University of Reading

Essays on the Economics of Large-Scale Land Acquisitions

Thesis submitted for the degree of

Doctor of Philosophy

School of Agriculture, Policy and Development

Marcello De Maria

September 2019

Declaration of Original Authorship

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

Reading, September 2019

Marcello De Maria

Table of Contents

Table of Figures

Table of Tables

Acknowledgments

I take full responsibility for any typos, mistakes or inaccuracies that the reader might find in this thesis. While acknowledging that I am the sole author of this work, I have to share the responsibility for any good insight that might be found in this work with a number of amazing people — friends, relatives and colleagues — who supported and stimulated me throughout this long journey.

I wish to express the deepest gratitude to my supervisors, Giacomo Zanello and Elizabeth Robinson, for their professional guidance, enthusiastic encouragement and constructive criticism throughout all phases of this research. Not only did they patiently distil their knowledge and tirelessly support me on countless of occasions, but they also made me believe in myself.

I would also like to thank a number of colleagues from the University of Reading, from the Land Portal Foundation, as well as from other Institutions, who constantly advised, sustained and inspired me: Iris, Kostas, Oana, Talleh, Yiorgos, Africa, Nikos, Alexis, Alex, Stavros, Kelvin, Carlos, Laura, Neil, Lisette, Silvina, Leon, Nicholas, Liz, Lorenzo and many others.

I am thankful to the old and new friends who have been with me along the way and I am filled with gratitude for my family — Mariella, Mimmo and Carlo, you have always been with me even though you were far away.

Finally, I have to thank Marcella because she stood by me and filled me with unconditional love all this time, making me happy at every step.

I hope that one day I will be able to give back to all these people at least a fraction of what they have given me.

Abstract

This thesis explores the economics of the most recent rush for land in human history, with a series of different but intertwined essays. The surge in Large-Scale Land Acquisitions (LSLAs) observed in the last two decades expresses elements of discontinuity and novelty compared to other land rushes that occurred in the past. First, despite the existence of a domestic component in many of these land deals, the transnational nature of the LSLAs phenomenon is predominant. Second, notwithstanding the involvement of public actors at various levels, the demand for land behind LSLAs has a strong private component, suggesting that a new international market for land — with both new and traditional players — is in the making. Third, the demand in this market reflects the multiple and competing uses of land in the contemporary world: from agriculture and mining to biofuel and energy production; but also from urban development to conservation of natural ecosystems and biodiversity.

The *Introduction* dissects the approximately 120 million hectares (ha) of land that were demanded through LSLAs since the beginning of the new millennium. The chapter analyses the geographical distribution of LSLAs; it scrutinises the different stakeholders typically involved; it reviews the main purposes of the investments behind these land deals, as well as their implementation and negotiation status; and it contextualises these data and figures with regards to the existing literature, providing a general but detailed overview of the main trends, drivers, and implications of LSLAs. In this sense, this chapter paves the way for the following three essays. Indeed, despite a narrative that is constantly imbued with words and concepts — such as *land deals*, *investments* or *acquisitions* — borrowed from to the economic jargon, the economics of LSLAs still remains a largely unexplored field, both from a theoretical and from an empirical perspective.

Chapter I challenges the current lack of a systematic economic theory for LSLAs by providing the foundations for a new conceptualisation of land in economics. If the basis for this chapter is rooted in the past and retraces a brief — and necessarily incomplete — history of land in the economic thought, the essence of it rests very much on the novelties and peculiarities of the current LSLAs phenomenon. Understanding the many faces of land in economics in the context of transnational land deals proved to be a non-trivial exercise. Nevertheless, this chapter provides a clear and simple framework to disentangle the multiple — and sometimes conflicting — values that are attached to land in the 21st century, thus helping us to understand how and why different actors are trading large portions of land across and within national borders.

Chapter II brings a more empirical perspective into the analysis. The literature on LSLAs is polarised across two opposite positions: The (relatively favourable) opinion of the advocates of LSLAs as a development opportunity clashes with the (relatively unfavourable) view of those who believe that this phenomenon is *land grabbing* perpetrated by unscrupulous investors and complaisant institutions over the head of local populations. Using data from the Land Matrix, I drew a line between speculative land-based investments and productive ones, postulating that it is only when the operations start that it becomes possible to evaluate the actual distribution of costs and benefits among the various stakeholders.

With different probit and logit model specifications, I estimated the marginal effects and the level of significance of different factors that are either hindering or bolstering the operationalisation of investments requiring LSLAs. Results from a broad sample of over 2,000 large-scale land deals suggest that deal-specific features — such as the intention of the investment and the size of the deal — influence the actual implementation of these investments. The institutions of both origin and destination

countries affect the implementation of LSLAs, but in ways that are not always straightforward to interpret. Overall, the combined analysis of deal-specific and institutional variables suggests that a more efficient mix of regulations and policies in both destination and investor countries — possibly with fewer rules, but clearer, more enforceable and diversified upon different investment types — can improve the chances of actual implementation of LSLAs, therefore enhancing the development potential embedded in some of these deals, and at the same time reducing the risks associated with land grabbing and predatory investments.

Chapter III explores the issue of fair compensation in LSLAs. The overlap between formal and informal tenure regimes in many destination countries often results in LSLAs leading to forced evictions of local communities, land disputes and land conflicts. In this context, the right to fair compensation and the principle of Free Prior and Informed Consent (FPIC), are often seen as the solution to these problems. Yet, the existing evidence suggests that — even when customary tenure regimes are formally recognised and customary right owners are entitled to fair compensation — little compensation, if any, is awarded to indigenous people and local communities affected by LSLAs, often leaving space for social unrest and generalised discontent. After revisiting the foundation of the economics of fair compensation and tailoring the analysis around the peculiarities of LSLAs, *Chapter III* presents — and solves by backward induction — an original three-player sequential game for fair compensation in transnational land deals, providing insights on how and why the fair compensation principle can fail. Notably, the assumption of full and symmetric information among the three players — namely the investor, the local government and the local community — does not prevent the game from ending with a land dispute, an outcome modelled as leading to additional costs for all players.

The final chapter distils the main findings and connects the dots between the previous chapters, by critically reviewing all the implications of LSLAs that emerged during this study and by outlining the overall contribution of this research.

Introduction

Large-Scale Land Acquisitions (LSLAs): The 21st Century Rush for Land

1. Scope and aim of the thesis

With about 120 million hectares of land[1] — an area larger than the combined surface of France, Spain and Portugal — globally demanded by international investors in less than two decades, the contemporary wave of Large-Scale Land Acquisitions (LSLAs) is often dubbed the *'Global Land Rush'* (Arezki et al., 2015; Cotula, 2013; Dell'Angelo et al., 2017; Nalepa, 2017).

In a relatively short span of time, a growing number of stories about the '*21st century rush for land*' made the headlines[2] and inspired a thriving scientific research on this topic. This literature highlighted the complexity of this phenomenon, as well as the wide range of repercussions and ramifications associated with it. LSLAs are increasingly seen as a key driver for decisions about the use and the allocation of the world's land reserves, both at the global and at the local level. As such, LSLAs are closely tied to some of the main socio-economic and environmental challenges of our time — including food security, climate change and sustainable development (Lazarus, 2014; Messerli et al., 2013; Santangelo, 2018; Shepard, 2011).

Despite the increasing attention that researchers, international institutions and civil society organisations are giving to LSLAs, some of its aspects are still disputed and uncharted. Arguably, the very essence of the present land rush is economic in nature, but several of its economic

[1] This figure was calculated by the author using data from the Land Matrix. Additional information is provided in the next section of this chapter, in *Figure 1*.

[2] See, among other media, the Financial Times (https://www.ft.com/content/84a646a0-dedc-11e5-b67f-a61732c1d025) the BBC (https://www.bbc.co.uk/news/world-africa-17099348) and the Guardian (https://www.theguardian.com/environment/2014-jun-27/land-grabbing-food-biofuels-crops).

implications — including, more generally, the global process of '*commodification*' of land that is entrenched in LSLAs — have not yet been fully explored. This thesis aims at filling this gap by approaching three separate problems related to LSLAs from a deliberately economic point of view.

The first problem I tackle in this thesis is basic, but not trivial:

What is it the LSLA phenomenon exactly?

While different branches of economics and other related social sciences provide useful ideas for the conceptualisation of LSLAs, there is no general and systematic theory for the economics of transnational land deals. For this reason, *Chapter I* adopts an epistemological approach and provides a general theoretical framework for the understanding of the economic essence — and the related implications — of LSLAs.

The second problem studied in this work is inspired by what is still the fundamental question in the LSLA debate:

Is this phenomenon a development opportunity or it is just 'land grabbing'?

Indeed, ten years after it was originally formulated (Cotula et al., 2009), this is still the most important and controversial issue around LSLAs. In *Chapter II*, I argue how, rather than reformulating this question, we should look at it form a different perspective, by taking advantage of the latest and more accurate data and information on the contemporary wave of large-scale land-based investments and by considering how this phenomenon is changing over time. With the support of a rigorous empirical analysis, I reframe this question by comparing the characteristics of the investments that were actually implemented with the features of land deals that failed to reach their operative stage, ultimately providing new and original insights on how we can amplify the development potential of LSLAs, while

reducing the risks associated with purely speculative land-based investments.

The third problem relates to the issue of fair compensation in the context of LSLAs:

Is it possible to reach an efficient and equitable fair compensation outcome in LSLAs?

In order to answer this question — in *Chapter III* — I reassess the traditional economic debate over the optimal compensation rule in light of the key features of the current rush for land, which allows me to explore the link between land conflict, LSLAs and fair compensation (or lack thereof). Adopting a game theory approach, I investigate the peculiarities of fair compensation for local communities and indigenous populations affected by LSLAs, providing a rational justification for the generalised failure of the *Free, Prior and Informed Consent* (FPIC) and *fair compensation* principles, as well as for the multiplication of land conflicts and disputes induced by transnational land deals.

In the rest of this *Introduction*, before expanding the discussion on each of the three key problems addressed in this research and examining their relevance and implications, I describe the main facts and figures of LSLAs.

2. LSLAs: Key Facts and Figures

This section, like the ones that follow it, revolves around a crucial enquiry:

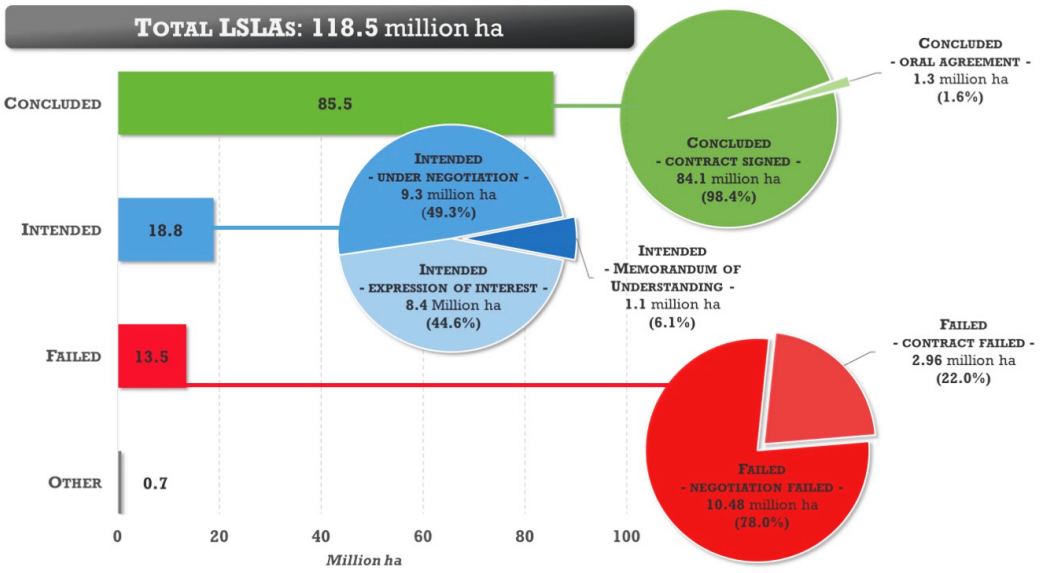
What do we know exactly about the contemporary global land rush?

This question can be answered by looking at the data provided by the *Land Matrix Initiative* (The Land Matrix Global Observatory, 2019) — which

is arguably the most complete, accurate and up-to-date source of data on LSLAs — and by tacking stock of the main findings that are emerging from the existing qualitative and quantitative literature on this topic.

The first important figure about LSLAs — which is also a controversial one (Edelman, 2013; Romei, 2016) — is related to the overall estimated size of the global land rush. If we consider, starting from the year 2000, all deals over 200 hectares (ha) involving — at least to some extent — foreign and international investors, then the global demand for land expressed by means of LSLAs extended over an astonishing 118.5 million ha.

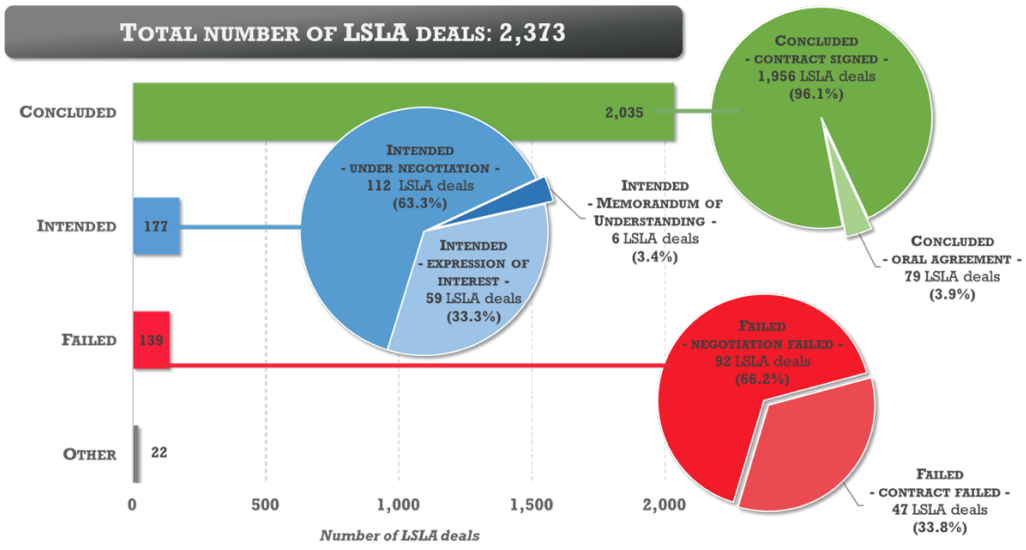
Figure 1 *– Total surface (ha) of LSLA deals by Negotiation Status*



Source: Author's elaboration on Land Matrix data (The Land Matrix Global Observatory, 2019). Since the Land Matrix database is constantly updated, it is important to highlight that the data used in this infographic were retrieved on the 4th of September 2018, from the following section of the Land Matrix Website: https://landmatrix.org/charts/negotiation-status/. The following active filters were used to obtain the data: '*Size greater than 200 ha*', '*Transnational*' and '*Year greater than 2000*'.

Figure 1 reveals that the vast majority of these large-scale land deals were actually signed and account for 85.5 million ha — that is, more than 72% of the global LSLA-related demand for land. About 19 million hectares — just above 16% of the total demand — are still under negotiation, while deals covering a surface of around 13.5 million ha — about 11% of the total demand — were never completed. If we look at the number of LSLA deals rather than at the surface they cover, the share of concluded deals is even greater, with over 2,035 contracts for LSLAs — more than four out of every five deals — successfully signed (*Figure* 2). By simply dividing the aggregated area covered by LSLAs by the total number of deals, we find that the average size of a transnational large-scale land acquisition is equal to almost 50 thousand ha — more than three times the surface area of Liechtenstein.

Figure 2 *– Total number of LSLA deals by Negotiation Status*



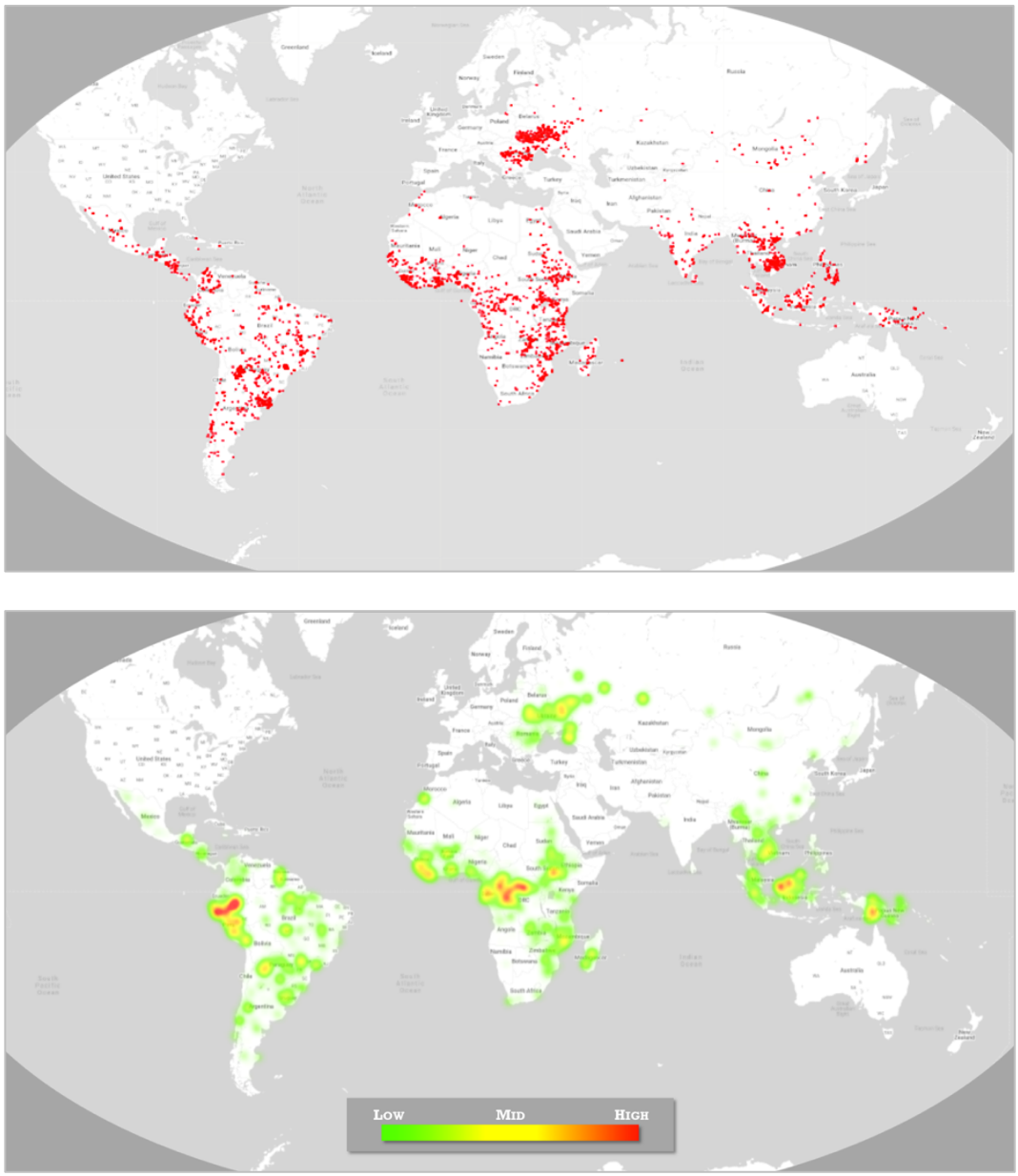
Source: Author's elaboration on Land Matrix data (The Land Matrix Global Observatory, 2019) retrieved on the 4th of September 2018 from the following section of the Land Matrix Website: https://landmatrix.org/charts/negotiation-status/. The active filters are the same as in *Figure 1*.

The current land rush is global, not only because it covers an extensive surface of land, but also because more than 140 countries are actively involved in this newly born international market for land. They are either acquiring land abroad or selling their national reserves to foreign investors. In some cases, they are simultaneously LSLA investors and destination countries. According to the Land Matrix database[3] (The Land Matrix Global Observatory, 2019), the top investor countries are China (19.9 million ha), USA (12.8 million ha), Canada (10.5 million ha), UK (7.9 million ha) and Switzerland (7 million ha), followed by Russia, Malaysia, Japan, Spain and South Korea. The most targeted countries are Peru (18.1 million ha), Russia (11.1 million ha), Congo (7.6 million ha), Ukraine (6.9 million ha) and Brazil (5.4 million ha), with Philippines, Sudan, Madagascar, Indonesia and Papua New Guinea coming right after.

The LSLAs phenomenon is certainly global, but its actual spatial distribution is not uniform over the different regions of the planet. While the profile of investors countries is quite heterogenous as both developed and developing countries are taking part to the global land rush (Anseeuw et al., 2012; Nolte et al., 2016), the portrait of host countries appears to be much more consistent, as LSLAs disproportionally target the Global South. Indeed, both the location of concluded LSLAs (*Figure 3*, top map) and the spatial density of LSLAs weighted for the size of each deal (*Figure 3*, bottom map), suggest that the global land rush focuses on a limited number of hotspots — namely in Central and Latin America, in Sub-Saharan Africa, in Eastern Europe and in South-Eastern Asia.

[3] These figures were retrieved from the Land Matrix database (The Land Matrix Global Observatory, 2019) on the 4th of September 2018, from the following webpage: https://landmatrix.org/charts/web-of-transnational-deals/. The active filters used to obtain the data are: '*Size greater than 200 ha*', '*Transnational*' and '*Year greater than 2000*'.

Figure 3 *– Spatial distribution and intensity of concluded LSLAs*



Source: Author's elaboration on Land Matrix data (Land Matrix Global Observatory, 2019) retrieved on the 11th of July 2018. Both maps use the best available approximation for the location of '*concluded*' LSLA deals only. The map on the top displays the location of concluded LSLAs as a point in space, but it does not consider the actual size of each acquisition. The heatmap on the bottom shows the intensity of LSLAs using the size in ha of each deal as a linear statistical weight — so that 1 deal of 600 ha would weight just like 3 neighbouring deals of 200 ha each — thereby providing an estimate for the planet's hotspots for transnational land deals.

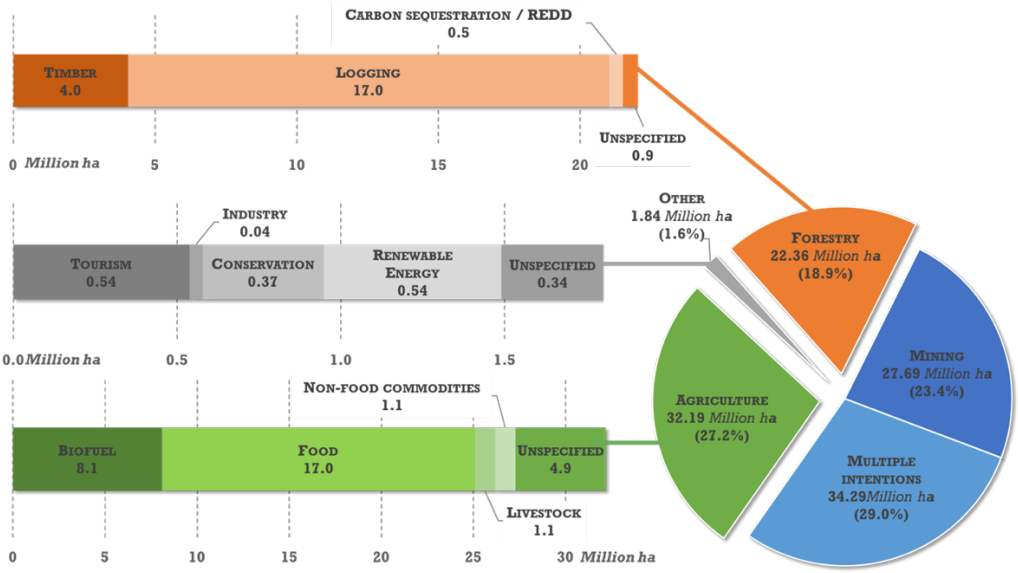
Looking at the disaggregation of the intention of these investments can offer useful insights into the drivers that sustain the current land rush (*Figure 4*). Agriculture and forestry-led purposes taken together account for more than 50 million ha, corresponding to 46% of the global LSLA demand. Forest management operations for timber and logging are the main reasons for LSLAs that are purely oriented to forests, while agricultural deals are mainly directed at food — on an estimated surface of 17 million ha of land — and biofuel production — on about 8 million ha. Mineral, gas and oil prospecting and extracting activities constitute another important driver for LSLAs (27.7 million ha), together with the investments that have several simultaneous purposes (34.3 million ha). Other components of the global demand for land of minor occurrence — which have nevertheless been of interest for researchers (Zoomers, 2010) — are related to investments directed at tourism, natural conservation and renewable energy.

The analysis of the objective of these land-based investments suggests that securing land to meet the increasing demand for food, energy and commodities that comes from an ever-growing world population is the major driving force for LSLAs. In this sense, even if the global land rush has been slowing down in recent years (Nolte et al., 2016), land is a resource that will continue to be in high demand in the future, suggesting that the end of the global land rush is yet to come.

Alongside the economic drivers, the existing literature has also identified institutional triggers behind LSLAs (Arezki et al., 2015; De Maria, 2015; Lay & Nolte, 2018; Mazzocchi et al., 2018; Raimondi & Scoppola, 2018). Indeed, if the predominant economic narrative shows that relatively developed but land-scarce countries are seeking acreages in relatively underdeveloped but land-abundant countries, the institutional narrative adds a new important element to this picture — that is, the differential in

the institutional quality of host and investor countries. In particular, public and private investors coming from countries with good institutions and well-defined property rights are targeting areas with relatively weak institutions and low levels of tenure security.

Figure 4 *– LSLA deals by intention of the investment*



Source: Author's elaboration on Land Matrix data (The Land Matrix Global Observatory, 2019). The data used in this infographic — retrieved on the 4th of September 2018 from the following section of the Land Matrix Website: https://landmatrix.org/charts/intention/ — refers to a total area of 118.4 million ha. The following active filters were used to obtain the data: '*Size greater than 200 ha*', '*Transnational*' and '*Year greater than 2000*'.

When we look at these two perspectives — the economic and the institutional one — jointly, we see what is still presently the most controversial question surrounding LSLAs (Cotula et al., 2009; Deininger et al., 2010; Dell'Angelo et al., 2017): *Can we promote global and local development through LSLAs in exchange for the land rights of vulnerable population groups — such as indigenous people and poor farmers — affected by LSLAs?*

If the existing literature has provided a potential positive impact of LSLAs for every negative one, it is also true that the price that the current land rush demands in terms of land conflicts, dispossession and displacement can soar dramatically. Despite the uncertainties over the total costs and benefits of the current land rush, Davis et al. (2014) provided a preliminary — and conservative — quantification of what could be the cost of losing access to land for local populations affected by LSLAs in 28 countries, suggesting that about 12 million people could lose their livelihood, with severe implications for food security, poverty reduction and unmanageable urbanisation.

Bearing in mind the trade-off between the development potential and the loss of land rights as the general background of this research, my next endeavour is to examine with more detail the three specific issues related to LSLAs around which I have built the rest of this work.

3. LSLAs: what exactly is the current great land rush?

3.1. The great land rush and the greater one.

For many people, the '*Great Land Rush*' is reminiscent of primary school history books, something that would generally relate to the U.S. Wild West, featuring pioneers, cowboys, Native Americans and old-fashioned stagecoach robberies. Some, might remember it as the 1893 *Great Oklahoma Land Run* (EyeWitness to History, 2006):

"*At precisely twelve noon on September 16, 1893 a cannon's boom unleashed the largest land rush America ever saw. Carried by all kinds of transportation - horses, wagons, trains, bicycles or on foot - an estimated 100,000 raced to claim*

plots of land in an area of land in northern Oklahoma Territory known as the Cherokee Strip."

Some academics and historians reckon that *the Great Oklahoma Land Run* is just a tiny piece of an even greater land rush. Indeed, according to Weaver (2003), the *Great Land Rush* is a complex three-and-a-half-century-long process, which lasted from 1650 to 1900 and originated from the expansion of European empires and their colonial influence. This process determined different — global and local — geopolitical equilibria and laid the foundations for one of the most important institutions that shaped the world as we know it today: the *individual private property*, as it is intended in the context of the Anglo-American *Common Law* Tradition.

For a number of development practitioners and scholars (including myself), yet another *Great Land Rush* is taking place right now — and here we are, back to the current wave of LSLAs. This phenomenon is often seen as the continuation of the *Great Land Rush* described by Weaver, as it is — in many ways — the heritage and the result of power imbalances, biased institutions and inequitable socio-economic relations promoted by colonisers in the territories that they subjugated to their control (Huggins, 2011; Roudart & Mazoyer, 2015; Wily, 2012).

While acknowledging that the current global land rush must be definitely interpreted in light of the legacy of the Imperial and Colonial era, the existing literature on LSLAs has also pointed out a wide range of new and peculiar features compared to previous land rushes. Consequently, in order to fully understand this phenomenon, we need to bring LSLAs up to date by looking at the context of the specific age — the present one — in which this process is taking place.

3.2. The epistemology of LSLAs

Determining whether this is a new land rush or the continuation of an older and greater one is just one of the many examples of why we need to understand to what exactly the current LSLA phenomenon corresponds. In fact, there are also other factors that justify the necessity of a specific '*epistemology*' of the current wave of land acquisitions. One factor above all has to do with the fact that land in economics has for too long been regarded as an ancillary — fixed, static and purely domestic — production factor. As a consequence, a general and comprehensive economic theory for LSLAs does not exist, despite the intrinsically economic nature, narrative and vocabulary associated with this phenomenon.

In *Chapter I*, I tackle this problem by arguing that we need to rethink land in economics if we want to fully comprehend the present rush for land and its ramifications — and it is the global land rush itself that can suggest in which ways we need to reconceptualise the economic meaning of land. While highlighting how the international '*commodification*' of land embedded in LSLAs requires a new multidimensional approach for land in economics, I will also suggest how many existing — and sometimes relatively old — theories in economics and in other social sciences might help to dissect and unravel the many faces of the global land rush.

4. The '*land grabbing or development opportunity*' question redux

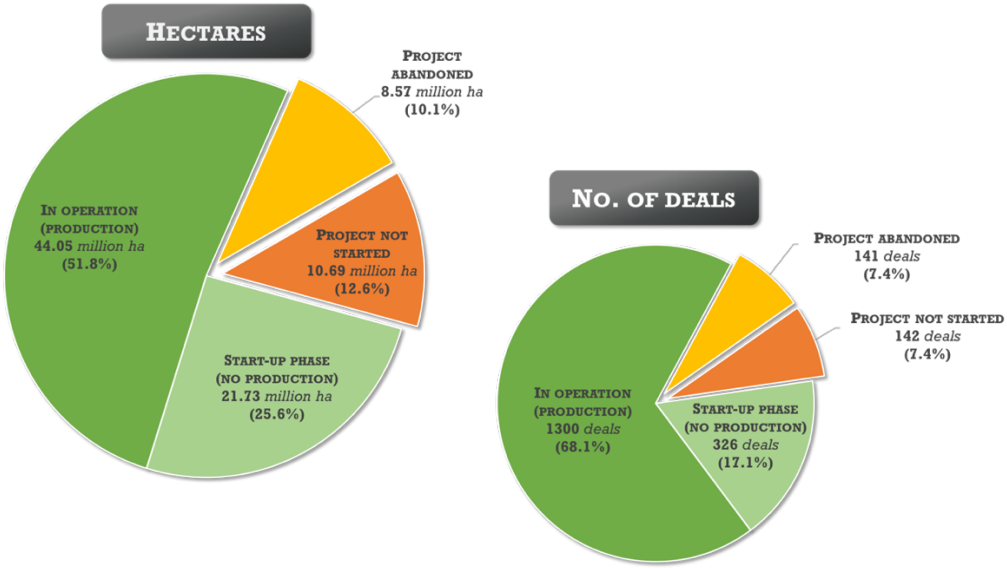
The problem addressed in *Chapter II* is related to the two — principal and conflicting — narratives surrounding LSLAs. On the one hand, one dominant narrative sees LSLAs as a crucial development opportunity, securing much needed investments and capitals in low and middle-income countries. On the other hand, the rival narrative describes LSLAs as a cruel

and myopic global '*land grabbing*', where international private investors and foreign governments secure access to the increasingly scarce global land reserves, in a '*race to the bottom*' for cutting commodities' production costs as much as possible — regardless of whether this results in land struggles for local populations affected by these deals. Rather than looking at these two views in contraposition, I argue that these are two sides of the same coin. Which side actually prevails depends on how well we understand and manage LSLAs.

In this way, the seminal question formulated by Cotula et al. (2009) ten years ago is still central to the LSLA discourse — *Is this just land grabbing or it is a great development opportunity?* However, if the question is still valid after a decade, we need to look at it from a different perspective, incorporating the new evidence and taking into account the latest features of LSLAs. Indeed, the current land rush is not static nor constant, as it is a dynamic process rapidly evolving in time and space.

In previous sections of this chapter, breaking down the negotiation status of different land deals helped us shed some light on the global demand for LSLAs, as well as on its components. New insights emerge when we turn our attention to the implementation status of different transnational land deals. *Figure 5* indicates that more than three deals out of four are either fully operational or in their start-up phase, suggesting that the investments behind the current rush for land are becoming increasingly productive. At the same time, about 20 million ha of land remain unexploited — they are left behind by the development frenzy, just like the populations that once lived on that very same land and sustained themselves from it.

