The Impact of Coffee Certification on the Economic Performance of Indonesian Actors

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ABSTRACT

The prevailing assumption among consumers in the North is that buying certified coffee contributes positively to the economic performance of Southern actors, particularly smallholder farmers. In this paper we examine the impact of coffee certification on the economic performance of Indonesian actors (farmers, traders, exporters, and Indonesian roasters) and analyze how economic rent is distributed among them. Questionnaire results and in-depth interviews revealed that all Indonesian actors benefit financially from certification on a price per kilogram measurement, but the differences between certified and non-certified actors are small. The paper finds that the economic rent from certification is distributed very unequally along the coffee value chain where roasters receive 95.46 percent (Robusta) and 83.66 percent (Arabica) of the total economic rent (retailers excluded). Overall, farmers enjoy a small direct benefit from certification in the form of a higher price per kilogram for their coffee, and possible benefits regarding increased productivity and quality resulting from training and advice in crop management.

Keywords: coffee certification, economic performance, economic rent, enablers and blockers, sustainable agriculture
JEL Classification: O13, Q13

INTRODUCTION

Economic globalization is generally seen as a vehicle for economic growth (Kaplinsky and Morris 2001), as it may provide higher incomes for actors in many countries. However, economic globalization has also been associated with increasing inequality in income and an unequal distribution of benefits and costs of trade (Kaplinsky and Morris 2001). Certification of agricultural commodities, such as coffee, aims to regulate the negative effects of global trade in the social, environmental, and economic realities of Southern actors. Certified farmers in developing countries have to fulfill social and environmental criteria for sustainable production, and receive a price premium in return. At the end of the global value chain, certified coffee is generally more expensive than non-certified or conventional coffee. Northern consumers are willing to pay more for certified coffee (Yang et al. 2012; De Pelsmacker, Driesen, and Rayp 2005) as they expect that the price premium will trickle down to the Southern actors and assure a more environmentally-friendly production process. The general assumption is that involvement in certification contributes to higher income for smallholder farmers in developing countries (Yang et al. 2012; De Pelsmacker, Driesen, and Rayp 2005).

Literature on coffee certification, however, shows conflicting results regarding the economic impact of certification. Three viewpoints can be observed: first, that certification generates financial benefits for southern actors (CIDIN 2012; Bacon 2005; Murray, Raynolds, and Taylor 2003; Elliot 2012; Muradian and Pelupessy 2005; van Dijk and Trienekens 2012), second, that certification has negative consequences on southern actors' income (Gilbert 2008; Green and Warning 2008; Kaplinsky 2000; Shumeta, Urgessa, and Kebebew 2012), and third, that certification influences some actors positively and others negatively or insignificantly (van Dijk and Trienekens 2012; Valkila 2010; Beuchelt and Zeller 2011).

On the positive side, certification is believed to generate financial benefits through improving the product quality, reducing costs, assuring continuity in trade with other farmers and buyers (TSPN 2011; Arifin 2010), directly providing higher prices for certified coffee (Bacon 2005), or increasing the production (CIDIN 2012).

On the more negative side, it is said that certification cannot guarantee the provision of premium prices (Verkaart 2008) because the supply of certified coffee transcends the demand, farmers' weak bargaining power (Green and Warning 2008), high dependency on other actors (Arifin 2010; Gilbert 2008), and the absence of their access to markets (Kaplinsky 2000, CIDIN 2012). Elliot (2012), Verkaart (2008), and Valkila (2010) showed that certification did not have a direct impact on farmers' income although certified farmers were found to have higher and qualitatively better production. Besides, higher prices for certified coffee compensate for higher production costs but fail to increase the profits of certified farmers as compared to conventional farmers. Higher farm gate prices do not necessarily lead to higher profits (Beuchelt and Zeller 2011). Furthermore, even though certification may positively influence southern actors' income, these benefits may be limited or counteracted by factors such as a lack of market information, affordable credit, and knowledge of good agricultural practices (Ayoola 2012; World Bank 2008). Certification can also be seen as a barrier to market access as it may involve costs and time to become certified, although market access without certification will be even more difficult (Giovannucci and Ponte 2005). Other research indicate that the gains of certification may be unequally distributed among southern

actors; some may win, others may lose (van Dijk and Trienekens 2012; Shumeta, Urgessa, and Kebebew 2012).

Next to these conflicting results in the literature, we find that most research on the economic impacts of coffee certification focuses on Latin America and Africa (CIDIN 2012; Verkaart 2008; Beuchelt and Zeller 2011) and on farmers. Indonesia, despite being the third largest coffee exporter in the world and even the world's largest exporter of Robusta coffee (Wahyudi and Jati 2012) receives little attention. In this paper we analyze the impact of coffee certification schemes on the economic performance of actors in the Indonesian coffee value chain and the distribution of economic rent along the value chain. Two questions are central in our research. First, to what extent do certification schemes influence the economic performance of actors in the Indonesian coffee value chain? Second, how is the economic rent distributed among actors in the Indonesian coffee value chain, and why do some actors benefit more than others? In the next section we introduce value chain analysis as a theoretical framework to determine the economic performance of actors in the coffee value chain. Next, we present our research methods before discussing the economic performance and economic rent inherent to the Indonesian coffee value chain. Finally, we present our conclusions.

Value Chain Analysis: A Framework to Determine Economic Performance

The coffee value chain encompasses the full range of activities that are required to bring coffee from the extraction of seeds, through the different phases of production, delivery to consumers, and disposal after use (Kaplinsky 2000). This chain is often complex and varies in different countries but typically includes farmers or farmer groups, hullers, collector traders, middlemen, exporters, and roasters. We used the theoretical framework of global value chain analysis to map all actors involved in the coffee value chain including their characteristics in terms of profit, costs, the destination and volume of sales, and flows of goods along the supply chain (Kaplinsky 2001). Mapping out the profit and costs of all actors in the product chain allows identifying the distribution of economic rent among stakeholders in the chain (Kaplinsky and Morris 2001).

