

Assessment of Agricultural Investment Funds' Role in Financing Farms



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*"Ing ngarso sung tulodo, ing madyo
mangun karso, tut wuri handayani"*

- Ki Hadjar Dewantara

"In the front giving a guide, in the middle
giving spirit, from behind giving
encouragement"

- Ki Hadjar Dewantara

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Abstract

For the past decades, interest in equity investment in agricultural sector has been increasing, due to several issues related to global food security. Agricultural investment could be done by both public and private sector in many ways, among others by setting up investment funds (AIFs). Such investments could potentially create improvement in agriculture by bringing in capital, know-how, jobs, market access and infrastructure development. Despite the growing interest of AIFs, farmers are still perceived to be the least attractive actor in the chain, due to its risk profile and lack of capital and offered return. Considering the significance of primary agricultural sector, this study aims to explore the role of AIFs in financing farms by identifying different types of AIFs, including their business models and potential impact on farm's performance from reviewing previous studies. Furthermore, multiple regression analysis was performed on Land Matrix public database, which comprises 1,230 global land transactions between the year 2000 until 2017. It was found that income category of the target country affects the size of the land deal. Furthermore, a digital survey was conducted to obtain overview of European AIFs' role in agricultural investment. To further interpret the outcomes of the survey, an expert interview was conducted with a fund manager of a Private Equity (PE) firm. Results show that despite its growing interest in agricultural investment, the respective PE still perceives the return offered by the sector to be too low. This study provides additional insights which could be utilised by policy makers in encouraging private investors to be more involved in developing primary agricultural sector and by business decision makers as a basis for consideration in regards to agricultural investment.

Abbreviation

AIF	Agricultural Investment Funds
CFROI	Cash Flow Return on Investment
CPI	Consumer Price Index
CSA	Community Supported Agriculture
CVA	Cash Value Added
EU	European Union
EVA	Economic Value Added
F&A	Food and Agriculture
F-REIT	Farmland real estate investment trusts
IDF	Inverse distribution function
OECD	Organization for Economic Cooperation and Development
PPP	Public-Private Partnership
ROI	Return on Investment
SBO	Secondary Buyout
UK	United Kingdom
US	United States
VBM	Value Based Management
VIF	Variance Inflation Factor

1 Introduction

1.1 General Background

To address global food security issue, development in agriculture sector plays a vital role. One of the ways to develop agriculture sector is through investment in technology, access to market, and land development (FAO, 2010). Historically, investment in agriculture was driven by the value of land which became significantly higher when the pressure to feed the population rises, because land is required for food production and the increasing rate of urbanisation and changing diets push up the food global demand and could increase the food prices in the longer term (Cotula, 2011; Savills, 2014).

Investment in agriculture could be provided by both public and private sector in many ways, among others is through setting up investment funds (Lowder et al., 2015). Investment funds are collective investment from a group of investors who pools their capital together, in order to generate more profits (FAO, 2010). Investment funds offer specialized management to each individual investment. A number of agricultural investment fund (AIFs) has lately been growing in various assets classes such as commodities, farmland, and financial assets including private equity, venture capital and structured trade finance (Viton, 2015).

Recent trends showed an increased participation of investors in agricultural schemes, including investments in input, equipment, and storage facilities, and investing horizontally along the value chain (FAO, 2010). (Klerx, 2015) found that investors / equity providers have a positive perception regarding possibility of alternative financing in the agricultural sector. However, in general, farmers are still the least preferred group of clients of value-chain financing due to their relatively higher risk profile and lack of buffer capital for future investments (Patil et al., 2016). Previous cases have also shown that not all agriculture investment are profitable and relatively-lower risk (Visser, 2015). Nevertheless, if these investments are properly structured, it could potentially create betterment in agriculture by bringing in capital, know-how, jobs, market access and infrastructure development (Cotula, 2010).

1.2 Research Problem

The role of financing in agriculture sector has becoming more important for the past decades, due to several phenomena in the sector, for instance the liquidity issue among European farmers due to low agriculture commodities price after the Russian embargo in 2014 and the end of EU milk quota in 2015 (Avermaete et al., 2016), the rapid growth in global population and food demand (Southgate, 2009), technological revolution in farming (King, 2017), and the increasing land prices worldwide (Visser, 2017). Hence, it is clear that access to finance is crucial for the agriculture sector in general, and for the farmers in particular (Avermaete et al., 2016).

However, farmers are perceived to be too risky for banks to finance (IFC, 2014). Farmers are lacking the conventional means of collateral and hence are viewed as 'unbankable' (Cuevas & Pagura, 2016). In this case, the presence AIFs could fill the gap by providing more financing options in the market and to help the farmers to ensure their business continuity. The farmers' need for financing are, for instance, finance for inputs (seeds and fertilizer), production (machinery, equipment, land) and marketing (processing, packaging, transportation) (FAO, 2010).

For the past years, there has been growing interest in primary agricultural investment, shown by increasing number of investment and volume of capital, as a result of commodity price hike and the uprising concern in food security (FAO, 2013). According to Lowder et al. (2015), private sector is the largest source of investment in agriculture, who invest in on-farm agricultural capital stock. This investment includes but not limited to investment in land development, livestock, machinery and equipment, and plantation crop. The presence of AIFs plays a crucial role in fostering the development of the general agricultural sector in developing countries because it contributes to growth, productivity increases, poverty reduction and hence sustainable development (FAO, 2010).

Despite the broad opportunities, AIFs still face many risks, which are valuation risk, financial risk, yield and price risk, and input cost risk (Koeninger, 2014). Valuation risk occurs from the possibility of overpaying for an asset, while financial risk arises from utilizing excessive leverage. Yield and price risk arises from the weather uncertainty which may alter the crop production and crop prices in the market, while input cost is generally controllable

and predictable. Fluctuation in the yield, crop price and input cost could affect gross margins and returns. These risks make agriculture investment to be riskier than similar investment in agriculture sector (Koeninger, 2014).

Furthermore, it is also important to take note that there are precedents where investment in primary agriculture failed to meet investors' expectation due to either internal factors, such as negligent business conduct and over ambitious business plans, or external factors, such as change in global economic circumstances (Karlsson, 2014; Visser, 2015). Nonetheless, the existing studies mainly focus only on developing countries cases, while farmers in more developed countries also face economic challenges. These include challenges in accessing farming resources such as farmland, capital, and in market access in terms of bargaining power in the food chain (Davidova & Thomson, 2014).

Therefore, a further detailed review and analysis were carried out in this study to provide additional insights to different stakeholders on how AIFs could play role in primary agriculture sector. The empirical analysis of this connection is said to be rare (Visser, 2015) since most of the previous studies had only been addressing the role of finance as macro-economic background or context. This study was conducted with the aim to contribute in enhancing the knowledge of investors who are interested in primary agriculture investment.

1.3 Research Objectives

The objective of this study is to analyse the role of AIFs on financing farms.

To further elaborate this research objective, the following sub-objectives were formulated:

1. To review the potential role of investment funds in primary agriculture;
2. To review the benefits and drawbacks of investment funds for farms' performance;
3. To analyse which countries, regions, and investor types are the major agricultural land investors in low and middle income countries; and
4. To analyse the extent to which European investment funds play a role in the agriculture.

Regarding the agricultural land investors and the investment funds, analysis was done towards investors which invest in primary agriculture in the form of equity participation, with focus on European Union (EU), United States (US), Canada, Australia and New Zealand areas.

These countries were chosen as focus areas due to their relatively comparable state in agriculture development (van Wagenberg et al., 2017).

1.4 Outline of the Thesis Report

This report is organized into five parts. Chapter two consists of literature review part on the AIFs' potential role in primary agriculture investment. Chapter three gives the theoretical framework, methodology and data description to provide evidences from several investment funds institutions which invest in primary agriculture. Chapter four provides analysis of the data. Chapter five discusses the result of the analysis, its decomposition, and some recommendations for any parties who are interested in investing in primary agriculture sector.

2 Literature Review on Agricultural Investment Funds

2.1 Sources of Capital

When conducting farm business, oftentimes the owner is required to seek external source of capital to implement his business plan. There are two sources of capital which could be obtained by farmers, namely debt and equity capital.

Debt capital is obtained from borrowing loans from other parties in order to support a business operation (Scarborough, 2013). In the case of primary agriculture, the farmer becomes the borrower and has the obligation to repay the debt principal and the interest. The borrowed capital has to be treated as liability on farmer's balance sheet which has to be repaid in the future. The debt principal has to be repaid at a later point of time, while the interest has to be paid before the debt's maturity (Scarborough, 2013).

The main advantage of obtaining debt capital is that it allows the farmer to maintain his complete control and ownership of the farm, while the lenders are not entitled to any profits made by the farm business (Scarborough, 2013). For the lenders, providing debt capital does not expose them directly to the company's business risk, unlike equity (Quiry et al., 2015). On the other hand, obtaining debt capital may create a financial insolvency, since the farmer has the obligation to repay the interest on top of the debt principal. When the farmer is going through difficult financial period or there is sudden hike in interest rate, repaying the loan could be a problem to farmers' business (Kahan, 2013). Furthermore, when obtaining debt from banks or other financial companies, farmer is usually required to pledge their asset(s) to the lender as collateral (Scarborough, 2013). Collateral is used by lenders to overcome their limited information on the individual farmers' repayment capacity (Calomiris et al., 1986). This way, taking debt capital forces farmers to take the risk of losing their asset(s) to pay back the loan. The other disadvantage of debt capital is that obtaining loan is getting relatively more difficult for farmers due to the tightening regulations in banking industry following higher capital requirement by Basel accords (Katchova & Barry, 2005; Maurer, 2014). Deterioration in agricultural economy could jeopardize the creditworthiness of agricultural borrowers and in result lead to tighter lending standard and higher loan rejection rate (Henderson, 2015).

Equity Capital refers to capital injected into a company by investor to support the business' operation, in return for a share of profit (Quiry et al., 2015). Obtaining this type of capital typically would result in some degree of ownership to those who contribute by

investing their capital (Chembezi, 1999). In this type of capital, the investors of the business are entitled of the company's earnings in the form of dividend and typically may participate in determining the strategy or direction of the business (Scarborough, 2013).

The main advantage of obtaining equity capital in primary agriculture is, unlike debt, equity capital does not require the capital to be repaid at a specific of time, and enables further investment by reinvesting the retained earnings (Quiry et al., 2015). By raising equity capital, the business could be further enhanced by the valuable assistance from prospective investors in the form of management expertise, business contacts and access to other source of capital (Zickefoose, 2014). On the contrary, the primary disadvantage of raising equity capital is it results in ownership dilution, hence the initial business owner(s) might lose their controlling power as sole decision makers and have to share portion of the business' earnings to the other investor(s) (Klerx, 2015; Quiry et al., 2015). In addition, equity capital typically requires higher rate of return on investment when compared to debt capital (Zickefoose, 2014). As of January 2017, the average cost of equity for US' farming and agriculture sector was 7.68%, much higher compared to the average cost of debt (3.7%) (Damodaran, 2017).

Furthermore, since agricultural lending is characterized by production and price uncertainty, obtaining debt capital (loan) from conventional banking institutions are getting more difficult (Kloeppinger-Todd & Sharma, 2010). In such scenario, raising equity capital may come as an alternative to balance the farmer's source of financing (Cheong, 2015). Moreover, Fu et al. (2002) performed an analysis on the relationship between profitability and financial capital of 1,276 small firm in Taiwan over the period of 1992-1997 and found a significant positive relationship between profitability and equity financing. On the contrary, it was found that there is a significant negative relationship between profitability and debt financing.

