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Trends, Driving Forces, and Implications for Developing Countries

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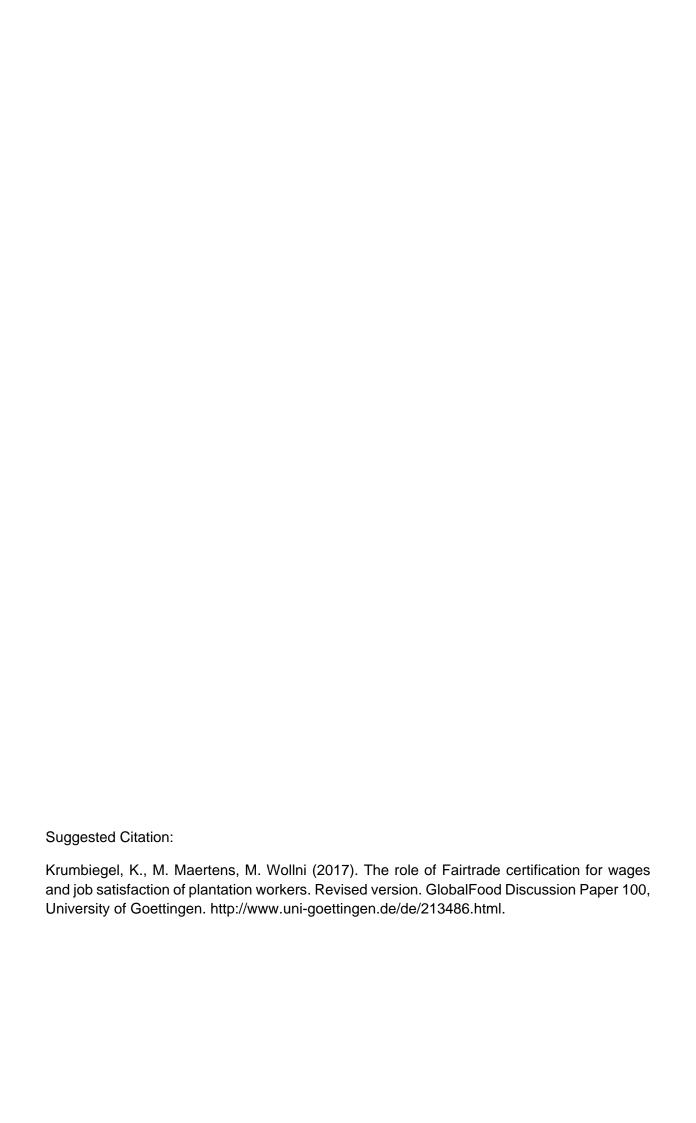
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The role of Fairtrade certification for wages and job satisfaction of plantation workers. Revised version

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Revised version

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Abstract:

Worker welfare and employment conditions in the agri-food producing and processing sectors in the global south have become an increasing concern for consumers. Sustainability standards, such as Fairtrade, play an important role in agri-food markets of horticultural produce and may be a tool to address these concerns. However, so far the implications of Fairtrade certification for extrinsic and intrinsic employment factors of hired labor on large-scale plantations remain hardly understood. In this paper we assess its effect on workers' hourly wages and their level of job satisfaction with primary survey data from 325 randomly sampled workers from eight different export-oriented pineapple companies in Ghana. We apply a linear, linear mixed model and instrumental variable approach to take into account the multilevel characteristics of our data and possible selection bias. Our findings show that both hourly wages and job satisfaction are indeed higher on Fairtrade certified plantations. Factors of increased job satisfaction are likely driven by higher wages, permanent employment contracts, training opportunities, company services such as medical care and paid leave as well as established labor unions on Fairtrade certified plantations.

Keywords: Fairtrade certification, horticultural employment, worker wages, job satisfaction

JEL Codes: J28, J31, Q13

1. Introduction

Exports of high-value produce such as fresh fruits, vegetables and flowers from developing countries have increased tremendously in the past couple of decades. Developing countries' share in global high-value agri-food exports[1] have quadrupled in value between 1995 and 2014 from 30.25 billion US$ to 122.5 billion US$ (Van den Broeck and Maertens, 2016). Horticulture exports constitute between one fourth and one third of total agri-food exports from developing regions (Van den Broeck and Maertens, 2016). These developments are linked to the expansion of large-scale horticultural and floricultural estates and processing plants catering for the export market. Diversification into export horticulture, often fostered by foreign investments, has become a strategy for employment generation and increased foreign exchange earnings for many developing countries (Barrientos et al., 2003). The quality of jobs on export plantations has been questioned by a number of studies pointing to insecure, badly paid and hazardous jobs and risk of exploitation (Riisgaard, 2009, Barrientos et al. 2003, Dolan, 2004). Plantation workers are considered one of the most vulnerable groups in the global trade system as they are often exposed to discrimination, difficult working conditions and at the same time lack bargaining opportunities. In recent years however, consumers have become increasingly aware of unfavorable employment conditions in the food producing and processing industry. This awareness has been mirrored by the rise of private food and sustainability standards, such as Fairtrade. The Fairtrade movement is most well-known to support smallholder farmers with fair prices but it also supports plantation agriculture with the aim of empowering workers and economically develop their communities (Fairtrade International, 2014a).

In this paper we analyze the implications of Fairtrade certification for low skilled workers on pineapple plantations in Ghana. As the pineapple export sector in Ghana experienced a recent shift from being partially smallholder based to being almost completely based on large-scale plantation production, the focus on workers in the sector is particularly pertinent. While there is a rather large literature on the implications of Fairtrade certification for smallholder farmers in various sectors, evidence on the implications of Fairtrade for plantation workers is very scarce. A handful of studies has analyzed the impact of Fairtrade on wages and workers' income (Granville and Telford, 2013; Ruben and van Schendel, 2009; Cramer et al., 2014) but few studies have looked beyond wages at other employment characteristics and job satisfaction – with the studies of Ruben and van Schendel (2009) and Raynolds (2012) as notable exceptions. In this paper we take a broader perspective by incorporating extrinsic as well as intrinsic factors of employment, and by investigating the impact of Fairtrade certification on wages as well as job satisfaction. More specifically, we address the following two questions: (1) Does Fairtrade certification have a positive effect on wage levels of plantation workers and (2) Are workers on Fairtrade certified plantations more satisfied with their jobs?

2. Literature review

2.1. Conceptual arguments

We rely on exchange theory (Homans, 1958; Blau, 1964) and link it to Herzberg's two-factor theory of job satisfaction (Herzberg, 1966). Exchange theory is a prominent theory on social behavior that can be applied to understand job satisfaction. Exchange theory stipulates that individuals enter into social relationships with the expectation of rewards, benefits and remuneration. To ensure the fulfillment of these expectations, they are willing to invest effort, time, skills and education amongst other contributions. According to the two-factor theory of workplace satisfaction, rewards of

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[1] These products are considered high-value food items: fresh, prepared or preserved vegetables; fresh, dried, preserved or processed fruits and cut flowers (Van den Broeck and Maertens, 2016).

employment can be either extrinsic and objective – including pay, job security and quality of leadership – or intrinsic and subjective – including variation of tasks, new skills development, autonomy, empowerment (Herzberg, 1966). Workers experience satisfaction from both extrinsic and intrinsic rewards of their job, which are determined by the characteristics of the job and the employment environment.

Fairtrade certification can affect job satisfaction by influencing both the extrinsic and intrinsic rewards for workers. Fairtrade particularly emphasizes social equity, alternative trade arrangements, fair prices for producers and fair wages for hired workers. Fairtrade focuses on three main principles to improve employment conditions on plantations and support worker empowerment: (1) the management of a Fairtrade Premium through a joint body consisting of workers and plantation management, (2) freedom of association and collective bargaining, and (3) fair working conditions, including fair wages and the implementation of health and safety measures (Fairtrade International, 2014b). The application of these principles is a list of Fairtrade requirements – marked out as core requirements and development requirements – which certified plantations must adhere to (see Annex 1 for an overview of the requirements). These principles and requirements can affect job satisfaction in a number of ways. To begin with, we discuss several channels through which Fairtrade certification may affect extrinsic rewards. Firstly, Fairtrade regulations stipulate the implementation of either an official minimum wage or if absent a regional average wage. From 2014 onwards, Fairtrade International has revised its requirements and now promotes a so-called national rural living wage, which should enable a household to lead a decent life based on the level of development in the specific sector and region. The reason for this is because national minimum wages are often very low. Fairtrade International identifies the cost of living according to local costs of food, housing and essential needs including education, health care and transportation (Anker and Anker, 2013). Fairtrade certified companies are now required to remunerate their employees according to the living wage if the minimum wage is lower (Fairtrade International, 2014b).[2]

Secondly, Fairtrade companies must ensure that all regular work in the company is undertaken by workers with permanent work contracts. Time-bound contracts are to be avoided and are only permitted during peak seasons and under special circumstances. As pineapples can be planted and harvested all year round, the majority of workers should be employed permanently. Further, produce sold into the Fairtrade market receives a minimum and stable price – independent of the world market price. Fairtrade companies also engage in long-term relationships with importers usually enforced through contracts. The ability to rely on long-standing prices and trading relationships enables companies to plan ahead also regarding their workforce. Thirdly, working conditions and company services including paid leave, access to medical care and the provision of social security are regulated in Fairtrade requirements.

Fairtrade certification may influence intrinsic rewards for workers as well. Firstly, the provisions of trainings are required for Fairtrade companies. These enable workers to enhance their skills and education. Secondly, Fairtrade certification strongly emphasizes collective bargaining and the empowerment of workers through strict regulations regarding collective agreements between the workforce and the company. Fairtrade certification requires companies to ensure freedom of association either through a worker representation body or a labor union. Workers further vote for worker representatives to be members of the so-called Fairtrade Premium Committees. The

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[2] As there is no common agreement on how a living wage should be calculated, the subjectivity of its measurement is criticized (Anker, 2011). Further, the living wage does not account for variations in costs over small distances within one area. This means that the calculated living wages may not necessarily reflect the needed means to lead a productive lifestyle.

