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# Agricultural value chains: towards a marriage of development economics and industrial organisation?\*

Marc F. Bellemare<sup>†</sup>

In the last half-century, development economics has gone from being a fringe field of economics to being at the very centre of the discipline, and the field's foremost proponents have been elevated to the highest levels of the discipline. At the same time, development economists have gone from being economists who study situations wherein multiple market failures lead to persistent poverty to being 'development-and-*x*' economists, where *x* is any of agricultural, demographic, environmental, health, labour, economics etc. Yet few economists, if any, would label themselves development-and-industrial organisation (IO) economists. In this keynote, I first speculate as to why that is. I then explain how the time is ripe to celebrate the marriage of development and IO, and why the study of agricultural value chains provides the ideal inception point for that marriage to be consummated.

**Key words:** agricultural value chains, development economics, industrial organisation.

**JEL classifications:** L24, O13, O14, Q12

## 1. Introduction

'A normal person is just a reasonable mix of these components, these four ideal types.'

'*Idealtypen.*'

'Very good. You know German?'

'Enough for bibliographies.'

'When I was in school, if you knew German, you never graduated. You just spent your life knowing German.'

– Umberto Eco, *Foucault's Pendulum* (1988).

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Much of development economics is concerned with improving the mean level of one or more outcome of interest—usually something like income, years of education, calories consumed and so on. As a result, most if not all of the 169 targets for improvement identified as part of the United Nations' Sustainable Development Goals (SDGs) consist of some mean level needing to be increased or decreased if we are to make progress on the SDGs.

Yet in many cases, the goal of reducing the variance of some variable of interest—depending on that context that variance can be referred to either as risk, uncertainty, volatility and so on—is no less important than that of improving the level of the same or some other variable. This is especially important in the context of a majority of low- and middle-income countries (LMICs), where formal insurance markets tend to be thin or fragmented when not altogether absent, and where the only opportunities for insurance lead to partial insurance.

In that sense, I view the transition from people living off of subsistence or semi-subsistence agriculture to having a steady paycheck—whether from manufacturing or services jobs—as the chief objective of development (World Bank, 2012, 2018). Consequently, a lot of my work has focused on the causes and consequences of various types of risk in LMICs (Bellemare, Barrett & Just, 2013, 2016; Bellemare & Lee, 2016; Bellemare et al., 2020, 2021; Boyd & Bellemare, 2020).

Indeed, in a famous (or infamous, depending on your perspective) article in *Foreign Affairs*, Collier (2008) writes (the emphasis is mine):

The first giant that must be slain is the ... love affair with peasant agriculture. With the near-total urbanisation of these classes in both the United States and Europe, rural simplicity has acquired a strange allure. Peasant life is prized as organic in both its literal and its metaphoric sense ... In its literal sense, organic agricultural production is now a premium product, a luxury brand ... In its metaphoric sense, it represents the antithesis of the large, hierarchical, pressured organisations in which the middle classes now work ... Peasants, like pandas, are to be preserved. *But distressingly, peasants, like pandas, show little inclination to reproduce themselves. Given the chance, peasants seek local wage jobs, and their offspring head to the cities. This is because at low-income levels, rural bliss is precarious, isolated, and tedious.*

For me then, what matters is the 'steady paycheck' part (which reduces risk and uncertainty, with all of the costs that they entail, relative to agriculture), but also the fact that work itself is dignified—it is an intrinsic good. This is not to say that agricultural work is not dignified; rather, it is in line with Collier's point that '[g]iven the chance, peasants seek local wage jobs, and their offspring head to the cities'. As an analogy, I am reminded here of the lyrics to the Dire Straits song 'Telegraph Road', wherein Mark Knopfler sings:

I used to like to go to work but they shut it down  
 I've got a right to go to work but there's no work here to be found  
 Yes, and they say we're gonna have to pay what's owed  
 We're gonna have to reap from some seed that's been sowed.

Less anecdotally, Ross (2019) notes how, in the rural sub-sample of the Indian Young Lives data, 43 per cent of children want to be a teacher when they grow up, 17 per cent want to be a doctor, eight per cent want to be a parent or a housewife, six per cent want to be an engineer, and six per cent want to be a police officer—but only four per cent of children want to be a farmer.

