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The Hidden Cost of Profit Sharing on Participation in Employee Stock Purchase Plans*

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Abstract

Many firms use equity-based profit sharing to boost participation in employee stock purchase plans (ESPPs). Using a large panel data set (N=262,824) of a multinational firm, we compare the reactions of former ESPP participants and non-participants to a profit sharing distribution (PSD). We find a dysfunctional effect. Although many former non-participants sign in, almost a similar share of employees leave the ESPP after the PSD. A closer look highlights the importance of social preferences when all employees enjoy profit sharing. Prosocial former participants show a motivational crowding out effect and leave the program, as the equity norm is violated.

JEL Codes: D03, J24, J33, J54, M52.

Keywords: Employee Stock Purchase Plans, Gift Exchange, Motivational Crowding Out, Norm Violation.

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I. Introduction

Employee ownership plans (EOPs) are a popular compensation form in corporate US (Guay et al., 2003; Poterba, 2003; Babenko and Sen, 2014; 2016), as they align the incentives of employees with shareholder interests and counteract turnover (Sengupta et al., 2007). The importance of EOPs is documented by evidence on significant productivity effects (Jones and Kato, 1995; Kim and Ouimet, 2014; Bryson and Freeman, 2019; Blasi et al., 2018). Despite their attractiveness for employees, these plans lack acceptance (Engelhardt and Madrian, 2004; Pendleton, 2010). For instance, this is documented by data on employee stock purchase programs (ESPPs), which are a common form of EOPs, where employees can buy company shares at a discount or receive free matching shares after a certain time period. Babenko and Sen (2014) report that only 30 percent of employees participate in ESPPs. In 2019, the participation rate was 37 percent in the US and 39 percent in Europe (Global Equity Organization, 2020). Thus, firms apply strategies to increase participation. However, less is known on employees' reactions and the efficiency of these practices.

Our paper fills this gap by presenting a natural experiment on the impact of a financial incentive in the form of the receipt of free company shares to increase participation in ESPPs. Specifically, we empirically analyze employees' participation decisions after an unannounced profit sharing[1] distribution (PSD), which is received by all employees, regardless of their past program participation. Another novelty is our focus on social preferences to study participation decisions in ESPPs. This is motivated by evidence that individual heterogeneity influences ESPP participation (Babenko and Sen, 2014) and by the idea that ESPPs share common characteristics, as in a "gift exchange" relationship (e.g., Akerlof, 1982; Fehr et al., 1993; 1998; Kube et al., 2012; DellaVigna et al., 2020). The reason is that preferential share prices may be interpreted as "gifts" by employees (Bryson and Freeman, 2019). We study the functioning of the gift exchange relationship in a field setting with a focus on prosocial employees. In the natural experiment we compare employees' behavior before and after the PSD, which allows us to study whether past participants perceive the PSD to be a violation of the equity norm. That is, reciprocal employees may be motivated by a norm, which implies that employees showing a higher commitment should enjoy higher rewards than employees who do this to a lower extent. If, however, companies offer profit sharing independently of employees' past effort, this violates the norm of equity, which is a prerequisite for reciprocity in gift exchange relationships (Abeler et al., 2010) and the functioning of labor supply (Bracha et al., 2015). While Abeler et al. (2010) find in a laboratory setting that high-performing employees lower performance when receiving the same rewards as low-performing employees, for our setting this implies that reciprocal former participants may lower commitment and leave the program after all employees have received the PSD.

[1] Profit sharing is a strategic human resource practice and can be defined as a plan that links a part of employee remuneration to the firm's profits within a specific time period (Delery and Doty, 1996; Kruse, 1992).

To analyze the effects of the PSD, we focus on a large-scale panel data set (N = 262,824) of a multinational firm. The timing of the experiment is as follows: First, employees face the annual choice to participate in the ESPP. Second, the firm implements the PSD, which all employees can receive worldwide. Third, the employees decide anew whether to participate in the ESPP. In the panel data, we classify two groups of employees (former ESPP participants and former non-participants), based on their participation behavior prior to the implementation of the PSD. Therefore, we can analyze the potential behavioral effects of PSDs (e.g., positive reciprocity, motivational crowding out) conditional on employees' level of prosociality. To control for the role of preferences, we exploit the cross-country variation of our data. We use the global preference data of Falk et al. (2018), who elicited individual preferences in a validated survey of 80,000 people in 76 countries. We match their data on positive reciprocity, altruism, trust, risk, and time preferences with our employee data at the country level.

The results demonstrate that the PSD has only a moderate effect on employees' subsequent ESPP participation. This can be explained by a dysfunctional effect of the distribution of free assets in the PSD. The free distribution of shares attracts a significant number of former non-participants, but at the same time, it suffers from hidden costs. That is, we find that an almost similar number of former ESPP participants leave the program after they have received the free shares. A closer look shows that prosociality plays an important role. First, prosocial employees are generally more likely to participate, which supports the gift exchange character of ESPPs (Bryson and Freeman, 2019). Second, former participants characterized by high degrees of prosociality show motivational crowding out effects and leave the program after the PSD. The result is similar to Abeler et al. (2010) as we find that former participants who participated in the program, leave it when all employees are treated equally and receive a PSD. By contrast, gift exchange works for former non-participants who sign up for the program after the PSD. In further analyses, we show that motivational crowding out does not occur for participants with a high degree of financial literacy. The result supports Babenko and Sen (2014) who showed that financial education facilitates ESPP participation.

Our paper extends the research on employee ownership plans (e.g., Jones and Kato, 1995; Guay et al., 2003) and employees' participation decisions using the example of ESPPs (Babenko and Sen, 2014). Our natural experiment provides novel insights on the effectiveness of financial incentives in the form of a PSD as a tool to boost ESPP participation. We analyze employees' reactions and test the role of social preferences. Therefore, the findings also contribute to the literature on gift exchange in the field (Falk, 2007; Kube et al., 2012; DellaVigna et al., 2020) and the adherence of equity norms for the effectiveness of reciprocity (Abeler et al., 2010) and relative pay (Bracha et al., 2015; Breza et al., 2018). We show that introducing financial incentives, which do not exclusively reward past commitment, may go hand in hand with hidden costs, as prosocial employees may leave the program. Thus, we contribute to the literature on motivational crowding out effects, which documents that financial incentives may backfire when subjects' actions are motivated by prosocial behavior (e.g., Falk and Kosfeld, 2006; Gneezy et al., 2011) or image motivation (Frey and Oberholzer-Gee, 1997; Bènabou and Tirole, 2006;

Ellingsen and Johannesson, 2008; Ariely et al., 2009). Our results are relevant for the success of management strategies which aim to increase employees' motivation. We emphasize the importance of equity norms when employees are prosocial, which may lead to hidden costs of PSDs. The results suggest that management practices should anticipate this effect when applying measures to increase participation in employee ownership programs, such as ESPPs. The finding that the effect is attenuated by increased financial literacy, suggests that knowledge-building activities may counteract the ambiguous effects of PSDs.

II. Profit Sharing Distribution and Data

A. ESPP and Profit Sharing Distribution

Our primary data source is internal data collected from an international, highly diversified industrial firm headquartered in Europe.[2] For more than 10 years, the firm has been offering an ESPP to nearly all employees worldwide. The ESPP is centrally administered from the firm's headquarter with consistent communication throughout all countries. Participation in the worldwide homogeneous program is confidential. That is, neither higher-level managers nor peers can see whether other employees are participating. It implies that employees' reasons for participation are based on voluntary motives. Once a year within a one-month election window, the firm's employees can choose to participate in the program and invest 0 to 5 percent of their annual salary in the firm's shares. After a one-year investment phase,[3] followed by a two-year vesting period, employees get one additional matching share for every three shares they hold. Any investment in the last 10 years was highly beneficial,[4] which demonstrates the attractiveness of the program and explains why employees may perceive ESPPs as a gift from the employer (Bryson and Freeman, 2019).