Table 1. Comparison of key characteristics of Debt and Equity Capital

Comparison Basis	Debt Capital	Equity Capital
Definition	Borrowing loans from other parties ¹	Injecting money to a business to support its operation ²
Consequences for Owners	Obligation to repay loan ¹	Diluted ownership ^{3, 8}
Status of holder	Lender	Investor
Return	Interest	Dividend
Term	Relatively short term (based on loan term)	Long term
Advantage for Lenders / Investors	Not directly exposed to business risk ²	Power to intervene business strategy and performance ²
Advantage for Owners	Maintain control and ownership over the business ¹	<ul style="list-style-type: none"> • Possibility to reinvest the retained earnings² • Additional value (e.g. management expertise and business contacts) from investors⁴
Disadvantage for Lenders / Investors	Not entitled to any profit ¹	Direct exposure to business risk ²
Disadvantage for Owners	<ul style="list-style-type: none"> • May result in financial insolvency⁵ • Low appetite of banking industry in agriculture lending⁷ • Collateral needed to secure loans¹ 	<ul style="list-style-type: none"> • Loss of controlling power² • Higher rate of return on investment⁴

Source : ¹ (Scarborough, 2013), ² (Quiry et al., 2015), ³ (Chembezi, 1999), ⁴ (Zickefoose, 2014), ⁵ (Kahan, 2013), ⁶ (Chembezi, 1999), ⁷ (Katchova & Barry, 2005; Maurer, 2014), ⁸ (Klerx, 2015)

2.2 Motivation of Equity Investors to invest in Primary Agriculture

In general, there are three main motivations of investors who invest in primary agriculture such as farmland and other agricultural infrastructure, which include inflation hedging, low or negative correlation to other assets, and fundamental motivation related to food security.

2.2.1 Inflation Hedging

The main driver for investing in real assets such as farmland is it provides an effective hedging tool against inflation due to its ability to store and increase in value (Fairbairn, 2014). Historically, return in farmland investment the US has shown a high positive correlation to the Consumer Price Index (CPI), which is one of the indicators in assessing inflation in a country (Rubens & Webb, 1995). Furthermore, Rubens et al. (1989) found that combining farmland with other assets in the investment portfolio provides an effective hedge for actual and expected inflation. Moreover, land investment promises potential appreciation and projection of secure returns far in the future (Deininger et al., 2011).

2.2.2 Low or Negative Correlation with other Assets

Investors are interested in acquiring farmland due to its low or negative correlation with other agricultural assets like traditional stocks or bonds (Visser, 2016). Investing in alternative assets such as farmland provides a way to diversify an investment portfolio, with relatively limited variability, predictable profitability and clear and defined income streams (Kuethe et al., 2013). Portfolio diversification enables investors to capture the upside of well-performing assets classes and avoid being fully invested in the poor-performing assets (Trust, 2016). Painter (2011) found that in the period of 1972-2009, investors worldwide could improve their portfolio performance by adding farmland real estate investment trusts (F-REIT) and gold, as addition for other assets such as stocks, bonds, and regular real estate investment trusts (Painter, 2011).

2.2.3 Food Security or Agricultural Fundamentals

The expected growths in global food demand and increasing prices have become threats to global food security. Thus, countries with growing population concerns or wealthy countries which are dependent on food imports and lack of arable land have started to invest in primary agriculture sector to ensure their food security in the future (FAO, 2010). For instance, China

has been involved in African agriculture sector by acquiring long-term leases of agricultural land, expanding agro-industry to Africa, and providing technical assistance as an aid programme. The reason behind this involvement was mainly the nation's growing concern on its food security and the low land prices in Africa (Christopher, 2013). Furthermore, increase in the use of biomass of biofuels as alternative source of energy also drive the growth in demand for agricultural crops (Janda et al., 2012) (Tokgoz et al., 2012).

2.3 Investors in Primary Agriculture

To stimulate investment in primary agriculture sector, major sources of capital need to be raised from both public and private investors. By pooling their capital, investors share the cost and benefit from investing in a larger amount, which offers the possibility of assets diversification and thus spreading risk (Ferrari, 2016). The pool of capital from different types of investors which provide capital to different agricultural stakeholders is known as Agricultural Investment Funds (AIFs) (FAO, 2010, 2017). For the purpose of this study, the definition of AIFs was limited to investors who provide equity capital to farmers.

Moreover, based on the survey conducted by Willis Tower Watson (2017) regarding the global trend in alternative investment, investors not only have been allocating substantial investment in agriculture sector, but also beginning to look beyond land-only strategies to also improve the supply chain, in order to boost returns and dampen volatility. Several major investors were identified as the following.

2.3.1 Private Equity Firms

Private Equity (PE) firms collect and manage investments from institutional investors, namely pension funds, investment funds, endowment funds, insurance companies, banks and other high-net worth individuals, as well as the private equity fund manager themselves (Gilligan & Wright, 2008). The committed capital from the investors are called PE funds (Ho, 2014). Fund manager, on behalf of the PE firm, then would invest the funds in securities of privately-held companies or venture, and expects to generate capital profit from the sale of investments (divestment) instead of expecting dividends, fees and interest payment (Gilligan & Wright, 2008).

In principal, fund manager is responsible to perform four roles, which are (i) to raise funds from investors, (ii) to source investment opportunity and make investments, (iii) to

actively manage investments, and (iv) to realise capital gains by selling or floating investment. Academic evidence suggest that active management style may be a significant factor in the increased value of many successful investment. Increasingly, fund managers are becoming hands-on managers of their investments. While they do not exercise day-to-day control, they are actively involved in setting and monitoring the implementation of strategy (Gilligan & Wright, 2008).

Furthermore, according to (Ho, 2014), the typical life span of a PE fund is ten years. PE funds typically take the first four to five years (*investment period*) to invest the committed capital and then harvest the investments over the remaining years (*holding period*). During this holding period, fund managers would focus on increasing the value of the investment (Strumillo & Lawrence, 2015). The average private equity's holding period for Food and Agriculture sector is 5.2 years as at 2015, shorter than the overall industry average, which is 5.9 years (Strumillo & Lawrence, 2015). Subsequently, the investment would be realized and distributed back to the investors in the end of the holding period (Ho, 2014).

Before making an investment decision, private equity frequently appoints third party with better knowledge on the sector, also known as service provider, to exercise due diligence (Gilligan & Wright, 2008). Substantial due diligence process covering financial, commercial and legal aspects is crucial for the private equity to provide good information prior investment decision, in order to verify the alignment with the business plan (Gilligan & Wright, 2008). During the due diligence process, the service provider checks whether the underlying assumption in the business plan is correct or incorrect (Gilligan & Wright, 2008). As for the exit strategy, historically PE has the options to sell the business to a corporate acquirer (trade sale), flotation on a stock market, or receivership and liquidation of the business (Gilligan & Wright, 2008).

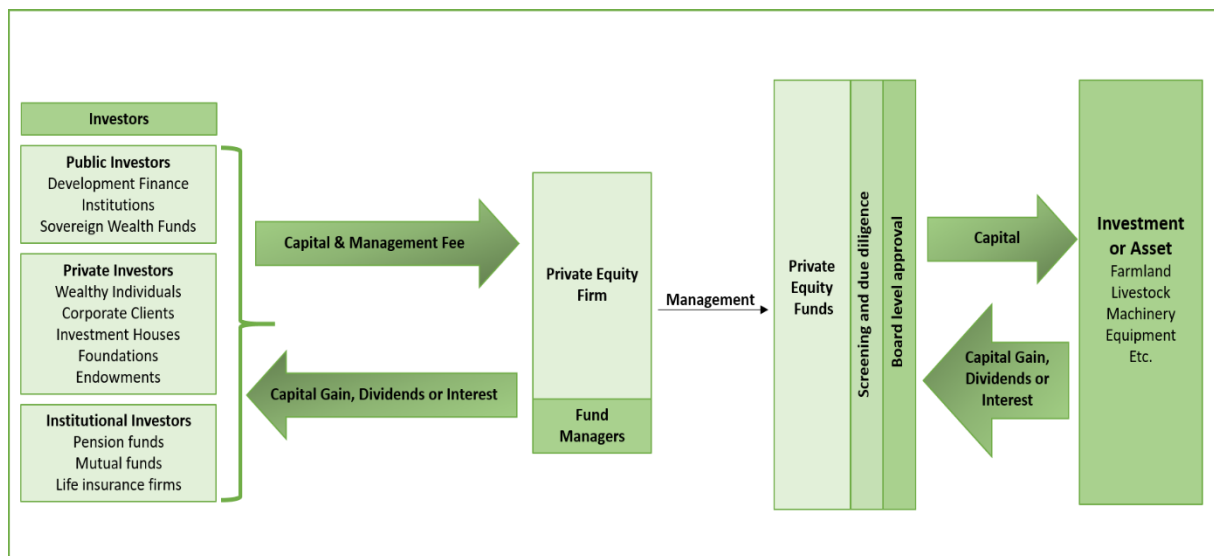


Figure 1. Mechanism of Private Equity Firm

Source : Own elaboration based on Buxton et al. (2012)

Examples of private equity investing in primary agriculture are TIAA Asset Management (US), Black River Asset Management (US) and MEAG (Germany), and the Investment Management companies owned by Banking institutions, such as Rabo Private Equity, UBS Private Equity Funds, and Triodos Investment Management.

2.3.1.1 Pension Funds

Pension funds represent the largest proportion (approximately 32%) of institutional investors investing in private equity (Preqin, 2016a). Pension funds are non-profit organisation which receives contribution or premium from the employers, who set aside some funds for the employees' future benefit, and from the employees themselves (Franzen, 2010). Subsequently, the funds would be invested on the capital markets to gain return, and would be repaid back in the form of pension benefits (entitlements) to the employees (Franzen, 2010). Hence, pension funds typically have a longer investment horizon since they only start paying entitlements at the retirement age of the employees. As a result, the future cash outflows are relatively more predictable (Houwen, 2011).

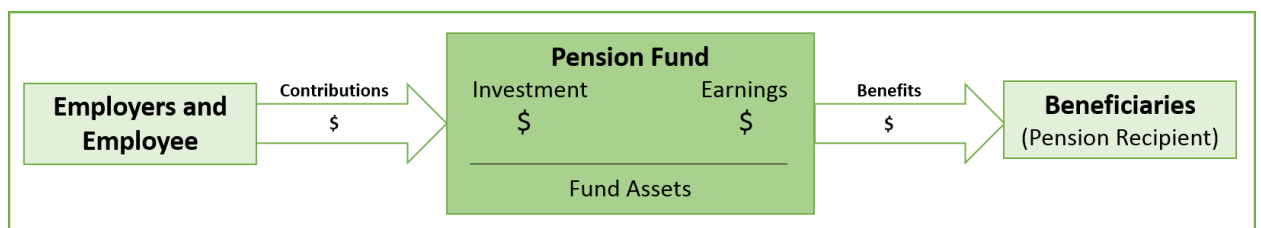


Figure 2. Mechanism of Pension Funds

Source : Own elaboration based on Strumskis and Balkevicius (2016)

In terms of governance, there are three main types of pension funds arrangement (Stewart & Yermo, 2008) which are :

1. **Institutional type**, where the pension fund acts as an independent entity with legal personality and capacity, having its own internal governing board. This type of pension funds is the most common in developed countries like Germany and Netherlands.
2. **Contractual type**, where unlike the institutional type, acts as a non-independent entity with legal personality and capacity, having a separate governing board, which usually are financial institutions like insurance companies or banks.
3. **Trust-based legal form**, which mostly could be found in Anglo-saxon countries, where the trustees have the legal title of the pension funds' assets. The trustees are either appointed or elected, and expected to make decisions on behalf of the beneficiaries' interest.

