WORKING PAPER 0

Coffee Certification: Research Review

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UNIVERSITAS LAMPUNG
2018

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1. Introduction

A number of certification schemes act as a buyer-driven mechanism that economically, socially, and environmentally influences smallholder farmers in coffee sector (Giovanucci and Ponte, 2005). Theoretically, certifications convince the consumers to give a high value to social and environmental characteristic attached to coffee product. As consumers are willing to pay price premium for the certified coffee, the coffee growers receive higher financial benefits from the trade of the product.

However, realities are far more complex and we still have limited knowledge ensuring the actual effects of certification (Blackman and Rivera, 2010). The debates about the impacts of certification on the livelihood of smallholder farmers are still ongoing. Empirical studies vary widely in their results, from positive to modest to negative. Studies which are positive regarding the benefits of certification revealed that that certified farmers obtain economic benefits in the form of higher coffee prices (Bacon, 2005), and productivity and quality improvement (Ruben and Zuniga, 2010). Other benefits shown by literature is more secure land tenure (Bacon, 2005), improved education, infrastructure asset, and monetary investments (Bacon et al. (2008), and also improved the availability of clean water (De Lima et al., 2005). According to Raynolds et al., (2004), certification brings economic advantages in the short run, and in the long run empowerment and capacity building will be more apparent (Raynolds et al., 2004).

Although not negative, some studies are relatively modest in their findings about certification impacts. Valkila (2009), for example, argue that the economic advantages from organic-Fair Trade certification are "very modest" because the production of organic farming was low. Ruben et al. (2009) also found that despite giving benefit to farmers and strengthening their organizations (i.e., indirect effect), Fair Trade only give "fairly modest" net revenue to farmers. Although they found the positive impact of certification, Bacon (2005) and Bacon et al. (2008) also remind us that certification has not yet a panacea for smallholders. The authors noted that both certified and uncertified farmers almost equally suffered from the decline impact of coffee prices in the late 1990s and early 2000s (Bacon, 2005). Several significant livelihoods vulnerabilities, such as low earning, high relocation, and foodstuff insecurity, sustained among small-scale coffee producers (Bacon et al. (2008).

The other studies are relatively pessimistic regarding the impacts, even tend to be negative. Kilian (2004) argued that not all schemes are suitable for smallholders. Fair Trade is more applicable to small farmers and offers price premium. However, the price premium often cannot compensate smallholders' burden for the demand of highly environmental and social practices. Other schemes such as Rainforest Alliance and Utz Kapeh are more suitable to larger-scale coffee producer than to smallholders (Kilian, 2004). According to Philpott et al. (2007), single certification would not lead to successful impact on environment. The combination of organic, fair trade and shade certifications would result in better conservation

approaches, but will increase farmer costs of participation. Calo and Wise (2005) found that most farmers face barriers to enter the new market of Organic-Fair Trade. This is because the cost of certification is high but productions are low, and therefore organic premium unsuccessfully covers farmer costs. In their study, Lyngbaek et al. (2001) similarly found that that organic certification cost would increase the cost of organic farming. The cost of certification makes the organic-price premium could not cover the total cost spent by the certified producers which is much higher than the cost of conventional farming. Therefore, the net income received by organic certified farmers is actually lower than the income received by conventional producers.

2. Overview of the literatures

No.	Research on Coffee
1.	Bacon (2005) studied "The impact of sales on organic and Fair Trade markets." By surveying 228 farmers from different social and environmental locations, Bacon found that organic and Fair Trade had impacts on farmers' livelihood. The researcher pointed out that certification had a significant influence on price than altitude based on a statistical technique two-way ANOVA. In short, Bacon (2005) concluded that farmers' received higher price and more secure land tenure when they were participating in certifications. However, Bacon also found that both certified and non-certified farms almost equally suffered from the decline impact of coffee prices in the late 1990s and early 2000s. **Reviews:** Bacon's research has strong data as the researcher completed an extensive research by collecting information from 228 farmer respondents. Bacon (2005) also tried to include the impact of different certification schemes - organic and Fair Trade - in his study. However, Bacon study's weakness is he included no significant and comparable group of uncertified farmers as a control group in evaluating the impact of certifications.
2.	De Lima et al. (2005) studied "The Impact of the Sustainable Agriculture Network (SAN) Certification in Coffee Farms in the Cerrado and Southern Minas Gerais". By sampling 16 Farms, they found that coffee enterprises received positive socio-environmental impact from SAN certification. De Lima et al. (2005) concluded that "sewage disposal, place for workers to keep their belongings, cleanliness of the bathrooms in the lodgings, treatment of water for human consumption and protection of lodgings against pesticide drift" were the recorded benefits they found from certification. **Reviews:** The research has tried to compare certified and non-certified enterprises and gave positive points regarding social and environmental impact of coffee certification. However, the study has not focused their aims to evaluate the impact of certification on smallholder farmers. In addition, the study has failed to show economic impact of SAN certification because of the confidentiality of data. The research also has biases in its