The conventional Indonesian coffee value chain is slightly different from other countries as Indonesian coffee farmers usually work on small plots of land. Therefore, they mostly do the primary processing (drying or hulling) themselves. Most Indonesian coffee farmers directly sell their coffee beans to collector traders who visit the farmers frequently and generally buy small amounts of coffee. Subsequently, many collector traders sell their coffee to middlemen who act as the intermediary or agent between the collector traders and large export-oriented trading houses. These 'exporters' will sell most of their coffee as green beans to either multinational traders or directly to international roasters, with an increasingly large volume sold to Indonesia-based roasters for domestic consumption or for export as roasted coffee.

In the certified market, the value chain is usually shorter than in the conventional market. Certified coffee farmers generally sell their coffee to a selected group of collector traders who are appointed by the exporters. These collector traders provide the farmers with a premium price and directly sell the coffee to the exporters, and in some cases, to cooperatives who again collaborate with the exporters. There are fewer middlemen involved in the certified coffee value chain and exporters play an important role as they hold the certificates and pay the certification cost. Exporters are also important as they determine the coffee prices based on a coffee sample that is analyzed based on the occurrence of defects, bean moisture,

bean size or grade, organoleptic quality, and taste. When non-conformities are found, price deductions are made from the basic market price, whereas coffee of an exceptional taste and quality receives a higher price. The coffee market price is determined by the London International Financial Futures Exchange for Robusta coffee and the New York market for Arabica coffee.

In this paper we analyze the impact of coffee certification on the economic performance of southern actors in the Indonesian coffee value chain: farmers, traders, exporters, and Indonesian-based roasters. Economic performance is a prosperity-related indicator and includes parameters such as profit, productivity, and production (CIDIN 2014; Beuchelt and Zeller 2011; Verkaart 2008). A powerful concept used to measure (differences in economic) performance between certified and conventional actors is economic rent. The concept of economic rent describes the extent to which the control of a particular set of resources (in our case, certified coffee) enables actors to insulate themselves from competition by taking advantage of it, or by creating barriers to entry for conventional actors (Kaplinsky 2004). Whether certified actors are able to insulate themselves from competition depends on the consumer's willingness to pay for certified coffee. In China, consumers were willing to pay 22 percent (USD 0.68) more for a medium cup of fair trade coffee compared to conventional coffee (Yang et al. 2012) whereas Belgians were willing to pay a 10 percent premium for fair trade coffee (De Pelsmakcker, Driesen, and Rayp 2005). Furthermore, economic rent arises if actors experience an unequal access to resources, if products can be considered scarce and/or exclusive, if technological intensity and product diversification expand, if actors or firms interact in a purposeful way, and if actors have a strong bargaining power (Kaplinsky 2000). The latter can only occur if the number of actors in the value chain is limited (Milford 2004; Ponte 2002), if competition is not too high (Milford 2004; Hirofumi 2006) and if actors receive symmetric information (Milford 2004; Hirofumi 2006). Coffee farmers are many and competition is high. They are also generally not well-informed about coffee prices and the relationship between coffee prices and quality. This results in a low bargaining power that may negatively influence farmers' potential to benefit from economic rent and thereby increase their selling prices and possibly generate increased profit. Local traders, for example, generally receive more symmetric information and are fewer in number, resulting in the potential for extracting higher rents than the farmers (Milford 2004).

Value chain analysis also allows us to examine the role of upgrading within a product chain (Neilson 2014; Kaplinsky and Morris 2001). Upgrading refers to activities that enhance the quality, productivity, efficiency, or design of products and enables producers to gain higher economic rents, such as increasing the efficiency or unit values of products, creating new functions to increase the value added of products, and developing an entirely new value chain (Blackmore 2012; Kaplinsky and Morris 2001; Giuliani, Petrobelli, and Rabellotti 2005; Humphrey and Schmitz 2002). In this paper, we refer to factors that enable upgrading in the value chain as enablers (e.g., training, financial incentives, government policies, and institutional factors), and factors that may hamper or adversely affect upgrading as blockers (e.g., resistance to implementing good agricultural practices, lack of adequate skills, and poor information technology infrastructure). For example, farmers may face problems in upgrading because they lack access to affordable credit, inputs (seeds and fertilizers), and market information (Blackmore 2012).

METHODS

Although value chain analysis functioned as a guiding theoretical framework, we adopted different methods to answer the research questions (questionnaire, interviews, and a focus group discussion). The questionnaire intended to measure the economic performance of actors (Question 1) and the distribution of economic rent (Question 2). The questions in the questionnaire differed for the different actor-groups based on the costs that were relevant for each.

We conducted our fieldwork in Sumatera (Lampung, North Sumatera, and Central Aceh) and (Central) Java as these regions cover 85 percent of the total Indonesian coffee production (Direktorat Jenderal Bina Produksi Perkebunan 2013). The questionnaire was pretested among eight coffee farmers, three traders, two exporters, and two roasters in Lampung for Robusta coffee, and among six farmers, four traders, two exporters, and two roasters in North Sumatera for Arabica coffee. Based on the pretest we made some minor changes in the questionnaires (i.e., we added costs that were not part of our preliminary list).

