HOW FEASIBLE IS A CONVERTIBLE IJARAH CONTRACT FOR SME FINANCING?: A SIMULATION APPROACH

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ABSTRACT

Islamic financial institutions have relied for decades on margin-based contracts to provide financing for the business sector, despite the basic idea that Islamic finance is expected to provide an equity-based or a profit and loss sharing (PLS) contract. This fact raises the need to encourage the use of a margin-based instrument with an innovative scheme that allows for conversion of the contract into a PLS-based contract. Moreover, we propose a convertible ijarah contract to fill this need. A convertible ijarah contract is an ijarah (rent) contract that is convertible to a PLS contract according to the Islamic financier's decision. In this study, we simulate three scenarios of project financing with (a) murabaha as a margin-based contract, (b) musharaka as a PLS contract and (c) a convertible ijarah contract. The aim is to evaluate whether the convertible ijarah contract will provide a higher return for the financier compared to the other contracts. The main input of the simulation is nine sectors of Indonesian SMEs' financial performance. We found that when the financial performance of Indonesian SMEs was measured by short-term financial performance, the convertible ijarah contract outperformed the murabaha contract for all sectors but did not outperform the musharaka contract, except for low-margin sectors. However, when the financial performance of Indonesians SMEs was measured by long-term economic performance, we found that the convertible ijarah contract outperformed the murabaha contract and musharaka contract for almost all sectors.

Keywords: Convertible Ijarah Contract, Islamic Venture Capital, Cash Recovery Rate, Profit and Loss Sharing Financing, SME Financing, Simulation Method.
JEL Classification: G21; G23; G24; G28; O3.

I. INTRODUCTION
1.1. Background
1.1.1. Basic Feature of Islamic Finance: PLS
The basic feature of Islamic finance is to replace interest rates with profit and loss sharing (PLS) or an equity participation system (Iqbal & Molyneoux, 2005; Khan, 1986; Warde, 2000). Aggarwal and Yousef (2000) stated that proponents of Islamic finance argue that profit-sharing contracts (equity) are superior to debt contracts for a variety of reasons, including the risk-sharing properties of equity and the promotion of economic growth by providing long-term financing to growth-oriented sectors of the economy. However, even though Islamic banking has been operating for five decades, their practices are still not in line with the ideal form based on a PLS or equity participation system. Islamic bank operations deviate in terms of the substance of the contract and the pricing of financing (Anwar, 2003; Chong & Liu, 2009; Hutapea & Kasri, 2010). Many Islamic scholars have tried to explain this deviation phenomenon. One of the most accepted reasons is the financial market's asymmetric information environment, in which Islamic banks operate (Khan, 1986; Roy, 1991; Warde, 2000; Azmat, Skully & Brown, 2015). A bank is a highly risk-averse financier. The presence of asymmetric information makes banks prefer debt to participation or equity as a financing choice, and this holds true in the case of Islamic banks (Azmat et al., 2015).

1.1.2. Asymmetric Information
Asymmetric information results in adverse selection and moral hazard problems. The adverse selection problem refers to a condition in which a financier seeks a good project but adversely finances a bad project. The adverse selection problem arises due to a lack of private information regarding the prospect or risk of the project (Carlier & Renou, 2006). The adverse selection problem causes credit rationing, especially for borrowers who do not have enough assets to use as collateral (Stiglitz and Weiss, 1981), and spurs unproductive investments (De Meza & Webb, 1997). Meanwhile, moral hazard may occur when asymmetric information causes change in the behavior of the contracting parties in the form of misreporting (Carlier & Renou, 2006; Azmat et al., 2015) and excessive risk taking (Azmat et al., 2015). However, the theoretical model developed by Azmat et al. (2015) showed that the moral hazard problem is not as severe as the adverse selection problem, since the moral hazard problem can be neutralized using long-term relationships or punishment strategies.

1.1.3. The Need for Innovation is Islamic Financing Scheme
The deviation of Islamic banking operation from the ideal form around the world raises the need to seek other institutions to provide financing that is more compliance with the conceptual framework of Islamic finance. Such an institution should be an equity-based financier. The capital market is an equity-based source of financing, but it cannot be accessed by small and medium-sized firms (SMEs). There is another kind of equity-based financier called venture capital firms. A venture capital market is an equity market in nature and is less risk-averse than

banks. In many cases, a venture capital firm is willing to invest in high-risk start-up firms that only have new product ideas. The objective of a venture capital firm is to add value through learning and innovation (Bergemann & Hege, 1998) so that the venture capitalist can sell their share later at a high price. They usually also provide the venture with organizational, managerial, and technological assistance and industry networking (see Gompers & Lerner, 2001; Guler & Guiller, 2010) to increase the venture's chance of success. A venture capital firm usually aims to reach the harvest time for selling the venture at the initial public offering (IPO); in many cases, ventures are even sold to investors prior to the IPO. In sum, venture capital financing has a positive impact on entrepreneurship, innovation (Ueda, 2004), job creation (Schmidt, 2003; Paglia &Harjoto, 2014), and thus the growth and development of the economy (Vergara et al., 2016).

Adapted from existing venture capital firms' operation, Islamic finance might develop Islamic venture capital firms. Al Suwailem (1998) stated that the arrangement of venture capital financing appears very close to musharaka model financing, a type of PLS-based financing. However, Islamic venture capital needs to develop financing schemes that comply with Islamic sharia rules and are workable in the market. Islamic venture capital is expected fill this need, provide financing for SMEs, spur invention and innovation, create jobs and ultimately contribute to economic growth.

In providing funding for start-ups, venture capital firms commonly provide convertible debt or convertible preferred stock financing. These contracts will be converted into equity if a project succeeds and the venture capital firm converts it into equity or shareholdings. Kaplan and Stomberg (2004) found that convertibles account for 90% of all start-up financing contracts in United States. Convertible securities provide an opportunity for venture capital firms to carefully assess the prospects and risk of the project as well as the trustworthiness of the entrepreneur before making a decision regarding whether the business will be further financed or liquidated (Ozerturk, 2008).

