify solutions for the trade-off between the differentiation strategy aiming at creating added value to local products and consequently a premium price to the small and medium size producers, and food justice which refers to the right of all residents, including low-income consumers, to adequate and nutritious food. Indeed, one of the re-territorialisation strategies' principles is equity which does not refer only to a fair income for producers but also to fair prices for low-income consumers. Probably, this trade-off is inevitably inherent to the "values-based agri-food supply chain" approach since it is fundamentally supply side driven but the question of whether and how FHs can provide support to overcome the limits of elitism, exclusivism and inequity typical of some AAFNs' experiences and increasing sustainable local food consumption among the lower income groups is still open.

Relying on Prahalad [123] who argues that cross-sector partnerships enable corporations to provide needed products and services to low-income consumers by developing innovative products and services as well as appropriate delivery, Choen and Derrick [59] identify within strategic cross-sector partnerships including NGOs a strategy to address the needs of low-income consumers.

5. Food Hubs Models, Functions and Operations

According to Matson et al. [92], the term FH exists more as a description of a number of functions than as a defined business structure and the term is often applied to a continuously changing business model, transforming to satisfy the ever-changing demands of local consumers. In the attempt to provide a theoretical conceptualisation of FHs, the identification of FHs' functions is therefore crucial. For this reason, we have explored the literature on FHs with a view to identifying the entirety of the functions that are exercised by FHs.

FHs are businesses or community based organisations and enterprises with the basic function of increasing the efficiency in the market to be understood as the occupation of the structural hole existing in the local produce market. FHs function as a bridge to connect fragmented and dispersed producers and processor with consumers by offering strategic coordination mechanisms that materialise into a logistical and organisational platform for the aggregation and distribution of local produce, which represents a unique "transaction point" for both producers and consumers.

According to Fisher et al. [80,124], FHs are local or regional and food distribution business "plus". What distinguishes them from the other local or regional and food distribution business is that the FH exhibits mission-driven values in addition to financial goals that affect the FH's functions and operations.

From both the "values-based agri-food supply chain management" and the "sustainable food community development" perspectives, the FHs understood as intermediary organisations have a coordinating function articulated in many tasks serving farmers, food processors, distributors, retailers and consumers by creating "shared value" (whether it is recognized as a premium prize or not) for mutual economic benefit while also advancing social and ethical values: sustainability, small and medium size farms viability, social justice and social health.

The "shared value" creation and the corresponding product differentiation occur through the re-territorialisation of the food supply chain as process of re-localisation and re-socialisation built around eight concepts that are socially constructed by the actors involved in the FHs' networks: quality healthiness, sustainability, locality, transparency, democracy, equity and access.

The central pillars of the re-territorialisation are information and knowledge. The differentiation strategy relies on the capacity to produce qualities (quality healthiness, sustainability, locality, transparency, democracy, equity and access) that are distinctively different from the ones circulating

in anonymous markets. This capacity is not privately owned, nor is it a strictly individual attribute. It is, instead, jointly shared by the involved producers and sustained through complex processes of socialisation, communication, experimentation and learning [11] (p. 165) that lead to what we can call “territorial intelligence” that is produced, owned and shared by local actors, and through which the circuit of production, distribution and consumption is established.

In the literature, the concept “community of food practice” [125] has been adopted, which relies on the concept of “communities of practice” (CoP) defined by Wenger et al. [126] (pp. 4–5) as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis”. The “community of food practice” concept focuses on the collective exchange and interaction between members of the group and the social learning that is ultimately produced as a result, and the opportunities created through the linking of diverse actors provide fertile ground for the emergence of new solutions to broad-based complex problems [126] (pp. 558–559).