Besides the ESPP, the firm decided very recently that employees should participate in the firm's success via a variable profit sharing (PS) program, which had not been distributed so far. Depending on the success of each fiscal year, the board of directors can decide to deposit a variable amount, not known in advance to the employees, into a financial pool. When the pool reaches a pre-defined threshold, the Managing Board can divide the pool between the employees. After the threshold was met for the first time in the spring of 2018, the firm distributed a three-digit million amount in the form of free shares to all employees below the senior management level, independently of whether they participated in the previous ESPP sign-up tranche. As a result, each employee participated in the PSD and received shares. As the PSD was not previously announced and the employees did not know in advance when the pool

[2] The firm operates in eight distinct three-digit SIC codes.
[3] In the investment phase, the employees invest parts of their income in (fractional) shares on a monthly basis.
[4] *Beneficial* is defined from a financial perspective as an increase in dividends and returns including low administrative costs.

was going to be distributed, the PSD constitutes a positive exogenous shock from the employees' perspective. In this paper, our main interest will be on the reactions of employees' participation behavior in the following ESPP sign-up tranche after they received the PSD.

Our natural experiment focuses on a unique large-scale data set that perfectly allows us to study behavioral changes in terms of subsequent participation in the program. That is, the firm had offered the ESPP in the year before the first PSD in firm history and in the subsequent year, which enables us to observe the employees' behavior before and after the receipt of free shares. Therefore, we can identify whether employees changed their participation behavior as a response to the receipt of the PSD. We distinguish between a "positive change" (an employee did not participate in the year before the PSD, but afterwards) and a "negative change" in participation behavior (an employee who did participate in the year before the PSD left the program afterwards). More precisely, we define a "change" as all cases where employees changed their investment behavior from 0 percent to a positive amount, or vice versa. That is, a *positive change* occurs if an employee invested 0 percent in the ESPP sign-up tranche 2018 and she invests >0 percent in the ESPP sign-up tranche 2019. By contrast, we count a *negative change*, if an employee invested >0 percent in the ESPP sign-up tranche 2018 and she invests 0 percent in the ESPP sign-up tranche 2019.

Figure 1 illustrates a chronological overview of the timing when the PSD was processed in our natural experiment.

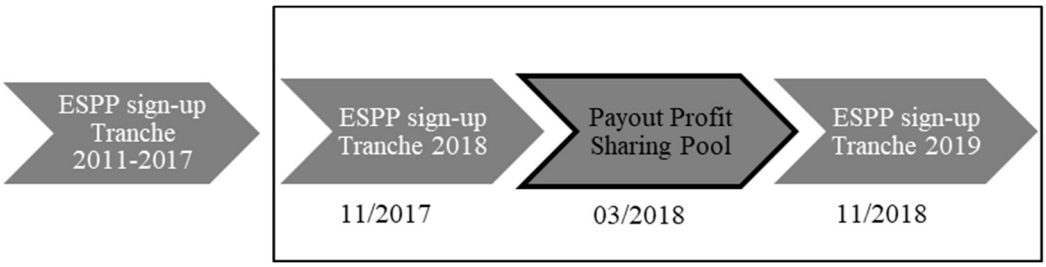

FIGURE 1. TEMPORAL CLASSIFICATION OF THE PROFIT SHARING DISTRIBUTION

Notes: This figure displays the chronological order of the natural experiment. The framed box shows the two ESPP sign-up windows (one before and one after the PSD) that we compare in our study. In November 2017, the employees could sign up for participation in the 2018 ESPP. Four months later, in March 2018, the employees were gifted free shares in the frame of a PSD. Eight months later, in November 2018, the next sign-up period for the 2019 ESPP started.

B. Sample

To investigate the effects of the PSD on subsequent ESPP participation, we observe the decisions of 262,824 employees from 36 countries that were employed in the year prior to the PSD and in the following year. In addition to employees' ESPP participation choices, the data include rich information on employees' characteristics (i.e., age, gender, tenure, occupation, level of education,

country). Table 1 shows the descriptive statistics of all variables used in the empirical analysis. Approximately 76 percent of the employees are male and 15 percent have a higher level of education (master's degree or higher). The highest concentration of employees is in the 50–55 age bracket. The table shows that 6 percent are employed in a finance department and 2 percent in human resources (HR), which are both linked to the administration of the ESPP. Around 39 percent are employed in the firm's home country. To avoid home country bias, we performed all calculations without observations from the home country and the results remained substantially unchanged.

TABLE 1 – DESCRIPTIVE STATISTICS

Variable	Mean	SD	Min	Max
Male	0.764	0.424	0.000	1.000
Education	0.148	0.355	0.000	1.000
Age<=30	0.122	0.327	0.000	1.000
Age31-35	0.138	0.344	0.000	1.000
Age36-40	0.156	0.362	0.000	1.000
Age41-45	0.135	0.341	0.000	1.000
Age46-50	0.167	0.373	0.000	1.000
Age51-55	0.173	0.378	0.000	1.000
Age56-60	0.143	0.350	0.000	1.000
Age>60	0.050	0.218	0.000	1.000
Tenure (log)	2.449	0.794	0.000	4.220
Finance	0.064	0.244	0.000	1.000
Human Resources	0.015	0.121	0.000	1.000
Home country	0.390	0.488	0.000	1.000

Notes: This table contains descriptive statistics for the total sample (N=262,824). Male, Education, Finance, Human Resources, and Home Country are dummy variables. Male takes the value of 1 if the employee is male. Education is 1 if the employee has a master's degree or higher. Finance or human resources take the value of 1 if the employee is working in a Finance or Human Resources Department, respectively. Home country is 1 if the employee is from the firm's home country.

C. Social Preferences

To account for social preferences, we exploit the cross-sectional characteristics of our data. We have data on 36 different countries, which we match with the global preference data of Falk et al. (2018). This allows us to study whether preference differences in our countries explain employees' dysfunctional reactions. Falk et al. (2018) applied verbal surveys in 76 countries to collect individual preference data. To study the role of prosociality, we incorporate their data on positive reciprocity and altruism. We include altruism to counteract measurement error (Snowberg and Yariv, 2021), since we expect that these data strongly correlate with positive reciprocity. We also implement their data on risk and time preferences, since we believe that they affect employees' investment behavior. We conduct a

principal component analysis (pca) to identify specific types of relevant preference combinations in the data of Falk et al. (2018) for the 36 countries we focus on.[5] Factors were extracted based on eigenvalues above one (Kaiser, 1960). To identify items, we used a loading greater than 0.50. The pca identified two components with eigenvalues greater than one. That is, in the first component *positive reciprocity* and *altruism* load positively with similar weights (each 0.53), which confirms the idea that these preferences are strongly connected. We call this component "PC1: *prosociality.*" We label component two "PC2: *patience & risk taking,*" as it encompasses strong loadings for patience (0.60) and risk taking (0.65). Eigenvalues and the proportion of the variance explained by the dimensions are shown in Table A2 in the appendix. The loadings of Falk et al.'s (2018) variables on the components are reported in Table A3 in the appendix. We will use the predicted principal components for our further analyses and our hypotheses tests.

III. Hypotheses

Firms offer ESPPs in their pursuit to increase firm performance, as firm and employees' incentives are aligned (Pendleton and Robinson, 2010). Our natural experiment focuses on the effects of a PSD, as part of a firm's strategy to increase employees' participation in the ESPP. In this section, we derive hypotheses for employees' behavior before and after they received the PSD.

Behavioral economics emphasizes the importance of "gift exchange" in labor-market relations. Empirical and laboratory evidence show that employers are willing to pay employees wages, which are above market clearing wages (Akerlof, 1982; Fehr et al., 1993; 1998; Charness and Kuhn, 2011). This wage premium is interpreted as "gift" by prosocial employees who increase their effort in return. Gift exchange relationships are also of importance for ESPPs when employers offer stocks to employees at preferential prices. Bryson and Freeman (2019) argue that ESPPs share characteristics similar to those in "gift exchange" relationships, since employees may interpret the discounted prices as "gifts." This implies that prosocial employees should generally more often reciprocate the gift and participate in ESPPs.

Hypothesis 1 (Participation in the ESPP):
ESPP participation positively correlates with employees' levels of prosociality.

