LASER PULSE

Long-term Assistance and Services for Research (LASER) Partners for University-Led Solutions Engine (PULSE)

DO BETTER MANAGERS ENGAGE IN LESS CORRUPTION?

Final Report

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ABOUT THE PROJECT

This final report was produced by the Do Better Managers Engage in Less Corruption? Project. The project has been supported by the United States Agency for International Development (USAID) through the LASER PULSE mechanism. It was implemented by the Duke Center for International Development (DCID) of Duke University in partnership with the Institute for Sustainable Development of National Economics University (ISD-NEU) in Vietnam, and Sustainable Development for Business of Vietnam Chamber of Commerce and Industry (SDforB). The project's research objective was to evaluate the impact of improved management on the incidence of corruption among Small and Medium-sized Enterprises (SMEs) in Vietnam. This final report presents the overall achievement of the project and research findings. For more information, please reach out to Professor Edmund Malesky, the principal investigator of the project, at eddy.malesky@duke.edu.

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ABOUT LASER PULSE

LASER (Long-term Assistance and Services for Research) PULSE (Partners for University-Led Solutions Engine) is a $70M program funded through USAID's Innovation, Technology, and Research Hub, that delivers research-driven solutions to field-sourced development challenges in USAID partner countries.

A consortium led by Purdue University, with core partners Catholic Relief Services, Indiana University, Makerere University, and the University of Notre Dame, implements the LASER PULSE program through a growing network of 3,500+ researchers and development practitioners in 86 countries.

LASER PULSE collaborates with USAID missions, bureaus, independent offices, and other local stakeholders to identify research needs for critical development challenges, and funds and strengthens the capacity of researcher-practitioner teams to co-design solutions that translate into policy and practice.

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Dr. Edmund Malesky, Professor of Political Economy and Director of the Duke Center for International Development, was the Principal Investigator and Lead author of the project. Dr. Tuan-Ngoc Phan, Assistant Professor of Economics at Fulbright University Vietnam, was the research manager and helped author the final report. Dr. Daniel Xu, a Professor of Economics at Duke University, and Dr. Rob Fetter, a Research Fellow at the Duke Center for International Development, played pivotal roles in creating the research design and deriving the formal

theoretical predictions. Dr. Le Canh, Associate Professor at NEU, led the course development and research implementation and designed the Marketing placebo course. Dr. Vu An Dan, Associate Professor in the Tourist Department at the National University of Hanoi, designed and provided instructional content for the Restaurant Training course. Dr. Vu Thuy Lien, Associate Professor of Hanoi Banking University, designed and provided instruction on the Internal Controls Course. Dinh Thi Bich Xuan, Director of Sustainable Development for Business at the Vietnam Chamber of Commerce and Industry played the critical role of Research Translation Partner. Le Dang Trung, Chief Economist of Real-Time Analytics, led the promotion and data collection for the endline survey. Phan Thi Ngoc Vi of *VNExpress* assisted with online promotion and recruitment into the course.

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Special acknowledgment goes to Dr. Nguyen Van Thang of National Economics University, who conceived of this project, serving as co-PI during the research development stage. We remain devasted by your loss but heartened by the fact that your vision ultimately proved correct.

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EXECUTIVE SUMMARY

Purpose

There is a broad academic agreement that corruption harms business growth and investment. While most scholars emphasize the role of public institutions, policies, and bureaucrats in corrupt transactions, individual firms have largely been regarded as victims rather than perpetrators. In this research project, we suggest that businesses may proactively engage in regulatory-related bribery for two reasons not appreciated in the literature. First, uncompetitive firms resort to cutting corners as a way to level the playing field with more productive competitors, and, as a result, most bribe inspectors ignore regulatory violations (*the productivity hypothesis)*. Second, in businesses with weak managerial control, subordinates may commit bribery for their own pecuniary gain, without the knowledge of top managers (*the internal controls hypothesis)*.

Context

We tested our theory on a nationally recruited sample of Small and Medium-sized Enterprises (SMEs) in Vietnam's restaurant industry. The restaurant industry in Vietnam is particularly appropriate for studying this question. Despite their growing role in the economy, Vietnamese SMEs are still plagued by well-known limitations, including limited capacity, scale, and internationalization. Reports have drawn direct connections between these failings and inadequate management quality in the domestic sector. The under-researched but rapidly growing service sector has absorbed a significant share of the labor force during Vietnam's structural transformation, and now accounts for over 42 percent of GDP and 35 percent of the labor force. In particular, since 2005, roughly two million workers have taken jobs in restaurants, hotels, and catering, leading to a 2.5 percentage point shift in its net employment share. Part of this rise has been fueled by Vietnam's $22.4 billion USD tourist industry (9.2 percent of GDP), but a larger portion is aimed at satisfying the demands of Vietnam's expanding middle-class markets. Vietnam's $108 billion USD retail market is poised to grow at 7.3 percent annually over the next five years — the fastest-growing in Southeast Asia.

Difficulties caused by COVID-19 and the slow recovery of the domestic service sector impacted our ability to recruit firms into the study. Many business owners were struggling to keep their operations afloat and were unable to spare the time for a six-week course, even one that might help them better manage their operations. Although we identified over 10,000 restaurants, coffee shops, and hotel cafeterias to take part in the project, we were only able to contact 4,776 on the phone to encourage them to participate. We offered descriptions of the benefits of the course, graduation certificates, and selective inducements (i.e., pre-paid telephone cards) to participate. Ultimately, only 196 firms enrolled in one of the three courses and roughly two dozen completed the entire six-week sequence. In addition, only 45 of the enrolled firms agreed to answer the endline survey that measured productivity and corruption.

Methodology

We tested our hypotheses through a randomized controlled trial (RCT) that assigned access to an existing set of online management courses for restaurant owners and managers in

Vietnam. Two sets of businesses received training courses that would either improve their productivity or internal controls, while a third set was assigned to a placebo course that encouraged the same six weeks of online contact but would not lead to changes in productivity or internal controls.

In designing the Restaurant Management course, we worked with the Institute for Sustainable Development at the National Economics University (ISD-NEU) to incorporate the latest insights from the literature on management training and firm productivity. Theoretically, we expected this course to improve management practices, productivity, and other development outcomes, such as increased business expansion, wage growth, and employment. Most importantly, we hypothesized that better management would alleviate another notorious burden afflicting the domestic private sector – corruption. By encouraging streamlined and efficient management practices, we expected the Restaurant Management course to help SMEs cut waste and become more efficient. Efficient businesses were expected to violate fewer regulations to stay competitive, reducing the risk of extortion by regulatory inspectors.

We designed the Internal Controls course based on a previous program of ISD-NEU and Sustainable Development for Business of Vietnam Chamber of Commerce and Industry (SdforB). This course taught managers to better monitor operations and the actions of lower-level employees, reducing the risks of subordinates violating regulations and bribing government officials without managers' knowledge.

As a condition of receiving the free training and official graduation certificates for management training from VCCI and the NEU, restaurant managers were required to respond to a survey conducted over the phone by our calling teams. The survey was conducted at least one month after the completion of the online course to ensure enough time for any changes to take effect. This survey included four major sections: 1) a request for pictures of the business establishment to visibly monitor regulatory compliance and to record physical changes in operations over time; 2) an accounting workbook with detailed questions on inputs, outputs, and other financial measures to estimate revenues, costs, and ultimately profit; 3) experience with regulations and regulatory knowledge; 4) participation in bribe payments made to regulators and inspectors. Because some firms may have been reluctant to directly report bribes, we also conducted shielded-response experiments to evaluate the managers' behavioral changes in corruption practices, reducing social desirability bias and increasing response rates.

