The Impact of Teams on Productivity under Fixed Pay

ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Department of Economics

Supervisor: S. Kapoor

Name: Nick de Zeeuw

Exam number: 387317

E-mail address: nickzeeuw@hotmail.com

Abstract

This paper aims to find the impact of teams on worker productivity under fixed pay and whether workers in this setting should work individually or in teams in order to increase productivity. It does so by analyzing data obtained from a field experiment conducted on stockers in an average sized Dutch supermarket. For eight weeks stockers were observed for 4 weeks when working individually and for 4 weeks when working in teams of two. The comparison of the data gathered in these periods, yields some interesting results. The data provides enough evidence necessary to conclude that working in teams in the setting of the mentioned field experiment lowers stocker productivity with 6.12%. Mainly due to free-riders and increased store crowdedness. After that, one extra week of individual work was observed. This week of the experiment provides data which suggests that stockers became more productive on an individual level during the pair treatment. This would imply that working in teams under fixed pay does not necessarily yield an increase in productivity, but stockers do seem to learn from other stockers when working in teams. Next to the fact that supermarkets could benefit from this information, this setting is also quite uncommon in related researches on team productivity. This is quite remarkable as a lot of supermarkets share this exact setting.

Productivity is one of the most important aspects of our economy. This is not at all surprising, since an increase in productivity is rarely a bad thing. One possible way of increasing productivity is working in teams. Though working in teams might not result in a guaranteed productivity increase, some economists have shown that teaming up workers is in certain settings productivity enhancing. Teaming up workers could result in division of labor and positive peer effects, where workers simply don't want to look bad compared to their peers, resulting in a higher output of effort. On the other hand, the employees might get in each other's way, slowing them down. Next to that, there is always a chance workers will free-ride.

For supermarkets, lowering costs has never been more important. Especially for supermarkets that compete with large discounters like Lidl and Aldi, who are cost leaders in the market of supermarkets (Shadbolt, 2015). One method that results in lower costs is increasing labor productivity; getting the same amount of work done in less time, resulting in lower labor costs.

This paper focuses on the effect of working in teams on the productivity of shelf stockers. In order to find the impact of team productivity, a field experiment will be conducted. This experiment observes stockers aged sixteen and seventeen over a period of eight weeks in which all stockers work individually for four weeks and in teams for the other four weeks. The stockers work from 5 p.m. until all work is done and work under fixed pay. The supermarket in which the experiment will be conducted, allows for the tracking of packages stocked by every single stocker and team.

The experiment in question should provide some interesting information on an uncommon research setting; team productivity under fixed pay. Related literature on the topic of team productivity show the existence of positive peer effects (Falk & Ichino, 2006), a decrease in free-riding chances under socially connected workers (Barankay, Bandiera, & Rasul, Social Incentives in the Workplace, 2010) and increasing productivity under piece rate (Hamilton, Nickerson, & Owan, 2003). Next to that, whatever the result may be, it will give a good view on the differences between working individually and working in teams. Some supermarkets (and arguably other retail stores) might benefit from this information.

Section 1 of this paper consists of a detailed description of the conducted field experiment. Section 2 presents the related literature on the subject and a small mathematical framework based on this literature. After that section 3 presents the data and how to interpret the data. Section 4 shows all test results with their conclusions. Section 5 consists of some concluding remarks, including the limitations and recommendations.

Section 1: The Field Experiment

The field experiment was conducted in the grocery department of an average sized Dutch supermarket from April 11th to June 3rd 2016. On every Monday, Wednesday and Friday new stock comes in and gets stocked between 6 and 9 p.m. by the shelf stockers. For four weeks, the shelf stockers worked individually, which they are used to. During this time Data was

collected on how long it took every individual to stock a certain amount of packages. After the first four weeks the process was repeated, but this time some workers were paired and had to work together on one container at the time. The stockers are aged sixteen or seventeen years old and all work part-time during the evenings. All stockers still attend school during the day. One should keep in mind that the above described context brings along some generalization restrictions. Whatever the results may be, they cannot easily be put to use by firms who don't have comparable staff.

The system that the supermarket uses to track the amount of packages that came in, allowed for some accurate tracking on the amount of packages every worker stocked. All new stock was divided between aisles and put in a table. That way one could exactly see how many packages of, for example, soup came in. After the stock was delivered (usually around 3 p.m.), one of the supervisors put all packages of the same aisle together on the same container. Then at 6 p.m. all workers were assigned one or more aisles to start stocking.

