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# Earnings, savings, and job satisfaction in a labor-intensive export sector: Evidence from the cut flower industry in Ethiopia

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## ABSTRACT

While labor-intensive export-oriented industries typically bring positive economic benefits to countries through employment generation, the effects of employment in these industries on various aspects of workers' welfare are less well-studied. This paper considers the case of the cut flower industry in Ethiopia to provide such quantitative evidences. We collected workers' primary data and conducted incentivized experiments to measure their cognitive abilities, risk preference, and other behavioral characteristics. Based on propensity-score matching and doubly robust estimations to facilitate rigorous comparisons, we find that production workers in the cut flower sector earn significantly more than similar workers in other sectors, most probably due to the flower farms' interest to reduce costly worker turnovers. In addition, workers in the sector save more regularly than workers in other sectors who have similar characteristics, and the amount saved relative to the income level is also higher, after controlling for the frequency of wage payment and employment status. The subjective valuation of their jobs is also higher in the cut flower sector, particularly in terms of the income level, stability, and future prospect, but workers in the sector are not necessarily more satisfied with the type of work they do. Unlike other sectors where wage payment decreases with worker's age, wage in the flower sector does not vary with age. Risk-averse individuals are more satisfied in the cut flower sector, while work experience reduces the satisfaction level on future prospect more in this sector relative to other sectors.

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## 1. Introduction

The high-value export-oriented horticulture sector in developing countries has received attention in the past decades for its potential role in reducing poverty. Some earlier studies focused on farmers involved in the sector as producers (Masakure & Henson, 2005; Minten, Randrianarison, & Swinnen, 2009; Maertens & Swinnen, 2009; Suzuki, Jarvis, & Sexton, 2011), while more recent studies examine the impacts of employment in these sectors on the welfare of individual workers (Maertens, Colen, & Swinnen, 2011; Mano, Yamano, Suzuki, & Matsumoto, 2011; Herrmann & Crote, 2015; Van den Broeck, Swinnen, & Maertens, 2017). Their results are mixed—some argue that such sectors do not benefit the poor (Barron & Rello, 2000; Trifkovic, 2014; Ulrich, 2014), while others argue that it contributes to reducing

poverty (Maertens & Swinnen, 2009; Maertens et al., 2011; Getahun & Villanger, 2018).<sup>1</sup>

In another strand of literature, mainly from international economics, the emergence of the labor-intensive export sector, such as agro-processing and light manufacturing industry, are known to bring higher wages and other positive economic benefits to receiving countries through employment generation, earning foreign exchange, or positive external economies (Borensztein, De Gregorio, & Lee, 1998; Markusen & Venables, 1999; Barrios, Gorg, & Strobl, 2005; Bwalya, 2005; Li & Liu, 2005; Gohou, 2012; Gui-Diby, 2014). One prominent effect is a wage increase specific to this export sector, exporter wage premia, found in the seminal work by Bernard and Jensen (1995) and others. The suggested explanations for this wage premia vary. Exporting firms may be more productive and able to offer higher wages (Tybout & Westbrook, 1995; Isgut, 2001), while export premium may actually

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E-mail addresses: [ayaszk@k.u-tokyo.ac.jp](mailto:ayaszk@k.u-tokyo.ac.jp) (A. Suzuki), [yukichi.mano@r.hit-u.ac.jp](mailto:yukichi.mano@r.hit-u.ac.jp) (Y. Mano).<sup>1</sup> Most papers examine labor income as welfare measures, while others also examine working conditions, contract security, and potential risks associated with these jobs (e.g., Trifkovic, 2014; Herrmann & Crote, 2015).

be the returns for the higher educational qualification of workers (Almeida, 2007; Munch & Skaksen, 2008), may be paid in order to maintain a low turnover rate (Schank, Schnabel, & Wagner, 2007), or may be considered as “compensating differential” for the challenging and risky work in exporting firms (Krueger & Summers, 1988).

However, existing studies lack the following important elements. First, most of them fail to control several important worker characteristics, leaving a large room for unobserved heterogeneity behind the evidence of higher wages. Literatures from international economics mostly use firm-level aggregate data, and thus do not have any variables that control for workers’ characteristics. Literatures from development studies use worker-level data, but do not consider some important variables that predict job acquisition and occupational choices, such as workers’ ability and psychological factors, nor do they analyze the reasons why these sectors offer different opportunities for their workers. Second, most studies only examine worker incomes and do not consider other aspects of welfare, such as savings, remittances, or job satisfaction levels, which are also important from the development economics’ perspectives. Third, although these sectors play a significant role in the early stages of economic development, rigorous empirical studies on developing countries remain limited.<sup>2</sup> It is important to examine the cases of developing countries as poverty reduction is a key development objective and industry structures may be different from those of developed countries.