We analyzed our data using econometric producers, including permutation tests using randomization inference to generate sharp null hypothesis tests of our theories.

Key Findings

Accounting for the sample size and non-random selection bias, the treatment courses appeared to have a striking effect on reducing bribery. Less than half of the students in the Restaurant Management course (41.2 percent) and Internal Controls course (43.8 percent) reported paying bribes in the previous month, compared to 75 percent of businesses in the placebo Marketing cCourse. These differences had startling results on the bottom line. The

average cost of bribery in the previous month for Marketing students was $427 USD, which was close to three times as much paid by those in Restaurant Management ($153 USD) and five times more than students in the Internal Controls course ($87 USD).

Because of the threat of social desirability bias, we also measured bribery using a shielded-response technique, called a list experiment, that provides firms with plausible deniability in their answers. We find a similar pattern, estimating that nearly every Marketing student paid bribes to regulatory inspectors in the past month, compared to 38 percent of Internal Controls students and 40 percent of marketing students. Again, the differences are not just limited to the frequency of payments. The amounts also differ. The average inspection bribe size for students in Marketing was $34 USD, compared to only $3 USD and $4 USD for Internal Controls and Management respectively.

Probing the mechanisms, we find little evidence for the *productivity hypothesis*. Restaurants assigned to the management training did not exhibit higher profit margins than the restaurants in other courses, either when calculated from endline workbooks or using self-reported survey measures. Sales revenue and expenditures also did not differ significantly across the groups.

However, there is evidence for the *internal controls* hypothesis. Testing firm knowledge of possible fines from fire safety and food sanitation violations, we find that those in the Restaurant Management and Internal Controls course exhibit greater knowledge of the possible risks of violations. However, this effect is particularly strong for the students in the Internal Controls course, who also exhibited lower bribe payments on average. This is true, even though all restaurants experienced the same number of regulatory inspections in the past month (about three on average).

Consistent with our theory, we find no difference in the fines paid by firms despite this regulatory knowledge. This is because the internal controls hypothesis predicts two equilibria. In the first, firms comply with regulations and pay fewer fines during inspections due to their higher management practices and regulatory knowledge. In the second, firms do not comply, but avoid regulatory fines by paying bribes.

Recommendations

The policy implications of this study are very clear. Practitioners can potentially place a large dent in corruption payments through broadscale Internal Controls training that increases manager awareness of regulations and compliance within their firm. This will insulate them from malicious bribe requests, as regulatory inspectors are less likely to find obvious violations for which they can threaten fines to extract bribes.

In Vietnam, we have already taken one large step toward achieving this goal by making the courses designed by ISD-NEU openly available on the Vietcourse to all participants. The course lecture, evaluation materials, and recording of peer-to-peer instruction are available for all participants. Unlike the Restaurant Management course, the Internal Controls training course is fungible and can be applied to firms in multiple industries.

While the results are sizable and in line with one of our pre-registered theories of change, sufficient caution is in order. Due to difficulties in recruitment, course completion, and attrition, our final sample is simply too small to draw definitive conclusions. It is possible that a small number of observations may be driving the results, reducing the ability to generalize to the larger population of Vietnamese businesses.

Before drawing definitive policy conclusions, we offer three recommendations for verifying these findings. First, we recommend scaling up the project by expanding to other industries to increase the sample and increase the take-up of the courses. Second, we recommend moving to in-person rather than online training to ensure greater commitment and higher completion rates. Finally, we recommend greater financial inducements to convince firms to enroll, complete courses, and fill out their accounting workbooks. Entrepreneurs of SMEs are extremely busy and operate at very narrow financial margins. Every moment away from the business counts and these pressures challenge their dutiful commitment to external coursework, even free and well-designed ones.

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ACRONYMS

CoC	Codes of Conduct
CP	*Chinh Phu* (Government of Vietnam)
DCID	Duke Center for International Development
ETE	Estimated Treatment Effect
FDI	Foreign Direct Investment
GSO	General Statistical Office

IC	Internal Controls
ISD	Institute for Sustainable Development (Institute at NEU)
ITE	Intention to Treat Effect
MBA	Master in Business Administration
MVND	Millions of Vietnamese Dong
OLS	Ordinary Least Squares
SME	Small and Medium-sized Enterprise
SDforB	Sustainable Development for Business (Department at VCCI)
SOE	State-Owned Enterprise
RI	Randomization Inference
UCT	Unmatched Count Technique, a shielded response or list experiment
USAID	United States Agency for International Development
USD	United States Dollars
VCCI	Vietnam Chamber of Commerce and Industry
VND	Vietnamese Dong
WB	World Bank

1. INTRODUCTION

There is a broad academic agreement that corruption harms business growth and investment. While most scholars have emphasized the role of public institutions, policies, and bureaucrats in corrupt transactions, individual firms have largely been regarded as victims rather than perpetrators (Mauro, 1995; Wei, 2000; Olken and Barron, 2009). In this research project, we suggest that businesses may proactively engage in regulatory-related bribery for two reasons not appreciated in the literature. First, uncompetitive firms resort to cutting corners as a way to level the playing field with more productive competitors, and, as a result, must bribe inspectors to ignore regulatory violations *(the productivity hypothesis)*. Second, in businesses with weak managerial control, subordinates may commit bribery for their own pecuniary gain, without the knowledge of top managers *(the internal controls hypothesis)*. As a result, we argue that improving firm productivity can reduce their incentives to bribe and business-to-government bribery. With the generous support of the USAID-funded LASER PULSE initiative, we tested these hypotheses by randomizing access to an existing set of online management courses for restaurant owners and managers in Vietnam.

A randomized controlled experiment (RCT) was preferable to observational research based on surveys or administrative data in this case due to two methodological threats. First, reverse causality is possible, as paying lower bribes reduces a firm's operational costs, leading to higher observed productivity. Second, critical features of businesses may be associated with both productivity and lower bribes, leading to spurious correlations. These factors may include business sector, size, connections to government officials, and knowledge of the political process. Randomization avoids these pitfalls by assigning similarly situated businesses to both a treatment and a control group. In our case, two sets of businesses received training courses that would either improve their productivity or internal controls, while a third set was assigned to a placebo course that encouraged the same level of contact – thereby avoiding a Hawthorne effect[1] – but would not lead to changes in productivity or internal controls.

In designing these courses, we worked with the Institute for Sustainable Development at the National Economics University (ISD-NEU) to incorporate the latest insights from the literature on management training and firm productivity. Theoretically, we expected this course to improve management practices as well as productivity and other development outcomes, such as increased business expansion, wage growth, and employment. Most importantly, we hypothesized that better management would alleviate another notorious burden afflicting the domestic private sector – corruption. By encouraging streamlined and efficient management practices, we expected the Restaurant Management course to help SMEs cut waste and become more efficient (Bloom 2013). Efficient businesses were expected to violate fewer regulations to stay competitive, reducing the risk of extortion by regulatory inspectors. We designed the internal controls course to allow managers to better monitor operations and the actions of lower-level employees, reducing the risks of subordinates violating regulations and bribing

[1] The Hawthorne Effect refers to the fact that people will modify their behavior simply because they are being observed. The effect gets its name from one of the most famous industrial history experiments that took place at Western Electric's factory in the Hawthorne suburb of Chicago in the late 1920s and early 1930s.

government officials without managers' knowledge. The courses were ready for open enrollment beginning in October 2022.