Figure 5 *– LSLAs by implementation status*



Source: Author's elaboration on Land Matrix data (The Land Matrix Global Observatory, 2019). This infographic is based on a total of 1909 LSLA deals, corresponding to over 85 million ha. The data, which considers those deals with available information over the *implementation status*, were retrieved on the 4th of September 2018, from the following section of the Land Matrix Website: https://landmatrix.org/charts/implementation-status/. The following active filters were used: '*Size greater than 200 ha*', '*Transnational*' and '*Year greater than 2000*'.

Accordingly, I reframe the land grabbing or development opportunity question by looking at the implementation status of different LSLAs, identifying the reasons for success and failure of the investments behind these land deals. In doing so, I also provide concrete policy recommendations that, ultimately, can contribute to promoting productive investments and preventing speculative and ill-conceived land acquisitions.

5. Fair compensation, land struggles and LSLAs: what is the link?

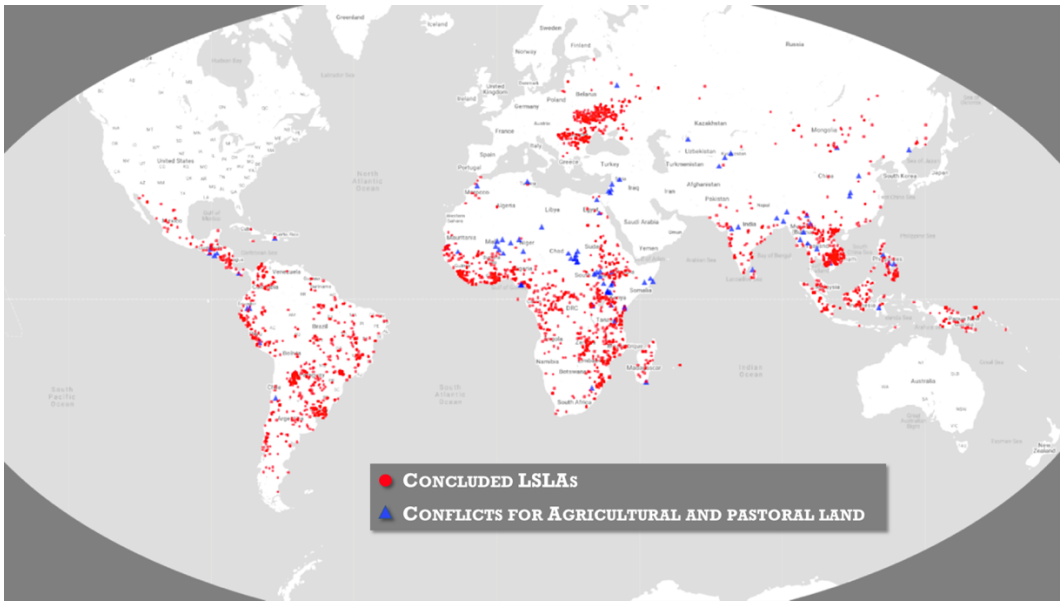
One of the ways in which the trade-off between the development potential of LSLAs and its repercussions on tenure insecure populations can be assessed is to look at it with a focus on the issue of *fair compensation*. Indeed, the compensation that many international and national frameworks grant to landlords and communities in the case of (legitimate) tenure changes corresponds exactly to the value of losing use and access rights over land.

The existing evidence suggests that the entitlement to fair compensation for local communities and indigenous populations affected by LSLAs often remains only on paper. As a result, these deals often engender conflicts and land struggles, with local populations experiencing dispossession, forced evictions and displacements. The existence of a general '*political ecology*' of wars and conflicts over the control of natural resources is not new and was analysed by Le Billon (2001) — among others. The literature on LSLAs has pointed out how large-scale land deals can also be seen as a driver for land struggles, legal disputes and violent conflicts (Balestri & Maggioni, 2019; Ndi & Batterbury, 2017; Vermeulen & Cotula, 2010). The map in *Figure 6* reinforces this idea, suggesting that hotspots for LSLAs can overlap with the areas where the concentration of conflicts for the control of natural resources is higher.

The economic literature has extensively addressed the issue of the optimal fair compensation (Blume et al., 1984; Hermalin, 1995; Miceli & Segerson, 2014; Nosal, 2001), but it has approached the problem in terms that do not necessarily apply to the current wave of land acquisitions. For this reason, in *Chapter III*, I will reframe the political economy of fair compensation for the specific case of LSLAs, analysing the nature of the

main economic incentives for the different actors typically involved in these deals.

Figure 6 *– Spatial distribution of concluded LSLAs and land conflicts*



Source: Author's elaboration on Land Matrix (The Land Matrix Global Observatory, 2019) and ECC Factbook (ECC Platform, 2019) data retrieved on the 11th of July 2018. The map combines concluded LSLAs from the Land Matrix database with a subset – 89 conflicts over agricultural and pastoral land – of the list of environmental conflicts known as *ECC Factbook*, which is available at: https://factbook.ecc-platform.org/ (accessed 19th June 2019).

6. Conclusions

In this introductory chapter, I have described LSLAs as the most recent land rush in human history and I have argued that the fundamental economic problem that comes with it — that is, the potential trade-off between development opportunities and land rights — is strictly intertwined with social, environmental and institutional issues.

In an effort to find the connections between different pieces of the LSLA puzzle, I will build on this idea further in the rest of this thesis, by addressing three key problems related to LSLAs — namely, the determination of the very essence and nature of this phenomenon; the individuation of the drivers of success for LSLA investments; and the identification of reasons behind the failure of the fair compensation mechanisms and the proliferation of land conflicts.

7. References

Anseeuw, W., Boche, M., Breu, T., Giger, M., Lay, J., Messerli, P., & Nolte, K. (2012). *Transnational Land Deals for Agriculture in the Global South. Analytical Report based on the Land Matrix Database*. Bern/Montpellier/Hamburg: CDE, CIRAD, GIGA, GIZ, ILC.

Arezki, R., Deininger, K., & Selod, H. (2015). What drives the global "land rush"? *World Bank Economic Review*, *29*(2), 207–233. Retrieved from: https://doi.org/10.1093/wber/lht034.

Balestri, S., & Maggioni, M. A. (2019). This Land Is My Land! Large-Scale Land Acquisitions and Conflict Events in Sub-Saharan Africa. *Defence and Peace Economics*, 1–24. Retrieved from: https://doi.org/10.1080/10242694.2019.1647727.

Blume, L., Rubinfeld, D. L. ., & Shapiro, P. (1984). The Taking of Land: When Should Compensation be Paid? *The Quarterly Journal of Economics*, *99*(1), 71–92. Retrieved from: http://www.jstor.org/stable/1885721.

Cotula, L. (2013). The international political economy of the global land rush: A critical appraisal of trends, scale, geography and drivers. In B. White, S. M. Borras, R. Hall, I. Scoones, & W. Wolford (Eds.), *The New Enclosures: Critical Perspectives on Corporate Land Deals* (pp. 43–74). Abingdon, New York, Montreal: Routledge. Retrieved from: https://doi.org/10.4324/9781315871806.

Cotula, L., Vermeulen, S., Leonard, R., & Keeley, J. (2009). *Land grab or development opportunity? Agricultural investments and international land deals in Africa*. London, Rome: FAO, IIED, IFAD. Retrieved from: http://www.fao.org/3/a-ak241e.pdf.

Davis, K. F., D'odorico, P., & Rulli, M. C. (2014). Land grabbing: a preliminary quantification of economic impacts on rural livelihoods. *Population and Environment*, *36*(2), 180–192. https://doi.org/10.1007/s11111-014-0215-2.

De Maria, M. (2015). Trading the Untradeable: A Gravity Model for Large-Scale Land Acquisitions. Paper Presented at the 2015 *World Bank Conference on Land and Poverty*, Washington DC. Retrieved from: https://www.researchgate.net/publication/330360585_Trading_the_Untradeable_a_Gravity_Model_for_Large-Scale_Land_Acquisitions.

Deininger, K., Byerlee, D., Lindsay, J., Norton, A., Selod, H., & Stickler, M. (2010). *Rising Global Interest in Farmland*. K. Deininger & D. Byerlee (Eds.), Agriculture and Rural Development Series, Washington, DC: The World Bank: https://doi.org/10.1596/978-0-8213-8591-3.

Dell'Angelo, J., D'Odorico, P., Rulli, M. C., & Marchand, P. (2017). The Tragedy of the Grabbed Commons: Coercion and Dispossession in the Global Land Rush. *World Development*, *92*, 1–12. Retrieved from: https://doi.org/10.1016/j.worlddev.2016.11.005.

ECC Platform. (2019). FACTBOOK - Mapping environmental conflicts and cooperation. Website. Retrieved from: https://factbook.ecc-platform.org/.

Edelman, M. (2013). Messy hectares: questions about the epistemology of land grabbing data. *The Journal of Peasant Studies*, *40*(3), 485–501. https://doi.org/10.1080/03066150.2013.801340.

EyeWitness to History. (2006). The Oklahoma Land Rush of 1893. Website. Retrieved from: http://www.eyewitnesstohistory.com/landrush.htm.

Hermalin, B. E. (1995). An Economic Analysis of Takings. *Source Journal of Law, Economics, & Organization*, *11*(1), 64–86. Retrieved from http://www.jstor.org/stable/765070.

Huggins, C. (2011). *Commercial Pressures on Land - A historical perspective on the "Global Land Rush"*. Rome: CIRAD, ILC. Retrieved from: https://www.landcoalition.org/sites/default/files/documents/resources/HUGGINS_History_web_11.03.11.pdf.

Lay, J., & Nolte, K. (2018). Determinants of foreign land acquisitions in low- and middle-income countries. *Journal of Economic Geography*, *18*(11), 59–86. Retrieved from: https://doi.org/10.1093/jeg/lbx011.

Lazarus, E. D. (2014). Land grabbing as a driver of environmental change. *Area*, *46*(1), 74–82. Retrieved from: https://doi.org/10.1111/area.12072.

Le Billon, P. (2001). The political ecology of war: natural resources and armed conflicts. *Political Geography*, *20*(5), 561–584. Retrieved from: https://doi.org/10.1016/S0962-6298(01)00015-4.

Mazzocchi, C., Salvan, M., Orsi, L., Sali, G. (2018). The Determinants of Large-Scale Land Acquisitions (LSLAs) in Sub-Saharan Africa (SSA): A Case Study. *Agriculture*, *8*(12), 194. Retrieved from: https://doi.org/10.3390/agriculture8120194.

Messerli, P., Heinimann, A., Giger, M., Breu, T., & Schönweger, O. (2013). From "land grabbing" to sustainable investments in land: Potential contributions by land change science. *Current Opinion in Environmental Sustainability*, *5*(5), 528–534. https://doi.org/10.1016/j.cosust.2013.03.004

Miceli, T. J., & Segerson, K. (2014). Regulatory Takings. In J. M. Duke & J. Wu (Eds.), *The Oxford Handbook of Land Economics* (pp. 668–697). New York: Oxford University Press.

Nalepa, R. A., Short Gianotti, A. G., & Bauer, D. M. (2017). Marginal land and the global land rush: A spatial exploration of contested lands and state-directed development in contemporary Ethiopia. *Geoforum*, *82*, 237–251. https://doi.org/10.1016/j.geoforum.2016.10.008.

Ndi, F., & Batterbury, S. (2017). Land Grabbing and the Axis of Political Conflicts: Insights from Southwest Cameroon. *Africa Spectrum*, *52*(1), 33–63. https://doi.org/10.1177/000203971705200102.

Nolte, K., Chamberlain, W., & Giger, M. (2016). *International Land Deals for Agriculture. Fresh insights from the Land Matrix: Analytical Report II*. Bern, Montpellier, Hamburg, Pretoria: CDE, CIRAD, GIGA, University of Pretoria. Retrieved from: https://doi.org/10.7892/boris.85304.

Nosal, E. (2001). The taking of land: Market value compensation should be paid. *Journal of Public Economics*, *82*(3), 431–443. Retrieved from: https://doi.org/10.1016/S0047-2727(00)00146-8.

Raimondi, V., & Scoppola, M. (2018). Foreign Land Acquisitions and institutional distance. *Land Economics*, *94*(4), 517–540. Retrieved from: https://doi.org/10.3368/le.94.4.517.

Romei, V. (2016). The debate over big land data. *Financial Times*, online: https://www.ft.com/content/df31f666-0a43-3a0e-a747-ec72f2efb40c.

Roudart, L., & Mazoyer, M. (2015). Large-Scale Land Acquisitions: A Historical Perspective. In G. Carbonnier, C. Gironde, C. Golay, & P. Messerli (Eds.), *Large-Scale Land Acquisition* (pp. 1–29), Leiden, Boston: Brill. Retrieved from: https://doi.org/10.1163/9789004304758.

Santangelo, G. D. (2018). The impact of FDI in land in agriculture in developing countries on host country food security. *Journal of World Business*, *53*(1), 75–84. https://doi.org/10.1016/J.JWB.2017.07.006.

Shepard, D. (2011). Land Grabbing and Potential Implications for World Food Security. In M. Behnassi, J. D'Sliva, & S. A. Shahid (Eds.), *Sustainable Agricultural Development: Recent Approaches in Resources Management and Environmentally-Balanced Production Enhancement* (pp. 25–42), Dordrecht, Berlin, Heidelberg, New York: Springer. https://doi.org/10.1007/978-94-007-0519-7

The Land Matrix Global Observatory. (2019). The Land Matrix Global Observatory. Website. Retrieved from: https://landmatrix.org.

Vermeulen, S., & Cotula, L. (2010). Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa. *Journal of Peasant Studies*, *37*(4), 899–916. https://doi.org/10.1080/03066150.2010.512463.

Weaver, J. C. (2003). *The great land rush and the making of the modern world, 1650-1900*. Montreal: McGill-Queen's University Press. Retrieved from: https://www.jstor.org/stable/j.ctt804f5.

Wily, L. A. (2012). Enclosure revisited: Putting the global land rush in historical perspective. In J. A. Allan, M. Keulertz, S. Sojamo, & J. Warner (Eds.), *Handbook of Land and Water Grabs in Africa - Foreign Direct Investment and Food and Water Secuirity* (pp. 11–23), Abingdon, New York: Routledge. https://doi.org/10.4324/9780203110942-2.

Zoomers, A. (2010). Globalisation and the foreignisation of space: seven processes driving the current global land grab. *The Journal of Peasant Studies*, *37*(2), 429–447. https://doi.org/10.1080/03066151003595325.

Chapter I

Understanding Land in the Context of Large-Scale Land Acquisitions: A Brief History of Land in Economics[4]

[4] This chapter was published as an article on January the 10th, 2019:

De Maria, M. (2019). Understanding Land in the Context of Large-Scale Land Acquisitions: A Brief History of Land in Economics. *Land*, 8(1), 15. doi:10.3390/land8010015.

Abstract: In economics, land has traditionally been assumed to be a fixed production factor, both in terms of quantity supplied and mobility. Yet, in the last two decades, international investors have expressed an unexpected interest in farmland and in land-related investments, with the demand for land rising at an unprecedented pace. In spite of a fast-growing literature analysing the variety of '*spaces*' affected by large-scale land acquisitions (LSLAs), the contemporary process of '*commodification*' of land embedded in this phenomenon has taken present day economists by surprise. This chapter reviews the evolution over time of the concept of land in economics and it suggests how different aspects of this evolution are relevant to the understanding of contemporary LSLAs. Rather than presuming to analyse in a systematic and comprehensive manner the immense literature relating to land economics, this work investigates what makes land a peculiar and complex commodity. Indeed, different branches of economic thought, at different moments in time, have pointed out that the location of land in space matters; that land is a living and fundamental component of the ecosystem; that it is a valuable economic asset, and yet, it is often hard to value it in pure monetary terms; eventually, that land is intrinsically connected to societies, cultural and spiritual identities, mores, and institutions. Through a brief history of the evolution of the concept of land in economics, I identify four broad categories — *space*, *economics*, *environment*, and *institutions* — that help understanding land. These four elements characterise land as a commodity, as well as its peculiarities, and constitute the prerequisites of a conceptual framework for the analysis and understanding of the forces at play in the contemporary wave of LSLAs.

Keywords: *large-scale land acquisitions; land grabbing; land investments; land market; land tenure; land economics; institutions; geography; environment*.

1. Introduction: rethinking land as a commodity in the 21st century

In a fast-changing, complex, and globalised world, assumptions, theories, and definitions that have been deemed to accurately reflect our world for a long time suddenly need to be questioned, adapted, and updated. Indeed, in the last decade, the surge of large-scale land acquisitions (LSLAs) — also commonly referred to as '*land grabbing*' by those who prefer to focus more on its controversial aspects — suggests that it is time to rethink the role of land in economics, as well as in other sciences.

Researchers from different fields immediately recognised the strategic importance of LSLAs (Anseeuw et al., 2012; Borras & Franco, 2012; Cotula, Vermeulen, Leonard, & Keeley, 2009; De Schutter, 2011b; Deininger et al., 2010; George C. Schoneveld, German, & Nutakor, 2011). A recent but rapidly growing literature has addressed a wide range of issues from both qualitative and quantitative perspectives, highlighting the variety of *'spaces'* affected by transnational land deals, as well as the multidimensional and intertwined nature of the phenomenon. Climate change, food security, food sovereignty, environmental sustainability, land tenure security, land–energy nexus, and development issues are some of the many aspects which this literature has connected to LSLAs.

However, it seems that to some extent economists were taken by surprise and a crucial part of the story is still missing. The LSLAs phenomenon shows the existence of an international market for land, which implies that the process of '*commodification*' has started on a global and transnational scale for this resource. Nevertheless, the economic science seems to not yet be equipped with a conceptual framework allowing for the full understanding of the mechanisms and the forces at play in such a novel international market for land.

For this reason, the different sections of this article aim — each one with a different specific focus — to fill this gap. While arguing that a new holistic conceptual framework for land is required in order to reflect the multifaceted features of the current LSLAs, I also endorse in this paper the idea that looking at the history of different branches and moments in the economic thought and other parallel disciplines can offer invaluable insights for deciphering the present — and future — of the most recent rush for land in human history.

Before starting with a brief — and necessarily incomplete — history of land economics, it is important to discuss the main features characterising the LSLAs phenomenon itself, and how they concur in justifying the need for a reconceptualisation of land. Hence, in the next section I examine the many faces of LSLAs, highlighting through the relevant literature the main figures and the leading — and sometimes conflicting — narratives around its nature and consequences. I then describe the methodological approach, while the rest of this paper analyses the four crucial aspects that need to be considered in land-related studies and contribute to defining a comprehensive conceptualisation of land at present day — namely *economics*, *space*, *environment*, and *institutions*. The last section offers final remarks.

2. Large-Scale Land Acquisitions

In the last decade, international investors unexpectedly expressed an interest in land, with the demand for it rising at an unprecedented pace, especially after the 2008 commodity bubble (Deininger et al., 2010). According to Deininger (Deininger, 2011), in 2009 alone, the demand for land targeting Sub-Saharan Africa, which was fed by a strong LSLAs

component, equalled 20 times its historical average. To get a sense of the global magnitude of this phenomenon, the Land Matrix (The Land Matrix Global Observatory, 2018), which is widely recognized as the most comprehensive and up-to-date database on large-scale land transactions, collects information on over 2800 deals since the beginning of the new millennium, corresponding in aggregate to just above 100 million hectares (ha) of land. Two out of three of these large-scale land deals, spreading over 77.3 million ha, are labelled as '*transnational*', while the rest of the records reflect purely domestic land transactions. With a list containing more than 90 destination countries and over 120 investor countries, even acknowledging that the same country can appear both as investor and as targeted region, the global scale of the LSLAs phenomenon is not currently under debate. Since the Land Matrix is constantly updated, it is important to note that these figures were obtained on November the 12th, 2018. In addition, the reported figures for the total number of deals and total area include all records in the dataset, irrespective of their *negotiation status*, according to which a deal can be '*concluded*' (2,401 deals, corresponding to 70,347,793 ha), '*intended*' (262 deals over 21,776,190 ha), or '*failed*' (146 deals, equal to 8,620,377 ha).

It is not a coincidence that several empirical papers borrowed from trade economics the (in)famous gravity equation (De Benedictis & Taglioni, 2011) — which itself was borrowed from physics — to analyse different aspects of LSLAs (Arezki, Deininger, & Selod, 2015; Giovannetti & Ticci, 2016; Raimondi & Scoppola, 2018). Given this, one of the ways in which we can look at LSLAs is through the lens of an international market, where land is the main traded commodity. However, it seems that this international market for land is an unusual one, not just because of the peculiar nature of its commodity, which was seldom traded internationally in the past, but

also because it appears to be a '*market without prices'* (De Maria, 2015). In this sense, the LSLAs literature pointed out the lack of information and transparency surrounding the entire life cycle of these investments — from the inception phase, through the negotiations, up to the operational stages (Cotula, 2011). On the one hand, the increasing pressure from civil society, non-governmental organizations (NGOs) and international institutions — in a joint effort to improve the information landscape around LSLAs — is gradually contributing to the disclosure of contractual terms, land records and cadastral registries. Indeed, beside the already mentioned Land Matrix, information on land records can be found on the *Open Land Contract* on-line repository (Columbia Center for Sustainable investment, 2018), on the *Cadasta* website (Cadasta Foundation, 2018), as well as on the *Land Portal* web platform (Land Portal Foundation, 2018), which contains a rich selection of open access data and information on land tenure and land governance across the globe. On the other hand, it is also true that finding the price at which large-scale land deals are closed in a systematic way is still, to a large extent, a lost cause.

The evidence emerging from the existing LSLAs literature also suggests that high-income and land-scarce countries sought, and are still seeking, land in low-income but land-abundant countries, mainly from the *Global South* (Anseeuw et al., 2012). After an initial emphasis put on the *negotiation status*, that is, whether a deal was actually concluded, still under negotiation or cancelled, the second *Analytical Report* from the Land Matrix shifted the attention to the *implementation status*, suggesting that, with more than half of the reported deals currently in operation, the LSLAs phenomenon reached a new '*productive*' era (Nolte, Chamberlain, & Giger, 2016).

The LSLAs phenomenon stimulated two main and opposed development narratives. On the one hand, this wave of land-related

investment has been hailed as a development opportunity, especially for low- and middle-income countries where agricultural activities are both suffering from chronic underinvestment and often contributing to a large extent to GDP, occupation, and livelihood. On the other hand, these deals have been seen as *land grabbing:* a fierce international competition for the control of natural resources, such as water, forestland, and farmland, which is happening at the expenses of vulnerable local populations (Arnall, 2018; Dell'Angelo, D'Odorico, Rulli, & Marchand, 2017; Rulli, Saviori, & D'Odorico, 2012; Vermeulen & Cotula, 2010).

From a global perspective, LSLAs can be seen as reflecting the increasing imbalance between the global supply and demand for land, with the '*perfect storm*' — as it was originally defined by Professor Sir John Beddington (Beddington, 2009) — in the making (Hertel, 2011): the combined pressure on the Earth's ecosystems and anthropogenic activities of climate change, population growth, and dietary changes pushing towards higher levels of average daily calorie intake. Such a considerable combination of factors is likely to dramatically exacerbate the pressure on the planet's food, water, and energy reserves in the next few years, with the risk of disproportionately hitting the poorest and most vulnerable strata of the world's population.

The increasing pressure of this '*perfect storm*' of human-led factors on natural resources, is not only changing the structure of the land market by making land a globally traded commodity, but it is also inducing a parallel and profound institutional change through the LSLAs phenomenon. In this context, land ownership is increasingly evolving from customary and often collective forms of tenure — typically adopted by local communities and indigenous populations to manage common pool resources — towards Western-like forms of individual private property. Indeed, during the last

century's decolonisation process, only a fraction of the natural resources under traditional forms of tenure was recognised by law, thus making it very difficult in some cases to recognise, formalise, and defend local communities' rights associated with customary tenure systems applied to common pool resources, including land. In fact, Dell'Angelo et al. (Dell'Angelo et al., 2017) provide support for the idea that the contemporary rush for land is preferentially targeting areas under traditional and common-property systems, thus embedding a strong '*commons grabbing*' component. According to the authors, while the communities adopting common and customary tenure regimes have over time developed forms of resilience to internal shocks (i.e. other community members), it is not clear to what extent they are equipped for absorbing shocks induced by exogenous factors, such as the competition with new external actors for the control over land reserves.

In this context, the crucial role of land emerges clearly, together with the need to allocate land optimally among the increasing number of competing land uses. The reader should note that '*optimally*', here, is to be intended as the balance — necessarily accounting for the related trade-offs — between economic efficiency, long-term development, inter and intra-generational equity, as well as sustainable management of environmental resources. Therefore, the land governance mechanisms regulating the LSLAs phenomenon can make the difference — for better or for worse — in facing the *perfect storm*. In order to implement and coordinate adequate policies, however, it is important to step back for a moment and start from the understanding of the many faces of land in the contemporary world.

3. Methodology

The preliminary phase of this research was structured as a systematic review of the existing LSLA literature, including scientific books and peer-reviewed journal articles in English. Search terms comprised *LSLAs*, *land grabbing*, but also other locutions and compound forms typically used to refer to this phenomenon, such as *transnational land deals*, *large-scale land investments*, *large-scale land transactions*, *land-based investments*, *foreign land acquisition*, and *land rush*.

This information gathering process, which was also complemented by a press and media review, highlighted the existence of a recent but rapidly growing literature on the topic, covering an extremely rich variety of different, but often interconnected aspects. If the multidimensionality of the LSLA phenomenon emerged clearly, this review process also highlighted the fact that the economics of LSLAs were, at best, scattered among the different sections of each contribution, revealing the contrast between the terminology used to name the phenomenon itself—which is imbued with economic terms such as *investments*, *deals*, *transactions*—and the lack of a comprehensive economic framework for the understanding of land and the different aspects contributing to its value in the context of LSLAs.

In an effort to disentangle the complexity of the LSLA phenomenon and to acknowledge its inherent multidisciplinarity, I organised this review around four main pillars: *economics*, *space*, *environment*, and *institutions*. These four aspects were broad enough to capture the whole range of features and implications embedded in LSLAs, and at the same time, they proved to be a clear and useful way to differentiate and to organise in a more systematic way the complexity of various bodies of the literature looking at LSLAs from different disciplines.

While acknowledging the crucial contribution of other non-economic disciplines to a comprehensive understanding of the multifaceted nature of LSLAs, I decided to address with this research the lack of a conceptual economic framework specifically tailored around land in contemporary LSLAs. I then started to look at how economic thought had addressed other similar land-related issues in the past through the lens of the four pillars that I had previously identified, combining these elements with a review of the main aspects of LSLAs. The result of this exercise, which is presented in detail in the following sections, is a brief history of land in economics in the context of LSLAs.

4. Land and Economics

Land appeared in economics at a very early stage of the discipline's history. Initially it had a prominent role, arguably reflecting the crucial position of agricultural activities in the 18th-century society. In his seminal contribution to the economic science, the physiocrat Cantillon (Cantillon, 1959), who is often seen as the first author to publish a modern economic treaty (Brewer, 1992), put land at the center of his theory of value. According to Brems (Brems, 1990), who has the merit of having formalised Cantillon's thought in a modern and rigorous manner, the physiocrat created an original '*land theory of value*', wherein all production factors were ultimately reduced to (indirect) land.

Compared to Cantillon, who was mainly looking at a largely pre-capitalist society, the classical economists were already aware of the rapid ascent of capitalism. They directly witnessed the deep changes that it was producing in the economy and in the society. Consequently, Smith, Ricardo, and Marx gradually began to lose interest in land, instead concentrating

their efforts into better understanding the novelties of labour and capital within the new capitalistic global order. Nonetheless, Ricardo (Ricardo, 1817) introduced the idea that the fertility of land — and thus its productivity — is the main determinant of the agricultural land rent, therefore driving the economic value of this resource.

The simple intuition behind the so-called "*Ricardian approach*" to land — suggesting that the land value can be measured in terms of its agricultural productivity, using for instance measures such as the average or net revenue per hectare for specific crops — is still used and debated today. For instance, in an article that appeared in 1994 in the *American Economic Review*, Mendelsohn, Nordhaus, and Shaw assessed the impact of climate change on US agriculture by looking at farmland prices and farm revenues, explicitly acknowledging their work as based on a '*Ricardian approach*' (Mendelsohn, Nordhaus, & Shaw, 1994) (p. 755):

"*In this study, we develop a new technique that in principle can correct for the bias in the production-function technique by using economic data on the value of land. We call this the Ricardian approach, in which, instead of studying yields of specific crops, we examine how climate in different places affects the net rent or value of farmland. By directly measuring farm prices or revenues, we account for the direct impacts of climate on yields of different crops as well as the indirect substitution of different inputs, introduction of different activities, and other potential adaptations to different climates. If markets are functioning properly, the Ricardian approach will allow us to measure the economic value of different activities and therefore to verify whether the economic impacts implied by the production-function approach are reproduced in the field.*"

While having some advantages, including the possibility to account for farmers' adaptation to climate change with relatively less data compared to other methods, the *Ricardian approach* has a strong limitation: it assumes that

the land market, together with other related markets, is operating in perfect conditions. If this assumption stands — at least to some extent — in land and real estate markets in the most advanced economies, it is hard to think that it can reflect the reality in most of developing countries, which also happen to be the areas most targeted by LSLAs. In addition, Timmins (Timmins, 2006) argued that the application of Ricardian techniques can lead to biased results, especially in the presence of "*unobservable determinants of land value*" (*Ibid.*, p.120) varying across different possible land uses. Therefore, it is not a coincidence that Timmins, as opposed Mendelsohn and his colleagues who looked at the U.S. agriculture, decided to focus his empirical work on Brazil, a complex and vast developing country, rich in both "*unobservable determinants of land values*" and alternative land uses.

Surprisingly, the question of the (correct) determination of land value appears to have been overlooked by LSLA literature so far. Besides a few scattered references to the price of land allegedly paid in one large-scale land deal or another, only the literature investigating the issue of fair compensation for local populations and indigenous communities affected by LSLAs has expressed a more systematic interest in the land value issue (Tagliarino, Bununu, Micheal, De Maria, & Olusanmi, 2018). For instance, in his essay addressing fair compensation in transnational land deals, De Maria (De Maria, 2018) discussed the controversial aspects related to the correct determination of land value using a law and economics perspective. Among the other cases revised in this essay, the discussion around the famous *Timber Creek Case* (See *Griffiths v. Northern Territory of Australia* (2016) FCA 900, as well as the appeal decision *Northern Territory of Australia v. Griffiths* (2017) FCAFC 106.) is of particular interest in this context. In the appeal decision, The Full Federal Court of Australia downsized from AUD

3.3 million to 2.9 million the amount of compensation to be paid to the *Ngaliwurru–Nungali* aboriginal people, who were stripped of their customary land during the development of the town of Timber Creek. However, despite having found mistakes in the calculation of the economic loss suffered by the aboriginal landholders, the Federal Court did not contend the inclusion of non-economics elements — mainly motivated through the spiritual value attached to land by the natives — in the calculation of the final value of the compensation. Despite being at the intersection of law and economics, this case clearly shows the importance of the previously mentioned "*unobservable determinants of land value*".

Trade is another branch of economics that can be of help in understanding LSLAs. Yet, just like the economic valuation of the land value, it probably requires some degree of conceptual adaptation in order to fully capture LSLAs. Indeed, trade economics traditionally assumed land to be a fixed production factor, both in terms of quantity supplied and mobility, as opposed to capital and labour, which are considered to be, at least to some extent, mobile factors (Mundell, 1957; Samuelson, 1948). For instance, Kenen (Kenen, 1965), who — to be fair — put the emphasis of his work on capital rather than on labour and land, defined land as "*fixed stock […] wholly inert*" (*Ibid.*, p. 441). In line with this conception, within the most famous and influential models for international trade (Heckscher & Ohlin, 1991; Jones, 1971; Krugman, 1980; Mussa, 1974; Stolper & Samuelson, 1941; Viner, 1937), land, when included in the analysis, was considered at best an ancillary production factor, with the focus put mainly on capital and labour. On the other hand, the recent wave of transnational *Large-Scale Land Acquisitions* (LSLAs) proves that the ownership of land is becoming increasingly mobile, so that each country's endowment of land is not constrained to national borders anymore.

With the *perfect storm* described in the previous section in the background and considering the main LSLA features, land cannot be considered simply as a stylised, abstract, and fixed production factor any longer. Moreover, if the price of land is still largely a missing element in the LSLA literature, the *Timber Creek* case shows that the market value of land alone is not sufficient for a complete assessment of the value of this resource, which should also ultimately include a variety of non-economic factors. Back in 1944, Polanyi (Polanyi, 1944) already understood the limitations of a conceptualisation of land based solely on its economic functions (*Ibid.*, p. 178):

"*The economic function is but one of many vital functions of land. It invests man's life with stability; it is the site of his habitation; it is a condition of his physical safety; it is the landscape and the seasons. We might as well imagine his being born without hands and feet as carrying on his life without land.*"

If underestimating the importance of the economic functions of land would be a terrible mistake, at the same time we need to acknowledge that land is much more than an economic asset: land is a complex commodity, with both market and non-market features; it supports the livelihood of billions of human beings; it is strategic for feeding the world population; it is a fundamental brick in the architecture of ecosystems and a vital element for building communities resilient to climate change; it is often the ground on which social, cultural, and individual identity are built. The following sections of this paper attempt to shed some light on these complex and intertwined aspects, which economists often refer to as *externalities*, and which contribute to define land and its value.