Committees are responsible for the management of the additional Fairtrade Premium that producers automatically receive from their exporter or importer when selling a Fairtrade product. The workers together with the company decide and vote upon the use of these available funds for the implementation of educational, health or other social projects to benefit those involved in the goods production.

2.2. Empirical evidence

Some studies have analyzed the implications of standards such as GlobalGAP and Ethical Trade Initiative towards specific rewards of employment on export plantations. These studies mostly point to positive effects on employee training, labor organizations and employment security but not necessarily on wages (Barrientos et al. 2003; Nelson and Pound, 2009, Gibbon and Riisgaard, 2014; Colen et al., 2012; Ehlert et al., 2014). Schuster and Maertens (2016 a, b) find that the adoption of private labor standards (including Fairtrade) in the Peruvian horticultural export sector results in a higher likelihood for workers to receive the minimum wage, more job security and more employee trainings as well as improved worker empowerment; which implies these standards contribute to both extrinsic and intrinsic rewards.

Studies evaluating the impacts of Fairtrade certification on plantation workers show diverse results. Granville and Telford (2013) point out that Fairtrade workers in the wine industry in South Africa earn salaries above the minimum wage. A study by the "Fairtrade, Employment and Poverty Reduction" project from the University of London does not find evidence for higher wages or better working conditions through Fairtrade certification on small farms and large estate units in the tea, coffee and flower sectors in Uganda and Ethiopia (Cramer et al. 2014). These studies focus on specific extrinsic rewards. There are very few studies looking at more intrinsic rewards or overall job satisfaction, likely because these are more subjective and more difficult to measure. Based on evidence from the Ecuadorian flower sector Raynolds (2012) concludes that Fairtrade benefits for workers particularly lie in the ability to empower them and secure their well-being at work. To the best of our knowledge, there is only one study that specifically assesses the implications of Fairtrade certification for worker job satisfaction. Ruben and van Schendel (2009) compare workers on a Fairtrade certified banana plantation with workers on a non-certified one. They do not find significant differences in job satisfaction between these workers. Workers on the non-certified plantation are found to receive a higher monthly salary, but also to work longer hours and receive less non-monetary benefits, such as sick leave payments, maternity leave or free medical care. A potential drawback of this study (and other studies on Fairtrade and workers) is that the data comes from only one certified and one non-certified company, which makes it more difficult to disentangle the effect of Fairtrade certification from other company characteristics. In this study, we use data from workers on several certified and non-certified companies to assess the implications of Fairtrade certification for wages and job satisfaction, which is possible due to the large size of the Ghanaian pineapple sector. It allows us to better control for other company characteristics, such as company size in terms of the number of workers and hectares as well as production capacity.

3. Background and data

3.1. Research area

Pineapple is Ghana's 6th most important export crop with fresh and processed pineapple exports amounting to 51 Million US$ in 2011 (Gatune et al., 2013). Pineapple was introduced in Ghana in the 1980s and first produced by smallholder farmers. With rising demand from Europe, large-scale

pineapple farms established close to the shipping port and airport (Fold and Gough, 2008). In the 1990s, Ghana was the 3rd most important pineapple supplier to the European Union after Côte d'Ivoire and Costa Rica. The dominant variety was "Smooth Cayenne" and exports were realized by both smallholder farmers and large-scale plantations. In the late 1990s, Fresh Del Monte developed a new variety called MD2, the so-called "shipping pineapple" with much longer shelf-life. Its expansion in Costa Rica and other countries, coupled with vast marketing campaigns in the United States and Europe, ultimately changed consumer taste in favor of the new variety and caused a drop in international market prices of the West African Smooth Cayenne variety due to low demand. MD2 is regarded an industrial crop for large-scale mechanized production as it requires fertilizer, pesticides, plastic mulching and cooling facilities, and therefore larger and continued capital investments. Ghanaian smallholder producers were unable to adapt to the quick change due to information and capital constraints and dropped out of export pineapple production. The difficulties in adjusting to the new market requirements led to a decline of the Ghanaian pineapple in the EU market share from 10.5% in 2003 to 4.3% in 2007 (Fold and Gough, 2008; Harou et al., 2015; Kleemann et al. 2014) and a shift in export production from smallholders to large-scale industrial plantations.

Today, 15 large-scale plantations both produce and export pineapples, of which eight are responsible for 93% of Ghana's fresh pineapple exports (Gatune et al., 2013). Smallholder farmers predominantly sell to the local market or to processors. While all companies produce pineapple, most also grow other crops, including other fruit (mango, banana papaya), vegetables and also teak. While seven of the 15 large-scale plantations are at least partly owned and managed by foreign investors and managers, the remaining eight companies are owned by Ghanaians. Only one of the foreign-owned companies is part of a multinational joint venture with dependencies also in other countries. The Ghanaian shareholders or owners of the pineapple companies predominantly come from Accra with degrees in accounting or marketing, and had previously worked either in the public sector or were involved in other business ventures (Whitfield, 2016). Some companies use lands that were formerly used by different large-scale companies producing pineapples, maize and vegetables. Others engaged with local communities to lease their land for 25 to 55 years. Contracts are commonly established with local chiefs, who hold land titles in the names of the community. Few of the companies in the Ghanaian pineapple sector engage small-scale producers to provide pineapples. Companies bought almost half of their export pineapples from small-scale farmers before the switch from the Smooth Cayenne to the MD2 variety. After the switch, companies have increased their farm sizes and now predominantly export their own production (Whitfield, 2016).

To remunerate their workers, companies apply a salary scale set up in accordance to various factors such as punctuality, target achievements, daily appearance at work, and quality assurance. Worker's wages, working conditions and worker's rights are stipulated in the labor act of 2003. The law includes specific work requirements, such as a maximum of eight hours of work per day and 40 hours per week, the entitlement of workers for annual leave of 15 days as well as paid maternity leave of at least 12 weeks for women workers (Ghana Labor Act, 2003). Since January 2017, the minimum daily wage in Ghana is 8.80 Ghana Cedi (2.03US$). To ensure that labor law requirements are followed, labor unions encourage workers to claim their rights. Labor unions are overall well-established in Ghana, where two thirds of the estimated formal sector workforce of 1.2 million is unionized (Asamani and Mensah, 2013). The largest unions are the Industrial and Commercial Workers Union with 107,000 members, Public Services Workers Union with 90,000 members, and General Agricultural Workers Union with 87,000 members (Anyemedu, 2000). While government provisions to ensure worker's rights are in place, companies face little consequences when not adhering to the laws. Against this background, certification may ensure more rigorous monitoring and auditing of employment conditions. All plantations in the Ghanaian export pineapple sector are GlobalGAP

certified and 40% have an additional Fairtrade certification. This provides an interesting context to study the implications of Fairtrade certification for workers as a market-based approach to improving working conditions.

3.2. Data

Our study focuses on the so-called Ghanaian pineapple belt, which is the central area for pineapple production stretching across the Central Region, the Eastern Region, the Greater Accra Region and the Volta. Data were collected from two sources. First, in November 2014 we implemented semi-structured interviews with main stakeholders in the pineapple export sector in order to gain a better understanding of the history and challenges of pineapple and fruit production for the export sector in Ghana, including the role of governmental export support strategies and donor-funded market linkage programs. Overall, we conducted three interviews with representatives from agricultural ministerial divisions at the central and district level, one interview with the association of sea-freight pineapple exporters of Ghana, five interviews with foreign aid agencies, three interviews with research institutions and 14 interviews with the management boards from pineapple producing and processing companies. Second, we collected original survey data from 361 hired plantation workers and their households between April and July 2015. We purposively selected eight pineapple companies, four (out of the six) Fairtrade certified companies and four (out of the nine) Non-Fairtrade certified companies. Fairtrade companies are generally larger in terms of the area, the number of workers and the export volumes and more often include foreign investment and management than Non-Fairtrade companies (see Annex 2 for an overview of all companies). In order to create the best comparison, we selected the four smallest Fairtrade companies and four Non-Fairtrade companies that best match these in terms of size. Also, most Fairtrade companies (four out of six) are at least partly owned by foreign investors and engage foreign managers on their farms. This is not the case for the majority of Non-Fairtrade companies, where six out of nine do not involve foreign investors in their operations. We therefore selected those Non-Fairtrade companies that are most comparable in terms of their support from abroad. [3]

From the selected companies we obtained lists of villages they recruit laborers from. We engaged local agricultural extension workers to generate lists of laborers living in those villages. We were partly able to compare these to full workers lists we received from some of the companies. From this sampling frame of all workers employed by the sampled pineapple plantations, we randomly selected an average of 40 workers per company from the worker lists.[4] The structured questionnaire incorporated questions on household characteristics, family health and dietary diversity, land ownership and agricultural production as well as employment conditions, provisions of services, labor union involvement and projects implemented by the companies. The survey was implemented through face-to-face interviews with a team of local field assistants. The majority of respondents were interviewed at home in private. However, to reach some of the randomly selected respondents with long working hours, it was

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[3] Additionally, four of the nine Non-Fairtrade companies have taken up differentiating marketing approaches, which makes them less comparable to the Fairtrade companies. Instead of directly exporting fresh pineapples, two Non-Fairtrade companies now sell the majority of their produce to local processors that export their fresh-cut and ready-to-eat products and juices to Europe (Whitfield, 2016). Two other Non-Fairtrade companies supply a different pineapple variety (Smooth Cayenne rather than MD2) to the European market (Whitfield, 2016).

[4] For one of the Non-Fairtrade companies, being relatively small in size, we only succeeded to reach 30 workers. To achieve a balanced sample between workers on Fairtrade and Non-Fairtrade plantations, we chose to slightly oversample workers from two of the remaining Non-Fairtrade plantations in the sample.

necessary to conduct interviews during the lunch break on company grounds.[5] If this was the case, we ensured a private setting, without the presence of supervisors or management staff.