Based on studies described previously, we propose a convertible ijarah contract for PLS-based of Islamic business financing. This contract is adapted from convertible contracts provided by venture capital firms. A convertible ijarah contract here refers to an ijarah (rent) contract with the option to be converted into a musharaka or equity contract by an Islamic venture capital firm. An ijarah contract is an asset rent contract, where the financier acquires an asset needed for business operation and leases it to an entrepreneur for a period with a scheduled rent payment. It is assumed that in the period of the ijarah contract, the financier would be able to collect any information regarding prospects and risks of the project and the integrity of the entrepreneur. This information reduces information asymmetry between the financier and the entrepreneur, thus reducing the adverse selection problem. After a thorough evaluation along the period of ijarah (i.e., rent), the Islamic venture capital firm can decide whether the project is feasible to finance further with equity or PLS scheme. The Islamic financier would then convert the contract into musharaka if the project shows a high growth potential, stay in the ijarah contract if the project has only moderate returns, or even liquidate the assets if the project fails. This convertible contract is expected to increase equity or PLS-based Islamic financial institution financing, especially Islamic venture

capital financing. Using this scheme, Islamic financiers are expected to increase their profitability.

In terms of Sharia, there are currently two statements (fatwa) of the Indonesian National Sharia Board (Dewan Syariah Nasional, DSN) that might be used as a basis for the discussion about the endorsement possibility for the convertible ijarah contract proposed here. These are (a) Fatwa number 49/DSN-MUI/II/2005 about Conversion on Murabaha and (b) Fatwa number 59/DSN-MUI/V/2007 about the Convertible Mudharaba bonds.

1.2. Objective of the Study

This study aims to evaluate the economic feasibility of the convertible ijarah contract proposed here. Specifically, it seeks to answer the question of whether it is feasible to provide this contract for Indonesian SMEs. This is crucial because SMEs account for more than 98% of all Indonesian business firms and provide more than 95% of Indonesia's employment. The analysis was conducted using a simulation method. Simulation was chosen because there are no data on the convertible ijarah contract. We designed the simulation by making three contract scenarios for SME financing. These are the murabaha contract, musharaka contract and convertible ijarah contact. The question we posed is whether providing financing with a convertible ijarah contract would result in better performance compared to financing with a murabaha contract and financing with a musharaka contract.

The main input of the simulation is the financial performance of Indonesian SMEs for the period of 2004-2010. These data were generated from Indonesia's central bank. Indonesian SMEs are here divided into nine categories based on Indonesia's central bank's categories. The Indonesian SMEs' financial performance was measured by the operating cash flow rate (OCFR) and the cash recovery rate (CRR). OCFR is a short-term profitability measure, while CRR is a long-term economic measure. There are 343 SMEs involved in nine sectors. We used these data to generate each sector's 'future data' of Indonesian SMEs' financial performance using Monte Carlo simulation or bootstrapping, which produced 10,000 points of data for each sector.

The rest of this paper is divided into five parts. Part two presents a literature review on the deviation of Islamic banking operations from the profit and loss sharing (PLS) system and review of venture capital and convertible contracts, followed by the construction of the conceptual framework for the convertible ijarah contract in part three. The research methods are detailed in part four, while the discussion and analysis will be provided in part five followed by the conclusion.

II. LITERATURE REVIEW
2.1. Islamic Banking Deviation from PLS System

Iqbal and Molyneoux (2005) stated that the basic feature of Islamic finance is to replace interest rates with a profit and loss sharing system (PLS) on both the asset (financing) and liability (savings) sides of the balance sheet. PLS on the financing side will lead capital allocation to be closely linked with economic growth, while PLS on the liability side will lead the income distribution of the society to be

aligned with financial institution performance. PLS on both sides will encourage distributive justice and prevent a wide income gap in society.

In practice, Islamic banking operation deviates from this system. Islamic banks around the world rarely provide financing based on the PLS system. Aggarwal and Yousef (2000) found that Islamic bank financing deviates from the ideal scheme in three ways. First, PLS financing is rarely employed; instead, Islamic banks generally rely on murabaha contracts in financing, despite the fact that these contracts resemble a standard debt contract. The most notable feature of the standard debt contract is that repayment does not vary under a wide range of circumstances, as it does with the murabaha contract. According to Anwar (2003), 45-93 percent of Islamic banking financing is murabaha compared to PLS for only 1-17 percent of mudharaba and 1-20 percent of musharaka. This phenomenon is called "murabaha syndrome" by Youssef (2004). Second, Islamic bank financing is biased to short-term financing, while only a minimal portion involves long-term financing. Third, financing tends to be 'secured' by requiring collateral over the asset acquired through financing Anwar (2003) skeptically stated that the change in the Islamic banks is more of a change in the form of the contract, without a fundamental change in the operations of the Islamic banks that confuse the public.

Another phenomenon that confuses the public is the pricing process of Islamic banks. Chong and Liu (2009) stated that the yield (or investment rate) of Islamic bank deposits was not interest free, but closely pegged against conventional bank interest rates on deposits. Moreover, the short-term dynamics indicate the mean reversion rate of the investment towards the long-term equilibrium level. This finding was reinforced by Hutapea and Kasri (2010), who found that the yield of Islamic banks is closely related to conventional bank interest rate fluctuations, while Ariss (2010) concluded that there is no significant difference between the profitability of Islamic banks and conventional banks, and Farook (2012) found that Islamic banks were proven to perform management profit distribution to savers.