5. Land and Space

Urban economics and economic geography represent other branches of the economic science which gave particular attention to land. The pioneering contribution of Von Thunen (Von Thunen, 1966)[5] emphasised the importance of space. In particular, in the original formulation of his model, the author suggested that the land rent, which depends on the level of farm specialisation and on the specific land use, is ultimately an inverse function of the distance from the town centre. Almost a century and a half later, Von Thunen's land rent theory inspired one of the most influential models in modern urban economics. Indeed, Alonso's *monocentric city model*, constituted the heart of urban economics for several decades (Alonso, 1966). In his formulation, direct land consumption was the main engine for urban expansion, with the land value ultimately depending on individual preferences over location and on the distance from the so-called (and unique) *Central Business District* (CBD). In the subsequent evolutions of the monocentric city model (Mills & Hamilton, 1994; Muth, 1969), and despite remaining an important factor, land was demoted to an "*intermediate input in the production of housing, which is the final consumption good*" (Brueckner, 1987) (p. 821). In other words, the great contribution of this family of models relies on the formalisation of transport costs, which is, mainly seen as the opportunity cost arising from the distance from the city centre, as a determinant of land value in an urban context.

If distance matters, the other factors related to the specific location in space are also important. Indeed, Paul Krugman, who is credited with

[5] The Von Thünen model was first published in 1826, but it seemed more suitable to cite the 1966 critical edition by Hall (ed.) and Wartenberg (transl.), which, to the best of my knowledge, is the first English translation of this incredibly influential work.

creating the branch of economics known as *new economic geography*, emphasised the role of space and distance in industrial location choices and trade (Krugman, 2010). The details of this new conception will not be discussed further, because they go beyond the general purpose of this research. With that in mind, using Krugman's own words, I would like to contextualise the importance and the novelty of this new approach for the general evolution of the economic thought (Krugman, 2010) (p. 1):

"*In the late 1980s mainstream economists were almost literally oblivious to the fact that economies aren't dimensionless points in space, and to what the spatial dimension of the economy had to say about the nature of economic forces.*"

The importance of space and distance was also highlighted in other trade models, including the aforementioned family of gravity models for trade, from which a series of more recent empirical works took inspiration to understand the forces at play in LSLAs (Arezki et al., 2015; De Maria, 2015; Giovannetti & Ticci, 2016; Lay & Nolte, 2018; Raimondi & Scoppola, 2018). Gravity models for LSLAs help to understand the structure and the functioning of the global land market, and they reflect the variety of factors and actors, each with his or her own goal, involved in this market. In such a peculiar, complex and imperfect market — that is, a "*market without prices*" and with very few binding national and international regulations — it is hard to expect that Smith's *invisible hand* is at work. Instead, it is probably easier to see the Marxian critique of the invisible hand at work (Mandel, 1990, p. 16):

"*Marx's critique of the 'invisible hand' concept does not dwell essentially on the analysis of how a market economy actually operates. It would above all insist that this operation is not eternal, not immanent in 'human nature', but created by specific historical circumstances, a product of a special way of social organisation, and due to disappear at some stage of historical evolution as it appeared during a*

previous stage. And it would also stress that this 'invisible hand' leads neither to the maximum of economic growth nor to the optimum of human wellbeing for the greatest number of individuals."

In this sense, the expected outcome of LSLAs is not a perfect nor an equitable allocation of the increasingly scarce global land reserves, but it is more so the result of the interaction of different — public and private, individual and collective, domestic and foreigner — stakeholders, with preferences and consequences varying, among other factors, with space and geography too.

In general, what we can learn from the past literature when looking at the contemporary land rush, is that the geographical and spatial features of this phenomenon matter. If this intuition is not new in the existing LSLA literature (Cotula, 2013; Messerli, Giger, Dwyer, Breu, & Eckert, 2014; Nolte et al., 2016; George Christoffel Schoneveld, 2014), the recent and rapid technological developments in remote sensing, satellite imagery, community-based Geographic Information Systems (GIS), mobile-based and drone-based mapping have just started to be systematically applied to the LSLAs context (Baird & Fox, 2015). Indeed, if the global geography of *land grabbing*, together with the distance (or proximity) of investor and destination countries, constitute elements that have already been addressed by several authors and from different angles, the spatial boundaries and features of specific large-scale land deals and concessions, which are also extremely relevant, are often hard to find. In this way, I wish to stress the current imbalance between the macro-geography and the micro-geography of LSLAs, hoping that this consideration will stimulate further research aiming at reducing this gap.

6. Land and Environment

Environmental economics questioned since its early stages the ancillary and stylised conception of natural resources that was often embedded in other branches of the economic thought. The publication of "*The Limit to Growth*" in 1972 (Meadows, Meadows, Randers, & Behrens, 1972) can be seen as the symbolic moment in which economists realised that they could no longer ignore the physical, chemical and biological attributes of the different forms of natural capital, as well as the fact that there were limits to its substitutability. It is not a coincidence that, in the same period, Georgescu-Roegen bridged the gap between economics and physics, thus bringing the economists back to the harsh reality of the fundamental laws of thermodynamics (Georgescu-Roegen, 1971).

Environmental economists also stressed the importance of externalities, inspired by the seminal contribution of Pigou (Pigou, 1920). The monetary evaluation of goods that do not necessarily have their own market became a fascinating issue, eventually leading to the awareness that intangible non-market values contribute to the determination of extremely tangible, and sometimes marketable, outcomes, especially when considering environmental resources. Gradually, the economic sciences embraced concepts we are all now familiar with, such as pollution, biodiversity, natural resource management, sustainability, and climate change.

Among others, the issues related to climate change have received particular attention in the last decades, producing a tremendous acceleration in land-use modelling techniques. For instance, Hertel, Rose, and Tol (Hertel, Rose, & Tol, 2009) edited an entire volume describing the myriad existing models for land-use and land-use change developed over the last thirty years or so. More recently, the Intergovernmental Panel on

Climate Change (IPCC) *Special Report on Global Warming of 1.5°* highlighted how the global land reserves are already deeply affected by climate change, and, at the same time, how land management represent a crucial component in the mix of proposed responses (IPCC, 2018). Land is so important in this context that the IPCC also plan to release a new *Special Report on Climate Change and Land* (SRCCL) next year.

With an estimated 65% of global land reserves *de facto* held by indigenous and local communities under customary and often collective tenure regimes (RRI, 2015), typically adopting small-scale and low-intensity techniques of agricultural, fishery, and forestry production, the current interest of international investors in LSLAs is — both *literally* and *figuratively* — changing the landscape. Scholars are already aware of the potential for land-use change and environmental impact embedded in LSLAs (Lazarus, 2014; Rulli et al., 2012; Stevens, Winterbottom, Springer, & Reytar, 2014). International institutions, civil society, and the private sector are aware of the potential impacts of LSLAs too, as suggested by the increasing number of guidelines, protocols, and tools — such as the FAO-endorsed *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (FAO, 2012) — to promote responsible and sustainable land investments. However, a more rigorous understanding and quantification of the effects of the current proliferation of large-scale land investments on biodiversity, climate changes, and land-use is still needed. In other words, the LSLAs literature has just started to disentangle the implications around the agro-ecological and pedoclimatic features of the large strips of land that are currently being acquired and sold.

7. Land and Institutions

The debate around (formal and informal) institutions, growth, and development — that is, whether good institutions are the major cause of economic growth and human development, or, conversely, high level of accumulation of human and social capital are actually responsible for improvements in institutional quality — is still open (D Acemoglu & Robinson, 2010; Daron Acemoglu, Johnson, & Robinson, 2005; Aron, 2000; Glaeser, Porta, & Shleifer, 2004; Shirley, 2008). However, all opposed factions agree that the issues of property rights and tenure systems, standing at the core of many aspects of land-related research, are crucial in this context (Platteau, 2000).

Land is not just a good defined by its economic rent, its position in the space and its natural features, but it is also a political, social, spiritual, and cultural asset. Land is so deeply embodied in the collective imagination of many societies, that it contributes, among other functions, to define the social identity both at the individual and at the collective level. Indeed, according to Deininger and Feder (Deininger & Feder, 1998, p. 1):

"*The way in which land rights are assigned therefore determines households' ability to produce their subsistence and generate marketable surplus, their social and economic status (and in many cases their collective identity), their incentive to exert non-observable effort and make investments, and often also their ability to access financial markets or to arrange for smoothing of consumption and income.*"

The "*institutional superstructure*" attached to land, that is, the way in which social customs and official legal systems allocate property rights and regulate access and use of land, it is not static and evolves within time and space. The historical evidence suggests that the actual path that this evolution takes can deeply affect the evolution of societies themselves. For

instance, the *enclosures* changed not just the landscape in the United Kingdom during the period 1750-1850, but they also sanctioned the passage from a pre-capitalist rural society to a capitalist and industrial one (Allen, 2004; Chambers, 1953). In more recent days, institutional arrangements over land are not less important than they were during the British industrial revolution, and the actual shape they take can range over an incredibly vast horizon of different possibilities. Indeed, according to Feder and Feeny (Feder & Feeny, 1991, p. 135):

"*[…] in the contemporary world, especially in developing countries, the presumption of exclusive, transferable, alienable, and enforceable rights is frequently inaccurate and potentially misleading. In such cases the complex nature of institutional arrangements in general and property rights in particular needs to be described.*"

In this sense, between the end of the last century and the beginning of the present one, the Nobel laureate Elinor Ostrom has laid the foundations for unravelling the knot linking the diverse range of property rights, the variety of existing formal and informal institutions, and their relation with natural resources (Ostrom, 2005; Schlager & Ostrom, 1992).

However, when it comes to LSLAs, the knot seems to not yet be fully unravelled. Indeed, according to the Rights and Resources Initiative (RRI), more than half of the global land reserves are held by indigenous people and communities under a diverse array of customary tenure regimes, but their ownership is formally recognised only on one tenth of the global land surface (RRI, 2015).

Several authors argued that this lack of formal recognition and enforcement of traditional tenure systems can increase the risk of *land grabbing*, while reducing the room for LSLAs to create inclusive and tangible

development opportunities (Cotula et al., 2009; De Schutter, 2011a, 2011b). Other authors also highlighted that the impact of specific large-scale land deals on affected communities, depending on different forms of traditional and customary land rights, can be very diverse among the various subgroups within each community, such as women, youths or elites (Behrman et al., 2012; German, Schoneveld, & Mwangi, 2013; Holden & Otsuka, 2014). Interestingly, customary tenure regimes are not only a trigger for land grabbing, but they can also work as a local community response, that is, a mechanism of social resilience, to transnational LSLAs (Chabeda-Barthe & Haller, 2018).

The previously cited LSLA gravity literature also emphasised the role of institutions, almost unanimously recognising tenure insecurity as one of the main drivers for large-scale land investments (Arezki et al., 2015; De Maria, 2015; Giovannetti & Ticci, 2016; Lay & Nolte, 2018). The latest findings in this branch of the quantitative LSLAs research unveil an extra layer of complexity surrounding the interplay between foreign land acquisition and institutions. At the same time, these findings reinforce the idea out forth in this article, whereby I suggest that a more holistic conceptualisation of land is needed to fully understand the implications of LSLAs. Indeed, Raimondi and Scoppola (Raimondi & Scoppola, 2018), not only address the issue of the institutional distance between target and investor country, but also find that the institutional pattern changes with the geography of LSLAs (*Ibid.*, p. 537):

"*The hypothesis that Africa follows a clearly different pattern from other regions is confirmed by the results. Indeed, while political distance negatively affects FLA, the gap in governance fosters the amount of hectares acquired in Africa, though not the number of contracts. These results suggest that the weaker the level*

of governance in target countries in Africa, the more investors prefer large-scale contracts."

8. Conclusions

Before entering the maze of the qualitative and quantitative impacts of LSLAs, and before discussing land governance and policy implications, it is important to take a step back, understanding first the essence of the multiple and intertwined dimensions behind land in the context of the contemporary wave of LSLAs. To do so, I organised this review around four aspects — namely *economics*, *geography*, *environment*, and *institutions* — that proved to be a practical way to categorise, to order, and to connect different LSLA features with the range of economic theories that could contribute to understanding them. Indeed, the value of land is not only about the pure economics of it, but it is also about its location in the space, its environmental and pedoclimatic features, and the variety of both formal and informal institutions that contribute to land governance in different societies. This critical review exercise suggested that many of the elements that appear as original features of current LSLAs are actually not new. Therefore, looking at how they have been conceptualised and approached in the past offered valuable insights for the comprehension of the present rush for land and stimulated a critical reflection on how the LSLA-related research could be improved by adopting a more holistic approach to land issues.

The first important finding that emerged from this approach is in fact the existence of a gap in the LSLA literature. Indeed, in the previous sections of this paper I argued how the LSLA phenomenon embodies a new trajectory in the contemporary process of land *commodification*. Yet, with a

new international market for land in place, and despite the recurrent reference to an economic vocabulary in the LSLA narrative and in its own definition, it is astonishing how the discourse around the value of land is systematically missing from the LSLA-related literature. If the lack of transparency surrounding LSLAs and the subsequent shortage of reliable data over land prices can contribute to explain this situation, it is also true that the contemporary economic science appears not to be equipped with a holistic theoretical framework for land, allowing for the full understanding of the implications of the current surge in transnational land acquisitions.

In this sense, while highlighting the need for additional and more rigorous economic analyses in the context of LSLAs, the historical perspective adopted in this paper suggests that international trade economics offers a preliminary way to include some of the peculiar aspects of LSLAs in the analysis, namely the transnational nature of LSLAs and the increased mobility of land — and its ownership — as a production factor. The review of the intertwined relationship between land and economics also emphasised how the *Ricardian approach* to land value, according to which the value of land ultimately depends on its productivity, with such value being fully captured by existing land markets, would not take into account all the complex and peculiar aspects characterising LSLAs and, more generally, land in the 21st century.

This last consideration leads us to the second key finding of this paper, that is the need to go beyond the silos of different schools of thought in economics, as well as the need to rely on the approaches, theories and the tools provided by other disciplines outside the fields of economics and development studies. The inclusion of the sections on space, environment, and institutions alongside the one on land and economics can be seen as a preliminary step in this direction. The lesson here is that LSLAs are not

happening in a spatial, environmental, and institutional vacuum. Different aspects of the geography of these deals should be factored into LSLA studies, in an effort to better understand the implications of both the physical distance — for instance in terms of location preferences, transport costs and transaction costs — and the socio-institutional distance — for instance in terms of the diversity of tenure regimes, land laws, and customs among the actors involved. This review also stresses that LSLAs are happening within natural ecosystems, with implications for biodiversity, pollution, and climate change that still need to be explored more in depth. In addition, economic, spatial, environmental, and institutional aspects influencing LSLAs and the value of land are not static: they evolve over time together with the actors involved and their motives. For instance, an historical perspective on colonisation and decolonisation dynamics from the last century can help to understand the players and features of the current LSLAs. Similarly, a brief history of land in economics and in related sciences can help the understanding of the factors determining the value of land and the likely outcome that we will observe in the future on the newly born international market for land.

The recent wave of LSLAs suggests that land is indeed a commodity, but alongside its economic functions, it also shows the variety of other elements that ultimately contribute to the actual determination of land value. Taking advantage of the variety of different approaches proposed over time in the history of economic thought and other related disciplines, as well as assessing them in the light of the current features of LSLAs, this paper ultimately sets the groundwork for a new holistic conceptualisation of land that reflects its present complexity.

9. References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Insitutions as a Fundamental Cause of Long-Run Growth. In P. Aghion & S. N. Durlauf (Eds.), *Handbook of Economic Growth* (pp. 385–472). Retrieved from: https://economics.mit.edu/files/4469.

Acemoglu, D., & Robinson, J. (2010). The Role of Institutions in Growth and Development. *Review of Economics and Institutions*, *1*(2). Retrieved from: https://doi.org/10.5202/rei.v1i2.1.

Allen, R. C. (2004). Agriculture during the industrial revolution, 1700–1850. In R. Floud & P. Johnson (Eds.), *The Cambridge Economic History of Modern Britain* (pp. 96–116). Retrieved from: https://doi.org/10.1017/CHOL9780521820363.005.

Alonso, W. (1966). *Location and Land Use. Toward a General Theory of Land Rent* (Reprinted). Cambridge, MA: Harvard University Press.

Anseeuw, W., Boche, M., Breu, T., Giger, M., Lay, J., Messerli, P., & Nolte, K. (2012). *Transnational Land Deals for Agriculture in the Global South. Analytical Report based on the Land Matrix Database*. Bern/Montpellier/Hamburg.

Arezki, R., Deininger, K., & Selod, H. (2015). What drives the global "land rush"? *World Bank Economic Review*, *29*(2), 207–233. Retrieved from: https://doi.org/10.1093/wber/lht034.

Arnall, A. (2018). "Employment until the end of the world": Exploring the role of manipulation in a Mozambican land deal. *Land Use Policy*, 1–9. Retrieved from: https://doi.org/10.1016/j.landusepol.2017.11.055.

Aron, J. (2000). Growth and institutions: A review of the evidence. *World Bank Research Observer*, *15*(1), 99–135. Retrieved from: https://doi.org/10.1093/wbro/15.1.99.

Baird, I., & Fox, J. (2015). How Land Concessions Affect Places Elsewhere: Telecoupling, Political Ecology, and Large-Scale Plantations in Southern Laos and Northeastern Cambodia. *Land*, *4*(2), 436–453. Retrieved from: https://doi.org/10.3390/land4020436.

Beddington, J. (2009). *Food, Energy, Water and the Climate Change: A Perfect Storm of Global Events?* Accessed on-line and Retrieved from: https://webarchive.nationalarchives.gov.uk/20121206120858/http://www.bis.gov.uk/assets/goscience/docs/p/perfect-storm-paper.pdf.

Behrman, J., Meinzen-Dick, R., Quisumbing, A., Peterman, A., Behrman, J., & Osorio, M. (2012). The gender implications of large-scale land deals. *The Journal of Peasant Studies*, *39*(1), 49–79. Retrieved from: https://doi.org/10.1080/03066150.2011.652621.

Borras, S. M., & Franco, J. C. (2012). Global land grabbing and trajectories of Agrarian change: A preliminary analysis. *Journal of Agrarian Change*, *12*(1), 34–59. https://doi.org/10.1111/j.1471-0366.2011.00339.x.

Brems, H. (1990). Price Theory - A Stylised History. *BEBR Working Paper*, No. 90-1627. Online: https://core.ac.uk/download/pdf/4837900.pdf.

Brewer, A. (1992). *Richard Cantillon: pioneer of economic theory* (First). London & New York: Routledge.

Brueckner, J. K. (1987). The Structre of Urban Equilibria: A Unified Treatment of the Muth-Mills Model. In E. Mills (Ed.), *Handbook of Regional and Urban Economics. Vol. II* (pp. 821–845). Amsterdam: Elsevier North Holland.

Cadasta Foundation. (2018). Cadasta - Your Rights, Your Future. Website. Retrieved from: https://cadasta.org/.

Cantillon, R. (1959). *Essai sur la Nature du Commerce en Général. Edited with an English Translation and other materials.* Reissued in English in, H. Higgs (Ed.). London: Frank Cass and Company LTD.

Chabeda-Barthe, J., & Haller, T. (2018). Resilience of Traditional Livelihood Approaches Despite Forest Grabbing: Ogiek to the West of Mau Forest, Uasin Gishu County. *Land*, *7*(4), 140. Retrieved from: https://doi.org/10.3390/land7040140.

Chambers, J. D. (1953). Enclosure and Labour Supply in the Industrial Revolution. *The Economic History Review*, *5*(3), 319–343. Retrieved from: https://www.jstor.org/stable/2591811.

Columbia Center for Sustainable investment. (2018). Open Land Contracts - An Online Repository. Website. Retrieved from: https://www.openlandcontracts.org/.

Cotula, L. (2011). *Land deals in Africa: What is in the contracts?* London: International Institute for Environment and Development (IIED).

Cotula, L. (2013). The international political economy of the global land rush: A critical appraisal of trends, scale, geography and drivers. In B. White, S. M. Borras, R. Hall, I. Scoones, & W. Wolford (Eds.), *The New Enclosures: Critical Perspectives on Corporate Land Deals* (pp. 43–74). Abingdon, New York, Montreal: Routledge. Retrieved from: https://doi.org/10.4324/9781315871806.

Cotula, L., Vermeulen, S., Leonard, R., & Keeley, J. (2009). *l land deals in Africa*. Retrieved from: https://pubs.iied.org/12561IIED/.

De Benedictis, L., & Taglioni, D. (2011). The Gravity Model in International Trade. In L. De Benedictis & L. Salvatici (Eds.), *The Trade Impact of European Union Preferential Policies: An Analysis Through Gravity Models* (pp. 55–89). https://doi.org/10.1007/978-3-642-16564-1_4.

De Maria, M. (2015). Trading the Untradeable: A Gravity Model for Large-Scale Land Acquisitions. Paper Presented at the 2015 *World Bank Conference on Land and Poverty*, Washington DC. Retrieved from: https://www.researchgate.net/publication/330360585_Trading_the_Untradeable_a_Gravity_Model_for_Large-Scale_Land_Acquisitions.

De Maria, M. (2018). A Law-and-Economics Perspective on Fair Compensation in Transnational Land Deals in the Context of Customary Tenure Regimes. In B. Hoops, E. J. Marais, L. van Schalkwyk, & N. K. Tagliarino (Eds.), *Rethinking Expropriation Law III: Fair Compensation* (p. 244). The Hague: Eleven International Publishing.

De Schutter, O. (2011a). How not to think of land-grabbing: three critiques of large-scale investments in farmland. *Journal of Peasant Studies*, *38*(2), 249–279. Retrieved from: https://doi.org/10.1080/03066150.2011.559008.

De Schutter, O. (2011b). The Green Rush: The Global Race for Farmland and the Rights of Land Users. *Harvard International Law Journal*, *52*(2), 504–559.

Deininger, K. (2011). Challenges posed by the new wave of farmland investment. *Journal of Peasant Studies*, *38*(2), 217–247. Retrieved from: https://doi.org/10.1080/03066150.2011.559007.

Deininger, K., Byerlee, D., Lindsay, J., Norton, A., Selod, H., & Stickler, M. (2010). *Rising Global Interest in Farmland*. K. Deininger & D. Byerlee (Eds.), Agriculture and Rural Development Series, Washington, DC: The World Bank: https://doi.org/10.1596/978-0-8213-8591-3.

Deininger, K., & Feder, G. (1998). *Land Institutions and Land Markets*. World Bank Policy Research Working Paper, No. WPS2014. Retrieved from: http://documents.worldbank.org/curated/en/777741468766207383/127527322_20041117152621/additional/multi-page.pdf.

Dell'Angelo, J., D'Odorico, P., Rulli, M. C., & Marchand, P. (2017). The Tragedy of the Grabbed Commons: Coercion and Dispossession in the Global Land Rush. *World Development*, *92*, 1–12. Retrieved from: https://doi.org/10.1016/j.worlddev.2016.11.005.

FAO. (2012). *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*. Retrieved from: http://www.fao.org/docrep/016/i2801e/i2801e.pdf.

Feder, G., & Feeny, D. (1991). Land Tenure and Property Rights: Theory and Implications for Development Policy. *The World Bank Economic Review*, *5*(1), 135–153. Retrieved from: https://www.jstor.org/stable/3989973.

Georgescu-Roegen, N. (1971). *The Entropy Law and the Economic Process*. Cambridge, MA: Harvard University Press.

German, L., Schoneveld, G., & Mwangi, E. (2013). Contemporary Processes of Large-Scale Land Acquisition in Sub-Saharan Africa: Legal Deficiency or Elite Capture of the Rule of Law? *World Development*, *48*, 1–18. https://doi.org/10.1016/J.WORLDDEV.2013.03.006.

Giovannetti, G., & Ticci, E. (2016). Determinants of biofuel-oriented land acquisitions in Sub-Saharan Africa. *Renewable and Sustainable Energy Reviews*, *54*, 678–687. https://doi.org/10.1016/j.rser.2015.10.008.

Glaeser, A. R. D. L., Porta, R. L. A., & Shleifer, A. (2004). Do Institutions Cause Growth ? *Journal of Economic Growth*, *9*(3), 271–304. Retrieved from: https://www.jstor.org/stable/pdf/40215873.pdf

Heckscher, E., & Ohlin, B. (1991). *Heckscher-Ohlin trade theory*. In H. Flam & M. J. Flanders (Eds.). Cambridge, MA: MIT Press.

Hertel, T. W. (2011). The Global Supply and Demand for Agricultural Land in 2050: A Perfect Storm in the Making? *American Journal of Agricultural Economics*, *93*(2), 259–275. https://doi.org/10.1093/ajae/aaq189.

Hertel, T. W., Rose, S., & Tol, R. S. J. (Eds.) (2009). *Economic analysis of land use in global climate change policy*. Routledge.

Holden, S. T., & Otsuka, K. (2014). The roles of land tenure reforms and land markets in the context of population growth and land use intensification in Africa. *Food Policy*, *48*, 88–97. Retrieved from: https://doi.org/10.1016/j.foodpol.2014.03.005.

IPCC. (2018). *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty climate change*. Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.), World Meteorological Organization, Geneva: Switzerland. Retrieved from: https://www.ipcc.ch/sr15/.

Jones, R. (1971). A Three-Factor Model in Theory, Trade and History. In J. Bhagwati, R. Jones, R. Mundell, & J. Vanek (Eds.), *Trade, Balance of Payments and Growth: Papers in International Economics in Honor of Charles P. Kindleberger* (pp. 3–21). Amsterdam & London: North Holland Publishing Company.

Kenen, P. B. (1965). Nature, Capital and Trade. *Journal of Political Economy*, *73*(5), 437–460. Retrieved from: https://www.jstor.org/stable/1829133.

Krugman, P. (1980). Scale Economies, Product Differentiation, and the Pattern of Trade. *The American Economic Review*, *70*(5), 950–959. Retrieved from: https://www.jstor.org/stable/1805774.

Krugman, P. (2010). The New Economic Geography, Now Middle-Aged. *Presentation to the Association of American Geographers, April 16, 2010*, 1–19. Retrieved from: https://www.princeton.edu/~pkrugman/aag.pdf.

Land Portal Foundation. (2018). Land Portal - Securing Land Rights Through Open Data. Website. Retrieved from: https://landportal.org/.

Lay, J., & Nolte, K. (2018). Determinants of foreign land acquisitions in low- and middle-income countries. *Journal of Economic Geography*, *18*(11), 59–86. https://doi.org/10.1093/jeg/lbx011.

Lazarus, E. D. (2014). Land grabbing as a driver of environmental change. *Area*, *46*(1), 74–82. https://doi.org/10.1111/area.12072.

Mandel, E. (1990). Karl Marx. In *Marxian Economics* (pp. 1–38). https://doi.org/10.1007/978-1-349-20572-1_1.

Meadows, D., Meadows, D., Randers, J., & Behrens, W. (1972). *The Limits to Growth. A Report for The Club of Rome's Project on the Predicament of Mankind*. New York: Universe Books.

Mendelsohn, R., Nordhaus, W. D., & Shaw, D. (1994). The Impact of Global Warming on Agriculture: A Ricardian Analysis. *The American Economic Review*, *84*(4), 753–771. https://www.jstor.org/stable/2118029.

Messerli, P., Giger, M., Dwyer, M. B., Breu, T., & Eckert, S. (2014). The geography of large-scale land acquisitions: Analysing socio-ecological patterns of target contexts in the global South. *Applied Geography*, *53*, 449–459. Retrieved from: https://doi.org/10.1016/j.apgeog.2014.07.005.

Mills, E., & Hamilton, B. (1994). *Urban economics* (5th ed.). New York: Harper Collins College Publishers.

Mundell, R. A. (1957). International Trade and Factor Mobility. *The American Economic Review*, *47*(3), 321–335. Retrieved from: https://www.jstor.org/stable/1811242

Mussa, M. (1974). Tariffs and the Distribution of Income: The Importance of Factor Specificity, Substitutability, and Intensity in the Short and Long Run. *Journal of Political Economy*, *82*(6), 1191–1203. Retrieved from: https://www.jstor.org/stable/1830668.

Muth, R. F. (1969). *Cities and Housing: The Spatial Pattern of Urban Residential Land Use*. Chicago & London: The University of Chicago Press.

Nolte, K., Chamberlain, W., & Giger, M. (2016). *International Land Deals for Agriculture. Fresh insights from the Land Matrix: Analytical Report II*. Bern, Montpellier, Hamburg, Pretoria: CDE, CIRAD, GIGA, University of Pretoria. Retrieved from: https://doi.org/10.7892/boris.85304.

Ostrom, E. (2005). *Understanding Institutional Diversity*. Princeton: Princeton University Press.

Pigou, A. C. (1920). *The Economics of Welfare.* Reprinted in 2013, London: Palgrave MacMillan.

Platteau, J.-P. (2000). *institutions, Social Norms and Economic Development*. London & New York: Routledge.

Polanyi, K. (1944). *The Great Transformation* (Third Edit). Boston: Beacon Press.

Raimondi, V., & Scoppola, M. (2018). Foreign Land Acquisitions and institutional distance. *Land Economics*, *94*(4), 517–540. Retrieved from: https://doi.org/10.3368/le.94.4.517.

Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*. London: John Murray.

RRI. (2015). *Who Owns the World's Land? A global baseline of formally recognized indigenous and community land rights. Washington, DC: RRI.* Retrieved from: http://www.rightsandresources.org/wp-content/uploads/GlobalBaseline_web.pdf.

Rulli, M. C., Saviori, A., & D'Odorico, P. (2012). Global land and water grabbing. *P.N.A.S. of the USA, 110*(3), 892–897. Retrieved from: https://doi.org/10.1073/pnas.1213163110.

Samuelson, P. A. (1948). International Trade and the Equalisation of Factor Prices. *The Economic Journal*, *58*(230), 163–184. Retrieved from: https://www.jstor.org/stable/2225933.

Schlager, E., & Ostrom, E. (1992). Property-Rights Regimes and Natural Resources: A Conceptual Analysis. *Land Economics*, *68*(3), 249. Retrieved from: https://doi.org/10.2307/3146375.

Schoneveld, G. C. (2014). The geographic and sectoral patterns of large-scale farmland investments in sub-Saharan Africa. *Food Policy*, *48*, 34–50. https://doi.org/10.1016/j.foodpol.2014.03.007.

Schoneveld, G. C., German, L. A., & Nutakor, E. (2011). Land-based Investments for Rural Development? A Grounded Analysis of the Local Impacts of Biofuel Feedstock Plantations in Ghana. *Ecology and Society*, *16*(4), art. 10 (1-16). https://doi.org/10.5751/ES-04424-160410.

Shirley, M. (2008). Handbook of New Institutional Economics. In C. Ménard & M. M. Shirley (Eds.), *Handbook of New Institutional Economics*. Dordrecht, Berlin, Heidelberg, New York: Springer.

Stevens, C., Winterbottom, R., Springer, J., & Reytar, K. (2014). *Securing Rights, Combating Climate Change. How Strengthening Community Forest Rights Mitigates Climate Change*. World Resources Institute (WRI). Washington, DC: WRI.

Stolper, W., & Samuelson, P. (1941). Protection and Real Wages. *The Review of Economic Studies*, *9*(1), 58–73.

Tagliarino, K. N., Bununu, A. Y., Micheal, O. M., De Maria, M., & Olusanmi, A. (2018). Compensation for Expropriated Community Farmland in Nigeria: An In-Depth Analysis of the Laws and Practices Related to Land Expropriation for the Lekki Free Trade Zone in Lagos. *Land* , Vol. 7. Retrieved from: https://doi.org/10.3390/land7010023.

The Land Matrix Global Observatory. (2018). The Land Matrix Global Observatory. Website. Retrieved from: https://landmatrix.org.

Timmins, C. (2006). Endogenous Land Use and the Ricardian Valuation of Climate Change. *Environmental & Resource Economics*, *33*, 119–142. https://doi.org/10.1007/s10640-005-2646-9

Vermeulen, S., & Cotula, L. (2010). Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa. *Journal of Peasant Studies*, *37*(4), 899–916. https://doi.org/10.1080/03066150.2010.512463.

Viner, J. (1937). *Studies in the theory of international trade*. London: George Allen & Unwin Ltd.

Von Thunen, J. H. (1966). *Von Thunen's isolated state: an English edition of Der isolierte Staat*. In. Hall, P. (Ed.) and Watenberg, C. M. (Trans). Oxford & London: Pergamon Press.

Chapter II

The Implementation of Large-Scale Land Acquisition Projects and the Role of Institutions

Abstract: This paper constitutes the first empirical identification of the factors influencing the actual implementation of the investments behind the contemporary global rush for land, as it reaches a new '*productive*' era. Recognising why some large-scale land investments fail, while others succeed in reaching their productive stage, is a considerable undertaking. As such, it requires an understanding of the key development and policy implications of *Large-Scale Land Acquisitions* (LSLAs). After a decade of debate, the narrative and the scientific literature around LSLAs are still imbued with the pivotal question raised by Cotula et al. (2009): *Is it just land grabbing or it is a development opportunity?*

I postulate that it is only when operations begin that it becomes possible to assess to what extent a deal is *land grabbing* and to what extent it is a *development opportunity*. Indeed, the potential benefits of a large-scale land deal — no matter how they will be distributed among different stakeholders in reality and how sizeable they will be with respect to the social, economic and environmental costs — will only materialise after the investment has entered the production phase.