In addition, we reduced the threat of confounding by limiting our analysis to a particularly corruption-prone industry in Vietnam: the domestic-facing restaurant sector. The restaurant industry in Vietnam is especially suitable for studying this question. Despite their growing role in the economy, Vietnamese Small and Medium-sized Enterprises (SMEs) are still plagued by well-known limitations, including limited capacity, scale, and internationalization. Reports by the Office for Business Sustainable Development (SDforB) in the Vietnam Chamber of Commerce and Industry (VCCI) have drawn direct connections between these failings and inadequate management quality in the domestic sector (Nguyen and Vu, 2019; Malesky et al., 2018).

We focus on the under-researched but rapidly growing service sector, which has absorbed a significant share of the labor force during Vietnam's structural transformation, now accounting for over 42 percent of GDP and 35 percent of the labor force. In particular, since 2005, roughly two million workers have taken jobs in restaurants, hotels, and catering, leading to a 2.5 percentage point shift in its net employment share. Part of this growth has been fueled by Vietnam's $22.4 billion USD tourist industry (9.2 percent of GDP), but a larger portion is aimed at satisfying the demands of Vietnam's expanding middle-class markets. Vietnam's $108 billion USD retail market is poised to grow at 7.3 percent annually over the next five years — the fastest-growing in Southeast Asia.

Difficulties caused by COVID-19 and the slow recovery of the domestic service sector impacted our ability to recruit firms into the study. Many business owners were struggling to keep their operations afloat and were unable to spare the time for a six-week course, even one that might help them better manage their business (World Bank 2023). Although we identified over 10,000 restaurants, coffee shops, and hotel cafeterias to take part in the project, we were only able to contact 4,776 on the phone to encourage them to participate. We offered descriptions of the benefits of the course, graduation certificates, and selective inducements (i.e., pre-paid telephone cards) to participate. Ultimately, only 196 firms enrolled in one of the three courses, and roughly two dozen completed the entire six-week sequence. In addition, only 45 of the enrolled firms agreed to answer the endline survey that measured productivity and corruption.

Accounting for these challenges and the smaller sample, the courses appeared to have a striking effect on reducing bribery. Less than half of the students in the Restaurant Management course (41.2 percent) and Internal Controls course (43.8 percent) reported paying bribes in the previous month, compared to 75 percent of businesses in the placebo Marketing Course. These differences had startling results on the bottom line. The average cost of bribery in the previous month for Marketing students was $427 USD, which was close to three times as much paid by those in Restaurant Management ($153 USD) and five times more than students in the Internal Controls course ($87 USD).

Because of the threat of social desirability bias, we also measured bribery using a shielded-response technique, called a list experiment (Coutts and Jann 2011), that provides firms

with plausible deniability in their answers. We find a similar pattern, estimating that nearly every Marketing student paid bribes to regulatory inspectors in the past month, compared to 38 percent of Internal Controls students and 40 percent of Restaurant Management students. Again, the differences are not just limited to the frequency of payments. The amounts also differ. The average inspection bribe size for students in Marketing was $34 USD, compared to only $3 USD and $4 USD for Internal Controls and Management, respectively.

Probing the mechanisms, we find little evidence for the productivity hypothesis. Restaurants assigned to the management training did not exhibit higher profit margins than the restaurants in other courses, either when calculated from endline workbooks or using self-reported survey measures. Sales revenue and expenditures also did not differ significantly across the groups.

However, there is evidence for the *internal controls* hypothesis. Testing firm knowledge of possible fines from fire safety and food sanitation violations, we find that those in the Restaurant Management and Internal Controls courses exhibit greater knowledge of the possible risks of violations. However, this effect is particularly strong for the students in the Internal Controls course, who also exhibited lower bribe payments on average. This is true, even though all restaurants experienced the same number of regulatory inspections in the past month (about 3 on average).

Consistent with our theory, we find no difference in the fines paid by firms despite this regulatory knowledge. This is because the internal controls hypothesis predicts two equilibria. In the first, firms comply with regulations and pay fewer fines during inspections due to their higher management practices and regulatory knowledge. In the second, firms do not comply but avoid regulatory fines by paying bribes.

The policy implications of this study are very clear. Practitioners can potentially reduce corruption payments through widespread Internal Controls training that increases managers' awareness of regulations and compliance within their firms. This will insulate them from malicious bribe requests, as regulatory inspectors are less likely to find obvious violations for which they can threaten fines to extract bribes.

While the results are sizable and in line with one of our pre-registered theories of change, sufficient caution is in order. Due to difficulties in recruitment, course completion, and attrition, our final sample is simply too small to draw definitive conclusions. It is possible that a small number of observations may be driving the results, reducing the ability to generalize to the larger population of Vietnamese businesses.

Before drawing definitive policy conclusions, we offer three recommendations for verifying these findings. First, we recommend scaling up the project by expanding to other industries to increase the sample and course participation. Second, we recommend transitioning from online to in-person training to ensure greater commitment and higher completion rates. Finally, we recommend offering greater financial incentives to persuade firms to enroll, complete courses, and fill out their accounting workbooks. Entrepreneurs of SMEs are extremely busy and

operate on very narrow financial margins. Every moment away from the business is crucial, and these pressures challenge their commitment to external coursework, even when it's free and well-designed.

2. THEORIES OF CHANGE

Before designing our empirical research, we first constructed a formal theoretical model to clarify our assumptions and enhance the precision of our predictions, as detailed in **Appendix A**. Bribery is a multi-faceted phenomenon, so clarity about the moving pieces is necessary before moving to empirical analysis. What are the precise outcomes we expect to occur in our experiment, and how can we rule out alternative explanations? To hold ourselves accountable, we also pre-registered our hypotheses on the Open Science Foundation website. This formal commitment prevented us from unscientifically changing our hypotheses or empirical modeling strategies after seeing the data – fitting our theory of change to what we observed rather than what we expected. In this section, we describe the resulting theories of change in non-technical language and with graphical illustrations. We begin with the productivity theory of change, which views bribery as a substitute for a lack of competitiveness. Next, we discuss the internal controls theory of change, which views management slippage and employee non-compliance as exposing firms to regulatory bribe threats.

2.1. The Productivity Theory of Change

Our first mechanism builds on an initial assumption that SMEs, on average, prefer to comply with regulations, either due to business ethics, the possibility of encountering honest inspectors or investigative journalists who will not accept bribes, or the potential for costly labor safety, food sanitation, or fire safety-related accidents. However, compliance requires expending valuable resources. Low productivity motivates certain SMEs to reduce costs by cutting corners on compliance and paying bribes during regulatory inspections. We hypothesize that management training, by improving SMEs' productivity and profits, will lead firms to strengthen regulatory compliance and reduce bribery. For more profitable SMEs, even if the compliance cost and price of bribes remain unchanged, in expectation, a regulatory violation would be costlier. This is because more profitable SMEs have more to lose if an incorruptible inspector temporarily closes the firm for violations or if media coverage on food sanitation, fire safety, or industrial accidents negatively affects the business.

In line with this theory of change, ***Figure 1*** illustrates how the Management Training course should lead students to improve their transparency, use of data, and personnel management to improve productivity. This should result in less waste, better planning, and improved regulatory compliance, ultimately reducing the threat of bribes to regulatory inspectors over time. In contrast, the Internal Controls course only deals narrowly with accounting and auditing processes and should have a limited impact on productivity, while the Marketing course focuses solely on enhancing and expanding sales.