A number of reasons have been proposed to explain why Islamic bank financing practices deviate from the ideal scheme. Roy (1991) mentioned that Islamic banks could not apply the rule of Sharia because they are constrained by the need to compete with conventional banks that operate within the interest rate system. This competition has led to Islamic banks using margin-based financing to provide competitive returns for depositors. Furthermore, Khan (1986) mentions that the interest-based contracts currently used in conventional banks have evolved over several centuries and operate in an asymmetric information environment. As a result, Islamic banks that operate in the same asymmetric information environment will operate 'very closely' to the techniques used by conventional banks. Azmat at al (2015) stated that the presence of information asymmetry requires Islamic banks to select a mode of financing that will minimize their risk, and why debt-like products dominate Islamic banking assets.

Financial markets do not operate like other goods and services markets. There is no equilibrium in financial markets due to the asymmetrical information (e.g., Arkelof, 1970; Stiglitz &Weiss, 1981). Carlier and Renou (2006) divided asymmetric information into two types of problems, the adverse selection problem and the moral hazard problem. De Meza and Webb (1990) defined adverse selection as a problem

that arises because the ability of the bank to assess a project is lower than that of the entrepreneur seeking capital. The adverse selection problem occurs when a lender is evaluating a financing proposal. Every lender wants to provide financing for entrepreneurs that have a good project (i.e., a project with high profitability and low risk) and want to avoid bad projects. During the proposal evaluation process, information related to the prospects and risks of a project might be highly asymmetric between the lender and borrower, which lead to a situation in which a poor project might actually get financing, and vice versa. Carlier and Renou (2006) defined the adverse selection problem as ex ante asymmetrical information, a condition in which each lender and borrower has a different private opinion about the possible outcome of a risky project. Differences of opinion can be in the form of differences in ownership of private information or simply differences in subjective beliefs even with the same ownership information. The other type of asymmetric information, in the form of the moral hazard problem, arises after financing is granted and repayment does not settle completely due to untrue reporting or uncontrollable entrepreneur efforts. Thus, the adverse selection problem refers to the ability to pay and the moral hazard problem refers to the willingness to pay.

2.2. Venture Capital Financing

Al Suwailem (1998) suggested to developing Islamic venture capital to encourage PLS or equity based financing. He stated that the arrangement in venture capital financing appears to be very close to that of musharaka model financing. However, developing PLS-based financing (mudharaba or musharaka) in Islamic venture capital needs extensive work, both from the theoretical and compliance with Sharia side and from the practical side. Durrani and Boocock (2006) argued that there are two primary reasons that justify the need for Islamic venture capital. First, the low state of economic development in the Muslim world increases the need for technological innovation and entrepreneurial assistance. The development of Islamic venture capital firms should fill this need and might become a vital contributor to a long-term strategy of economic growth. Second, it is believed among Islamic scholars that venture capital finance has its roots in the Islamic world, especially in the concept of mudharaba and musharaka. This financing scheme provides support to those who have entrepreneurial skills but lack financial resources.

A venture capital firm is a type of financial institution providing funds for businesses seeking capital. It holds a portion of equity stake in the venture financed to gain a high cash flow when business is successful. When banks become lazy in evaluating projects based on their future prospects (see Manove, 2001), venture capital firms deliberately seek high future prospect projects and evaluate the funding proposals. Venture capital firms often provide funding for start-ups that entail high risk and high information asymmetry. Most venture capital firms aim to either bring the venture financed to initial public offering (IPO) or sell the venture for a high profit before the IPO. Thus, venture capital firms put forth any effort needed bring about success for the project or the venture. Venture capital firms work more than pure financial intermediaries. They usually provide the venture with organizational, managerial, and technological assistance as well as industry networking (see Gompers & Lerner, 2001; Guler & Guiller, 2010).

The venture capital industry has played an important role in spurring innovation and entrepreneurial activity in the US. Bergemann and Hege (1998) mentioned that among the advantages of venture capital firms' financing is the process of learning and innovation. The learning process increases the chance the project will succeed in the next period, while the innovation process increases the marginal return of the additional financing provided. Bank lending to small firms in the US has been constant or even fallen since 1977, whereas venture capital investment was almost 100 times larger in 2001 than it was in 1977 (Ueda, 2004). Moreover, Kortum and Lerner (2000) found that even though the R&D of venture capital in the USA during the 1983-1992 periods was less than 3 percent, it contributed more than 8 percent of industrial innovation. According to Schmidt (2003), while venture capital funding accounts for only a tiny fraction of the total corporate investment in the US, its impact on the economic growth and the creation of new jobs is dramatic. Moreover, Paglia and Harjoto (2014) summarize several studies reporting the performance of VC-backed firms to non-VC-backed firms. VC-backed firms have significantly higher revenues, employment growth rates, and higher operating efficiency due to better screening and monitoring. Vergara et al. (2016) highlighted the importance of VC in the entrepreneurship and economic growth process. They stated that VC industry has played a key role in provide financing for entrepreneurs in United States. Companies such as Google, Intel, FedEx, Apple and Microsoft, among others, are US public companies that were backed by venture capital firms. These VC-backed companies provide 38 percent of total employment, account for the 63 percent of total market capitalization and spend 85 percent of total research and development.

2.3. Previous Studies on Convertibles in Venture Capital Financing

Venture capital firms often use convertible securities (convertible debt or convertible preferred stock) for financing start-up firms. Convertible debt or convertible preferred stock generally will be converted into common shares when the business is successful. Petersen and Rajan (1995) stated that start-up firms tend to have high cash flow prospects but low actual cash flows. With convertible securities, investors are willing to accept a low (or even negative) cash flow in the early stages of the business cycle, as they expect to get a high cash flow in the future. Empirical study on financial contracting by Kaplan and Stromberg (2004) found that convertible contracts account for over 90 percent of all financial agreements in their sample start-up firms. A convertible contract combines debt and equity financing with a conversion feature that gives the claimholder (lender) the right to convert the debt into company equity with specified terms. This conversion feature can be superior to pure debt, pure equity, or mixed financing due to high information asymmetry. Ozeturk (2008) argued that the business strategic action employed by entrepreneurs determines the riskiness of the venture payoff. The conversion into equity may prevent the entrepreneur from defaulting strategically and walking away from the venture. Schmidt (2003) showed that convertible debt gives efficient investment incentives when the entrepreneur and investor move sequentially in a double moral hazard type of problem.