Furthermore, based on the survey conducted by Preqin Hedge Funds (2016b) to 2,000 investors in natural resources, 26% of total investors express a preference in agriculture

investment, with pension funds represent the largest proportion of institutional investors in agriculture. In Europe, there are several pension funds investing in farmland, namely AP Fonden (Sweden), ATP (Denmark), PKA AIP (Denmark), ABP (Netherlands), APG (Netherlands), PGGM (Netherlands), BT Pension Scheme (UK), and Hermes EOS (UK) (PRI, 2015; RaboFarm, 2015).

2.3.1.2 Insurance Companies

In principal, insurance companies run their business by receiving premiums in return for undertaking and managing risks transferred by other companies and individuals (the insured) (Insurance Europe, 2012). The amount of the premiums is determined based on the probability of occurrence of the unpredictable event (Ferrari, 2016). In the case of specified event occurred, the insured, who hold the insurance policy, would be able to claim for financial compensation (Insurance Europe, 2012).

Compared to other financial institutions, insurance companies, especially life insurance companies, have a relatively longer investment horizon. One of the types of life insurance, called Endowment Plan, is one of the major investors in farmland, accounts for approximately 14% of overall institutional investors (Preqin, 2016a). Endowment Plan offers a bundled insurance product which includes savings and protection (Cua, 2013; Preqin, 2016a). Thus, investment in farmland is attractive for this type of insurance companies because of the investment horizon relates to the maturity of the life insurance contract (Davis, 2002a).

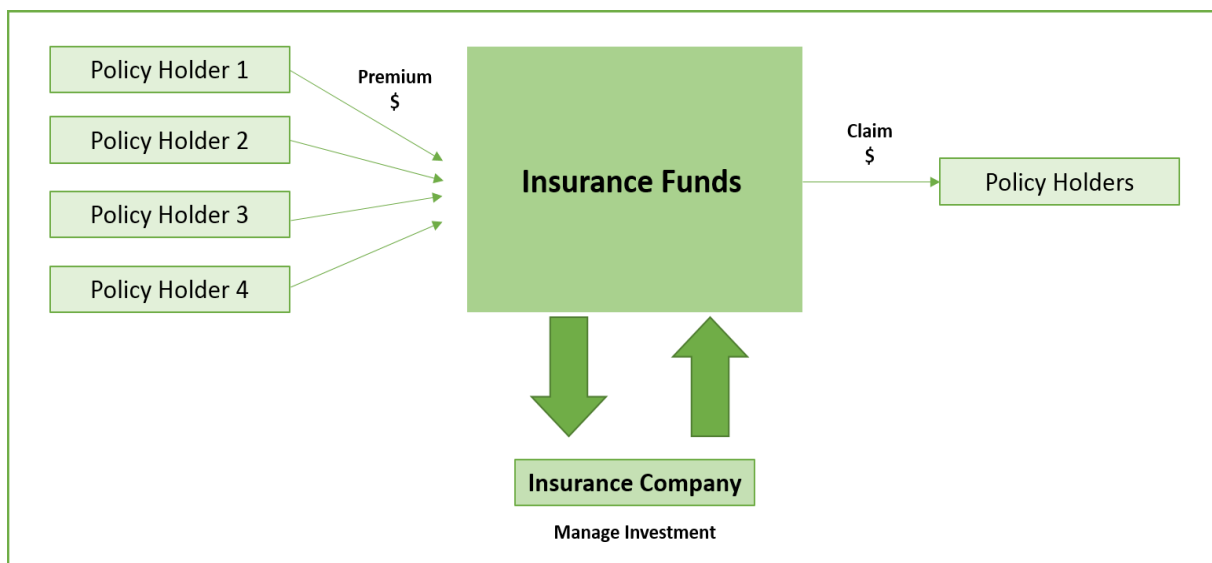


Figure 3. Mechanism of Insurance Companies

Source : Own elaboration based on Insurance Europe (2012)

Historically, insurance companies have been a major global player in financial market (Schich, 2009). They have been investing in primary agriculture in the form of traditional agricultural lending since the farmland values rose sharply in the 1970s due to increased export demand and low real interest rates (Koeninger & HighQuestPartners, 2017). By investing in farmland, timberland, or other real assets, the insurance companies are able to match their long-term liabilities with the long-term investment horizon, similar to pension funds (Washburn, 2014). An example of insurance company investing in primary agriculture is *ASR verzekeringen*, a Dutch insurance company. ASR has been investing in agricultural land for a long time and currently is the largest private owner of agricultural land in the Netherlands (ASR, 2016).

2.3.2 Blended Finance

World Economic Forum and OECD (2015) defines blended finance as *“the strategic use of development finance and philanthropic funds to mobilize private capital flows to emerging and frontier markets”*. Blended finance allows private or philanthropic investors to access the high-development impact sectors while maintaining their risk-adjusted return (IFC, 2017). It provides funding to high-impact projects which have high risk and unpredictable return. Blended finance is needed to provide different capital at various stages of the project (IFC, 2017). Possible instrument for implementing blended finance include guarantees, concessional debt, performance-based incentives, and equity through direct investment or private equity (IFC, 2017). Through its structure, blended finance brings different risk appetites and time horizon of the public and private sector. It allocates risks to parties be able to manage them, thus reducing overall project risk (IFC, 2016).

Furthermore, a survey conducted by World Economic Forum (2016) found that investors have become more interested in blended finance due to varying reasons, among others are accelerated development, ability to respond to clients’ demand for responsible innovation, access to high-growth market, and attractive financial return compared to other investment opportunities. In regards to responsible innovation, agribusiness and food security are among the main current targets of blended finance. For instance, in 2017, IFC through its program called The Global Agriculture and Food Security Program (GAFSP) provides several low-income countries with long-and-short term loans, credit guarantees and equity to support smallholders and small and medium enterprises (SME) farmers to improve productivity growth, access to markets and to increase capacity and technical skill (IFC, 2017). Other example of blended finance is The Africa Agriculture and Trade Investment Fund (AATIF) managed by Deutsche Bank, which aims to create a sustainable agricultural sector in Africa by combining mezzanine capital and long-term debt.

One of the sub-sets of blended finance is Public-Private Partnership (PPP), which represents a formalized partnership between public and private sector to conjointly finance a public-sector project under an agreed funding model. In this partnership, investment and risk are shared and active roles have to be performed by all partners at various stages throughout the PPP-project (World Economic Forum, 2015).

2.3.1 Value Chain Actors

Value chain actors in this study refers to all organizations involved in agriculture related products or services. Value chain actors in agricultural sector engage in the production, distribution, marketing or utilization of food, fibre, forest, or biofuel (Van Fleet, 2016). In order to secure their inputs through high volume and reliable contracts, value chain actors, such as agribusiness companies, invest in farming business, which then referred as corporate farming (Wittmaack, 2006). By securing their flow of inputs, value chain actors may produce outputs in consistent amount and hence leverage their economies of scale (Wittmaack, 2006). Corporate farm represents 2.4% of all farms in EU countries as of 2010 (European Commission, 2013) and 5.06% of all farms in the US as of 2012 (United States Department of Agriculture, 2014).

In addition, in today's complex and inter-connected F&A industry, one of the strategies that value chain actors adopt in order to strengthen their competitiveness is vertical integration (Grega, 2003). Vertical integration occurs when a firm perform additional activities other than what it initially performs, which are related to its business activities (Rehber, 1998). This strategy offers to bring in cost minimization and higher input productivity to the firm (Grega, 2003) and could occur in two directions, which are upstream (backward) or downstream (forward) (Roder, 2007). Upstream integration occurs when an entity gains ownership of the raw materials production, which ensure the availability of raw materials for its business (Roder, 2007). In agriculture industry, one of the most common forms of upstream (backward) integration is contract farming, where a case study done in India, showed that contract farming of pulses in the production of Bhujia result in the decrease of raw material cost and increase in profit (Sharma et al., 2014). Meanwhile, downstream integration occurs when an entity gain ownership or control of the activities in the next or final step of the value chain, for example when a manufacturer decides to sell their own products directly to consumer (Roder, 2007) (Lafontaine & Slade, 2007).

2.3.2 Community Supported Agriculture (CSA)

The mechanism of CSA represents the mutual commitment and direct link between local farmers and community of supporters, which is manifested in the form of fees paid to the farmer, who then make use of it to run the farm business throughout the season. In return,

the community members receive the share of the harvest during certain season (Newman & Jennings, 2012). This form of direct partnership enables the producers and consumers to share the risk and potential reward of production (Benna, 2018)

There are three (3) main models of CSA, namely Self-Harvest CSA, Subscription Farming, and Shareholder CSA. Shareholder CSA is the only model in which the members buy the share of the farm and gain ownership, thus act as the co-owner of the farm. In this model, the members share the risk and responsibility of the farming business, while typically hiring farmers for their agro-technical knowledge after collectively purchasing land (Benna, 2018) (Markiet, 2011).

CSA offers several livelihoods and opportunities for the farmers, among others are providing access to affordable land, working capital to run the business, living wage, and risk hedging through the crop diversification and membership strategy. In 2015, there are 2,783 CSAs operating across European countries, and produce food for approximately half a million members, with France as the biggest contributor which represents 67% of all members (Paul, 2015).

2.3.3 Crowdfunding

Crowdfunding is a platform which facilitates the transfer of funds from a large number of people who would like to donate or invest to those who seek for funding for a project or a venture (Nesta, 2012). This way, crowdfunding allows investors to make either large or small contribution based on the available financial resources and the varying interest into the project, without intermediary (Rossi, 2014). When crowdfunding model is combined with collaborative consumption in agriculture, it is called CSA (Rossi, 2014).

There are four main Crowdfunding models, which are reward-based, lending-based, simple donations, and equity-based model (Rossi, 2014). In equity-based model, investors gain return for a share in the profits or revenue generated by the project or the venture. Nevertheless, this type of Crowdfunding is relatively unpopular due to the high risk exposure to the investors (Rossi, 2014) and the current worldwide legal restrictions which are not suitable for implementing Equity Crowdfunding (Valanciene & Jegeleviciute, 2013). Some European platforms have been pioneers in the equity Crowdfunding model, which allows investors to take small stake in an unlisted or private business (Nesta, 2012; New Funding Source for Food-Related Business, 2017) .