Normally, all workers had to collect the package materials and all left-over stock and bring this to the back once they were done with their container. After that they had to split plastic and paper, and put both in the appropriate press machine. Finally, they had to put all the leftover items in crates. During the 8 weeks of experimenting, the stockers didn't have to do these last few things, except for bringing everything to the back. Once they did that, they just left the finished container and grabbed a new one. This change was implemented in order to make sure that the stockers were stocking shelves the majority of the time.

In order to make sure that all other factors remained constant across treatments, a small change was made during the pair treatment. Stockers were told to put the last three packages of a container on the ground in the store. During this time, one stocker returned the container to the back and grabbed a new one, while the other stocker stocked the last three remaining packages. Without this change, stockers would bring back every finished container together. This means that per container, two stockers walked into the store and back, while during the single treatment this is only one stocker per container. Without this change stockers would spend more time walking on average per container, which would bias the results.

Only the supervisors were fully aware of the exact experiment. All workers were told that the experimenter was collecting some data for his thesis. Questions from the workers on what the experimenter was doing exactly were left unanswered. All workers were also unaware of the working method change, until they were asked to work in pairs. All workers were assigned to pairs randomly. This was done by writing the names of the stockers on pieces of paper, folding and shuffling all pieces. Then all pieces were randomly matched with another piece and unfolded to see who was going to work in a team with whom.

There are a lot of factors that can influence the results of the pair treatment and the results in general. For the pair treatment, some factors may influence productivity positively, others negatively. Workers can pick the packages they prefer from the container. A worker will logically never pick a package that contains a product of which he knows he is not able to

find or stock quickly. Unless workers have identical preferences and abilities, this will result in a small form of division of labor, where workers pick the packages which they are able to stock fast or easy. Another important factor is the peer effects. Falk and Ichino showed that positive peer effects exist, which can result in a productivity increase simply when workers work in each other's presence (Falk & Ichino, 2006). The working conditions in their experiment however, are not comparable with the field experiment conducted in this paper. Working in pairs also grants the workers the possibility of free-riding. Although full free-riding is impossible due to the presence of a supervisor, stockers do have the option to lower their effort without direct or individual consequences.

There are also some more general factors that can influence productivity in both treatments, but are unlikely to be equal in both treatments. Some of these factors are the amount of customers in the store at the moment of experimenting, the amount of questions the stockers are asked, the total amount of stocking that needs to be done, the weather, Etc. Some of these factors require different or more complex measurement techniques and others are simply beyond the scale and time span of this research.

Next to the answering of the research question, certain other effects may arise. Though the experiment does not include enough observations for any smaller effects to surface, their might still be some interesting observations that leaves room for speculations. For instance, a male stocker may act entirely different when paired with a female stocker.

Section 2: Theoretical Framework

Although a lot of research has been done on the different factors influencing team productivity, research on the exact same setting as the field experiment conducted in this paper is absent. This experiment's setting being the comparison of individual and team productivity under fixed pay. Making predictions on the outcome of the experiment can therefore only be constructed by putting different findings together, but even then parts of the complete prediction are unknown. This paper should be able to fill in these unknowns at the end. One possible reason for the lack of research on this setting is that there are no obvious incentives for stockers to work hard and increase productivity in the first place, other than wanting to keep their jobs. But this does not mean that researching this setting is a waste of time. Next to the impact itself of teams on productivity under fixed pay, the results can yield useful information on the differences between fixed pay and piece rate.

Barankay et al. wrote some literature on the subject of teams, social connections and productivity. They, just like this paper, conducted a field experiment on a soft fruit producer in the UK to find the effects of feedback and tournaments on team productivity with a piece rate. Except for the fact that their workers participated in teams, the entire experiment is not comparable with the experiment conducted in this paper. One thing that is interesting is that free-riding seems very unlikely to occur among teams consisting of socially close related workers (Barankay, Bandiera, & Rasul, Team Incentives: Evidence from a Field Experiment, 2011).

In another research they find more effects of working with people whom you're socially tied to. Apart from the low free-rider chances, friends adapt their level of productivity when working with each other. The lower productivity workers increase their productivity, when working with a high productivity worker (Barankay, Bandiera, & Rasul, Social Incentives in the Workplace, 2010), who chooses to decrease productivity in the presence of a less productive friend. Although productivity increases and decreases depending on the worker, the total sum of productivity changes is positive. This means that letting friends work together, may increase the total productivity.