And that is where my interest in agricultural value chains—and the development of agribusiness and a rural manufacturing sector—comes from: because agricultural value chains and agribusiness both lead to people working regular jobs with steady paychecks, which leads to dignified, fulfilling lives, but also to the types of investment that those less risky, more certain lives allow making in children's education and in building wealth.

The remainder of this article is organised as follows. Because not every reader of this article will be a development economist, and because even development economists may not be familiar with the field's origins, Section 2 provides some historical background, and notes that few, if any, development economists label themselves development-and-industrial organisation (IO) economists. In Section 3, I speculate about this state of affairs by discussing how the lack of market-level data in LMICs (Section 3.1), the sharp differences in the empirical approaches of development economics versus IO (Section 3.2), and the different assumptions about markets made by development versus IO economists (Section 3.3) may have led to few economists labelling themselves as development-and-IO economists. In Section 4, I first document trends that seem to indicate that things are changing (Section 4.1) and that it might be time to celebrate the marriage of development and IO. I explain how this presents opportunities for younger researchers interested in development and IO to contribute to our understanding of agricultural value chains (Section 4.2) and to develop new empirical methodologies (Section 4.3). Section 5 concludes.

## **2. Historical background, or: why are there no development-and-IO economists?**

The general reader may or may not know where development economics came from as a field. That is also true of 'young' development economists, viz. development economists who got their PhD after 2010 or so, and who are thus children of the Credibility Revolution (Angrist & Pischke, 2010).

Where did development economics come from? In their landmark graduate development microeconomics textbook, Bardhan and Udry (1999) write that, strictly speaking:

The classical economists of the 17th, 18th, and early 19th centuries were all development economists, as they were usually writing about a developing country (in many cases, Britain) going through a process of industrial transformation.

Modern development economics, however, was born in the wake of World War II, with the Marshall Plan for European reconstruction, an American initiative signed into law by President Harry S. Truman in 1948. This led to the creation of the International Bank for Reconstruction and Development—better known nowadays as the World Bank.

Early modern development economists focused on ‘Big Push’-type policies and the development of the industrial sector (Mandelbaum, 1945; Nurkse et al., 1966; Rosenstein-Rodan, 1943).<sup>1</sup> Here, Bardhan and Udry (1999) note:

Much of this early postwar literature originated in a clear perception of the limited usefulness ... of orthodox economics, particularly in its standard Walrasian form with [constant returns to scale], pure competition, perfect information, insignificant transaction costs and externalities, supposed institutional neutrality, price-sensitive adjustments that unambiguously clear markets, and so on.

Since then, development economics has gone through three broad overlapping phases:

1. The macro phase (1945–1985),
2. The micro-theoretic phase (1970–1995),
3. The micro-empirical phase (1990–present),
  - a. The observational, survey-based phase (1990–2005),
  - b. The (quasi-) experimental phase (2005–present).

The dates in parentheses do not represent sharp discontinuities. Rather, they provide rough estimates of when each phase came in and out of fashion. For instance, I can think of several good theoretical articles in development microeconomics written after 1995, but that was also the point when development microeconomics became relatively more applied.

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<sup>1</sup> For instance, in the context of the Solow (1956) growth model, the theory behind Big-Push policies would posit that low-income countries are stuck at a low-level stable equilibrium growth rate because their growth trajectory exhibits increasing marginal returns. A massive investment in capital—a Big Push—is thus necessary to get out of that zone of increasing marginal returns, past an unstable equilibrium, and into a zone of decreasing marginal returns to eventually converge towards a stable high-income equilibrium. All of this obviously necessitates moving away from the neoclassical assumption that the production function of the economy exhibits decreasing marginal returns everywhere.

My University of Minnesota colleague Terry Roe, for instance, has spent a great deal of his career working on development macroeconomics (phase 1). Former World Bank chief economist Kaushik Basu, who taught me one of the many development economics courses I took at Cornell, has made many contributions to the (microeconomic) theory of development (phase 2). I specifically chose to go to Cornell for my PhD because Chris Barrett, my coauthor and erstwhile dissertation advisor, worked fully in the context of empirical development microeconomics (phase 3).