2.4. Conceptual Framework of Convertible Ijarah Contract

There are several kinds of margin-based or debt-like contracts in Islamic finance, such as murabaha and ijarah. A murabaha contract is an arrangement for selling an asset or goods with a non-cash payment. The financier charges a margin on the asset cost for the sale. The buyer pays the full price with a serial payment for a given period. A murabaha contract is commonly described as cost plus financing. Meanwhile, an ijarah is a rent contract. The financier here buys an asset and rents it to the entrepreneur for a period with a certain rent payment. The most important difference between murabaha and ijarah is the ownership of the asset. In a murabaha contract, the ownership has been moved to the buyer as stipulated by the contract. However, in an ijarah contract, the ownership of the asset stays with the financier. Thus, in a murabaha contract, the financier has no right to convert it into another, whereas such conversion is possible in an ijarah contract.

The convertible ijarah contract proposed here has several characteristics. The nature of this contract is business project financing with a profit and loss sharing (PLS) scheme. At the first stage, financing is provided in the terms of the ijarah (rent) contract. This rent period provides an opportunity for the financier to accumulate information about the prospects and risk of the project, as well as to collect information related to the entrepreneur such as the effort he has put in the business, his competence and also his credibility. Many of these are difficult to estimate based on hard information on financial statements provided before the funding was granted to the project. A financing contract is an incomplete contract, typically meaning that the effort level and strategic decisions of the entrepreneur cannot be define clearly when the contract is signed by the parties (Aghian &Bolton, 1992; Lacker, 2001; Ozeturk, 2008). However, effort levels and strategic decisions are crucial to determine the success or failure of the project. The process of information accumulation does not necessarily mean that the project may have better prospects but rather that assessment process will reduce the valuation gap between the financier and the entrepreneur regarding the actual prospects and risks of the project. The ijarah (or rent) period will also reveal the efforts and strategic decisions of the entrepreneur. This information accumulation thus reduces the adverse selection problem of PLS or equity based financing such as musharaka contract financing. If the thorough examination during the ijarah (rent) contract concludes that the project has good prospect for funding in the PLS scheme, the financier would execute his right to convert the contract into a musharaka or equity contract.

The convertible ijarah contract proposed here has several features:(1) the financing is for real assets or a long-term investment, (2) the conversion terms are predetermined, and (3) the asset acquired functioning as an inside collateral.

The first feature of the convertible ijarah contract proposed here typically involves financing for real assets or a long-term firm investment. This might involve capital budgeting project providing fixed assets needed for business operation, or it might be financing for a start-up firm. Financing for a long-term investment is the main source of a firm's future long-term cash flow. It should be noted that the financing contracts undertaken could not be securitized to be traded in the financial market. An Islamic financial institution, as the financier of the project, still bears the risk until the exit time of financing. For this reason, the

financier should evaluate the financing decision primarily based on the prospects and risks of the project.

The second feature of the contract is related to the terms of the convertible contract. The conversion terms and condition of the convertible ijarah contract are established clearly at the signing of the contract or are predetermined. There are at least three conversion terms and conditions: (a) the timing of the conversion right's applicability, (b) the form of the contract after conversion (i.e. muhasraka or equity stake), and (c) the profit and loss sharing ratio or equity share of each party after conversion is executed. For example, it might be stated that the conversion rights can be exercised after six months and that the stake ratio of the financier and the entrepreneur is 40 percent (: 60 percent after conversion) and so on. The financier into a musharaka or equity stake contract can convert this ijarah contract. Both of these instruments are forms of PLS justified in Islam with different maturity features. The musharaka contract provided by Islamic banking has a maturity time, while an equity stake contract has no definite maturity date. However, an exit strategy is essential for a venture capital firm, meaning that the two can be regarded as similar contracts in term of their maturity.

The third feature is inside collateral. In an ijarah (rent) contract, the Islamic venture capital firm acquires an asset and rent it to the entrepreneur for the economic useful life of the asset. The ijarah contract here is similar to a financing lease commonly found in a conventional contract, with a transfer of ownership at the end of the contract. However, before the whole rent period is completed, the asset still belongs to the Islamic venture capital firm. There is no transfer of property rights at the beginning of the contract. This feature provides inside collateral for the Islamic venture capital firm. In the event that the project fails and the rent payment is defaulted, the financier might rent the asset to another entrepreneur or liquidate the asset and receive cash from the liquidation. This feature provides some of protection against default risk. If the financier requires higher collateral, then it will only ask for the difference.

III. METHODOLOGY
3.1. Simulation Method

This research aims to evaluate the economic feasibility of convertible ijarah contracts to be used by Islamic venture capital firms or to improve PLS-based financing in Islamic financial institutions. A convertible ijarah contract is a type of contract that is not currently used by Islamic financial institutions. This research employed a simulation method due to lack of convertible ijarah contract data in order to achieve the goals of the research. Brooks (2008) defines simulation as an approach of creating a new model that resembles the functioning of a system. In a simulation method, the researcher will be able to act as a true scientist conducting experiments in a controlled situation. The simulation method enables researchers making experiments to determine how changing one factor or aspect while other aspects are unchanged will change the result. Simulation methods are increasingly popular in research when there is lack of empirical data or when a data-collection process might be very costly or need an excessive time to generate. Kleijnan (1995) gives an example of how it might be almost impossible to obtain the data for some

studies, such as a study of the effects of a nuclear war. In these circumstances, only a simulation method is feasible.