Our total sample includes 361 workers, but for this paper we restrict the total sample of 361 workers to a subsample of 325 workers (166 workers in Fairtrade companies and 159 in Non-Fairtrade companies) only including manual or low skilled laborers and excluding management, administrative and technical personnel. In this paper, we refer to companies that are Fairtrade certified as "Fairtrade companies" and their employees as "Fairtrade workers". Companies that do not comply with Fairtrade certification are called "Non-Fairtrade companies" and the workers on those plantations "Non-Fairtrade workers".

4. Descriptive analysis

4.1. Company characteristics

Despite our strategy to sample the most similar companies, Fairtrade companies are significantly larger than Non-Fairtrade companies in terms of the area of production and the workers employed (table 1). The majority of companies in the sample have been GlobalGAP certified for more than 10 years. Two of the Non-Fairtrade companies and one of the Fairtrade companies have been GlobalGAP certified for a shorter time period, with three, six and eight years, respectively. The length of Fairtrade certification ranges from two to fourteen years among the Fairtrade companies in the sample. Worker representation is mandatory for Fairtrade companies. In our sample, the General Agricultural Workers Union is the most prominent labor union – representing workers in two Fairtrade companies and one Non-Fairtrade company. The Union of Education, Agriculture and General Services as well as the Industrial Commercial Workers Union represent the workers in the other two Fairtrade companies. In the remaining Non-Fairtrade companies there are no labor unions present.

Three of the Fairtrade companies sell approx. 30% of their produce into the Fairtrade market; the fourth about 60%. The remainder of the produce, although produced under Fairtrade requirements, is sold as conventional produce. In the Fairtrade market, buyers pay either the Fairtrade minimum price for the respective produce or the world market price, if it is higher than the Fairtrade minimum price. On top of this, a Fairtrade Premium is paid to be used for socio-economic development projects and payments. The Fairtrade Premium companies in our sample receive for social projects is on average approx. 40.000 US$ per year. To organize the distribution of those funds, a Fairtrade Premium Committee is set up within the companies. This Committee consists of worker representatives as well as advisors from the company management. The worker representatives must be democratically elected by all workers and they must outnumber the company management advisors. All Fairtrade Premium funds are kept in a separate bank account. Individual projects are suggested by all workers to the Fairtrade Premium Committee, which reviews the proposals to ensure that they are in line with Fairtrade requirements. The proposals are then put up to equal vote within a General Assembly meeting, in which all workers participate. Projects have different beneficiaries with some projects addressing the individual and household level, e.g. payment of secondary school fees for worker's children, and others the village level, e.g. borehole construction. Annex 3 provides an exemplary overview of what projects are funded by the Fairtrade Premium in our sample. So far, none of the companies has taken up the new possibility to use this premium to pay out bonuses in cash to employees.

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[5] This happened to the same extent on Fairtrade and Non-Fairtrade plantations.

Table 1 Overview of the selected companies for the survey

Company	Fairtrade companies in sample (N=4)					Non-Fairtrade companies in sample (N=4)				
	1	2	3	4		1	2	3	4	
Variables	Individual values				Difference in means and significance level	Individual values				Difference in means and significance level
Size of the company in hectares used for pineapple production [a]	400	242	480	230	338* (122.32)	200	110	200	250	190 (58.31)
Number of workers in company [a]	190	350	450	400	347.50** (112.66)	184	80	180	150	148.50 (48.12)
Number of male workers	145	200	273	200		n/a	43	40	80	
Number of female workers	45	150	167	200		n/a	27	140	70	
Number of workers per hectare [a]	2.11	0.69	1.07	0.58	1.09*** (0.59)	1.09	1.38	1.11	1.67	1.36 (0.24)
Production capacity in metric tons per week [a]	60	100	200	300	165 (107.55)	150	40	96	30	79 (55.53)
Export performance in overall tons in 2014 [a]	1.851	3.172	5.315	5.287	3964.45*** (1463.74)	1.116	700 [#]	883 [##]	1.329	1010.50 (258.31)
Export performance as tons per ha in 2014 [a]	4.63	13.11	11.07	22.99	13.22*** (6.64)	5.58	6.36	4.42	5.32	5.50 (0.69)
Foreign ownership	Partly	Partly	No	Yes		No	Yes	Yes	Partly	
Foreign involvement in company management	Yes	Yes	No	Yes		No	Yes	Yes	Yes	
Years of GlobalGAP certification	8	15	16	11		6	3	15	13	
Years of Fairtrade certification	7	14	6	2						
Labor union	General Agricultural Workers Union	Union of Education, Agriculture and General Services	General Agricultural Workers Union	Industrial Commercial Workers Union				General Agricultural Workers Union		
Average yearly Fairtrade Premium (US$)	50.000	49.000	50.000	0 [###]						
Share of production sold to Fairtrade market (%)	60	35	30	30						

Sources: Personal interviews with company management and Whitfield (2016)

a Variable is continuous and has been tested with a t-test, # is an estimated figure, ## the figure is from 2013, ### as the company only became Fairtrade certified in 2013, it had no numbers available at the time of the interview

* Result is significant at a 10% significance level, ** Result is significant at a 5% significance level, *** Result is significant at a 1% significance level

4.2. Worker characteristics

Table 2 provides means comparisons of the demographic characteristics of Fairtrade and Non-Fairtrade workers and their households. Significant differences between Fairtrade and Non-Fairtrade workers are found with respect to age, education, marriage status, number of dependents and number of workers. Fairtrade workers are on average 2.08 years older, more often married, and have more dependents (children below the age of 18 and/ or adults above the age of 65 living in the household) to care for. Non-Fairtrade workers show slightly better education levels with a higher number of workers being at least secondary school graduates and a smaller share with no formal education at all. Literacy rates are nonetheless comparable across all workers.

Table 2 also presents socio-economic information on living conditions, asset ownership, and household income. Fairtrade and Non-Fairtrade workers are quite similar in terms of living conditions as well as the level of income generation apart from horticultural wage labor. Only access to electricity and clean drinking water is slightly better for Fairtrade workers, which may of course be an outcome of Fairtrade certification. The computation of an asset index[6] shows that Fairtrade workers have a higher number of assets than Non-Fairtrade workers. At the village level, it is actually Non-Fairtrade workers that live in larger villages with better access to amenities such as health centers, and markets. Regarding income, we differentiate between (1) income from horticultural wage employment, (2) income generated from own agricultural land, (3) income from self-employment (such as tailoring, shop keeping or hair dressing etc.), (4) income from off-farm wage employment as well as (5) additional incomes from pensions, gifts and others. Fairtrade workers have a higher total and per adult equivalent household income than Non-Fairtrade workers. While the different income sources are equally important for both types of workers, the income from horticultural wage labor is significantly higher for Fairtrade workers than for Non-Fairtrade workers. Contributing about 60% to total household income, it is the main income source for workers and their households.

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[6] The asset index includes thirteen variables that reflect the possession of the following asset categories: motor vehicle, motorbike, bicycle, fan, freezer, sewing machine, water tank, gas stove, jewelry, kente cloth, TV set, radio and bank account. The thirteen individual asset categories are defined as dummy variables that take a value of one, if the household owns at least one unit of the respective asset category. The asset index was then computed using Principle Component Analysis. For easier interpretation we transform the values into a standardized asset index that is calibrated on a 0 to 100 scale.

Table 2 Summary statistics of worker and household characteristics

Variable	Worker in a **Fairtrade company**		Worker in a **Non-Fairtrade company**		Difference in means and significance level
	Mean value	Std. deviation	Mean value	Std. deviation	
Household Demographics					
Number of workers in Household [a]	1.49	0.61	1.36	0.49	0.14**
Number of workers on pineapple plantations in Household [a]	1.23	0.47	1.10	0.30	0.13***
Female Household Head [b]	0.23		0.28		0.04
Number of dependents [a]	2.52	1.54	1.97	1.43	0.55***
Protestant [b]	0.85		0.86		0.01
Catholic [b]	0.03		0.06		0.03
Muslim [b]	0.04		0.02		0.02
Worker Demographics					
Female worker [b]	0.62		0.61		0.01
Worker is married [b]	0.81		0.67		0.13***
Worker is literate [b]	0.46		0.50		0.04
Worker did not go to school [b]	0.33		0.15		0.17***
Worker finished primary school only [b]	0.23		0.23		0.01
Worker finished secondary school or higher [b]	0.44		0.62		0.18***
Age of worker (years) [a]	38.51	9.10	36.07	10.46	2.44**
Household living conditions					
Number of rooms [a]	1.90	1.27	1.91	1.42	0.03
Electricity [b]	0.86		0.78		0.08*
Earthen floor [b]	0.17		0.11		0.06
Access to improved sanitation [b]	0.24		0.19		0.06
Clean drinking water [b]	0.88		0.69		0.19***
Total agricultural land [a]	1.02	1.35	0.98	1.22	0. 04
Standardized Asset Index [a]	22.47	17.45	15.77	16.95	6.70***
Village characteristics					
Village population [a]	978	855	1594	1292	616***
Distance to next town (km) [a]	6.35	4.42	7.63	10.85	1.28
Distance to next primary school (km) [a]	0.24	0.61	0.17	0.80	0.07
Distance to next health center (km) [a]	1.70	0.46	1.42	0.50	0.28***
Distance to next market (km) [a]	8.80	6.19	4.82	5.67	3.98***
Household Incomes (in USD[7])					
Total income [a]	1323	1376	941	757	382***
Total income per adult equivalent [a]	477	657	374	286	104*
(1) Horticultural wage labor income [a]	721	310	602	255	119***
(2) Agricultural income [a]	222	863	129	649	93
(3) Self-employment income [a]	167	366	135	335	31
(4) Other wage labor income [a]	133	564	61	302	71
(5) Other income [a]	17	67	13	36	4
N (325)	*N (166)*		*N (159)*		

a Variable is continuous and has been tested with a t-test

b Variable is bivariate and has been tested with a Wilcoxon-Mann-Whitney test

* Result is significant at a 10% significance level

** Result is significant at a 5% significance level

*** Result is significant at a 1% significance level

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[7] All monetary figures are converted from Ghana Cedi to US$ according to the exchange rate in June 2015, when the survey data was collected.