Less well-known to people outside the field and to younger development economists is the fact that from about 1970 until the early to mid-2000s, development economics was seen as a fringe field of economics (Leijonhufvud, 1973), closer to anthropology and its fluffy qualitative research than to ‘real’ economics (i.e. presumably macroeconomics or financial economics) with its rigorous formal theories.

Since then, however, the field’s status has been established beyond any reasonable doubt, and development has not only moved from the fringe to the very centre of the discipline, its foremost contributors have been elevated to the very top of the hierarchy of the profession. As evidence of that claim, recall that Esther Duflo won the John Bates Clark medal in 2010, as did Dave Donaldson in 2017 and Melissa Dell in 2020, and the Nobel Memorial Prize in Economic Sciences was awarded to Angus Deaton in 2015, and to Abhijit Banerjee, Esther Duflo and Michael Kremer in 2019.

Against that background, it is worth noting that there used to be a time where most development economists were just that—development economists. That is, they were economists who worked on problems wherein multiple market failures led to chronic poverty and persistent underdevelopment, doing so either by developing new theoretical models or by taking those models to the data for testing. At this juncture, few development economists refer to themselves as *just* development economists. Most of us are development-and-*x* economists, where *x* can be one or more of agricultural, environmental, health, labour and so on—that is, economists who import a set of questions and methods specific to a field like agricultural or labour economic to LMIC contexts. For instance, I am a development-and-agricultural economist, my University of Minnesota colleague Jason Kerwin is at times a development-and-labour economist, and at other times a development-and-health economist.

In my view, however, there is one glaring exception to the above rule: I cannot think of anyone who would describe themselves as a development-and-IO economist. In what follows, I will

1. Speculate as to why that is so,
2. Argue that this represents a tremendous opportunity for young economists and
3. Argue that this is especially interesting when it comes to food and agricultural markets—agricultural value chains, specifically.

### 3. Causes

In this section, I speculate about three reasons why there are few if any development-and-IO economists. Those reasons are a lack of data with which to conduct proper IO studies, the chasm between the structural methods favoured by IO economists and the reduced-form methods favoured by development economists, and the contrast between the ‘complete’ markets studied by IO economists and the situations of multiple market failures studied by development economists.

#### 3.1 Lack of data

First and foremost, an obvious lack of data has constrained empirical IO studies in LMICs.

Since IO is about the structure of industries and the behaviour of firms and consumers in those industries, in order to do IO in an LMIC context, one needs to have access to high-quality data on those same firms and consumers—ideally for more than one commodity or industry.

Though those kinds of data are routinely available in high-income countries, the data available to development economists typically come in two varieties: (i) small-scale experimental data sets, such as that used for your run-of-the-mill randomised controlled trial or lab-in-the-field experiment, or (ii) larger household surveys, such as the World Bank’s Living Standards Measurement Surveys or the Demographic and Health Surveys. Unfortunately, neither of those allow doing market- or industry-level empirical work. Worse, few LMICs systematically collect firm- or market-level data, and even in those countries that do collect these data, a great many firms operate informally, which can lead to data that are not representative.

Fortunately, things are changing. On its website, the Nielsen Company notes: ‘We track consumer behavior for more than 250,000 households in 25 countries,’ including Brazil, India and Kenya, for example, and ‘[w]ith presence in more than 100 countries, [we] collects sales information from more than 900,000 stores within our worldwide retail network’, and recently, in discussions with an official from the Colombian Central Bank, a group of collaborators and I discovered that the Colombian government conducts an annual survey of manufacturing firms. Similarly, the Indonesian government collects data on firms as part of two surveys, viz. the Susi (cottage and small-scale firms) and Statistik Industri (large- and medium-scale manufacturing) surveys. Similarly, Hsieh and Klenow (2009, 2014), respectively, use firm-level data from China and India and from India and Mexico.<sup>2</sup>

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<sup>2</sup> I thank an anonymous reviewer for bringing the existence of the Indonesian surveys to my awareness.

### 3.2 Reduced-form vs. structural econometrics

Second, in Bellemare and Bloem (2018), my coauthor and I speculated that IO had been left well enough alone by development economists because the empirical methods used in IO tend to be viewed with suspicion by development economists.