After pretesting the questionnaire, it was filled out by 234 respondents, consisting of 165 smallholder farmers (114 Robusta coffee farmers, 51 Arabica coffee farmers); 45 collector traders (24 for Robusta, 21 for Arabica); 12 exporters (5 for Robusta, 7 for Arabica); and 12 Indonesia-based roasters (7 for Robusta, 5 for Arabica) (Appendix Table 1 and Appendix Table 2). About 148 respondents were part of a certification scheme (e.g., 4C Code, Rainforest Alliance, UTZ Certified, Fair Trade Certified, USDA Organic, Starbucks C.A.F.É. Practices, and Smithsonian Bird-Friendly). Appendix Table 1 shows that the certified and conventional actors are very similar in terms of demographic characteristics; we did an ANOVA test which did not reveal significant differences in sociodemographic characteristics between conventional and certified actors.

Our sampling method for conventional farmers comprised contacting the local agricultural extension services and asking them to provide us with the locations where the conventional farmers reside. We were informed about the residence areas of the certified farmers through the exporters' databases. We distributed the questionnaires personally, in the evenings, when the farmers were done with their work. It was very rare that a farmer did not want to participate in our study. In those cases, the farmer had other obligations or was too tired to participate.

We employed a random sampling technique to interview traders. To contact Indonesian-based roasters, we first contacted known roasters (from previous work experience) to subsequently sample more roasters via snowball sampling. For the exporters, we contacted the 40 most important Indonesian exporters (see www.aeki-aice.org). Their response rate was low (30%) as most exporters did not want to collaborate due to time constraints. The relatively small number of exporters in this study, as well as the small number of roasters and conventional Arabica farmers, forms a weakness of this study as it may raise questions about statistical significance. Therefore, we conducted semi-structured interviews (28 in total) and a focus group discussion to validate the preliminary results from the questionnaire (particularly for the roasters and exporters as they were relatively fewer) and to unravel and explain differences in the distribution of economic rent along the coffee value chain. We interviewed farmers (n=4), traders (n=3), exporters (n=12), roasters (n=5), a cooperative (n=1), a researcher (n=1), and NGOs (n=2). The focus group consisted of eight participants (farmers, traders, a nongovernment organization, a government employee, a cooperative, and a roaster).

For the first research question, we operationalized the concept of economic performance into different variables based on the literature: coffee area (CIDIN 2014; Beuchelt and Zeller 2011; Verkaart 2008), total coffee production (Beuchelt and Zeller 2011), productivity (kg/tree, kg/hectare), number of coffee trees (CIDIN 2014; Verkaart 2008), coffee price per kilo (CIDIN 2014; Verkaart 2008; Bacon 2005), value of coffee production, production costs, and profit (Beuchelt and Zeller 2011). Some variables only relate to specific actors in the value chain (e.g., the number of coffee trees only relates to the farmers). The last variable, profit, could only be measured for traders, roasters, and exporters. Profit expresses the difference between the selling price and buying price minus the unit costs. For farmers we could not determine the investment costs—and therefore profit—due to the right of inheritance and related difficulties in determining prices for coffee seedlings and plants. To determine the unit costs, we had to focus on different cost items for each actor. For farmers, we focused on costs for chemical and organic fertilizers; agricultural equipment; transportation; hired labor to control pests, diseases, and weeds; hired labor for picking coffee; and miscellaneous costs. Traders' unit costs cover expenses for handling the beans, transport, storage, grading, drying, depreciation, and miscellaneous costs. Exporters also have different unit costs, which include costs for handling, storage, grading, drying, transport from traders to factory, freight forwarding, freight onboard, depreciation, certification, overhead, and miscellaneous costs. Roasters have unit costs related to processing (roasting coffee), packaging, marketing, distribution, depreciation, overhead, and miscellaneous costs. The completeness of variables indicating the costs for different actors was also checked during the pretest. To measure differences in economic performance between certified and conventional actors, we tested differences in scores on the above mentioned variables by using the ANOVA test and adopting a significance level of 5 percent ($p<.05$).

The second question focuses on the distribution of economic rent along the Indonesian coffee value chain. Based on the questionnaire, we compared the average selling price of each actor in the conventional coffee value chain with the average selling prices of each actor in the certified coffee chain (IDR/kilogram). The difference is considered to express the average economic rent. The relative economic rent for each actor in the value chain can be calculated through the following formula:

> ([Average selling price of certified actor A − average selling price of conventional actor A] / (average selling price certified actor A)) * 100%

RESULTS AND DISCUSSION

Economic Performance of Indonesian Actors and the Role of Certification

Farmers

Table 1 shows that certified farmers receive higher prices per kilogram of coffee compared to conventional farmers. This difference is significant, but rather small: certified Robusta farmers receive, on average, USD 0.03 per kilogram more than conventional farmers (2%, $p=.042$), and certified Arabica farmers receive USD 0.19 more per kilogram (6%, $p=.000$). The interviews confirmed these patterns and revealed that certified farmers deliver coffee of higher quality—with lower moisture content, fewer physical defects, and larger-sized beans—compared to coffee delivered by conventional farmers. Many certified farmers sell their coffee to conventional collector traders who buy and directly pay for the coffee at the farm gate. When selling coffee to certified traders,