4.3. Employment characteristics

Summarizing horticultural employment characteristics, table 3 shows that daily working hours are similar across groups. Fairtrade workers work fewer hours per month, which can also be attributed to the average of 23 days of paid leave per year granted to Fairtrade workers in comparison to the 5 leave days for Non-Fairtrade workers. The descriptive data further shows that Fairtrade workers are more likely to have a permanent employment status (87%) than Non-Fairtrade workers (53%). This may also be the reason for a much longer time of employment for Fairtrade workers, who at the point of interview have been working on average 7.27 years at their particular company in comparison to 3.70 years for Non-Fairtrade workers. With our sample we cannot confirm that wage employment on pineapple plantations is associated with casual employment by young and short-term workers, as is often put forward for high-value plantation agriculture. This is also because of the organization of pineapple production on plantations, where pineapple production cycles are implemented in a staggered manner, so that produce is planted and harvested throughout the entire year. Therefore pineapple is de facto not a seasonal crop but can be produced all year round and workers can be employed throughout the entire year.

Workers are engaged in different work categories, where they are usually organized in small work teams with each team working on one pineapple field at the same time. The main activities that workers may be engaged in are planting, harvesting, field preparation and maintenance such as weeding or pruning. Export-related activities involve the washing of fruits as well as packaging and labeling. Companies commonly also grow their own pineapple plantlets (so-called suckers) from mature pineapple plants which have already flowered and produced a fruit. A team of technicians, agronomists and administrative staff is responsible for the coordination of work processes, for quality insurance and time management. It is mostly women that are involved in packaging and export-related activities. Men are typically responsible for the application of chemical fertilizer and pesticides and dominate the higher level positions such as the technical jobs.

We calculate an average hourly wage for each worker based on data on monthly wage payments, the number of hours worked per day, and the number of days worked per month. We see that Fairtrade workers receive higher hourly wages overall and in almost all work categories. With an average daily wage of 2.53 US$ on Fairtrade plantations and 2.13 US$ on Non-Fairtrade plantations, wage levels are on average above the daily minimum wage in Ghana of 1.62 US$[8]. Production increases leading to extra work hours and also overtime pay are based on higher demand for pineapples around European holidays. While Fairtrade certification stipulates that overtime should be paid at a premium rate, only 75% of Fairtrade workers mention that the overtime rate is in fact higher than the normal wage rate.

Table 3 shows that Fairtrade workers participate in a higher number of trainings, contributing to their educational capital. Labor union membership is also more pronounced in Fairtrade companies with 73% of their workers being a member of a labor union and only 45% of the Non-Fairtrade workers. There are several services provided by all companies. Transport is often organized as is medical care for workers either on-site or in cooperation with a local health facility. Fairtrade companies seem to have better social allowances and loan provisions, which is partly funded by the Fairtrade Premium. As can be seen in table 1, workers in at least two of the four Fairtrade certified companies have voted for the Fairtrade Premium to be used to provide credit to workers. Both Fairtrade companies and Non-Fairtrade companies do not treat their permanent and casual workers differently in terms of granting them access to services. In Non-Fairtrade companies, casual workers are indeed more likely to eat

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[8] The daily minimum wage in Ghana was 7 Ghana Cedi (1.62US$) in 2015. The minimum daily wage was adjusted to 8.80 Ghana Cedi (2.03US$) as per 01.01.2017.

lunch and use transportation than permanent workers[9]. In Fairtrade companies, where only 13% of workers have casual employment contracts, no significant differences are found in terms of services use between casual and permanent workers.

Table 3 Summary statistics of variables concerning horticultural employment

Variable [a]	Worker in a **Fairtrade company**		Worker in a **Non-Fairtrade company**		Difference in means and significance level
	Mean value	Std. deviation	Mean value	Std. deviation	
Employment conditions					
Working months per year [b]	11.45	1.42	11.28	1.92	0.169
Working days per month [b]	21.28	4.73	22.36	3.52	1.075**
Working hrs per day [b]	7.98	2.15	8.14	1.62	0.169
Average hrs overtime per week [b]	1.33	2.60	1.44	2.53	0.115
Permanent employment status [c]	0.87		0.53		0.338***
Years of employment [b]	7.27	4.37	3.70	3.76	3.567***
The overtime rate is higher than the normal wage rate [c]	0.75		0.63		0.113*
Yearly extra bonus (in USD) [b]	18.85	24.91	14.72	20.85	4.13
Worker takes leave [c]	0.88		0.19		0.691***
Days of paid leave to be taken per year [b]	22.96	7.55	4.87	9.76	18.09***
Labor union membership (if there is a labor union present at the company) [c]	0.73		0.45		0.273***
Received training within last 12 months [c]	0.47		0.16		0.306***
Nr of trainings received within last 12 months [b]	1.70	2.86	0.40	1.44	1.296***
Daily wage (in USD) [b]	2.64	2.34	2.13	0.97	0.51**
Hourly wage (in USD) [b]	0.33	0.17	0.26	0.11	0.07***
Hourly wages in the different activity sectors (in USD)					
Packaging and Export [b]	0.27	0.10	0.27	0.15	0.001
Field preparation and maintenance [b]	0.40	0.28	0.25	0.09	0.15***
Planting and Harvesting [b]	0.33	0.17	0.27	0.14	0.06
Chemical application [b]	0.42	0.19	0.28	0.08	0.13**
Sucker management [b]	0.35	0.11	0.26	0.06	0.9***
Other menial jobs (cleaning, security etc.) [b]	0.24	0.07	0.26	0.06	0.02
Company services used					
Lunch [c]	0.21		0.28		0.072
Transport [c]	0.49		0.70		0.210***
Medical care for worker on site [c]	0.64		0.35		0.293***
Medical care for worker off site [c]	0.59		0.40		0.188***
Medical care for family off site [c]	0.06		0.006		0.054***
Social allowances (for funerals etc.) [c]	0.07		0.01		0.054**
Loan [c]	0.24		0.05		0.191***
N (325)	*N (166)*		*N (159)*		

a For a detailed definition of the employment characteristics variables, please see Annex 5.

b Variable is continuous and has been tested with a t-test

c Variable is bivariate and has been tested with a Wilcoxon-Mann-Whitney test

* Result is significant at a 10% significance level

** Result is significant at a 5% significance level

*** Result is significant at a 1% significance level

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[9] In Non-Fairtrade companies, 37% (80%) of the casual workers eat lunch (use transportation), compared to 20% (62%) of the permanent workers. Based on Wilcoxon-Mann-Whitney tests, these differences are statistically significant at the 5% level.

4.4. Job satisfaction

We measure job satisfaction based on multiple questions concerning satisfaction with different aspects of the job. Most studies on job satisfaction consider a single-item question "How do you feel about your job?" and thereby assume that workers are able to jointly consider all aspects of their job to make an overall assessment of job quality. We therefore apply a different approach and asked a set of questions regarding overall job satisfaction as well as organizational identification and climate. These questions were based on various studies in these fields from Andrews and Withey (1976) and Menon (2001).[10] The full overview of questions, that have been adapted both to the local as well as to the working context, can be found in the Annex 5.

We apply Principle Component Analysis (hereafter PCA) to group individual variables according to their degree of correlation and relation. This is done via the transformation of correlated variables into a new set of uncorrelated components using a covariance matrix. Weights are applied via factor loadings to generate a component that explains the majority of the variance amongst the job satisfaction variables. We apply specific tests (Cronbach's alpha, Kaiser-Meyer-Olkin measure and Bartlett test of sphericity) to ensure the suitability of variable use within the PCA. For easier interpretation we calibrate the job satisfaction score on a 0 to 100 scale. In table 4 we compare the overall job satisfaction score but also take a closer look at the differences across the individual variables of the job satisfaction score component. Table 4 shows, Fairtrade workers have a higher overall job satisfaction score and show much higher satisfaction levels when it comes to different conditions at the employment level (co-workers, provisions, supervisors etc.). They also confirm higher levels of company identification and positive company climates. The individual indicators of job satisfaction are measured on a Likert scale from 1 (very dissatisfied/ strongly disagree) to 5 (very satisfied/ strongly agree) as described in Annex 4.

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[10] We acknowledge that the utilization of a subjective measure as a dependent variable is not without difficulty. Several aspects of asking subjective measures can have an impact on the credibility and usefulness of the information provided, including the ordering and wording of questions, and the potentially low effort that respondents put into answering such questions (Bertrand and Mullainathan, 2001). Consequently, attitudes can be unstable over time or respondents may feel pressured into having an opinion instead of having none. However, we use the job satisfaction score in addition to a more objective measure (wage). Combined with the information on employment characteristics, measuring job satisfaction can add to the overall picture.

Table 4 Comparison of workers' satisfaction for individual factors of job satisfaction (in %)

Variable		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	Std. Dev	Difference in means and significance level [a]
Job satisfaction score	Fairtrade						63.26	18.91	11.10***
	Non-Fairtrade						52.15	22.41	
General job satisfaction	Fairtrade	7	23	18	45	10	3.34	1.07	0.508***
	Non-Fairtrade	10	33	25	27	4	2.83	1.08	
Job satisfaction: co-workers	Fairtrade	0	7	10	64	20	3.97	0.75	0.280***
	Non-Fairtrade	3	11	13	62	11	3.69	0.90	
Job satisfaction: work itself	Fairtrade	3	23	23	40	11	3.33	1.04	0.344 ***
	Non-Fairtrade	9	32	20	32	8	2.99	1.15	
Job satisfaction: environment & conditions	Fairtrade	2	17	20	49	11	3.51	0.97	0.404***
	Non-Fairtrade	7	28	17	42	6	3.11	1.10	
Job satisfaction: provisions	Fairtrade	3	10	13	55	19	3.77	0.96	0.474***
	Non-Fairtrade	6	27	13	39	15	3.30	1.18	
Pride to be an employee at company	Fairtrade	3	14	16	50	16	3.62	1.02	0.487***
	Non-Fairtrade	9	24	22	37	9	3.13	1.14	
Right company choice	Fairtrade	4	16	24	40	16	3.50	1.06	0.494***
	Non-Fairtrade	8	27	29	27	8	3.01	1.10	

a The difference in means has been tested with a t-test
* Result is significant at a 10% significance level
** Result is significant at a 5% significance level
*** Result is significant at a 1% significance level

5. Model specification and econometric analysis

We first apply a linear regression model as follows:

$$(1) \qquad y_i = \alpha_0 + \alpha_1 FT_j + \alpha_2 c_j + \alpha_3 x_i + \varepsilon_{ij}$$

The outcome variables of interest (y_i) are (1) individual hourly wage in log and (2) worker job satisfaction – and we estimate separate models for these two outcome variables. The outcome variable is a function of the main variable of interest for Fairtrade certification FT_j of the company, other company level characteristics c_j and a vector x_i of worker level characteristics including demographics. As control variables we consider variables used in previous research related to horticultural wage employment and the role of certification (Ehlert et al. 2014; Schuster and Maertens, 2016 a, b). The treatment dummy FT_j takes a value of one if the pineapple plantation is Fairtrade certified and zero if otherwise. We account for factors of efficiency and productivity of the company c_j in terms of number of workers, plantation size of the company in hectares and company capacity in output per week. Worker characteristics include the gender of the worker, education level, age, job and pineapple production experience as well as the type of job performed on the plantation (planting and harvesting, packaging and export, chemical application, sucker management and other menial jobs in comparison to field management). We further control for village-level characteristics, including village population, distance to the next market, and distance to the next health center, which were found to vary significantly between Fairtrade and Non-Fairtrade workers in the descriptive comparison. ε is a random error term.