Indeed, whereas empirical IO economists often tend on structural econometric methods combined with observational data, which make the goal of causal inference difficult to attain, development economists have been increasingly relying on an empirical approach that is the antithesis of that favoured by empirical IO, relying instead on experimental or quasi-experimental data and on relatively atheoretical reduced-form methods.

Here, too, things are changing. On the one hand, development economists—most of us, that is—have figured out that experimental data are not strictly needed for the identification of causal relationships. When done well, approaches relying on instrumental variables, difference-in-differences, regression discontinuities, synthetic controls, front-door adjustments, etc. can all yield causal identification, and often with considerably more external validity than the best field experiments. On the other hand, development economists are also slowly starting to accept the fact that there is often a trade-off between external validity and internal validity, and that if we are to study market-level phenomena, we cannot hold research designs to the degree of internal validity afforded by randomised controlled trials.

### 3.3 ‘Complete’ markets vs. market failures

Third, a conversation with a colleague who is an actual IO economist made me realise that while IO economists tend to look at reasonably well-behaved markets, development economists tend to look at situations characterised by market failures.

In a criminally underrated essay penned for an edited volume by Bardhan (1991), Stiglitz (1991) writes:

A study of least developed countries is to economics what the study of pathology is to medicine: by understanding what happens when things do not work well, we gain insight into how they work when they do function as designed. The difference is that in economics, pathology is the rule: less than a quarter of mankind lives in the developed economies.

Carrying the analogy further, one might be tempted to conclude that IO is the study of high-level sports medicine!<sup>3</sup>

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<sup>3</sup> This is not to say that there are no market failures in high-income countries. Externalities such as pollution, for instance, certainly count as market failures, and those often end up reducing social welfare.



That said, IO does not always exclusively look at perfect Walrasian economies, as it often look at departures from perfect competition (e.g. strategic behaviour, scale economies, transaction costs and information frictions), and those areas of overlap between development and IO might be the right place to start thinking about combining the two fields. The next section will have more to say about opportunities for doing so.

#### 4. Consequences

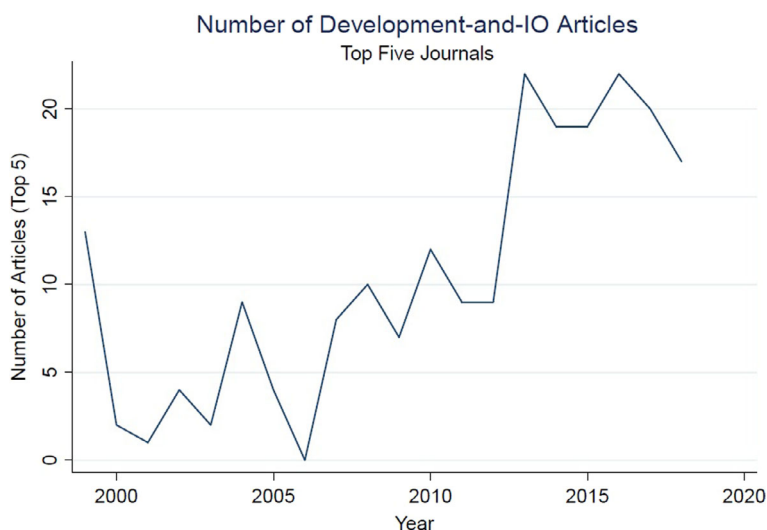
The state of affairs just described presents opportunities for young development economists. This is especially so given that in many cases, LMICs represent the perfect setting to witness the birth of entire industries. When focusing on high-income countries, it is often the case that we have to take industries as given and as having existed for decades. Thus, a lot of hypotheses about the birth and early stages of industrialisation—which one can only look at using historical accounts or on the basis of case studies in developed countries—are likely to be testable using data from developing countries.

For instance, Lim (2019) studies the effect of participation by countries in global agricultural value chains (GAVCs) on those countries' structural transformation. Using multi-region input-output data for 183 countries for the period 1990–2013, he finds that as its participation in GAVCs increases, a country transforms its economy by decreasing its reliance on the agricultural sector and increasing its reliance on the services sector, thereby leapfrogging the manufacturing sector. This runs counter to conventional structural transformation narratives, which posit that the agricultural, manufacturing, and services sector chronologically each play a prominent role in the structure of economies. Moreover, it suggests that trade liberalisation through GAVCs helps modern agrarian economies foster the structural transformation that has been considered both a cause and a consequence of sustainable economic growth.