Importantly, empirical evidence shows that gift exchange relationships may be disrupted if the equity norm is violated. Abeler et al. (2010) report evidence of a multi-employee gift exchange

[5] We use all variables from Falk et al. (2018) except negative reciprocity because this cultural preference plays a negligible role in the context of our study. Results remain similar when we include negative reciprocity in the pca.

experiment, where employees lowered their effort when they outperformed their co-worker and nevertheless did not receive a higher wage than their colleague. The authors argue that this motivational crowding out effect occurs because the equity norm is violated. Bracha et al. (2015) document a similar harmful effect when the equity norm is violated. In a laboratory experiment they find that employees decrease labor supply when a given wage is low relative to wages of other employees. In our setting, norm violations should also play a central role when a PSD is given to all employees. We expect that employees' past participation behavior in the ESPP is crucial for their perception of the PSD. That is, if program participation was motivated by reciprocal behavior, former participants may perceive a violation of the equity norm if the PSD is given to all employees, unconditional of program participation. As a consequence, we expect that prosocial employees may be prone to a motivational crowding out effect (Bènabou and Tirole, 2006; Gneezy et al., 2011). Thus, employees may lower their commitment and stop participating in the subsequent ESPP. This effect should be more pronounced the more their past behavior was motivated by prosociality.

Hypothesis 2 (Reaction of former participants):
After the PSD, former ESPP participants are less likely to participate in the ESPP, the higher their level of prosociality.

By contrast, non-participants of the ESPP should not perceive a violation of the equity norm when they receive a PSD. The reason is that they cannot feel unfairly treated, as they originally did not participate in the program and therefore did not show this form of commitment. Instead, we expect that the PSD may work as an amplifying signal to establish a gift exchange relationship between the employers and non-participants. This may increase non-participants' participation in the subsequent ESPP, if they are characterized by prosociality.

Hypothesis 3 (Reaction of former non-participants):
After the PSD, former non-participants are more likely to participate in the ESPP, the higher their level of prosociality.

IV. Results

A. Main Findings

Focusing on participation rates in the ESPP in the year before the PSD, we find that only 34 percent (n = 89,435) of eligible employees participated, whereas 66 percent (n = 173,389) did not

participate. The low participation rate is in line with the empirical literature on ESPPs (e.g., Engelhardt and Madrian, 2004; Pendleton, 2010; Babenko and Sen, 2014).

Next, we test our hypotheses. Table 2 presents probit models which focus on employees' participation behavior before the introduction of the PSD (models (1)—(2)). Moreover, the table presents a further probit regression (model (3)), which analyzes whether ESPP participants are more likely to stay in the firm. We explain the corresponding model variables below, after the test of Hypothesis 1. Models (1) and (2) analyze the sample of all employees. Model (2) tests the robustness of the findings when controlling for region fixed effects.[6] All models present average marginal effects. The models implement the two components of our pca: PC1: *prosociality,* PC2: *patience & risk taking.* In models (1) and (2), we apply a control variable which focuses on employees' involvement in the program. The variable refers to the initial investment level to the ESPP, which may affect employees' reactions when receiving the gift. To control for this, we include the percentage of annual income, which was invested in the ESPP (*investment percentage*) in the year prior to the PSD. All models include additional controls on employees' socio demographics. We include a gender dummy (*male*), which is positive for male employees. We also include employees' *age* (measured at 5-year intervals, e.g., aged between 30 and 35), and the tenure of employees (measured by the natural logarithm of the tenure in years +1). We apply the additional dummies as further controls.

TABLE 2 – PROBIT REGRESSIONS ON EMPLOYEES' PARTICIPATION IN ESPP (BEFORE PSD) and ON EMPLOYEES TURNOVER BEHAVIOR

	Participation in ESPP before PSD		*Left the Company*
	(1)	(2)	(3)
ESPP participation in 2017			-0.049***
			(0.001)
PC1: prosociality	0.113***	0.026***	-0.003***
	(0.003)	(0.001)	(0.000)
PC2: patience & risk taking	0.067***	0.015***	0.001
	(0.005)	(0.001)	(0.000)
Male	0.128***	0.029***	-0.018***
	(0.007)	(0.002)	(0.001)
Controls	yes	yes	yes
Region fixed effects	no	yes	yes
Obs.	262,824	262,824	308,428

Standard errors in parentheses
*** p <0.01

Notes: All regressions report marginal effects. Standard errors are in parentheses. The number of observations is higher in Model 3) as this regression includes all employees that were with the firm in 2017, while models 1) and 2) include only employees that were employed in the firm in 2017 (year before the PSD) as well as in 2018 (year after PSD).

[6] We include fixed effects for East Asia, Europe, Mesoamerica, North Africa, North America, Oceania, South America, South and South-East Asia, Sub-Saharan Africa, West and Central Asia.

We control for employees with a higher level of education or working in functions with potential better knowledge about stock investment in general or the ESPP specifically (Babenko and Sen, 2014). *Education Master* is positive when employees' highest level of education is a master's degree or higher, *Finance* is positive when the employee is working in a finance department, *Human Resources* is positive when the employee is working in an HR department. Finally, it is possible that employees working in the firm's home country have better access to ESPP-related information. To control for this, we include the dummy *Home Country,* which is positive if the employee is working in the country where the firm's headquarters is located.

Models (1) and (2) support Hypothesis 1, i.e., we find that the coefficient of PC1 is positive and highly significant. Thus, prosocial preferences increase the likelihood of ESPP participation. Moreover, we find that patience and risk tolerance is positively related to program participation and men are more likely to participate.

RESULT 1: *Participation in ESPPs is positively related to prosocial behavior.*

Result 1 supports the idea that ESPPs may be perceived as gifts by employees (Bryson and Freeman, 2019). To better understand whether employees actually interpret the ESPPs as gifts, we analyze whether ESPP participants showed some form of positive reciprocity towards the company.[7] The gift-exchange literature demonstrates that employees typically increase their effort levels to show commitment after receiving a monetary gift from the employer (e.g., Fehr et al., 1993; Abeler et al., 2010). Since we do not have data on employees' performance, we focus on a proxy for reciprocal behavior. In our data set we can identify employees who left the company. We interpret employees' commitment to stay in the company as reciprocal behavior. To analyze this, we run a further probit regression (model (3) in Table 2) on employees' likelihood to leave the company after participation in the ESPP. To account for this, we compare our employee data of 2018 to the data of 2017, i.e., employees who left the country are not listed in the year 2018 of the panel. In contrast to models (1) and (2). Model (3) includes another dummy *ESPP participation in 2017*, which is positive when employees participated in the program in the year 2017. We apply the same variables and controls as in models (1)—(2). Indeed, we find that ESPP participants apparently show a significantly higher degree of reciprocal behavior in the form of commitment towards the company. That is, *ESPP participation in 2017* is highly significant with a negative sign, i.e., ESPP participants are less likely to leave the company. In line with the findings in models (1)—(2), we again find that prosocial preferences stimulate reciprocal behavior towards the company. That is, *PC1* is highly significant with a negative coefficient, i.e., prosocial employees are less likely to leave the company. By contrast, *PC2* is insignificant.

[7] We thank Johannes Abeler for proposing this interesting idea.

We turn to the tests of hypothesis 2 and 3, which focus on employees' reactions after the PSD. Before concentrating on the effects of prosociality, we briefly focus on the aggregate effects of the PSD. Table 3 overviews the effects on program participation, before and after the receipt of the gift in the form of free shares. The table distinguishes between the aggregate data, i.e., employees who participated in the last ESPP wave (participated before PSD) and employees who did not participate in the last wave (not participated before PSD).

Overall, it can be seen that the PSD has a moderate positive effect, which supports the idea of gift exchange. That is, after receiving a PSD, the number of participating employees increased by 3,267 from 89,435 to 92,702 people. Importantly, we find first evidence in line with hypotheses 2 and 3. That is, the change of participants is in part the result of a dysfunctional effect of the PSD. We find that 16,569 employees, who initially did not participate, joined the program after they received the PSD. At the same time, a similar number of employees (13,329) who initially participated lower commitment and leave the program after they receive the PSD.[8]

TABLE 3 – NUMBER OF ESPP PARTICIPANTS BEFORE AND AFTER THE RECEIPT OF A PSD

	ESPP Participation		
	before PSD	after PSD	change
Participated before PSD	89,435	76,106	- 13,329
Not participated before PSD	--	16,596	+ 16,569
Aggregate data	89,435	92,702	+ 3,267

Notes. This table compares the ESPP participation before and after the PSD, distinguishing between former participants ("participated before PSD") and non-participants ("not participated before PSD").