The FHs’ strategic network has the potential to be a “community of food practice” or better a “web of agri-food practice”. Indeed, according to Wenger [126,127], some configurations are too far removed from the scope of engagement of participants, too broad, too diverse, or too diffuse to be fully treated as a single CoP, but they can be profitably viewed as constellations of interconnected practices (p. 125). To broaden the scope of the concept, Brown and Duguid [128] have introduced the concept of network of practice (NoP) to designate the collective of all practitioners of a particular practice. NoPs (of which CoP is a subset) have the same features as CoPs (sharing a practice, mutual engagement, joint enterprise and shared repertoires) but they may have weaker ties, and they do not necessarily share a close spatial proximity. In agricultural studies, Oreszczyn et al. [129] have adopted the CoP perspective to analyse farmers’ engagement with and learning about agricultural innovation. The authors found that farmers may more accurately be described as a NoP rather than CoP because of the specific distributed nature of agriculture. Farmers do not have a strong, formal organisational framework. They are not a “localised thickening” of enterprises but they are physically dispersed in vast rural territories. They share a practice but they may do not directly and systematically coordinate practice. Yet, farmers’ shared identity and the aspects of practice they share such as mutual engagement and shared repertoires bind their network together [129] (p. 410). Furthermore, agriculture innovation and learning do not occur primarily in the interaction between farmers but “other people and organisation who are not farmers contribute the learning and knowledge management of individual farmers” [129] (p. 410). They are part of a heterogeneous web of different kind of actors, not just farmers, but centered around farming, engaged in different roles and practices. According to Oreszczyn [129] (p. 410), farmers are part of a wider “web of influencers on practice” that influence “farmers’ practices rather than only influencing their views and attitudes”.

What it is very important in the conceptualization of the FH strategic network as a “web of agri-food practice” is the position of the FH intermediary organization which has the potential to be a “learning and innovation boundary organization”. The concept of boundary organizations has been introduced by Guston [130] to describe organizations that exist at the frontier and play a mediating role between the two relatively different social worlds of politics and science [131]. Franks [132] has broadened the definition and defines boundary organisations as: “organizations which mediate between different social worlds and communities to bring people on either side of a boundary together to increase mutual understanding of one another’s perspectives, capacities and needs while allowing individuals within the organization to remain within their respective professional boundaries and to maintain their responsibility to their different constituencies” (p. 286). Boundary organisations serve as a bridge between different social worlds that allows the accommodation of varying interests of parties by providing a mechanism that reinforces collaboration and convergent interests while allowing divergent ones to persist [133].

This definition, which goes beyond looking narrowly at the science policy interface, but acting as a “systemic intermediary” [134], resonates with concepts such as innovation intermediaries and

innovation brokers [135,136]. Innovation intermediary is defined as “an organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties. Such intermediary activities include: helping to provide information about potential collaborators; brokering a transaction between two or more parties; acting as a mediator, or go-between, bodies or organizations that are already collaborating; and helping find advice, funding and support for the innovation outcomes of such collaborations” [136] (p. 720). In their position of intermediary, the FHs may act as information brokers, a “conduit of information” [72] and transparency guarantors with regards to the relevant aspects of the food supply chain but also as “innovation brokers”.

As the outcome of the literature review and relying particularly on the work of Barham et al. [57], we have identified a scheme of classification of the FH’s Intermediary Organization’s functions and corresponding operations along five directions (Table 3):