Next to social connections, peer effects may have arisen as well during the experiment. Peer effects are the effects on worker behavior that result from being in the presence of a working colleague. Experiments done with high-school students (Falk & Ichino, 2006) and supermarket cashiers (Mas & Moretti, 2009)show that a less productive worker increases his/her own productivity with a percentage of the productivity difference between him/her and the high productivity colleague. Because the stockers in the field experiment share the same working conditions (seeing each other work), one could expect the same numbers to be applicable.

What happened in this paper's field experiment is that stockers were used to working individually and had to work in teams for some time. This working method change has also been researched in the past. Hamilton et al. showed that the adoption of teams with workers who used to work individually increased long term average productivity by 14 percent. Next to that, teams with a bigger gap between individual productivity levels, showed bigger increases in productivity, than teams with more equal levels of individual productivity (Hamilton, Nickerson, & Owan, 2003). The main difference however, is that in the experiment in question workers were payed a piece rate, which makes predictions based in this research unreliable. Nonetheless, it does provide some insights on how productivity can increase with a simple change in working method.

Based on the related literature, a small mathematical framework can be constructed with knowns and unknowns. Consider a stocker *'i'* who produces output '*yit'* on day 't'. His output is influenced by his personal characteristics and by environmental factors. If stocker '*i'* works individually, all possible team effects will not influence his productivity. However, when stocker '*i'* does work in a team, his/her productivity is influenced by a set of other factors. Stocker *i*'s output can then be written as

1) $Yit = \alpha i + \beta * TEAMit + \delta i + \vartheta t + \epsilon it$

where 'αi' equals the output of the average stocker given that there are no environmental effects, 'β' the total effect of working in a team on the productivity of stocker '*i'*, 'δi' the individual characteristics of stocker '*i'*, 'ϑt' the environmental effects on day 't' and 'єit' the error term. One can argue that the value of 'αi' is equal to 60 AP/h, as this is the norm set by the supermarket, which an average stocker should be able to produce. '*TEAMit'* represents a dummy variable that takes value '1' when stocker '*i'* is in a team with another stocker and value '0' when working individually. A stocker's personal characteristics are then responsible

for any positive or negative deviations from the 60 AP/h. The environmental effects include effects like store crowdedness, attention required from customers and pressure set by supervisors. These vary per day as every day of the week has another supervisor and the amount of customers and questions are logically rarely exactly the same. How a stocker adjusts his productivity based on the environmental effects is included in the personal characteristics of the stocker. Productivity differences between days are included in the environmental effects.

'*β*' is the variable of interest. The value of '*β*' will determine whether pairing stockers in teams will increase, decrease or not affect productivity. '*β*' depends on several factors, of which the actual coefficient will remain unknown, as the conducted experiment doesn't collect the specific data required for such an analysis. However, the factors that possibly came into play during the pair treatment are known. Based on the related literature presented earlier, one could argue that peer effects will arise when stockers are paired. Note that this is purely a speculation, as the experiment setting differs from the literature, but it could still have some influence on the stockers as they are in each other's presence and see each other work. The possibility of free-riding must also be taken into account. Free-riders arguably occur rarely among friends, but it would be illogical to presume al stockers are close friends. This means that there is a realistic chance the some stockers choose to free-ride at some point during the pair treatment, which influences team productivity negatively. Two not yet discussed factors are the division of labor and the increased crowdedness. Division of labor can occur during the pair treatment, because the stockers work in the exact same task, which allows them to divide the labor. The effect of a possible division of labor is easily and logically explained by a probability example:

- Let's presume we have two workers who are able to locate 80% of the products. They have to spend more time on the other 20% as they have to find the right shelf first. If these two workers work together, they can help each other find the appropriate shelf. So the chance that both workers don't know where to find the shelf is only (0.2*0.2=0.04) 4%, which is significantly lower than 20%.

Next to that, workers only have to stock a proportion of the packages in the container, while their teammate stocks the remaining packages. This allows the workers to pick the proportion of packages of which they know they are able to stock quickly. Although not every package is always quickly done by at least one of the workers in the team, it does imply that stockers should be able to finish stocking earlier than when working individually. What could slow down however, is the physical presence of each other. Working in teams means that instead of one stocker, two stockers will be present in an aisle. Working in teams will therefore always increase the crowdedness for the stockers, which will logically slow them down.

Making predictions, based on the related literature and math, is hard as the exact same setting of the experiment is not treated in any other literature. That is, working on the same

task simultaneously. This makes it difficult to use numbers and results found in other researches.