	results because the researchers have failed to separate the impact of other certification schemes- beside the one they studied- to the coffee enterprises.
3.	International Consumer (2005) evaluated different certification schemes' impact on coffee growing areas in Brazil. By collecting information from twenty-eight certified farms own by twenty companies or farmers, International Consumer (2005) found that all certification schemes (i.e., Fair-trade, organic, Utz Kapeh and Rainforest Alliance) gave benefits to small famers, such as higher coffee prices, enhancing the handling and reprocessing of water used in coffee processing, and facilitation to access export markets and. For the enterprises, the notable impacts were financial benefit and working condition improvement for the farm's workers. **Reviews**: The International Consumer (2005) brought a new light in coffee certification studies by evaluating the impact of Fair-trade, organic, Utz Kapeh and Rainforest Alliance on companies and farmers. However, this research lack of matched control groups to compare certifications impacts on different areas. From all location where certified farms were taken as sample (i.e., Ipanema, Monte Alegre, Cerrado region of Minas Gerais, and Saopaolo), only from Minas Gerais and São Paulo non certified [conventional]farmers were surveyed as the competitors.
4.	Millard (2006) studied the impact of partnership in Southern Mexico on farmers' household. The partnership involving four parties, namely farmers, Conservation International, Starbucks Coffee Company and the United States Agency for International Development. The partnership had aims to establish coffee superiority and environmental organization through "the best practice" in farming, post-harvest handling and the broader landscape. Millard (2006) found that the partnership gave positive effects for farmers through which farmers received an increase of earnings. The farmers got premium prices for the coffee sold to Starbucks, but they were required to follow farming practices proposed by the company. Conservation international gave necessary services to the farmers to help them acquaintances with Starbuck' requirements. **Reviews**: Millard's study tried to convince that the partnership has positive impact to farmers by showing the differences of socio-economic indicators between "beneficiaries" (i.e., farmers in the project) and the "non-beneficiaries." Millard (2006) found that the farmer's involved in the Starbucks' project has better socio-economic condition that those did not participate in the project. However, Millard's methods are not clear in which the researcher did not explain in detail how he collected the data. The researcher is also fail to properly describe whether the non-beneficiaries farmers were comparable enough to act as a control group.
5.	Bacon et al. (2008) completed study in Nicaragua by surveying 177 farmers' households who established coffee trade with conventional and Fair Trade market. The

177 households consisted of 101members of CECOCAFEN cooperative union following Fair Trade certification, 61 farmers connected to conventional markets, and 15 producers traded certified organic coffee. The research has aims to analyze the impact of fair trade on farmers' livelihoods by comparing social-economic of farmers' life with the frameworks of Millennium Development Goals (MDG). The researcher found that Fair trade cooperatives gave positive effects to households in term of education, infrastructure asset, and monetary investments. However, Bacon et al. (2008) also found that several significant livelihoods vulnerabilities, such as low earning, high relocation, and foodstuff insecurity, sustained among small-scale coffee producers.

Reviews:

Bacon et al.'s research presented a case study arise from a six-year fieldwork. By conducting participatory action research and focus group the study were likely gathered deep information from the fields. In addition, MDG framework to analyze the results made the research had more structural perspective in assessing Fair Trade impacts on Farmers' livelihood. However, Bacon et al. (2008) did not focus their evaluation on unambiguous impact of Fair Trade on Farmers' life. This is because the researchers only performed comparison based on the markets where the farmers sold their coffee. Therefore, this research miss clear explanations of the important characteristic of a matched control group in which the control group should has comparable characteristic to the experiment group. Yet, the control group does the different practices from the experiment group. In addition, in this case, the authors compared the households, member cooperative unions sold to Fair Trade Markets, with the others who sold to conventional markets. This method would likely raise question whether both of the households consistently sold their coffee to the same market, or sometimes they change the market.