RESULT 2: *The PSD causes a dysfunctional effect in subsequent ESPP participation. Although new participants enter the program, a similar number of former participants leave it.*

Even though gift exchange seems to work for former non-participants, Table 3 reveals that unexpected hidden costs occur when free shares were gifted to employees who initially participated. The data on employees' pre-participation in the ESPPs allow us to deeper analyze the effects of receiving free shares conditional on subjects' initial behavior. Next, we focus on employees' reactions to the PSD, considering their social preferences, which may reflect their motivation for the program participation before the PSD was introduced. The idea is that employees who participated for prosocial reasons may pay attention to how the firm adheres to an equity norm when rewarding employees after they participated in the first wave. Hence, initial reciprocal motives may lead to motivational crowding out (Bènabou and Tirole, 2006; Abeler et al., 2010; Gneezy et al., 2011) for former participants when realizing that the receipt of the PSD was not aligned to ESPP participation. At the same time, the equity

[8] Appendix A1 presents descriptive statistics of positive and negative changes in participation per country.

norm cannot be violated for non-participants. Thus, it is possible that receiving a PSD emphasizes the gift exchange relationship between non-participants and the firm, as these employees perceive the PSD as a kind signal of the firm. Next, we analyze whether perceived violations of the equity norm particularly occur for employees in countries characterized by a high degree of prosociality, which is reflected by a high PC1 score. Figure 2 presents the reaction of employees who participated in the ESPP before the PSD. The diagram analyzes employees' decisions to stay in the program or to leave it, based on their level (low vs. high) of prosocial preferences. Therefore, the diagram focuses on a median split of our first component (PC1: prosociality).

Figure 2 documents that the share of employees who leave the program is significantly higher for employees characterized by an above-median level of prosociality (26%) as compared to employees with less pronounced prosociality (9%) (X^2-test, $p<0.001$). Thus, prosocial former participants apparently perceive the non-discriminatory reward as a violation of the equity norm (Abeler et al., 2010). The finding is a first support for Hypothesis 2.

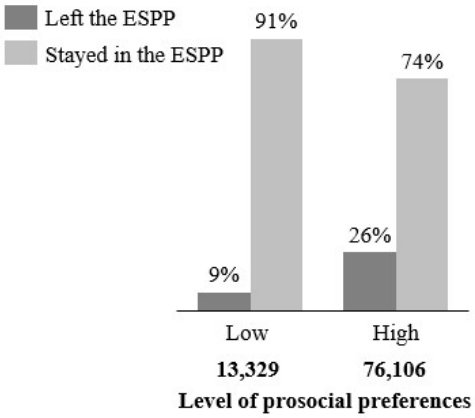

FIGURE 2. REACTIONS TO PSD DEPENDING ON PROSOCIAL PREFERENCES

Notes: The diagram conditions on employees' level of prosocial preferences based on the PC1 of the pca and a median split (low = below/equal median; high = above median). Sample: Employees that participated in the ESPP in the year before the PSD.

Moreover, the results are supported by parametric regressions. Table 4 presents probit models, which test hypotheses 2 and 3. The table focuses on employees' participation in the program after they received the free shares in 2018. Models (1) and (2) analyze the sample of employees who participated in the program before the PSD, whereas models (3) and (4) analyze employees who did *not* participate beforehand when receiving the free shares. Models (2) and (4) test the robustness of the findings when controlling for region fixed effects.[9] All models present average marginal effects. The models implement

[9] We include fixed effects for East Asia, Europe, Mesoamerica, North Africa, North America, Oceania, South America, South and South-East Asia, Sub-Saharan Africa, West and Central Asia.

the same variables as in the regression models of Table 2. More precisely, we again include the two components of our pca: PC1: *prosociality,* PC2: *patience & risk taking*[10] and the same controls as before. For robustness, we rerun all our regressions without observations from the country in which the firm's headquarters is located. The results are in line with our main results, indicating that results are not driven by employees based at the headquarter.

TABLE 4 – PROBIT REGRESSIONS ON EMPLOYEES' PARTICIPATION IN ESPP AFTER THEY RECEIVED FREE SHARES

	Participation in ESPP after PSD			
	Former participation		No former participation	
	(1)	(2)	(3)	(4)
PC1: prosociality	-0.004***	-0.013***	0.011***	0.015***
	(0.001)	(0.002)	(0.000)	(0.001)
PC2: patience & risk taking	0.006***	0.002	0.006***	0.005***
	(0.002)	(0.003)	(0.001)	(0.001)
Male	0.028***	0.029***	0.022***	0.020***
	(0.003)	(0.003)	(0.002)	(0.002)
Controls	yes	yes	yes	yes
Region fixed effects	no	yes	no	yes
Obs.	89,435	89,435	173,389	173,389
	Standard errors in parentheses			
	*** p <0.01			

Notes: All regressions report marginal effects. Standard errors are in parentheses.

Model (1) clearly supports the finding of Figure 2. We find indication of a motivational crowding out effect among former participants. That is, the coefficient of *PC1* is negative, which suggests that these employees perceived a violation of the equity norm (Abeler et al., 2010). In other words, former program participants, characterized by a high level of positive reciprocity and altruism, are significantly less likely to remain in the program after the profit sharing is given to all employees. The positive significant coefficient of *PC2* (patience & risk taking) shows that risk tolerant and patient employees are more likely to stay in the program after the PSD. Model (2) highlights that the motivational crowding out effect is robust and even becomes stronger when controlling for region fixed effects. By contrast, in this case the coefficient of *PC2* becomes insignificant. Thus, employees' prosocial preferences apparently explain a main part of the detrimental effect of the PSD. The findings are in line with the occurrence of a motivational crowding out effect for prosocial subjects (Bénabou

[10] For robustness, we reran all regressions with positive reciprocity and altruism, each as a dependent variable.

and Tirole, 2006) when the equity norm is violated (Abeler et al., 2010; Bracha et al., 2015). We thus find further support for Hypothesis 2.

Turning to employees who did not previously participate in the program (models (3) and (4)), we find that PC1 is also predictive of their behavior. That is, the highly significant positive coefficients of PC1 demonstrate that employees characterized by high levels of prosociality are significantly more likely to enter the program after they received the free shares if they had not participated before the PSD. Thus, the findings support Hypothesis 3, i.e., that employees participate in ESPPs so as to reciprocate a firm's generosity of offering advantageous programs (Bryson and Freeman, 2019). The results of models (3) and (4) show that gift exchange works for employees who did not previously participate and therefore cannot perceive a violation of the equity norm when the PSD is received.

The significant effect of *PC1* is robust when controlling for region fixed effects. Moreover, risk tolerance increases the likelihood of participating in the program for both types of employees. The results also show that *PC2* is positive and highly significant in all models except for model (2). The finding is intuitive, as investing in stocks is risky. All models show evidence of a gender effect, i.e., *male* is significant and positive, which emphasizes that men are generally more likely to participate in the program after receiving free shares. Finally, to rule out that the crowding out effect is driven by employees' income levels or by program experience, we ran additional analyses of models (1)—(4) (see Table A4 in the appendix), where we include employees' income and the number of prior program participations.[11] We find that PC1 remains highly significant with a negative (positive) sign in models 1 and 2 (3 and 4). We summarize our findings as follows.

RESULT 3: *The double-edged effect of the PSD occurs because of the different working mechanisms of prosocial preferences. Former participants motivated by reciprocal behavior apparently perceive a violation of the equity norm when the PSD is offered to all employees. By contrast, the gift exchange relationship works if employees did not previously participate in the PSD. In this case, the likelihood of participation increases in the level of their prosociality.*

B. Robustness Checks

In this section we run robustness checks on the stability of our findings, i.e., the impact of prosocial preferences for participation in ESPP after a PSD. We present two types of robustness checks. To test whether motivational crowding out effects increase in the level of prosociality we first run additional regressions. Second, we test whether the relations between prosociality and employees' changes in participation behavior after the PSD also holds at the aggregate country level. That is, we

[11] We want to thank Ilona Babenko for raising this interesting point.

study whether the motivational crowding out effects of former participants are more prevalent in countries characterized by high levels of prosociality.