We extend the linear model to take into account the multilevel nature of the data at worker and company level. Workers are employed in eight different companies and wages within a company are likely more correlated than wages across companies, leading to correlation in the error term. To

account for this, we apply a linear mixed model with the combination of fixed and random effects. This relaxes the assumption of no linear dependence in the error term as in the linear model. This means we add random effects to the fixed effects in our model, which characterize the idiosyncratic variation due to individual company differences.

(2) $$y_i = \alpha_0 + \alpha_1 FT_j + \alpha_2 c_j + \alpha_3 x_{ij} + \gamma_{0j} + \varepsilon_{ij}$$

Where γ_{0j} is the random deviation from the intercept α_0
α_1, α_2, α_3 are "fixed" slope parameters of the explanatory variable (FT_j), company level variables (c_j) and vector (x_{ij}) for worker $i = 1, \ldots, n_i$ in company $j = 1, \ldots, m$

For the outcome variable hourly wage, both the Wald test and the likelihood-ratio test confirm that the random-intercept model provides a better model fit than a linear regression model. The Hausman test does not confirm correlation between random effects and covariates, so using the linear mixed model is suitable. However, the intraclass correlation coefficient for the outcome variable job satisfaction shows low correlation within clusters. The likelihood ratio test reveals that the linear mixed model does not provide a better fit than the OLS model. This may be due to the fact, that our variable of interest is a subjective measure and therefore much more a personal perception and less related to company characteristics. Therefore, in the case of the job satisfaction regression, OLS is preferred.

Estimates may be biased because of unobserved heterogeneity at the company and the worker level. First, companies that become Fairtrade certified may differ from companies that chose not to become Fairtrade certified. While we are able to control for certain observed characteristics of the companies in the vector c, we cannot account for unobservables such as altruism of the management, social conscience, sense of responsibility for community development and other unobservable characteristics that might be correlated with both Fairtrade certification and the outcome variables of interest. Interviews with company management have revealed that Fairtrade certification is not regarded a sign of altruism but rather an important marketing choice. They regard Fairtrade as a tool to raise their standard and quality of production. While GlobalGAP certification is perceived as mandatory to be able to export to the European Union, Fairtrade certification provides an entry pathway into a particular niche market, that other export countries do no target. Prices for Fairtrade certified pineapples are very often higher than for conventional pineapples due to the price instability of the conventional pineapple market. It is possible, however, that we measure more of a "general attitude" of Fairtrade companies than necessarily the certification effect specifically. The linear mixed model addresses the problem of endogeneity of our explanatory variable to a certain extent. The random intercepts in the linear mixed model can be interpreted as effects of omitted covariates and therefore account for unobserved heterogeneity (Fahrmeir et al., 2013).

Second, workers who seek employment in Fairtrade companies may be inherently different regarding their motivation. In rural Ghana, the freedom to choose a work place is often restricted due to distances and access to transport. In reality therefore, workers choose their work places mainly based on proximity to their village and vice versa companies source the majority of their workers from villages surrounding their estate units. To reduce potential bias from unobserved heterogeneity at the worker level, we apply an instrumental variable approach with a distance measurement as instrument. Our instrumental variable model is as follows:

(3) $$y_i = \alpha_0 + \alpha_1 FT_j + \alpha_2 c_j + \alpha_3 x_i + \varepsilon_{ij}$$
(4) $$FT_j = \delta_1 FTD + \delta_2 x_i + \varepsilon_i$$

We define the instrumental variable (*FTD*) as a dummy variable of whether the next Fairtrade company is located within a 5km radius of the village. We chose this instrumental variable based on the arguments above. Distance plays a major role in the choice to take up wage labor due to limited mobility. In the context of a developing country, where infrastructure is poorly established, the cut-off at 5 km is realistic as this would likely be the farthest distance, a worker would travel to his or her place of work – most likely on foot. This is also reflected in the high correlation with the endogenous variable (correlation = 0.53***). The suitability of the variable as an instrument is confirmed through a weak instrument test (chi2 = 67.38***). We are however aware of the fact, that the larger and more productive Fairtrade companies may attract workers with higher reservation wages. To take this into consideration, we apply a second instrument. We asked the workers about the minimum salary they would be willing to accept for their current job, which we consider as an estimate of their reservation wage. However, this correlates highly with the actual wage a worker receives as they commonly used their actual wage as a benchmark for their reservation wage estimate. Therefore, we use reservation wage as an additional instrument for Fairtrade certification only in the job satisfaction outcome regression. The Sargan-Hansen test of overidentifying restrictions confirms the validity of the instruments. Again, the reservation wage is highly correlated with the endogenous variable (correlation = 0.20***). The weak instrument test confirms that the joint significance of coefficients is strong (chi2=103.05***). In the first stage (see Annex 5 and 6) we include socio-demographic and village-level characteristics of the worker to account for self-selection into Fairtrade certified plantations. While all individual tests for the suitability and strengths of the instruments are significant, we cannot reject the null hypothesis of no correlation between the treatment errors and the outcome errors within the IV model. Accordingly, this suggests that the linear mixed model and OLS are preferred in the wage regression and job satisfaction regression, respectively. Nonetheless, for comparison, we provide all model outputs in the results section.

6. Results

6.1. Hourly wage

The results in table 5 show that Fairtrade certification positively and significantly correlates with hourly wages of hired labor. All models show that hourly wages are more than 30% higher for Fairtrade workers than for Non-Fairtrade workers. Estimated coefficients on Fairtrade certification are slightly higher in the linear mixed model (31%) and the IV model (38%), in which unobserved company heterogeneity and self-selection into certification is better accounted for - than in the OLS regression model (30%). Other company level characteristics also influence wage levels, such as the size of a company, which is here proxied the production capacity of a company. The scale of this effect is very small however. We account for the different types of jobs that workers are engaged in. Our base category is the work category of field management and maintenance as it represents the sector with most overall workers. The effects of the job types are therefore in comparisons to this base category. Worker experience, both on the plantation and on the own farm, does not play an important role in the determination of worker wage. Female workers tend to earn lower wages, although the coefficient is not statistically significant. Wages are significantly lower for workers in more remote villages, here measured as distance from the next market. In the linear mixed model, the results are confirmed with slightly less statistical significance for Fairtrade certification.

Table 5 Regression results on the hourly wages of hired labor

Variable	OLS regression model		Linear mixed model		IV regression model	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Fairtrade certification	0.297***	(0.086)	0.310**	(0.143)	0.384***	(0.143)
Number of workers in company	-0.001	(0.001)	-0.001	(0.001)	-0.001*	(0.001)
Pinapple plantation size of company	-0.000	(0.000)	-0.000	(0.001)	-0.000	(0.000)
Production capacity	0.001**	(0.001)	0.001	(0.001)	0.001**	(0.001)
Female worker	-0.026	(0.050)	-0.017	(0.048)	-0.025	(0.049)
Worker finished secondary school or higher	0.028	(0.048)	0.050	(0.047)	0.031	(0.047)
Age of worker	-0.003	(0.002)	-0.001	(0.002)	-0.003	(0.002)
Job experience	0.032	(0.077)	0.024	(0.073)	0.029	(0.076)
Pineapple experience	0.063	(0.079)	0.055	(0.076)	0.053	(0.079)
Planting and Harvesting	0.008	(0.065)	0.025	(0.062)	0.004	(0.063)
Packaging and Export	-0.099	(0.067)	-0.116*	(0.064)	-0.104	(0.065)
Chemical application	0.105	(0.083)	0.103	(0.079)	0.103	(0.081)
Sucker management	0.072	(0.075)	0.069	(0.071)	0.072	(0.072)
Other menial jobs	-0.133	(0.092)	-0.101	(0.087)	-0.132	(0.089)
Village population	-0.000	(0.000)	-0.000	(0.000)	-0.000	(0.000)
Distance to next health center	0.005	(0.006)	0.007	(0.006)	0.004	(0.007)
Distance to next market	-0.012***	(0.004)	-0.008*	(0.004)	-0.012***	(0.004)
Constant	0.339**	(0.135)	0.208	(0.168)	0.342***	(0.131)
			-2.414***	(0.386)		
			-1.030***	(0.040)		

N = 325		N = 325		N = 325
F (17, 307) = 3.83		No. of Groups = 8		Wald chi^2(17) = 45.61
Prob>F = 0.000		Wald chi^2 (17) = 33.64		Prob>chi^2 0.0002
R-squared = 0.175		Prob>chi^2 0.009		LR test of indep. Eqns. (rho=0)
Adj R-squared = 0.129		LR Test = 0.007		Prob>chi^2 0.463
Root MSE = 0.377				

* Result is significant at a 10% significance level

** Result is significant at a 5% significance level

*** Result is significant at a 1% significance level

6.2. Job satisfaction

Looking at the regression results for job satisfaction in table 6, we find the different approaches to result in comparable point estimates and similar statistical significance levels. The results show that Fairtrade certification is significantly positively correlated with job satisfaction. Furthermore, the company's production capacity has a negative effect on job satisfaction. The reasons may be related to a higher demand for workers' flexibility and effectivity and increased pressure for workers' performance. Other significant factors are worker age and the specific jobs on the plantation. Older workers are happier with their job, possibly because of the limited work opportunities for people of older age particularly in the context of rural Ghana. Having a (potentially) permanent employment status might contribute to a feeling of secure income generation. Female workers tend to have higher levels of job satisfaction, but the coefficient is not statistically significant. At the same time, many women are engaged in export-related activities, which is clearly associated with being unhappier with their job. This is also the case for the job activity of planting and harvesting. The descriptive data in table 3 shows that - particularly in Fairtrade certified companies - the average hourly wages in those

work areas are among the lowest. Furthermore, activities such as planting may also be more physically demanding than other sectors, leading also to lower levels of job satisfaction.