##### 4.1 Towards a marriage of development and IO

To be fair, some economists have already started working at the intersection of development and IO. In 2019, I asked a research assistant to provide me with a count of all articles that listed both L ('Industrial Organization') and O ('Economic Development, Innovation, Technological Change, and Growth') *Journal of Economic Literature* classification codes published in top five, top general and development economics journals for the period 1999–2018. Here are the patterns that emerge.

Figures 1–3 shows the trend in the number of development-and-IO articles in the top five journals in economics, that is the *American Economic Review*, the *Quarterly Journal of Economics*, the *Journal of Political Economy*, *Econometrica* and the *Review of Economic Studies*. Generally, the trend is positive, with a seeming structural break in the mid-2010s.



**Figure 1** Number of development-and-IO articles: top five journals.

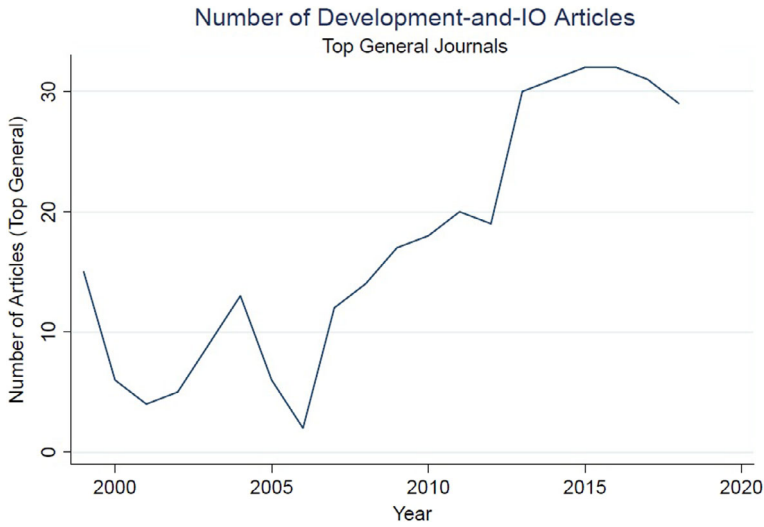
Sources: *American Economic Review*, *Quarterly Journal of Economics*, *Journal of Political Economy*, *Econometrica*, and *Review of Economic Studies*. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

The trend is likewise positive in top general journals in economics (i.e. the top five journals plus the *Review of Economics and Statistics*, the *American Economic Journal: Applied Economics*, and the *Economic Journal*), with a similar structural break occurring in the mid-2010s.

Looking at development economics journals (i.e. the *Journal of Development Economics*, *Economic Development and Cultural Change*, the *World Bank Economic Review*, the *World Bank Research Observer*, and the *Journal of African Economies*), however, the trend is more erratic, and only mildly positive at best. Given development economists' obsession with experimental methods and reduced-form methods, this is perhaps not surprising. But innovations in research tend to trickle down, and field journals tend to follow the lead of top journals, so it is perhaps too early for development economics journals to have taken notice of a rising interest in development-and-IO articles.

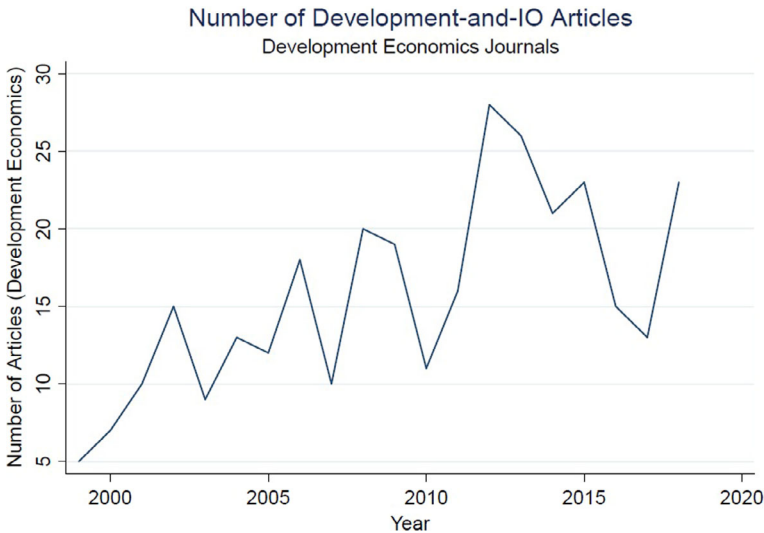
Given the foregoing, it looks as though the time is ripe for the marriage of development and IO—or that it might in fact already be occurring. I now turn to what I see as the most important area of opportunity for that marriage to be consummated, viz. agricultural value chains, and to the important role agricultural and applied economists can play.<sup>4</sup>