Table 1. ANOVA analysis for farmers, collector traders, exporters, and roasters

Variables	Robusta			Arabica		
	Conventional	Certified	Sig	Conventional	Certified	Sig
Farmers						
Coffee area (hectare)	1.3	1.25	0.245	1.21	0.75	0.041**
Total coffee production (kg)	1,004	1,047	0.803	659	1,252	0.016**
Productivity (kg/tree)	0.45	0.49	0.579	0.52	0.84	0.063
Productivity (kg/ hectare)	811	935	0.329	617	1,623	0.000**
Coffee trees	2,841	2,497	0.400	1,929	1,475	0.187
Coffee price (IDR/ kg)	17,000	17,400	0.042	35,600	37,800	0.000**
Revenue from coffee production (IDR)	17,300,000	18,100,000	0.787	23,500,000	47,800,000	0.025**
Unit costs (IDR/kg)	3,460	3,068	0.454	1,438	778	0.204
Collector Traders						
Volume of coffee sold per year (kg)	210,000	414,000	0.160	132,000	140,000	0.919
Coffee prices (IDR/kg)	17,769	18,200	0.030	37,000	39,100	0.000
Revenue from coffee sold (IDR)	3,760,000,000	7,520,000,000	0.157	4,890,000,000	5,550,000,000	0.835
Unit costs (IDR/kg)	397	411	0.459	410	383	0.224
Profit (IDR/kg)	284	301	0.237	764	832	0.696
Length of cooperation (years)	10	4	0.019	8	6	0.068
Exporters						
Volume of coffee exported per year (kg)	6,603,300	4,061,875	0.269	1,140,000	5,958,000	0.572
Revenue from coffee sold (IDR)	1,366,883,100,000	377,257,480,000	0.023	154,764,000,000	917,496,300,000	0.533
Coffee prices (IDR/kg)	22,500	23,000	0.028	44,500	46,550	0.124
Unit costs (IDR/kg)	997	1,071	0.489	1,815	1,854	0.904
Profit (IDR/kg)	3,243	3,630	0.023	4,084	4,516	0.187
Establishment of business (years)	5	8	0.754	5	12	0.327
Roasters						
Volume of roasted coffee per year (kg)	26,064	846	0.553	50	6,194	0.675
Coffee prices (IDR/kg)	107,000	135,000	0.050	150,000	182,500	0.780
Revenue from coffee sold (IDR)	1,660,032,000	123,120,000	0.579	7,500,000	1,099,945,000	0.680
Unit costs (IDR/kg)	7,315	19,340	0.009	6,320	13,812	0.395
Profit (IDR/kg)	76,000	97,801	0.016	106,675	129,557	0.834
Establishment of business (years)	26	3	0.485	1	2	0.419

Notes: USD 1 = IDR 11,731 (2014 rate); **significant at $p<.05$

farmers have to wait 3–7 days for their payment as the actual price cannot be determined until the coffee is sold to an exporter who sets the price. Selling certified coffee to conventional traders, however, generally results in receiving the same prices as selling coffee to certified traders. The coffee quality is considered more important than the certificate. In the interviews, the farmers indicated that certification leads to higher production and better coffee quality, but they doubt the financial gains. Most certified farmers believe that the higher price per kilogram hardly compensates for the higher cost and time-consuming work (e.g., recording activities) to make certification economically attractive. Table 1, however, shows that there are no (statistically) significant differences in unit costs between certified and conventional coffee farmers. Certified Arabica farmers, however, have a significantly higher productivity (p=.000) and a higher total coffee production (p=.016) despite having smaller coffee areas (p=.041) compared to conventional farmers. For Robusta coffee, we could not identify additional differences (except for the price per kilogram) between certified and conventional farmers.

Moreover, we found that all certification schemes, except Fair Trade, do not ascertain minimum prices for coffee, but use flexible prices instead. Most certified farmers receive different amounts of price premiums, depending on the exporter and the scheme they are participating in (e.g., Fair Trade on average at USD 0.03–0.06/kg, 4C Code on average at USD 0.02–0.13/kg, UTZ Certified on average at USD 0.04–0.13/kg; and Rainforest Alliance on average at USD 0.03–0.06/kg). Farmers who join the same certification scheme may receive different premium prices. For example, Robusta farmers in a 4C Code scheme with an exporter in Lampung, received a premium of USD 0.02/kg, however, Robusta farmers in a 4C Code scheme with an exporter in Central Java received USD 0.13/kg. Robusta farmers in a 4C Code scheme with a different exporter in Lampung did not receive premium prices at all, but received agricultural equipment instead. In general, premium prices are used to directly pay farmers, to offer trainings or assistance, or to invest in public infrastructure. Little attention is paid to increasing welfare at the household level.

The differences between Arabica and Robusta farmers can partially be explained by the fact that Robusta farmers only recently got certified (beginning in the mid-2000s), while Arabica farmers were already certified as early as the 1990s. Therefore, the certified Arabica farmers have received more training, service, and support from donors, NGOs, and businesses than the Robusta farmers, which may explain their increased productivity and total coffee production. In the interviews, it was also acknowledged that training in crop management and postharvest techniques were important enablers to upgrade the economic performance of farmers. Besides, the existence of farmers' organizations was believed to play a vital positive role in enabling economic performance by providing opportunities for labor sharing; revolving credit; bulk buying; knowledge dissemination; increasing awareness about more diverse channels to sell coffee (for higher prices); risk sharing; pooling; and an efficient distribution of resources (fertilizers, seeds, new coffee varieties, farming equipment). Weather (e.g., suitable conditions for irrigation and drying) and equipment were also considered important enablers as well as the presence of credit to hire coffee pickers during the harvest.

Traders

Table 1 shows that certified Robusta traders and certified Arabica traders receive significantly higher prices (on a per kilogram basis) for their coffee compared to conventional traders (p=.030 and p=.000, respectively),

although differences are generally small (5.4% or USD 0.18 per kg for Arabica coffee and 2.4% or USD 0.04 per kg for Robusta coffee). For the volume of coffee sold, profit, and the unit costs, we could not identify significant differences between certified traders and conventional traders. Based on the interviews, better access to markets and market information are largely believed to enhance a trader's economic performance. Large traders generally have extensive access to information and a broad network of actors to sell their coffee to. Small- and medium-sized traders, however, often lack information about prices and access to markets. The interviews, furthermore, revealed that lack of credit and increasing fuel prices are seen as important blockers. Not being able to access enough credit results in a reduced amount of coffee that can be purchased (and sold) at once, reducing the trader's revenues.