- (1) Logistics. According to Van der Vorst et al. [137] (p. 236), “logistics is that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of goods, services and related information from the point-of-origin to the point-of-consumption in order to meet customer requirements and satisfies the requirements imposed by other stakeholders such as the government and the retail community”. In the case of FHs the logistics function concerns the active coordination of the actors and the aggregation and distribution of food.
- (2) Marketing, which is defined by American Marketing Association as “the activity, conducted by organizations and individuals, that operates through a set of institutions and processes for creating, communicating, delivering, and exchanging market offerings that have value for customers, clients, marketers, and society at large” [138] (p. 275). In the case of FH intermediary organizations, marketing comprises seeking markets for producers and processors and others actors and all the activities necessary for the product differentiation to be understood as the co-creation of “shared value” within the FH strategic network, which involves all actors: producers, processors, retailers and consumers [139]. Indeed, the FH intermediary organisation is a network facilitator and broker involved in building long term relationships among food value chain actors by helping to establish effective communication channels for transparency, ensuring values are articulated and shared and fostering a trusting environment.
- (3) Product services, which refer to other activities aiming at adding value to the agricultural products and also providing facilities to farmers as storage.
- (4) Producers’ consultancy services. The FH intermediary organisation can provide to the producers, especially the farmers, many other services that can reinforce the capacities of the single individual producers, supporting the transition to sustainable agro-ecological or organic practices, and also services aiming at strengthening the connections and integration of different actors of the network and help the development of a “web of practices”.
- (5) Web of practices. Acting as knowledge brokers and knowledge developers, the FH intermediary organization can provide learning and innovation services to all the actors involved in the networks, to support the development of the single actors but also development of the FH strategic network as a “web of agri-food practices”.

Table 3. Functions and operation of Food Hub Intermediary Organizations.

Functions	Operations
Logistics	<ul style="list-style-type: none"> ■ Aggregation: On-farm pick up; On-FH drop off; ■ Distribution: customer location delivery; or Drop off points; ■ Food safety; ■ Waste management; ■ Information and communication.
Marketing	<ul style="list-style-type: none"> ■ Seeking markets; ■ Recruiting producers; ■ Commerce and E-commerce management; ■ Products identification, Branding and “telling the story”, labelling and certification (quality, locality, sustainability, equity) and marketing; ■ Negotiating with buyers to secure a fair return for the producers; ■ Building effective information flows and transparency along the values chain (Communication, information and transparency); ■ Recruiting consumers and influencing their buying behaviour.
Product Services	<ul style="list-style-type: none"> ■ Preservation and Conservation; ■ Processing: <ul style="list-style-type: none"> ■ Basic processing (washing, trimming, peeling, cutting, freezing); ■ Value-added processing (blanching, soaking, drying, boiling, mixing, cooking, bottling, capping, sterilization, cooling, extraction, filtration, roasting or steaming, rolling, concentration, pressing, etc.). ■ Packaging and repackaging; ■ Product storage.
Producers Consultancy Services	<ul style="list-style-type: none"> ■ Developing producers network; ■ Production planning: pre-season production planning to guide crop selection and match supply with demand; ■ Business management services and guidance; ■ Communication services; ■ Farm branding “tells the story” and marketing; ■ Food Safety; ■ Wastage and recycling management services; ■ Supporting the transition to organic agriculture; ■ Resource prospector: identify and pursue resources, such as grant and loans; ■ Lobbying to local, regional and national institution; ■ Training and workshops; ■ Extensions services.
Community Engagement	<ul style="list-style-type: none"> ■ Volunteers programs; ■ Family events; ■ Fests and social events; ■ Social agriculture projects; ■ Community gardens and school gardening; ■ “Buying local” campaigns; ■ Farm visits; ■ Food Bank donations; ■ Distributing to “food deserts”; ■ Educational programmes; ■ Waste management and recycling (at home, individual level, restaurants, cafeterias, hotels etc.); ■ Cooking programmes; ■ Supporting implementation Urban/Local Food Strategy.
Web of Practices	<ul style="list-style-type: none"> ■ Communication networks (between suppliers, between suppliers and consumers, between suppliers and local community, between FH-IO and all the nodes of the network); ■ Discussions; ■ Experiences sharing; ■ Expertise sharing; ■ Organized and formalized learning; ■ Discussions and coordination for collaborative activities; ■ Open repositories and knowledge based; ■ Training and workshops and online learning; ■ Standardized forms for the value proposition: quality, sustainability, locality, economic fairness etc.; ■ Events; ■ Cooking programmes.