<sup>4</sup> I adopt the definition of value chain in Kaplinsky and Morris (2000): 'The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use'.



**Figure 2** Number of development-and-IO articles: top general journals.

Sources: *American Economic Review*, *Quarterly Journal of Economics*, *Journal of Political Economy*, *Econometrica*, *Review of Economic Studies*, *Review of Economics and Statistics*, *American Economic Journal: Applied Economics*, and *Economic Journal*. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



**Figure 3** Number of development-and-IO articles: development economics journals.

Sources: *Journal of Development Economics*, *Economic Development and Cultural Change*, *World Bank Economic Review*, *World Bank Research Observer*, and *Journal of African Economies*. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

## 4.2 Opportunity: agricultural value chains

The first opportunity lies in the study of agricultural value chains (AVCs). Why AVCs? Because of three stylised facts:

- Maslow's hierarchy of needs, whereby food (along with shelter and clean water) is the most basic of human needs,
- Engel's law, whereby people spend a declining share of their budget on food as their income increases and, to a lesser extent,
- Bennett's law, whereby people at low levels of income substitute away from coarse grains towards finer grains as their income increases, and people at higher levels of income substitute away from carbohydrates towards fat and proteins as their income increases (Bennett, 1941).

This is not to say that there are no markets other than food markets that allow studying the intersection of development and IO, but because

1. Everyone has to eat (Maslow),
2. The demand for food increases as people get wealthier (Engel),
3. People demand higher-quality, more differentiated goods as they get wealthier (Bennett),
4. People also seek out food as an experiential good as they get wealthier and
5. Because the structure of LMICs is such that their economies are primarily agrarian, agricultural and food markets tend to be those for which high-quality data sets are collected first by statistical agencies and market-research firms.

Agricultural value chains should realistically be the first value chains we can actually look at in LMICs.<sup>5</sup> And indeed, recent articles by Atkin et al. (2018) and Macchiavello and Morjaria (2015), respectively, look at food retail in Mexico and horticulture in Kenya. More recently, I have had the pleasure and privilege of being the editor in charge of seeing the articles by Ma et al. (2021) (on the transition from small to large farms, and what it does to welfare) and Kopp and Sexton (2021) (on double marginalisation in the Indonesian rubber value chain) through the peer-review process in my role as co-editor of the *American Journal of Agricultural Economics*.

Moreover, agricultural value chains are interesting because, when looking at the list of topics covered in the various chapters of the *Handbook of Industrial Organization*, they allow studying the following phenomena as the nature of food production and consumption changes along with the level of economic development:

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<sup>5</sup> And not just in LMICs. The pioneering IO study by Nevo (2001), which has been cited 2,250 times as of writing this article, focuses on ready-to-eat cereals in the United States.