Results from a broad sample of over 2,000 LSLAs suggest that deal-specific features — such as the intention of the investment and the size of the deal — influence the actual implementation of these investments. In particular, forestry and food-oriented investments are more likely to reach the operative stage, while biofuel-oriented projects — which are often structured as large monocropping plantations, thus being more vulnerable to price fluctuations in global and regional commodity markets — appear more difficult to implement. Results also suggest that the larger the land acquisition, the lower is the likelihood of actual implementation. This reinforces the idea that deals that are too large — which often come with higher initial, technical and management costs — are more likely to fail.

The institutional context of both destination and investor countries significantly affects the likelihood of investment implementation. In general, good institutions tend to favour the implementation of LSLA-projects, except for the rule of law index – which captures, among other aspects, contract enforcements and security of property rights. The estimates suggest that lower the rule of law in both destination and investor countries, the higher the implementation likelihood for a given deal is. In other words, when it is easier to seize land from local populations, it becomes also easier to start operations, thus supporting the hypothesis of the existence of a trade-off between economic goals and land rights in LSLAs.

The combined analysis of deal-specific and institutional variables suggests how institutions can play a crucial role in this context. In particular, a more efficient mix of regulations, conditionalities and policies in both destination and investor countries — possibly with fewer rules, but clearer, more enforceable and diversified upon different investment types — can improve the chances of actual implementation of LSLAs, therefore enhancing the development potential embedded in some of these deals.

Keywords: *large-scale land acquisitions (LSLAs); land grabbing; transnational land acquisitions; land investments; land-based investment; implementation; institutions; development; land governance.*

---

1. New answers to an old question

As the most recent land rush in human history reaches its maturity by entering into the productive phase, this paper empirically investigates for the first time which factors affect the actual implementation of the investments requiring the acquisition of large areas of land across the world. In order to identify the determinants of the success — or failure — of the current wave of large-scale land investments, the analytical section of this work makes use of an original dataset containing deal-specific information, as well as macro-economic and institutional variables for both investor and destination countries, for a total of 2,343 individual Large-Scale Land Acquisitions (LSLAs) that have been initiated since the beginning of this century. The empirical evidence emerging from this research suggests that institutions — together with other deal-specific variables — are an important driver for the implementation of LSLAs-related investments and that there is room for improvement in current institutional frameworks.

The Cambridge Dictionary defines land grab as "*the act of taking an area of land by force, for military and economic reasons*"[6]. The Oxford Dictionary concurs, suggesting that land grab is "*an act of seizing land in an opportunistic or unlawful manner*"[7]. No matter what dictionary we are looking at, the definition of land grab always comes with a negative connotation, which is also often echoed in the scientific literature, in the media and in the public opinion. However, the term land grab (or land grabbing), is often used

[6] *See* the definition given by the Cambridge Dictionary. Also available on-line: https://dictionary.cambridge.org/dictionary/english/land-grab (Accessed 10/6/2018).

[7] *See* the definition given by the Oxford Dictionary. Also available on-line: https://en.oxforddictionaries.com/definition/us/land_grab (Accessed 10/6/2018).

interchangeably with other and more neutrally or positively connotated locutions, such as large-scale land acquisitions, transnational land deals or large-scale land investments. The use, the choice and the meaning attached to different locutions simply mirrors the wide range of impacts that are typically associated with the phenomenon. Indeed, after a decade of debate, the narrative and the scientific literature around LSLAs are still imbued with the pivotal question raised by Cotula and his colleagues (Cotula et al., 2009): Is it just land grabbing or it is a development opportunity?

While this question remains open for debate, the LSLA phenomenon is evolving, revealing new features and trends. In particular, large-scale land deals entered into a new '*productive*' era. Evidence from the Land Matrix suggests that most of the international land acquisitions for agriculture are already in production, with an average implementation time — that is, the time occurring between the signature of the land deal and the beginning of the production — close to three years (Nolte et al., 2016). Compared to the initial phase where the attention was put on the negotiation status (Anseeuw et al., 2012), and hence onto whether a deal was actually signed or not, now the emphasis has shifted more on the implementation status of these projects, and therefore on their actual social, economic and environmental implications.

In this sense, I postulate that it is only when operations begin that it becomes possible to assess to what extent a deal is *land grabbing* and to what extent it is a *development opportunity*. Indeed, the potential benefits of a large-scale land deal — no matter how they are actually going to be distributed among different stakeholders and how sizeable they are with respect to social, economic and environmental costs — only materialise when the investment enters into the production phase.

While the existing literature has already emphasised that a component of the demand sustaining large-scale land deals is speculative and rent-seeking-driven (Baumgartner et al., 2015; Cotula et al., 2014; Giovannetti & Ticci, 2016; Hvid, 2014; Nolte, 2014), it is not clear what the differences are between the investments that actually reach the production phase and those that fail to materialise. Along with this question, other aspects of the contemporary wave of global investments targeting vast tracts of fertile land remain controversial. Among other issues, the role of institutions in the context of LSLAs has captured the interest of researchers and practitioners all over the world. The idea that weak institutions and poor land governance favour speculative land deals with negative impacts on local communities permeates the existing literature (Arezki, Deininger, & Selod, 2015; De Maria, 2015; Deininger, 2011; Engström & Hajdu, 2019; Raimondi & Scoppola, 2018; Schoneveld & German, 2014). With that in mind, a recent empirical work found that the role of institutional factors is often unclear or not significant in explaining foreign land acquisitions in low and middle-income countries (Lay & Nolte, 2018), which suggests that further research is needed to fully comprehend the inextricable nexus between land, institutions, growth and development in the context of LSLAs.

According to North (1991, p. 1), "*Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)*". Starting from this definition, Acemoglu and his colleagues, suggested that institutions are a fundamental driver of long-term growth and development (Acemoglu et al., 2005), in line with the idea previously endorsed by North (1990) and Mauro (1995).

If this statement appears as a common-sense notion — and most economists and social scientists would agree in principle — the literature on the topic is still profoundly divided, especially when looking at empirical studies that attempt to quantify the actual effects of institutional quality. Measuring institutions, however, is not an easy task, and several articles explore the inherent difficulties of assessing the various dimensions of institutional quality (Aron, 2000; Voigt, 2013; Woodruff, 2006). While reviewing the risks and benefits of different proposed institutional metrics, this literature also highlights the wide range of measurement options that are increasingly becoming available.

In summary, the debate around growth, development and institutions is polarised around two opposite views. On the one hand, Rodrick and his co-authors suggest that institutions are more important than trade and geography in explaining differences in income levels among countries (Rodrik et al., 2004). On the other hand, Glaeser et al. (2004) provide empirical evidence for the idea that the direction of the causality link between institutions and economic growth should be reversed, suggesting that the process of accumulation of human capital (i.e. education) and the economic growth are actually igniting improvements in the institutional framework.

The *chicken-and-egg-style* dilemma over the direct or reverse causality of the relation between institutions and development is not the main focus of this work. Nevertheless, it is important to highlight that the two opposing factions — that is, the *institutionalists* and the advocates of *adverse causality* — surprisingly also reach a general agreement when it comes to discussing the importance of property rights. Corroborating this argument, Glaeser et al. (*Ibid.*, p. 272) wrote that "*the two views of economic and political development share some important similarities. They both emphasize the need for secure property*

rights to support investment in human and physical capital, and they both see such security as a public policy choice."

Platteau (2000) extensively discussed the role of property rights in land and the related implications in terms of economic and social development, distinguishing between different forms of land rights and tenure regimes. In revising the different existing views, he suggested that public authorities are crucial, since virtually all changes in the settings of land rights and tenure systems require formalisation and consolidation by governmental and public institutions.

It is not surprising, then, that tenure security and property rights are among the most recurrent themes in the LSLA literature (Cotula, 2013; De Schutter, 2011a, 2011b; Dell'Angelo et al., 2017; Toulmin, 2008). In this context, together with public authorities, we observe other important players typically involved in the negotiations, including foreign and domestic investors, as well as different individuals that make up part of the local communities affected by land deals. In such an arena full of players — each one with their own interest and agenda — institutions not only matter for the recognition, the protection and the enforcement of different tenure regimes and land rights. Institutions are also crucial in defining the incentives and the risks associated with land-related investments at all stages, thus crucially affecting their actual implementation. And yet, specific insights into how institutional quality affects the operationalisation of LSLA-related investments are virtually entirely missing from the existing literature.

In order to fill this gap, this paper provides an empirical assessment of the factors contributing to the actual implementation of the investments related to LSLAs, with a particular emphasis given to the role of institutions of both host and investor countries in this process. The rest of the paper is

structured as follows: first, it revises the key features of contemporary LSLAs; then, it describes the empirical strategy and the data, also reviewing potential limitations; subsequently, it presents the key results; it then discusses the main findings, highlighting the originality of some of the results and connecting the key insights with the existing literature. The last section of the paper presents the implications.

2. To deal or not to deal? Facts and figures about LSLAs

The first known use of the term '*land grabbing*' dates back to 1860[8]. However, if the general meaning has not changed for a long time, the features of, and the ideas associated with the contemporary wave of land acquisitions are so complex and diverse that a critical review of the existing definitions and how they have been used by civil society, academia, institutions and corporations have required a whole specific report on their own (Baker-Smith & Miklos Attila, 2016).

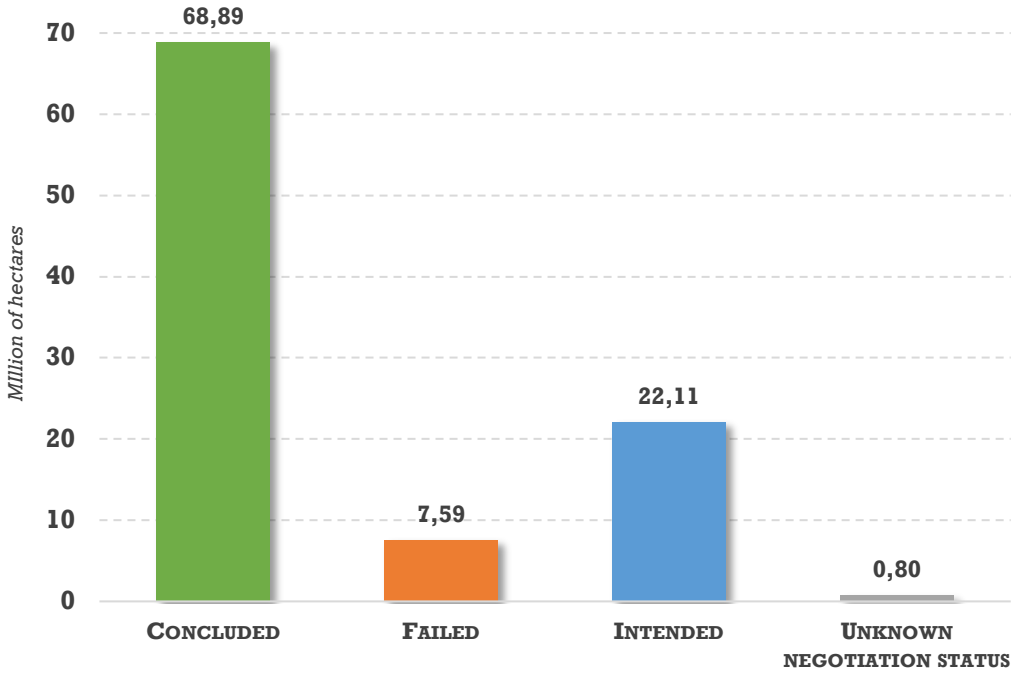
According to the Land Matrix (The Land Matrix Global Observatory, 2018), as of April 2018[9], the interests of both domestic and international investors in LSLAs covered just under 100 million hectares (ha) of land globally — that is, an aggregated surface greater than Tanzania, the thirty-

[8] *See* the definition given by the Merriam-Webster Dictionary, which also provide a date for the first known use of a word with a specific meaning. On-line: https://www.merriam-webster.com/dictionary/land grab (Accessed 10/6/2018).

[9] Since the Land Matrix database is constantly updated, it is important to highlight that the data used in this paper were downloaded the 11th of April 2018, directly from the Land Matrix website: https://landmatrix.org/.

second largest country in the world[10]. Almost 70 million ha of this aggregated surface designates land deals that have actually been concluded. Some 22 million ha are still under negotiation, while the remaining 7.5 million ha, correspond to land acquisitions that eventually failed (*Figure 7*).

Figure 7 *– Total size of LSLAs by negotiation status*



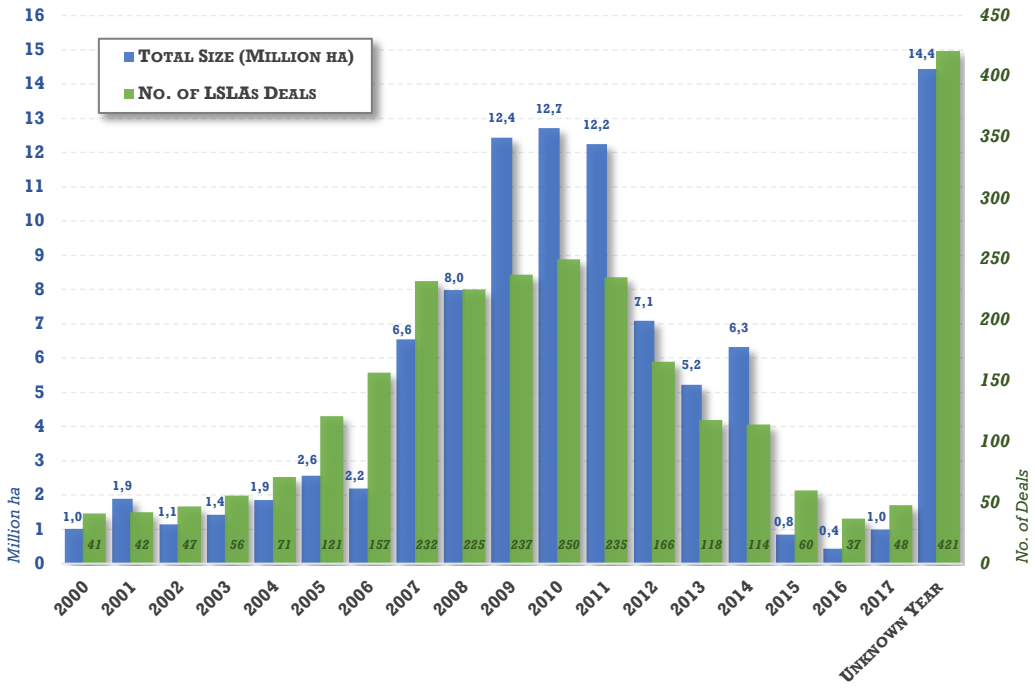
Source: Authors' elaboration on Land Matrix data retrieved on the 11/4/2018 (The Land Matrix Global Observatory, 2018). The total area of LSLAs included in the dataset is equal to 99.39 million ha, corresponding to 2,679 individual LSLAs.

When looking at the evolution of LSLAs recorded over time in the Land Matrix, we observe a peak both in terms of size and number of deals in 2010,

[10] *See* CIA, The World Factbook. Retrieved on-line from the following webpage: https://www.cia.gov/library/publications/the-world-factbook/rankorder (accessed on 20/11/2018).

and yet, the largest category remains for both series — size and number of deals — the one accounting for deals concluded, intended or failed in an unknown year (*Figure 8*). Even if the recent rush for land was just a temporary bubble, it affected over 100 million ha of land in less than two decades and its consequences in terms of land use change are likely to linger in the medium and long-term. Also, as is the case for other economic and financial bubbles, the LSLA bubble might repeat, and — with land becoming an increasingly scarce resource — we need to be better prepared to minimise negative consequences while amplifying the potential benefits that this phenomenon could bring in the near future.

Figure 8 *– Total size and number of deals over time*



Source: Authors' elaboration on Land Matrix data retrieved on the 11/4/2018 (The Land Matrix Global Observatory, 2018). The total area of LSLAs included in the dataset is equal to 99.39 million ha, corresponding to 2,679 individual LSLAs. The only deal recorded in the Land Matrix in 2018 (10,000 ha) has been excluded.

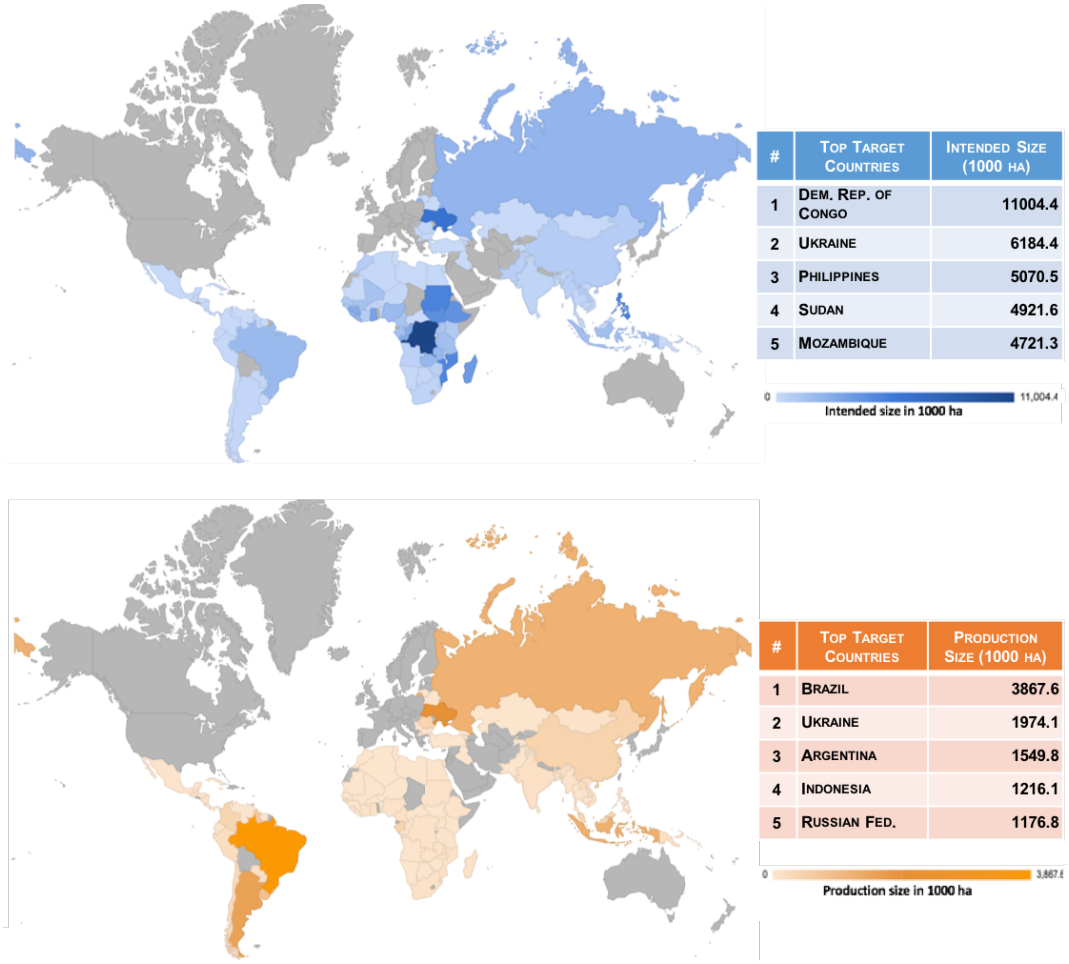
If the pace of this rush for land is decreasing over time, we observe a different trajectory when looking at deals that are actually put into production. Indeed, the second Analytical Report released by the Land Matrix in late 2016 — which focuses on LSLAs for agricultural purposes only — suggests that we have entered into a new '*productive*' era: "*It remains difficult to track the area under production, though currently the Land Matrix records 6.4 million hectares that are reported to be under production, almost quadruple the area in June 2013*" (Nolte et al., 2016, p. 14).

The picture emerging from Land Matrix data not only varies with time, but also across space. The dataset offers three different measures of the size of a deal: the *intended size* of a deal, which refers to deals currently under negotiation or to deals that eventually failed; the *current size under contract* or simply *contract size*, which refers to the area that has been actually leased or purchased by the investors in concluded deals; and finally, the *production size*, which accounts for the hectares on which operations have started. *Figure 9* compares a heatmap of the intended size of LSLAs in each target country for which we have records (top, in shades of blue), with a heatmap based on the measure of production size (bottom, in shades of orange). The intended size map shows Sub-Saharan Africa as a clear hotspot for LSLAs. However, when we look at the hectares that have actually been put in production, the whole African continent virtually fades away, while Brazil, Ukraine, Argentina, Indonesia and Russia stand out as the countries with the largest area currently in operation for large-scale land investments.

The spatial analysis of differences between intended and actual production size offers another important lead in the context of this study. Indeed, many of the countries that fade away in the production size heatmaps are typically fragile and unstable in terms of institutional quality. This suggests a pattern where countries with weak institutions — which

include insecure tenure regimes, higher incidence of corruption, political instability and lower levels of the rule of law — seem to attract more interest in terms of potential demand for LSLAs, but, at the same time, the same countries appear to struggle in truly implementing the related investments. Whereas the first part of this proposition finds support in the existing empirical literature on LSLAs, the second part still requires thorough empirical validation.

Figure 9 – *Intended and Production size in target countries*



#	Top Target Countries	Intended Size (1000 ha)
1	Dem. Rep. of Congo	11004.4
2	Ukraine	6184.4
3	Philippines	5070.5
4	Sudan	4921.6
5	Mozambique	4721.3

#	Top Target Countries	Production Size (1000 ha)
1	Brazil	3867.6
2	Ukraine	1974.1
3	Argentina	1549.8
4	Indonesia	1216.1
5	Russian Fed.	1176.8

Source: Authors' elaboration on Land Matrix data retrieved on the 11/4/2018 (The Land Matrix Global Observatory, 2018).

In their seminal work, Arezki and his colleagues at the World Bank found a negative correlation between the institutional quality of destination countries and the incidence of large-scale land deals (Arezki et al., 2015), a results that is also in line with other empirical studies (De Maria, 2015; Giovannetti & Ticci, 2016). Lay and Nolte — using a similar approach but newer and more accurate data — could not find a clear path for the institutional variables, which were often not significant in explaining the dynamics of LSLAs (Lay & Nolte, 2018). More recently, Raimondi and Scoppola (2018) — in what is arguably the most advanced example of a gravity-like equation applied to LSLAs — found support for the idea that institutions affect large-scale land investments in ways that are more complex than was initially thought. In particular, they included in their analysis the effect of the institutional distance between target and investor countries, suggesting that — with the important exception of the African continent — the greater the gap between any pair of countries, the lower the incidence of LSALs tends to be, both in terms of number of deals and in terms of hectares. However, in their article the emphasis is still on the number of deals and on their intended size, with no mention of the implementation status and of the amount of land that is actually put in production.

Intuitively, a potential explanation for the institutional puzzle in LSLAs might lie in the *dual effect of institutions*, which — looking back at *Figure 9* — appear to be negatively correlated with the intended size of the deal, but positively correlated with the actual production size. Given the uncertainties accompanying the role of institutions in LSLAs and the need to offer for the first time preliminary but more rigorous insights into the impact of institutions on the actual implementation of LSLA-related

investments, this study put the accent on institutional variables and on the dichotomy between operational (in production) and non-operational deals.

When a deal is signed but not implemented, the main benefit for the destination country usually takes the form of a land rent, which is typically paid to institutions and offices within the host Government, thus increasing the public revenue. However, Cotula and his colleagues, using evidence from several in-country case studies conducted in Africa together with secondary data, concluded that: *"land fees and other monetary transfers are not the main host country benefit, not least due to the difficulty of setting land prices in the absence of well-established formal land markets*" (Cotula et al., 2009, p.101). They also found that: *"host country benefits are mainly seen in the form of investor commitments on investment levels, employment creation and infrastructure development"* (*Ibid.*). These conclusions reinforce the hypothesis that the projects that reach the production phase are the ones that are more likely to produce development benefits, especially for local populations and communities living in the host country. On the contrary, investments that do not see the beginning of operations at all, face higher risks of becoming pure land speculations, leaving little space for the realisation of any development promise.

3. Model

The ultimate goal of this paper is to assess which factors contribute to the actual implementation of projects requiring large-scale land purchases and leases. Given this, the first step of the analysis was to identify which LSLAs can be considered operational. The Land Matrix distinguishes between the negotiation status of a deal and its implementation status, which are cross-tabulated in *Table 1*.

In order to clearly separate LSLAs in actual production from other deals, I constructed an ad hoc dummy variable, which takes the unit value when a deal is concluded and in operation. Deals marked as concluded, but without any information about the implementation status, were excluded from the estimates, so as to reduce the level of uncertainty. All other combinations of negotiation and implementation statuses were considered as deals not currently in production — and therefore labelled as zeros for the purpose of building the ad hoc binary variable used as the dependent variable in the model. This dummy accounts for 1,424 deals in production (53.1%) over a total of 2,345 non-missing records.

Table 1 *— Land Matrix deals by negotiation and implementation status*

		Implementation status					
		In operation (production)	*Project abandoned*	*Project not started*	*Start-up (no prod.)*	*Missing values*	**Row Total**
Negotiation status	*Concluded*	1,424	89	151	238	334	**2,236**
	Failed	7	25	7	9	89	**137**
	Intended	9	8	40	12	193	**262**
	Missing values	21	1	2	2	18	**44**
	Column Total	**1,461**	**123**	**200**	**261**	**634**	**2,679**

Source: Authors' elaboration on Land Matrix data retrieved on the 11/4/2018 (The Land Matrix Global Observatory, 2018).

The empirical model, which includes a set of deal-specific characteristics, as well as macro-economic factors and institutional variables, can be written as follows:

$$\boldsymbol{Y}_{(0;1)} = \beta_0 \boldsymbol{k} + \beta_1 \boldsymbol{Deal} + \beta_2 \boldsymbol{Cont_{inv}} + \beta_3 \boldsymbol{Cont_{tg}} + \beta_4 \boldsymbol{Inst_{inv}} + \beta_5 \boldsymbol{Inst_{tg}} \quad [1]$$

Where $\boldsymbol{Y}$ is a dummy equal to 1 if a deal is concluded and production has started, and zero otherwise; $\boldsymbol{k}$ is a constant; $\boldsymbol{Deal}$ is a matrix of specific features for each LSLAs recorded in the dataset, such as the size, the intention of the investment, the participation of domestic investors, the presence of contract farming agreements, and so on; $\boldsymbol{Cont_{inv}}$ and $\boldsymbol{Cont_{tg}}$ are matrices of economic factors, namely the GDP and the average cereal yield, respectively for the investor(s) and for the target country; $\boldsymbol{Inst_{inv}}$ and $\boldsymbol{Inst_{tg}}$ are matrices of institutional variables for the investor(s) and for the destination country; lastly, β_0 to $\beta_5$represents the estimated coefficients associated to each variable included in the model. Having a binary dependent variable, which distinguishes between deals that have reached the production stage and deals that have not, I used maximum likelihood estimation methods, comparing results associated with different specifications of the well-known logit and probit models (Aldrich & Nelson, 1984).

4. Data

4.1. LSLAs data

The original database used in this paper is structured as a cross-section of LSLAs, where deal-specific information relies on the Land Matrix (The Land Matrix Global Observatory, 2018), while other economic and institutional variables are taken from the World Bank. Descriptive statistics for the full sample are presented in *Table 2*.

The Land Matrix (*Ibid.*, 2018) — which arguably is the most complete, open and up-to-date source of data on LSLAs — defines large-scale land deals as "*as an intended, concluded or failed attempt to acquire land through purchase, lease or concession*"[11]. Furthermore, a deal is admissible as a record in the Land Matrix only if it covers a surface of at least 200 hectares (ha); if it has been initiated in the present millennium; and if it entails the potential conversion of land for commercial use. Deal-specific variables include the size of the deal, as well as several dummies accounting for the existence of a domestic participation in the land deal, the presence of multiple investor countries at the same time and the nature of the proposed investment (food, livestock, biofuel, multiple intention, etc.). Each deal is typically observed in the negotiation year, which corresponds to the year of negotiation reported in the Land Matrix[12]. Having only limited time-variant information, the dataset has been shaped as a cross-section. This decision not only reduces potential biases related to the incomplete information that often characterises the evolution of each deal over time, but also contribute to increasing the total sample size on which simulations can be run.

[11] *See* the Land Matrix Global Observatory, 2018. Available on-line at: https://landmatrix.org/faq/ (Accessed 12/8/2019).

[12] In cases where the *negotiation year* is missing, but there is information about the *implementation year*, the latter is used as reference year. This is the case for 209 deals over a total of 2,679 records (7.8% of the full sample).

Table 2 *— Descriptive statistics for the full sample*

Variable (a)	Description (b)	Obs. (c)	Mean (d)	St. Dev. (e)	Min (f)	Max (g)
Production	*Dummy (=1 if deal is in production) – Author's calculation on LM Data*	2,345	0.607	0.488	0.00	1.00
Intended Size	*1,000 ha [LM]*	1,372	62.27	169.85	0.20	3,000
Contracted Size	*1,000 ha [LM]*	2,209	31.22	96.41	0.00	1,900
Production Size	*1,000 ha [LM]*	1,024	15.07	54.02	0.00	860
Size	*1,000 ha – Author's calculation on LM data*	2,679	37.10	123.00	0.00	3,000
Size (log)	*Size in Log*	2,677	8.83	1.87	1.95	14.91
Domestic Component	*Dummy (=1 if domestic share in deal) [LM]*	2,679	0.44	0.50	0.00	1.00
Multiple Investor	*Dummy (=1 if multiple investors in deal) [LM]*	2,679	0.15	0.36	0.00	1.00
Food	*Dummy (=1 if food is main intention) [LM]*	2,679	0.45	0.50	0.00	1.00
Biofuel	*Dummy (=1 if biofuel is main intention) [LM]*	2,679	0.18	0.39	0.00	1.00
Livestock	*Dummy (=1 if livestock is main intention) [LM]*	2,679	0.15	0.36	0.00	1.00
Tourism	*Dummy (=1 if tourism is main intention) [LM]*	2,679	0.02	0.15	0.00	1.00
Forest	*Dummy (=1 if forest is main intention) [LM]*	2,679	0.13	0.33	0.00	1.00
Multiple Intention	*Dummy (=1 if multiple intentions for deal) [LM]*	2,679	0.33	0.47	0.00	1.00
Contract farming	*Dummy (=1 if contract farming in deal) [LM]*	2,679	0.06	0.24	0.00	1.00
GDP Tg.	*Log of GDP in 2010 constant US$ [WB–WDI]*	2,257	24.86	1.88	19.10	29.61
GDP Inv.	*Log of GDP in 2010 constant US$ [WB–WDI]*	2,186	26.67	2.02	20.26	30.47
Cereal Yield Tg.	*Log of the average cereal yield (Kg/ha) [WB–WDI]*	2,257	7.77	0.65	5.53	8.92
Cereal Yield Inv.	*Log of the average cereal yield (Kg/ha) [WB–WDI]*	2,140	8.26	0.60	5.17	10.21

Table 2 (Continued) *— Descriptive statistics for the full sample*

Variable (a)	Description (b)	Obs. (c)	Mean (d)	St. Dev. (e)	Min (f)	Max (g)
Voice & Accountability Tg.	*Voice & Accountability Index [WB–WGI]*	2,258	-0.35	0.74	-2.23	1.29
Voice & Accountability Inv.	*Voice & Accountability Index [WB–WGI]*	2,198	0.05	1.06	-2.24	1.80
Political Stability Tg.	*Pol. Stability/Absence of Violence Index [WB–WGI]*	2,258	-0.56	0.80	-2.81	1.20
Political Stability Inv.	*Pol. Stability/Absence of Violence Index [WB–WGI]*	2,198	-0.09	0.88	-2.68	1.76
Gov. Effectiveness Tg.	*Government Effectiveness Index [WB–WGI]*	2,258	-0.51	0.55	-3.37	1.28
Gov. Effectiveness Inv.	*Government Effectiveness Index [WB–WGI]*	2,198	0.41	0.99	-3.07	2.44
Regulatory Quality Tg.	*Regulatory Quality Index [WB–WGI]*	2,258	-0.48	0.55	-2.68	1.52
Regulatory Quality Inv.	*Regulatory Quality Index [WB–WGI]*	2,198	0.30	0.97	-2.48	2.23
Rule of Law Tg.	*Rule of Law Index [WB–WGI]*	2,258	-0.61	0.49	-1.82	1.37
Rule of Law Inv.	*Rule of Law Index [WB–WGI]*	2,198	0.24	1.02	-1.80	2.04
Contr. of Corr. Tg.	*Control of Corruption Index [WB–WGI]*	2,258	-0.59	0.54	-1.67	1.59
Contr. of Corr. Inv.	*Control of Corruption Index [WB–WGI]*	2,198	0.24	1.08	-1.74	2.47

Source: Author's elaboration. In column (a) the abbreviations 'Tg.' and 'Inv.' stand, respectively for target and investor country. In column (b) LM is used as the abbreviation for Land Matrix; WB–WDI for World Bank — World Development Indicators; WB–WGI for World Bank — World Governance Indicators. Column (c) shows the number of Observation. Column (e) displays the standard deviation.