Table 6 Regression results for job satisfaction score

Variable	OLS regression model		Linear mixed model		IV regression model	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Fairtrade certification	18.73***	(4.597)	18.73***	(4.466)	21.05***	(6.405)
Number of workers in company	0.023	(0.025)	0.023	(0.025)	0.020	(0.025)
Pinapple plantation size of company	-0.022	(0.016)	-0.022	(0.015)	-0.023	(0.015)
Production capacity	-0.073***	(0.027)	-0.073***	(0.026)	-0.069*	(0.027)
Female worker	4.296	(2.689)	4.296	(2.612)	4.286	(2.615)
Worker finished secondary school or higher	1.416	(2.583)	1.416	(2.510)	1.553	(2.527)
Age of worker	0.389***	(0.128)	0.389***	(0.125)	0.374***	(0.128)
Job experience	-0.911	(4.195)	-0.911	(4.076)	-1.002	(4.084)
Pineapple experience	3.193	(4.232)	3.193	(4.111)	2.869	(4.165)
Planting and Harvesting	-6.918**	(3.513)	-6.918**	(3.413)	-7.193**	(3.452)
Packaging and Export	-7.844**	(3.602)	-7.844**	(3.500)	-8.097**	(3.532)
Chemical application	5.470	(4.451)	5.470	(4.325)	5.334	(4.331)
Sucker management	-3.933	(3.986)	-3.933	(3.873)	-4.081	(3.883)
Other menial jobs	2.328	(4.885)	2.328	(4.746)	2.142	(4.758)
Village population	-0.000	(0.001)	-0.000	(0.001)	-0.000	(0.001)
Distance to next health center	-0.245	(0.339)	-0.245	(0.329)	-0.297	(0.345)
Distance to next market	-0.220	(0.227)	-0.220	(0.220)	-0.227	(0.221)
Constant	44.57***	(7.273)	44.57***	(7.066)	44.47***	(7.074)
			-19.48***	(7.156)		
			2.970***	(0.040)		
	N = 321		N = 321		N = 321	
	$F_{(17, 303)} = 3.57$		No. of Groups = 8		Wald $chi^2(17)$ = 53.07	
	Prob>F = 0.000		Wald $chi^2(17)$ = 64.37		Prob>chi^2 0.000	
	R-squared = 0.167		Prob>chi^2 0.000		LR test of indep. Eqns. (rho=0)	
	Adj R-squared = 0.120		LR Test = 1.000		Prob>chi^2 0.610	
	Root MSE = 20.07					

* Result is significant at a 10% significance level
** Result is significant at a 5% significance level
*** Result is significant at a 1% significance level

The positive effect of Fairtrade certification on job satisfaction is likely driven by employment characteristics that are requirements of Fairtrade certification. Yet, including such factors into a regression model would lead to multicollinearity. In order to gain a better understanding of the potential drivers of job satisfaction, we estimate bivariate correlation coefficients between the job satisfaction score and selected employment characteristics. Table 7 shows that both extrinsic employment characteristics, such as stability of employment, wages, and company services as well as more intrinsic characteristics associated with skill development through trainings and worker representation through labor union membership are positively associated with job satisfaction. On the contrary, long work hours and transport utilization are negatively correlated to job satisfaction. Regarding transport, the quality of services provided may play a role, such as waiting times or vehicle conditions.[11]

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[11] As one of the anonymous reviewers correctly pointed out the provision of safe and healthy working conditions is likely to be another important driver of job satisfaction that should be considered in future research.

Table 7 Individual correlations between job satisfaction and extrinsic and intrinsic employment characteristics

Employment characteristics	Job satisfaction
Hourly salary in log	0.112**
Working hrs per day	-0.040
Average hrs overtime per week	0.077
Permanent employment status	0.131**
Years of employment	0.166***
Yearly extra bonus	0.071
Days of paid leave to be taken per year	0.315***
Labor union membership (if there is a labor union present at the company)	0.228***
Nr of trainings received within last 12 months	0.218***
Lunch	0.054
Transport	-0.136**
Medical care for worker on site	0.175***
Medical care for worker off site	0.022
Medical care for family off site	0.072
Social allowance (for funerals etc.)	0.036
Loan	0.123**

7. Discussion

Our results reveal that Fairtrade certification of large-scale pineapple plantations in Ghana has contributed to the job satisfaction of plantation workers and improved both the extrinsic and intrinsic rewards of employment on pineapple plantations. We find that hourly wages are between 30-38% higher in Fairtrade companies. This is only partly in line with what has been found so far. Ruben and van Schendel (2009) find that workers on a Fairtrade certified large-scale plantation generate lower overall incomes even though their hourly wages are in effect higher than for workers on the compared Non-Fairtrade certified plantation. In comparison, Cramer et al. (2014) find no evidence for higher wages and Granville and Telford (2013) find that Fairtrade workers earn salaries above the minimum wage. Our data from Ghana shows that in both types of companies, Fairtrade certified and non-certified companies, wages are higher than the minimum wage set by the government. Despite wages in the whole sector being above the minimum wage, wages in Fairtrade certified companies are still about 38% higher than wages in non-certified companies. This points to a rather strong positive impact of Fairtrade certification of plantations on the wages workers earn. We believe that this effect is more related to Fairtrade stimulating good labor practices in certified companies than to the price premium and bonus system included in Fairtrade certification trickling down to workers. From company interviews we know that companies do not make use of the possibility to return the Fairtrade bonus they receive at the end of the season to their workers as wage top-up payments. In addition, the interviews revealed that Fairtrade certified pineapple companies in Ghana sell on average only 40% of their produce on the Fairtrade market; the remainder of produce, that satisfies all Fairtrade criteria, is sold in the conventional market. Companies hence receive a Fairtrade price premium for only part of their Fairtrade certified produce. It is likely – but remains unclear from our analysis – that the effect of Fairtrade on wages would be even higher if a higher share of Fairtrade certified produce would find an ultimate Fairtrade destination.

Apart from wages, other extrinsic rewards are found to be higher for workers in Fairtrade companies and seem to be equally important for higher job satisfaction. Almost 90% of Fairtrade workers are permanently employed, which results into longer duration of employment. The stability of working arrangements is important for worker job satisfaction as it contributes to secure income generation and

long-term planning options. Other extrinsic rewards that are found to be higher for workers in Fairtrade companies and positively influence job satisfaction include more days of paid leave per year, improved access to on-site provision of medical care for the workers, and increased availability of loans. Some of these services, such as paid leave and access to medical care, are directly related to Fairtrade requirements. The Fairtrade Premium, generated through selling produce in the Fairtrade market, is sometimes used by workers to provide credit at better conditions than credit from local banks. On a yearly basis, workers vote upon the usage of the Fairtrade Premium towards either worker or household provision, such as payment of children's secondary school fees and loans, or rather village level provisions, such as education and sanitary facilities.

Also intrinsic rewards may contribute to higher levels of job satisfaction. Descriptive statistics show that almost 50% of the Fairtrade workers participated in at least one training within the past 12 months. On average they received 1.7 trainings in comparison to 0.4 trainings received by Non-Fairtrade workers. More qualitative data shows that workers indeed appreciate trainings and the ability of knowledge gain even though they feel they are only able to use the information on the plantation and not necessarily at home or their own farm. Furthermore, worker engagement and collective bargaining fostered through labor unions may contribute to higher job satisfaction scores as can be seen in table 7. Labor unions, a Fairtrade requirement, represent the work force within a particular company and aim to improve wages, working conditions and employment factors for the workers. This is in line with studies on small-scale farmers that have found Fairtrade to strengthen producer organizations and their ability for collective action and bargaining power (Jaffee, 2007; Bacon, 2005; Ronchi, 2002). Raynolds (2012) confirms this also for flower workers on large-scale plantations in a qualitative study, identifying Fairtrade worker committees as a major pathway of their empowerment. Also the process of selecting and allocating the Fairtrade Premium towards village projects contributes to workers' engagement[12]. For workers to take over responsibility regarding their community development can strengthen their voice and decision-making ability. Here, the involvement of workers in decision-making is of importance rather than the outcome of which villages receive projects to be implemented with Fairtrade Premium funds. It is true however, that villages with more workers also have more voting power to direct funds towards their villages.

Our findings further contribute to the understanding of what determines job satisfaction in labor-intensive agricultural sectors in developing countries. The empirical literature on job satisfaction in the context of developing countries is rather thin and is not directly linked to Fairtrade certification. Mulinge and Mueller (1998) assess job satisfaction of agricultural extension workers in Kenya and find that intrinsic rewards (upward communication, job variation) are more important than extrinsic rewards (resource adequacy, job security and promotional opportunities) for job satisfaction. Staelens et al. (2014) conclude that job satisfaction in the floricultural sector in Ethiopia is mainly driven by organizational extrinsic rewards such as wages, job security and bonus payments. These findings are in line with the assumption that skilled workers – as in the extension sector in Kenya - pay more attention to intrinsic rewards at their workplace, such as responsibility, recognition and opportunities for advancement while for low skilled workers extrinsic rewards are more important than intrinsic rewards. Even though the sampled workers in the Ghanaian pineapple sector are low skilled workers, our finding on Fairtrade improving overall job satisfaction seems to be driven not only by the effect Fairtrade has on wages and other extrinsic rewards, but also on intrinsic rewards, as is confirmed in Table 7.