Table 2. Examples of Investors in Primary Agriculture Sector

No	Types of Investors	Name of Investor	Country of Origin	Investment Type	Investment Area	Initial Investment Year	Type of Crop / Production	Source
1	Private Equities	Black River Asset Management (owned by Cargill)	US	Farmland Investment	Australia	2013	Sugarcane growing & grain farming	(Condon, 2015)
		NPM Capital N.V.	Netherlands	Equity Participation	Netherlands	2015	Layer, turkey, pig, aquaculture and traditional poultry breeding	(NPM-Capital, n.d.)¹
		Triodos Investment Management	Netherlands	Farmland Investment	Netherlands	1990	Organic Cattle Farm	(Triodos Bank, n.d.)¹
		Aquila Capital	Germany	Farmland Investment	Australia, New Zealand & Brazil	2008	Dairy farms, cattle breeding and sugarcane cultivation	(Herre, 2010)
		Altor Funds	Sweden	Input Supplier & Equipment	Sweden	2013	Aquaculture	(Towers, 2013)
2	Pension Funds	APG	Netherlands	Farmland	Latin America, Australia, New Zealand and Eastern Europe	2007	Corn and wheat	(GRAIN, n.d.)¹
		Första AP-Fonden	Sweden	Farmland	Australia, New Zealand	2012	Dairy & cattle farm, Grain crops	(AP-Fonden, n.d.)¹ (Cranston, 2012)
		TIAA-CREF	US	Farmland	South America, Australia, US	2007	Horticulture Crop, Food Crop, Cash Crops,	(Nuveen TIAA, n.d.)¹

3	Insurance Company	Prudential (PGIM Real Estate)	US	Farmland	US	1989	Permanent Plantings and Annual Row Crops	(PGIM Real Estate Finance, n.d.)¹ (Hancock Agriculture, n.d.)¹
		John Hancock Financial (Hancock Agricultural Investment Group)	US	Farmland	US, Canada and Australia	1981	Food, cash and horticulture crop	
4	Blended Finance	Dutch Good Growth Fund (DGGF)	Netherlands	Farmland and Land Development	Ethiopia	2015	Horticulture	(Government of the Netherlands, 2015)
5	Value Chain Actors	Cargill	US	Farmland	Indonesia	2005	Palm oil plantation	(Cush & Macken-Walsh, 2016) (Grosse, 2015)
		KTG Agrar AG	Germany	Farmland	Germany, Lithuania, Romania, and Bavaria	1994	cash crops (corn, maize, rapeseed, potatoes, soya)	
6	Community Supported Agriculture (CSA)	Angelica Organic Farm	Australia	Annual Subscription	Australia	2006	Organic horticulture	(Farm, n.d.)¹
		De Nieuwe Ronde	Netherlands	Annual Subscription	Netherlands	2016	Organic horticulture	(De Nieuwe Ronde, 2011)
		Farm Fresh to You	US	Monthly / Weekly Subscription	US	1992	Organic horticulture	(Farm Fresh to You, n.d.)¹
7	Crowdfunding	Agriterra	Netherlands	Working Capital	Indonesia	2015	Coffee	Fundwijzer (2015)
				Land Development (Microreservoir for	Peru	2015	Arable farming	

		irrigation system)					
		Equipment	Ethiopia	2015	Dairy farmer		
		(Refrigerated					
		Carriage)					
Harvest Returns	US	Farmland	US & South America	2017	Livestock, row crop, timber, orchard	(PR News Wire, 2017)	

Notes : ¹ No date (n.d.)

2.4 Business Models for Investors in Primary Agriculture

To achieve the most direct and pure exposure to agriculture, investors could invest in real agricultural assets, such as land, livestock or crops. There are several most common business models which can be adopted by investors who would like to invest in equity capital in primary agriculture, which are :

2.4.1 Land Lease

Land lease model, or also known as management contract, is when investors acquire farmland, and then lease the land to other party, namely farmers, to be managed. The land is leased for either flat-rate (cash) rent or a rent with profit participation (Murray & McGrath, 2016). This model is commonly found in the region or country with adequate independent farming skill (FAO, 2013). The advantage of this model is it enables investors to gain return from both appreciation of land value and predictable cash flow from the rental income (Macquarie, n.d.). Nevertheless, the leasing model possess a threat, whereby there is a possibility that the renter of the land tends to practice over-intensive farming to be able to repay the rental fee, while ignoring the long-term quality of the land (Jose de Almeida & Buainain, 2016).

2.4.2 Owner-Operator

Under this model, investors acquire the farmland and operate their own farming business on the land (Murray & McGrath, 2016). In most cases, the investment manager hires a farm manager to operate the farm. This model is best adopted in the area where there is a lack of suitable experienced and competent lessees, or where there is lack of leasing demand from qualified farmers (Macquarie, n.d.). The advantage of such model is it ensure the management of the assets, hence the value is maintained (Buxton et al., 2012). Furthermore, investors may gain return from capital gains of the land and from operating profits. Operating profits are determined by the commodities price, input price, and management techniques. Hence, implementation of new management techniques and technology could help to improve profit margin. The downside of this model is it possesses higher risk due to direct involvement to the farming business operation and the need for regional expertise (Macquarie, n.d.).

Table 3. Comparison of Primary Agriculture Business Models for investors

Business Model	Type of Crops / Products	Investors	Country	Advantage	Disadvantage	Source
Land-Lease	Cattle breeding, Soybean, Maize and Sugarcane	-	Brazil	Tenants are equipped with administrative and business skills, which enables the running of the business to keep up with market demands.	Possibilities of land degradation due to excessive use of chemical substances and fertilizers or over-intensive farming practice under cash rent contract	(Jose de Almeida & Buainain, 2016)
	-	US Farmers	US	Provide opportunities to young and beginning farmers who do not have necessary capital to purchase farmland	-	(Katchova & Ahearn, 2014)
	Corn or soy	TIAA-CREF (Pension Funds)	US	Predictable cash flow or rental income from annually harvested row crops.	-	(Ross, 2014)
	Corn, Soybean, Wheat	-	US	Low income variability for the landowner under cash rent contract		(Bruynis, 2013)
Owner-Operator	Food, Cash and Horticulture Crop	Hancock Agricultural Investment Group (Insurance Company)	US, Canada, Australia	-	- Inherently riskier, since investors are exposed to bad weather to volatile commodity prices - Heavily reliant on professional farm managers	(Ross, 2014)

Permanent Crops (fruit trees / vineyards)	TIAA-CREF (Pension Funds)	US	Investors are entitled of sales proceeds of profitable crops	-	(Ross, 2014)
-	-	-	Better control over the farm productivity, and hence the land appreciation	-	(Fairbairn, 2014)

3 Materials and Method

3.1 Theoretical Background

Value Based Management (VBM) is defined as a managerial process which effectively connects an organisation's strategy, measurement and operational processes in order to create shareholder value (Starovic et al., 2004). VBM is a relatively simple framework for setting objectives of those business decisions that add an economic value to a firm in both short and long term (Bukvic, 2014). Several indicators used could be used to assess VBM, among others are Economic Value Added (EVA), Cash Value Added (CVA), Cash Flow Return on Investment (CFROI), and other indicators which are relevant to analyse shareholders value (Bukvic, 2014). A company's shareholder value depends on strategic decisions made by management, including the ability to make wise investments and generate a healthy Return on Investment (ROI). In the case of investment company, the fund managers must ensure the healthy ROI for their investors. The ability of investment or fund managers in making wise investment decision may determine the value of the investors' funds. As a result of global competition, the rise of manager activism result in fund managers becoming more active in reconsidering their investment portfolio and focus more on the core competences of the organization (Claes, 2008).

In regards to Principal-Agent theory, VBM is expected to reduce the lack of congruence between the objectives of the *agent* and the *principal* (Ameels et al., 2002). Principal-agent theory studies the relationship between *principal*, who assigns the task, and *agent*, who performs the task on the principal behalf (Shah, 2014). Principal-agent problem arises when the interests of agents and the principals are not perfectly aligned, yet the principals cannot monitor the agent's action, and the agents act against the principal's interests (Abdalla, 2008). In conjunction with AIFs practice, principal-agent problem may arise between the stakeholders due to different interests as depicted below.

Table 4. Potential Principal-Agent Relationship in AIF

Relationship Principal – Agent	What does Principal Expect from the Agent?
Investors – Fund Managers	The shareholders expect the fund managers to maximize their wealth (share value).
Fund Managers – Farm Manager	The fund managers expect the farm manager to manage his investment and obtain the best return.

Furthermore, according to (Visser, 2015), the major problem in agriculture investment arises from the mismatch between investment horizon of the end investors from the financial sector and the time horizon and cycle of the farming business. In average, the time horizon of farming business is much longer than the average institutional investors' time horizon. This is because in farming business, mostly there is just one harvest per year in crop production, the business involves trial and error in the beginning phase, and the whole business is subject to uncertainties such as weather condition (Visser, 2015).

3.2 Land Deals Analysis

3.2.1 Data Description

In order to determine which countries, regions, and investor types are the major agricultural land investors in low and middle income countries, a land deals database called Global Observatory is used. Global Observatory is a database provided by Land Matrix, a global and independent land monitoring initiative and could be accessed from Land Matrix website in <http://www.landmatrix.org>.

The database includes intended, concluded or failed attempts to acquire land used for agricultural production, timber extraction, carbon trading, industry, renewable energy production, conservation, and tourism in low and middle income countries, which are defined according to the World Bank's country group classification as of 2010. Deals which are included in Global Observatory are deals which involve a transfer of rights to use, control or ownership of land through sale, lease or concession, have been initiated since the year 2000, cover a minimum area of 200 hectares, and imply the potential conversion of land use, from smallholder production, local community or ecosystem service provision to commercial use

(Land Matrix, 2017). As of 8 December 2017, the Global Observatory consists of 2,645 land deals. Each land deal includes the following variable :

Table 5. Explanation of Variables in Land Deal Database

No	Variable	Explanation	Category of what?
1	Deal ID	Unique identification number of land deal	-
2	Target Country	The country in which land is acquired	-
3	Target Region ¹	The region in which land is acquired	<ul style="list-style-type: none"> • East Asia & Pacific • Europe & Central Asia • Latin America & Caribbean • Middle East & North Africa • North America • South Asia • Sub-Saharan Africa
4	Target Income Category ¹	Category of target country based on its income	<ul style="list-style-type: none"> • Low Income Countries • Lower-Middle Income Countries • Upper-Middle Income Countries • High Income Countries
5	Location	The location in which land is acquired	Name of the city
6	Investor Name	The name of individual, company, investment funds, or state agency that acquires the land	-
7	Investor Country	The country from which the investor originates	-
8	Investor Type ²	Classification of investor based on available company information	<ul style="list-style-type: none"> • F&A Value Chain Actors • Government • Institutional and Non-institutional Investors • Other Industry
9	Investment Type ³	The type of investment based on the relation between investor and target country	<ul style="list-style-type: none"> • Domestic • Transnational
10	Investor Region ¹	The region from which the investor originates	<ul style="list-style-type: none"> • East Asia & Pacific • Europe & Central Asia • Latin America & Caribbean • Middle East & North Africa • North America • South Asia • Sub-Saharan Africa

11	Investment Region Type ³	The type of investment based on the region where the investor and target country are located	<ul style="list-style-type: none"> • Intra-regional (within the same region) • Inter-regional (between different regions)
12	Intention	The intention behind land deal	Type of intentions : <ul style="list-style-type: none"> • Agriculture • Biofuels • Conservation • Food crops • Carbon Sequestration • Wood and Fibre • Forestry • Industry • Livestock • Non-food agricultural commodities
13	Negotiation Status	The negotiation phase of the deal	<ul style="list-style-type: none"> • Intended • Concluded • Failed
14	Implementation Status	The actual implementation of the land deal	<ul style="list-style-type: none"> • Project not started • Start-up phase (no production) • In operation (production) • Project abandoned
15	Intended Size	Total area of land under negotiation (for intended or failed deals)	-
16	Contract Size	The current area that has been leased or purchased by the investor	-
17	Production Size	The current area that is already operational.	-
18	Nature of the deal	The type of the land deal	<ul style="list-style-type: none"> • Outright purchase • Lease / Concessions • Exploitation License • Unidentified (no information)

Notes : ¹ Determined based on World Bank (2017) classification.

² Determined based on available company information.

³ Determined based on the investor and target country.

To address the research objective which is to find what are the major agricultural land investors in terms of country, region and type, only deals which meet the below criteria are included in the analysis :

1. Deals with clear investor name and investor country;

2. Deals with concluded negotiation status;
3. Deals with primary intention include either agriculture, food crops, livestock and/or non-food agricultural commodities;
4. Deals with available information of contract size.
5. Deals with available information of the investor.
6. Deals took place between the period of 2000 to 2017.