- The technological determinants of firm (or farm) and industry structure. For example, how does mechanisation change the distribution of farm sizes?
- The theory of the firm (or farm). For example, when (if ever) does the objective function of a farm become more akin to that of a firm wherein farm profit is maximised rather than to that of an individual or household maximising utility defined over farm profit and other arguments?
- Vertical integration. For example, when do processing firms choose to purchase land and produce themselves rather than contract out the production of agricultural commodities?
- Oligopolistic behaviour. For example, do processing firms behave oligopolistically in situations where there are few such firms? Do they form cartels or collude to keep purchases prices low and sales prices high? How does this behaviour affect the welfare of farmers and consumers?
- Horizontal mergers. For example, do we see farms consolidate as the technology they rely on allow moving from constant to increasing returns to scale?
- Antitrust policy. For example, do governments in LMICs regulate firms with few competitors? And if so, what determines the specific policies they implement?
- Price discrimination. For example, do farmers, traders or wholesalers price discriminate depending on who they transact with?
- Product differentiation. For example, what happens to available varieties on the market as consumer incomes and preferences change?
- Imperfect information in both input and output markets. For example, how does the presence of fake seeds or tainted goods, such as aflatoxin-contaminated groundnuts (Magnan et al., 2021) or maize (Hoffmann & Moser, 2017), do to equilibrium behaviour? And does that kind of imperfect information lead to some markets unravelling altogether?
- Market structure. For example, does the agricultural sector in LMICs follow a trajectory similar to that in high-income countries and are we seeing fewer, but larger and more mechanised farms in middle-income countries than in low-income countries?
- Health, safety and environmental regulations. For example, do organic certifications resulting from consumer demand in high-income countries lead to improvements in the health of those who produce organic commodities?
- Value chains as a source of financing.<sup>6</sup> For example, to what extent do smallholder farmers use in-kind credit to gain access to inputs that would otherwise be too costly to use?

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<sup>6</sup> For example, McMillan and Woodruff (1999) find that longer relationships between firms and customers in Vietnam are associated with larger credit from the firm to the customer.

### 4.3 Opportunity: empirical methods

Because agricultural statistics are the first ones to be collected by most governments, agricultural and applied economists have consistently been at the forefront of econometric methods, and one need only think of Philip Wright (instrumental variables; see Wright (1928)) or Yair Mundlak (fixed effects; see Mundlak (1961)) to convince oneself that this is so. Here, too, lies an opportunity to push the frontier of empirical economics to allow studying entire value chains, or at least portions thereof that are longer than mere dyadic links.

Indeed, in the context of agricultural value chains, we know how to analyse dyadic links in the notional chain encompassing farms, traders, processors, retailers and consumers. The whole literature on contract farming (Bellemare & Bloem, 2018), for instance, focuses on the first link. When the time comes to analyse whole value chains; however, most economists are at sea.

One can think of several approaches that might allow studying whole value chains.

From least to most computationally intensive, one could study value chains using

1. Case studies,
2. Network mapping,
3. CGE modelling,
4. Statistical analysis of network data.
5. Structural econometrics

This list is not exhaustive, but recent advances in data availability (i.e. ‘big data’) and empirical methods (e.g. machine learning and the use of artificial intelligence) should make the task of studying entire value chains feasible in the near future.

## 5. Summary and concluding remarks

In this article, after giving a brief overview of where development economics came from as a field, I have explained why we have not really seen people describe themselves as development-and-IO economists so far. I have then argued that this represents a golden opportunity for agricultural and applied economists, and that agricultural and food markets agricultural value chains are the ideal place to start working at that intersection.

This is an area where the scope of research remains rather limited. As we argued in Bellemare and Bloem (2018), most studies focus on contract farming—the move away from subsistence agriculture, and the first step towards vertical integration—but the focus is often on old research question (e.g. Does participation in contract farming increase incomes?)

My perspective is informed by 15 years of research in this area, and by having seen many manuscripts come and go in my role as editor at *Food*

*Policy* and at the *American Journal of Agricultural Economics*. And as I often tell my PhD students, I believe it is better from the perspective of one's scholarly impact to write the first paper on a new topic than it is to write the best paper on an old topic. Or as Ries and Trout (1993) put it first among their 22 laws of marketing:

Law 1 (Law of Leadership): Being first in the market is better than having a better product.

To that effect, I have listed a number of areas of research that remain wide open for enterprising young researchers in agricultural and applied economics.

Ultimately, the study of value chains offers (i) a chance to study the process of economic development, and see whether current-day development trajectories correspond to older (e.g. OECD countries) trajectories, (ii) an opportunity to say something (if not many things) of value to development policy (e.g. industrial policy, job creation) and (iii) a chance to develop new empirical methodologies.

### Conflict of interest

The authors have no conflict of interest to declare.

### Data availability statement

None.

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