6. Food Hubs in the Digital Era

In the business and management literature, it is argued that the recent advances in ICT, the expansion of the Internet, the rapid and the vertiginous decline in digital technologies costs, the diffusion of open source and also the increasing computational capacity of people—defined as the combination of cheap processing, accessibility to it and analytical capabilities [140] (p. 13)—have allowed the development of new ways to create, co-produce and distribute value. The digital disruption has offered the space for the creation of unconventional exchange mechanisms and transaction mechanisms and accentuated the possibilities for the design of new organizational forms. Indeed, these developments have opened new horizons for the design of innovative business models by enabling firms to fundamentally change the way they organise and engage in economic exchanges [141] (p. 1025).

Indeed, as it has been stressed by Barham et al. [57] (p. 14), “it is not coincidental that the emergence of the regional food hub concept is occurring at a time when technology is increasingly accessible and portable”. Digital technologies make commercial transactions easier, quicker and cheaper than ever, as well as the implementing cost-effective communication, data sharing and inventory management tools that are tailored to meet specific local needs.

These tools are called “online food hub networks” and they are defined by Horst et al. [78] (p. 211) as: “internet-based online directory and marketplace that fosters efficient connections between local and regional food producers and consumers, including institutions, restaurants, and stores. It may have a physical location, but this is not necessary”.

It is possible to identify two typologies of “online food hub networks” that are adopted to connect producers, processors, buyers and other value chains actor in the same locality or regions:

- (1) The first type are virtual meeting places where buyers and producers or processors connect and interact and this interaction may lead to business transactions. The actual transactions themselves and delivery logistics do not take place on the electronic platform; instead they are carried out and managed by the buyer and seller directly [57] (p. 14).
- (2) The second type are more complex tools which allow establishing information connections between buyers and sellers in real time and they also offer the capability to place online orders, to carry out payment processing and to coordinate delivery logistics including routing optimisation.

In this first case, we have what we call the “virtual food hub” which “establishes the “information connection” and places the burden of completing the transaction on the two agents involved: the buyer and the seller” [84] (p. 20).

The second typology of “online food hub networks” is used by what we call the “e-business food hubs”. The term e-business means “doing business electronically” [137] (p. 120). As stressed by Zott et al. [141] (pp. 1023–1024), the e-business encompasses e-commerce, e-markets, and it refers to firms that conduct commercial transactions with their business partners and buyers over the Internet, with the exclusion of the firms that merely make use of websites to display information for products or services. Therefore, the “e-business food hubs” are intermediary organisations or businesses which are conducted over the Internet and the commercial transactions related to the management of the aggregation, distribution, and marketing of source-identified food products from local and regional producers to individuals or a group of individual and wholesale buyers.

7. Food Hub: A New Definition

With the exception of Blay-Palmer et al. [56] who define FHs “networks and intersections of grassroots, community-based organisations and individuals that work together to build increasingly socially just, economically robust and ecologically sound food systems that connect farmers with consumers as directly as possible” (p. 524), the term FH is generally adopted to describe an intermediary business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to both

strengthen their ability to satisfy wholesale buyers as institutions, food service firms, retail outlets and end consumers as well.

Relying on the work of Jarillo [111], we have developed a definition to guide the field research on FHs, which is built around two intertwined concepts that together compose the concept of FH: the concept of “strategic network” and the concept of “hub firm”. According to Jarillo [111] (p. 32), strategic networks are “long-term, purposeful arrangements among distinct but related for-profit organizations that allow those firms in them to gain or sustain competitive advantage vis-a-vis their competitors outside the network. Firms in the network are independent along some dimensions (i.e., they are not completely dependent on each other). Otherwise, they would fall into a case of ‘vertical quasi-integration’”. Furthermore, according to Jarillo [111] (p. 32), “essential to this concept of strategic network is that of ‘hub firm’, which is the firm that, in fact, sets up the network, and, takes a pro-active attitude in the care of it”.

In most of the literature, there is a tendency to restrict the idea of FH to a physical, distribution centre while, with the advent of the Internet, the concept of FH should be reconsidered. Therefore, we would like to provide a new definition that takes into account the e-business as a chore dimension of the FHs and that is able to provide clear and bounded borders and, at the same time, is flexible enough to capture the variegated conceptualisation and practices of FHs which are fluid organisations that emerge from and reflect the unique character of the places they serve and are shaped by where they develop.