Based on above screening criteria, number of land deals which could be used in the analysis comprises of 1,230 land deals. For the purpose of this study, investors in each deal were classified into 4 groups by the researcher, based on the available investors' information on internet. These groups are:

1. **F&A value chain actors**, which refers to investors whose business activities are related to F&A products or services, which includes among others but not limited to, agrichemical manufacturer, palm oil or rubber plantation company, distributors, traders, seed supplier, and food and beverage company.
2. **Government**, in which the investment(s) were made by either local government of the investor's country.
3. **Institutional and Non-Institutional Investors**, in which the investment(s) were made by either institutional investors, which is an entity which pools money from various investors, or by other non-institutional investors, who acquires land through a broker or agent. This category includes among others, but not limited to, wealthy individual, investment funds, mutual funds, insurance company, pension funds, venture capital or private equities.
4. **Other Industry**, which refers to investors whose main activities fall into other industry type.

Table 6. Descriptive Statistics of Land Deals per Investor Region, Target Country Income Category, Intention and Deal Size per Investor Type

Variable	Category	F&A Value Chain Actors (n=918)	Investor type		
			Government (n=28)	Institutional & Non-Institutional Investors (n=207)	Other Industry (n=77)
Investor Region ^a	East Asia & Pacific	31.9	14.3	15.9	35.1
	Europe & Central Asia	24.9	0.0	27.1	15.6
	Latin America & Caribbean	19.0	0.0	19.8	22.1
	Middle East & North Africa	4.1	21.4	14.5	5.2
	North America	4.1	7.1	8.2	13.0
	South-Asia	4.6	57.1	0.0	2.6
	Sub-Saharan Africa	11.3	0.0	14.5	6.5
	Subtotal	100	100	100	100
Target Country Income Category ^a	Low Income Countries	19.2	39.3	19.3	29.9
	Lower-Middle Income Countries	43.9	50.0	24.6	33.8
	Upper-Middle Income Countries	33.2	10.7	48.8	33.8
	High Income Countries	3.7	0.0	7.2	2.6
	Subtotal	100	100	100	100
	Subtotal	100	100	100	100
Intention ^a	Agriculture	29.2	17.9	14.5	37.7
	Food Crops	50.1	78.6	62.3	44.2
	Livestock	8.9	0.0	22.7	7.8
	Non-food agricultural commodities	11.8	3.6	0.5	10.4
	Subtotal	100	100	100	100
Deal size ^b	Contract Size (ha)	22,837	21,861	21,810	34,195
		(1,959.19)	(6,489.03)	(4,585.84)	(9,537.62)

^a Expressed as percentage of total deals per investor type (%)

^b Mean values with standard errors in parentheses

Source : Author's calculation

3.2.2 Analytical Method

The land deals database comprise a large amount of transaction, in which various types of investors acquire the land for different purposes. When referring to upstream (backward) integration theory and the findings of Wittmaack (2006) which indicates that value chain actors in agricultural sector tend to secure their flow of inputs by acquiring agricultural land. Therefore, it is interested to know whether investors which fall into category 1 (F&A value chain actors) tend to acquire larger area of land, when compared to other type of investors (Government, Institutional and Non-Institutional Investors and Others).

Furthermore, the conducted literature review has given the impression that large scale agricultural land investments typically occur more in developing countries compared to developed countries, among others due to the low land prices. Based on this fact, it is also interesting to know whether the income category of the target country, where the land was acquired, also influence the size of the land deals, in order to understand if investors tend to acquire larger area of lands in countries with poorer countries. Therefore, multiple regression analysis was performed to investigate the factors, which determine the contract size of the land deals.

The generic form of the regression model is

$$Y_i = X'_i \beta + \varepsilon_i, i = 1, 2, \dots, N \quad (1)$$

Following the generic form above, the regression model in this analysis is :

$$Y_i = \beta_1 + \beta_2 \text{Investor Category} + \beta_3 \text{Target Income Category} + \varepsilon_{ij} \quad (2)$$

Where dependent variable (Y_{ij}) is the contract size, which refers to the total area of the land which was acquired on certain land deal, either being purchased or leased. This variable is expressed in hectares. Contract size was chosen as the dependent variable in the model because it reflects the total area that the investor intends to lease or purchase. Meanwhile, independent variables (X_i) comprise of the investor category (F&A value chain actors, government, institutional or non-institutional investors, and other industry) and the income category of the target country of each specific land deal (low income, lower middle income, upper middle income, and high income). As the regression model consists of two categorical independent variables and one continuous dependent variable, Two-Way ANOVA test was used. Prior to the test, assumptions were checked, which are (1) normally distributed

residuals, (2) homogeneity of variances and (3) independence of error (Ott & Longnecker, 2010). In terms of residuals, result of normality test (Appendix 1.3) showed that the standardized residuals of the model are not normally distributed. Therefore, in order to fulfil this assumption, Contract Size data was transformed using Two-Step Approach, which includes fractional ranking method and followed by Inverse Distribution Function (IDF). This data transformation method is typically used to transform non-normally distributed continuous variables towards statistical normality (Templeton, 2011). Using the transformed data of Contract Size, standardized residuals are normally distributed and hence fulfil the first assumption. Meanwhile, result of Levene's Test (See Appendix 1.4) also shows that the assumption of equal variances was not fulfilled, which may decrease the validity of the result. Based on the residual plot and the result of Durbin-Watson test, the assumption of independence of error was fulfilled (See Appendix 1.5).

3.3 European Investors Analysis

To gain understanding on the preference and opinion of European investment funds behind their investment decisions in agricultural sector, digital survey and interview were conducted.

3.3.1 Survey of European Investors

Questionnaire design. A digital survey was developed to gain insights from European investors who invest in agricultural sector. The digital survey was divided into three major parts, which comprise of investment activity, investment drivers and future outlook, and investment evaluation and exit strategy. To construct the survey, Qualtrics, an online survey software was used, which then was distributed via e-mail to various institutions or organisations who invest in agricultural sector. The content of the survey can be found in Appendix 2.

Data collection. During the period from November 2017 to January 2018, the digital survey was sent out to contacts from various types of investment funds, which consists among others of private equities, asset management firms, insurance company and pension funds. These investment funds were chosen based on the available company information which indicate their interest or investment focus in the agricultural sector. Contact details were obtained from the company website or from referral (snowball sampling). In total, 45 contacts

located in the EU, US, Canada, Australia and New Zealand were approached, of which only 9 European investors actually participated in the digital survey. In the end, only 4 out of 9 respondents completed the whole survey. Reasons for incompleteness were mainly due to respondents dropping out during the survey. In addition, lack of personal approach might also be one of the reasons of the low response rate.

Analytical Method. Cross-tabulation was used to provide overview of the responses. Due to the low response rate, an additional step was taken, an in-depth interview was carried out as an extension to this survey.

3.3.2 In-depth Interview with European Investor

Interview Setup. Subsequently, an in-depth phone semi-structured interview (see Appendix 4) was conducted to gain insights from European Investment Funds on the investment decision in agricultural sector. Due to the low response rate from companies, in the end only one interview was conducted. The interview was done with a fund manager of a Danish private equity, which for anonymity and confidentiality purposes, was addressed as XYZ from this point onwards. The company has had a previous investment in agricultural sector, and is eyeing on further potential agricultural investment. The contact of the private equity was obtained from an external recommendation. The interview was done through phone call. A set of questions regarding investment activity, investment drivers and future outlook, and investment evaluation and exit strategy were raised.

Analytical Method. The conducted interview was recorded and transcribed for further analysis. The transcription was analysed and coded using general inductive approach, which aims to gain research findings from frequent, dominant or significant themes in the interview (Thomas, 2006). Coding was done on the transcript to find relevant and important information, which either was mentioned repeatedly in several places, a surprising or unexpected idea, similar with findings in literature review, or could be referred to the theoretical background. Expected keywords include, among others, *investment focus, value-chain, requirement, holding period, future outlook, agri-sector, rate of return* and *investors*. Subsequently, based on the coding, the relevant information was grouped into three main categories; namely investment strategy, perspective, and mechanism, aligns with the survey. Investment strategy includes all information regarding company's investment orientation,

type of investors, type of investment, and required return. Perspective includes how the company perceive agricultural sector in regards to their past experience, their future outlook and preferred type of assets. Lastly, mechanism includes information on the company's business model, which includes role of management, average investment horizon and typical exit strategy of the business. These categories were used for further elaboration, to address the fourth research question, i.e. “....”.

4 Results

4.1 Results of Land Deals Analysis

4.1.1 Characteristics of Major Agricultural Land Investors

In general, global land deals took place mainly in the low and middle-income countries, which makes up to 96% of total deals occurring between 2000 to 2017. The main intention behind acquiring land is the same across all type of investors, which is to grow food crops and agricultural purposes. These investors are mainly Value Chain Actors in the F&A sector (75%), and most of the investors are originated from East Asia & Pacific (29%), Europe & Central Asia (24%) and Latin America & Caribbean (19%) region. Based on the number of land deals transaction, Argentina, Malaysia, China, UK and US are the main investor countries, making up to 35% of the total global land deals.

4.1.2 Determinant Factors of Land Contract Size

Findings from Two-Way ANOVA showed that in overall, the model does not explain the variability of the transformed contract size in the land deals, as the Adjusted R Square value is very low (0.033). However, result shows that income category of the target country indeed determines the size of the land deals, in which 1.3% of variances in the dependent variable (transformed Contract Size) can be attributed to the income category of the target country. This finding shows that many more factors influence the size of land deals.

Table 7. Determinant Factors of Land Contract Size - Two-Way ANOVA Result

Tests of Between-Subjects Effects						
Dependent Variable: Transformed Contract_size						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	20632058740 0.000 ^a	14	14737184 810.000	4.024	.000	.044
Intercept	21940209040 .000	1	21940209 040.000	5.990	.015	.005
IncomeCategory_T argetCountry	59706465150 .000	3	19902155 050.000	5.434	.001	.013
Investor_Type	3907507829. 000	3	13025026 10.000	.356	.785	.001

IncomeCategory_T	19452485230	8	24315606	.664	.724	.004
argetCountry *	.000		54.000			
Investor_Type						
Error	44464093330	1214	36626106			
	00.000		54.000			
Total	53231887130	1229				
	00.000					
Corrected Total	46527299210	1228				
	00.000					

a. R Squared = .044 (Adjusted R Squared = .033)

4.2 Results of European Investors Survey

The digital survey conducted with Agricultural Investment Funds received 4 full responses, as shown in the following table. Due to low number of data, no generalization could be derived from this result.

Table 8. Result of Agricultural Investor Survey

Factors	Response				Average
	1	2	3	4	
Assets under Management	100%	24%	1%	25%	37.5%
Investor Region	Europe	Europe	Europe South America Australia & New Zealand	Europe	
Investment Type					
Land / Farm	X	X	X		
Livestock				X	
Farming					
Buildings &	X	X	X	X	
Improvement					
Machinery,	X	X			
Equipment & Stable					
Working capital	X				
Investment Model					
Land-Lease	X	X		X	
Owner-Operator			X		
Due Diligence	Financial & Legal	-	-	Financial, Legal & Operational	
Major Investors	High Net Worth	Others : Knowledge Institutions	Pension Funds	Pension Funds, Insurance Companies	

Origin of Investors	Europe				
Average Holding Period (in years)	26	8	10	5	12.3
Exit Strategy	Sale of the investment to corporate acquirer (trade sale)				

4.3 Result of In-depth Interview with European Investor

The interviewed investor is a Danish private equity company (called 'XYZ' here) who invests in mid-sized companies and headquartered in Copenhagen. The management of XYZ acts as fund managers which takes care of both advisory and administration matters and licensed by The Danish Financial Supervisory Authority. As of June 2018, the company has secured more than 1 billion Euros from its investor base.