Exporters

For Arabica coffee, we could not identify significant differences in the economic performance of exporters trading conventional or certified coffee (Table 1). Prices paid for each kilogram of certified Arabica coffee are higher than for conventional coffee, but this difference is not significant. For certified Robusta coffee, prices per kilogram were USD 0.04 higher than for conventional coffee (p=.028), the revenues were lower (p=.023), but the profit was again higher (p=.023). Because the number of exporters who filled out the questionnaire was limited, these results have to be treated with care. Nine of 12 interviewed exporters argued that certification—although an expensive business for them—is still considered an advantage to enlarge their market access, to benefit from price premiums, to attract (new) buyers, and to collect coffee beans directly from the farmers. In addition, increasing fuel prices, poor conditions of physical infrastructure, and bureaucratic government processes were mentioned as blockers to enhanced economic performance.

Roasters

Roasters processing certified Robusta coffee have higher unit costs (p=.000), but also higher profits compared to roasters processing conventional Robusta coffee (Table 1). No other significant differences between certified and conventional roasters could be identified. However, again, we have to treat these results with care as the number of exporters that responded to our questionnaire was limited. In the interviews, it was largely confirmed that roasters who process certified Robusta coffee, have higher revenues as they trade high-quality coffee beans. This outstanding quality makes access to upper-class hotels, restaurants, and cafes in Indonesia possible, which explains the high profits these roasters make. The high volume of Robusta coffee that is sold by the roasters can be explained by well-known and very popular coffee brands and the relatively cheap consumer prices. Here, we see that for the domestic Indonesian market, the coffee brand and its place of origin are considered more important than the certificate. For Indonesian roasters, who generally supply the domestic Indonesian market, and upcoming markets in Asia, certificates do not play an important role. Although certified coffee generally has higher quality than conventional coffee, this is only an indirect result of certification. A more direct link can be identified between trainings provided to farmers and increases in their coffee quality and productivity.

For Arabica coffee, there are no significant differences between roasters processing conventional or certified coffee. The interviews revealed that certified coffee can often be characterized by its outstanding quality in terms of low moisture content, few defects, and larger-sized beans, which explains the higher prices paid for it. For the domestic Indonesian

market, it is not the certificate that adds value to the coffee, but the coffee quality, flavor, and blend, and related to this, its origin. Indonesian consumers, for example, are said to be willing to pay more for Arabica coffee from Aceh. This is also the reason why not all roasters add a logo of the certification's label on their packages. Kapal Api and White Coffee "Kopi Luwak" are two large conventional roasters in Indonesia that have large market shares in the Indonesian coffee market. For them, blending different types of coffee to achieve a desired taste is more important than the certificate.

To answer our first research question on how coffee certification schemes influence the economic performance of Southern actors, we cannot simply give one answer. For farmers (Arabica and Robusta), traders (Arabica and Robusta), and exporters (only Robusta), we found that certification leads to limited, but significantly higher prices per kilogram of coffee ($p \leq .05$). Related to profit, only Robusta exporters benefited significantly from certification (Table 2). However, we have also seen that it is not so much the certificate itself that contributes to a better economic performance, but the higher quality of certified coffee beans.

Distribution of Economic Rent

Table 3 presents the economic rent of certified coffee for each actor in the Indonesian value chain and reveals that the economic rent is distributed unequally. For Robusta coffee, we see that the economic rent for certified coffee is around IDR 28,000/kg (USD 2.39) for roasters; IDR 500/kg for exporters (USD 0.04), IDR 431/kg (USD 0.04) for traders, and IDR 400/kg (USD 0.03) for farmers. The economic rent in the Arabica value chain is higher for all actors and ranges from IDR 32,500 per kilogram for the roasters (USD 2.77) to IDR 2,050 for the exporters (USD 0.17). If we look at the total economic rent of certified coffee along the entire Indonesian value chain, the economic rent of Robusta coffee equals IDR 29.331 per kilogram (USD 2.50) versus IDR 38.850 per kilogram (USD 3.31) for Arabica coffee.

Table 2. Absolute and relative differences of average profit

	Average profit (IDR/kg coffee)	Average profit (IDR/kg coffee)	Absolute difference (in profit, IDR)	Relative difference in profit (%)
	Certified	- Conventional		
Robusta				
Farmer*				5.8
Trader	301	284	17	6.0
Exporter	3,630	3,243	387	11.9
Roaster	97,801	76,000	21,801	28.7
Arabica				
Farmer				4.4
Trader	832	764	68	8.9
Exporter	4,516	4,084	432	10.6
Roaster	129,557	106,675	22,882	21.5

Note: As explained before, we cannot calculate the farmer's profit. To that end, we calculated the relative difference between selling process and costs. The cost of certified Robusta farmers is IDR 3,068/kg; the cost of conventional Robusta farmers is IDR 3,460/kg; the cost of certified Arabica farmers is IDR 778/kg; and the cost of conventional Arabica farmers is IDR 778/kg. The relative difference of Robusta farmers is ([17,400–3,068]–[17,000–3,460])/(17,000–3,460). The relative difference of Arabica farmers is ([37,800–1,438]-[35,600–778])/(35,600–1,438).