We start by analyzing the impact of different levels of prosociality on the crowding out effects of former participants. To do so, we separate the sample into three groups, based on the level of prosociality (PC1).[12] Group 1 includes employees with the lowest levels of prosociality, whereas group 3 includes those that are most prosocial. In Table 5 we run regressions similar to those in Table 4. The only difference is that we now include dummy variables for the groups characterized by higher levels (2–3) of *PC1* (prosociality). Group 1 serves as the reference group (omitted).

TABLE 5 – PROBIT REGRESSIONS ON EMPLOYEES' PARTICIPATION IN ESPP AFTER THEY RECEIVED FREE SHARES – GROUPS WITH DIFFERENT LEVELS OF PROSOCIALITY

	Participation in ESPP after PSD			
	Former participation		No former participation	
	(1)	(2)	(3)	(4)
PC1: prosociality level 2	-0.013***	-0.039***	0.040***	0.052***
	(0.047)	(0.006)	(0.002)	(0.003)
PC1: prosociality level 3	-0.023***	-0.105***	0.052***	0.077***
	(0.004)	(0.014)	(0.002)	(0.005)
PC2: patience & risk taking	0.006***	0.001	0.005***	0.004***
	(0.001)	(0.002)	(0.001)	(0.001)
Male	0.028***	0.029***	0.021***	0.020***
	(0.003)	(0.028)	(0.002)	(0.002)
Controls	yes	yes	yes	yes
Region fixed effects	no	yes	no	yes
Obs.	89,435	89,435	173,389	173,389
	Standard errors in parentheses			
	*** p <0.01			

Notes: All regressions report marginal effects. Standard errors are in parentheses.

The results show stronger marginal effects for higher levels of prosociality (levels 2 and 3), which holds in the sample of former participants and in the sample of former non-participants. In models (1)–(2), we find that the crowding out effect is strongest when former ESPP participants belong to the highest group (level 3) of prosociality. Moreover, we observe a similar pattern in models (3)–(4) for employees who had not previously participated. This emphasizes that motivational crowding out effects increase in the level of prosociality. The analysis also highlights that crowding out effects constantly occur for different levels of social preferences.[13]

[12] To define the groups, we created the variable "level-pc1" containing three tertiles of pc1.

[13] Results are also corroborated by parametric (non-parametric) correlation tests. The Pearson (Spearman) correlation coefficient for PC1 and the percentage of employees with a negative change in their participation behavior is 0.33 (0.37) and is statistically significant (p=0.05 (0.03), n=36), suggesting that the negative change in

Next, we test whether the observed relation between prosociality and the exiting behavior of former participants also exists at the country level for the 36 countries in which the firm has branches. Figure 3 presents a simple scatter plot on the percentage of employees who leave the ESPP conditional on the level of prosociality, represented by *PC1*. Figure 3 shows that a positive significant relation between prosociality and the exiting behavior of former participants exists in the 36 countries (Spearman's correlation test, $\rho = 0.372$; $p = 0.026$). It is remarkable that almost all countries are centered around the 45° line. Only four outliers exist.

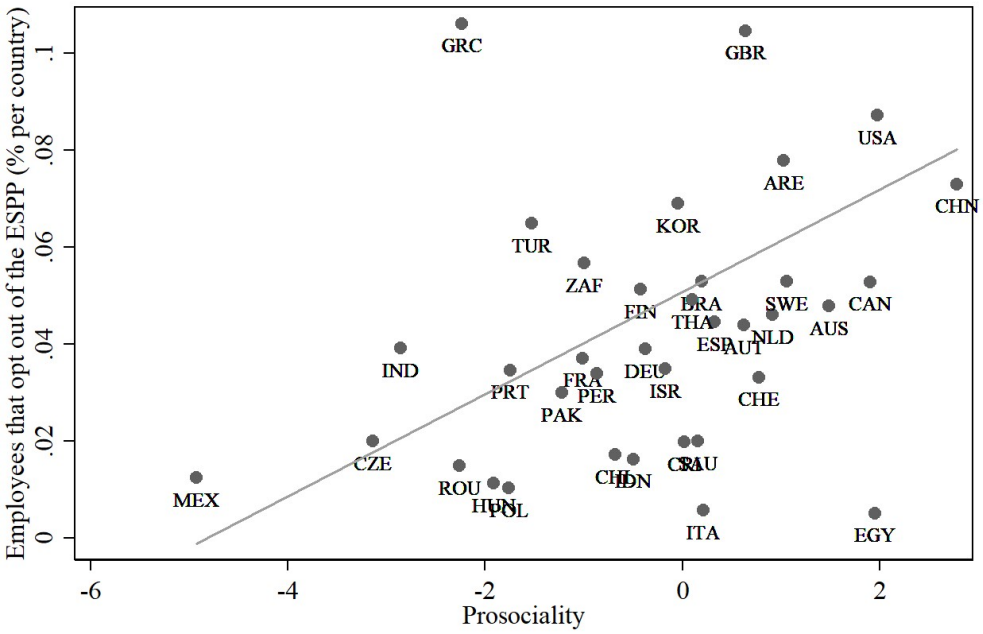

FIGURE 3. EMPLOYEES THAT LEAVE THE ESPP AFTER THE PSD (AVERAGE PERCENTAGE PER COUNTY) PLOTTED AGAINST THE LEVEL OF PROSOCIALITY

Notes: The x-axis shows the level of prosociality for each country. The y-axis shows the percentage of employees per country that cease participating in the ESPP after the PSD took place.

In a similar vein, Figure 4 focuses on the relation between prosociality and the opt-in behavior of former non-participants in the 36 countries. The scatter plot shows evidence of a significant positive relationship between prosociality and participation in the ESPP after the PSD (Spearman's correlation test, $\rho = 0.361$; $p = 0.030$).

The findings provide additional support and highlight that the effects of prosociality are not only driven by few countries. Instead, the scatter plots suggest that the combination of former participation behavior and social preferences crucially impacts employees' change in ESPP participation after the

the participation behavior after the PSD is influenced by the level of prosocial preferences. Results for the group of employees with no former participation are supported as well. Pearson (Spearman) correlation coefficients for PC1 and the percentage of employees with a positive change in their participation behavior is 0.36 (0.36) and is statistically significant (p=0.03 (0.03), n=36), suggesting that the positive change in participation behavior is positively influenced by the level of prosocial preferences.

PSD in the majority of the 36 countries. This emphasizes that the main findings on individual changes in participation behavior seem to be universal and not only the consequence of an extreme effect induced by the data of a few countries. To introduce intra-country heterogeneity in terms of preferences, we rematch the global preference data according to employees' nationality (which differ from the country where they work for 6% of our observations) and repeat our main tests. This is motivated by evidence showing the existence of preference differences between natives and second generation migrants. More precisely, Constant et al. (2011) report that migrants show significantly more pronounced risk tolerance and significantly lower degrees of reciprocity as compared to natives.[14] If we rematch our data, we find that the results differ only very slightly compared to our main results (see Tables A5–A7 in the Appendix).