Figure 1: Productivity Theory of Change

2.1.1. Productivity Hypotheses

Following our Theory of Change, we pre-registered the following three hypotheses that follow the causal logic of Figure 1. If the management training is successful, firms should exhibit higher productivity (Hypothesis 1), which should result in greater regulatory compliance (Hypothesis 2), and less risk of costly fines during inspections. This will ultimately manifest in less frequent and less sizable bribe payments (Hypothesis 3).

Hypothesis 1: *Firms assigned to the management training course will have higher levels of productivity compared to firms in the IC and placebo groups*.

Hypothesis 2: *Firms assigned to the management course will have greater regulatory compliance than firms assigned to the placebo group.*

Hypothesis 3: *Firms assigned to the management course will pay bribes less often and pay less in bribes than firms in the placebo group.*

2.2. The Internal Controls Theory of Change

The second mechanism connecting poorly managed firms to bribery occurs when top managers fail to monitor the activities of lower-level employees. As shown by Cole and Tran (2011), salespersons and procurement officers frequently collude for their own gain at the expense of the companies. In addition, due to weak monitoring capability, owners and top managers may be unaware of the firms' failure to comply with government regulations in tax, fire safety, food sanitation, environmental protection, etc. Such violations will render SMEs vulnerable to extortion by public officials during inspections, leading them to pay bribes to avoid costly and time-consuming fines and penalties. In our second intervention, we will provide

restaurant owners and managers with in-depth training on internal controls, which we define as *accounting and auditing processes that ensure the integrity of financial reporting and regulatory compliance*. These processes are designed to provide reasonable assurance regarding subordinates' adherence to operations, reporting, and compliance. Such firms will bribe less compared to those with egregious violations.

Figure 2 outlines our second pre-registered theory of change, which is simpler and more direct than the productivity channel. In this case, we expect the internal controls training to increase business monitoring of expenses and employee activities, enhancing regulatory compliance, as the owner knows more about what their subordinates are doing. Ultimately, this leads to fewer costly regulatory mistakes and less need to bribe inspectors when they discover these violations.

Notice that the internal control theory implies two equilibria. In the first equilibrium, which we call the *internal controls stat*e, a firm is likely to pay regulatory fines because they are less culpable. There are simply fewer violations for inspectors to find and exploit. In the second equilibrium, which we call the *corruption with theft state* (Shleifer and Vishny 1994), restaurants pay fewer fines because they are bribing regulators to avoid them, risking public safety and depriving the state of resources. This type of corruption is often called collusive because it requires an implicit contract between the business and regulator to look the other way (Ackerman 1975).

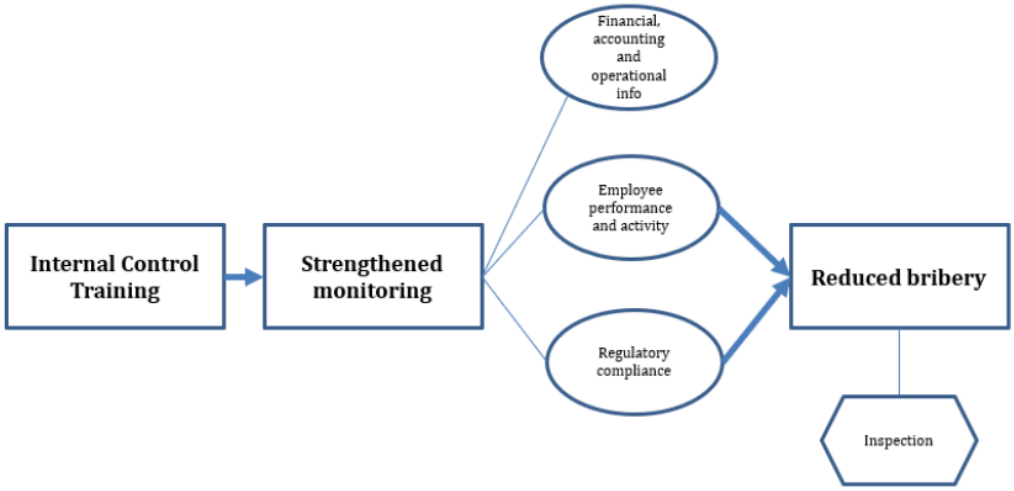

Figure 2: Internal Controls Theory of Change

2.2.1. Productivity Hypotheses

Following our theory of change in ***Figure 2*****,** we expect that restaurants in the Internal Controls course will exhibit greater regulatory compliance (Hypothesis 4) and pay fewer bribes (Hypothesis 5) than those in the placebo Marketing course, which should not improve internal accounting and auditing processes. We thus pre-registered the following hypotheses.

Hypothesis 4: *Firms assigned to the Internal Controls course will have greater regulatory compliance than firms assigned to the placebo group.*

Hypothesis 5: *Firms assigned to the Internal Control will pay bribes less often and pay less in bribes than firms in the placebo group.*

Finally, we hypothesized that the magnitude of the increase in regulatory compliance would be greater for the Management than the Internal Controls. If both theories of change were operating simultaneously, this would imply that the Management course would receive a double boost, as it included the Internal Controls content but also much broader material on management practices in the use of information, key performance indicators, and data management. Accordingly, with bribery as the dependent variable, we will also test whether the two treatment courses are statistically distinguishable in their bribery ($\beta_M = \beta_{IC}$).

Hypothesis 6: *Firms assigned to the Management will pay bribes less often and pay less in bribes than firms in the Internal Controls group.*

3. CONTEXT

Our field experiment aimed to test the effect of improved productivity and strengthened internal controls on corruption, in the form of a randomized controlled trial. Our Embedded Research Translation Partner was the Office for Business Sustainable Development (SDforB) under the Vietnam Chamber of Commerce and Industry (VCCI) – the national organization that represents the interests of domestic businesses in Vietnam. SDforB had already provided extensive research on this subject and created a handbook on internal controls for SMEs.

The target population consisted of formally registered domestic SMEs in the restaurant industry in Vietnam. All of these SMEs are subject to annual regulatory inspections (Malesky et al., 2018). We focused on the restaurant sector for two reasons: First, we expected a management training program specifically tailored to the restaurant industry to be more likely to improve productivity and profitability, as these firms generally do not have sophisticated operations. Second, focusing on one sector reduced a problem that econometricians refer to as unobserved heterogeneity, which can bias findings when hard-to-measure differences in the target population can lead actors to respond differently in terms of willingness to accept the treatment (i.e., management training) and in the size of the impact of the treatment. Sectoral diversity is a major source of such heterogeneity because of wide differences in SME size, customers, capital intensity, international exposure, and prior management skills. We set these differences aside by focusing on a single sector. This also allowed for a more consistent measure of productivity, as the outputs of these businesses are directly comparable – literally apples to apples.

Many factors make Vietnam an ideal setting to study this question. First, Vietnam has a large and fast-growing service sector. Even accounting for COVID-19, Vietnam's $108 billion retail market is poised to grow at 7.3% per year over the next five years — the fastest-growing in

Southeast Asia. At the same time, the industry is dominated by small traditional establishments that are relatively not well-managed and are vulnerable to corrupt dealings and extortion by local authorities. Second, Vietnam is an emerging market where business-to-government corruption is prevalent. In addition, Vietnam is in the midst of a systematic anti-corruption campaign, which provides political impetus for such an intervention. On November 20, 2018, the National Assembly passed the revised Anti-Corruption Law that came into force in July 2019. The revised law expands the scope of anticorruption to the private sector, requiring companies to have a code of conduct and an internal control unit to resist corruption.