The size variable used in this paper was built as a combination of the *intended size*, *contract size* and *production size* included in the original Land Matrix dataset. In particular, the values of the size variable are equal to the *contracted size* unless this information is missing, in which case the *production size* is taken. When both the *contract* and *production size* are unavailable, the *intended size* is used as a proxy to populate the size variable. This approach — which allowed an increase in the sample size because not all of the three measures for the size are available for all deals recorded in the Land Matrix — is relatively conservative. Indeed, it puts the original variables on a hierarchical scale in which the *contract size* sits on the top, whilst the *intended size* — which is arguably the most uncertain and overestimated measure of the area of a deal — is used only residually, when other metrics are not available.

Early criticism around the accuracy and the reliability of the initial set of data collected by the Land Matrix and, more generally, around aggregated figures on LSLAs (Edelman, 2013), has been largely overcome with improvements in the data collection method, which now includes both automated and user-based data quality controls, more complete records on the negotiation status, on the implementation status, as well as on the information source for each deal included in the database. Indeed, according to Nolte et al. (2016, p. vi) "*Although data collection by the LMI is unlikely to result in a complete inventory of all large-scale land acquisitions worldwide, the data provides a sample that is large and representative enough for empirical analysis*". Such a claim is also supported by the evidence of the increasing number of scientific and peer reviewed publications making use of these data to analyse a variety of aspects related to LSLAs.

Despite these improvements, limitations still exist and the evidence coming from empirical works — including this paper — should be taken

with extreme care and with a genuine dose of (constructive) criticism. Current data limitations include at least three elements. Firstly, data on LSLAs are inherently incomplete, due to the lack of transparency surrounding land deals in many developing countries, where procedures, laws and regulations for land acquisitions are unclear and official sources of information — when they exist at all — are rarely accessible to the general public, nor are they up to date. Secondly, despite providing an increasing range of information about the time in which a given deal is negotiated, as well as about the evolution of deal-specific characteristics, the Land Matrix is not explicitly organised as a time series, thus reducing the space for reliable empirical analysis that explicitly include time-variant factors — especially when new information about a given deal simply overwrite what was previously available. Thirdly, information about the exact location of land deals and concessions is often incomplete or inaccurate, so that the best possible spatial disaggregation that can be used in global empirical analysis does not go below national level boundaries.

4.2 Economic and institutional variables

I included additional control variables in the dataset for both target and investor countries. These controls have been extensively used in the empirical literature on LSLAs (Arezki et al., 2015; De Maria, 2015; Giovannetti & Ticci, 2016; Lay & Nolte, 2018; Mazzocchi et al., 2018; Raimondi & Scoppola, 2018). Data series for the GDP[13] — which mirrors the general economic environment for target and investor countries — and the

[13] The GDP variable used in this paper is measured in constant 2010 US dollars. See: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD (Accessed 18/4/2018).

average cereal yield per hectare[14] — which is used as a proxy for the average productivity in agriculture in both target and destination countries — were obtained from the World Development Indicators (WDI) database of the World Bank (World Bank, 2018a). Institutional variables — again for the countries of origin and for the destination ones — come from the World Bank too, but this time from the suite of World Governance Indicators[15] (WGI), which includes the following institutional metrics: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption (World Bank, 2018b).

Despite recognising the existence of other institutional metrics that might be more relevant or more specific for the land sector, and acknowledging the inherent difficulty of measuring institutional quality, the choice of WGI indicators for this work is well motivated. Indeed, these indicators rely on a robust methodology; they are available, with long time series, for a wide range of countries; they have already been used extensively in a wide range of empirical works analysing different aspects of institutional quality

Missing values in given years for given countries, for both WDI and WGI series, have been estimated using simple linear interpolation and extrapolation techniques, so that values of institutional and macro-economic variables are taken at the specific time in which each deal is recorded. In case of multiple investors involved in the same deal at the same time, WDI and WGI-related variables are calculated as the simple average

[14] See: https://data.worldbank.org/indicator/ag.yld.crel.kg (Accessed 18/4/2018).

[15] The WGI dataset is regularly updated. Therefore, it is important to say that the data used here were downloaded in April, 2018, from: http://info.worldbank.org/governance/wgi/#home. For a detailed description of the methodology, please consult Kaufmann, Kraay, & Mastruzzi (2011).

of all investor countries participating into a given deal, thus assuming — with no additional detail available — that each investor country participates with the same share.

4.3. Comparing implemented and non-implemented deals

Table 3 displays a list of descriptive statistics divided by group, juxtaposing the implemented deal (in production) with the deals not in production. A simple t-test comparing the mean difference for all variables of interest already suggests that the two groups are characterised by very different features. Deals that fail to reach the productive stage are, on average, targeting larger stretches of land compared to deals that are actually implemented. To make sense of the differences in terms of hectares, deals currently in production have an average surface equal to 26,985 ha, while the average surface for deals not implemented is 47,701 ha. Clearly, this does not imply that bigger deals are necessarily going to fail, but it does suggest that the risk of failure for LSLAs might increase with the size of the deal.

Biofuel-oriented investments are almost twice as frequent in the subsample of deals in which operations have not started, where they represent one in every four investments. Food, livestock and forestry are more common purposes within implemented deals, with food production being the main driver for the investment more than half of the time in this case. On the other hand, the two groups do not differ significantly in terms of the average incidence of tourism-oriented deals and contract farming arrangements — however, these are not particularly common occurrences in the whole sample either.

The subset of implemented deals shows, on average, a higher involvement of national (target country) stakeholders, with more than half of these investments involving some form of domestic participation. Similarly, deals in production are more likely to have multiple investors on board at the same time. Moreover, productive deals present a greater incidence of multiple intention investments, which suggests a higher degree of diversification in the portfolio of productive LSLA-related investments. Implemented deals are associated with higher GDP and agricultural productivity in target countries, but when we consider the same metrics for investor countries the differences in the mean values of the two groups are no longer statistically significant. A last important regularity emerges when looking at the subsample of implemented LSLAs: the average value for institutional variables is always higher when looking at deals where operations have started, and this is true in both destination and investor countries.

Table 3 *— Descriptive statistics and mean difference by subsample: implemented and non-implemented deals*

	Deals not in production (*Y=0; N=744*)				**Deals in Production** (*Y=1; N=1170*)				**Group mean-comparison** (*Y=0,1; N= 1914*)	
Variable	**Mean**	**St. Dev.**	**Min**	**Max**	**Mean**	**St. Dev.**	**Min**	**Max**	**Mean-difference**	**T-Statistic**
Domestic	0.44	0.50	0.00	1.00	0.50	0.50	0.00	1.00	-0.06**	(-2.64)
Multiple Investor	0.15	0.35	0.00	1.00	0.20	0.40	0.00	1.00	-0.05**	(-2.85)
Food	0.38	0.48	0.00	1.00	0.53	0.50	0.00	1.00	-0.15***	(-6.66)
Biofuel	0.25	0.43	0.00	1.00	0.13	0.34	0.00	1.00	0.12***	-6.56
Livestock	0.11	0.32	0.00	1.00	0.19	0.39	0.00	1.00	-0.07***	(-4.32)
Tourism	0.03	0.17	0.00	1.00	0.02	0.15	0.00	1.00	0.01	-1.05
Forest	0.08	0.27	0.00	1.00	0.15	0.36	0.00	1.00	-0.07***	(-4.94)
Multiple Intention	0.29	0.45	0.00	1.00	0.39	0.49	0.00	1.00	-0.11***	(-4.76)
Contract farming	0.06	0.24	0.00	1.00	0.07	0.26	0.00	1.00	-0.01	(-0.70)
Size (log)	8.85	2.05	1.95	14.91	8.63	1.76	2.71	14.46	0.22*	-2.54
GDP Target (log)	24.70	1.80	20.26	29.53	25.23	1.93	19.10	29.61	-0.52***	(-5.93)
GDP Investor (log)	26.83	2.02	20.26	30.46	26.68	1.96	20.87	30.47	0.15	-1.64
Cer. Yield Tg. (log)	7.69	0.65	5.96	8.88	7.89	0.60	5.53	8.92	-0.21***	(-7.05)
Cer. Yield Inv. (log)	8.27	0.62	5.62	10.21	8.29	0.54	5.17	10.02	-0.02	(-0.60)
Voice & Acc. Tg.	-0.43	0.70	-2.21	1.11	-0.22	0.74	-2.23	1.29	-0.21***	(-6.34)
Voice & Acc. Inv.	-0.02	1.08	-1.94	1.78	0.21	1.04	-2.23	1.80	-0.23***	(-4.64)
Political Stab. Tg.	-0.64	0.81	-2.81	1.20	-0.45	0.77	-2.80	1.09	-0.19***	(-5.14)
Political Stab. Inv.	-0.21	0.86	-2.67	1.62	0.00	0.83	-2.53	1.76	-0.21***	(-5.21)

Table 3 (Continued) *— Descriptive statistics and mean difference by subsample: implemented and non-implemented deals*

	Deals not in production (*Y=0; N=744*)				**Deals in Production** (*Y=1; N=1170*)				**Group mean-comparison** (*Y=0,1; N= 1914*)	
Variable	**Mean**	**St. Dev.**	**Min**	**Max**	**Mean**	**St. Dev.**	**Min**	**Max**	**Mean-difference**	**T-Statistic**
Gov. Effectiv. Tg	-0.56	0.54	-2.78	1.26	-0.40	0.52	-3.37	1.28	-0.16***	(-6.35)
Gov. Effectiv. Inv.	0.31	0.91	-2.18	2.23	0.46	0.96	-3.07	2.35	-0.15***	(-3.47)
Reg. Qual. Tg	-0.52	0.54	-2.28	1.49	-0.38	0.55	-2.68	1.52	-0.13***	(-5.23)
Reg. Qual. Inv.	0.21	0.91	-2.10	1.88	0.36	0.96	-2.48	2.15	-0.15***	(-3.42)
Rule of Law Tg	-0.62	0.46	-1.82	1.37	-0.54	0.50	-1.78	1.36	-0.08***	(-3.41)
Rule of Law Inv.	0.19	0.96	-1.70	2.04	0.27	1.03	-1.70	2.01	-0.09	(-1.82)
Control of Corr. Tg	-0.64	0.48	-1.67	1.54	-0.50	0.56	-1.66	1.59	-0.15***	(-5.94)
Control of Corr. Inv.	0.12	1.01	-1.74	2.44	0.31	1.08	-1.66	2.47	-0.18***	(-3.69)

Source: Author's elaboration. The sample used here corresponds to the estimation sample used in models (3) and (4) in *Table 4*, with a total of 1914 observations of which 1170 refers to deals in production. T-statistics in parentheses. Level of significance reported as follows: * p<0.05; ** p<0.01; *** p<0.001.

In a nutshell, operational land deals are typically correlated with a stronger institutional and economic environment compared to deals that never reached their productive stage. This finding brings us back to the importance of the *dual institutional effect hypothesis* that I have previously discussed, offering evidence of a direct and positive relationship between productive deals and institutional quality. While the *GDP* and the *average cereal yield* are statistically different among the two groups only in target countries, institutional variables present statistically different mean values for both target and investor countries.

5. Results

The results of the empirical estimations are summarised in *Table 4*, which reports only the estimated average marginal effects, the level of significance and the main model statistics for each specification. The full estimates are shown in *Appendix I*.

The first logit model (*Model 1)* in column *(a)* only includes deal-specific variables, with their estimated average marginal effects. In this basic model, all regressors but the size of the deal — which is expressed as the log of the number of ha for each deal — are dummies. The model estimated with this specification uses a sample of 2,343 deals and passes the Wald's Chi^2 test. Assuming a 0.5 sensitivity level for the predicted values of the dependent variable, the model correctly classifies approximately two thirds of the deals (0.65). *Table 4* also reports the ratio of correct predictions — computed as the sum of the fraction of correctly predicted zeroes and ones — as an additional measure of the goodness of fit (Mcintosh & Dorfman, 1992). In general, a model is considered robust when this ratio is greater than one, which is the case for all specifications used in this research.

Table 4 *— Estimated Average Marginal Effects for different model specifications*

Variable	**Model 1** (*Logit*) **Marginal Effects** (a)	**Model 2** (*Logit*) **Marginal Effects** (b)	**Model 3** (*Logit*) **Marginal Effects** (c)	**Model 4** (*Probit*) **Marginal Effects** (d)
Domestic Component	0.07***	-0.01	0.00	0.00
Multiple Investor	0.05*	0.10***	0.08**	0.08**
Food	0.18***	0.21***	0.17***	0.17***
Biofuel	-0.17***	-0.12***	-0.17***	-0.16***
Livestock	0.11***	0.10***	0.01	0.01
Tourism	-0.12*	-0.04	-0.1	-0.1
Forest	0.24***	0.28***	0.22***	0.22***
Multiple Intention	0.09***	0.05	0.09***	0.09***
Contract Farming	0.07	0.09**	0.09**	0.08*
Size (log)	-0.02***	-0.02***	-0.02***	-0.02***
GDP Target (log)	-	0.03***	0.03***	0.03***
GDP Investor (log)	-	-0.02***	-0.02**	-0.02**
Avg. Cereal Yield Tg. (log)	-	0.10***	0.09***	0.09***
Avg. Cereal Yield Inv. (log)	-	0.01	-0.07**	-0.07**
Voice & Accountability Tg.	-	-	0.04	0.04
Voice & Accountability Inv.	-	-	0.04*	0.04*
Political Stability Target	-	-	0.045**	0.04**
Political Stability Investor	-	-	0.03	0.03
Gov. Effectiveness Tg.	-	-	0.08	0.08
Gov. Effectiveness Inv.	-	-	0.12**	0.12**
Regulatory Quality Tg.	-	-	-0.06	-0.06
Regulatory Quality Inv.	-	-	0.19***	0.18***
Rule of Law Target	-	-	-0.19***	-0.18**
Rule of Law Investor	-	-	-0.33***	-0.32***
Control of Corruption Tg.	-	-	0.11**	0.10**
Control of Corruption Inv.	-	-	0.06	0.05
Model statistics				
Observations	2343	1914	1914	1914
Log likelihood	-1452	-1153	-1106	-1105
Wald Chi²	201.4	211.9	291.5	321.9
Prob > Chi²	0.00	0.00	0.00	0.00
Joint restriction Wald Chi²	161.44	65.83	82.02	86.81
Joint restriction Prob > Chi²	0.00	0.00	0.00	0.00
Correctly classified obs.	0.65	0.66	0.7	0.7
Correct prediction ratio	1.27	1.28	1.37	1.37
pseudo r-squared	0.07	0.1	0.14	0.14

Source: Authors' elaboration. *Note:* Wald tests for joint restrictions – all run on the 1,914-observation sample – rejects the hypothesis that the parameters for the additional regressors included in each specification are simultaneously equal to zero.

In the basic model only the presence of contract farming agreements does not have a significant impact on the actual start of production activities on site. Estimates for other regressors included in this specification suggest that the participation of domestic stakeholders increases the probability that the investment is actually implemented. This is also true when we look at deals that have multiple investor countries on board at once. Different types of investments show different paths for implementation. Deals oriented towards the production of food crops and livestock, as well as forestry-oriented investments, are more likely to be implemented, whilst biofuel and tourism-oriented investments are negatively related with the probability of implementation. Finally, the model suggests that the larger the deal area, the lower the chances of seeing that deal moving into the production phase. *Ceteris paribus*, the dummies associated with the intention of the investment — namely *forestry*, *food* and *biofuel* — appear to have the highest average marginal effects.

The second model (*Model 2*) in column *(b)* also includes macro-economic variables. These results suggest that the probability of implementation of a land deal increases with the GDP of the destination country and decreases for relatively lower levels of the investor country GDP. Land-related investments tend to reach the production phase in destination countries with a relatively higher agricultural productivity, as suggested by the results associated with the average cereal yield in destination countries. Compared to the basic model in *(a)*, the presence of contract farming increases its level of significance in the second model, suggesting a positive impact on the probability that a deal is implemented. In contrast, the impact of a domestic participation in the investment fades, together with the level of significance of the dummy variable accounting for tourism-oriented land investments. The model specification in *(b)*,

which runs over a sample of 1,914 land deals[1], passes the Wald *Chi*^{2} test and slightly increases the overall predictive power compared to the model in *(a)*. In *(b)*, the magnitude of the effects of forest and food-oriented purposes, as well as the impact of the multiple investor dummy, increase even further, while the average marginal effect of biofuel decreases compared to the basic model *(a)*.

The estimates in *(c)* and *(d)* incorporate institutional variables, as well as the macro-economic and deal-specific controls included in previous specifications. These two models (*Model 3* and *Model 4*) consider the same set of variables, but differ in terms of the estimation technique, since the model in *(c)* is estimated as a *logit* — assuming a logistic distribution for the probability of a deal to be implemented — and the model in *(d)* as a *probit* — with an underlying normal distribution assumption. Results obtained with these two specifications are very similar in terms of sign, significance and magnitude of the impact of the regressors. These similarities between *(c)* and *(d)* can be seen as an additional indirect robustness check. Both models pass the Wald Chi^2 test and increase their predictive power up to the point where at least 70% of the total number of deals included in the model are correctly classified with respect to their production status. Tests for joint restrictions strongly reject the hypothesis that the additional parameters included in each model specification are simultaneously equal to zero, therefore suggesting that these additional regressors – including the set of WGI institutional variables – increase the goodness of fit of the estimates. The results of a cross-validation exercise included in *Appendix II*

[1] The sample size in model (2) decreases compared to model (1) because of the exclusion of the observations for which information over the GDP and (mainly) the average cereal yield is not available.

reinforce this idea further, suggesting that model *(c)* can predict the implementation likelihood in a more accurate way than model *(a)* and *(b)*.

Compared to the second model specification — in column *(b)*, the role of the dummy for livestock-oriented investments is cleared out from the set of significant variables, which now also includes a negative and significant relationship between the average cereal yield in investor countries and the probability of implementation of the investment related to LSLAs. The magnitude of the average marginal effects associated with the biofuel, food and forestry dummies remains relatively high, with institutional variables such as the regulatory quality of the investor country and the rule of law of both target and investor countries displaying sizeable effect on the likelihood of implementation too.

Simulations that explicitly include institutional controls suggest that the institutional environment in which LSLAs take place has a relevant impact on the chances that a deal would actually reach its production phase. Politically stable target countries see land deals implemented more often, which is the case also for destination countries with a higher control of corruption. Results also suggest that a good institutional environment from the investor side is important, especially in those cases where the action of the investor government is effective and where the investors' regulatory framework is stronger. The interpretation of estimates for the rule of law proves to be more challenging. Indeed, the expanded models in *(c)* and *(d)* suggest that when projects reach the production stage we tend to observe lower levels of the rule of law — which, according to its definition, "*captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights,*

the police, and the courts, as well as the likelihood of crime and violence"[2]. A potential interpretation for the estimates over the rule of law would suggest that, *coeteris paribus* it is easier to implement LSLA-related investments when it is also easier to "*grab*" – that is, when land and property rights of local communities are weakly enforced. This result reinforces the concerns raised by the "*land grabbing*" narrative and highlights how the risk of a potential trade-off between economic development and land rights might manifest itself in practice in the context of LSLAs.

6. Discussion

Despite the data limitations previously acknowledged and the challenges in the interpretation of the effect of some of the institutional variables, most of the results resonate with the existing literature and, in some cases, also provide new original insights.

First, with regards to deal-specific attributes, the size of LSLAs matters. Deals concluded (or intended) over larger concession areas face greater implementation challenges; they require higher managerial skills and involve a wider range of stakeholders; also, these land deals typically come with higher sunk costs, including initial, technical and management costs. Given this, it comes as no surprise that all simulations suggest that bigger deals are less likely to reach the production stage. The famous *'too big to fail'* motto — which economists have often used with regards to nations and financial institutions in recent years — seems reversed when it comes to LSLAs, with some of these investments being *'too big to start'*.

[2] See ancillary files in: http://info.worldbank.org/governance/wgi/index (accessed 20/7/2018).

The specific purpose of LSLA-related investment matters too. Land deals concerned with the production of biofuels are less likely to be implemented in all simulations. In their empirical paper on biofuel-oriented land acquisitions in Sub-Saharan Africa, Giovannetti and Ticci (2016) already warned us about the risks of a natural-resource rent-seeking component in the demand for LSLAs driven by the biofuel production. With the biofuel bubble in the air[3] and growing concerns over the impact of the food-energy nexus particularly on the poorer strata of the population (Finley & Seiber, 2014; Runge & Senauer, 2007), biofuel-oriented LSLAs are more prone to speculation induced by short-term price fluctuations, especially when envisaging monocropping plantations. This result suggests that biofuel oriented LSLAs should require a more thorough scrutiny by land authorities and any other stakeholders involved. In this case, policy interventions envisaging forms of conditionality based on the actual implementation of these investments might contribute to discouraging speculative and rent-seeking deals, thus reducing potential costs and risks associated with the investment failure and with the unfruitful use of land.

On the contrary, food and forestry projects tend to reach the production stage more often. However, starting operations for these investments does not necessarily imply the achievement of domestic goals such as food security and sustainable management of forestry. Therefore, conditionality measures — this time specifically tailored around environmental and development targets of destination countries — can be useful legal and policy tools, contributing to increasing the magnitude of potential development opportunities associated with LSLAs.

[3] See, for instance, http://www.foeeurope.org/biofuels-bubble-turns-bust-280415 (accessed 25/8/2018)

Multiple intention investments seem to have a positive impact on the likelihood of implementation for any given investment, as if the diversification of production activities can reduce the risk of failure. On the other hand, the domestic participation in the investment does not seem to be a relevant driver for the actual implementation of productive activities, thus suggesting that the involvement of local investors might not necessarily act as a disincentive for speculative LSLAs.

Descriptive statistics for both productive and non-productive deals confirm the common LSLA narrative, which suggests that middle and high-income countries are seeking land in lower-income countries with high potential but currently low agricultural productivity levels (Anseeuw et al., 2012; Deininger et al., 2010). However, from this paper's estimates it appears that the destination countries with relatively higher levels of GDP and agricultural yields are more likely to see the LSLAs concluded in their territory reaching the production phase, thus suggesting that the actual implementation is easier in target countries that have better economic environments and productive techniques. On the investor side, this relation is reversed, with higher chances of implementation observed in connection with relatively lower GDP and yield levels. This result indicates that investor countries that have relatively weaker levels of economic and agricultural productivity might have a greater incentive for reaping the benefits of the proposed investment by starting the activities, with relatively less space for speculative land acquisitions.

Overall, the emerging picture of the impact of institutions is complex and, in some cases, poses serious challenges in terms of interpretation. However, the influence of institutions is not negligible when we look at the likelihood of implementation of LSLA-related investments, with the probability that the production phase will begin typically increasing with the institutional quality of the host country. Indeed, in destination

countries, political stability and control of corruption positively affect the chances of reaching the deal implementation phase. The influence of the business and institutional culture in investor countries are relevant factors too, with a higher likelihood of implementation observed when there are higher levels of freedom of expression; when the civil society participation in the political arena is more common; when governments are more likely to successfully implement their political agenda; and, finally, where the regulatory quality is relatively better.

So far, the message gathered from the analysis of institutional variable is clear: better institutions, in both target and investor countries, favour the actual implementation of investments requiring LSLAs. However, the institutional aspects that matter, are different in host and destination countries, and the results associated with the rule of law — negative and significant for both destination and investor countries — suggest that in some cases the actual impact of institutions might be more complex than it seems. A potential explanation for the puzzle affecting the estimates on the rule of law is that too many regulations might hinder the implementation of these land-related investments, suggesting that it would be better to have less, but more efficient and well targeted, legal requirements for LSLAs. It is challenging, however, to control for the impacts of different elements embedded in the rule of law variable, which captures both aspects related, for instance, to tenure insecurity, and other elements typically included in the contracts used to sign LSLA deals. Another possible explanation, which would be in line with the "*land grabbing*" concerns that are often raised in the LSLA literature, would reinforce the idea that the implementation of these deals often comes with a price, which is paid in terms of tenure insecurity for the affected communities – that is, the easier to grab the land, the easier will be to start the operations for the proposed land-related investment.

7. Conclusions

While acknowledging the relevance of the existing LSLA literature that addresses institutions mainly in terms of land rights, land titling and tenure security, this paper offers a new and original view of the role of institutions in this context. Indeed, this article assesses for the first time which factors contribute to or hamper the actual implementation of LSLA-related investments, offering some preliminary support for the *dual institutional effect hypothesis*. In particular, while a first generation of empirical papers on LSLAs suggested that weak institutions — especially in destination countries — trigger a higher demand for land from both international and domestic investors, this paper finds that LSLA deals are more likely to be implemented when backed by host and investor countries with a relatively stronger institutional framework. Overall, while weak institutions can increase the overall demand for land embedded in LSLAs by favouring its speculative and rent-seeking component, it is only when the institutional quality is relatively higher that these investments have more chances to reach their productive stage, thus bearing their fruits also in terms of growth and development.

Results from the empirical analysis, which support the idea that institutions are important drivers for the actual implementation of LSLAs-related investments, together with deal-specific features and macro-economic factors, also support a series of practical policy and legal recommendations. Particularly, while suggesting that a concise, clear and enforceable set of rules and regulations can improve the chances of actual implementation of these land deals, the evidence also indicates that conditionality measures diversified over different possible investment intentions can protect governments, local land owners and local land users

against speculation risks, investment failure and unproductive use of land. The economic benefits of implemented deals might come with a loss of property and land rights for local communities affected by LSLAs. In order to prevent such negative impacts, voluntary and participatory acquisitions should be favoured, together with laws and policies that formalise, enforce and protect customary and collective tenure rights in target regions. In this regard, the existing LSLA-literature has already emphasised the importance of legal tools such as Free Prior and Informed Consent (FPIC) and fair compensation for populations affected by LSLAs. Overall, clear and well calibrated rules can be the key to fostering the actual implementation of LSLAs, to maximise their development potential and, ultimately, to reduce the risk of *land grabbing*.

8. References

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as a Fundamental Cause of Long-Run Growth. In P. Aghion & S. N. Durlauf (Eds.), *Handbook of Economic Growth* (pp. 385–472). Amsterdam: Elsevier. Retrieved from https://economics.mit.edu/files/4469.

Aldrich, J. H., & Nelson, F. D. (1984). *Linear probability, logit, and probit models*. Newbury Park, London, New Delhi: SAGE publications. Retrieved from: https://us.sagepub.com/en-us/nam/linear-probability-logit-and-probit-models/book466.

Anseeuw, W., Boche, M., Breu, T., Giger, M., Lay, J., Messerli, P., & Nolte, K. (2012). *Transnational Land Deals for Agriculture in the Global South. Analytical Report based on the Land Matrix Database*. Bern/Montpellier/Hamburg: ILC, CDE, CIRAD, GIGA. Retrieved from: https://landportal.org/library/resources/mokoro5925/transnational-land-deals-agriculture-global-south-analytical-report.

Arezki, R., Deininger, K., & Selod, H. (2015). What drives the global "land rush"? *World Bank Economic Review*, *29*(2), 207–233. Retrieved from: https://doi.org/10.1093/wber/lht034.

Aron, J. (2000). Growth and institutions: A review of the evidence. *World Bank Research Observer*, *15*(1), 99–135. Retrieved from https://doi.org/10.1093/wbro/15.1.99.

Baker-Smith, K., & Miklos Attila, S. B. (2016). *What is land grabbing? A critical review of existing definitions*. Cluj-Napoca: Eco Ruralis. Retrieved from: http://www.fao.org/family-farming/detail/en/c/1010775/.

Baumgartner, P., Von Braun, J., Abebaw, D., & Muller, M. (2015). Impacts of Large-scale Land Investments on Income, Prices, and Employment: Empirical Analyses in Ethiopia. *World Development*, *72*, 175–190. https://doi.org/10.1016/j.worlddev.2015.02.017.

Cotula, L. (2013). The international political economy of the global land rush: A critical appraisal of trends, scale, geography and drivers. In B. White, S. M. Borras, R. Hall, I. Scoones, & W. Wolford (Eds.), *The New Enclosures: Critical Perspectives on Corporate Land Deals* (pp. 43–74). Abingdon, New York, Montreal: Routledge. Retrieved from: https://doi.org/10.4324/9781315871806.

Cotula, L., Oya, C., Codjoe, E. A., Eid, A., Kakraba-Ampeh, M., Keeley, J., Rizzo, M. (2014). Testing Claims about Large Land Deals in Africa: Findings from a Multi-Country Study. *The Journal of Development Studies*, *50*(7), 903–925. https://doi.org/10.1080/00220388.2014.901501.

Cotula, L., Vermeulen, S., Leonard, R., & Keeley, J. (2009). *Land grab or development opportunity? Agricultural investments and international land deals in Africa*. London, Rome: FAO, IIED, IFAD. Retrieved from: http://www.fao.org/3/a-ak241e.pdf.

De Maria, M. (2015). Trading the Untradeable: A Gravity Model for Large-Scale Land Acquisitions. Paper Presented at the 2015 *World Bank Conference on Land and Poverty*, Washington DC. Retrieved from: https://www.researchgate.net/publication/330360585_Trading_the_Untradeable_a_Gravity_Model_for_Large-Scale_Land_Acquisitions.

De Schutter, O. (2011a). How not to think of land-grabbing: three critiques of large-scale investments in farmland. *Journal of Peasant Studies*, *38*(2), 249–279. https://doi.org/10.1080/03066150.2011.559008.

De Schutter, O. (2011b). The Green Rush: The Global Race for Farmland and the Rights of Land Users. *Harvard International Law Journal*, *52*(2), 504–559.

Deininger, K. (2011). Challenges posed by the new wave of farmland investment. *Journal of Peasant Studies*, *38*(2), 217–247. Retrieved from: https://doi.org/10.1080/03066150.2011.559007.

Deininger, K., Byerlee, D., Lindsay, J., Norton, A., Selod, H., & Stickler, M. (2010). *Rising Global Interest in Farmland*. K. Deininger & D. Byerlee (Eds.), Agriculture and Rural Development Series, Washington, DC: The World Bank: https://doi.org/10.1596/978-0-8213-8591-3.

Dell'Angelo, J., D'Odorico, P., Rulli, M. C., & Marchand, P. (2017). The Tragedy of the Grabbed Commons: Coercion and Dispossession in the Global Land Rush. *World Development*, *92*, 1–12. Retrieved from: https://doi.org/10.1016/j.worlddev.2016.11.005

Edelman, M. (2013). Messy hectares: questions about the epistemology of land grabbing data. *The Journal of Peasant Studies*, *40*(3), 485–501. https://doi.org/10.1080/03066150.2013.801340

Engström, L., & Hajdu, F. (2019). Conjuring 'Win-World' – Resilient Development Narratives in a Large-Scale Agro-Investment in Tanzania. *The Journal of Development Studies*, *55*(6), 1201–1220. Retrieved from: https://doi.org/10.1080/00220388.2018.1438599.

Finley, J. W., & Seiber, J. N. (2014). The Nexus of Food, Energy, and Water. *Journal of Agricultural and Food Chemistry*, *62*(27), 6255–6262. Retrieved from: https://doi.org/10.1021/jf501496r.

Giovannetti, G., & Ticci, E. (2016). Determinants of biofuel-oriented land acquisitions in Sub-Saharan Africa. *Renewable and Sustainable Energy Reviews*, *54*, 678–687. https://doi.org/10.1016/j.rser.2015.10.008.

Glaeser, A. R. D. L., Porta, R. L. A., & Shleifer, A. (2004). Do Institutions Cause Growth ? *Journal of Economic Growth*, *9*(3), 271–304. Retrieved from: https://www.jstor.org/stable/pdf/40215873.pdf.

Hvid, A. (2014). Agricultural rent-seeking in developing countries: an empirical investigation. *Applied Economics Letters*, *21*(14), 951–954. https://doi.org/10.1080/13504851.2014.902012.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The Worldwide Governance Indicators: Methodology and Analytical Issues. *Hague Journal on the Rule of Law*, *3*(02), 220–246. Retrieved from: https://doi.org/10.1017/S1876404511200046.

Lay, J., & Nolte, K. (2018). Determinants of foreign land acquisitions in low- and middle-income countries. *Journal of Economic Geography*, *18*(11), 59–86. https://doi.org/10.1093/jeg/lbx011.

Luque-Fernandez, M. A., Redondo-Sánchez, D. & Maringe, C. (2019). CVAUROC: Stata module to compute Cross-validated Area Under the Curve for ROC Analysis after Predictive Modelling for Binary Outcomes. *Stata Journal*, 19(3), 615-625.

Mauro, P. (1995). Corruption and Growth. *The Quarterly Journal of Economics*, *110*(3), 681–712. https://www.jstor.org/stable/2946696.

Mazzocchi, C., Salvan, M., Orsi, L., Sali, G. (2018). The Determinants of Large-Scale Land Acquisitions (LSLAs) in Sub-Saharan Africa (SSA): A Case Study. *Agriculture*, *8*(12), 194. Retrieved from: https://doi.org/10.3390/agriculture8120194.

Mcintosh, C. S., & Dorfman, J. H. (1992). Qualitative Forecast Evaluation: A Comparison of Two Performance Measures. *American Journal of Agricultural Economics*, 74(1), 209-214. https://doi.org/10.2307/1243005.

Nolte, K. (2014). Large-scale agricultural investments under poor land governance in Zambia. *Land Use Policy*, *38*, 698–706. https://doi.org/10.1016/j.landusepol.2014.01.014.