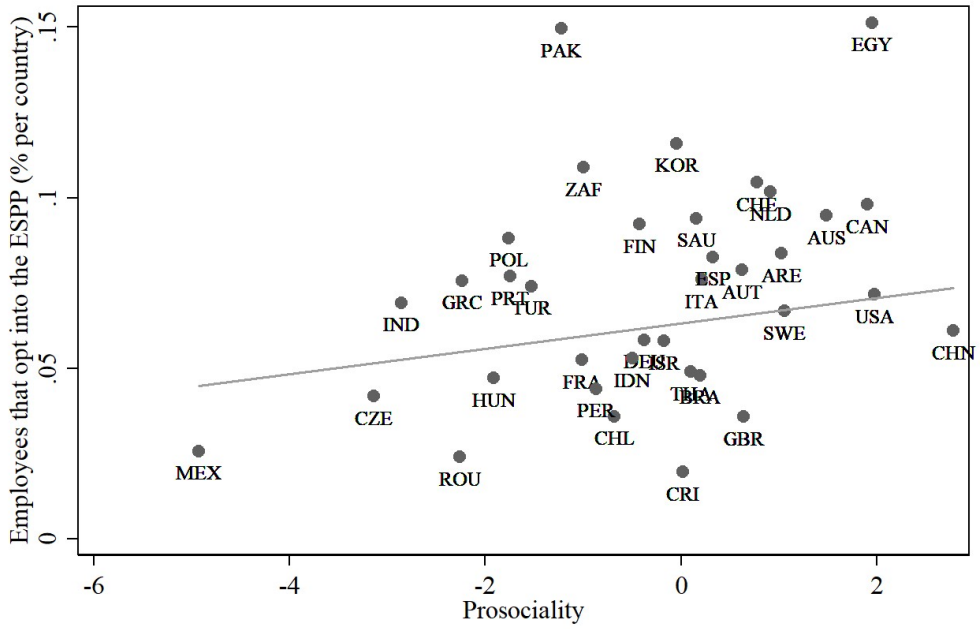

FIGURE 4. EMPLOYEES THAT OPT INTO THE ESPP AFTER THE ESPP (AVERAGE PERCENTAGE PER COUNTY) PLOTTED AGAINST THE LEVEL OF PROSOCIALITY

Notes: The x-axis shows the level of prosociality for each country. The y-axis shows the percentage of employees per country that participate in the ESPP after the PSD took place and had not participated before.

[14] There is evidence by some papers showing that "nurture" effects may matter, i.e., people's preferences can be shaped by the social environment (Booth and Nolen, 2012; Gneezy, et al., 2009). Note that these papers differ in several respects to our setting. First, the aforementioned papers focus on the role of socialization regarding gender effects. Second, Booth and Nolen (2012) analyze the development of preferences of young school girls who went to single-sex schools. It is plausible to assume that experiencing a special education environment at young age may have strong effects on socialization. Third, Gneezy et al. (2009) report data from development countries, analyzing the development of preferences in certain tribes with a strong norm culture.

C. The Role of Financial Literacy

Our main results revealed that social preferences and the adherence of the equity norm crucially matter for explaining the behavioral changes of employees after the receipt of the PSD. However, from a financial perspective, not participating in the beneficial ESPP is irrational. Especially if employees had previously participated and had already made a positive investment experience. Prior literature showed that financial education may be a remedy to attenuate irrational behavior (e.g., Babenko and Sen, 2014; Bellofatto et al., 2018). Therefore, in the next section we concentrate on the role of financial literacy to find out how universal the motivational crowding out effects were. In this section, we aim to further test the robustness of this finding. We analyze whether this behavior still occurs when employees are characterized by financial education. This is motivated by findings which emphasize that people with a higher degree of financial literacy are less prone to psychological effects and irrational investment behavior. For instance, Behrman et al. (2012) show that financial literacy is positively related to improved household wealth accumulation. Investors who are characterized by high financial literacy invest smarter and are less prone to the disposition effect (Bellofatto et al., 2018). Experimental evidence suggests that experienced traders are less prone to behavioral biases induced by social preferences (Hermann et al., 2019). Most importantly, in the context of ESPP participation decisions, Babenko and Sen (2014) showed that non-participation is related to low levels of education and financial literacy. Motivated by these findings, we analyze whether the program drop out especially occurs for investors characterized by a low degree of financial literacy.

In Table 6 we present four probit regressions which focus on employees' participation in the program after the PSD. The regressions condition on high and low levels of financial literacy. We match our employee participation data with global financial literacy data from the Standard & Poor's Ratings Services Global Financial Literacy Survey (S&P Global FinLit Survey), which was conducted in cooperation with Gallup, Inc.[15] Again, we match the data at the country level. Models (1)–(2) focus on employees who participated in the ESPP in 2018, whereas models (3)–(4) focus on former non-participants. We run subsample regressions which distinguish between employees' degrees of financial literacy. Models (1) and (3) focus on low (below median) financial literacy, whereas models (2) and (4) focus on high (equal/above median) financial literacy. All regressions include the same variables and controls as in Table 4.

[15] The data are based on over 150,000 interviews with representative adults in more than 140 economies. The degree of financial literacy is measured with questions that investigate four areas of financial knowledge: risk diversification, inflation, numeracy, and interest compounding.

TABLE 6 – PROBIT REGRESSION ON EMPLOYEES' PARTICIPATION IN THE ESPP AFTER THEY RECEIVED FREE SHARES (CONDITIONAL ON LOW VS. HIGH FINANCIAL LITERACY)

	Participation in ESPP after PSD			
	Former participation		No former participation	
	financial literacy			
	low	high	low	high
	(1)	(2)	(3)	(4)
PC1: prosociality	-0.006**	-0.001	0.008***	0.026***
	(0.002)	(0.002)	(0.000)	(0.001)
PC2: patience & risk taking	0.003	0.078***	0.007***	0.059***
	(0.002)	(0.005)	(0.000)	(0.005)
Male	0.040***	0.025***	0.012***	0.032***
	(0.006)	(0.029)	(0.002)	(0.003)
Controls	yes	yes	yes	yes
Obs.	28,700	60,735	100,297	73,092
	Standard errors in parentheses			
	*** p <0.01, ** p < 0.05			

Notes: All regressions report marginal effects. Standard errors are in parentheses. Columns (1) and (3) show regression results for employees with low (below median) financial literacy, columns (2) and (4) present results for employees with higher (equal/above median) financial literacy. As a measure of financial literacy, we use the global financial literacy data from the Standard & Poor's Ratings Services Global Financial Literacy Survey (S&P Global FinLit Survey).

If we compare model (1) and (2), our previous results on motivational crowding out only occur when employees have a low degree of financial literacy. In model (1) *PC1* is significantly negative, whereas in model (2) the coefficient is insignificant for employees with a higher degree of financial literacy. Thus, former participants, characterized by high financial literacy apparently show no motivational crowding out effects. By contrast, financial literacy does not change the behavior of employees who had not previously participated in the ESPP. The highly significant positive coefficients of PC1 show for both financial-literacy types (models (3) and (4)) that more reciprocal and more altruistic employees are more likely to join the program after receiving the free shares. In line with the aggregate findings in Table 3, we find that *PC2* is positive in models (2)–(4) for all employees. The only exceptions are employees who formerly participated in the program and have a low degree of financial literacy (model (1)). We also confirm the gender effect observed in Table 3, i.e., male employees are generally more likely to participate in the program. We summarize our findings in Result 4. [16]

[16] To further check the robustness, we repeat the same regressions from Table 5 with three groups differentiated by their level of financial literacy. Results regarding the effect of financial literacy are confirmed.

RESULT 4: *The motivational crowding out effect does not occur when former participants are characterized by a high degree of financial literacy. For former non-participants, financial literacy has no effect for post-PSD participation.*

V. Conclusion

This study analyzes the performance of a financial incentive to increase ESPP participation in the presence of prosocial employees. Therefore, we study the effects of a non-discriminatory PSD which was given to all employees independently of their past commitment. Using a large-scale natural experiment in a multinational firm, we find a dysfunctional effect of an equity-based PSD on subsequent ESPP participation. PSDs are generally understood as a tool to motivate employees. Our analysis highlights the importance of employee heterogeneity in terms of their preferences and their initial motivation to participate in ESPPs. Ironically, we find that employees that previously participated stopped participating in the ESPP after they received the PSD. We attribute this behavior to employees' perception as a violation of the equity norm. That is, the gift exchange relationship is disrupted when the former participation was motivated by reciprocal motives and the PSD was received independently of past actions (Abeler et al., 2010). By contrast, for employees that did not initially participate, our results confirm findings in line with classical gift exchange theory (e.g., Fehr et al., 1993; 1998). That is, after receiving the gift of the free shares, employees behave reciprocally and participate in the subsequent ESPP.