This paper aims to understand the impact of participating in the labor-intensive export sector on the welfare of individual workers, considering the case of the cut flower sector in Ethiopia. We particularly focus on the effects of employment in this sector on workers’ pay and saving behavior as well as their subjective valuations of quality of work in this sector. Using primary data we collected from cut flower farms between 2007 and 2013 as well as from production workers in the cut flower farms and workers who have similar characteristics but are in other sectors in 2013,<sup>3</sup> we examine whether income and savings are higher for the cut flower workers. Employing propensity-score matching and doubly robust estimation methods, we find that production workers in the cut flower sector earn significantly more than their counterparts in other sectors. We also find evidence that farms pay this wage premia in order to reduce worker turnover rates. Further, we find that workers in the cut flower sector save more regularly and larger amounts relative to their income in comparison to their counterparts. The total job satisfaction level is also higher for cut flower workers, particularly considering income level, stability of income, and future prospect.

In further analyses, we find that workers’ wage does not decrease with age in the cut flower sector, unlike other sectors where wage and age are inversely related. However, while we find that the effect of work experience to the job satisfaction level on future prospect is initially high in the flower sector, it decreases more rapidly among workers in the flower industry than workers in other sectors. Risk-averse individuals are more satisfied with their jobs in the cut flower sector relative to people with the same level of risk aversion in other sectors, although they are paid less in comparison to other sectors. We also find that generally, self-employed workers are more satisfied with their jobs, while payments are lower than wage earners, which is consistent with the compensating differential theory. In other words, higher income for employed workers acts as a compensation for disutility from giving up independence in the working environment.

Our contribution is threefold. First, we extend the current literature on exporter wage premium by providing evidence based on worker-level data, which allowed us to control for workers’ qualities to the extent possible. In order to capture the various abilities and characteristics of workers beyond the standard variables, such as education and working experience, we conducted incentivized experiments to measure their numeracy, risk preference, competitiveness, and overconfidence. We show that the export-oriented labor intensive industry, as represented by the cut flower sector in Ethiopia, offers higher income opportunities to workers in comparison to other sectors, holding the workers’ qualities constant, even for the level of production workers who are at the bottom of the employment pyramid in the sector. We also provide some evidence for the reasons for this wage premia, relating firm-level turnover rates and worker-level wages. Second, we find that participation in the high-value horticulture sector induces workers to save more often and larger amounts in comparison to their income level. To our knowledge, the impact of high-value horticulture sector on the saving behavior of workers has not been studied, and while saving behavior is a much studied topic in development literature (e.g., Karlan, Ratan, & Zinman, 2014), its linkage to the working environment has not been examined. While the exact mechanism on what drives this behavior needs to be examined in further studies, anecdotal evidence suggests the role of peer effects within these labor-intensive environments. Third, we extend the study of the impact of export-oriented industry on subjective satisfaction of workers, going beyond the traditionally-studied outcome of income levels. The findings illuminate the type of workers who benefit (aged and more risk-averse) and the satisfaction with the work provided by these sectors.

The next section explains our hypotheses to be tested. Section 3 describes the cut flower sector in Ethiopia. Section 4 explains the data collection methodology. Section 5 discusses the estimation strategies employed and the estimation results are contained in Section 6. Conclusions follow in Section 7.

## 2. Hypotheses

In order to examine the impacts of working in the cut flower sector, we pose the following five hypotheses. First, as the *export wage premia* holds, we predict that the cut flower sector offers higher wages to its workers in comparison to the workers’ quality. The main reason for believing in the existence of wage premia is based on the fact that a high turnover rate among production workers is one of the main issues that cut flower farms encounter. We suspect that this high turnover rate and labor-intensiveness of the sector lead cut flower farms to offer higher wages. From our interviews with managing directors of cut flower farms in 2013, we find that the turnover rate among permanent production workers was 14.4% in 2012 and increased to 20% in 2013. Note that these figures actually understate the true turnover rate of production workers as it only considers those who managed to remain for at least 45 days with the firm, those who became permanent workers. Anecdotes suggest that a considerable number of workers depart farms within the first 2 or 3 weeks of employment. We present turnover rates across different sectors in Ethiopia based on a representative firm survey, used also by Abebe et al. (2017), in Table 1. It shows that the turnover rate in the cut flower sector is indeed higher than other sectors. Note that labor demands for construction and farming are normally seasonal, and it is not surprising that their turnover rate is exceptionally high.<sup>4</sup> This high

<sup>2</sup> Exceptions are Herrmann and Crote (2015), Herrmann (2017), Van den Broeck et al. (2017), and Getahun and Villanger (2018).

<sup>3</sup> “Other sectors” include various jobs, such as construction work and retail sector, as will be detailed in Section 4.

<sup>4</sup> While the demand for cut flowers peaks around Christmas and Valentine’s Day, the farms continue flower production and export throughout the year by maintaining workers. In the lean season, some workers are shifted to land preparation and leveling, constructing/repairing facilities, and other sections on the farm.

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