Importantly for our proposal, formal efforts aimed at strengthening management practices already exist in Vietnam— including internal controls (IC) and codes of conduct (CoC) — among Vietnamese SMEs. Our research translation partner, SDforB at VCCI launched a large program to help businesses fulfill the requirements on internal controls stipulated in the revised Anti-Corruption Law. To lay the groundwork for this effort, in March 2019, SDforB published a Research Report on Companies' Use of Internal Control and Codes of Conduct (henceforth referred to as the VCCI Report). The VCCI Report concluded that there was significant room for improvement. Vietnamese firms possess a very weak understanding of IC and COCs, with only 50 to 60 percent being able to define those terms. The VCCI Report also highlighted that a high proportion of companies violate basic safety, labor, and environmental regulations, which makes it necessary for them to pay bribes during inspections in order to avoid fines and penalties. Based on the results from this report, SDforB designed the Instruction Manual for Building and Deploying Internal Control and Code of Conduct in Business (the Training Manual).

Management training can be particularly effective among Vietnamese SMEs, given their low starting point when compared with peers abroad. The 2017 PCI Report applied Bloom's innovative metrics to Vietnamese firms and found domestic managers to rank below their counterparts in China and India. The study also found strong evidence tying management quality to capacity and performance. SMEs that engage in export have the highest management scores, followed by private businesses that supply to foreign companies in Vietnam. The lowest-scoring managers in Vietnam are found in the domestic wholesale and retail sector, as well as among firms providing services to government agencies and SOEs (Malesky et al., 2018, p.112). Enterprises led by high-scoring managers outperform poorly managed ones on nearly every metric, including profitability, expansion plans, and growth in employment and investment.

The 2017 Vietnam PCI Report provided suggestive evidence for both the *productivity* and *internal controls* theories of change. Better managers bribe less and are less likely to consider corruption a significant burden. A one-point improvement in management quality (on a scale from 1 to 4) comes with a 5.5% reduction in reported bribery during regulatory inspections. Better-managed firms also bribe less to win government contracts during procurement (Malesky et al., 2018, p.125). Good management practices reduced not only the frequency but also the total cost of bribes. The PCI survey asked firms to estimate the total corruption burden in all business activities as a share of revenue. According to the data, good managers spent a statistically significant 14% less on corruption-related payments. While helpful, it is important to note that management in the PCI survey was self-reported and the study did not address the obvious issue of reverse causality: that is, more productive companies may have more resources to invest in management training.

4. RESEARCH DESIGN

4.1. Project Timeline

Figure 3 provides a timeline of the major milestones in the project. Work began on the project in August 2021 with desk work on the Vietnamese restaurant sector's training needs, regulatory requirements, and exposure to bribery. Disruptions caused by the COVID-19 crisis, however, delayed the implementation of the experiment and necessitated alterations in the medium of training delivery and data collection. In-person training was abandoned, and the research team moved to online courses to be able to deliver training without exposing participants to contamination. Similarly, online data collection of workbooks had to be discontinued. Initially, the team worked with a software company to design an online accounting workbook, but this proved unrealistic as restaurant owners struggled with the technology and time necessary to fill it out.

The three six-week online training modules were finally completed in November 2022, and the team began recruiting participants for the courses. Recruits were initially identified using an online campaign conducted by Vietnam's largest newspaper *VNExpress* website and later supplemented through the Vietnamese Hospitality Database. Students began entering the course immediately, but enrollment was low, and course completion rates were quite slow.

By February 2023, the first eleven students graduated from the program, including eight women entrepreneurs. However, the total number of enrollees and graduates was too low to commence data collection. To compensate, the research team hired Real-Time (RTA), a research technology and survey firm, to directly call over 10,000 firms in the sampling frame in a final push to encourage course enrollment, completion, and survey responses. Before this final push, the research team had filed their pre-analysis plan on the Open Science Framework website.

Endline data collection began in May 2023 and continued until the end of August 2023. As RTA recruited firms into the training, they were given ten weeks to complete the course before being called for the survey. This allowed all firms at least one month to make changes resulting from the knowledge they gained in the course.

Figure 3: Timeline of Experimental Implementation

4.2. Description of Interventions

With our partners from ISD-NEU and SDforB, we designed three online training courses. Originally, we planned to administer these courses in person in Hanoi, but after COVID-19 struck, we were forced to move to a web-based portal called *Vietcourse*, administered by the National University of Hanoi. While disappointing, moving to online courses had unanticipated advantages in that the courses could reach a national population, entrepreneurs could study on their own time, and, after the experiment, the courses could easily be made available to the wider public for free.

In line with our theory of change, we designed three courses: 1) a Restaurant Management Course, a mini-MBA for the specific operations needs of restaurants; 2) an Internal Controls course, based on the SdforB Training Manual; and 3) a classic Marketing course, which worked on sales promotion but did not include any content on management practices, data, performance indicators, or auditing processes. This third course served as a placebo treatment because it included six weeks of content and commitment, like the other courses, but was not expected to influence treatment. Including a placebo was necessary to avoid a Hawthorne effect, whereby firms reported lower bribery simply because they had more contact with instructors and consequently felt they were more likely to be monitored or simply expected to do better.

The online courses were designed to provide restaurants with the tools they needed to survive in the challenging COVID-19 and post-COVID markets. Each course was divided into six half-hour lectures with exercises that allowed students to test their knowledge and apply the new lessons to their own operations. Courses, exercises, and peer learning videos were also posted on an easy-to-use portal, allowing students all over the country to study at their own pace. Restaurant managers and owners are extremely busy, so we theorized that the online approach would provide the greatest flexibility and convenience. Students could watch the lectures and finish the exercises when they were free of family and restaurant commitments. As can be seen from the demographics of the first graduates, the course flexibility was especially helpful for female entrepreneurs in Vietnam, who must balance demanding work and family responsibilities.

The landing page on Vietcourse for the three courses is shown in ***Figure 4*** below. While this landing page was visible to the researchers, in practice, dedicated registration IDs that were supplied during the recruitment stage limited the landing page to only the single course to which the restaurant was randomly assigned. That is, a firm with a course ID of MBA31 could only see the Management Course, while a firm with an ID of IC31 could only see internal controls.