Nolte, K., Chamberlain, W., & Giger, M. (2016). *International Land Deals for Agriculture. Fresh insights from the Land Matrix: Analytical Report II*. Bern, Montpellier, Hamburg, Pretoria: CDE, CIRAD, GIGA, University of Pretoria. Retrieved from: https://doi.org/10.7892/boris.85304.

North, D. C. (1990). *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press.

North, D. C. (1991). Institutions. *Journal of Economic Perspectives*, *5*(1), 97–112. Retrieved from: https://www.jstor.org/stable/1942704..

Platteau, J.-P. (2000). *institutions, Social Norms and Economic Development*. London & New York: Routledge.

Raimondi, V., & Scoppola, M. (2018). Foreign Land Acquisitions and institutional distance. *Land Economics*, *94*(4), 517–540. Retrieved from: https://doi.org/10.3368/le.94.4.517.

Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development. *Journal of Economic Growth*, *9*(2), 131–165. Retrieved from: https://www.jstor.org/stable/pdf/40212696

Runge, C. F., & Senauer, B. (2007). How Biofuels Could Starve the Poor. *Foreign Affairs*, *86*, 41. Retrieved from: https://www.foreignaffairs.com/articles/2007-05-01/how-biofuels-could-starve-poor.

Schoneveld, G. C., & German, L. (2014). Translating Legal Rights into Tenure Security: Lessons from the New Commercial Pressures on Land in Ghana. *The Journal of Development Studies*, *50*(2), 187–203. https://doi.org/10.1080/00220388.2013.858129.

The Land Matrix Global Observatory. (2018). The Land Matrix Global Observatory. Website. Retrieved from: https://landmatrix.org.

Toulmin, C. (2008). Securing land and property rights in sub-Saharan Africa: The role of local institutions. *Land Use Policy*, *26*(1), 10–19. https://doi.org/10.1016/j.landusepol.2008.07.006.

Voigt, S. (2013). How (Not) to measure institutions. *Journal of Institutional Economics*, *9*(1), 1–26. https://doi.org/10.1017/S1744137412000148.

Woodruff, C. (2006). Measuring institutions. In S. Rose-Ackerman (Ed.), *International Handbook on the Economics of Corruption*. Edward Elgar Publishing.

9. Appendix I – Full econometric results

Table 5 *– Full econometric output*

Variable	**Model 1** (*Logit*)[a]	**Model 2** (*Logit*)[b]	**Model 3** (*Logit*)[c]
Domestic Component	0.293***	-0.043	0.017
	[0.093]	[0.128]	[0.157]
Multiple Investor	0.216*	0.460***	0.374**
	[0.126]	[0.148]	[0.155]
Food	0.788***	0.940***	0.756***
	[0.106]	[0.121]	[0.130]
Biofuel	-0.687***	-0.480***	-0.690***
	[0.130]	[0.147]	[0.160]
Livestock	0.468***	0.453***	0.045
	[0.138]	[0.155]	[0.170]
Tourism	-0.507*	-0.161	-0.418
	[0.297]	[0.335]	[0.354]
Forest	1.189***	1.481***	1.143***
	[0.178]	[0.202]	[0.214]
Multiple Intention	0.407***	0.195	0.416***
	[0.113]	[0.124]	[0.134]
Contract Farming	0.295	0.412*	0.405*
	[0.197]	[0.221]	[0.218]
Size (log)	-0.089***	-0.087***	-0.098***
	[0.026]	[0.030]	[0.031]
GDP Target (log)		0.131***	0.130***
		[0.037]	[0.043]
GDP Investor (log)		-0.108***	-0.092**
		[0.036]	[0.041]
Average Cereal Yield Target (log)		0.451***	0.383***
		[0.105]	[0.122]
Average Cereal Yield investor (log)		0.024	-0.303**
		[0.121]	[0.148]
Voice & Accountability Target			0.163
			[0.124]
Voice & Accountability Investor			0.183*
			[0.105]
Political Stability Target			0.192**
			[0.096]
Political Stability Investor			0.139
			[0.121]
Government Effectiveness Target			0.350
			[0.248]
Government Effectiveness Investor			0.517**
			[0.258]
Regulatory Quality Target			-0.251
			[0.209]
Regulatory Quality Investor			0.810***
			[0.232]

Table 5 (Continued) *– Full econometric output*

Variable	**Model 1** (*Logit*)[a]	**Model 2** (*Logit*)[b]	**Model 3** (*Logit*)[c]
Rule of Law Target			-0.837***
			[0.321]
Rule of Law Investor			-1.435***
			[0.313]
Control of Corruption (target)			0.456**
			[0.221]
Control of Corruption (investor)			0.248
			[0.239]
Model statistics			
Observations	2,343	1,914	1,914
Log likelihood	-1452	-1153	-1106
LR Chi2	201.4	211.9	291.5
pseudo r-squared	0.0746	0.0987	0.135

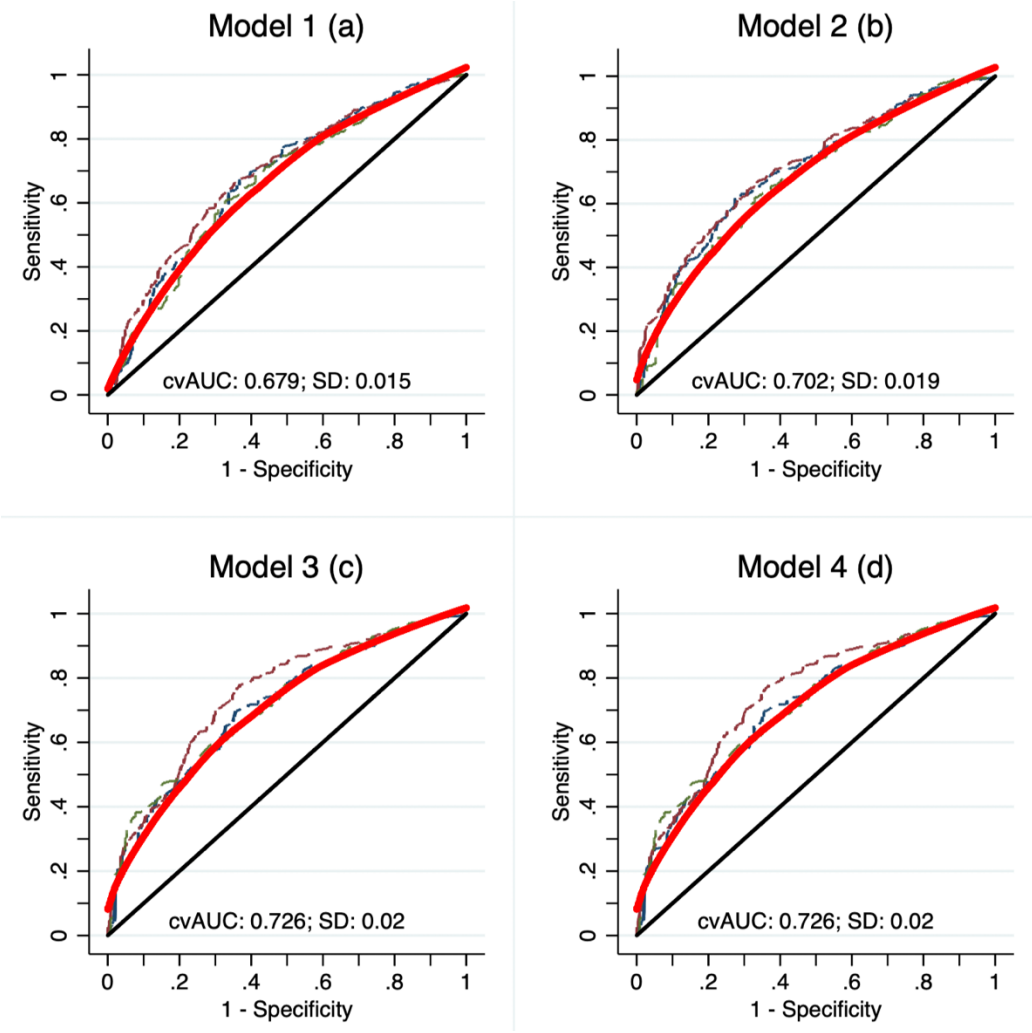
Source: Authors' elaboration.

Note: Joint Robust standard errors in square brackets; levels of significance as follows: *** p<0.01, ** p<0.05, * p<0.1

10. Appendix II – Cross-validation and ROC curve analysis

To further examine the robustness of the econometric analysis, a cross-validated mean Area Under the Curve (AUC) for different model specifications proposed in *Table 4* was calculated and compared. The Stata command *cvauroc* – which "*implements k-fold cross-validation for the AUC for a binary outcome after fitting a logistic regression model, averaging the AUCs corresponding to each fold and bootstrapping the cross-validated AUC to obtain statistical inference*" (Luque-Fernandez et al., 2019) – was used.

Figure 10 *– Cross-validated mean AUC for different model specifications*



Source: Authors' elaboration. *Note:* "*Sensitivity*" represents the true positive rate, while "*Specificity*" corresponds to the true negative rate. The mean cross-validated *Receiver Operating Characteristics* (ROC) curve is the solid red line, while k-fold (with $k = 3$ and *seed* = *7777*) ROC curves are the dashed ones in each plot.

The results of this exercise (summarised in *Figure 10*) suggest that the specifications with institutional variables – that is, model 3 (c) and model 4 (d) – provide more accurate predictions for the binary dependent variable ("*Production*") used in this study. Indirectly, this results also reinforces the idea that the institutional quality of both investor and destination countries influences in a statistically significant way the implementation likelihood of LSLA- related projects.

Chapter III

The Economics of Fair Compensation in Large-Scale Land Acquisitions[1]

[1] Part of this chapter, in a very preliminary version, was published as a book chapter:

> **De Maria, M.** (2018): A Law-and-Economics Perspective on Fair Compensation in Transnational Land Deals in the Context of Customary Tenure Regimes. In B. Hoops, E. J. Marais, L. van Schalkwyk, & N. K. Tagliarino (Eds.), *Rethinking Expropriation Law III: Fair Compensation*, The Hague: Eleven International Publishing.

A completely renewed version of the fair compensation game in LSLAs was originally included in the following co-authored conference paper:

> **De Maria M.**, Robinson E. J. (2018): The Economics of the Fair Compensation in Large-Scale Land Acquisition. Paper presented at the *WCERE 2018 — 6th World Congress of Environmental and Natural Resources Economists*, 25-29 June 2018, Gothenburg.

Abstract: This paper provides original insights into the issue of fair compensation for local populations affected by transnational land deals. Such deals often involve changes to the land use — such as from subsistence agriculture, natural forest or grazing, to intensive crop production, agro-forestry, or biofuels — and modifications to tenure regimes — thus altering antecedent norms and customs regulating land access and land rights. The existing evidence suggests that the scale and nature of these transformations, together with the lack of participation and consent of the affected local populations, can escalate into long and costly legal disputes or (sometimes violent) conflicts over land.

Despite the existence of a legal framework defining fair compensation and notwithstanding the vast literature on transnational land deals, no underlying theoretical framework has been developed so far to allow for a specific analysis of the economics of fair compensation in large-scale land acquisitions (LSLAs). In order to fill this gap, I have developed a three-player sequential game that captures the peculiarities of fair compensation in transnational land deal by introducing a tailor-made range of actors, behaviours and outcomes.

The model suggests that, under specific circumstances, the local community will be offered a zero-compensation as a rational consequence of the players' optimisation, and this will lead to a land conflict, with all players incurring additional costs. Furthermore, the locals will always be worse off compared to the pre-deal situation — unless they can fight the deal at zero cost — and the greater their fighting opportunity-cost, the greater their expected loss of livelihood will be.

Keywords: large-scale land acquisitions (LSLAs); land grabbing; fair compensation; land-based investment; land governance; indigenous and community land rights.

1. Introduction

This essay analyses the issue of *fair compensation* in the context of transnational Large-Scale Land Acquisitions (LSLAs), focusing in particular on those situations where land is held under collective, informal or customary tenure regimes by local communities and indigenous populations. Transnational land deals — which are typically considered to be of a large-scale when covering an area of 200 hectares or more — are frequently part of wider investments promising local economic development and benefits such as job creation and new infrastructures (Baumgartner *et al*., 2015; Nolte & Ostermeier, 2017). However, the emerging evidence suggests that, when these investments affect local and indigenous populations holding customary and informal rights over land, there is a tangible risk that the promise of economic development will remain only a rhetorical expedient for the affected communities, leaving space instead for social unrest, dispossession, evictions, land disputes and conflicts (Schoneveld, 2017).

The impact on local rural communities affected by LSLAs has received considerable attention in the literature, which stresses the complex and intertwined nature of the linkages between the investments that engender LSLAs and the potential range of effects on the livelihood of the affected populations. In their contribution, Davis *et al*. (2014) suggested that an estimated 12 million people have lost their main source of livelihood due to LSLAs. Qualitative studies have identified a range of adverse impacts of LSLAs on affected communities too. For instance, Kachika (2010), in his report funded by the Oxfam International Pan African Programme, pointed out a wide range of negative effects induced by transnational land acquisitions on vulnerable population groups, including rural poor, women, pastoralist communities and small-scale farmers.

Of course, not all LSLA-related investments affect local communities and — even when this is the case — not all the impacts are negative. Potential positive effects include job creation, increase of agricultural productivity, greater revenues for local and central administrations, technological spillovers, as well as the creation of schools, healthcare facilities and other infrastructures — which are often required by land lease contracts (Deininger *et al*., 2010; Liu, 2014; Zhan *et al*., 2016). However, the literature suggests that the costs for local populations can often be greater than the benefits, especially when local communities are socially, politically and economically marginal (Behrman *et al*., 2012; Cotula, 2013; Hall *et al*., 2015; Kachika, 2010).

Given this picture, the question of fair compensation for local populations affected by transnational land deals becomes socially, politically and economically relevant. A number of national and international laws — such as the *Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act* in India (Parliament of India, 2013), the *Land Act* in Tanzania (United Republic of Tanzania, 1999a), the *Takings Clause* of the *Fifth Amendment to the U.S. Constitution*[2] and the *UN Declaration on the Rights of Indigenous People* (UN, 2007) — establish the right to prompt and fair compensation in land acquisitions.

As I will argue later in this paper, this right — coupled with clear rules for its implementation and calculation — is one of the tools that can protect local communities and indigenous populations from the negative consequences of LSLAs. Furthermore, fair compensation is not just a

[2] The last clause of the Fifth Amendment to the U.S. Constitution, also known as the *takings clause*, balances the power of the eminent domain with the need for just compensation for the private owner, stating that "[…] *nor shall private property be taken for public use, without just compensation*".

redress method that mitigates negative consequences *ex post*, but it can also act as a deterrent *ex ante*. Indeed, when compensation and its due process are clear and legally binding, governments, investors and communities can internalise these elements in their decision making. Fair compensation, therefore, can act like as a catalyst and contribute to ensuring that positive outcomes of LSLAs are maximised, whilst reducing the risk of negative impacts on vulnerable social groups and local communities.

The application of the *Free, Prior and Informed Consent* (hereinafter FPIC) principle is often seen as a prerequisite for the achievement of peaceful, fair and participatory land-based investments for the local populations affected by transnational land deals (Galgani *et al*., 2016; Vermeulen & Cotula, 2010). However, despite the growing international consensus around *fair compensation* (in the context of compulsory land acquisitions) and FPIC (for voluntary land acquisitions), the existing — but often scattered, anecdotal and incomplete — evidence suggests that local communities' consent and participation to LSLA negotiation processes is limited. Furthermore, the actual payment of a compensation is not a common outcome in transnational land deals (Nolte, Chamberlain, & Giger, 2016). As discussed in Tagliarino *et al*. (2018), dissatisfaction can lead to turmoil, legal disputes and land conflicts with long-lasting negative consequences for all stakeholders involved — even when some form of compensation is awarded to local populations. It is then legitimate to ask whether the fair compensation of local communities and indigenous people is achievable at all in the context of LSLAs; if it can be efficiently combined with the interests of foreign investors and host governments; and if fair compensation can reduce predatory land-based investments and protect affected populations from potential negative impacts.

In a bid to answer these questions, this chapter is organised as follows: the next section examines the theory and the practice of fair compensation, analysing — with the support of both the theoretical literature and concrete examples — the key legal and economic views and the main implications of focusing on LSLAs specifically; based on the insights emerging from this theoretical and practical review, the following section formalises a simple yet original theoretical model, structured as a *fair compensation game in LSLAs* that goes beyond national borders and considers a tailor-made range of actors, behaviours, tenure regimes and outcomes — thus reflecting the peculiarities of transnational land deals; finally, the last sections of the chapter discuss the main implications of the *fair compensation game in LSLAs* and provide concluding remarks and policy recommendations.

2. Fair compensation and LSLAs: theory and practice

2.1. A law and economics perspective on fair compensation

The *fair* or *just compensation* principle is not new and dates back to at least 1215, with *Clause 28* of the *Magna Carta* (Ely, 1992). In the English and American *Common Law* tradition, compensating landowners for tenure changes was already a widespread practice well before 1791 — when the *Bill of Rights*, which includes the *Takings Clause* contained in the *Fifth Amendment to the U.S. Constitution*, was ratified. If tracking back the legal foundations for the fair compensation principle requires a journey over the centuries, it was only a few decades ago that the economists started to formalise different approaches for the determination of the *optimal compensation rule*.

The seminal model proposed by Blume, Rubinfeld and Shapiro (1984) fuelled — and still fuels — the discussion over the *optimal compensation rule.*

Their paper, which was framed around the U.S. *Takings Clause*, formally introduced an economic perspective into the compensation debate, which until then had been mainly driven by legal concerns. Currently, different economic views over the optimal compensation rule range between two extreme positions, namely the *zero-compensation* rule and the *full-market-value* (or simply *full-compensation*) rule.

The zero-compensation approach originally appeared as a corollary of the previously mentioned Blume-Rubinfeld-Shapiro (hereinafter simply BRS) model (*Ibid.*). The main justification for the idea that a zero-compensation could be optimal is related to the moral hazard of the landowner. Intuitively, a private landlord learning that his or her land is at risk of expropriation, would have the incentive to invest in that piece of land more than he or she would have done otherwise. Such overinvestment would increase the market price of the land, thereby inflating the value of the compensation which he or she would be entitled to.

The mathematical formulation of the BRS model was such that — under specific circumstances and assumptions — the zero-compensation was an optimal result, leaving no space for the moral hazard of landowners. The controversial nature of this specific corollary of the BRS model stimulated an intense debate and yielded to the multiplication of the economic views and approaches over the optimal compensation rule. For instance, Fischel and Shapiro (1989), adopted a *public choice* perspective and considered the specific nature of the government explicitly. With a benevolent (or *Pigouvian*) government — that is, a government that will never overuse the eminent domain power vested in its hands — the *zero-compensation* would be an optimal solution. However, in the case of a majoritarian or authoritarian government — that is a government such that the individual interests of its members would prevail over the collective

interest — the optimal compensation would be always greater than zero, thus limiting the risk of excessive expropriation to the detriment of private landowners.

Other economists discarded at once the possibility that the zero-compensation could be an optimal compensation rule. For instance, Nosal (2001) provided support to the full-compensation rule, suggesting that the optimal compensation has to be calculated looking at the market value — that is, the price that private investors would pay in the free market when buying a given parcel of land. In particular, he developed a model based on a *tax-and-compensation* scheme, where the average market value of land, in equilibrium, constituted the optimal redress for the private owner whose land was expropriated.

Miceli and Segerson used yet another different approach — based on a bargaining model — to study the optimal compensation rule in the context of the so-called *land assembly problem* (Miceli & Segerson, 1994; 2007). While rejecting the possibility that the zero-compensation rule could be regarded as optimal, they also warned of the risks associated with overcompensating private landholders — thus counterbalancing the concerns of excessive expropriation that were raised, for instance, by Fischel and Shapiro under their majoritarian government scenario.

Miceli and Segerson (*Ibid.*) mainly focused on the holdout problem. They considered the case of a developer who wants to buy several plots of land owned by different individuals for a large-scale development project. Assuming that all plots are needed by the developer, holdouts could undermine the success of the whole project. Indeed, when only a few of these plots remain in order for the developer to assemble the whole area required for the proposed development scheme, the private owners of these plots gain disproportionate bargaining power, ultimately allowing them to

obtain compensation that goes well above the full market valuation of those plots.

At this stage, the reader should be aware of how the risk of excessive expropriation by public authorities can be offset by holdouts and moral hazard for private landholders, especially in the case of projects requiring the assembly of several parcels of land. According to Epstein (1985), these two conflicting forces are balanced when fair compensation is granted following the full-market-price rule. In this case, the just compensation is ideally to be set equal to the price that would leave the landlord whose land is at risk of expropriation indifferent between keeping his property and accepting the taking requested by the public authority. Epstein (*Ibid.*) suggests that, ideally, this simply corresponds to the value at which the individual landholder would be willing to sell his property or land on the free market, which is also known as the *individual reservation price*. When the compensation equals this ideal price threshold, then it works as a deterrent for both the risk of excessive expropriation — because the reservation price, at least, must be paid for the expropriation — and for the holdout problem — because no more than the reservation price will be paid as compensation.

However, even this line of reasoning has limitations. In particular, the problem related to the individual reservation price is that it includes a *subjective component*, which is not directly observable and varies according to personal considerations of each landlord. For this reason, the market price — which can be observed when the land and real estate market exists and works perfectly — is traditionally used as a practical solution for the determination of the just compensation value. The market price, however, is the amount at which similar parcels or properties have been sold on the market by other owners and does not necessarily reflect the amount at which another individual would be willing to sell in a consensual

transaction. Indeed, this subjective premium can be quite sizeable, especially when we look at family homes or parcels of land that have been kept in the family for a long time. When this is the case, the market value, even if paid in full as compensation, underestimates the amount that the private landlord would accept in a consensual sale. Nevertheless, the unobservability of such subjective premium acts also as an incentive — for the private landlord whose property is at risk of forced taking — to behave strategically, ultimately bringing back in the game the holdout and the moral hazard problems that we have previously described.

If the economic analysis around the optimal compensation rules provides an extraordinary theoretical basis for the understanding of the multiple issues associated with the concept of fair compensation, the *jurisprudence* — here intended as the analysis of the course of actual cases and court decisions — also provides very useful insights. A notable example is the famous decision by the U.S. Supreme Court in *Kelo v City of New London* (Supreme Court of the United States, 2005). The Supreme Court summarised the case as follows (*Ibid.*, p.1):

"*After approving an integrated development plan designed to revitalize its ailing economy, respondent city, through its development agent, purchased most of the property earmarked for the project from willing sellers, but initiated condemnation proceedings when petitioners, the owners of the rest of the property, refused to sell. Petitioners brought this state-court action claiming, inter alia, that the taking of their properties would violate the 'public use' restriction in the Fifth Amendment's Takings Clause.*"

This short summary of the case contains at least two key issues that deserve to be discussed further. The first of these issues relies on the very essence of the decision of the Supreme Court, ruling that even private investments can satisfy the Fifth Amendment's *public use* requirement. In

fact, the petitioners claimed that the private nature of the development project requiring the forcible taking of their properties "*would violate the 'public use' restriction in the Fifth Amendment's Takings Clause*". The second issue relates to the fact that the petitioners, including the lead plaintiff Susette Kelo, "*refused to sell*" their properties and land. They rejected the just compensation they were offered based on the full-market-value rule, whereas other landowners willingly accepted they amount they were offered. Once again, this decision brings us back to the uncertainty associated with the subjective component in the individual reservation price.

Regarding the first issue, the interpretation of the *public use* requirement adopted by the Court in the *Kelo* decision raised some concerns. For instance, Miceli (2016) argued that if , on the one hand, it is not surprising that a private development project can produce direct and indirect (spillover) positive effects on the affected community, on the other hand, it is also true that the majority of private development projects typically promise a wide range of generic positive effects on the economy and on the society — thus virtually fulfilling the public use requirement at all times. He also noted that such a broad interpretation of the public use requirement might disproportionally hit low-income households, as well as ethnic and religious minorities. In fact, urban and peri-urban areas that are home to disadvantaged population groups, are also very often the most attractive ones for both private developers — as these areas can typically offer the highest investment return — and local authorities — because these zones can usually guarantee higher public revenues from the prospect of increasing property taxes. In such situations — especially considering that the generic promises of future job creation and potential higher tax revenues are sufficient to fulfil the public purpose requirement — the alignment between the interests of public authorities and private investors

might expose unprivileged population groups to an excessive use of the eminent domain power.

Concerning the second issue deriving from the decision of the Supreme Court — that is, the fact that Susette Kelo and other landlords did not accept the full-market-value compensation they were offered — it is important to stress that there is no evidence to support the idea that the petitioners were acting to obtain a higher compensation for their properties — which would rule out holdouts and the moral hazard problem. Indeed, the petitioners never ask for a higher compensation premium. No one will ever know what exactly was the (subjective) value that Kelo and other petitioners ascribed to their properties, and yet, it is important to note that it was high enough to let them sustain a decade-long legal dispute through all levels of the U.S. judiciary system, eventually reaching up to the Supreme Court.

The impossibility of determining in an objective way the true value of the subjective component of the reservation price is not the only problem that arises when trying to establish the actual value of fair compensation. In this regard, the recent *Griffiths v Northern Territory of Australia* case — also known as the *Timber Creek* case — suggests that estimating the monetary value of fair compensation based only on the average value of similar properties on the market might not always be sufficient.

The *Timber Creek* decision is generally seen as the first decision ordering the payment of compensation to native people for the loss or impairment of traditional rights and interests under the provisions of the Australian *Native Title Act* (Parliament of Australia, 1993). The peculiar nature of the aboriginal customary tenure system was clearly acknowledged in the motivations of the first instance determination (Federal Court of Australia, 2016, §219):

"Native title, as the jurisprudence now clearly accepts, is a communal bundle of rights, and not an individual proprietary right. It depends for its existence on the continuing acknowledgment and observance of the relevant traditions, customs and practices of the community."

Interestingly, when determining the amount of the AUD 3.3 million compensation to be paid to the *Ngaliwurru-Nungali* aboriginal peoples following the development of the town of Timber Creek and its surroundings, the Honourable Judge Mansfield of the Federal Court of Australia took into account both economic and non-economic land values. In particular, concerning the value of the compensation, the Federal Court ruled that (*Ibid.*, §3):

"The compensation payable to the native title holders by reason of the extinguishment of their non-exclusive native title rights and interests arising from the said act is:

(a) Economic value of the extinguished native title rights: AUD 512,400;

(b) Interest on the said sum of AUD 512,400 assessed in accordance with the reasons for judgment: AUD 1,488,261;

(c) Allowance for solatium of AUD 1,300,000;

Totalling AUD 3,300,661."

Interestingly, when determining the amount of the AUD 3.3 million compensation to be paid to the *Ngaliwurru-Nungali* aboriginal peoples for the loss of their traditional land in favour of the development of the town of Timber Creek and its surroundings, the Judge adopted a dual approach. On the one hand, the Judge estimated the strictly economic loss — corresponding to 80% of freehold value of the land *(a)*, plus the simple (and

not compound) interest rate on this sum *(b)* — using a criterion that very closely mirrors the full-market-price compensation rule. On the other hand, the Judge evaluated the spiritual, ceremonial and cultural harm separately, as a *solatium* (c), and in addition to present market value of the land that was requisitioned.

Not surprisingly, in September 2016, the Northern Territory Government — which was sanctioned to pay the compensation to the natives — appealed the decision. If the right to compensation for the non-economic damage (i.e. the spiritual, ceremonial and cultural harm) experienced by the aboriginal people was not the object of contention, the Northern Territory contested the discretional nature of the method used for actual determination of the *solatium,* suggesting that this amount was exaggerated. In the appeal decision, the *Full Federal Court* of Australia, reduced the compensation amount to AUD 2.9 million (Full Court of the Federal Court of Australia, 2017). The Northern Territory and the Federal Governments (Commonwealth of Australia) appealed again, this time to the High Court. In the final decision dated 13th March 2019, the High Court of Australia ordered the payment of a compensation equal to AUD 2.5 million (High Court of Australia, 2019), with the said amount disaggregated as follows (*Ibid., §238*):

"(a) compensation for economic loss in the sum of $320,250;

(b) interest on (a) in the sum of $910,100;

(c) compensation for cultural loss in the sum of $1,300,000;

Total: $2,530,350."

Therefore, the High Court granted the appeal in part. Remarkably, only the appraisal of the pure economic damage was revised and reduced,

while the compensation for the cultural loss remained unchanged compared to the initial valuation made in the first instance by Judge Mansfield. In this sense, the *Timber Creek* decision suggests that whilst cultural and spiritual values attached by indigenous people to their land are not included in market prices, these intangible values are to be accounted for in the determination of fair compensation.

2.2. The peculiar nature of fair compensation in LSLAs

The different — and often conflicting — views presented so far suggest that granting and determining fair compensation remains extremely puzzling. However, a possible way forward can be found in the words of Hermalin (1995, p. 65):

"There is more than one efficient rule for any given takings situation. One can, then, choose among these efficient rules based on the moral (i.e., political or philosophical) issues of the specific situation."

This sentence is particularly important for the object of the present analysis, suggesting that the issue of fair compensation in LSLAs might constitute a problem on its own, thus requiring a new specific approach. Indeed, if the review of the economic literature on fair compensation offered plenty of useful insights, it is also true that this literature mainly considered circumstances and actors that might not necessarily be relevant in the context of transnational land deals. Most of the contributions reviewed in the previous section framed their analysis around the U.S. *Takings Clause* and the Anglo-American Common Law tradition (J. M. Duke, 2014; Miceli & Segerson, 2014); they focused on purely domestic contexts and on the expropriation of individual private property (Farber, 1992); and, even when the focus shifted to the land-assembly problem, the

existing literature mainly studied the case of high-income countries, considering the perspective of rural populations, indigenous people and poor farmers — often characterising tenure systems in developing countries — only occasionally (Ghatak & Mookherjee, 2014).

If the LSLA phenomenon shows elements of continuity with other land rushes that have characterised human history in the past, and some of its key features are deeply rooted in the legacy of the colonial era (Huggins, 2011; Wily, 2012), it is also true that the current wave of transnational land deals expresses new peculiar traits (De Maria, 2019), which happen to be relevant when looking at the fair compensation issue. In *Chapter I*, I argue that LSLAs can be seen as a process of international '*commodification*' of land. Indeed, large portions of land are currently traded as an international commodity, but this newly born global land market typically fails to take into account a wide range of non-economic values that are often attributed by local communities and indigenous people to their land. As extensively highlighted in the discussion of the Timber Creek case, while the non-economic values are not internalised in market prices, they nevertheless should be taken into account when determining the amount and nature of fair compensation.

The difficult determination of the value of fair compensation is not just limited to the subjective component of the individual reservation price but is also related to the values — often intangible — that different communities assign to their land collectively. This would not be a problem if LSLAs were only directed towards idle lands. However, transnational land deals are not targeting *no man's lands*. The existing evidence suggests that more than half of the foreign investors' attempts to acquire land are directed towards relatively highly populated areas which were already used as cropland, in destination countries that are often characterised by weak levels of tenure

security (Arezki, Deininger, & Selod, 2015; De Maria, 2015; Nolte *et al*., 2016).

Tenure insecurity is often the result of situations where customary and collective tenure regimes coexist *de facto* — without being fully recognised *de jure* by national laws, nor mapped in cadastral registries — alongside other forms of tenure certified formally (De Schutter, 2011; RRI, 2015). In such contexts, the increasing pressure over land caused by LSLAs has triggered a series of land disputes and land conflicts between local populations, national governments and international investors, leading in some cases to extreme consequences such as displacement, dispossession and forced evictions (Dell'Angelo *et al*., 2017; Meyer, 2016; Ndi & Batterbury, 2017; Nolte & Voget-Kleschin, 2014; Tagliarino *et al*., 2018; The Oakland Institute, 2013; Tura, 2018; Twomey, 2014; Woods, 2015).

A number of elements contribute to making the issue of fair compensation in LSLAs peculiar compared to the traditional Anglo-American Common Law perspective: customary and informal tenure regimes; collective (social, cultural and spiritual) values attributed by local communities and indigenous people that are hard to express in monetary terms; the risk that land quarrels might lead to extreme consequences, including violence and armed conflicts. Another factor of discontinuity can be identified in the specific range of stakeholders that are involved in the fair compensation issue. In the traditional '*takings*' literature — from both the legal and the economic point of view — the fair compensation issue is almost exclusively framed as a two-player problem, in which the planning and developing functions vested in the public authority are to be balanced with the interests of private landlords.

The fair compensation issue in the context of LSLAs looks more like a three-player contest instead, in which private investors, governments and

local communities play each with their own strategy and interests. Indeed, data from the *Land Matrix Initiative* suggests that transnational land deals are mainly moved by the private interest of foreign investors — indeed, the great majority of backers of LSLAs private companies, investment funds, individual entrepreneurs or joint ventures in which private subjects hold the majority of shares (Nolte *et al*., 2016). National governments and public authorities, rather than being the main economic subject proposing the investment, act more at the policy and normative levels, attracting foreign investors, defining the general framework of the national and local development, and determining the rules under which proposed land deals can take place. Finally, local populations enter the game when the land that has been identified as suitable for the proposed land-based investments, also happens to be their land.