We define the Food Hub as an intermediary organisation or business (the Food Hub Intermediary Organization—FH-IO) which works as the supply chain manager and provides a logistical and organisational platform for the aggregation and distribution of source-identified food products from local and regional producers to both wholesale buyers (institutions, food service firms—restaurant, hotel, pubs, etc.—retail outlets) and end consumers (individuals and groups).

This intermediary organisation is the activator and the animator of the Food Hub Strategic Network (FH-SN) which is a “strategic network” [111] involving all the actors along the farm (producers) to table (consumers) chain, collaborating according to different levels of joint endeavour—varying from networking to collaboration [70,71]—to co-produce “shared value” (as a new form of economic value including socio-environmental values) to be equitably distributed within the network and that has strategic positive economic-social and environmental spillover effects in the locality.

8. Conclusions

Both in the academic and the political arenas, it is claimed that the way forward to respond to the existing conventional agri-food systems and to create a competitive or survival strategy for small family farms is the re-construction of regional and local agri-food systems.

The construction of local and regional agri-food systems can occur through the “re-territorialisation” or “re-localisation” of the food supply chains or networks, which is a twofold strategy corresponding to the three distinct ways proposed by Porter and Kramer for shared value creation: reconceiving products and markets, redefining productivity in the value chain and building supportive industry clusters. Indeed, the re-territorialisation constitutes a double strategy:

- (1) “value creation strategy” oriented to product differentiation along the dimensions of quality, locality and sustainability;
- (2) “supply chain (or supply network) organizational strategy” that shifts from individual competition to active clustering through the development of strategic alliances and relies on the creation of local clusters.

In the alternative agri-food chains literature, “cutting out the middleman” is the mantra to build the short circuits, but while in the last 30 years we have witnessed the spreading of alternative models of farm to table chains, the agri-food markets are still dominated by conventional channels.

Direct marketing approaches may not be a solution for all the producers who cannot have the marketing or organisational capacities to deal with direct selling, nor the economic, organisational and physical structures of the appropriate scale for meeting the growing demand for local, sustainable food also from big buyers which raise many new challenges:

- (1) providing the right quantity and consistency of products;
- (2) providing a more varied range of products;
- (3) improving accessibility and convenience;
- (4) assuring food security and safety.

In contrast to the economies of scale that characterise the conventional food system, where the farms are forced to become bigger through high capital investment and they are vertically integrated with a distribution system concentrated in the hands of a small number of globalised distributors, in this paper we have introduced the new business model of FH which has the potential to meet the growing demand of local sourced foods from individuals and families and to reach wholesale consumers by acquiring some of the economic and logistical efficiencies of the conventional food system supply chain while still retaining environmental priorities, maintaining the farmers' identities and connections to consumers, viability for small and medium family farms and more equal distribution of power and economic value among all the involved actors.

Of particular relevance is the disruptive impact of digital technologies which allow the emergence of promising new business models which combine the peer-to-peer potential with the capacity of e-commerce platforms to aggregate small suppliers and creating a single point of transaction for consumers. Digital Food Hubs are a very promising example of those disruptive business models that can sustain the scaling of AAFNs and VBFSCs by avoiding high capital investment, overcoming the existing time/space limits, favouring the flows of information and knowledge and facilitating aggregation, collaboration and coordination among the participants (producers, consumers and processors).

The US literature on FHs reports a big collection of case studies' analyses and surveys, and a few very interesting contributions on the methodologies to evaluate the FHs have appeared in the last couple of years [142–151]. From this literature, it is possible to state that FHs are capable of bridging the structural holes existing in the agri-food markets between small producers and the consumers—both individual and families and big buyers with a positive impact on the local economy, environment and society.