We conclude that PSDs can lead to dysfunctional effects, depending on employees' social preferences and their ESPP participation history. A possible explanation is that employees' former participation may cause a reference point. If employees participated because of reciprocal motives, their reference point may be the equity norm, which requires that employees showing a higher commitment should also receive higher rewards (Abeler et al., 2010). Thus, past participants perceive a norm violation when the PSD is offered to all employees, independently of their past actions. By contrast, norm violations cannot occur for former non-participants when they receive the PSD.

The policy implications of our study are twofold. First, adjustments in compensation systems (e.g., PSDs) which are carried out for all employees can lead to dysfunctional effects. These effects can be prevented if the heterogeneity of employees' preferences is taken into account. In our data, the PSD induced crowding out effects in the subsequent ESPP participation for employees who perceived this compensation adjustment as a violation of the equity norm. As a remedy, this adverse effect could be attenuated with the means of more flexible communication strategies. To maintain the gift exchange relationship firms may show some form of employee discrimination (Abeler et al., 2010), i.e., they could adjust their communication strategies to treat former participants differently than non-participants. An example would be to send more directed signals to the different groups of employees. To show

appreciation, the firm may thank prior ESPP participants for their participation and commitment through specific emails or certificates before distributing free shares. Furthermore, firms should pay more attention to the regional preference structures of employees (e.g., country-specific levels of prosociality) as opposed to commonly applied global communication strategies. For instance, differentiated communication mechanisms may be of particular importance in countries and regions with employees characterized by high degrees of prosociality.

Second, our results show that financial literacy may attenuate the harmful effect of the PSD for prosocial former participants. The relationship between financial literacy and ESPP participation confirms the findings of Babenko and Sen (2014). It follows that companies can counteract the crowding out effect with knowledge-building activities, such as information campaigns regarding the risks and opportunities of shareholding, especially aimed at people with less financial education. The knowledge-building activities have the advantage of positive spillover effects with regard to other financial investment decisions besides ESPPs, such as retirement plan decisions (Duflo and Saez, 2003; Poterba, 2003). A higher level of financial education also offers the chance to increase the total number of ESPP participants (Babenko and Sen, 2014), i.e., the positive effect becomes even larger. This is important regarding the range of positive effects of ESPPs, such as increased employee motivation and commitment or decreased turnover (e.g., Aldatmaz et al., 2018), which in turn depends on the participation of employees.

A limitation of our study is that we use country-level data to control for employees' level of prosociality. This approach neglects intra-country heterogeneity. To increase intra-country heterogeneity, we conducted a robustness check, which rematched foreign employees based on the preferences of their origin countries. Our findings do not change. Future research could apply field experiments and/or surveys going into more detail in terms of individual-level attitudes. Since our study does not apply preference data at the individual level and as we use a more coarse-grained measure, we probably underestimate the crowding out effect.

VI. References

[1] Abeler, J., Altmann, S., Kube, S., & Wibral, M. (2010). Gift exchange and workers' fairness concerns: when equality is unfair. *Journal of the European Economic Association*, 8(6), 1299–1324.

[2] Akerlof, G. A. (1982). Labor contracts as partial gift exchange. *Quarterly Journal of Economics*, 97(4), 543–569.

[3] Aldatmaz, S., Ouimet, P., & Van Wesep, E. D. (2018). The option to quit: The effect of employee stock options on turnover. *Journal of Financial Economics*, 127(1), 136–151.

[4] Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American Economic Review*, 99(1), 544–55.

[5] Babenko, I., & Sen, R. (2014). Money left on the table: An analysis of participation in employee stock purchase plans. *Review of Financial Studies*, 27(12), 3658–3698.

[6] Babenko, I., & Sen, R. (2016). Do nonexecutive employees have valuable information? Evidence from employee stock purchase plans. *Management Science*, 62(7), 1878–1898.

[7] Behrman, J. R., Mitchell, O. S., Soo, C. K., & Bravo, D. (2012). How financial literacy affects household wealth accumulation. *American Economic Review*, 102(3), 300–304.

[8] Bellofatto, A., D'Hondt, C., & De Winne, R. (2018). Subjective financial literacy and retail investors' behavior. *Journal of Banking & Finance*, 92, 168–181.

[9] Bénabou, R., & Tirole, J. (2006). Incentives and prosocial behavior. *American Economic Review*, 96(5), 1652–1678.

[10] Blasi, J., Kruse, D., & Freeman, R. B. (2018). Broad-based employee stock ownership and profit sharing. *Journal of Participation and Employee Ownership*. 1(1), 38–60.

[11] Booth, A.L. & Nolen, P. (2012). Gender differences in risk behavior: Does nurture matter? *The Economic Journal,* 122(1), F56–F78.

[12] Bracha, A., Gneezy, U., & Loewenstein, G. (2015). Relative pay and labor supply. *Journal of Labor Economics*, 33(2), 297–315.

[13] Breza, E., Kaur, S., & Shamdasani, Y. (2018). The morale effects of pay inequality. *Quarterly Journal of Economics*, 133(2), 611–663.

[14] Bryson, A., & Freeman, R. B. (2019). The role of employee stock purchase plans—gift and incentive? Evidence from a multinational corporation. *British Journal of Industrial Relations*, 57(1), 86–106.

[15] Charness, G., & Kuhn, P. (2011). Lab labor: What can labor economists learn from the lab?. *In Handbook of labor economics* (Vol. 4, pp. 229–330). Elsevier.

[16] Constant, A. F., Krause, A., Rinne, U., & Zimmermann, K. F. (2011). Economic preferences and attitudes of the unemployed: are natives and second generation migrants alike?. *International Journal of Manpower*, 32(7), 825-851.

[17] DellaVigna, S., List, J. A., Malmendier, U., & Rao, G. (2020). Estimating social preferences and gift exchange with a piece-rate design. *Working paper*.

[18] Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of management Journal*, 39(4), 802–835.

[19] Duflo, E., & Saez, E. (2003). The role of information and social interactions in retirement plan decisions: Evidence from a randomized experiment. *Quarterly Journal of Economics*, 118(3), 815–842.

[20] Ellingsen, T., & Johannesson, M. (2008). Pride and prejudice: The human side of incentive theory. *American Economic Review*, 98(3), 990–1008.

[21] Engelhardt, G. V., & Madrian, B. C. (2004). Employee Stock Purchase Plans. *National Tax Journal*, 57(2), 385–406.

[22] Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. *Quarterly Journal of Economics*, 133(4), 1645–1692.

[23] Falk, A., & Kosfeld, M. (2006). The hidden costs of control. *American Economic Review*, 96(5), 1611–1630.

[24] Falk, A. (2007). Gift exchange in the field. *Econometrica*, 75(5), 1501–1511.

[25] Fehr, E., Kirchsteiger, G., & Riedl, A. (1993). Does fairness prevent market clearing? An experimental investigation. *Quarterly Journal of Economics*, 108(2), 437–459.

[26] Fehr, E., Kirchsteiger, G., & Riedl, A. (1998). Gift exchange and reciprocity in competitive experimental markets. *European Economic Review*, 42(1), 1–34.

[27] Frey, B. S., & Oberholzer-Gee, F. (1997). The cost of price incentives: An empirical analysis of motivation crowding-out. *American Economic Review*, 87(4), 746–755.

[28] Global Equity Organization (2020). Global Equity Insights 2020.

[29] Gneezy, U., Leonard, K.L., & List, J.A. (2009). Gender differences in competition: Evidence from a matrilineal and a patriarchal Society. *Econometrica*, 77(5), 1637–1664.

[30] Gneezy, U., Meier, S., & Rey-Biel, P. (2011). When and why incentives (don't) work to modify behavior. *Journal of Economic Perspectives*, 25(4), 191–210.

[31] Guay, W., Kothari, S. P., & Sloan, R. (2003). Accounting for employee stock options. *American Economic Review*, 93(2), 405–409.

[32] Hermann, D., Mußhoff, O., & Rau, H. A. (2019). The disposition effect when deciding on behalf of others. *Journal of Economic Psychology*, 74, 102–192.

[33] Jones, D. C., & Kato, T. (1995). The productivity effects of employee stock-ownership plans and bonuses: Evidence from Japanese panel data. *American Economic Review*, 391–414.