Table 3. Distribution of economic rent in the certified market

	Average Selling Price (IDR/kg) Certified (1)	Average of Selling Price (IDR/kg) Conventional (2)	Absolute difference (IDR) (3) = (1)–(2)	Relative economic rent of certified coffee (4) = (3)/(1)	Relative economic rent*
Robusta					
Farmer	17,400	17,000	400	2.30%	1,36%
Trader	18,200	17,769	431	2.37%	1,47%
Exporter	23,000	22,500	500	2.17%	1,70%
Roaster	135,000	107,000	28,000	20.74%	95,46%
	Selling Price (IDR/kg) Certified	**Selling Price (IDR/kg) Conventional**	**Absolute difference (IDR)**	**Premium price of certified coffee**	**Relative economic rent**
Arabica					
Farmer*	37,800	35,600	2,200	5.82%	5,66%
Trader	39,100	37,000	2,100	5.37%	5,41%
Exporter	46,550	44,500	2,050	4.40%	5,28%
Roaster	182,500	150,000	32,500	17.81%	83,66%

Notes: USD 1 = IDR 11,731 (2014 rate)

*Absolute difference of each actor compared to total of absolute differences is ratio between absolute difference of each actor and total of absolute differences of all actors. For the Robusta farmer = (400/[400+431+500+28,000]).

Both for Robusta and Arabica, we see that the roasters receive the largest share of economic rent (95.5% and 83.7%, respectively). In the Robusta value chain, farmers are the actors who benefit least from the economic rent connected to certified coffee; in the Arabica value chain, the farmers benefit a bit more than the traders and the exporters. The interviewees argued that the farmer's low bargaining power and vulnerability do not change as a consequence of certification. Farmers still have a very weak voice in setting the coffee prices and are dependent on other actors (mainly the exporters who pay for the certificates and set the prices). Budget constraints, lack of knowledge, and the absence of opportunities for networking reproduce dependency structures that contribute to the vulnerable position of farmers, which also explains their small share in the overall economic rent. The difference between the relatively low economic rent of certified Robusta coffee and the slightly higher rent for Arabica coffee can be explained by the origin of the Arabica coffee. The domestic market has a strong preference for Arabica coffee from Gayo (Aceh), which is the region where this research is carried out. The results may be different for certified Arabica coffee from other regions.

CONCLUSION

In developed countries, certified coffee is being promoted and sold on the grounds of offering a better deal to farmers. This better deal encompasses not only improvements in the social and environmental situation of the farmers, but also in their economic situation and their vulnerable position compared to the more powerful actors in the coffee value chain. Our indicative results, however, show that the economic rent resulting from certified coffee is

relatively low for farmers; the Indonesian-based roasters are the actors who benefit the most from certification. These roasters receive 95.5 percent (Robusta) and 84 percent (Arabica) of the total economic rent in the certified Indonesian coffee value chain. Our results also reveal that the certificate itself hardly plays a role in explaining the slightly higher coffee prices for farmers. The price per kilogram of certified coffee is higher than conventional coffee not because of the certificate but because of the higher quality (lower moisture content, fewer physical defects, and larger-sized beans); flavor; brand; and place of origin. From an optimistic point of view, certification contributes to better prices only in an indirect way, through improving the coffee quality and efficiency of the production.

These results raise the question of whether the current certification system, which is widely seen as a response to the negative effects of global trade in agricultural commodities, is able to meet its own targets or whether it largely reproduces prevailing problems. One of the most persistent problems is probably the unequal distribution of benefits and gains; something that does not seem to be changed through certification. Certification programs target farmers as being the agents of change. The undeniable underlying assumption, however, is that farmers lack information, skills, market access, and capital, even though all these aspects are present in the system. The main challenge is to guide farmers in the process of accessing and internalizing these aspects. If the roasters remain to be the actors who benefit the most, and if the Indonesian domestic market hardly cares about certified products, it is questionable whether an effective, sustainable transformation of the current agricultural economic system can be initiated at the farmers' level. Improving the financial situation of farmers probably asks for a more profound restructuring of the current system, including institutions for education and training and access to credit. It is also worthwhile to consider possibilities to improve the farmers' livelihoods in the context of the different coffee markets the farmers are part of. Whereas European and American consumers increasingly require certified coffee, upcoming Asian and Arabic markets just want to be assured of good quality coffee without caring too much about certificates. Therefore, trainings to increase the quality and productivity of coffee production seem to be of particular benefit to the farmers. It can be seriously questioned what additional value certification has except for the provision of training (as part of the certification process).

Of course, the results of this study, and particularly the statistical relations that have been made, need to be interpreted with care. This call for reticence mainly results from the sample sizes in this study and methodological challenges to accurately define and measure costs (and therefore profits). The small sample sizes particularly hold true for the 12 roasters and 12 exporters (6 processing conventional coffee, 6 processing certified coffee) that were included in this study. The methodological difficulties regarding the measurement of costs do not so much result from the development of a full overview of costs (in which we succeeded well), but from the actors' memory and estimations regarding the costs they have made. Although we checked the reliability of data through interviews and a focus group, it is good to treat the data as indicative at this stage. It will be interesting to investigate the distribution of rents across the coffee chain for other regions and for other countries, to find out whether our identified distributional patterns can, or cannot, be identified elsewhere. Extension of this research to other parts of Indonesia may also add more robustness and rigor to the methodology used. Nonetheless, this research offers interesting preliminary results regarding the relationship between certification and the economic performance of

coffee value chain actors. Although the unequal distribution of rents may not be surprising from an economic point of view, it is surprising from a sustainability point of view. Lastly, we expect that the involvement of Northern (e.g., European and US) roasters in this study would affect the distributional pattern of rents as it seems likely that farmer's rents would even go down further in international value chains. This was, however, not part of our study.

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REFERENCES

Ayoola, J.B. 2012. "An Assessment of Factors Constraining Coffee Production and Marketing in Nigeria." *International Journal of Science and Nature* 3 (3): 678–683.