Once again, the *Kelo* case can offer useful insights. Intuitively, the Supreme Court sentence recognised that private developments might be aligned with the public interest, therefore justifying the public use requirement. Some of the criticism surrounding such a broad interpretation of the public use requirement revolved around the risk that private investors and public authorities might collude at the expense of private owners, ultimately resulting in an abuse of the eminent domain power (Miceli, 2016). This threat is certainly realistic. However, it is also reasonable to assume that each subject, at least in principle, acts according to his own interests. Then, the interests of some of these individuals, in some cases, might align, whilst they might by all means diverge in other cases — thus justifying the adoption of a three-player setting in the fair compensation game that will be developed in the next section of this paper.

So far, the reader has seen how both the private landlord and the public authority might have the incentive to act strategically in

expropriation and compensation settings, as well as how these strategic behaviours might lead to suboptimal outcomes both in terms of economic efficiency and equity. In particular, from the private landowner side, the main risks are related to holdouts and moral hazard, while the main problem from the public authority side is related to the abuse of the eminent domain, which would ultimately lead to excessive and unnecessary expropriations.

In the LSLA context, however, both holdouts and moral hazard can hardly be seen as realistic threats. Indeed, one of the necessary conditions for the holdout problem to happen — that is, the existence of formally recognised individual private property rights over a number of distinct land parcels — does not stand when land is held under customary, informal or communal forms of tenure. The moral hazard threat might not be a relevant problem either, especially when LSLAs affect local communities and indigenous people living on a subsistence economy. On the contrary, in countries characterised by weak institutions, tenure insecurity, corruption and poor law enforcement, the incentive for the public officials to abuse the eminent domain power and ally with private investors at the expense of — often politically, economically and socially marginal — local communities might be even stronger. In these cases, fair compensation becomes a crucial tool to limit the excessive use of eminent domain to protect vulnerable population groups, as well as to avoid the worst-case scenario in land tenure changes.

Vermeulen and Cotula (2010), among others, suggested that there is a solution to prevent such worst-case scenarios, which would help avoid land conflicts, forced evictions, displacement and dispossession often induced by LSLAs on affected local communities. The solution they envisaged is a three-fold process, based on the following pillars: *consultation*, *consent* and

compensation. This view echoes what is known as the *Free, Prior and Informed Consent principle* (hereinafter FPIC), which is also often seen as the prerequisite for the achievement of fair and successful land-based investments, where tenure changes are voluntarily agreed among the parties – as opposed to the case of compulsory land acquisitions, which would require expropriation and therefore compensation.

In fact, both the FPIC and fair compensation are not new concepts in national and international law. At the international level, *Article 32* of the *United Nations Declaration on the Rights of Indigenous Peoples* (UN, 2007) — which explicitly refers to land — grants to indigenous population the right to *free, prior and informed consent* (FPIC), as well as the right to *fair compensation* for a wide range of adverse impacts, going well beyond pure economic damages. These rights are also often recognised — at least on paper — in the context of international development strategies. For instance, FAO promoted the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (FAO, 2012) — hereinafter simply VGGTs. The VGGTs, which have been officially endorsed by more than 140 countries in the world (*Figure 11*), broaden the perspective even further, taking into account not only indigenous people, but also other communities with customary tenure regimes (*Ibid.*, part 3, Section 9, pp. 14-16) and informal tenure systems (*Ibid.*, part 3, Section 10, pp. 16-17). Similarly, *Performance Standard 5*. *Land Acquisition and Involuntary Resettlement* proposed by the International Finance Corporation (IFC) of the World Bank Group emphasizes the importance of *fair compensation* and FPIC in land acquisitions (IFC, 2012a, 2012b).

Figure 11 *– Map of countries that officially endorsed the VGGTs*

Source: Land Portal, available at: https://landportal.org/voluntary-guidelines.

However, the rights to FPIC and fair compensation — despite their formalisation at the international level with the UN Declaration on the Rights of Indigenous Peoples, the VGGTs and the IFC Performance Standards — are not often reflected in national-level legal systems. For instance, the assessment started by Tagliarino in 2016 (Tagliarno, 2016) and expanded further the following year (Tagliarino, 2017), found that out of 50 countries assessed across Africa, Asia and Latin America, only 7 provided compensation for unregistered customary tenure rights held by indigenous peoples and local communities. Even when international standards on FPIC and fair compensation are formally recognised by national legal framework, they might only remain valid on paper.

For instance, Tanzania constitutes a good example of the complex interaction between LSLAs, FPIC and fair compensation. The country arguably has one of the most complete and advanced set of legal provisions

when it comes to land tenure, as it recognises the right to compensation for landholders under both customary and informal tenure regimes (United Republic of Tanzania, 1999a, 1999b, 2001a, 2001b). Shortly after the formal recognition of fair compensation rights to customary and informal landholders, Tanzania witnessed a paradigm shift in the country's wildlife policy. The *1998 Wildlife Policy* (United Republic of Tanzania, 1998) transferred powers in this domain form the central government to regional administrations and local communities, especially through the creation of *Wildlife Management Areas* at the village level. However, the *2007 Wildlife Policy* (United Republic of Tanzania, 2007) reversed this devolution trend by bringing back to governmental and central-state actors most of the competences related to the management of natural resources, including land.

According to Benjaminsen *et al*. (2013), this approach reduced the space for the participation in both decision-making and benefit-sharing for local populations. Enacted in 2009, the *Wildlife Conservation Act* (United Republic of Tanzania, 2007) strengthened this new centralisation paradigm further. On the one hand, this *Act* put wildlife management and eco-tourism at the core of Tanzania's development strategy. On the other hand, however, this bill further increased the influence of central authorities in the management of natural resources over local bodies and communities.

The legal provisions granting the right to a fair compensation to local communities for land tenure changes — namely, the *Land Act* (United Republic of Tanzania, 1999a) and the *Land (Assessment of the Value of Land for Compensation) Regulations* (United Republic of Tanzania, 2001a) — are still in place. However, the new regulations on wildlife policy vested so much power in the hands of central authorities that the scope for the actual application of compensation procedures, in practice, shrunk considerably.

The case of the forced removal of Maasai tribes from their villages in Loliondo, in the Arusha Region, is a relevant and concrete example. It all began when the government approved the request for the expansion of an existing land concession. The concessionaire — namely, the *Ortello Business Corporation,* a private company based in the United Arab Emirates — motivated the request for additional land with the desire to expand and improve the game reserve that the company was managing in the area. The forced eviction of the Maasai people that followed the extension of this land concession caught the attention of James Anaya, who was the *United Nations Special Rapporteur on the Human Rights and Fundamental Freedoms of Indigenous Peoples* at the time. In his communication to the Human Rights Council (Anaya, 2010), the Rapporteur requested the Tanzanian government respond to the allegations regarding the use of violence — including rapes and burning of several *bomas*[3] — during the eviction ordered by a letter dated 20 May 2009 from the Executive Director's Office of the Ngorongoro District.[4] According to the Rapporteur (*Ibid.*, §424, h):

"*Government representatives admit the burning of bomas, claiming that it was done to prevent residents from resettling in the villages from which they were evicted. The 20 May 2009 letter from the Executive's Office ordering the evictions asserts that the reasons for evicting the pastoralists are environmental degradation from agriculture, unsustainable tree cutting and the establishment of permanent bomas within the hunting area. The letter also forbids farming activities from occurring within the hunting block.*"

[3] *Bomas* is the name of Maasai traditional shelters.

[4] The Rapporteur referenced this letter as follows: Ref. No. NGOR/DC/M. 1/94.

Remarkably, the Special Rapporteur framed the Loliondo episode in light of the broader wildlife policy shift that was previously discussed. In particular, he argued that (*Ibid.*, §424, j):

"*Although Government representatives claim that the evictions took place as a result of environmental concerns related to the conservation of the Loliondo Game Control Area, the circumstances surrounding the evictions indicate that the evictions were in fact part of a larger Government policy favouring the interests of private enterprises engaged in conservation tourism and wildlife hunting, principally the Ortello Business Corporation, over the rights of indigenous peoples, particularly the Maasai pastoralists. The Government carried out the evictions in order to pave the way for the passage of the Wildlife Conservation Act of 2009, and the conversion of the Loliondo Game Control Area into a game reserve, a move which would further restrict the land use and occupancy rights of Maasai pastoralists.*"

In addition, the rapporteur noted how the safeguard of customary tenure rights of indigenous peoples necessitates additional care when balanced against public use requirements (*Ibid.*, §443):

"*Like other property interests, the property rights of indigenous peoples based on their traditional land and resource tenure may be subject to limitations for legitimate, non-discriminatory public purposes in accordance with law. However, […] a much higher threshold than ordinarily required must be met, and in the most compelling of circumstance, for justifying significant limitations on the rights to lands and resources of indigenous peoples, where those rights are associated with the most important and fundamental human rights, including the right to life, food, the right to self-determination, to shelter, and the right to exist as a people.*"

Not only was the Government requested to respond to the allegations regarding the excessive use of force during the eviction, but it was also

asked to explain why there was no record of any attempt to obtain the consent of the local Maasai tribes and to negotiate fair compensation with them.

An ethnological study, which analyses the impacts on the Maasai population of the recent wave of government-backed foreign private investments in the name of biodiversity conservation and safari tourism around the Serengeti National Park, suggests that the Loliondo example is not an isolated case (Gardner, 2016). The study argues that the negative effects of foreign land acquisitions are not limited to economic damages and violent evictions, as losing access to land also undermines the conservation of traditional knowledge and practices, ultimately putting the preservation of the whole cultural identity of the Maasai people at risk. At present, the Serengeti scramble between the Maasai and the central authorities still continues[5], with the Government stressing the importance of biodiversity conservation and sustainable management of natural resources for the country's future, and its opponents arguing that sustainable development cannot be achieved at the expense of the rights of indigenous populations. In general, the Tanzanian experience suggests that even a good legal framework, alone, might not be sufficient to guarantee FPIC and fair compensation for affected local communities on the ground. Interestingly, in this particular case, environmental reasons fulfil the public use requirement, ultimately justifying the taking of land and the use of force — with forcible evictions, displacement and dispossession of the Maasai population becoming an acceptable cost for the greater good.

[5] See, for instance, the open letter written by the Oakland institute to the Tanzanian Government. Available at: https://www.oaklandinstitute.org/open-letter-tanzanian-government-response-losing-serengeti (accessed on 1/Sept/2019).

Land conflicts and violent tumults, however, can also occur when some compensation is paid, and not only when — whatever the reason — the right to fair compensation is denied. In this sense, the *Lekki Free Trade Zone* case — which was extensively analysed by Tagliarino *et al*. (2018) — is a good example. As part of a wider effort to stimulate rapid industrialisation and economic growth, the Lagos State Government promoted the creation of the Lekki Free Trade Zone (LFTZ). Operations officially started in 2006, on a small portion of the total 16,500 ha area devoted to the development of the LFTZ (World Bank, 2012). Project developers — a private-public joint venture comprising the Lagos State Government and a consortium of Chinese companies[6] — claimed that the LFTZ would become the largest free trade zone in Africa. Strategically located on the Lekki peninsula, in the heart of the Gulf of Guinea and about 50 kilometres south-east of the city centre of Lagos, the LFTZ is set to become a key commercial, industrial and residential hub, connecting West Africa with the rest of the world.

In 2007, representatives of the developer consortium, including the Lagos State Government, signed a Memorandum of Understanding (MoU) with nine coastal and lagoon communities whose land was expropriated in order to allow the beginning of the first phase of the LFTZ development. The MoU promised a wide range of redress measures to the affected communities, including prompt and fair compensation, alternative land, job creation, healthcare and educational opportunities. Despite the solid legal foundations set by the MoU, eventually, the situation escalated into violence. The failure to comply with the obligations laid down in the MoU

[6] See the "*About us*" section of the official website of the *Lekki Free Zone Development Company*: https://lfzdc.org/about-us/ (accessed on 1/Sept/2019).

fuelled the discontent of members of the affected communities, reaching its peak on October the 12th, 2015. After a number of failed attempts at tabling a discussion with company officials, the protesters barricaded the entrance of the project site. Police intervention aimed at restoring public order precipitated the situation further, eventually leading to the death of Mr Disu — the then-managing director of Lekki Worldwide Investment Limited, a major stakeholder in the LFTZ project — by gunshot. The police and demonstrators accused one another of having fired the death blow and the government opened an investigation on the LFTZ case.

The Government Withe Paper that was compiled after this investigation explicitly acknowledged the *"failure to faithfully implement and honour"* the MoU (Lagos State Government, 2016, §4.1). The White Paper noted that the communities were granted only "*375 hectares of land instead of the 750 hectares agreed in the MoU*" (*Ibid.*, §5.1). Furthermore, the inquiry found that the community members received "*inadequate or no compensation at all*" (*Ibid.*, §7); that they were compensated "*for crops and buildings only but not for empty land*" (*Ibid.*, §7.1.4); that the scale used for calculating the value of the compensation "*was drawn up in 2000, over 10 years ago. That scale has by reason of inflation and depreciation of the Naira become obsolete and ought to be revised upwards*" (*Ibid.*, §7.2); and that "*beneficiaries of compensation were paid in cash and sometimes through proxies in circumstances which facilitate diversion of money, theft, embezzlement, manipulation and fraud*" (*Ibid.*, §8.2.1).

The LFTZ example suggests that violent land conflicts can erupt even when adequate compensation is promised to the communities and indigenous populations affected by LSLAs, especially when the compensation is not paid promptly and fully. Therefore, due process is not just a formal requirement for fair compensation, as the absence of it might contribute to disputes and conflicts. Another interesting element that

emerges from the Lekki case is that the alignment of interests between public authorities and private investors does not necessarily appear as a secretive form of collusion, but can take the shape of a formal partnership, such as a joint venture instead.

Finally, this case raises additional concerns regarding market-led valuation methods for compensation, as the market might not necessarily provide a valuation for all the aspects related to the loss of livelihood of populations whose land is at risk of expropriation. Even the full-market-value rule might be unsuitable in many developing countries, not only because the real estate and land markets do not account for intangible elements — such as the spiritual attachment to specific land sites or other cultural values that indigenous populations and local communities attribute to their land — but also because these markets are often characterised by failures and imperfections.

3. The Fair Compensation Game in the context of LSLAs

3.1. Preliminary steps: defining fair compensation

This section presents an original model for fair compensation, based on the findings that emerged from the extensive — theoretical and practical — review of the existing literature presented above.

Before entering into the specifics of the model, it is necessary to operationalise the fair compensation concept, providing the definition that will be used in this context. In this essay I define fair compensation as *compensation that at least restores the livelihoods of affected people*, in line with the definition proposed by Galgani *et al*. (2016) in their publication titled "*Towards a protocol on fair compensation in cases of legitimate land tenure changes*". Compared to traditional market-value and income approaches, I

deliberately decided to put the emphasis on *livelihood*, because it would be more appropriate in the specific LSLA context, for at least two reasons which I believe are rather compelling.

The first reason is that the concept of livelihood allows for the consideration of values that are typically not internalised in market prices — and we saw in the previous section how intangible elements are important components of fair compensation, especially when it comes to indigenous people and local communities holding customary and informal rights over land. Current poverty reduction strategies in low and middle-income countries — which represent by far the regions most targeted by LSLAs — typically revolve around the concept of *sustainable livelihood*. According to Krantz (2001, p.1):

"*The concept of Sustainable Livelihood (SL) is an attempt to go beyond the conventional definitions and approaches to poverty eradication. These had been found to be too narrow because they focused only on certain aspects or manifestations of poverty, such as low income, or did not consider other vital aspects of poverty such as vulnerability and social exclusion. It is now recognized that more attention must be paid to the various factors and processes which either constrain or enhance poor people's ability to make a living in an economically, ecologically, and socially sustainable manner.*"

The second argument is related to the peculiar nature of tenure systems and to the variety of market failures that are typical in most parts of the developing world. The segmented nature of tenure systems — where formal, informal and customary rights over land coexist, often without a clear set of principles for their regulation and recognition — and weak land administrations — with incomplete cadastral records and tight budget constraints — undermine the very existence of land markets. In these cases, the use of appraisal criteria based on market prices — as pointed out in the

discussion of the LFTZ case — might be unsuitable and lead to major inaccuracies and miscalculations.

3.2. The LSLA fair compensation game

This theoretical contribution is structured as a sequential game and involves three players, namely a foreign investor (INV), which maximises profits; the Government of the destination country (GOV), which maximises its own revenue from the proposed investment; and the local community (COM), which maximises its land-based livelihood. Before the game starts the investor has already compared different investment opportunities and has identified the most suitable concession area for the planned investment. The community affected by the land deal holds formally recognised customary rights over the whole concession area. The model assumes perfect and symmetric information among the players, so that all payoffs are known, and all actions are observable. *Table 6* summarises the key elements of the game.

***Table 6** – Overview of the fair compensation game*

Player	Payoff	Strategy space	Decision Node
Investor (INV)	π_{INV}	D or back out	①
Government (GOV)	π_{GOV}	Select k or back out	②
Community (COM)	π_{COM}	Accept or fight	③
Nature	—	$0 \leq q \leq 1$	④

Source: Author's elaboration.

The sequential game is played in the following way. The investor moves first, choosing whether or not to make an offer d per unit of land to the government for a fixed area of land $\bar{a}$, such that the total value of the

offer is $D = d\bar{a}$. If the investor does not make an offer, the game ends and both the government and investor get a zero-payoff, whilst the payoff to the community is $l\bar{a}$ — where l is the livelihood value to the community per unit area of land. If the investor does make an offer, the government then moves. It chooses whether or not to accept the offer. If the government does not accept, the game ends, and the payoffs are as before. If the government accepts the offer instead, it then chooses the compensation rule for the community. This rule comprises the share of D that goes to the community, $k\bar{a}$, and the share that the government keeps, $t\bar{a}$, such that:

$$d = t + k \quad [1]$$

And therefore:

$$D = (t + k)\bar{a} \quad [2]$$

The community then moves. It has a dichotomous choice whether to accept the government's offer of $k\bar{a}$, in exchange for the loss of land, or to fight. Fighting imposes a cost C_{Fi} on each player i. If the community chooses fight, they win with probability q, in which case the community keeps the land, all players incur fighting costs, and no external investment occurs. If the community loses, all parties face the cost of fighting once again, but the community loses the land upon the payment of the proposed compensation $k\bar{a}$ and the planned investment goes ahead. The sequencing of the game — including each player's choice set and their payoffs — is described in *Figure 12*.

The optimisation for each of the three players is presented here. The investor maximises the expected profits of the proposed land-based project. When the investment goes through, the investor profit is the difference between the revenues $p\bar{a}$ — where p is the exogenous market price of the (fixed and constant) output per unit area of land — and the costs $c\bar{a}$ —

where c is the development and production cost per unit area — and $d\bar{a}$ — which can be seen as the total price to be paid to the government and to the local community for the land concession. In addition, the investor faces the cost of fighting ($-C_{FI}$) when the community opposes the deal and fights.

$$\max_d E\{\pi_{INV}\} = \max_d \begin{cases} 0 & \text{If INV or GOV backs out} \\ (1-q)(p\bar{a} - c\bar{a} - d\bar{a}) - C_{FI} & \text{If COM fights } (\delta = 0) \\ p\bar{a} - c\bar{a} - d\bar{a} & \text{If COM accepts } (\delta = 1) \end{cases} \quad [3]$$

The government maximises its revenue from the land concession required for the project. If the investment goes ahead, the government gains $D = d\bar{a}$ from the investor and gives a share $k\bar{a}$ to the community. Similar to the investor, it also incurs a cost C_{FG} if the community chooses to fight.

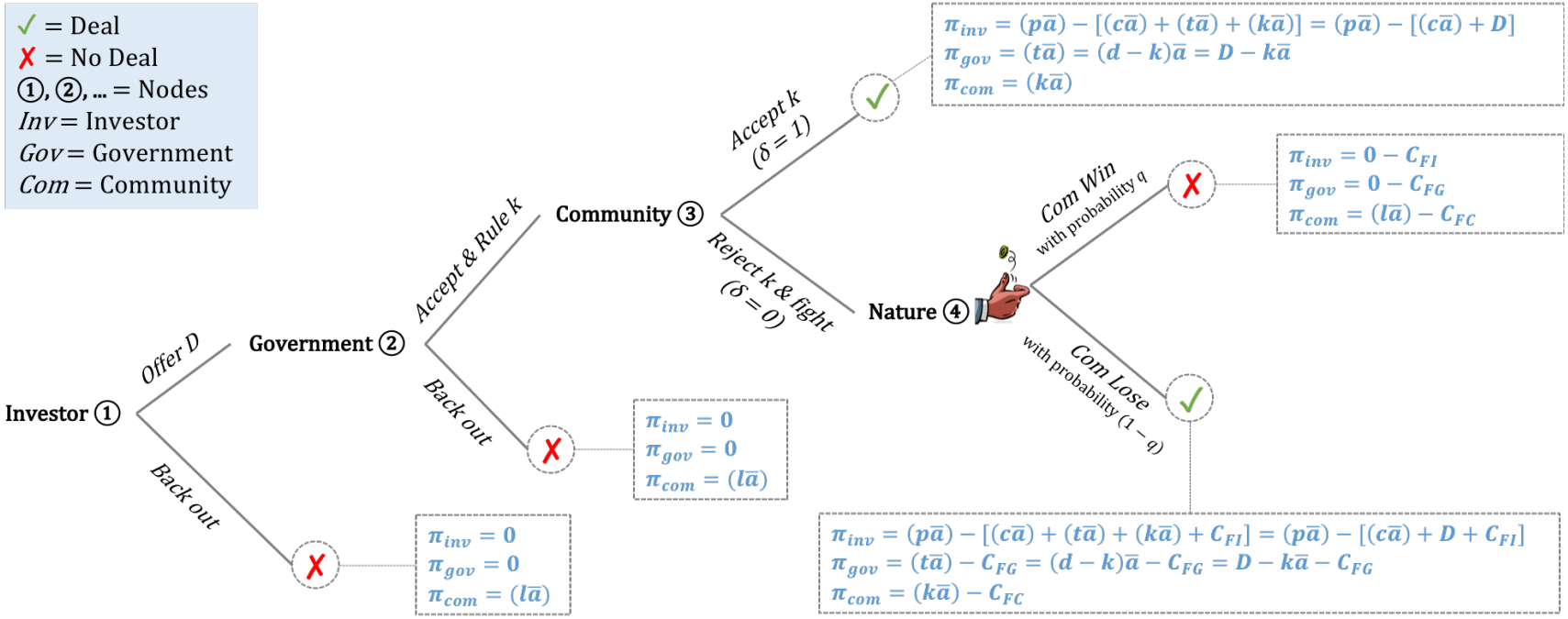
$$\max_k E\{\pi_{\text{GOV}}\} = \begin{cases} 0 & \text{If INV or GOV backs out} \\ (1-q)(D - k\bar{a}) - C_{FG} & \text{If COM fights } (\delta = 0) \\ D - k\bar{a} & \text{If COM accepts } (\delta = 1) \end{cases} \quad [4]$$

The community only makes its play if the investor chooses to make an offer and the government chooses to accept it. The community maximises its expected land-based livelihood, choosing whether to accept the government's offer ($\delta = 1$) or fight ($\delta = 0$). Formally, we can write this as follows:

$$\max_\delta E\{\pi_{COM}\} = \max_\delta \{\delta(ka) + (1-\delta)[q(l\bar{a} - C_{FC}) + (1-q)(k\bar{a} - C_{FC})]\} \quad [5]$$

In [5], the first term on the right-hand side [$\delta(ka)$] is the compensation paid to the community if it acquiesces; the second term $(1-\delta)[q(l\bar{a} - C_{FC})]$ is the payoff they would get if they fight and win ($\delta = 0 \; and \; 0 < q \geq 1$); the third term $(1-q)(k\bar{a} - C_{FC})$ is the community payoff, if they fight and lose the battle ($\delta = 0 \; and \; 0 \leq q > 1$) — in which case the community faces the cost of fighting C_{FC}, but is also compensated with $k\bar{a}$, that is the amount of compensation offered by the government in the first place.

Figure 12 *– The LSLAs fair compensation game tree*



Source: Author's elaboration.

3.3. *Solving the LSLA fair compensation game*

As for most of such sequential games, we solve the LSLA fair compensation game through backwards induction. The risk neutral community accepts the government's offer if:

$$k\bar{a} \geq q(l\bar{a} - C_{FC}) + (1 - q)(k\bar{a} - C_{FC}) \quad [6]$$

Thus:

$$k \geq l - {}^{C_{FC}}/_{q\bar{a}} \quad [7]$$

This defines the minimum compensation that the government must offer the community to avoid a land conflict — that is, $k^* = (l - C_{FC}/q\bar{a})$. Therefore, when the government receives an offer from the investor such that its own return from the investment is non-negative, its own optimisation strategy, which is based upon the selection of k, can be written as:

$$\max_k E\{\pi_{\text{GOV}}\} = \left\{0, l - {}^{C_{FC}}/_{q\bar{a}}\right\} \quad [8]$$

Looking at the government's optimisation equation, it is clear that, if the government chooses to accept the investor's offer, the government's optimal choice is either $k = k^*$ or $k = 0$. The former (k^*) is the minimum amount that the government must pay in compensation in order for the community to vacate the land peacefully. The latter ($k = 0$) is the (in)famous zero-compensation. Notably — given that $0 \leq k^* \leq l - C_{FC}/q\bar{a}$ — the government can offer a zero-compensation and still avoid a fight, when the community's costs of fighting are sufficiently high and their probability of winning is sufficiently low. Formally, this can be written as follows:

$$C_{FC}/_{q} \geq l\bar{a} \quad [9]$$

The government would never offer more than k^*, because the community's reaction would not change, while the government's return would fall. When k^* is strictly positive ($k^* > 0$), then offering a zero-compensation would trigger a land conflict. Thus, the risk neutral government chooses $k = k^*$, with $k^* > 0$, if:

$$D - k^*\bar{a} \geq (1-q)D - C_{FG} \Longrightarrow k^* \leq {}^{C_{FG}}/_{\bar{a}} + {}^{qD}/_{\bar{a}} \quad [10]$$

Otherwise the government chooses the zero-compensation approach, that is offering $k = 0$ to the community, knowing that they will fight.

Finally, we consider the investor — whether he or she makes an offer, and the actual amount of this offer. Given that there is no cost attached to making an offer, (as we assumed that there are no transaction costs) and that there is full and symmetric information in this game, the investor would only make an offer when she knows for certain that the government will accept it. The government accepts the offer when its expected returns are greater than zero — and therefore greater than the payoff that the government would get from rejecting the offer and cancelling the investment. Hence, the investor makes an offer *D* sufficiently high for the government's expected revenues to be non-negative, and sufficiently low for its own returns to be non-negative.

If the government offers k^*, the community accepts, and the investor's profits are:

$$p\bar{a} - c\bar{a} - d\bar{a} = p\bar{a} - c\bar{a} - D \quad [11]$$

For the investor is optimal to make an offer when:

$$p\bar{a} - c\bar{a} - D \geq 0 \quad [12]$$

Which implies:

$$D \leq p\bar{a} - c\bar{a} \quad [13]$$

Recalling the expression of D in *Equation 2* and knowing that in this case the government will offer exactly k^*, we have:

$$t \leq p - c - k^* \quad [14]$$

If the government offers a zero-compensation to the community — assuming that the condition in [9] does not stand — all players face the costs of fighting and the investor's expected profit becomes:

$$q(p\bar{a} - c\bar{a} - D) - C_{FI} \quad [15]$$

It then follows that [15] must be greater than zero too for the investor to choose to make an offer. Thus:

$$D \leq p\bar{a} - c\bar{a} - {}^{C_{FI}}/_{q} \quad [16]$$

Recalling once again *Equation 2* and keeping in mind that we are now considering the case in which the government would offer only a zero-compensation to the local community affected by the deal, we have:

$$t \leq p - c - {}^{C_{FI}}/_{q\bar{a}} \quad [17]$$

In general, the greater the investor's offer (D), the lower the profit will be — whether the community fights or not. Certainly, the investor's profits will always be greater for any given D if the community does not fight — that is, when the government offers them k^* as a compensation. However, if the investor wants the government to make an offer of k^*, the initial offer (D) must be sufficiently high. Therefore, the investor chooses between the

following options: no offer and zero profits; the minimum level of D that leads the government to offer k^* and avoid a land conflict, with a payoff of $(p\bar{a} - c\bar{a} - D)$ for the investor; or the minimum level of D that leads the government to accept the deal and offer a zero compensation to the villagers, which would trigger the fight and give the investor a payoff of $(1 - q)(p\bar{a} - c\bar{a} - D) - C_{FI}$.

When the proposed land-based investment is profitable, the investor's dominant strategy to maximise profit would be to minimise D, thus offering the government just enough to make it better off compared to the no-deal situation, in which the government gets a zero-payoff. It then follows that the investor — in pursuing his effort to minimise D — will also minimize t, given the optimal choice of the government between k^* and $k = 0$. Therefore, whenever the investor makes an offer for the land concession, the government's share of that offer D, will always be set equal to $t \to 0^+$. Furthermore, in order to make an offer such that the fight will be avoided (the government would offer k^*) and the land deal will go through, the following condition must hold:

$$k^* \leq q(p - c - t) + {}^{CFI}/_{\bar{a}} \qquad [18]$$

In this case, the investor would offer just above k^*, and precisely $D = (k^* + t)\bar{a}$, with $t \to 0^+$. Otherwise, if k^* is greater than the right-hand side term in [18], provided that $k^* > 0$ and that π_{INV} is non-negative, the investor would offer just above zero, that is $D = t\bar{a}$, with $t \to 0^+$ and $k = 0$.

4. Discussion

Notwithstanding its inherent simplicity, the model for fair compensation in LSLAs presented in this research provides a number of significant insights, and I will now discuss the most important ones.

The first important consideration is that the interplay between the three players in the LSLA fair compensation game is complex, despite the stringent assumptions — such as full and symmetric information — and the limited choice set that is given to each player by the game design. The local community affected by the deal wishes to at least maintain their livelihood. The government wants to maximise the public revenue deriving from the land concession. The profit-maximising investor wants to pay as little as possible for the land concession. However, too high an offer from the investor erodes the potential profits, whilst too low an offer can ultimately result in a costly land fight or in the cancellation of the investment all together. The model captures well the fact that each player — each a key actor typically involved in LSLAs — pursues an individual interest, which might collide with the ambitions of other parties involved.

The specific settings of the proposed game also reproduce another important element that emerged from the review of the existing literature: local communities and indigenous populations affected by LSLAs typically have limited bargaining power in the negotiation process and their participation tends to be quite limited. This is true even considering that the game grants the right to reject the deal to the local populations, together with full and complete information about the whole negotiation process. However, the game also suggests that these conditions are not sufficient, alone, for the actual achievement of fair compensation. Indeed, the community cannot negotiate the compensation in the model and is given

only a dichotomous choice: either they can accept the compensation amount set by the government pacifically, or they can reject it and trigger a land conflict. The *right to consent* is inextricably related to the *right to reject*. If the former is frictionless while the latter comes at a cost, then there is space for strategic behaviours and power imbalances, as the fair compensation right is, in practice, weakened.

Another important contribution of the game is that it provides a '*rational justification*' for the proliferation of land conflicts that is often observed in conjunction with LSLAs. Even if the fight comes with additional costs for all players — and, arguably, with a deadweight loss for the society as a whole — the land conflict outcome can be seen as the consequence of the rational optimisation behaviour of the different actors. Intuitively, land conflicts and land disputes are the result of the different — and often opposed — interests of the players, especially in a context where the actual opportunity-cost of a land conflict is not the same for each player. When public authorities have discretional powers in setting the compensation amount, and when the opportunity cost of fighting is relatively low for the private investor and for the government and relatively high for the community, then the land conflict becomes a likely consequence of LSLAs.

Now, the identification of a '*rational justification*' for the proliferation of land conflicts in LSLAs leads to the next important contribution of this work. The game highlights a direct connection between the fight and the zero-compensation outcome, providing new evidence for the controversial debate that originated from the BRS model. The zero-compensation result is not rejected by the model and, under specific circumstances, it is the dominant strategy for the investor and the government. If the zero-

compensation might not be an efficient result from the perspective of the society as a whole, as it will lead to a conflict with additional costs for all players, it can still be the best option to maximise the payoff for some of the players.

In this sense, the game also offers a '*rational justification*' for the lack of compensation for local populations affected by LSLAs that is often observed on the ground — despite the generalised consensus around FPIC and fair compensation and the legal provisions that exist at the national and international level. For instance, the Loliondo land dispute which we have previously discussed can be framed in light of the zero-compensation outcome, with the government offering no compensation to the local population and the situation escalating to violence. On the one hand, the social, economic and political marginality of the semi-nomadic pastoral Maasai community reflects a low probability of them winning a land conflict, with relatively high costs associated with opposing the land deal. Such a situation, on the other hand, becomes an incentive for the investor and the local authorities to provide no compensation and start a land conflict that they can easily win.