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[12] A prerequisite for worker involvement in guiding Fairtrade Premium funds is of course their understanding of the process. 78% of Fairtrade workers in our sample know that there is a Fairtrade Premium and 50% of those know that all workers are eligible to vote about the utilization of the Fairtrade Premium. However, still 25% think that the Fairtrade Premium Committee makes the decisions about fund allocations and 20% believe that the management does so. Here, knowledge is key to increasing worker's ownership of the Fairtrade Premium.

For our analysis, we utilize cross-sectional data and therefore cannot fully account for possible selection bias of workers and companies. Companies voluntarily adopt Fairtrade certification and as can be seen by the descriptive statistics, Fairtrade certification indeed correlates with the size and scale of production of the companies in our sample. Given that we have data from several pineapple plantations, we can control for such observable differences to some extent by integrating company level data into our estimations. Still, for highly correlated variables the effects are difficult to disentangle and we cannot fully rule out that the observed effects of Fairtrade are to some extent driven by company characteristics that are unrelated to certification per se. At the same time workers select the company they want to work for. We use a variety of econometric techniques to reduce such bias, but estimates may be less efficient and therefore point estimates should be considered with care.

8. Conclusion

The expansion of large-scale horticultural and floricultural estate farms in developing countries has led to structural changes within the region, such as providing job opportunities for the rural population and contributing to infrastructural developments. As large-scale estate farm production is mainly export-oriented, certification schemes have been adopted to access particular markets. So far there is little research that deals with the potential implications of sustainability certifications for hired laborers on these large-scale plantations. Fairtrade as a prominent sustainability standard is particularly interesting when assessing working conditions, worker empowerment, and fair wages, as Fairtrade focuses on these provisions while other sustainability standards often only incorporate minimum labor requirements. In line with the exchange theory on social behaviour, we use diverse measures to acquire a more complete picture of Fairtrade's implications for workers' extrinsic and intrinsic employment factors. We find that Fairtrade has a positive effect on two measures that were evaluated in this study: hourly wages are higher for Fairtrade workers and they are more satisfied with their job. At the same time, the utilization of appropriate econometric models and statistical methodology addresses observed and unobserved selection bias. Our findings, which are based on such rigorous use of statistics, therefore certainly add clarity in a field of research, where ambiguous results on the effects of Fairtrade certification on small-scale farmers and workers have been found.

Ghana provides a suitable case for assessing the effects of Fairtrade certification as the pineapple sector has established in a way that allows for a balanced comparison between companies. In most countries only very few plantations obtain the Fairtrade certification and therefore hardly represent sectoral developments, but are rather driven by individual company's motivation. We contribute to the understanding of standards and certifications addressing labor regulations, such as Fairtrade, in providing viable mechanisms to achieving appropriate working conditions. Rigorous monitoring and auditing processes of the implementation of strict rules are hereby key to ensuring the provisions of adequate remuneration, working hours and a working environment that is safe and productive[13]. At the same time, certification schemes enable companies to access markets that do not entail the volatility of the world market in terms of prices and trading arrangements. These findings are likely to be transferable to other horticultural sectors in other developing countries.

We conclude that Fairtrade is able to provide higher wages and comparably better working conditions for hired laborers on Ghanaian pineapple plantations beyond the GlobalGAP certification. While the

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[13] To ensure that all Fairtrade requirements are met, Fairtrade companies are monitored at least twice a year through announced audits. Additionally, unannounced audits are carried out on a regular basis. Every company is required to appoint a Fairtrade officer that is responsible for the implementation of Fairtrade requirements and who monitors the company performance.

latter also stipulates certain minimum requirements for employment and working conditions, the explicit labor requirements of Fairtrade certification lead to improved workplace provisions for workers. This shows that higher labor standards are crucial to generate high-quality employment in rural areas. Certain agricultural product and production characteristics may better enable the assurance of adequate working conditions. For example, pineapples can be produced year-round – therefore reducing the seasonality and flexibility of worker contracts. Further, the Ghanaian pineapple sector does not rely on migrant workers. The engagement of migrant workers certainly has effects on whether workers are able to fully reap the benefits of Fairtrade certification, e.g. the Fairtrade Premium for community development projects. Because of such specific sector characteristics more differentiated research of Fairtrade certification's impacts on plantation workers in other countries is needed. Little is still known about a number of labor aspects including workers' health and safety, workers' knowledge on labor and representation rights, or environmental impacts.

However, Fairtrade certification is unlikely to be a viable option for all export-oriented producers, due to the limited consumer demand for Fairtrade certified produce. As can be seen for the Ghanaian example, pineapple companies only sell about 30% of their produce to the Fairtrade market. Currently, the limited market demand represents one of the major challenges in the context of Fairtrade certification. Increasing consumer awareness on the implications of Fairtrade certification for workers' livelihoods is therefore necessary to justify higher Fairtrade prices. Finally, Fairtrade certification represents one pathway of implementing better framework conditions for workers, as it opens up alternative markets and better trading conditions for companies. Market-based approaches to reducing the vulnerability of hired labors are therefore equally important as governmental strategies to foster quality employment generation in developing countries.

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Annex 1 Overview of relevant Fairtrade regulations in the context of this study

<table>
<tr><td colspan="2">The Fairtrade Standard for Hired Labor has two different types of requirements:
1)   Core requirements which reflect Fairtrade principles and all of which must be complied with.
2)   Development requirements which refer to the continuous improvements that you must make on average against a scoring system (also defining the minimum average thresholds) defined by the certification body.</td></tr>
<tr><td colspan="2" align="center"><i>Working hours</i></td></tr>
<tr><td>Year 0 – core requirement</td><td>3.5.9 Your company must comply with applicable national and local legislation and industry standards regarding working hours and overtime regulations. Your company must not require workers to work in excess of 48 hours per week on a regular basis.</td></tr>
<tr><td>Year 0 – core requirement</td><td>3.5.10 Your company must allow workers at least one day of rest for every 6 consecutive days worked, unless exceptional circumstances apply.
…
An exception is valid for a maximum of 12 weeks per calendar year. It will not allow workers to work more than 14 hours per day or more than 72 hours per week or more than 18 continuous working days without rest.</td></tr>
<tr><td colspan="2" align="center"><i>Overtime</i></td></tr>
<tr><td>Year 0 – core requirement</td><td>3.5.11 Your company must not require its workers to work overtime. Overtime is allowable if it is voluntary and not used on a regular basis and does not extend over a period of more than 3 consecutive months. It must not exceed 12 hours per week, unless exceptional circumstances apply (see 3.5.10). In all cases overtime rates apply (see 3.5.12).
National legislation must be complied with if it exceeds this requirement.</td></tr>
<tr><td>Year 0 –core requirement</td><td>3.5.12 Your company must compensate overtime at a premium rate. The premium rate must be paid at a factor of 1.5 for work performed on regular workdays, and for work performed on the regional day of rest public holidays and night work a premium at a factor of 2 must be paid, unless otherwise defined by national legislation, by CBA or by agreements with unions.</td></tr>
<tr><td colspan="2" align="center"><i>Remuneration</i></td></tr>
<tr><td>Year 0 – Core requirement</td><td>3.5.1 Your company must set wages for workers and other conditions of employment according to legal or CBA regulations where they exist, or at regional average wages or at official minimum wages for similar occupations; whichever is the highest, with the intention of continually increasing salaries (see 3.5.4).
Your company must specify wages for all employee functions and employment terms, such as piecework.</td></tr>
<tr><td>Year 0 – Core requirement</td><td>3.5.3 For work based on production, quotas and piecework, during normal working hours, your company must pay the equivalent to average hourly waged work based on a</td></tr>
<tr><td>Year 1 – core requirement</td><td>3.5.4 If remuneration (wages and benefits) is below living wage benchmarks as established by Fairtrade International, your company must ensure that real wages are increased annually to continuously close the gap with living wage.
Wage increments must be negotiated with elected worker representatives considering the living wage.</td></tr>
</table>

Contract arrangements regarding employment status	
Year 0 –core requirement	**3.5.22** All regular work **must be undertaken** by permanent workers. Time-limited contracts and subcontracting are permitted during peak periods, in the case of special tasks and under special circumstances. Your company **must not use** production, quotas and piecework employment as a means to avoid time-bound contracts.
Paid leave	
Year 0 – core requirement	**3.5.13** Your company **must grant** workers at least 2 weeks of paid leave per year at minimum, not including sick and casual leave. Periods of annual leave **must be in line** with national legislation and/or with agreements detailed in a specific or sectorial CBA, if either of these exceeds 2 weeks.
Provisions of trainings	
Year 3 – Development requirement	**2.2.4**. Your company **must provide opportunities** to workers and staff to develop their skills and qualifications whenever feasible.
Year 0 –core requirement	**3.6.6** Your company **must** regularly **train** workers and their representatives in the basic requirements of occupational health and safety, relevant health protection and first aid, at least once per year.
Labor unions/ collective bargaining	
Year 0 – Core requirement	**3.1.9.** All workers, regardless of nationality or residency status, including seasonal/temporary and migrant workers, **must have the right** to be elected as a worker representative and/or a member of the Fairtrade Premium Committee
(Core requirement: Your company **must not deny** these rights in practice, and your company **must not have opposed** any of these rights in the last 2 years prior to application for certification.)	**3.4.2** Your company **must**: • Respect the right of all workers to form or join trade unions; • Respect the right of workers to bargain collectively in practice; • **Not** engage in any acts of anti-union discrimination or in any acts of interference; • Not deny access rights for trade unions; • **Accept** that it has a duty to bargain in good faith with unions; • **Inform** the workforce about the local point of contact and posts relevant contact information in the workplace for workers to see and understand.
Year 0 – Core requirement	**3.4.5** In situations where workers are not represented by a trade union recognized for collective bargaining with the company, management **must allow** representatives of trade union organizations that represent workers in the sector or region to meet with workers on company premises at agreed times so that the trade union representatives can inform the workers about trade unions. Workers may also choose to meet with these trade union representatives at any other location. Times and locations of these agreed meetings **must be reasonable** and management **must not interfere** in any way with, nor conduct any surveillance of these meetings.
Year 0 – Core requirement	**3.4.6** There **must be** some form of democratically elected and independent workers' organization established to represent workers in the company and negotiate with management. Workers **must take** the initiative themselves and **must be allowed** to organize independently of management. Management is expected to provide the opportunity to workers to organize, but they **must not interfere** in the process nor directly or indirectly conduct elections related to the formation, recognition or governance of this organization. Your company **must respect** the self-organization of workers by engaging with representatives of these organizations through regular