Arifin, Bustanul. 2010. "Global Sustainability Regulation and Coffee Supply Chains in Lampung Province, Indonesia." *Asian Journal of Agriculture and Development* 7 (2): 67–90.

Bacon, C. 2005. "Confronting the Coffee Crisis: Can Fair Trade, Organic, and Specialty Coffees Reduce Small-Scale Farmer Vulnerability in Northern Nicaragua?" *World Development* 33 (3): 497–511.

Beuchelt, T.D., and M. Zeller. 2011. "Profits and Poverty: Certification's Troubled Link for Nicaragua's Organic and Fairtrade Coffee Producers." *Ecological Economics* 70 (7): 1316–1324.

Blackmore, E., J. Keeley, R. Pyburn, E. Mangus, L. Chen, and Q. Yuhui. 2012. *Pro-poor Certification: Assessing the Benefits of Sustainability Certification for Small Scale Farmers in Asia*. United Kingdom: International Institute for Environment and Development.

CIDIN (Centre for International Development Issues). 2012. *The Impact of Coffee Certification on Smallholder Farmers in Kenya, Uganda and Ethiopia (Report)*. The Netherlands: CIDIN and Radboud University Nijmegen.

Consumers International. 2005. From Bean to Cup: How Consumer Choice Impacts on Coffee Producers and the Environment. Accessed http:// www.consumersinternational.org/coffee and http:// www.iied.org/SM/index.html

De Pelsmacker, P., L. Driesen, and G. Rayp. 2005. "Do Consumers Care about Ethics? Willingness to Pay for Fair-Trade Coffee." *Journal of Consumer Affairs* 39 (2): 363–385.

Ditjenbun (Directorate General of Plantation). 2013. *Statistik Perkebunan Indonesia* (Tree Crop Estate Statistics of Indonesia). Jakarta: Ditjenbun

Elliott, Kimberly Ann. 2012. "Is My Fair Trade Coffee Really Fair? Trends and Challenges in Fair Trade Certification." *Center for Global Development Policy Paper* 17:1–30. http://www.cgdev.org/ content/publications/detail/1426831

Gilbert, Christopher L. 2008. "Value Chain Analysis and Market Power in Commodity Processing with Application to the Cocoa and Coffee Sectors." In *Commodity Market Review 2007-2008*, 5–34. Rome: FAO.

Giovannucci, D., and S. Ponte. 2005. "Standards as a New Form of Social Contract? Sustainability Initiatives in the Coffee Industry." Food Policy 30 (3): 284–301.

Green, G.P., and Mathew J. Warning. 2008. *The Impact of Fair Trade Coffee on Economic Efficiency and the Distribution of Income.* Accessed July 15, 2013. http://www.pugetsound.edu/files/ resources/6926_Green Warning Impact of FT Coffee on Ec Eff and Distr of Inc.pdf

Guilani, E., C. Petrobelli, and R. Rabellotti. 2005. "Upgrading in Global Valuechains: Lessons from Latin American Clusters." *World Development* 33 (4): 549–573.

Hirofumi, U. 2006. "Empirical Determinants of Bargaining Power." *Rieti Discussion Paper Series* 06-E-030. http://www.rieti.go.jp/jp/publications/dp/06e030.pdf

Humphrey, J., and H. Schmitz. 2002. "How Does Insertion in Global Value Chains Affect Upgrading in Industrial Clusters?" *Regional Studies* 36 (9): 1017-1027.

Kaplinsky, Raphael. 2004. *Sustaining Income Growth in a Globalizing World: The Search for the nth Rent.* Brighton: Centre for Research in Innovation Management. https://www.ids.ac.uk/files/RKrentJan04.pdf.

———. 2000. "Globalization and Unequalisation: What Can Be Learned from Value Chain Analysis?" *Journal of Development Studies* 37 (2): 117–146.

Kaplinsky, Raphael, and Mike Morris. 2001. *A Handbook for Value Chain Research*. Ottawa: IDRC. http://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf

Méndez, V., C. Bacon, M. Olson, S. Petchers, D. Herrador, C. Carranza, L. Trujillo, C. Guadarrama-Zugasti, A. Cordon, and A. Mendoza. 2010. "Effects of Fair Trade and Organic Certifications on Small-scale Coffee Farmer Households in Central America and Mexico." *Renewable Agriculture and Food Systems* 25 (3): 236–251.

Milford, A. 2004. *Coffee, Co-operatives and Competition: The Impact of Fair Trade Chr. Michelsen Institute Report*. http://www.fairtrade.net/uploads/media/Milford_Coffee.pdf.

Muradian, Roldan, and Wim Pelupessy. 2005. "Governing the Coffee Chain: The Role of Voluntary Regulatory Systems." *World Development* 33 (12): 2029–2044.

Murray, D., L. Raynolds, and P. Taylor. 2003. *One Cup at a Time: Poverty Alleviation and Fair Trade Coffee in Latin America*. Boulder: Colorado State University Fair Trade Research Group. http://welcome2.libarts.colostate.edu/centers/cfat/wp-content/uploads/2009/09/One-Cup-at-a-Time.pdf.

Neilson, J. (2014). "The Value Chain for Indonesian Coffee in A Green Economy." *Bulletin of Research on Spice and Industrial Crops* 4 (3): 183–198.

Ponte, S. 2002. "The 'Latte Revolution'? Regulation, Markets and Consumption in the Global Coffee Chain." *World Development* 30 (7): 1099–1122.

Ruben, R., and R. Fort. 2011. "The Impact of Fair Trade Certification for Coffee Farmers in Peru." *World Development* 40 (3): 570–582.