Notably, the model also suggests that the government will offer the community a compensation $k = (0, k^*)$ that is typically less than the livelihood value per-unit area of the land (l) — unless the community can reject the deal (and fight) with a zero opportunity cost. Intuitively, the players discount the fair compensation value that the community would be entitled to, by a factor representing the opportunity cost of fighting for the local population. Formally, when the government offers a non-zero compensation (k^*) to the community, this can be written as:

$$k^* = l - C_{FC}/q\bar{a}$$

As such, k^* can be interpreted as the maximum achievable value (per unit of land area) for fair compensation. This sum ultimately depends on the pre-deal livelihood of the local community (l), but also on their cost of fighting (C_{FC}), on the probability of winning the dispute (q) and on the extension of the concession area ($\bar{a}$). *Coeteris paribus*, the greater the community's costs of fighting and the lower their probability of winning, the lower the non-zero compensation offer (k^*) will be. This implies that, in most cases, the community will be offered a fair compensation that does not restore their pre-deal livelihood ($k^* < l$), so that the compensated populations will always be worse off unless they can reject the deal at zero cost. Notwithstanding the adoption of a fair compensation definition based on livelihood restoration, the model suggests that there is an incentive to undercompensate local communities, even in those situations where the community accepts the deal and the compensation offer peacefully. At the same time, the LSLA fair compensation game rejects the overcompensation of local populations as a possible outcome.

In this sense, the model reflects the evidence emerging from the empirical LSLA literature, which provides a number of examples where the actual payment of fair compensation turned out to be incomplete or insufficient, while virtually offering no evidence in support of the existence of overcompensation issues. This result also reinforces the idea that, in the specific context of LSLAs, the excessive use of the eminent domain power by public authorities is a greater threat to the achievement of fair compensation, compared to other traditional issues on the landholder side, such as holdouts and moral hazard.

The LFTZ case, for instance, is a good example of how this theoretical result —that is, the existence of incentives to undercompensate affected

populations — might become a tangible outcome in the real world. The coastal communities whose land was expropriated for the development of the LFTZ project willingly accepted the what they were promised under the terms of the MoU, but they only received a fraction of the money, the alternative land and the investment shares that they were promised as compensation. Arguably, in this particular case, the incentive to only partially restore the livelihood of affected communities was even stronger, the Lagos State Government being a direct shareholder of the Lekki Free Zone Development Company (LFZDC).

The theoretical framework built through the fair compensation game in LSLAs already offers a number of original and important insights, providing a solid background for the understanding of the interactions between fair compensation, land conflicts and transnational land deals. However, this work is just the starting point for further research in this field. Further refinements and variations of the proposed game can help to answer other important questions that were not addressed directly in this research.

For instance, *what would happen if the discretional power of the government to rule the compensation amount was limited by law, for instance by setting the level of compensation mandatorily? What would be the opportunity cost of ensuring such mandatory fair compensation in terms of cancelled investment and reduction of public revenue?* Additionally, *what would be the consequence of not looking at the community just as one single player? Would this shed some light on elite capture mechanisms within the community?* Moreover, *what would happen if the cost of fighting were not known ex ante? Would uncertainty over fighting costs and other parameters lead to different strategies and outcomes?*

5. Conclusions

This work has framed the well-known issue of fair compensation into the new and peculiar context of LSLAs. The implications of the *commodification* of land embedded in transnational land deal are complex and diverse, but opportunities and risks related to this phenomenon are often seen as two sides of the same coin. On the one hand, LSLAs bring new investments and prospects for both global and local development. On the other hand, however, this new wave of land-based investments comes at a cost, which is often paid by the most vulnerable population groups.

National and international legal frameworks provide tools — namely the FPIC (in the context of voluntary tenure changes) and fair compensation (in case of compulsory land acquisitions) — that have the potential to limit and prevent some of the negative consequences of LSLAs, including land conflicts, forced evictions and dispossession. However, the existing evidence suggests that these tools often remains only on paper, failing to protect the rights of indigenous populations and local communities affected by LSLAs.

In order to understand and tackle the causes of this failure, I built a simple yet original theoretical framework, structured as a three-player sequential game for fair compensation in LSLA settings. The game is designed in a way that grants full and symmetric information to all players, including the local community. The definition of fair compensation that is used in the game recalls existing national and international standards, as it implies compensation that at least restores the livelihood of the affected population.

The game suggests that the interaction among the three players — namely the foreign investor, the local community and the host-country government — is not trivial, even under the assumption of full and complete information. The different and sometimes divergent nature of the interests of the players is well captured by the game settings and this element ultimately contributes to explaining the failure of fair compensation mechanisms and the outbreak of land conflicts that is often observed in LSLAs. Indeed, under specific circumstances, zero-compensation and land conflicts are the rational consequences of each player's optimisation process — even if the land conflict is in principle modelled as a suboptimal outcome, with additional losses for all actors.

The game also suggests that there is the tangible risk to underestimate the value of fair compensation, while overcompensation does not appear to be an issue. When the game ends with the community peacefully accepting the fair compensation that they are offered, the actual amount that they receive is lower compared to their livelihood before the deal — unless they can reject the deal at no cost. In other words, when fair compensation is granted, the value of such compensation is discounted by the community's opportunity cost of opposing the deal and starting a fight. Furthermore, the higher the opportunity cost of the land conflict for the local population, the lower the fair compensation offer will be.

For the affected community, the right to accept a LSLA-deal is a necessary but not sufficient condition for the achievement of fair compensation that fully restores their livelihood. When the right to consent is granted, but the rejection of LSLA projects comes at a cost, this cost is directly deducted from the livelihood of local communities. Sadly, the more

vulnerable and marginal these communities, the greater their loss of livelihood will be.

Despite the intrinsic focus on LSLAs and fair compensation, the scope of this study can be further extended. Indeed, the original approach developed here can contribute more generally to framing and analysing both equity and efficiency issues arising from the increasing number of conflicts over the control of the limited natural resources that our planet has to offer.

6. References

Anaya, J. (2010). *Report by the Special Rapporteur on the situation of human rights and fundamental freedoms of indigenous people - Cases examined by the Special Rapporteur (June 2009 – July 2010) - A/HRC/15/37/Add.1*.

Arezki, R., Deininger, K., & Selod, H. (2015). What drives the global "land rush"? *World Bank Economic Review*, *29*(2), 207–233. Retrieved from: https://doi.org/10.1093/wber/lht034.

Baumgartner, P., Von Braun, J., Abebaw, D., Müller, M., & Muller, M. (2015). Impacts of Large-scale Land Investments on Income, Prices, and Employment: Empirical Analyses in Ethiopia. *World Development*, *72*, 175–190. https://doi.org/10.1016/j.worlddev.2015.02.017.

Behrman, J., Meinzen-Dick, R., Quisumbing, A., Peterman, A., & Osorio, M. (2012). Gender implications of large-scale land deals. *Journal of Peasant Studies*, *39*(1), 49–79. https://doi.org/10.1080/03066150.2011.652621.

Benjaminsen, T. A., Goldman, M. J., Minwary, M. Y., & Maganga, F. P. (2013). Wildlife Management in Tanzania: State Control, Rent Seeking and Community Resistance. *Development and Change*, *44*(5), 1087–1109. https://doi.org/10.1111/dech.12055.

Blume, L., Rubinfeld, D. L. ., & Shapiro, P. (1984). The Taking of Land: When Should Compensation be Paid? *The Quarterly Journal of Economics*, *99*(1), 71–92. Retrieved from: http://www.jstor.org/stable/1885721.

Coase, R. (1960). The Problem of Social Cost. *Law and Economics*, *3*(1), 1–44. https://doi.org/10.1086/466560.

Cotula, L. (2013). The international political economy of the global land rush: A critical appraisal of trends, scale, geography and drivers. In B. White, S. M. Borras, R. Hall, I. Scoones, & W. Wolford (Eds.), *The New Enclosures: Critical Perspectives on Corporate Land Deals* (pp. 43–74). Abingdon, New York, Montreal: Routledge. Retrieved from: https://doi.org/10.4324/9781315871806.

Davis, K. F., D'odorico, P., & Rulli, M. C. (2014). Land grabbing: a preliminary quantification of economic impacts on rural livelihoods. *Population and Environment*, *36*(2), 180–192. Retrieved from: https://doi.org/10.1007/s11111-014-0215-2.

De Maria, M. (2015). Trading the Untradeable: A Gravity Model for Large-Scale Land Acquisitions. Paper Presented at the 2015 *World Bank Conference on Land and Poverty*, Washington DC. Retrieved from: https://www.researchgate.net/publication/330360585_Trading_the_Untradeable_a_Gravity_Model_for_Large-Scale_Land_Acquisitions.

De Maria, M. (2019). Understanding Land as a commodity in the Context of Large-Scale Land Acquisitions: a Brief History of Land in Economics. *Land*, 8(1), 2-15. Retrieved from: https://doi.org/10.3390/land8010015.

De Schutter, O. (2011). The Green Rush: The Global Race for Farmland and the Rights of Land Users. *Harvard Int'l. Law Journal*, *52*(2), 503–559. Retrieved from: https://www.researchgate.net/publication/265411418-The_Green_Rush_The_Global_Race_for_Farmland_and_the_Rights_of_Land_Users.

Deininger, K., Byerlee, D., Lindsay, J., Norton, A., Selod, H., & Stickler, M. (2010). *Rising Global Interest in Farmland*. K. Deininger & D. Byerlee (Eds.), Agriculture and Rural Development Series, Washington, DC: The World Bank: https://doi.org/10.1596/978-0-8213-8591-3.

Dell'Angelo, J., D'Odorico, P., Rulli, M. C., & Marchand, P. (2017). The Tragedy of the Grabbed Commons: Coercion and Dispossession in the Global Land Rush. *World Development*, *92*, 1–12. https://doi.org/10.1016/j.worlddev.2016.11.005.

Duke, J. M. (2014). Eminent Domain and the Land Assmbly Problem. In J. Duke & J. Wu (Eds.), *The Oxford Handbook of Land Economics* (pp. 698–722). New York: Oxford University Press.

Ely, J. (1992). "That Due Satisfaction May be Made:" The 5th Amend and the Origins of the Compensation Principle. *The American Journal of Legal History*, *36*(1), 1–18.

Epstein, R. A. (1985). *Takings: private property and the power of eminent domain*. Boston: President and Fellows of Harvard College.

FAO. (2012). *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*. Rome: FAO. http://www.fao.org/docrep/016/i2801e/i2801e.pdf.

Farber, D. A. (1992). Public Choice and Just Compensation. *Constitutional Commentary*, *9*(2), 279–308.

Federal Court of Australia (2016). *Griffiths v Northern Territory of Australia - No 3, 2016, FCA 900*.

Fischel, W. A., & Shapiro, P. (1989). A Constitutional Choice Model of Compensation for Takings. *International Review of Law and Economics*, *9*, 115–128.

Full Court of the Federal Court of Australia (2017). *Northern Territory of Australia v Mr A. Griffiths (Deceased) and Lorraine Jones of beahlf of the Ngaliwurru and Nungali Peoples - 2017, FCAFC, 106*.

Galgani, P., de Adekhart Toorop, R., Verstappen, L., de Groot Ruiz, A., & Van Maanen, E. (2016). *Towards a protocol on fair compensation in case of land tenure changes. Input document to a participatory process.* Gorningen: True Price and University of Groningen. Retrieved from: https://landportal.org/library/resources/narcisrugoaipurerugnlpublications68804717-385e-4bc1-8b8a-de9305e3faf8/towards.

Gardner, B. (2016). *Selling the Serengeti : the Cultural Politics of Safari Tourism.* University of Georgia Press.

Ghatak, M., & Mookherjee, D. (2014). Land acquisition for industrialization and compensation of displaced farmers. *Journal of Development Economics*, *110*, 303–312. https://doi.org/10.1016/j.jdeveco.2013.01.001.

Hall, R., Edelman, M., Borras, S. M., Scoones, I., White, B., & Wolford, W. (2015). Resistance, acquiescence or incorporation? An introduction to land grabbing and political reactions 'from below.' *The Journal of Peasant Studies*, *42*(3–4), 467–488. Retrieved from: https://doi.org/10.1080/03066150.2015.1036746.

Hermalin, B. E. (1995). An Economic Analysis of Takings. *Journal of Law, Economics, & Organization*, *11*(1), 64–86. Retrieved from: http://www.jstor.org/stable/765070.

High Court of Australia. (2019). *Northern Territory v Mr A. Griffiths (deceased) and Lorraine Jones on behalf of the Ngaliwurru and Nungali Peoples - 2019, HCA, 7*.

Huggins, C. (2011). *Commercial Pressures on Land - A historical perspective on the "Global Land Rush"*. Rome: CIRAD, ILC. Retrieved from: https://www.landcoalition.org/sites/default/files/documents/resources/HUGGINS_History_web_11.03.11.pdf

IFC. (2012a). *Guidance Note 5: Land Acquisition and Involuntary Resettlement*. International Finance Corporation (IFC), World Bank. Retrieved from: https://www.ifc.org/wps/wcm/connect/61320ff7-0e9a-4908-bef5-5c9671c8ddfd/GN5English2012.pdf?MODAJPERES&CVIDmeSEhRH.

IFC. (2012b). *Performance Standard 5. Land Acquisition and Involuntary Resettlement Overview of Performance Standards on Environmental and Social Sustainability*. International Finance Corporation, World Bank. https://www.ifc.org/wps/wcm/connect/75de96d4-ed36-4bdb-8050-400be02bf2d9/PS5_English_2012.pdf?MOD=AJPERES&CVIDjqex59b.

Kachika, T. (2010). *Land grabbing in Africa: A review of the impacts and the possible policy responses*. Oxfam International.

Krantz, L. (2001). *The Sustainable Livelihood Approach to Poverty Reduction - An Introduction*. Swedish International Development Cooperation Agency (SIDA).

Lagos State Government. (2016). *Government Write Paper on the Report of the Tribunal of Inquiry into the Cause of Civil Disturbances at the Lekki Free Trade Zone on 12 October, 2015*. Lagos, Nigeria.

Liu, P. (2014). *Impacts of foreign agricultural investment on developing countries: evidence from case studies*. FAO Commodity and Trade Policy Research, WP No.47. Retrieved from: http://www.fao.org/3/a-i3900e.pdf.

Meyer, G. (2016). The Great Land Rush : Investors face conflict in quest for farms. Canadian pension fund's purchase led to an outcry. *Financial Times*. Retrieved from: https://www.ft.com/content/84a646a0-dedc-11e5-b67f-a61732c1d025.

Miceli, T. J. (2016). The Cost of Kelo: Property Taxes, Public Use, and Subjective Value. *Public Finance Review*, *44*(4), 500–522. https://doi.org/10.1177/1091142115595914.

Miceli, T. J. ., & Segerson, K. (1994). Regulatory Takings: When Should Compensation Be Paid? *The Journal of Legal Studies*, *23*(2), 749–776.

Miceli, T. J., & Segerson, K. (2007). A bargaining model of holdouts and takings. *American Law and Economics Review*, *9*(1), 160–174. https://doi.org/10.1093/aler/ahm005.

Miceli, T. J., & Segerson, K. (2014). Regulatory Takings. In J. M. Duke & J. Wu (Eds.), *The Oxford Handbook of Land Economics* (pp. 668–697). New York: Oxford University Press.

Ndi, F., & Batterbury, S. (2017). Land Grabbing and the Axis of Political Conflicts: Insights from Southwest Cameroon. *Africa Spectrum*, *52*(1), 33–63. https://doi.org/10.1177/000203971705200102.

Nolte, K., Chamberlain, W., & Giger, M. (2016). *International Land Deals for Agriculture. Fresh insights from the Land Matrix: Analytical Report II*. Bern, Montpellier, Hamburg, Pretoria: CDE, CIRAD, GIGA, University of Pretoria. Retrieved from: https://doi.org/10.7892/boris.85304.

Nolte, K., & Ostermeier, M. (2017). Labour Market Effects of Large-Scale Agricultural Investment: Conceptual Considerations and Estimated Employment Effects. *World Development*, *98*, 430–446. Retrieved from: https://doi.org/10.1016/J.WORLDDEV.2017.05.012.

Nolte, K., & Voget-Kleschin, L. (2014). Consultation in large-scale land acquisitions: An evaluation of three cases in mali. *World Development*, *64*, 654–668. https://doi.org/10.1016/j.worlddev.2014.06.028

Nosal, E. (2001). The taking of land: Market value compensation should be paid. *Journal of Public Economics*, *82*(3), 431–443. Retrieved from: https://doi.org/10.1016/S0047-2727(00)00146-8.

Parliament of Australia (1993). *Native Title Act 1993 - No. 110, 1993,* amended and in force on 22 June 2017.

Parliament of India (2013). *The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act - No. 77-C of 2011*.

RRI. (2015). *Who Owns the World's Land? A global baseline of formally recognized indigenous and community land rights. Washington, DC: RRI.* Retrieved from: http://www.rightsandresources.org/wp-content/uploads/GlobalBaseline_web.pdf.

Schoneveld, G. C. (2017). Host country governance and the African land rush: 7 reasons why large-scale farmland investments fail to contribute to sustainable development. *Geoforum*, *83*, 119–132. Retrieved from: https://doi.org/10.1016/J.GEOFORUM.2016.12.007

Supreme Court of the United States (2005). *Kelo v City of New London - 545 U.S. 469* [2005].

Tagliarino, K. N., Bununu, A. Y., Micheal, O. M., De Maria, M., & Olusanmi, A. (2018). Compensation for Expropriated Community Farmland in Nigeria: An In-Depth Analysis of the Laws and Practices Related to Land Expropriation for the Lekki Free Trade Zone in Lagos. *Land* , Vol. 7. Retrieved From: https://doi.org/10.3390/land7010023.

Tagliarino, N. (2017). The Status of National Legal Frameworks for Valuing Compensation for Expropriated Land: An Analysis of Whether National Laws in 50 Countries/Regions across Asia, Africa, and Latin America Comply with International Standards on Compensation Valuation. *Land*, *6*(2), 37. https://doi.org/10.3390/land6020037.

Tagliarno, N. K. (2016). *Encroaching On Land And Livelihoods: How National Expropriation Laws Measure Up Against International Standards*. World Resources Institute (WRI) Working Paper. Washington, DC.

The Oakland Institute. (2013). *Unheard Voices: The Rights Impact of Land Investments on Indigenous Communities in Gambella*. Retrieved from: http://www.oaklandinstitute.org/sites/oaklandinstitute.org/files/OI_Report_Unheard_Voices.pdf.

Tura, H. (2018). Land rights and land grabbing in Oromia, Ethiopia. *Land Use Policy*, *70*, 247–55. https://doi.org/10.1016/j.landusepol.2017.10.024.

Twomey, H. (2014). *Displacement and dispossession through land grabbing in Mozambique The limits of international and national legal instruments*. University of Oxford, Refugee Studies Centre Working Paper Seroes, No. 101. Retrieved from: https://www.rsc.ox.ac.uk/files/files-1/wp101-displacement-dispossession-land-grabbing-mozambique-2014.pdf.

UN. (2007). *United Nations Declaration on the Rights of Indigenous Peoples - A/RES/61/295*.

United Republic of Tanzania (1998). *The Wildlife Policy of Tanzania*.

United Republic of Tanzania (1999). *The Land Act*.

United Republic of Tanzania (1999). *The Village Land Act*.

United Republic of Tanzania (2001). *Land (Assessment of the Value of Land for Compensation) Regulations*.

United Republic of Tanzania (2001). *The Village Land Regulations*.

United Republic of Tanzania (2007). *The Wildlife Policy of Tanzania*.

Vermeulen, S., & Cotula, L. (2010). Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa. *Journal of Peasant Studies*, *37*(4), 899–916. https://doi.org/10.1080/03066150.2010.512463.

Wily, L. A. (2012). Enclosure revisited: Putting the global land rush in historical perspective. In J. A. Allan, M. Keulertz, S. Sojamo, & J. Warner (Eds.), *Handbook of Land and Water Grabs in Africa - Foreign Direct Investment and Food and Water Secuirity* (pp. 11–23), Abingdon, New York: Routledge. https://doi.org/10.4324/9780203110942-2.

Woods, K. (2015). *Commercial Agriculture Expansion in Myanmar: Links to Deforestation, Conversion Timber, and Land Conflicts.* Washington, D.C., London: Forest Trend and UK aid. Retrieved from: https://www.forest-trends.org/wp-content/uploads/2015/03/ConversionTimber.

World Bank. (2012). *An Overview of Six Economic Zones in Nigeria: Challenges and Opportunities - World Bank Policy Note, No. 103442*. Retrieved from: https://openknowledge.worldbank.org/bitstream/handle/10986/23881/An0overview0of0es0and0opportunities.pdf?sequence=1&isAllowedy.

Zhan, J., Mirza, H., & Speller, W. (2016). The Impact of Larger-Scale Agricultural Investments on Communities in South-East Asia: A First Assessment. In C. Gironde, C. Golay, & P. Messerli (Eds.), *Large-scale land acquisitions: Focus on South-East Asia* (pp. 81–107). Leiden, Boston: Brill. https://doi.org/10.1163/9789004304758.

Conclusion

LSLAs: The End of Land or the Beginning of a New Era?

1. The end of land

Different sections of this thesis have revealed how LSLAs can be seen, interpreted and analysed from a variety of perspectives. Most of my research has revolved around different aspects of the fundamental question surrounding this phenomenon, and I have proposed a range of solutions to assess to what extent it is a development opportunity or whether it is land grabbing. I have suggested that the economic science needs a new multidimensional and dynamic conceptualisation of land in order to fully understand and cope with the current land rush; I have proposed a distinction between successful and unsuccessful LSLAs, together with a range of concrete policy recommendations aiming at fostering productive land-based investments and preventing speculative ones; I have stressed the importance of the FPIC principle and the right to fair compensation for indigenous people and local populations affected by transnational land deals, revealing the roots of the recurrent failure of these legal tools for the protection of land rights.

However, when LSLAs are framed in the bigger picture of the important challenges that humanity is facing, there is yet another crucial issue that emerges:

Could the LSLA phenomenon be the end of land?

Indeed, the pressure that stems from LSLAs could represent the end of global land reserves, the end of a stylised and static economic theory for land, as well as the end of customary and collective tenure systems. I assembled this concluding chapter around this question, as it provides a compelling setting for combining in a synergic way the ideas and the findings that are presented — separately — in previous sections. In general, there is no simple or single answer to this question. There are as many

possible — and often open — answers as there are angles that can be chosen to analyse this problem.

The first and most intuitive interpretation for the '*end of land*' question is quantitative, as it relates to the surface of the planet that is actually suitable for agriculture and other human activities that consume land — including energy production, urbanisation, conservation of biodiversity and ecosystems. Two major forces — both of which are ultimately driven by the ever-increasing global demand for food, energy and other commodities (Alexander et al., 2015) — determine net land consumption and global land use change patterns. On the one hand, *extensification* increases the total amount of land consumed, as it is the result of putting in production land that was not previously utilised. On the other hand, *intensification* does not expand the land surface in production, but instead increases the average productivity — the output per hectare — of the land that is already in use. However, both *intensification* and *extensification* are bound by the fundamental laws of physics and come with an environmental cost.

In a renowned article that appeared on *Nature*, Foley at al. (2011, p. 337) not only conveyed very clearly what the challenge is — *"To meet the world's future food security and sustainability needs, food production must grow substantially while, at the same time, agriculture's environmental footprint must shrink dramatically*" — but also suggested what could be the potential way forward:

"[…] tremendous progress could be made by halting agricultural expansion, closing 'yield gaps' on underperforming lands, increasing cropping efficiency, shifting diets and reducing waste. Together, these strategies could double food production while greatly reducing the environmental impacts of agriculture."

Now, land-based investments supporting LSLAs have an important role to play in this process, as they are a major component of the global demand for land and influence land use and consumption patterns — in terms of intensification and extensification, but also in terms of reallocation dynamics. In this regard, I argued in *Chapter II* that local communities (in particular) and humankind (in general) cannot afford the cost of unsuccessful LSLAs. Someone might be tempted to dispute this interpretation, by saying that the surface that is set aside when LSLAs fail to start the operations can contribute to replenishing natural capital. However, successful conservation and restoration activities are complex operations — requiring an efficient combination of know-how, technology, labour, capital and participation of local populations and institutions — and are increasingly seen as productive investments (Chazdon & Guariguata, 2016; De Groot et al., 2013; Ouyang et al., 2016).

Others might argue that not all productive LSLAs are actually sustainable, fair and economically viable; but they would also agree that the beginning of operations is a necessary precondition for these investments to potentially achieve sustainable outcomes. When such a precondition is not met LSLAs are more likely to turn into speculative investments and land grabs, further increasing the scarcity of this natural resource and the social, environmental and economic cost of consuming even more land.

Another way to approach the '*end of land*' problem is by adopting a more institutional perspective:

Could the LSLAs phenomenon contribute to the end of customary and collective land ownership systems?

An estimated 50% of the world's land is currently held under customary and communal tenure regimes (RRI, 2015). Despite the positive

trend in terms of increased legal recognition of informal and traditional tenure regimes (Alden Wily, 2018), on average, as little as one in ten hectares of indigenous and community land is formally recognised (Notess et al., 2018). In addition, the legal recognition and protection of customary and collective tenure rights — when granted by law — often remains only on paper, leaving space for social unrest, forced evictions, long-lasting tenure disputes and even violent conflicts.

In this work, I have reiterated the idea — providing extensive evidence in support of it — that one of the main issues related to LSLAs is the existence of a trade-off between development and land rights. In fact, the promise of social, environmental and economic development that comes with virtually all transnational land deals, is often paid with the erosion of land rights and the reduction of tenure security of vulnerable and marginal populations affected by these deals. In *Chapter III*, I analysed the essence of this paradox, revealing the nature and the interplay of different incentives that can determine the failure of fair compensation mechanisms in LSLAs, the multiplication of land conflicts and the loss of land rights and livelihood for local communities.

Finally, the '*end of land*' problem can be approached from a more theoretical angle, which refers to the traditional economic conceptualisation of this resource. Indeed, LSLAs could mark the *end of land* intended as a simple and static — almost dull — production factor, with just an ancillary role in the economic system, in the ecosystem and in the society. In *Chapter I*, I have challenged this stylised conception of land, highlighting how it would fail to reflect the complex issues surrounding the current land rush.

2. The beginning of a new era

I described how LSLAs — both literally and figuratively — could be the '*end of land*': the end of a vital natural resource; the end of customary and collective rights over this resource; the end of a specific economic conception of land. At the same time, with this research, I have also contributed to setting the foundation for what could be the beginning of a new — and possibly brighter — era.

I strongly criticised some of the predominant economic views over land, but I also proposed a new — more holistic and more realistic — approach to land issues, where the market price of land should be balanced with other cultural and institutional values and framed through the economics of natural resource scarcity. I expressed concerns about a number of impacts and implications of current LSLAs, but I have also suggested how — with the right mix of policies, regulations and incentives — this wave of land-based investments can contribute to the achievement of sustainable development. I revealed the perverse nature of a development mechanism that potentially consumes land rights and livelihoods of affected populations, but I also exposed some of the shortfalls of current protection mechanisms — such as the right to fair compensation and the FPIC principle — for tenure rights, identifying potential corrections for these failures.

Following the increasing pressure from the civil society and building on the improved knowledge of this topic, development agencies are progressively adopting the recognition and the protection of land rights as a guiding principle for their interventions and development strategies (Cotula et al., 2019; English et al., 2019; Wehrmann et al., 2019); governments and institutions are passing legislations and promoting

policies for the regularisation of different forms of tenure (Alden Wily, 2018; Ali et al., 2014; De Schutter, 2011); researchers and practitioners are identifying the linkages between tenure security and sustainable development (Deininger & Jin, 2006; Higgins et al., 2018; Payne, 2001; Robinson et al., 2018).

Guidelines and models for inclusive and sustainable large-scale land-based investments that protect the rights of local landholders already exist, alongside concrete examples of successful implementation (FAO, 2012; German et al., 2018; Mirza et al., 2014; Vermeulen & Cotula, 2010). Avoiding the temptation to underestimate the pressure that LSLAs exert on global land reserves, the LSLA phenomenon could define the beginning of a new era, where land rights are the price to pay no longer, but instead the cornerstone of a new '*global rush*' for sustainable land-based investments.

3. References

Alden Wily, L. (2018). Collective Land Ownership in the 21st Century: Overview of Global Trends. *Land*, *7*(2), 68. Retrieved from: https://doi.org/10.3390/land7020068.

Alexander, P., Rounsevell, M. D. A., Dislich, C., Dodson, J. R., Engström, K., & Moran, D. (2015). Drivers for global agricultural land use change: The nexus of diet, population, yield and bioenergy. *Global Environmental Change*, *35*, 138–147. Retrieved From: https://doi.org/10.1016/J.GLOENVCHA.2015.08.011.

Ali, D. A., Deininger, K., & Goldstein, M. (2014). Environmental and gender impacts of land tenure regularization in Africa: Pilot evidence from Rwanda. *Journal of Development Economics*, *110*, 262–275. https://doi.org/10.1016/J.JDEVECO.2013.12.009.

Chazdon, R. L., & Guariguata, M. R. (2016). Natural regeneration as a tool for large-scale forest restoration in the tropics: prospects and challenges. *Biotropica*, *48*(6), 716–730. https://doi.org/10.1111/btp.12381.

Cotula, L., Berger, T., Schwartz, B., & P. (2019). *Are development finance institutions equipped to address land rights issues?* Land: Enhancing Governance for Economic Development (LEGEND). Retrieved from: https://landportal.org/library/resources/legend-dfi-report-2019/are-development-finance-institutions-equipped-address-land.

De Groot, R. S., Blignaut, J., Van der Ploeg, S., Aronson, J., Elmqvist, T., & Farley, J. (2013). Benefits of Investing in Ecosystem Restoration. *Conservation Biology*, *27*(6), 1286–1293. Retrieved from: https://doi.org/10.1111/cobi.12158.

De Schutter, O. (2011). The Green Rush: The Global Race for Farmland and the Rights of Land Users. *Harvard International Law Journal*, *52*(2), 504–559.

Deininger, K., & Jin, S. (2006). Tenure security and land-related investment: Evidence from Ethiopia. *European Economic Review*, *50*(5), 1245–1277. https://doi.org/10.1016/J.EUROECOREV.2005.02.001

English, C., Locke, A., Quan Julian, & Feyertag, J. (2019). *Securing land rights at scale. Lessons and guiding principles from DFID land tenure regularisation and land sector support programmes*. Land: Enhancing Governance for Economic Development (LEGEND). Retrieved from: https://landportal.org/library/resources/securing-land-rights-scale.

FAO. (2012). *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*. Rome: CFS, FAO. http://www.fao.org/docrep/016/i2801e/i2801e.pdf.

Foley, J. A., Ramankutty, N., Brauman, K. A., Cassidy, E. S., Gerber, J. S., Johnston, M., … Zaks, D. P. M. (2011). Solutions for a cultivated planet. *Nature*, *478*(7369), 337–342. https://doi.org/10.1038/nature10452.

German, L., Cotula, L., Gibson, K., Locke, A., Bonanno, A., & Quan, J. (2018). *Land governance and inclusive business in agriculture: advancing the debate*. Land: Enhancing Governance for Economic Development (LEGEND). Retrieved from: https://www.odi.org/sites/odi.org.uk/files/resource-documents/12452.pdf.

Higgins, D., Balint, T., Liversage, H., & Winters, P. (2018). Investigating the impacts of increased rural land tenure security: A systematic review of the evidence. *Journal of Rural Studies*, *61*, 34–62. Retrieved from: https://doi.org/10.1016/J.JRURSTUD.2018.05.001.

Mirza, H., Speller, W., Dixie, G., & Goodman, Z. (2014). *The practice of responsible investment principles in larger-scale agricultural investments : implications for corporate performance and impact on local communities*. World Bank Report No. 86175-GLB. Retrieved from: https://unctad.org/en/PublicationsLibrary/wb_unctad_2014_en.pdf.

Notess, L., Veit, P., Monterroso, I., Andiko, Sulle, E., Larson, A. M., … Williams, A. (2018). *The Scramble for Land Rights - Reducing Inequity between Communities and Companies*. Washington, DC: WRI. Retrieved from: https://wriorg.s3.amazonaws.com/s3fs-public/scramble-land-rights.pdf.

Ouyang, Z., Zheng, H., Xiao, Y., Polasky, S., Liu, J., Xu, W., … Daily, G. C. (2016). Improvements in ecosystem services from investments in natural capital. *Science*, *352*(6292), 1455–1459. Retrieved from: https://doi.org/10.1126/science.aaf2295.

Payne, G. (2001). Urban land tenure policy options: titles or rights? *Habitat Int'l*, *25*(3), 415–429. https://doi.org/10.1016/S0197-3975(01)00014-5.

Robinson, B. E., Masuda, Y. J., Kelly, A., Holland, M. B., Bedford, C., Childress, M., … Veit, P. (2018). Incorporating Land Tenure Security into Conservation. *Conservation Letters*, *11*(2). Retrieved from: https://doi.org/10.1111/conl.12383.

RRI. (2015). *Who Owns the World's Land? A global baseline of formally recognized indigenous and community land rights. Washington, DC: RRI.* Retrieved from: http://www.rightsandresources.org/wp-content/uploads/GlobalBaseline_web.pdf.

Vermeulen, S., & Cotula, L. (2010). *Making the most of agricultural investment: a survey of business models that provide opportunities for smallholders*. FAO and IIED. Retrieved from: https://pubs.iied.org/12566IIED/.

Wehrmann, B., Lange, A., Puginier, O., Matthaei, E., Nitzinger, F., & Schilling, F. (2019). *Secure Land Tenure Rights for All: Key Condition for Sustainable Development*. Bonn and Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from: https://landportal.org/library/resources/secure-land-tenure-rights-all-key-condition-sustainable-development.