	dialogue.
Year 0 – Core requirement	**3.4.7** Your company **must allow** access to trade union representatives in order to communicate about unionisation and/or to carry out their representative functions at an agreed time and place. These meetings **must take place** without management interference or surveillance.
Year 0 – Core requirement	**3.4.8** Your company **must not** interfere in any way with the freedom of association by controlling or obstructing trade unions or elected worker representatives or supporting one workers' organization over another.
Year 0 – Core requirement	**3.4.9** Your company **must ensure** that elected worker representatives: • Have access to all workers in the workplace during working time without interference or the presence of management representatives and at agreed times, on average every three months; • Can meet among themselves during regular working hours, at least once a month for one hour; • Meet representatives of senior management during working hours at least once every 3 months. These meetings **must be scheduled** on a regular basis and **must be documented.**
Year 1 – Core requirement	**3.4.12** If there is no Collective Bargaining Agreements (CBA) in place, your company **must proactively engage** in a process to enter into a collective agreement with elected worker representatives. Your company should not refuse any genuine opportunity to bargain collectively with workers. Negotiations can take place with a recognized trade union or with elected worker representatives in the absence of a trade union, but only where such elected worker representatives are provided for by law and are legally authorized to bargain (see 3.4.6). In cases where workers have freely and specifically decided to not form or join a trade union and are not otherwise legally authorized to collectively bargain, then the collective bargaining requirement is waived. In these situations the certification body will determine whether there was any intimidation or coercion involved in this decision (see 3.4.4). The decision cannot be the result of any vote in which management was in any way involved.
	Company service provisions
Year 6 – Development requirement	2.2.9. Your company **must provide support** for crèche facilities for your workers' children either inside or outside your premises. (Development requirement from year 6 of certification onwards)
Year 0 – core requirement	**3.5.19** Your company **must provide** legal social security for all workers.
Year 3 – development requirement	**3.5.20** Your company **must work** towards all permanent workers having a provident fund or pension scheme.
Year 0 –core requirement	**3.6.18** Your company **must provide** access to appropriate healthcare in case of work-related illness or injury.
Year 1 –core requirement	**3.6.29** Your company **must offer** regular examinations and check-ups by a medical doctor to all workers on a voluntary basis at least every three years. Any findings **must be communicated** to the worker confidentially and in a readily understandable form.

Annex 2 Overview of individual companies in the Ghanaian pineapple sector

	Selected Fairtrade certified companies (FT comp) for survey				Non-selected Fairtrade certified companies (FT comp) for survey		Selected Non-Fairtrade certified companies for survey				Non-selected Non-Fairtrade certified companies for survey				
	FT comp 1	FT comp 2	FT comp 3	FT comp 4	FT comp 5	FT comp 6	Non-FT comp 1	Non-FT comp 2	Non-FT comp 3	Non-FT comp 4	Non-FT comp 5	Non-FT comp 6	Non-FT comp 7	Non-FT comp 8	Non-FT comp 9
Size of the company in hectares	400	242	480	230	640	650	200	110	200	250	800	8	400	350	200
Size of the company in worker numbers	190	350	450	400	200	250	184	80	180	150	75	12	110	75	45
Productivity level in metric tons per week	60	100	200	300	150	60	150	40	96	30	60	4	30	30	20
Foreign involvement in company management	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	No	No
Years of Fairtrade certification	7	14	6	2	10	17	-	-	-	-	-	-	-	-	-

Annex 3 Examples of projects financed with Fairtrade Premium

Fairtrade companies in sample *(N=4)*				
Company	1	2	3	4
Examples of Fairtrade Premium use in the education sector	Secondary school fees for worker's children; reading clinics for 4 schools; cash incentive for teachers to improve reading ability of students; vocational training for workers	Construction of kindergarten blocks; supply of furniture to kindergartens; learning materials, tuition fees, scholarships for worker's children; construction of ICT training center	Secondary school fees for worker's children; construction of school library, books for worker's children; construction of an IT center	No projects yet at pineapple site
Examples of Fairtrade Premium use in the health sector	Hepatitis B vaccinations; maternity ward renovation	Rehabilitation of health posts; donation for maternity wing construction		
Examples of Fairtrade Premium use in the sanitation and water supply sector	Drinking water improvements through renovation of pumps	Borehole construction; construction of water closet		
Examples of Fairtrade Premium use for loans		Revolving micro-finance loan	Micro loan provision; Land for workers to buy with low-interest loans	

Annex 4 Description of variables of extrinsic and intrinsic employment characteristics

Variables	Type of variable	Definition
Employment conditions		
Working months per year	Continuous	Number of months worked in the past year
Working days per month	Continuous	Number of average work days per month
Working hrs per day	Continuous	Number of average hours per day
Average hrs overtime per week	Continuous	Number of hours of overtime/ extra hours worked the previous week
Permanent employment status	Dummy	Whether the current status of employment is permanent or not
Years of employment	Continuous	Years of employment in the company
The overtime rate is higher than the normal wage rate	Dummy	Whether the wage received for overtime/ extra hours worked are remunerated higher than the regular wage rate or not
Yearly extra bonus	Continuous	Extra bonus payment received yearly
Worker takes leave	Dummy	Whether the worker takes leave (holiday) or not
Days of paid leave to be taken per year	Continuous	The number of leave days (holidays) the worker is allowed to take within 1 year of employment
Labor union membership	Dummy	Whether the worker is a member of a labor union or not (if there is a labor union present at his/her company)
Received training within last 12 months	Dummy	Whether the worker participated within the past 12 months or not
Nr of trainings received within last 12 months	Continuous	The number of trainings (from a choice list) the worker received within the past 12 months
Company services used		
Lunch	Dummy	Whether lunch provision is offered by the company and used by the worker or not
Transport	Dummy	Whether transportation to and from the company is offered and used by the worker or not
Medical care for worker on site	Dummy	Whether medical care on company site for the worker is offered (via an on-site health clinic with a doctor or health staff) and used by the worker or not
Medical care for worker off site	Dummy	Whether medical care at local health care facilities for the worker is offered and used by the worker or not
Medical care for family off site	Dummy	Whether medical care at local health care facilities for the worker's family is offered and used by the worker or not
Social allowances (for funerals etc.)	Dummy	Whether monetary gifts and allowances are provided by the company for special occasions of the worker, such as funerals, weddings or christenings
Loan	Dummy	Whether loans are offered by the company and used by the worker or not
Job satisfaction		Answers ranked via a 5-point Likert scale: 1 = Very dissatisfied 2 = Dissatisfied 3 = Indifferent 4 = Satisfied 5 = Very satisfied
General job satisfaction	Ordinal	Answer to the question "How do you feel about your job"
Job satisfaction: co-workers	Ordinal	Answer to the question "How do you feel about the people you work with – your co-workers?"
Job satisfaction: work itself	Ordinal	Answer to the question "How do you feel about the work you do in your job – the work itself?"
Job satisfaction: environment & conditions	Ordinal	Answer to the question "What is it like where you work – the physical surroundings, the hours, the amount of work you are asked to do?"
Job satisfaction: provisions	Ordinal	Answer to the question "How do you feel about what you have available for doing your job – I mean equipment, information, good supervision, and so on?"
Organizational Identification		Answers ranked via a 5-point Likert scale 1 = Strongly disagree 2 = Don't Agree 3 = Indifferent 4 = Agree 5 = Strongly agree
Pride to be an employee at company	Ordinal	Level of agreement with the statement "I am proud to be an employee of this company"
Right company choice	Ordinal	Level of agreement with the statement "I am glad I chose to work for this company rather than another company"

Annex 5 First stage results for IV model on hourly wage

Variables	First stage IV regression	
	Coefficient	Standard error
Distance from village to Fairtrade company[14]	1.395***	(0.181)
Female worker	-0.237	(0.189)
Worker finished secondary school or higher	0.035	(0.181)
Age of worker	0.021**	(0.009)
Job experience	0.245	(0.289)
Pineapple experience	0.188	(0.308)
Village population	-0.000	(0.000)
Distance to next health center	0.049**	(0.023)
Distance to next market	0.043***	(0.016)
Constant	-1.703***	(0.446)
	N = 325	
	LR chi2(9) = 140.72	
	Prob>chi2 = 0.000	
	Pseudo R-sqared = 0.312	

Annex 6 First stage results for IV model on job satisfaction

Variables	First stage IV regression	
	Coefficient	Standard error
Distance from village to Fairtrade company[15]	1.691***	(0.204)
Reservation wage	0.010***	(0.002)
Female worker	-0.193	(0.200)
Worker finished secondary school or higher	-0.095	(0.193)
Age of worker	0.025**	(0.010)
Job experience	0.130	(0.311)
Pineapple experience	0.154	(0.326)
Village population	-0.000	(0.000)
Distance to next health center	0.039	(0.025)
Distance to next market	0.069***	(0.019)
Constant	-3.890***	(0.630)
	N = 321	
	LR chi2(10) = 175.5	
	Prob>chi2 = 0.000	
	Pseudo R-sqared = 0.395	

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[14] Dummy = 1 if the next Fairtrade company is located within a 5km radius of the village
[15] Dummy = 1 if the next Fairtrade company is located within a 5km radius of the village