The simulation here is used to calculate the possible return that would be generated by Islamic financiers provide funding for Indonesian SME using three contract scenarios: They are murabaha as a margin-based contract, musharaka as a direct PLS contract, and the convertible ijarah contract. The financing return is measured by the internal rate of return (IRR), which is defined as a discount rate that would equate the present value of expected cash flow generated from financing, as shown in the following equation (See Bodie, Kane and Marcus, 2014):

$$\sum_{i=1}^{n} \frac{CF_i}{(1+IRR)^i} = IO \tag{1}$$

CF_i here refers to future cash flows that would be received as a result of financing (or investment) in a project made on the initial period (initial outlay, IO). The internal rate of return (IRR) reflects the annual yield (rate of return) from the project. The IRR criterion considers cash flows that are related to the project for the whole period. This is a common criterion to evaluate a proposed investment or a capital expenditure project of a firm, along with the net present value (NPV) criterion. An advantage of the IRR criterion is that it can be directly compared to the cost of capital to carry out the investment.

Cash flow received by a financier is dependent on the financial performance of the SME and the type of contract used in each of the three scenarios. The financial performance of the SME is generated from empirical data for 2004-2010. The financial performance of a project will be measured by the operating cash flow rate (OCFR) or the cash recovery rate (CRR) of the firm. OCFR is a short-term financial performance or profitability measure, while CRR is a long-term financial or economic performance measure (Andrews, Rue and Volkan, 2010). OCFR is measured as:

$$OCFR = \frac{operating\ profit + DA\ exp,net + interest\ exp,net}{total\ assets\ at\ the\ beginning} \tag{2}$$

and CRR is measured as:

$$CRR = \frac{net\ profit + DA\ exp + R\&D\ exp,net + advertising\ exp,net + interest\ exp,net + \Delta NWC}{total\ assets\ at\ the\ beginning + R\&D,net + adveertising\ exp,net} \tag{3}$$

OCFR and CRR in this research refer to the concept proposed by several researchers to measure the long-term economic performance of a firm using ex post data (e.g., Ijiri, 1978, 1979; Salomon, 1982, 1985; Stark, 1987; Taylor, 1999). DA exp is depreciation and amortization expense, net is net of tax, NWC is net working capital, and R&D is research and development expenses.

Moreover, the Islamic financier would receive different cash flows from the same project if the financing was provided through different types of contracts. As a result, the IRR from a project would also differ depending on whether the project is financed using the murabaha contract, the musharaka contract or the convertible ijarah contract.

3.2. Convertible Ijarah Contract Model Building and Assumptions

The simulation model built in this research contains several assumptions relating to (1) the time period of financing, (2) collateral value, (3) the benchmark price of Islamic financing, (4) categorization of project performance, (5) decision criteria for conversion, and (6) stability of the project's performance.

The first assumption is related to the time of financing. It is assumed that there are two financing periods with three important time points in the development of the model building of the convertible ijarah contract. The convertible ijarah contract is assumed to take place at three time points, namely (i) t = 0, when the contract is signed by the parties; (ii) t = 1, when the project profit or cash flow is realized and the conversion right is applicable; and (iii) t = 2, the exit time, or the end of the project. At time t = 0, the contract agreed upon in the early forms of the contract is an ijarah contract. The amount of financing is based on the value of the assets acquired, and the Islamic financier sets the margin assuming the contract will remain in the form of ijarah until all payment is completed. The contract occurs with high asymmetrical information regarding the profitability and risk of the project, while the competence and the effort level of the entrepreneur as project-specific factors (idiosyncratic factors) are unknown. However, industry growth opportunity (systemic factor) is assumed to be known by the financier. Based on the industrial systemic information, if the project is assumed to have high growth opportunities, then the Islamic financier is willing to provide financing and both parties agree to enter the contract. The financier would refuse to provide funding for a project without high potential future growth.

The second assumption is related to the collateral value of the project. Here, it is assumed that the collateral is 120 percent of the amount of financing and that this comes from assets acquired plus other assets provided by the entrepreneur. This assumption was taken from interviews with several Islamic bank employees. The collateral value assumption is relevant to simulate the IRR for a murabaha contract and for a convertible ijarah contract. The third assumption is related to the benchmark price for financing. We assume here the equivalent of an effective annual rate for a murabaha contract of Indonesian Islamic commercial banks as the benchmark. This is an effective rate comparable to conventional Indonesian banking lending rate. The rate used for the simulation is generated from Indonesian Islamic commercial banking data for the year 2010, published by the Indonesian financial service authority. The equivalent rate is 14.31 percent.

The fourth assumption involves categorizing the financial performance of a project. We categorize a high-performance project as one that realized OCFR or CRR higher than the benchmark rate, a failed or default project as one that realized OCFR or CRR lower than zero and an average performance project as one that realized OCFR or CRR between these two extremes. The fifth assumption is related to the criteria by which the Islamic financier would make decision at t=1. The decision is dependent on the type of the contract being used and the financial performance of the project financed. First, if the project was financed using a murabaha contract, the Islamic financier has the decision of whether to stay in the contract or to liquidate the asset. It is assumed that the Islamic financier would stay in the murabaha contract when the project is categorized as high performance or average performance, whereas if the project is categorized as a

failure, the Islamic financier is assumed to liquidate the asset. Second, if the project was financed using a direct musharaka contract, the Islamic financier has to stay in the contract, regardless of the performance of the project. Finally, if the project is financed using a convertible ijarah contract, the Islamic financier has three choices: to convert the contract into a musharaka contract, to stay in the ijarah contract or to liquidate the asset. The Islamic financier assumed to convert the contract for a project categorized as high performance, stay in the ijarah contract for a project categorized as average performance, and liquidate the asset for a project categorized as a failure.

The last two assumptions are related to the stability of the financial performance of the project and the monitoring cost of the financing. For simplicity, here it is assumed that the financial performance of the project for the first period (or from t=0 to t=1) is exactly the same as the financial performance for the second period (or from t=1 to t=2). In other words, the OCFR or the CRR and the cash flow generated from a project are the same for both periods. We ignore monitoring costs for this study.