Section 3: Data

Every aisle has a certain norm which represents the amount of packages a stocker should stock within an hour. For example, the norm for cookies is 40, which means a stocker should be able to stock 40 packages of cookies in one hour. These norms allow for the comparison of different aisles and different types of products. The norms differ per supermarket as every supermarket has its own arrangement of aisles. For this reason, the norms used are the supermarkets specific norms, which were adjusted to fit the supermarket in question best. Because of these differences in norms between aisles, the term 'packages per hour' won't accurately represent the output of a worker. Therefore, every package will be assigned a time value, which represents the time a stocker is allowed to spend stocking a package. For example, 40 packages of cookies should be stocked in an hour, which means one package of cookies should take one and a half minute. So a package of cookies will be assigned a time value of '1.5'. The output of a stocker will be represented by the Sum of the time values of all packages filled in an hour. For example, a stocker filled 30 packages of soup and 20 packages of cookies in 1.25 hours (75 minutes). The norms are 50 and 40 and their time values are 1.2 and 1.5 (50/60 and 40/60) for soup and cookies respectively. The total time value of these packages equals 66 minutes (1.2*30 + 1.5*20). It took the worker 1.25 hours, which gives an output of 52.8 (66/1.25). This means that the stocker spends an hour on average to stock packages he should stock in 52.8 minutes. In this example the stocker is a bit slower than is preferred. These outputs will from here on be referred to as 'adjusted packages per hour'. The norm of adjusted packages per hour is 60 for every aisle, which allows for the comparison between aisles.

One should keep in mind that during the experiment, some work was taken of the stockers hands, which may result in slightly higher stocker productivity than the norm, as the norm is based on all work activities of the stockers. However, as this was done for all observations in both treatments, the comparison of productivity levels will not be influenced.

A lot of data has been collected regarding the shelf stockers, but not all data is usable. Data on all fifteen year old stockers has been left out, because these stockers aren't legally allowed to work more than 2 hours on a school day. Next to that, the supervisors let all fifteen year olds start at 5 p.m. instead of 6 p.m.. Data on stockers who stocked the aisles with soda and beer have been left out as well, as these aisles have unrepresentative norms and are near impossible the keep track of. Also, not every stocker knows how to stock the beer and soda aisle, which would have made it impossible to assign stockers randomly. There are also a few stockers who quit and some who were hired during the time of the experiment. Data on these stockers is incomplete, which makes it unusable. In the end, the only data used is the data of stockers who participated in both treatments.

(Table A.1) Stocker productivity single treatment

Stocker	Number of observations	average AP/h	Stocker	Number of observations	average AP/h
1	3	60,93	6	5	63,91
2	3	64,76	7	3	73,74
3	3	70,47	8	6	69,38
4	3	67,27	9	3	47,60
5	7	53,74	10	6	54,03

Average of the single treatment	61,68

(Table A.2) Stocker productivity pair treatment

Stocker	Number of observations	average AP/h	Stocker	Number of observations	average AP/h
1	4	54,55	6	4	56,20
2	2	60,98	7	4	59,57
3	2	62,81	8	3	52,81
4	2	59,19	9	5	52,17
5	5	57,37	10	7	56,71

Average of the pair treatment	56,59

The single treatment yields 42 observations with an average AP/h of 61.68 (See table A.1). This is slightly higher than the norm of 60, which the supermarket aims to achieve. This could be due to the fact that stockers did not have to do all the work that the norm of 60 AP/h takes into account. So the slightly above norm productivity of the workers in the single treatment is not surprising. The pair treatment yields 38 observations with an average AP/h of 56.59 (See appendix A.2), which would suggest that the stockers were less productive when working in teams. The collected data also includes the day of the week, stocker, norm, duration and pair for every observation.

Section 4: Results

(Table B.1) Test on equal variances*

Treatment	Mean	Std. dev.	N
Pair	56.59	4.97	38
Single	61.68	10.93	42
W0 = 20.90	**Probability > F = 0.0000**		
W50 = 20.53	**Probability > F = 0.0000**		
W10 = 20.91	**Probability > F = 0.0000**		

(Table B.2) T-test for unequal variances

Variable	N	Mean	Std. error	Std. dev.
Pair	38	56.59	0.81	4.97
Single	42	61.68	1.69	10.92
difference		-5.09	1.87	
H0: difference = 0				
Ha: difference ≠ 0				
Probability (T < t) = 0.0042				

*All test statistics show that the variances between treatments are significantly unequal. These statistics include Levene's test statistic (W0), and the alternative Levene tests that replace the mean with the median (W50) and the 10% trimmed mean (W10).