6.	Philpott et al. (2007) conducted a research in Chiapas, Mexico, where they evaluated economic and ecological impacts of coffee certification in the area. They compared eight coffee cooperatives that were certified as organic, both organic and fair trade, as well as uncertified. The researchers found that certification gave no impact on vegetation and fauna appearances. However, farmers with certification (i.e., organic, and organic-fair trade), in some cases, may receive higher earning than those with no certification. In addition, Philpott et al. (2007) concluded that single certification would not lead to successful certification impact on environment. Combination of organic, fair trade and shade certifications would result in better conservation approaches in the coffee-planting areas. Review: Study by Philphott et al. (2008) showed that the researchers have made no attempt to contest the three categories of the farmer cooperatives. Their study lack of the credible control group as a competitor to compare whether the certification had impact on the farmers. The researchers also failed to separate clear effect of each certification on the farmers as some certifications have overlapping aims. Therefore, independent and simultaneous impacts of a single certification are difficult to be measured and would likely biases in their results.

7.	Valkilla (2009) evaluated "The impact of Fair Trade organic coffee production on the well-being of small-scale farmers in Nicaragua". The researcher conducted semi structure interviewed to a number of farmers, cooperatives' representatives, export corporations, governmental and NGO, and certification agencies during a seven-month fieldwork between 2005 and 2008. Valkilla (2009) found that organic-Fair trade production increased farmers' earnings compared to the low-intensity conventional farming. However, as the production of organic farming was low, the economic advantages from organic-Fair Trade certification are "very modest". In addition, prices in the mainstream markets significantly determined the financial benefit of the certification. **Review:** This research has a limitation in which the number of the uncertified farmers acting as the control group was limited; instead evidence concerning the conventional-farming practices was gathered from some other sources. Because the low of organic production and market price uncertainties, this research also failed to give strong conclusion whether organic-Fair Trade certification has significant positive impact on Farmers' livelihood.
8.	Raynolds et al. (2004) examined "The ongoing rapid expansion in Fair Trade coffee networks linking Northern consumers with producers in the global South." They took seven Latin American cooperatives (i.e., five in Mexico, one in Guatemala and one in El Salvador) as sample to find factors that facilitate the success of cooperatives engagements in Fair Trade linkages. Raynolds et al (2004) concluded that joining organizations, societies and producers received wide ranging advantage attributed to Fair Trade networks. In the short run, economic advantage will appear considerably; however, in the long run, the empowerment and capacity building will be benefitting from Fair Trade. **Review:** In this study, the researchers seemed to ignore the role of a control group as a counterfactual factor in their analysis. They also lack of a credible method how to evaluate the impact of Fair Trade network. Therefore, the research results could not be said free from biases in which the impacts presented on the coffee cooperatives might came from other causes, in addition to Fair Trade.
9.	Kilian et al. (2004) examined the impacts of four certification processes (i.e., Organic, Fair Trade, Rainforest Alliance, and Utz Kapeh) on microeconomic sectors by considering private-segment potentials and long-term market standpoints. While the data used for market analysis were based on surveyed conducted by CIMS Foundation, the final economic assessments were constructed on two master theses belong to students of University Of Costa Rica. Kilian et al. (2004) found that certification gave producers both financial benefits (e.g., better price) and entrepreneurial prospects (e.g., in differentiating their products in a competitive market). Kilian et al. (2004) also found that, although their concept seemed overlapping, these certifications have different approaches in encouraging sustainable coffee production. According to Kilian et al