3.3. Example of a Contract Performance (IRR) Calculation

Suppose there are three independent projects proposed for financing at t=0. The three projects– project A, project B and project C – need an investment or initial outlay of $1,000 each. After making a thorough evaluation, an Islamic financier is assumed to agree to provide financing for all three projects. Now, the financier may choose any type of contract as a financing arrangement – a margin-based (M) contract, a direct musharaka (S) contract or a convertible ijarah (K) contract – for all three projects. After the first period or at t=1, the performance of each project is known, measured by the operating cash flow rate (OCFR): 22 percent for project A, 10 percent for project B, and -8 percent for project C. Because the OCFR of project A is higher than the benchmark rate of 14.3 percent, it is categorized as a high-performance project. Because the OCFR of project B is positive but lower than the benchmark rate, it is categorized as an average-performance project. While project C is categorized as a failure because the OCFR of the project is negative. The type of contract that was chosen at t=0 would affect to the different decisions that need to be taken by the Islamic financier at t=1. First, when the projects are financed with a murabaha contract (M), at time t=1 the Islamic financier is assumed to stay in the murabaha contract for project A (categorized as high performance) and for project B (categorized as average performance) but to liquidate the asset for project C (categorized as a failure). Second, when the projects are financed with a direct musharaka contract (S), at time t=1 the financier has to stay in the contract, regardless of the performance of the project. Third, when projects are financed with a convertible ijarah (K) contract, at time t=1 the Islamic financier is assumed to convert the contract for project A (categorized as high performance), to stay in the ijarah contract for project B (categorized as average performance) and to liquidate the assets for project C (categorized as a failure). Every decision will lead to a different cash flow received by the Islamic financier. For instance, from project A, the financier will receive a cash flow of $609.7 (if it uses a murabaha contract), a cash flow of $220 (if it uses a musharaka contract) or a cash flow of $143.1 (if

it uses a convertible ijarah contract and the contract was converted to PLS). The cash flow of $143.1 at t=1 from the convertible ijarah contract comes from the ijarah part for the first period that reflects the financing price benchmark of 14.3 percent, as described before. Meanwhile, from project C, which is categorized as a failure, the Islamic financier will liquidate the asset (if the contract is a murabaha or a convertible ijarah) and a receive cash flow of $1,000, reflecting the financing provided without any return, or it will receive zero if the contract is a direct PLS. At time t=2, the Islamic financier will receive a cash flow that depends on the type of contract employed, the performance of the project and the decision that was taken at time t=1. The Islamic financier will receive nothing from project C, which was liquidated at t=1 (if the contract is a murabaha or a convertible ijarah) or will receive $846 (if the contract is a musharaka). The cash flow received from a musharaka reflects a loss sharing from the project in the amount of $154 ($1,000 - $846). Detailed information regarding the cash flow provided by each type of the contract for each project at time t=1 and t=2, along with the IRR calculation for each, is shown in Table 1.

Table 1.
Example IRR Calculation for Each Type of Contract

Project	OCFR (%)	Category	Margin Based Contract (M) Performance				Direct PLS Contract (S) Performance				Convertible Ijarah Contract (K) Performance			
			Decision at t=1	CF1	CF2	IRR (%)	Decision at t=1	CF1	CF2	IRR	Decision at t=1	CF1	CF2	IRR (%)
A	22	High	Stay	609.7	609.7	14.31	Stay	220	1,220	22%	Convert	143.1	1,220	17.84
B	10	Average	Stay	609.7	609.7	14.31	Stay	100	1,100	10%	Stay	609.7	609.7	14.31
C	-8	Fail	Liquidate	1,000	0	0	Stay	0	846.4	-8%	Liquidate	1,000	0	0
		average				9.50%	Average			8.00%	Average			10.70%

OCFR: Operating Cash Flow Rate, CF: Cash Flow, IRR: Internal Rate of Return

Based on the example calculation above, the Islamic financier will generate a different average IRR from all projects depending on the different type of contract employed at t=0. The Islamic financier will generate a 9.5 percent return by using a murabaha contract, an 8 percent return by using a direct musharaka contract, or a 10.7 percent return by using a convertible ijarah contract.

We use the above procedure to simulate the average return from all sectors of Indonesian SMEs. We used 10,000 points of data for each sector of Indonesian SMEs, generated from Monte Carlo simulations or bootstrapping based on empirical data on SMEs in each sector.

3.4. Observation and Simulated Data

The main input for the simulations in this study is the financial performance of Indonesian SMEs for 2004-2010, measured by operating cash flow rate (OCFR) and cash recovery rate (CRR). The financial performance of Indonesian SMEs is included in unpublished data of the Indonesian Central Bank, but the data were presented for another internal research study conducted for the central Bank. An SME is defined here as a firm with average annual sales of less than Rp50

billion (US$ 4,000,000). There are 343 SMEs from nine sectors included in the data. The observed data for each sector vary from 17 firms (mining sector and utility sector) to 66 firms (business services sector). We used these data sets to generate each 'future data' sector of Indonesian SMEs' financial performance using Monte Carlo simulations or bootstrapping. If the original observed data set is normally distributed, we used Monte Carlo simulation. When the original observed data are not normally distributed, we used the bootstrapping method after exclusion of any outlier data (see Brooks, 2008) The Monte Carlo simulations and bootstrapping resulted in 10,000 points of data for each of the ten data sets, with the first data set reflecting all SMEs data while the next nine data sets reflect sector data.

IV. RESULTS AND ANALYSIS

Table 2 shows the statistical distribution of the financial performance of Indonesian SMEs, for both observed data and simulated data. Financial performance was measured by short-term performance (OCFR) and long-term performance (CRR).