[34] Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and psychological measurement*, 20(1), 141–151.

[35] Kim, E. H., & Ouimet, P. (2014). Broad-based employee stock ownership: Motives and outcomes. *Journal of Finance*, 69(3), 1273–1319.

[36] Kruse, D. L. (1992). Profit sharing and productivity: Microeconomic evidence from the United States. *Economic Journal*, 102(410), 24–36.

[37] Kube, S., Maréchal, M. A., & Puppe, C. (2012). The currency of reciprocity: Gift exchange in the workplace. *American Economic Review*, 102(4), 1644–62.

[38] Pendleton, A. (2010). Employee participation in employee share ownership: An evaluation of the factors associated with participation and contributions in Save As You Earn plans. *British Journal of Management*, 21(2), 555–570.

[39] Pendleton, A., & Robinson, A. (2010). Employee stock ownership, involvement, and productivity: An interaction-based approach. *ILR Review*, 64(1), 3–29.

[40] Poterba, J. M. (2003). Employer stock and 401 (k) plans. *American Economic Review*, 93(2), 398–404.

[41] Sengupta, S., Whitfield, K., & McNabb, B. (2007). Employee share ownership and performance: golden path or golden handcuffs? *International Journal of Human Resource Management*, 18(8), 1507–1538.

[42] Snowberg, E.,Yariv, L. (2021). Testing the waters: Behavior across participant pools. *American Economic Review*, 111(2), 687-719.

Appendix

TABLE A1 – DESCRIPTIVE STATISTICS PER COUNTRY

	Negative Change				Positive Change			
Country	0	1	%	Total	0	1	%	Total
Australia	1,476	74	5%	1,550	1,403	147	10%	1,534
Austria	7,534	346	4%	7,880	7,258	622	8%	7,878
Brazil	3,905	218	5%	4,123	3,925	198	5%	4,090
Canada	3,177	177	5%	3,354	3,025	329	10%	3,336
Chile	1,148	20	2%	1,168	1,126	42	4%	1,163
China	15,375	1,210	7%	16,585	15,572	1,013	6%	16,575
Costa Rica	149	3	2%	152	149	3	2%	151
Czech Republic	8,720	177	2%	8,897	8,525	372	4%	8,890
Egypt	585	3	1%	588	499	89	15%	587
Finland	185	10	5%	195	177	18	9%	194
France	6,467	249	4%	6,716	6,363	353	5%	6,711
Germany	98,559	4,000	4%	102,559	96,570	5,989	6%	102,533
Greece	59	7	11%	66	61	5	8%	66
Hungary	2,281	26	1%	2,307	2,198	109	5%	2,302
India	16,322	664	4%	16,986	15,809	1,177	7%	16,962
Indonesia	909	15	2%	924	875	49	6%	868
Israel	416	15	3%	431	406	25	6%	430
Italy	2,982	17	1%	2,999	2,771	228	8%	2,993
Mexico	5,241	66	1%	5,307	5,170	137	3%	5,293
Netherlands	1,846	89	5%	1,935	1,738	197	10%	1,931
Pakistan	519	16	3%	535	455	80	15%	532
Peru	285	10	3%	295	282	13	4%	293
Poland	1,256	13	1%	1,269	1,157	112	9%	1,261
Portugal	1,115	40	3%	1,155	1,066	89	8%	1,151
Romania	1,595	24	1%	1,619	1,580	39	2%	1,612
Saudi Arabia	1,522	31	2%	1,553	1,407	146	10%	1,507
South Africa	1,082	65	6%	1,147	1,022	125	11%	1,145
South Korea	1,742	129	7%	1,871	1,654	217	12%	1,867
Spain	2,982	139	4%	3,121	2,863	258	8%	3,114
Sweden	3,368	188	5%	3,556	3,318	238	7%	3,542
Switzerland	4,117	141	3%	4,258	3,813	445	10%	4,255
Thailand	1,123	58	5%	1,181	1,123	58	5%	1,119
Turkey	908	63	6%	971	899	72	8%	858
United Arab Emirates	1,552	131	8%	1,683	1,542	141	9%	1,621
United Kingdom	10,163	1,187	10%	11,350	10,942	408	4%	11,332

United States	38,830	3,708	9%	42,538	39,485	3,053	7%	42,473
	249,495	13,329		262,824	246,228	165,96		262,824

TABLE A2: PCA – EIGENVALUES AND PERCENTAGE OF VARIANCE EXPLAINED

Component	Eigenvalues	Explained variance (%)
1	2.810	0.561
2	1.265	0.253
3	0.531	0.106
4	0.255	0.051
5	0.142	0.029

TABLE A3: PCA – LOADINGS

Variable *(as defined by Falk et al., 2018)*	PC 1	PC 2
Positive Reciprocity	0.530	-0.271
Altruism	0.533	-0.179
Trust	0.478	-0.336
Patience	0.342	0.605
Risk Taking	0.299	0.645

TABLE A4 – ROBUSTNESS CHECK: PROBIT REGRESSIONS ON EMPLOYEES' PARTICIPATION IN ESPP AFTER THEY RECEIVED FREE SHARES INCLUDING CONTROLS FOR INCOME AND NUMBER OF PRIOR PARTICIPATIONS

	Participation in ESPP after PSD			
	Former participation		No former participation	
	(1)	(2)	(3)	(4)
PC1: prosociality	-0.009***	-0.018***	0.001**	0.001*
	(0.001)	(0.002)	(0.000)	(0.001)
PC2: patience & risk taking	-0.004***	-0.000	-0.003***	0.002**
	(0.001)	(0.002)	(0.001)	(0.001)
Male	0.019***	0.018***	0.007***	0.004***
	(0.003)	(0.003)	(0.002)	(0.002)
Income	0.032***	0.042***	0.044***	0.055***
	(0.002)	(0.003)	(0.001)	(0.001)
Prior ESPP participation	0.021***	0.021***	0.042***	0.042***
	(0.001)	(0.001)	(0.001)	(0.001)
Region fixed effects	no	yes	no	yes
Obs.	89,435	89,435	173,389	173,389
	Standard errors in parentheses			
	*** p <0.01, ** p < 0.05, * p <0.10			

Notes: All regressions report marginal effects. Standard errors are in parentheses. *Income* is the individual employee's income in total target cash. *Prior ESPP participation* is the number of years employees have participated in the ESPP.

TABLE A5: PCA – EIGENVALUES AND PERCENTAGE OF VARIANCE EXPLAINED FOR ANALYSIS BASED ON NATIONALITY

Component	Eigenvalues	Explained variance (%)
1	2.870	0.573
2	1.299	0.260
3	0.409	0.082
4	0.272	0.054
5	0.155	0.031

TABLE A6: PCA – LOADINGS FOR ANALYSIS BASED ON NATIONALITY

Variable *(as defined by Falk et al., 2018)*	PC 1	PC 2
Positive Reciprocity	0.522	-0.277
Altruism	0.525	-0.186
Trust	0.470	-0.368
Patience	0.352	0.600
Risk Taking	0.326	0.627

TABLE A7 – PROBIT REGRESSIONS ON EMPLOYEES' PARTICIPATION IN ESPP AFTER THEY RECEIVED FREE SHARES – COMPONENTS BASED ON NATIONALITY

	Participation in ESPP after PSD			
	Former participation		No former participation	
	(1)	(2)	(3)	(4)
PC1: prosociality	-0.005***	-0.011***	0.010***	0.013***
	(0.001)	(0.001)	(0.000)	(0.001)
PC2: patience & risk taking	0.006***	0.004**	0.005***	0.003***
	(0.001)	(0.002)	(0.001)	(0.001)
Male	0.028***	0.028***	0.022***	0.020***
	(0.003)	(0.003)	(0.002)	(0.002)
Controls	yes	yes	yes	yes
Region fixed effects	no	yes	no	yes
Obs.	88,817	88,817	171,909	171,909
	Standard errors in parentheses			
	*** p <0.01, **p <0.05			

Notes: All regressions report marginal effects. Standard errors are in parentheses. Falk dimensions are matched to employees via their nationalities. Observations are slightly smaller due to missing data regarding employee's nationality.