In order to answer the research question, the single- and pair treatment results must be compared. If the means of the two treatments are significantly different, then one could argue that one of the two treatments is more productive than the other. In order to do so, first the two samples must be checked for equal variances. All robust tests on this matter show with a high significance that the variances are unlikely to be equal (See Table B.1). The average productivity of the two treatments would suggest that productivity in the pair treatment is considerably lower than the single treatment productivity. The mean comparison test on the means of the two treatments confirms this presumption and is significant at the 1% level (See Table B.2). Stocker productivity was 5.09 average packages per hour, or 9.0%, higher in the single treatment than in the pair treatment. This difference is not to be neglected and therefore presumably an important finding for supermarket implications. In order to know for sure, other factors need to be taken into account first. What follows is the question whether the entire effect is due to the change in treatment, as some of the productivity decline could be due to other factors. When adding all logically influential factors, the value of the treatment effect will get closer to its actual value. All factors shown in table C have an effect on the treatment effect coefficient.

(Table C) The treatment effect

	Apph (1)	**Apph (2)**	**Apph (3)**	**Apph (4)**	**Apph (5)**
Constant	61.6789***	56.0311***	59.6927***	56.8492***	51.3971***
Treatment	-5.0903***	-4.7467**	-4.2083**	-5.1034***	-4.3503**
Norm*Norm		.00033***			.00023**
Stocker 1					4.7071
Stocker 2			5.2349		4.2827
Stocker 3			9.3952**		9.0522**
Stocker 4			6.0311		4.9961
Stocker 5			-2.6845		-.53215
Stocker 6			2.6584		3.9254
Stocker 7			8.3520**		8.4298**
Stocker 8			5.5683		6.3867*
Stocker 9			-6.6030*		-2.8622
Stocker 10			-1.9524		
Monday				6.6478***	4.0693*
Friday				7.7660***	4.9263
N	**80**	**80**	**80**	**80**	**80**
Adjusted R^2	**0.0699**	**0.1470**	**0.2860**	**0.1878**	**0.3344**

(All regressions are ordinary least squared)

(1) 'Single treatment' in constant
(2) 'Single treatment' in constant
(3) 'Single treatment' and 'Stocker 1' in constant
(4) 'Single treatment' and 'Wednesday' in constant
(5) 'Single treatment', 'Stocker 10' and 'Wednesday' in constant

*** = significant at the 1% level
** = significant at the 5% level
* = significant at the 10% level

One factor that seems to have influence on stocker productivity is the norm of every observation. The norm represents the time in which the stocker should finish all of his assigned packages. When adding the norm variable to the regression, including an interaction variable, the interaction term seems to lower the coefficient of the treatment and is significant at the 1% level. The norm variable is not significant, which means the value of the norm has an exponential effect on stocker productivity. Its coefficient is positive which means that an increase in the norm results in an exponential increase in average worker productivity (See Table C, column 2). The same tests have been done for the individual characteristics of stockers and the days of the week. Although the individual productivity levels of the stockers are all quite insignificant, most probably due to the low number of individual observations, they do affect the treatment coefficient. Upon further investigation, it seems that the less productive stockers relatively participated more in the

pair treatment than in the single treatment, causing the productivity to fall a little bit more (See Table C, column 3).

As for the days of the week, for some unknown reason, stockers are on average less productive on Wednesday in comparison with Monday and Friday. Monday and Friday on the other hand don't differ much in average stocker productivity. Another point of interest is that the coefficient of the treatment dummy yet again changed significantly. One would expect the coefficient to stay the same when every day is observed the same amounts in both treatments. This change can be explained by two holidays that took place on a Wednesday in the single treatment and a Monday in the pair treatment. This means that Wednesday was observed one time less in the single treatment than in the pair treatment. Due to Wednesday being a less productive day, the measured average productivity is slightly biased (See Table C, column 4).

Adding all known variables into one final regression yields the final value of the treatment effect (See Table C, column 5). For the experiment setting in this paper, it can be concluded that productivity among stockers decreases when they are put into teams and assigned to the same task. Doing so results in an average productivity decrease of 4.35 (or 6.12%) adjusted packages per hour, which is significant at the 5% level.

In order to make sure that these findings are accurate, some other logically possible effects have been tested. For example, norms and durations per observations could differ across workers and days. If certain days or certain stockers yield significantly higher or lower values compared to others, some of the found coefficients could be biased. Tests for these possible robust results all show no significant relation between these factors. Added controls for outliers and mean replacements by median did not alter the above conclusions.