Table 2.
The Statistical Distribution of the Financial Performance of Indonesian SMEs Measured by OCFR and CRR, Observation and Simulated Data

				Financial Performance : OCFR				Financial Performance : CRR				
				Observation data		Simulated data (10.000 data each)			Observation data		Simulated data (10.000 data each)	
				Avg	SD	Avg	SD		Avg	SD	Avg (%)	SD (%)
No	Sectors	Observed data	DGP	(%)	(%)	(%)	(%)	DGP	(%)	(%)		
1	All Data	343	BS	19.33	15.8	19.34	15.76	BS	8.76	19.02	8.72	18.97
2	Farming	20	MC	14.23	12.27	14.12	12.28	MC	2.65	17.5	2.61	17.55
3	Mining	17	MC	31.1	22.52	31.04	22.5	MC	13.97	20.64	13.95	20.55
4	Industry	31	MC	18.45	10.89	18.53	10.86	MC	15.45	19.51	15.42	19.48
5	Utility	17	MC	13.37	10.47	13.36	10.74	MC	5.64	22	5.62	22.08
6	Construction	55	BS	22.83	16.7	22.9	16.51	MC	10.07	20.41	10.08	20.39
7	Commerce	50	MC	19.83	12.7	19.81	12.81	MC	10.38	14.93	10.34	14.95
8	Transportation and Communication	55	MC	22.44	17.43	22.4	17.45	MC	12.62	18.08	12.64	17.7
9	Business Services	66	BS	14.25	14.46	14.21	14.47	BS	2.77	20.36	2.77	20.27
10	Social Services	30	MC	15.62	13.23	15.61	13.25	MC	5.61	15.03	5.57	15.14

DGP : Data Generating Process; MC = monte carlo simulation; BS = bootrapping

Table 2 shows that the distribution of the data generated using Monte Carlo simulation or bootstrapping is quite close to the observed data. For instance, the first row shows that the average OCFR from all SME data (consisting of 343 firms) is 19.33%, while the average OCFR of the simulated data (consisting of 10,000 data points from the bootstrapping process) is 19.34%. Moreover, the standard deviation of the observed data is 15,80%, while the standard deviation of the simulated data is 15.76%. The next columns show that that average CRR

from all SME data (consisting of 343 firms) is 8.76%, while the average CRR of the simulated data (consisting of 10,000 data points from the bootstrapping process) is 8.72%. The other data sets show similar figures.

Next, we calculated the cash flows produced from each project and contract according to the calculation process described in part 4.3. This process produces an average IRR for all projects of each data set and for each type of contract. The IRR results are shown in Table 3, based on both OCFR and CRR measures. Table 3 shows the average IRR for all SMEs and for each sector from the simulation process. The first row shows that if the financial performance of SMEs is measured by OCFR and the financing is provided through a murabaha contract, it will produce an average IRR of 14.5% per annum, while if the financing is provided through a musharaka contract, it will produce an average IRR of 19.3%. Meanwhile, if the financing is provided through a convertible ijarah contracts, it will produce an average IRR of 18.0%. The convertible ijarah contract does not produce the highest average IRR but rather slightly lower than the average IRR that is produced by a musharaka contract. However, the standard deviation figures are quite interesting. Financing through musharaka contracts involves the highest risk, with a standard deviation of 15.8%; while financing through murabaha contracts involves the lowest risk, with a standard deviation of 3.4%; and, finally, financing through convertible ijarah contracts involves quite a low risk, with a standard deviation of 6.7%.

Table 3.
The Average IRR of Each Sector for Each Contract Scenario

No	Sectors	Short Term Financial Performance (OCFR)						Long Term Financial Performance (CRR)					
		Margin Based Contract (M)		Musharaka Contract (S)		Convertible Ijarah Contract(K)		Margin Based Contract (M)		Musharaka Contract (S)		Convertible Ijarah Contract(K)	
		Avr (%)	SD (%)	Avr (%)	SD (%)	Avr (%)	SD (%)	Avr (%)	SD (%)	Avr (%)	SD (%)	Avr (%)	SD (%)
1	All Data	14.5	3.4	19.3	15.8	18	6.7	11.2	6.8	8.7	19	13.2	9.1
2	Farming	13.4	5.1	14.1	12.3	15.3	6.5	8.6	7.6	2.6	17.6	9.7	8.9
3	Mining	14	4.2	31	22.5	22.2	9.8	11.5	6.6	13.9	20.6	14.9	9.7
4	Industry	14.6	3.2	18.5	10.9	17.3	5	12.1	6.3	15.4	19.5	15.5	9.3
5	Utility	13.6	4.8	13.4	10.7	15.2	5.8	9.2	7.5	5.6	22.1	11.3	10
6	Construction	15	2	22.9	16.5	19.5	6.5	10.6	7	10.1	20.4	13.2	9.6
7	Commerce	14.4	3.6	19.8	12.8	17.8	5.9	11.6	6.5	10.3	15	13.3	8.1
8	Trans. & Comm.	13.8	4.6	22.4	17.4	18.7	8.1	11.6	6.5	12.6	17.7	14.2	8.9
9	Business Services	14.6	3.2	14.2	14.5	16.8	5.8	9	7.5	2.8	20.3	10.4	9.5
10	Social Services	13.5	4.9	15.6	13.3	15.9	6.7	9.9	7.3	5.6	15.1	11	8.4

The second column of Table 3 shows similar figures, but the financial performance of SMEs is measured by a long-term measure of financial performance – cash recovery rate (CRR). In general, the IRR from any type of the contract is lower than other IRR if the financial performance of projects is measured by

OCFR, while the risk or standard deviation looks higher. The first row shows that the average IRR (for all SME data) from a murabaha contract is 11.2%, compared to 14.5% of the average IRR from the same type of contract with the OCFR measure; while the average IRR from a musharaka contract is 8.7% (compared to 19.3%); and the average IRR from a convertible ijarah contract is 13.2% (compared to 18.0%). However, the standard deviation from each type of contract is 6.8% (compared to 3.4%) for a murabaha contract, 19.0% (compared to 15.5%) for a musharaka contract, and 9.1% (compared to 6.7%) for a convertible ijarah contract. The IRR and standard deviation figures for each of the nine sectors are displayed in the following rows.