To obtain insights on how investment funds might play role in agricultural sector, an interview was conducted. The interview with XYZ's fund manager was transcribed, labeled and grouped into three major categories, to provide additional insights on the private equity's investment strategy, mechanism and its perspective on agricultural investment. The below table provides summary of the findings obtained from the interview. Further elaboration of the obtained information, combined with additional data from company website, could be found afterward.

Table 9. Main Insights from In-Depth Interview with Private Equity company XYZ

Category	Sub-Category	Main Findings
Investment Strategy	Orientation	<ul style="list-style-type: none"> Industry agnostic Invests mainly in Nordic-based business
	Type of Investors	<ul style="list-style-type: none"> Nordic-region institutional investors Mandate from investors
	Return Target	In the range of 20% per annum
Investment Mechanism	Management	<ul style="list-style-type: none"> Active role in the management of invested business External advise for industry evaluation
	Holding Period	Average holding period of 5 years
	Exit Strategy	Secondary buyout
Perspective in Agricultural Investment	Previous Investment	Feed supplier
	Type of Assets	Agricultural land is not preferred
	Future Outlook	<ul style="list-style-type: none"> Interest in pork industry Increasing interest in agricultural sector

4.3.1 Investment Strategy

In general, the company has no specific target focus or particular sector or industry, and tend to be industry agnostic. This was also shown by the company's current portfolio, which ranges from information technology to fashion business. Therefore, agricultural sector is not the main investment focus of the company. In regards to the geographical scope of the business, the company invests mainly in business whose headquarters are located in Nordic-countries, such as Denmark and Sweden, even though the production site could be in other region, such as United States, Asia or Eastern Europe.

Majority of the company's investors are institutional-type, which mainly originated from Europe, with approximately 72% coming from Nordic-region. Pensions funds, insurance companies and financial institutions are the major investor which account for 65% of its investors, followed by Funds of Funds (22%) and Family Offices or Foundations (13%). As a rule of thumb, the company targets its ROI to be in mid-20s percent, which applies to all of their investment, regardless of the industry. XYZ received mandates from the investors and operate its business accordingly, by having dialogue in ongoing basis. This way, investors are fully aware of where their funds flow into.

4.3.2 Investment Mechanism

In terms of the management, like other private equity companies, the Company does not directly manage the business of the company in which it invests in. However, the company takes an active role to oversee the investment by acting as sparring partner and engaging in ongoing dialogue with respective board of management. When evaluating the potential attractive industry or investment, the company would obtain advises from various roles, for example by involving consulting company with competitive edge in respective industry. For instance, XYZ works with a strategy consulting firm to evaluate the potential investment in agricultural sector, specifically in pig farming sector.

Since the main objective of private equity is to generate capital profits from the sale of investments, a firm exit strategy is important to the company. Historically, their previous agricultural investment was sold to another Private Equity funds. This type of exit strategy is commonly known as secondary buyout (SBO), which is defined as transaction whereby both the buyer and the seller are private equity firms, buying and selling a portfolio company. In average, the company's investment horizon is around 5 years.

4.3.3 Perspective in Agricultural Investment

In terms of investment in agricultural sector, the company was formerly an investor in an animal nutrition company producing soy-based protein solutions for specialty animal, between 2007 until 2015. This experience has contributed to the knowledge-building to the company, for instance its current interest in pork farming is also related to the fact that the company has developed an expertise in piglet weaning. Generally speaking, the company perceives that there is an increasing attractiveness in the agricultural sector among private equities, shown by a former success transaction between an unnamed Danish agricultural processing company and a private equity company. Furthermore, when it comes to specific types of investment, the company has its own consideration regarding investment in agricultural land, since such investment offers relatively lower return compared to other type of investment. For instance, the return offered by investment in agricultural land is perceived to be below the Company's threshold rate of return.

Compared to the result obtained from the survey, there was a difference in regards to the type of investment. While the investors survey indicated that several AIFs tend to invest in agricultural land or crop farming, it was suggested from the interview that the PE perceives that the return offered by agricultural land is too low. Despite this difference, both result from the interview and the survey show similar major investors and preferred exit strategy, namely selling the assets or investment to other corporate.

5 Discussion, Conclusions and Recommendations

5.1 Discussion

Initially, the literature review was intended to evaluate the role of AIFs on the farm's performance. However, as the study evolved, it became clearer that assessing the impact on AIFs' investment on the farm's performance is complex due to the fact that improvement in farm's performance is not single-handedly determined by the investment itself. To a small extent, findings from literature review provide partial insight on how AIFs might potentially affect the farm performance, for instance how investment made by Blended Finance might improve the productivity growth, access to markets and capacity and technical skill of the farmers.

With regard to the theoretical framework, the principal-agent theory was found to be applicable to the findings obtained in this study, especially the case of Private Equity whereby the company acts as the agent who carries out the mandates given by its investors as the principal. This is shown by the fund manager's perspective in agricultural sector that even though the sector is interesting and efforts had been made to explore its potential, the Company has to act as an agent by focusing on the fact that the return offered by agricultural sector is still very low and do not meet their required return. Similarly, the principle of Value-Based Management was also applicable in this case, whereby PE as AIFs act for the best interest on behalf of the investors, in order to maximize its shareholders' value. The role of fund manager in PE is very crucial as their decision may determine the value of the managed funds.

In regards to dataset used in this study, initially, this study intended to investigate how much portion of agricultural lands in Europe are owned by farmers and non-farmers. However, such quantitative data were not available publicly hence unable to obtain. As an alternative, this study made use of Land Matrix dataset, which was publicly available. The Land Matrix contains the most current global land transaction and is useful to provide a starting-point for the topic of this study and an approximation on how large the size of an agricultural-related land transaction occurred for the past one and half decade. Analysis from this dataset provides an overview of the basic characteristics of agricultural land investors. However, the reliability of Land Matrix data could not be entirely ensured, because the data was collected from various public sources, i.e. from media reports, international and non-

governmental organizations and academics (Nolte, 2016). In addition, the classification of the investor type was done manually using public information of the investor, which may contain error or invalid information due to limited official company information and the possibility of translation error. There is approximately 5% of land deals with unclear company information, which might result in wrong classification of investors, and as a result, may distort the result of the analysis.

In addition, the findings obtained from land deals analysis gave a general view on the type and origin of investors in agricultural land, even though no pattern could be derived as the result of the regression analysis has shown a non-significant relationship between the size of the deals and the type of investors. This finding was not aligned with findings from literature review, which indicate that value chain actors have the higher tendency to acquire agricultural land for the purpose of securing flow of inputs, compared to other type of investors. However, it was found that the income category of the target country has a significant relationship with size of the deals, which aligns with findings from literature, where most of large scale agricultural land investments typically occur in less developing due to the low land prices.

In terms of data collection process, difficulties were encountered especially in conducting digital survey, due to low personal network and confidentiality issue of investors. Based on the obtained result, the respondents tend to dropout from the survey when opposed to more detailed questions which are not the core purpose of the survey, such as whether they appoint third party for conducting due diligence process. From this experience, simpler survey with more straightforward questions might have improved the survey's completion rate. However, despite the low rate of response, the result of the survey pointed out that investors with Owner-Operator business model typically have a higher portion of investment on agricultural sector with longer investment horizon compared to the Land-Lease business model, assuming all other factors remain constant. Possible reason for longer investment horizon is Owner-Operator investors are more involved in the business, hence they have invested in more highly specific assets when compared to the Land-Lease investors. In addition to that, result of interview was also used to for triangulation, by providing insights from one type of AIFs (PE). The result of the interview gave an idea that there is actually an interest from PE in agricultural sector, even though not specifically at the farm stage.

5.2 Conclusions

This study aimed to analyse the role of AIFs on financing farms by addressing four main objectives as follows:

Sub-Objective 1 : Review of potential role of investment funds in primary agriculture

Equity investors in agricultural sector or so-called AIFs could take many forms. This study identified five main AIFs, namely PE firms, Blended Finance, Value Chain Actors, Community Supported Agriculture (CSA) and Crowdfunding. Literature indicates that the investment activities of the five types of AIFs have been increasing over the past years by Each type of AIF manages its agricultural investment in different ways, depending on their objective:

1. **PE** receives mandates from its investors, mainly institutional investors, with aims to gain profit from capital gain. Therefore PE invests in an agricultural business of initiatives which seem to offer potential gain in the future, and not involved in day-to-day basis.
2. **Crowdfundings'** equity-investment model is typically similar with PE, although in their case, there is no intermediary, which allows attracted investors to directly devote their capital to the agricultural project or venture.
3. **Blended Finance's** investment generally is based on altruistic goals, hence the structure of the investment allows the combination of funding from public and private sector, whose risk tolerance differs.
4. **Value chain actors** invest in agricultural sector mainly to manage their supply risk, therefore evidences show that this type of AIF frequently acquires farmland which produces the commodities they need for their business operations.
5. **CSA** owns an entirely different business model, which enables the investors to both support the livelihood of the local farmers and at the same time secure their supply of agricultural products for their own consumption.

Sub-Objective 2 : Review of benefit and drawbacks of investment funds in primary agriculture

There was limited evidence from previous studies measuring impact of AIFs on farm performance, hence it is not possible to derive a general conclusion.

Sub-Objective 3 : Analysis of countries, regions, and investor types of the major agricultural land investors in low and middle income countries

Previous land transactions with the purpose related to agriculture mainly took place in low and middle income countries are dominated by investment made by investors originating from East Asia & Pacific and Europe & Central Asia. In general, most of the land deals were initiated by F&A value chain actors, which make up to 75% of the total investors. This aligns with the fact that on average, 59% of the investors acquire the land with the intention to acquire or to grow food crops. Results show that size of land deals does not depend on the type of investors, but is influenced by the income category of the target country.

Sub-objective 4 : To analyse the extent to which European investment funds play a role in the agriculture.

Findings from this study has shown that investors who invest in agricultural land / crop farming, with longer investment horizon or higher share of agricultural investment in their portfolio, tend to adopt Owner-Operator model more than Land-Lease model. Furthermore, PE, as one type of AIFs, invests in agriculture sector by overseeing the business it invests in through engaging the board of management, and do not directly manage the business. Despite this, PE nowadays has becoming more hands-on of their investment, by actively being involved in setting and monitoring the strategy implementation, although not directly exercise the day-to-day control.

5.3 Recommendations for further research

Based on the above, several suggestions for further research are proposed:

1. To engage more type of stakeholders both in terms of variety (by involving other types of AIFs) and quantity (to increase the number of study participants), in order to generate a generalizable conclusion towards differences across types of AIFs in terms of business models, average return requirement and risk tolerance.
2. In regards to data reliability on agricultural land investment, further study with longer timeframe could obtain more reliable data, for example by obtaining agricultural land parcel data from each Member States in the EU, altogether with the ownership data. This way, a more reliable conclusion could be derived to provide an overview on the current ownership of agricultural land.
3. As this study was not able to evaluate the impact of AIFs on the farm performance, further study might alternatively investigate the average return offered by different types of agricultural assets, to identify the gap or mismatch with AIFs' threshold of return and to better provide insights for the AIF's decision makers before entering into agricultural investment.