The 2013 and 2015 National Food Hub Survey conducted by [142,143] reports the successful experience of FHs in the United States:

- FHs are financially viable businesses generating a positive cash flow and 60% of FHs operate without grant fundings [152].
- Food hub suppliers and customers are almost entirely regional.
- FHs are supplying local food to all communities increasing community food access and they strive to improve health outcomes.
- FHs are creating jobs.
- FHs are creating market opportunities and providing crucial services for small and mid-sized producers.
- FHs are growing to meet market demand.

Despite the exhaustive analysis on the FHs presented in the existing literature, some aspects of FHs are not explored yet and new research is needed. First of all, the existing literature focus on the FH-IO, while the concept of FH extend to what we have defined as the FH-SN.

Second, the risk is to conflate the desired benefits with results and to fall into the "local trap" by assuming something inherent about the local production. One of the core dimensions of the

re-territorialisation strategy is the “transparency” which allows the re-connection between producer and consumers, but no research has been done about the information flows from farm to table. Also, the “quality” and “healthiness” of the locally sourced produce has not been explored and are inevitably taken for granted. Those attributes are very important since they are at the base of the differentiation strategy from which the premium price is derived. “Quality” and “healthiness” are social constructions and the value of these attributes is interdependently created by all the actors involved in the FH-SN. Therefore, it is necessary to understand how those attributes are defined by the actors. Are the “quality” and “healthiness” examined and compared to those of the products available in the conventional food systems? Is the information about farming practices and the components of “quality” and “healthiness” available to consumers? What are the FH’s mechanisms of monitoring such attributes?

FHs are alleged to restore fairness along the food supply chains or networks that refers to both the distributive justice and the procedural justice. Research is needed to explore the producer’s point of view about the redistribution of the economic value along the chain and their bargaining power on price. The second dimension of economic democracy is the procedural justice which refers to the management of processes and relationships. To understand the distribution of power within the strategic networks, it is necessary to investigate what the level of involvement of the different actors within the network in strategic decision making (pricing, operations, logistics, crop planning finances, long-term goals and strategies, investments, connection and activities with the community) is as well as what the mechanism of involvement and the democratic rules for decision making are.

Interesting work has been done about the evaluation of the “sustainability” by investigating the FHs required and preferred producer/supplier certifications and practices [143] (pp. 19–20) but no research has been conducted on the sustainability of the FHs: waste management, packaging, etc.

With the exception of Schmit et al. [153–155], very little has been done by way of assessing the economic impacts of FHs at the regional level, but the issue in question is even more challenging and refers to the need to measure “shared value” [156].

In Europe, much work has to be done in this regard. Despite the growing interest of FHs in Europe, there is a lack of attention from both academia and policy makers. In the UK, for instance, with the exceptions of Morley et al.’s [72] seminal work on exploring the different model FHs in UK, Franklin et al.’s [45,73] analysis of the avant-garde experience of Stroudco Food Hub, and Sustain’s (2009) [74] review of small scale food hubs, there has not been much research interest in FHs. Even if in the last few years we have witnessed the spreading of FH initiatives, scholars have not engaged in research and, on the political side, specific policies, strategies, programmes and initiatives are missed. Notwithstanding, in the 2015 Final Report of the EIP-AGRI Focus Group “Innovative Short Food Supply Chain management” [157] in presenting the topics for Operational Groups, FHs are suggested as the solution for the scaling of the short food supply chains. This stresses the needs for the development of a broader European research programme on FHs.

Acknowledgments: We acknowledge support from, Scaling the Rural Enterprise (EP/J000604/2) and Digital Economy Sustainable Society Network+ (EP/K003593/1) in the development of this paper. We thank the editor of the special issue and the two anonymous reviewers for their constructive comments, which helped us to improve the manuscript.

Author Contributions: Giaime Berti has conceptualized, designed and drafted the paper, both the authors have contributed equally to the development of the manuscript. Catherine Mulligan has conceived and developed the research programs within which this study sits.

Conflicts of Interest: The authors declare no conflict of interest.

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