The experimental settings don't allow for any analyses of the value of β, apart from its total average value. So what is known is that the factors that influence productivity negatively are dominant over the factors that influence productivity positively within the pair treatment. Based on the related literature, one could argue that the peer effect should increase productivity, which would mean that the negative effects are even bigger. Whether this is the case is uncertain though, as the literature on peer effects doesn't go into detail on the matter of working in teams on the same task. As mentioned earlier, the possible negative factors include increased store crowdedness and the possibility of free-riding. The only thing that can be said about these factors is that the sum of their effects on productivity is bigger than the positive effects, which were the peer effects and the possibility of labor division.

Section 5: Concluding Remarks

This paper presented a small field experiment which showed how productivity changed when workers are put into teams of two on the same task under fixed pay. In comparison with other literature on the subject, workers seem to lack the incentives that are present when workers are paid a piece rate. In the short run, this caused worker productivity to drop.

However, these results must be interpreted with caution, as there are a lot of limitations that come along with the experiment and research. First off, the experiment had a time span of eight weeks, in which every stocker was observed three to seven times in both the single and pair treatment. These low numbers of observations make it near impossible to observe any changing time effects, like experience and seasonality. There also still exists a possibility that workers were not fully adapted to the pair treatment method, which means that with more experience, the results of the pair treatment could be different.

There are also most likely some measurement errors within the collected data. These errors can be as small as writing down a time with a one-minute error margin, but can grow as big as a mistake made during the splitting of packages, resulting in some packages being stocked by the wrong stocker. These measurements won't have a big impact on the big picture of this research, which is the difference between the single treatment and the pair treatment, but they can cover up smaller effects that went unnoticed. For example, males could have been a little more productive when paired with a female in the pair treatment compared with two males in a pair.

Next to the possible errors within the measurements, the completed measurements only contain data on the productivity of pairs, instead of the individual productivity of stockers within pairs. This means that conclusions were only based in the pair productivity as conclusions based on individual performance are not possible within the conducted experiment. This is an issue, because some individuals could have been more productive in the pair treatment, then they were in the single treatment. But if their peer showed a larger decrease in productivity, their individual productivity gain went unnoticed. The same goes for the environmental effects, like customer crowdedness, which were not included in the data.

The scale of the field experiment brings along some restrictions to the results as well. The results are specific to the supermarket in which the experiment was done, including all store specific factors that can vary between supermarkets. The same experiment conducted in a different supermarket may hold completely different results.

Next to the needed improvements mentioned above, in order to find the scale of the negative effects, a similar field experiment could be conducted, with two small changes. The chance that free-riders will arise can be decreased by measuring individual productivity, instead of team productivity. As this would require a lot of time, a more realistic alternative would be to increase supervision by the supervisors. Decreasing crowdedness on the other hand is near impossible, as it would require a bigger supermarket with larger aisles, but with the same worker and store characteristics. Also, keeping crowdedness equal across treatment is simply impossible, because the workers have to work together on the same task. Putting only 1 worker in every aisle doesn't allow for any teams of workers.

Another possible explanation for the productivity decrease is the lack of actual division of labor. In the supermarket in question, stockers have the possibility to divide the labor, but they might not know how to do so. Though it is unlikely that stockers will dramatically

increase their team productivity when they are taught how to divide labor efficiently, teaching them might increase their productivity. As for the possible peer effects, they might not have been present due to the fact that individual productivity was not measured. This might have prevented the stockers from feeling like they didn't want to be outperformed by their peer.

After the field experiment was complete, another ten observations were made in working settings identical to the single treatment. These observations were made in order to find possible side effects of the pair treatment. Six workers were observed once and two workers were observed twice. The observations were made on one week after the pair treatment on Monday, Wednesday and Friday. Though the small amount of only ten observations does make it impossible to draw strong conclusions, some obvious speculations can be made. Out of the ten observations, nine observations yielded an output higher than the stockers' average individual output in the single treatment. Next to that, six of these observations yielded higher individual outputs than any of their single treatment outputs. This would suggest that stockers increased their individual productivity during the pair treatment. This would, however, require future research in order to find an actual learning effect from working in teams. This could mean that even though productivity declines when stockers are assigned to teams under fixed pay, the individual productivity increases as a result of the work done in teams. Using teams as a tool in order to increase individual worker productivity could therefore be a productivity increasing implementation that firms, or at least supermarkets, might want to look into.

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