TSPN (Trade Standards Practitioners' Network). 2011. Food-related Voluntary Sustainability Standards: A Strategy Guide for Policy Makers. Draft working document for TSPN Members Meeting, Bern, Switzerland, November 18, 2010. https://unfss.files.wordpress.com/2013/02/tspn-guide-v9_1.pdf

Shumeta, Z., K. Urgessa, and Z. Kebebew. 2012. "Analysis of Market Chains of Forest Coffee in Southwest Ethiopia." *Academic Journal of Plant Sciences* 5 (2): 28–39

Valkila, J. 2010. "Empowering Coffee Traders? The Coffee Value Chain from Nicaraguan Fair Trade Farmers to Finnish Consumers." *Journal of Business Ethics* 97: 257–270

van Dijk, Meine Pieter, and Jacques Trienekens (eds). 2012. *Global Value Chains: Linking Local Producers from Developing Countries to International Markets*. Amsterdam: Amsterdam University Press.

Verkaart, S. 2008. "Effects of UTZ Certified and Fair Trade on Coffee Producers in Uganda and Tanzania: Certification and the People and Profit Dimensions of Corporate Social Responsibility." Masters thesis, Radboud University Nijmegen.

World Bank. 2008. *Agriculture for Development.World Development Report 2008*. Washington, D.C.: The World Bank.

Wahyudi, T., and M. Jati. 2012. "Challenges of Sustainable Coffee Certification in Indonesia." Paper prepared for the Conference on Economic, Social and Environmental Impact of Certification on Coffee Supply Chain, International Coffee Council 109th Session, London, United Kingdom, September 25, 2012. http://www.ico.org/event_pdfs/seminar-certification/certification-iccri-paper.pdf

Yang, Shang-Ho, Wuyang Hu, Malvern Mupandawana, and Yun Liu. 2012. "Consumer Willingness to Pay for Fair Trade Coffee: A Chinese Case Study." *Journal of Agricultural and Applied Economics* 44 (1): 21–34.

Appendix Table 1. Characteristics of farmers and collector traders

Characteristics	Robusta				Arabica			
	Conventional		Certified		Conventional		Certified	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Farmers								
Age (years old)								
Less than 25	2	5.4	1	1.3	1	8.3	0	0
25-40	20	54	39	51	7	58	10	26
41-55	9	24	27	35	4	33	12	31
More than 55	6	16	10	13	0	0	17	44
mean (years old)	42		42		38		42	
Sex ratio								
Male	35	95	69	90	8	67	33	85
Female	2	5	8	10	4	33	6	15
Education Level								
No schooling	1	2.7	2	2.6	0	0	0	0
Elementary School	19	51	37	48	1	8.3	6	15
Junior High School	6	16	22	29	7	58	11	28
Senior High School	10	27	15	20	4	33	20	51
Diploma	1	2.7	0	0	0	0	0	0
Bachelor	0	0	1	1.3	0	0	2	5.1
Experiences on cultivation (years)								
0 - 10	22	60	28	36	4	33	12	31
11 - 20	8	22	35	46	4	33	8	21
21 - 30	3	8.1	4	5.2	1	8.3	17	44
31 - 40	0	0	9	12	3	25	2	5.1
41 - 50	3	8.1	1	1.3	0	0	0	0
More than 50	1	2.7	0	0	0	0	0	0
mean (years)	14		16				19	
Traders								
Age (years old)								
Less than 25	0	0	0	0	0	0	1	11
25-40	6	38	2	25	1	8.3	0	0
41-55	7	44	3	38	8	67	8	88
More than 55	3	19	3	38	3	25	0	0
Mean (years old)	47		48		52		45	
Sex ratio								
Male	12	75	8	100	9	75	8	89
Female	4	25	0	0	3	25	1	11
Education Level								
No formal education	0	0	0	0	0	0	0	0
Elementary School	6	48	2	25	3	25	1	11
Junior High School	5	31	2	25	2	17	0	0
Senior High School	5	31	3	38	6	50	5	56
Diploma	0	0	1	13	0	0	1	11
Bachelor	0	0	0	0	1	6.3	2	22
Experiences on Coffee Trading (years)								
0-10	7	44	6	75	4	33	7	78
11 - 20	6	38	1	13	4	33	2	22
21-30	1	6.2	1	13	1	8.3	0	0
31-40	2				3	25	0	0
mean (years)	16	13		0	8		9	

Appendix Table 2. Characteristics of exporters and roasters

	Robusta				Arabica			
	Conventional		Certified		Conventional		Certified	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Exporters								
Position in the company								
Owner	1	100	2	50	2	100	3	60
Director	0	0	1	25	0	0	1	20
Manager	0	0	1	25	0	0	1	20
Sex ratio								
Male	1	100	4	100	2	100	5	100
Female	0	0	0	0	0	0	0	0
Company established (years)								
Less than 5	0	0	1	25	0	0	0	0
5-10	1	100	1	25	1	50	2	40
More than 10	0	0	2	50	1	50	3	60
Legal form of company								
CV	0	0	0	0	1	50	1	20
PT	1	100	4	100	1	50	3	60
Koperasi	0	0	0	0	0	0	1	20
Roasters								
Position in the company								
Owner	5	100	2	100	1	100	2	50
Manager	0	0	0	0	0	0	2	50
Sex ratio								
Male	4	80	2	100	1	100	2	50
Female	1	20	0	0	0	0	2	50
Company established (years)								
Less than 5	1	20	1	50	1	100	3	75
5-10	3	60	1	50	0	0	1	25
More than 10	1	20	0	0	0	0	0	0
Legal form of company								
CV	0	0	2	100	0	0	1	25
UD	3	60	0	0	0	0	1	25
Koperasi	0	0	0	0	0	0	1	25
Home industry	2	40	0	0	1	100	1	25