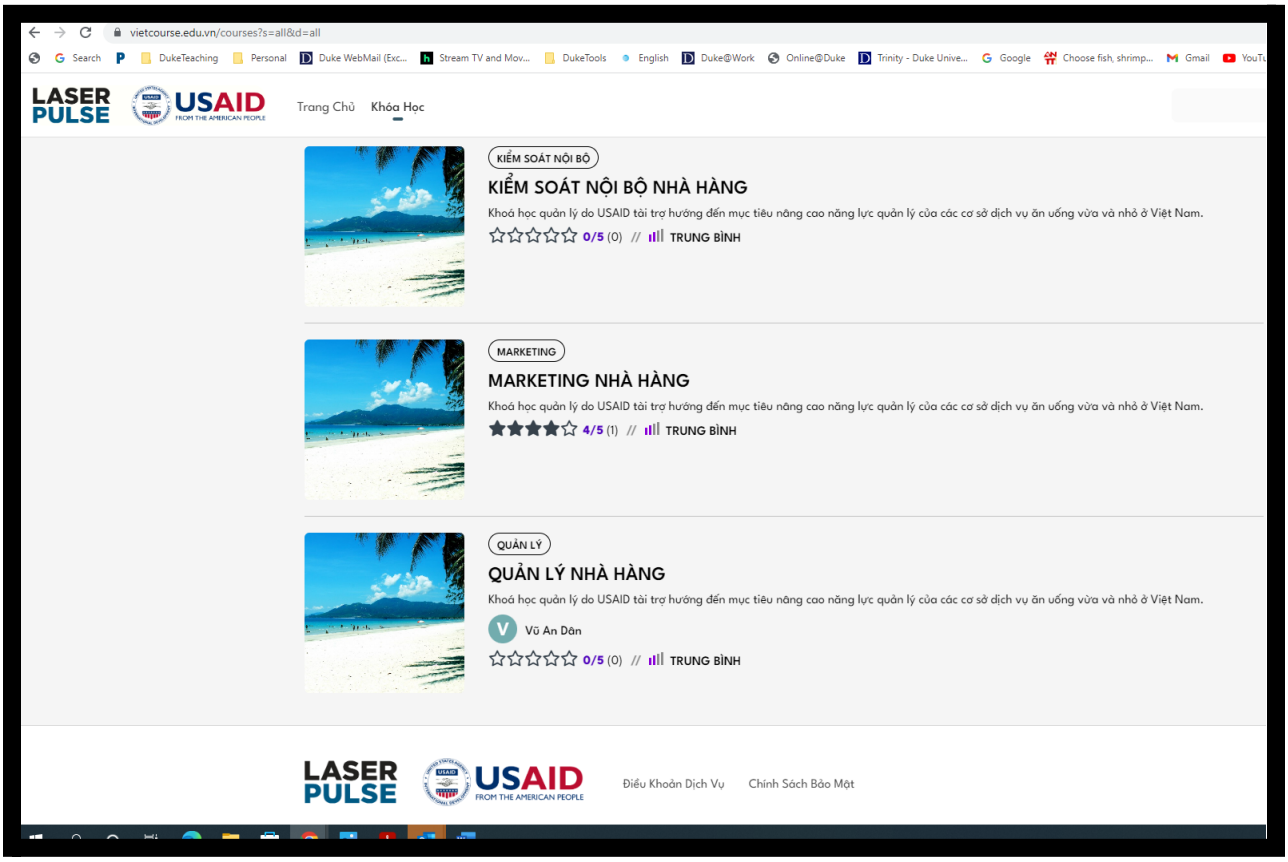

Figure 4: Landing Page on Vietcourse for Three Online Courses

4.1.1. Comprehensive Restaurant Management Training (Treatment Group 1 (T1))

Treatment Group 1 (T1) received comprehensive peer-to-peer training on all five functions of management (goal setting, planning, executing, coordinating, and human resource management) tailored to the context of the food service industry. This management training was designed in collaboration with SDforB and ISD-NEU and intended to lead to substantial and long-lasting improvement in productivity.

In designing the management course (T1), we incorporated the latest insights from the literature on management training and productivity. The training intervention utilized hands-on training and peer teachers rather than exclusively classroom components. ***Figure 5*** depicts a peer-to-peer training led by the course instructor with one of Hanoi's top chefs and restaurateurs. Classroom-based training for managers in low- and middle-income countries (LMICs) tends to have weak effects on productivity, but incorporating group activities, allowing participants to exchange experiences, and facilitating learning from peers have consistently demonstrated a greater impact on employment, sales, and profitability (Lafortune et al., 2018; Higuchi et al., 2017; Dalton et al., 2018; Iacovone et al., 2022).

Figure 5: Online Peer-to-Peer Learning Led by Course Instructor with Successful Restauranteur

4.2.2. Internal Controls and Code of Conduct (Treatment Group 2 (T2))

This group received specific training on internal controls aimed at strengthening top management's capability to monitor employees and ensure regulatory compliance, following the VCCI syllabus. They also received training on introducing a code of conduct within the firm. This treatment was added to account for the reasonable alternative argument that the effects captured in the other treatments may be due to strengthened monitoring and a change of ethical values toward corruption brought about by the training, rather than due to substantive effects from increased productivity.

4.2.3. Marketing Training (Placebo (P))

This group received a placebo training course on marketing. We chose marketing as the subject of instruction since the training for the placebo group (P) should be sufficiently compelling to attract managers to attend for a similar number of hours as T1 but should not affect profitability, ethics, or monitoring capability. Accordingly, we used training on marketing, which has been shown to result in both higher employment (as firms expand advertising and promotion activities) and higher sales — thus increasing size but leaving profitability unchanged (Anderson et al., 2018).

4.3. Recruitment and Sampling

4.3.1. Oversubscription Design for Random Assignment

As we could not force restaurant owners to participate in the training, we used an oversubscription method to select SMEs into treatment. Specifically, at the recruitment stage, enumerators introduced the upcoming training program and invited businesses to participate. Among those who signed up, we then randomized which firms received which training course.

All 196 firms that ultimately signed up are therefore similar in terms of unobserved characteristics that drive their interest in training. However, this approach comes at the cost of generalizability to the larger population of Vietnamese restaurants, who did not exhibit an interest in training.

4.3.2. Power Calculations

We based our power calculations on a question asked in the 2017 Provincial Competitiveness Index (PCI) observational analysis that found a strong relationship between self-reported management quality and corruption: "During any regulatory inspections, did you provide a gift or informal payment to the examiner?" To calculate an Estimated Treatment Effect (ETE), we re-coded the PCI's estimation of management quality to a dichotomous measure, where restaurants were coded as 1 if they had scores above median quality (=3) and 0 if they had scores below. Using the PCI 2017 data, we found that 46.9% (sd=49.9%) of restaurants with below-average quality paid inspection bribes. We then re-ran the exact same regression specifications as reported in the PCI 2017 report with our dichotomous, calculating ETEs of 5.4 percentage points. Assuming $\alpha = .05$ and $\kappa = .8$, we estimated we would need 1,276 firms per treatment group to detect the ETE for the inspection question. However, adjusting the power calculations by blocking firm size and physical distance from major streets to reduce variance, and considering 6 repeated visits for data collection, led us to determine that 300 restaurants per group was more than enough power to identify the ETE. We also believed power would be enhanced by reducing measurement error in the assessment of management quality (which was self-reported in the PCI) and social desirability bias in the reporting of corruption. These two features of the PCI design led to over-estimations of management quality and under-reporting of corruption, which likely reduced the observed effects in the PCI data. Our randomized assignment of training and shielded assessment of corruption should reduce both biases, thereby enhancing power.

Unfortunately, we fell well short of these predicted power calculations despite our enormous efforts to expand the pool through recruitment.

4.3.3. Recruitment

We employed a two-pronged approach to recruit participants for the program. We conducted a month-long publicity campaign through the *VNExpress* website, one of the most popular online news websites in the country. Additionally, we supplemented this list by cold-calling businesses from the Hospitality Database of the Ministry of Culture, Sports, and Tourism.

First, we collaborated with FPT Corporation to run a month-long recruitment campaign through their media site, VNExpress. This campaign consisted of several components:

- A series of six business articles on the Vietnamese restaurant industry, including one on the difficulties that firms faced after COVID-19 and the need to improve productivity to make up for reduced sales. These articles included interviews with academics who are involved with the project, such as Dr. Edmund Malesky at Duke University and Dr. Le Quang Canh at National Economics University. If readers were interested in taking the

course, they would leave their contact information in a chat box at the end of the articles.

- A survey box that was featured on the first page of the business section for several weeks. This survey included questions about the difficulties and needs of restaurants, along with an invitation at the end that introduced respondents to our free online restaurant management training course. Restaurant owners and managers who were interested in taking the course could leave their contact information in the survey.