Appendices

Appendix 1 – Land Deals Analysis

Appendix 1.1 Land Deals based on Investor Region and Income Category of Target Country

Investor Region	Income Category of Target Country				Total	Percentage	Cumulative Percentage
	High Income Countries	Low income economies	Lower-Middle Income Economies	Upper-Middle Income Economies			
East Asia & Pacific	14	29	271	43	357	29%	29%
Europe & Central Asia	18	68	88	123	297	24%	53%
Latin America & Caribbean	15	1	11	205	232	19%	72%
Middle East & North Africa	0	24	30	24	78	6%	78%
North America	4	15	18	30	67	5%	84%
South Asia	0	29	13	2	44	4%	87%
Sub-Saharan Africa	0	84	63	8	155	13%	100%
Total	51	250	494	435	1230	100%	

Appendix 1.2 Land Deals based on Investor Country and Income Category of Target Country

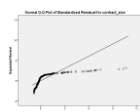
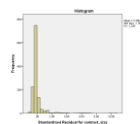
Investor Country	Income Category of Target Country				Total	Percentage	Cumulative Percentage
	High Income Countries	Low income economies	Lower-Middle Income Economies	Upper-Middle Income Economies			
Argentina	4	0	2	133	139	11%	11%
Malaysia	0	5	86	8	99	8%	19%
China	4	14	53	17	88	7%	27%
UK	9	20	22	7	58	5%	31%
US	2	9	17	23	51	4%	35%
Viet Nam	0	1	43	0	44	4%	39%
Singapore	10	8	20	4	42	3%	42%
Cambodia	0	0	39	0	39	3%	46%
Other Countries (n=93)	22	193	212	243	670		
Total	51	250	494	435	1230	100%	

Appendix 1.3. Assumption Testing : Normality of Residual

Before Transformation

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statisti	df	Sig.	Statisti	df	Sig.
	c			c		
Standardized Residual for contract_size	.301	1230	.000	.430	1230	.000

a. Lilliefors Significance Correction

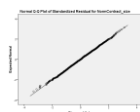


After Transformation (Two-Step Approach)

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for Transformed Contract_size	.021	1229	.200 [*]	.999	1229	.940

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction



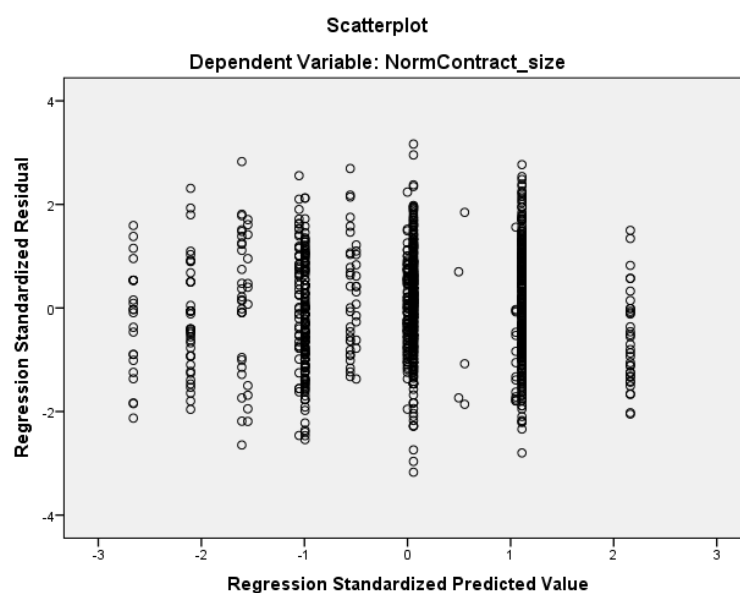
Appendix 1.4. Assumption Testing : Homogeneity of Variances

Levene's Test of Equality of Error Variances ^a			
Dependent Variable: Transformed Contract_size			
F	df1	df2	Sig.
3.951	14	1214	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + IncomeCategory_TargetCountry + Investor_Type + IncomeCategory_TargetCountry * Investor_Type

Appendix 1.5. Assumption Testing : Independence of Error



Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.056 ^a	.003	.002	61507.27903	1.615

a. Predictors: (Constant), Investor_Type, IncomeCategory_TargetCountry

b. Dependent Variable: NormContract_size

Appendix 2 – European Investors Survey

Dear fund / asset manager,

As part of my master thesis at Wageningen University I am conducting a survey to investigate the role of investment funds in providing access to finance for the agricultural sector. Through this survey, I would like to understand investors' preferences and opinion behind investment decisions in agriculture.

It will take approximately 10 minutes to complete this digital survey. Please kindly fill up the survey before Sunday, 27 January 2018.

This research is conducted under supervision of Miranda Meuwissen of the Business Economics Group of Wageningen University. For any questions about this research, please kindly contact me (Irma Savitri Sani at irma.sani@wur.nl or +31 (0) 6 14 86 49 96).

Please note that your answers will be handled in a confidential and anonymous manner. This means that your name or company will not appear anywhere and that your answers will never be linked to your name or company. You can stop the survey at any time. However your answers will not be valuable to the research anymore.

When you click 'I AGREE', you confirm that you have read this text, and that you have no further questions concerning the survey. Click on >> at the bottom of the page to start the survey.

Let me know by email (irma.sani@wur.nl) if you would like to receive a summary of the anonymised overall results of my research (expected to be available early January 2018).

I. Investment Activity

1. Do you invest in agriculture?
 - a. Yes
 - b. No (Thank you for participating in this survey)
2. Approximately, which percentage of your total AuM (Assets under Management) is invested in agriculture?
 - a. 1-100% (Scale answers)
3. In which of the following regions do you focus your investments in agriculture ? (multiple answers are allowed)
 - a. Europe
 - b. North America
 - c. South America
 - d. Australia & New Zealand
 - e. Others (Africa, Asia ...)
4. On which type of assets do you focus your investments in agriculture? (multiple answers are allowed)
 - a. Agricultural land / crop farming
 - b. Livestock farming
 - c. Buildings & Improvements (Storage facilities, Power Source, Water Supply, Soil Drainage, Irrigation)
 - d. Machinery / Equipment / Stables / Glasshouses
 - e. Working Capital
 - f. Others, please specify _____
5. If you invest in agricultural land, which of the following investment models do you mostly prefer? (one answer possible)
 - a. Own-to-lease (leasing the land for rental fee)
 - b. Own-to-operate (direct management)
 - c. Other, specify _____
6. Is your agricultural investment managed or run by third-party farm management services? (one answer possible)
 - a. Always
 - b. Sometimes
 - c. Never
7. Do you invest or engage in any contract with other actors along the agricultural value chain?
 - a. Yes → continue to question 8
 - b. No (End of the section)
8. Could you specify in which actor(s) along the value chain you invest -- or engage in contract with? (more than one answer possible)
 - a. Input suppliers (seeds, feed, fertilizer, technology)
 - b. Processors
 - c. Wholesalers

d. Others, please specify _____

9. Do you conduct a due diligence process prior to an investment decision? (one answer possible)

- a. Always → To number 10
- b. Sometimes → To number 10
- c. Never → To number 11

10. Do you appoint a third-party to conduct the due diligence process?

- a. Yes (In which role, please tick – more than one answer possible)
 - i. Financial due diligence
 - ii. Legal due diligence
 - iii. Operational due diligence (on farm)
 - iv. Others, please specify _____
- b. No

II. Investment Drivers & Future Outlook

1. Which parties are the major investors of your funds? (More than one answer possible)

- a. Pension funds
- b. Insurance companies
- c. High-net worth individuals
- d. Foundations
- e. Others, please specify _____

2. What is the most frequent origin of your investors? (One answer possible)

- a. Europe
- b. North America
- c. Australia & New Zealand
- d. Others

3. How would you rate the following statements :

Statements	Disagree	Somewhat disagree	Neutral	Somewhat Agree	Agree
The reason for investors to invest in the agricultural sector is to address the food security issue.					
The reason for investors to invest in agricultural assets is to hedge against inflation.					
The reason for investors to invest in agricultural assets is the low / negative correlation with other asset classes.					
Currently, there is significantly higher interest in agricultural investment compared to 5 years ago.					
In 5 years, there will be significantly more interest in agricultural investments compared to now.					

III. Investment Evaluation and Exit Strategy

1. What is the average duration (*holding period*) of your investment in agriculture?

(Slider type of answer, from 1-100 scale)

Average holding period (in years)

0 100 0

2. What is your most typical or preferred exit strategy with regard to investments in agriculture? (One answer possible)
- a. Sale of the funds' assets to individual buyers (liquidation)
 - b. Sale of the investment to corporate acquirer (trade sale)
 - c. Others, please specify _____

Thank you for taking the time to complete this survey. I truly value the information you have provided.

Appendix 3 – List of Interview Questions

1. Investment Activity

- Approximately, which percentage of your total AuM (Assets under Management) is invested in agriculture?
- In which regions do you focus your investments in?
- On which type of assets do you focus your investments in agriculture?
- Do you invest in agricultural land? If yes, do you manage it directly or lease it for rental fee?
- Is your agricultural investment managed or run by third-party farm management services?
- Do you invest, engaged in or are interested in having any contract with other actors along the agricultural value chain?
- Could you specify in which actor(s) along the value chain you invest -- or engage in contract with? (Input suppliers, processors, wholesalers)
- Do you conduct a due diligence process prior to an investment decision?
- Do you appoint a third-party to conduct the due diligence process? If yes, which aspects? (financial, legal, operational, others)

2. Investment Drivers and Outlook

- Which parties are the major investors of your funds? (pension funds, insurance, high-net worth individuals, foundations, others)
- What is the most frequent origin of your investors? (Europe, North America, Australia & New Zealand)
- What are your investors' reasons in investing in agricultural sector? (food security, hedging against inflation, low or negative correlation with other assets classes, attractive return, others)?
- In your opinion, is there significantly higher interest in agricultural sector compared to 5 years ago? And how about the upcoming 5 years from now?

3. Investment Evaluation and Exit Strategy

- What is the average (or intended) duration (holding period) of your investment in agriculture?
- What is your most typical or preferred exit strategy with regard to investments in agriculture?

Appendix 4 – Interview Transcription (After Coding)

Transcript	Label	Category
<p>(R) : Robert?</p> <p>(I) : Hello, good afternoon Mr. Robert it's Irma speaking, um</p> <p>(R) : How are you?</p> <p>(I) : Hi are you still busy, hi I'm great. Are you still busy or should I call you back later?</p> <p>(R) : No, this is good time.</p> <p>(I) : Okay good, okay. Um, yeah how are you?</p> <p>(R) : I am good okay thank you, eh just um, I've been, I've been away skiing for a few days so, 00:27 it's good to be back then, I think it's good catching up and everything and so that's why, why I postponed the phone call 00:35</p>	Introduction	
<p>(I) : So yeah, thank you so much for sparing your time to help me out do my research.</p>	Investment focus	Investment Strategy
<p>(R) : Yep.</p> <p>(I) : So previously I previously received a personal recommendation to contact you since XYZ might have some interest in agricultural sector, is that correct?</p>	Interest in agri-sector	Investment Strategy
<p>(R) : Yes, I mean we've um, 01:01 as a fact we don't specialize in the any particular 01:06 industry but the sort of industry agnostic, 01:10 as we look, we look across 01:13 industry and we've spent a couple of years we spent considerable amount of time looking into the 01:22 agri sector, we previously owned a company which produces seed to our input to animal feed source of protein substance to um, 01:40 to feed in which we were we sold that I think two or three years ago. So we've had some interest in previous engagement 01:54 but we also look sort of across the value chain of different course of the value chain 02:00 but um I mean like animal protein company is a very early in the value chain 02:04 the input chain and seed or 02:06 sort of into different equipment, to different part of the agri sector also in terms of how we look 02:14 together which Wilhelm Uffelman on one particular project so we've been around the value chain I would say I've spent time in general, sort of trying to</p>	<p>Previous investment</p> <p>Value chain</p>	<p>Perspective</p> <p>Perspective</p>
	Interest in agri-sector	Investment Strategy
	Value chain	Perspective