	(2004), Fair Trade were more applicable to small farmers as it offered price premium; however, it demanded highly environmental and social practices to the farmers. Conversely, Rainforest Alliance and Utz Kapeh were more suitable to larger-scale coffee producer. Kilian et al. (2004) stated that markets in North America and in Europe were almost equal in size for Organic certified coffee; market in Europe were the main destination for Fair Trade coffee, in addition to USA; and Europe and USA were the main market for Utz Kapeh and Rainforest Alliance respectively . **Reviews:** Kilian et al. (2004) gave some positive highlights of economic impacts of four coffee certifications. However, by mostly using secondary data (i.e., CIMS's surveyed and master theses), this study could not properly evaluate the actual effect of the certifications by proportionally comparing the certified with the non-certified producers. The survey and the theses might not have enough data for such a comparison.
10.	Calo and Wise (2005) studied the impact of Organic and Fair Trade markets on small coffee producers in Mexico. Calo and Wise (2005) stated that most farmers were facing barriers to enter new markets of Organic-Fair Trade because the cost of certification was high and productions are low. They found that organic premium unsuccessfully cover farmers' cost productions and maintenances, especially labor costs. Fair Trade market for non-organic certified coffee, in contrast, was able to give compensable price for the costs that farmers spent in coffee production. **Review:** Similar to a majority of researchers assessing certifications' impacts, Calo and Wise (2005) did not take into account a matched control group (i.e., the non-certified coffee farmers) as the comparison to the certified coffee farmers. In addition, the research did not seem to focus on evaluating impacts, but rather gave broad overview of coffee sector in Mexican context.
11.	Lyngbaek et al. (2001) conducted a study on "Productivity and profitability of multistrata organic versus conventional coffee farms in Costa Rica". They compare farmers practicing organic farming with those performing conventional method in term of output, profitability, producer-defined limitations as well as objectives and study main concern. The study found that the production of five organic farms was higher than the conventional farm; however, the other three organic farms' yields were 22 % lower than that of conventional plantations. In addition, Lyngbaek et al. (2001) found that organic certification cost would increase the cost of organic farming. The certification cost makes the organic-price premium could not cover the total cost spent by producers; and this total cost is much higher than the conventional cost. Therefore, the net income received by organic farmers is actually lower than the income received by conventional producers. **Reviews**: This study compares ten pairs of organic and conventional farms. The conventional

	farms act as a control group and are matched to the organic farms for a "biophysical and socioeconomic" characteristic. Because of their proximity to the experiment groups, the conventional farms could provide a fair evaluation of the organic practices. Therefore, the assessment of organic certification impacts on the coffee producers could be more reliable.
12.	Ruben et al. (2009) evaluated the direct and indirect impact of Fair Trade on farmers' life. They conducted the research in Peru and Costa Rica and surveyed two different commodities of producers – coffee and banana farmers. Ruben et al. (2009) found that despite giving benefit to farmers and strengthening their organizations (i.e., indirect effect), Fair Trade only give "fairly modest" net revenue to farmers. **Reviews**: Ruben et al. (2009) evaluate the influence of Fair Trade at the level of producers' household by comparing the changes of several characteristics (i.e., revenue, capital and investments). Ruben et al. (2009) compare the effect of Fair Trade on farmers involved in Fair Trade certification and on those followed conventional practice. They use the non-certified farmers as a control group. This control group, in the study, is matched for growers' land use, household revenue, expenses, credit usage, and risk attitudes conditions. In addition, Ruben et al. (2009) also used Propensity Score Matching (PSM) techniques for addressing biases frequently happened in selection; thus, providing a control group that has relevant characteristics resemble the treatment group.
13.	Ruben and Zuniga (2010) evaluate the impact of various types of standards on farmers' wellbeing, and the role of these standards in value chains upgrading. By surveying 315 farmers, who cultivate coffee in Northern Nicaragua, Ruben and Zuniga (2010) compare the effect of Fair Trade, Rainforest Alliance and Café' Practices labels in coffee sector. They found that farmers under Fair Trade received higher practices than independent farmers, but private labels nevertheless better than Fair Trade in terms of productivity and quality. In addition, according to Ruben and Zuniga (2010), Fair trade can be supportive for "initial market corporation" whereas private labels give more encouragement in quality improvement. **Reviews**: Ruben and Zuniga (2010) provide two categories of control groups for comparison the effect of Fair Trade, with other different certification schemes (i.e., Rainforest Alliance and Café' Practices), on farmers' welfare. The first control group is the farmers cultivating coffee under Rainforest Alliance and Café' Practices, and the second group is the farmers practicing conventional method. Ruben and Zuniga (2010) uses a balanced sample for each the treatment group (i.e., farmers under Fair Trade scheme) and the control groups. In order to avoid bias selection of sample characteristic, the researchers also perform Propensity Score Matching (PSM) techniques in providing "Probit functions for the likelihood of receiving a particular certification." Therefore, Ruben and Zuniga (2010) use a methodological study that has ability in correcting bias while assessing and comparing the impacts of various certifications.