- With support from Vietnam Real-Time Analytics (RTA), our calling teams reached out to registrants to confirm their participation in the course. Only respondents who were currently operating a dine-in business that sells food and drinks were accepted into the program. We then randomly assigned the confirmed participants to the treatment arms and provided them with an account on the *Vietcourse* platform to begin the courses.

Second, we took advantage of the Hospitality Database of the Ministry of Culture, Sports, and Tourism. This database provides publicly available contact information about restaurants throughout Vietnam. We limited our targets to the segment of three-star restaurants and lower to capture the SME businesses for whom our training could be the most beneficial. In our final sampling frame, there were 10,370 phone numbers and 2,700 email addresses. Our calling teams, managed by RTA, reached out to these firms to introduce the management training courses and invited them to participate. We then randomly assigned the confirmed participants to the treatment arms and provided them with an account on the *Vietcourse* platform to start the training.

Critically, neither respondents from the *VNExpress* recruitment nor the Hospitality Database knew which course they were assigned to until they plugged their passwords into the *Vietcourse* landing page. This mitigated against selection bias caused by dropping courses participants were uninterested in before entering the course.

4.3.4. Monitoring of Interventions

Once the participants started the courses on *Vietcourse*, RTA calling teams continued to stay in contact to monitor their progress and provide any necessary technical support. Participants could contact our support team through phone, email, and Zalo — the most popular Voice over Internet Protocol (VOIP) application in Vietnam. During their initial phone calls with the firms, our calling teams clearly listed the benefits of participation. Other than a completely free, well-designed, course on management training, students who completed the course received a certificate of completion jointly issued by Duke University and the National Economics University. ***Figure 6*** illustrates the image of the graduation certificate, while ***Figure 7*** shows Professor Malesky visiting some of the first graduates to congratulate them in person. There were also material incentives. To encourage firms to finish the course in a reasonable amount of time, we offered participants 500,000 VND (21.29 USD) in the form of a prepaid cell phone card as a gift upon completion.

USAID PURDUE UNIVERSITY Duke SANFORD CENTER for INTERNATIONAL DEVELOPMENT VCCI

GIẤY CHỨNG NHẬN

Certificate of Completion

được trao cho
is presented to

Ông NGUYỄN VĂN HỌC

Đã hoàn thành khóa bồi dưỡng
"Quản lý nhà hàng và cơ sở dịch vụ ăn uống"
do Viện Phát triển bền vững-Trường Đại học Kinh tế quốc dân và Đại học Duke thực hiện
với sự hỗ trợ của Cơ quan Phát triển Quốc tế Hoa Kỳ (USAID)

for completing the Training Course
"Mini-MBA for Restaurants and F&B Businesses"
organized by the Institute for Sustainable Development-National Economics University and Duke University
with support from USAID

TRƯỜNG ĐẠI HỌC KINH TẾ QUỐC DÂN
VIỆN PHÁT TRIỂN BỀN VỮNG

LASER PULSE

DUKE UNIVERSITY
CENTER FOR INTERNATIONAL DEVELOPMENT

PGS.TS. LÊ QUANG CẢNH

DR. EDMUND MALESKY

Hà Nội, ngày tháng năm 2022

Figure 6: Example of Graduation Certificate for Course Completion in Restaurant Management

Figure 7: Graduation Ceremony of Ms. Vũ Thị Yến in her Phở Shop

4.4. Endline Survey to Measure Experimental Outcomes

As a condition of receiving the free training and obtaining official graduation certificates for management training from VCCI and the NEU, restaurant managers were required to respond to a survey conducted over the phone by our calling teams. The survey, provided in ***Appendix B***, was conducted at least one month after the completion of the online course to ensure enough time for any changes to take effect.

This survey included four major sections. First, we asked the respondents to take a few pictures of the business establishment to visibly monitor regulatory compliance and record

physical changes in operations over time. Second, the survey contained an accounting workbook with detailed questions on inputs, outputs, and other financial measures to estimate revenues, costs, and ultimately profit. Third, the survey asked questions about experience with regulation and regulatory knowledge. Finally, the survey collected data on bribe payments made to regulators and inspectors. Because some firms may have been reluctant to directly report bribes, we also conducted LIST (Unmatched Count Technique) experiments to evaluate the managers' behavioral changes in corruption practices. LIST experiments have been shown to reduce social desirability bias and increase response rates (Coutts and Jann, 2011) and have been used successfully in Vietnam, particularly in questions related to bribe payments during inspections (see Malesky et al. (2015) and Malesky et al. (2018)).

4.5. Econometric Specifications

4.5.1. Models

Our pre-registered empirical analyses were designed to measure and test the impact of the training programs on bribe payments, compliance with health and safety regulations, and financial indicators of productivity. Note that our estimand[2] in these models is an intention-to-treat effect (ITE), where we compare those who started the Management or Internal Controls course, regardless of how many sessions they engaged in or whether they completed the course at all. We do not focus only on those who completed the course because of concerns that non-completion of the course may be correlated with specific course content. If that were the case, the results might be driven by non-random selection bias, as those who wanted to bribe less, for example, were more likely to stay with the course. In calculating the ITE, we do not need to worry about those who were invited but never enrolled, as firms were not aware of which course they were assigned to until they entered the code into the *Vietcourse* landing page. Selection bias was only possible after they learned their assignment status.

To enhance power, we first begin our statistical analysis with a combined treatment, where assignment to the Management course or Internal Controls courses are counted as 1, while assignment to Marketing is coded as zero (Equations 1 & 2). Next, we disaggregate the two treatment conditions and analyze them separately (Equations 3 & 4). For each outcome Y we estimate the following equations for firm i, where X_i indicates pre-treatment, firm-level variables that might influence experimental take-up and bribery. We control for the gender of the owner, as previous scholarship indicates that women entrepreneurs are more law-abiding (Wangeroud 2012). We also control for the specific sector of the restaurant. We identified four types that differ in scale, growth prospects, and exposure to regulation and corruption (coffee shops, single-dish restaurants, multi-dish restaurants, and hotel cafeterias). η indicates two locational fixed effects, capturing whether the restaurant was based in a national-level city (Hanoi, Ho Chi Minh City, Haiphong, Da Nang, or Can Tho) versus a more rural province and whether the

[2] An *estimand* is a quantity that is to be estimated in a statistical analysis. The term is used to distinguish the target of inference from the method used to obtain an approximation of this target (i.e., the estimator) and the specific value obtained from a given method and dataset (i.e., the estimate). In relation to an estimator, an estimand is the outcome of different treatments of interest. It can formally be thought of as any quantity that is to be estimated in any type of experiment.

restaurant is based in historically South Vietnam, which is thought to be a more entrepreneurial and business-friendly environment (Benzing et al. 2005).