	understand the sector and how um and where investor 02:32 like us can could see potential value.	Fundamental requirement	Investment Strategy
(I)	: Okay, and if I may know, agriculture is not the focus in your portfolio right?	Global Perspective	Investment Strategy
(R)	: No.		
(I)	: Right, okay.		
(R)	: Exactly.		
(I)	: So it's not like the major sector in your portfolio, I see, um also Dr. Wilhelm mentioned something about the, I don't know it it's confidential or not, but he mention about the pork farming sector that you are interested in, um, are you allowed to speak about that or?	Opinion on agriculture land	Perspective
(R)	: Uh I mean so yes we look at together with Wilhelm to look at sort of the pork industry and different angles on that, but I mean we so, but we haven't sort of concluded any projects or investment in there as of yet, so, but we look to add it and, yeah seek it, it can be an interesting area if you find the right angle and the right type of 03:42 your investment and that also sort of one part of the value chain that can be interesting.	Concern on return	Perspective
(I)	: Okay, so I will keep it as a general. So may I know like which regions do you invest in the agriculture sector, is it only in Denmark or do you also invest in companies outside Denmark?	Return target	Investment Strategy
(R)	: So the way we work is that the, our mandate is to invest in Nordic based, Nordic founded companies, um, so 04:13 so it should be um Nordic angle either is I mean we've we deployed historically we invested in a lot of companies with most of our companies and many of them have some international global aspect, so a lot them they might have a Nordic headquarter but their production might be in the US, in Asia in Eastern Europe and then 04:36 might also big so we try to, I mean we like in general we like companies to have a global perspective in 04:49 in any industry but there should be a Nordic connection with our mandate of focus.	Concern on return	Perspective
(I)	: Okay, I see, understood. Also you mention that you invested along the supply chain so besides like livestock you also invest in the input like animal feed, do you also invest in like lands,	Involvement in management	Mechanism
		External advise	Mechanism
		Type of investors	

<p>(R) : buildings or machinery and other type of assets? I'm just curious though.</p> <p>(R) : I mean it's not something that excluded, I won't say that any sort of part of the value chain will be 05:24 included I think per say I think we can be I mean we could be interested in 05:29 across the value chain and all that, if we invest in land or agriculture land then that's, then I mean as an investment opportunity so I guess from our 05:42 private equity perspective, it's a bit different from investing in processing equipment for example, so I think it's all about sort of the return you can get, and when you do investment in agriculture 05:56 the return on investment, so it's relatively low compared to other areas, so I guess, I mean for us, we, we're standard, we were um in terms of return requirement and where we're focus were 06:14 typical segment more get 06:16 private equity fund so when we target mid 20s return, and I mean, that's so I think looking at agricultural investment I think that sort of inline, I that that sort of outside of our reach in terms of return requirements.</p> <p>(I) : Hem, I see okay, make sense. Also when you run like the agri sector investment do you appoint like third party to manage the company or do you like manage it directly?</p> <p>(R) : When we invest in companies we want to take an active role in how to manage the company, I mean management will, we are running the company but we act as a sparring partner to the board to have sort of an ongoing dialogue with management 07:14 supporting in different activities where we can add value but we don't run companies but we try to as active as possible.</p> <p>(I) : Okay, so is that where the consultant like Rolland Berger comes, their role is to conduct like to check the due diligence, is that correct?</p> <p>(R) : Exactly, exactly. In fact yeah it is.</p> <p>(I) : I see, understood.</p> <p>(R) : Yeah so I mean given that we not 07:40 in act sort of particular I mean we have obviously in some industries we've had some experience previously, we have insight but generally we try to utilize different 07:57 advise from different</p>		<p>Investors' Role and Mandate</p> <p>Investor's Origin</p> <p>Opinion on agri-sector investment</p>	<p>Investment Strategy</p> <p>Mechanism</p> <p>Investment Strategy</p> <p>Perspective</p>
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	<p>roles in order to help us evaluate the attractiveness of pork industry, particularly investment.</p> <p>(I) : Oh I see okay, understood. Now I would like--</p> <p>(R) : Like Roland Berger.</p> <p>(I) : Nice, okay, because I am not really familiar with this private equity, so I would like to dig in about it because I cannot really find it in literature as well. Yeah, so I would like to move on to investment drivers now, so if I may know, who are the major investors in your funds, is it like institutional investors or they are mostly like high net-worth individuals?</p> <p>(R) : No, solely institutional investors.</p> <p>(I) : Okay.</p> <p>(R) : Yeah exactly, so basically the way it works is that we go out to investors we have access, so yeah.</p> <p>(I) : And also are they aware that you, that they are investing in agriculture sector or it's just like little part of their portfolio?</p> <p>(R) : I mean we, so they I mean some investors they know we have a mandate from the investors, and we always operate within that mandate and then we have a dialogue an ongoing dialogue with our LP so investors say terms of what investment we do and how we, how we evaluate those investment so on, so they fully aware sort of the investment that we do and how we go for it, but we have sort of within our mandate we have the 09:34 different affinity to focus on the projects that we think are interesting and then we sort of propose to the funding to invest in different opportunity. So they are fully aware sort of on how we operate.</p> <p>(I) : Also are the investors, again mainly from Nordic areas or they are also from foreign investor like Chinese or um?</p> <p>(R) : It's a mix, so our investor base is 10:07 it's a mix of the Nordic and European investors, mainly but we don't limit ourselves to the geography in term of investors.</p> <p>(I) : I see, now it's more, uh, I would like to ask a question that is more like a related to my theory, do you agree that investing in agriculture provides you like inflation 10:32 hedging tools or like low and negative correlation with other</p>	<p>Future outlook in agri-sector</p> <p>Future outlook in agri-sector</p> <p>Industry network</p> <p>Opinion on agri-sector</p> <p>Precedents</p> <p>Holding period of previous investment</p> <p>Investment horizon</p> <p>Average holding period</p> <p>Exit strategy</p>	<p>Perspective</p> <p>Perspective</p> <p>Investment Strategy</p> <p>Perspective</p> <p>Perspective</p> <p>Perspective</p> <p>Mechanism</p> <p>Mechanism</p> <p>Mechanism</p>
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	assets or you just like blindly take a look at the, how do you call it, like return/ROI?		
(R)	: So the first point 10:45 if you can elaborate more on that.		
(I)	: Okay, like in my theory I mentioned that investment funds are investing in agriculture also because of the motive that they could have like inflation hedging tools, and also they perceive that agriculture has a low or negative correlation with other assets, so yeah, it's the same like hedging, pretty much like hedging tools when other, like when other--	Closing	
(R)	: In terms of the business cycle and so on?		
(I)	: Yes right.		
(R)	: Yeah, I mean I think when we look at any, I mean investment I will look that, I think we have, there is several dimensions and I completely 11:30 agree with you, I mean I will say yes and yes. I mean we always look at the particular sort of specific investment to see how does that, I mean in isolation if that an attractive or interesting investment, yes or no, and then, then given, and then we also add sort of the portfolio aspect saying how does that sit in with the rest of our investment and the mix of the portfolio, I think it's absolutely accurate to say that you do look at it from a portfolio aspect to see how sort of it correlate with other assets where for example and it could potentially depending on how you given it, it could be an hedging in that sense 12:27 towards specific cycle in our investment circle, you could 12:32 argue that, yeah.		
(I)	: Oh I see, thank you. And do you think that there has been an increasing interest in agriculture sector, I mean like increasing interest of private equities in agriculture sector in the past 5 years or you think like there is no increasing trend at all?		
(R)	: I think to be complete honest I don't, I can't answer sort of a generally I mean I can't say that for I can say that for I mean for 13:04 XYZ, it's an industry that we've look into historically uhm so it's not only sort of the recent years that we've had, that we looked into it, I mean we spent a lot of time over the last couple of years so I don't think it's not, I mean it's driven from the fact that we uhm, so we look at a lot of different		

	<p>industry, we did studies in industries to see where it could be attractive as sort of 13:37 part of the value chain, to see that where we could add value or providing the better support for companies and then so we've, over time we have done a couple of studies on the agri sector in general and also invested in animal protein company, so we also 13:53 if there sort of knowledge on how the industry works and the volatility specially on the sort of the, the as we discuss the pork side. So I think, I think as it is difficult to sort of have a general, I am not at the position to have sort of a general view on the--</p> <p>(I) : On agriculture?</p> <p>(R) : From other funds and so on, but it's definitely something that we 14:23 that I think definitely something that given sort of the where you see the market uhm it's, I think it's increased 14:33 attractiveness of the industry. Given sort of way see it as the general trend in the economy, and the market in terms of how we can see it to uhm private equity portfolio, so I think that's fair enough to assume that.</p> <p>(I) : So having experience like for example having experience in the animal protein company, then you build expertise on the agriculture sector is that correct, like how that, how does that work?</p> <p>(R) : Yes, exactly I mean that, that other just sort of they are uhm building 15:03 network within the industry in Nordic and then also, but I mean we look at sectors prior to animal protein as well regarding sort of that's how we found the investment, but I mean so it's been done, I mean it has been an ongoing process where we look at different opportunities and being sort of Danish related as well, I think I mean that Denmark has a lot of knowledge within the agriculture sectors so it's natural for us to choose to look at this sector, so I think if we look at the market there's has been a huge Danish companies that's been sort of sold, there is a processing company and there is sort of a company producing equipment for big farms and so on that's recently sold to private equity company, so there is definitely success 15:54 across the value chain from this.</p> <p>(I) : I see, so I think my last two questions wouldn't be too relevant because I would like to ask like,</p>		
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	<p>do you know if there is average holding period of agriculture investment but then I don't think it's relevant. So I'm just going to ask like for the animal protein investment, how long was the holding period for the company?</p> <p>(R) : I think, you can uhm I think it's on our website I think,</p> <p>(I) : Oh okay, okay.</p> <p>(R) : But I think I wasn't involved, I think it was 6 years, but I might be, I might if I am being correct.</p> <p>(I) : Yeah I will check it.</p> <p>(R) : But I think it was 6 years holding period. So an average I think when we look at companies we have a mandate I mean looking at the sort of the maturity of the fund and so on, so we usually we have agreed 7 years investment 16:54 horizon when we look at companies. That's the price to I mean we usually look the same way on old time 17:04 investment obviously with flexibility on today's characteristic so that, when we look 17:13 to see I think that base 7 years is where we-</p> <p>(I) : Grow average.</p> <p>(R) : Into yeah, and average is 5, like 5.2 or 5.5.</p> <p>(I) : Okay, do you also think that I can find the information about the exit strategy of your previous agri-investment in your website? I'm just wondering whether you sell it to individual buyers or other corporate or?</p> <p>(R) : Yes we sold it to 17:36 Goldman Sachs and Altor and uhm 17:40 they are two uhm Goldman Sachs private equity.</p> <p>(I) : Oh I see.</p> <p>(R) : Urm 17:43 and then also uhm Altor which is a Nordic 17:48 private equity company.</p> <p>(I) : Alright, okay. I see, so that's it, that's pretty much all my questions that I would like to ask. Once again thank you very much for helping me, I hope you a great evening Mr. Robert, that's it that I wanted to ask.</p> <p>(R) : Yeah, if you have any any further questions please to reach out, I think I am always 18:15</p> <p>(I) : Okay.</p> <p>(R) : So, yep.</p> <p>(I) : Thank you very much Mr. Robert I will also thank Dr. Wilhelm for passing me the contact.</p>		
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(R)	: Yeah thank you.		
(I)	: Okay thank you.		
(R)	: Have a nice day, bye.		
(I)	: You too, bye.		
18:39			

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