The last part of the discussion relates to how a convertible ijarah contract would perform better compared to a murabaha contract and compared to a musharaka contract. Using t-tests, we examine whether (a) the IRR from a convertible ijarah contract minus the IRR from a direct PLS contract (i.e., IRR(K)-IRR(S)) is significantly higher than zero and (b) whether the IRR from a convertible ijarah contract minus the IRR from a murabaha contract (i.e., IRR(K)-IRR(M)) is significantly higher than zero. At-test is conducted for every data set of 10,000 data points. The summary of the t-test is shown in Table 4.

Table 4.
Performance of Convertible Ijarah Contract Compared to Other Contracts

No	Sectors	Short term Financial Performance (OCFR)				Long term Financial Performance (CRR)			
		IRR(K)-IRR (S)		IRR(K)-IRR (M)		IRR(K)-IRR (S)		IRR(K)-IRR (M)	
		Average (%)	t test (p value)	Average (%)	t test (p value)	Average (%)	t test (p value)	Average (%)	t test (p value)
1	All Data	-1.31	0	3.54	0	4.51	0	2.05	0
2	Farming	1.21	0	1.96	0	7.07	0	1.08	0
3	Mining	-8.79	0	8.23	0	0.92	0	3.33	0
4	Industry	-1.18	0	2.76	0	0.09	0.662	3.46	0
5	Utility	1.8	0	1.53	0	5.7	0	2.14	0
6	Construction	-3.37	0	4.51	0	3.1	0	2.56	0
7	Commerce	-1.99	0	3.44	0	2.99	0	1.72	0
8	Transp & Comm	-3.71	0	4.9	0	1.6	0	2.6	0
9	Business Services	2.63	0	2.25	0	7.64	0	1.36	0
10	Social Services	0.32	0.005	2.44	0.005	5.39	0	1.07	0

The first row of Table 4 shows that the IRR of a convertible ijarah contract is significantly (1.31%) lower compared to the IRR of a musharaka contract, while the IRR of a convertible ijarah contract is significantly (3.54%) higher compared to the IRR of a murabaha contract. The following rows present the figures for each of the SMEs sectors. These figures show that, for several sectors (e.g., farming, utility, business services and social services), financing though a musharaka contract will produce higher IRR than financing through a convertible ijarah contract, while financing for other sectors (e.g., mining, industry, construction, commerce, and

transportation & communication) will be better off when employing a convertible ijarah contract. However, financing through a convertible ijarah contract will always outperform financing through a murabaha contract.

The above conditions are conditional to how financial performance is measured (i.e., by OCFR). When the financial performance is measured by CRR, the next column of Table 4 presents a more conclusive figure. This part shows that, for all SME data, the IRR of a convertible ijarah contract is significantly (4.51%) higher than the IRR of a musharaka contract and significantly (2.05%) higher than the IRR of a murabaha contract. The following rows also show similar figures, except for the industry sector. In the industry sector, there is no difference between the IRR from a convertible ijarah contract and the IRR from a musharaka contract. We conclude that when SME's financial performance is measured by CRR, an Islamic financier firm will generate a higher return by providing financing through a convertible ijarah contract compared to a murabaha contract or a musharaka contract, for almost all sectors.

V. CONCLUSION AND RECOMMENDATION FOR FUTURE RESEARCH
5.1. Conclusion
In this study, we analyze the economic feasibility of a convertible ijarah contract to be used by Islamic financial institutions to provide PLS or equity-based financing, because this type of financing is more suitable to Islamic finance ideas. Specifically, here we examined whether a convertible ijarah contract will result in a higher return (measured by internal rate of return, or IRR) for Islamic financiers compared to a murabaha contract and compared to a direct musharaka contract. This study was conducted using a simulation method assuming each project is financed using three contract scenarios: a murabaha (cost plus financing as a margin-based contract), a direct musharaka (as profit and loss sharing or equity participation contract), and a convertible ijarah contract, as proposed here. We used financial performance of Indonesian SMEs as the main input for the simulation. We found that when the financial performance of SMEs is measured by short-term operating performance –that is, operating cash flow rate (OCFR) – the IRR from convertible ijarah contract does not outperform the IRR of a direct PLS contract, except for low-margin sectors like farming and utility sectors. However, when the financial performance of SMEs is measured by long-term economic performance – that is, cash recovery rate (CRR) – we found that IRR from a convertible ijarah contract outperforms a margin-based contract and outperforms a direct PLS contract for almost all sectors.

5.2. Recommendation
Based on results of this study, we provide recommendations for practitioners, regulator and academicians. For practitioners, while a convertible ijarah contract might be most suited for Islamic venture capital, we also suggest that Islamic financial institutions should consider the convertible ijarah contract to increase their PLS-based financing to increase their profitability. This contract provides a greater opportunity for Islamic financial institutions to collect any soft information

regarding the project and the entrepreneur, thus reducing the adverse selection problem before provide financing based on a profit and loss sharing scheme. For academician, this study hopefully become early research to consider convertible ijarah contracts to increase PLS-based financing. Muslim countries need to increase PLS-based financing in order to accelerate their technological innovation and entrepreneurship for long-term economic development and to increase the equality of income distribution in the society. For Bank Indonesia as regulator, this study intent to provide an innovation to provide financing for SME's in Indonesia, especially to achieve minimum 20 percent of SME's financing as stated in Bank Indonesia Regulation no. 14/22/PBI/2012. However, for regulators, a thorough discussion is needed to determine whether this contract will be able to comply with Sharia principles before implementation.

Last, we admit that the main data source for this study was limited to financial reports of Indonesian SMEs during 2004-2010. The difficulty in gathering data means that this study might not be able to capture the recent figures of the economic performance of Indonesian SMEs. Further research should use more recent data to overcome this limitation and to describe the possible dynamics of Indonesian SMEs' performance. Moreover, this study was conducted by simulation method, meaning that the result would be sensitive to assumptions of the model. A more mathematical modeling with a closed solution might be needed to enrich the conclusion regarding the convertible ijarah contract model.

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