14.	**Correlations**

As noted above, several studies compare certified with unmatched noncertified farmers and find that certified farmers have higher socioeconomic status and/or use more sustainable management practices. Bacon (2005) finds that in a sample of 228 Nicaraguan farmers, organic and FT certified farmers receive higher prices and believe they have more secure land tenure. However, he also finds certified farms were no more insulated from adverse economic impacts of the sharp decline in coffee prices in the late 1990s and early 2000s (the "coffee crisis") than were noncertified farmers. Barbosa de Lima et al. (2009) examine SAN coffee certification in Minas Gerais, Brazil. In a sample of 16 farms, half of which were SAN certified, they find that SAN certification is correlated with use of an array of environmental practices, including use of less toxic agrochemicals and solid and liquid waste management. Consumers International (2005) analyzes environmental and social indicators in a sample of 28 (FT, organic, Utz Kapeh, and Rainforest Alliance) certified farms and 10 noncertified farms. They find that certified farms generate higher revenues and use more environmental practices. Finally, Millard (2006) evaluates the Starbucks and C.A.F.E. Practices certification project in Chiapas, Mexico. He finds that productivity, prices, and profits are higher for participants than for nonparticipants.

Several other studies that compare certified with unmatched noncertified farmers find that certified farmers do not do any better in terms of socioeconomic status and environmental performance. Using data from Oaxaca, Mexico on 26 FT and organic certified farms and 25 unmatched noncertified farms, Jaffee (2008) finds that although certified farms receive higher prices, they do not generate more income or wealth. Also, certified farmers do not believe they are better off than noncertified neighbors. He suggests that root causes are low premiums for FT coffee and high costs of organic certification. Philpott et al. (2007) compare ecological indicators for farms belonging to three organic certified, three organic and FT certified, and two uncertified cooperatives in Chiapas, Mexico. No effort is made to match the three types of cooperatives. They find no differences among the farms in ecological indicators. Similarly, Martínez-Sánchez (2008) compares ecological indicators for 10 certified organic and 10 unmatched noncertified farms in northern Nicaragua. He finds that organic farms do not have significantly different shade levels, bird diversity, or bird abundance. Quispe Guanca (2007) uses survey data on changes in environmental management practices before and after (organic, FT, Rainforest Alliance, Utz Kapeh, and C.A.F.E. Practices) certification for a sample of 106 certified farms in Costa Rica. He finds that although all certified farms reduced herbicide use after certification, most did not reduce other agrochemicals.

Finally, two studies use data from field surveys to construct spreadsheet farm budget models for certified and noncertified farms. Calo and Wise (2005) model the returns from organic and FT certification in Oaxaca, Mexico. They find that although FT certification is profitable, price premiums paid to organic farmers generally fail to cover the added costs associated with certification and maintenance (assuming market rates for labor). Focusing on Costa Rica, Kilian et al. (2004) find that with one exception (organic coffee sold in Europe), and certification by itself does not generate significant price premiums. However, coffee quality is a prerequisite for a price premium, and certification is a signal of this quality. They also find that although FT coffee, which establishes a price floor for certified coffee, ostensibly has a high premium, in practice

it is much lower since the price floor generates excess supply; that is, not all certified FT coffee can be sold as such.

Muradian and Pelupessy (2005).

The coffee crisis has coincided with the emergence of a number of voluntary regulatory systems in the global coffee chain. The present article explores the advantages and limitations of such schemes, their impact on the chain's governance, and their implications for farmers' upgrading. We conclude that participation in these systems does not ensure a better economic performance, but it may facilitate coordination between roasters/traders and some growers, which may lead to upgrading opportunities. The paper also explores some possible options for deriving rents from improved coordination along the coffee chain.

Conclusion
This article has explored the advantages and limitations of some of the voluntary regulatory schemes applied to the coffee sector, as well as their impact on the governance structure of the chain and their implications for farmers' upgrading. The ability to participate in a voluntary regulatory system may work as a ''reputation'' tool for farmers, facilitating coordination between roasters/traders and growers. We have also explored some possible options for deriving rents from alternative governance structures of the coffee chain, such as promoting stronger coordination with roasters in order to improve coffee quality and farmers' skills, and shortening the length of the chain with the assistance of public and private institutions. National coffee institutes in producing countries may play a role in promoting stronger coordination along the chain.

Ponte (2004)
This paper analyzes the potential of sustainability standards to address this situation through the lenses of Global Value Chain (GVC) analysis. How do sustainability standards affect the structure of the coffee marketing chain? Do they actually address and/or solve problems of sustainability in its economic, social and environmental aspects? Can different sustainability standards be coordinated or harmonized to improve their actual impact? Can sustainability be addressed in mainstream markets as well as in niche markets? Is there a role for public regulation (national and international) for the development, harmonization and/or implementation of sustainability standards?

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