1. $Y_i = \alpha + \beta_T CombinedTreatment_i + \epsilon_i$

2. $Y_i = \alpha + \beta_T CombinedTreatment_i + X_i + \eta + \epsilon_i$

3. $Y_i = \alpha + \beta_M MgtTraining_i + \beta_{IC} ICTraining_i + \epsilon_i$

4. $Y_i = \alpha + \beta_M MgtTraining_i + \beta_{IC} ICTraining_i + X_i + \eta + \epsilon_i$

For our primary approach to hypothesis testing, we follow Todd et al. (2021) in adopting a randomization inference (RI) approach coupled with a tabular presentation of regression coefficients, standard errors, and RI-derived p-values. Randomization inference is extremely helpful with small sample sizes to ensure that our results are not driven by a few outlier observations (Bowers et al. 2011, Ozler 2021). To compute these p-values, we reassigned respondents to treatment and control 1,000 times in precise accordance with the blocked randomization procedure with covariates and outcomes undisturbed. We conducted all analyses on each re-randomized dataset and compared our experimental estimates to these distributions of re-randomized estimates. Again, the first estimating equation does not include covariates, while the latter estimations use blocking variables and major fixed effects and account for location, gender, and sector in the calculation of the RI p-values. We thus obtained an answer to the question: Under the sharp null hypothesis of no effects for all restaurants, just how unusual are our experimental results? As opposed to a traditional null hypothesis, which asks whether the average effect is statistically distinguishable from zero, the sharp null asks whether any single individual changed their behavior due to the experiment. Note that it is possible to reject the sharp null hypothesis without rejecting the null hypothesis for an average effect.[3]

4.5.2. Outcome Variables

Our main outcome variable is *bribery*, which we measure in two different ways. First, we calculate each restaurant's bribery payments last month based on their reporting in the accounting portion of the survey (Section 1, Question 15).

Q15. Informal charges (e.g., payments or gifts to regulators, inspectors, or any other official)

We study this as both a dichotomous variable (whether the restaurant paid any bribe at all=1) and a continuous variable, measuring the amount of money spent on bribes last month, which we transform from Millions of Vietnamese Dong (VND) to US Dollars, using the average exchange rate at the time of the endline survey.

[3] A sharp null hypothesis is strong in that it assumes zero effect for every unit i. Contrast this with a weaker null hypothesis that the average treatment effect is zero where each unit may have non-zero treatment effect and yet the effect is zero on average across all units.

To avoid the threat of social desirability bias, we also employed a list experiment to measure the frequency and amount of bribery paid during regulatory inspections, in accordance with our theory. A list experiment is a technique that involves randomly assigning two versions of the same survey instrument to participants. This technique aids in lowering the perceived risk of detection by individual respondents, hence reducing the prevalence of social desirability bias. The critical design element in a list experiment is a list of infrequent, yet non-sensitive activities, along with one other item. For the control group, this last item is a placebo, considered to have a near-zero probability of relevance in the local context. For the treatment group, this last item is a sensitive question, such as "paid informal charges to expedite the application," which measures the incidence of bribery. To shield respondents, they mark down how many activities they have engaged in but not which activities they engaged in. This provides them with plausible deniability about paying bribes, as it is impossible for anyone to know whether paying a bribe was one of those items or another item on the list.

When aggregating anonymized responses to the group level, analysts can calculate the frequency of bribery by comparing the difference in means between groups. By subtracting the average number of behaviors in the treatment group from the same measure in the control results in a direct estimate of the frequency of bribery within the sample.

The critical design element in a list experiment is the box that asks questions about regulatory inspections. As not any one item from the list is ever revealed as having been done by a survey respondent, the respondent and their answers are appropriately shielded. We show the exact wording of the question in ***Figure 8.*** This question is used to identify the frequency of bribes during inspections. Respondents receive either Form A or Form B. The first three items in each form are non-sensitive, ordinary activities, randomly ordered, that related to the inspection experience. However, Form A contains a sensitive activity related to bribery (highlighted in red): "Presented gifts (monetary or in-kind) to government inspectors." Form B contains a placebo clause, "Consulted lawyers/legal counsel". The placebo clause is plausible but unlikely, hence essentially taking a zero value for Form B respondents. As respondents are randomly distributed between Form A and Form B, any difference in aggregate values can be attributed to costs associated with informal charges paid to expedite applications.

*Q28a. Please read this list of common activities that establishments like yours normally engage in while being visited by government regulatory inspectors. Please tell us how many of these activities your business, personally, engaged in the **last time such a visit took place**. **Do not tell us which activities**; we only need to know the **total number of actions** you engaged in.*	
(Version A) - Closed the business temporarily during the inspections - Presented gifts (monetary or in-kind) to government inspectors	**(Version B)** - Closed the business temporarily during the inspections - Consulted lawyers/legal counsel - Checked for violations before the inspectors arrived

- Checked for violations before the inspectors arrived - Retrain your employees after inspections to improve regulatory compliance ☐ 0 activities ☐ 1 activities ☐ 2 activities ☐ 3 activities ☐ 4 activities	- Retrain your employees after inspections to improve regulatory compliance ☐ 0 activities ☐ 1 activities ☐ 2 activities ☐ 3 activities ☐ 4 activities

Figure 8: List Experiments to Measure Bribe Frequency during Regulatory Inspections

Notice that Figure 7 (Question 28a) only captures the frequency of bribes – What share of firms pay bribes? It does not measure the amount that these firms are paying. As Delios et al. (2023) point out, frequency and size have quite different theoretical implications. A large number of firms paying very small bribes is annoying, but not economically debilitating, while a small number of firms paying very large bribes could indicate high levels of regulatory capture or artificial entry barriers to SMEs. To capture the size dimension in ***Figure 9***, we deploy the same UCT methodology, but instead of asking about a number of activities, we ask firms to estimate how much they paid for each of the common items. The difference-in-means for this question now provides the scale of bribery for each group. We measure this in millions of VND, but convert to USD for reporting purposes.

Q28b. Please tell us your total expenditures for the following items the **last time such a visit took place**. There is no need to indicate the amount for specific items. We only need to know the **total amount** you spent on these activities.

(Version A)	**(Version B)**
- Closed the business temporarily during the inspections - Presented gifts (monetary or in-kind) to government inspectors - Checked for violations before the inspectors arrived - Retrain your employees after inspections to improve regulatory compliance	- Closed the business temporarily during the inspections - Consulted lawyers/legal counsel - Checked for violations before the inspectors arrived - Retrain your employees after inspections to improve regulatory compliance

TOTAL EXPENDITURE: _____ (VND)	**TOTAL EXPENDITURE: _____ (VND)**

Figure 9: List Experiments to Measure Bribe Amount during Regulatory Inspections

4.5.3. Mechanism Variable 1: Productivity

Our first theory of change hypothesizes that firms in the Management Training course will benefit from higher productivity. There are a number of ways to measure productivity, but the most common is profit margin. Expressed as a percentage, profit margin represents the portion of a company's sales revenue that it gets to keep as a profit, after subtracting all of its costs. We calculate this measure from the respondent's accounting workbook, subtracting total expenditures in the last month (Questions 6 through 21, excluding bribery in Question 15) from the respondent's revenue in the last month (Question 2) and then dividing by the respondent's total revenue (Question 2).

$$\text{ProfitMargin}_i = \left(\frac{\text{Revenue}_i\text{-Expenditures}_i}{\text{Expenditures}_i} \right) * 100$$

We also allowed respondents to calculate their own profit margin in Question 22, which we used as a robustness test. As can be seen, the calculations are quite different. Using the raw data, we observe many more loss-making firms, but the restaurants themselves report low, positive profits. Regardless, ***Figure 10*** shows that the bivariate correlations between the two measures are quite strong. Both approaches identify the same restaurants as low, medium, and high productivity.

Q22. In the most recent calendar month, what were your gross profit margins? That is the ratio of your profits (total revenues minus total expenses) to total revenues. For example, if your revenues are 50 million VND and your total expenses are 40 million VND, your total profits are 10 million and your profit margin is 20%.

0) Below 0%
1) 0% -5%
2) 5% - 10%
3) 10% - 20%
4) 20% - 30%
5) 30% - 50%
6) Above 50%

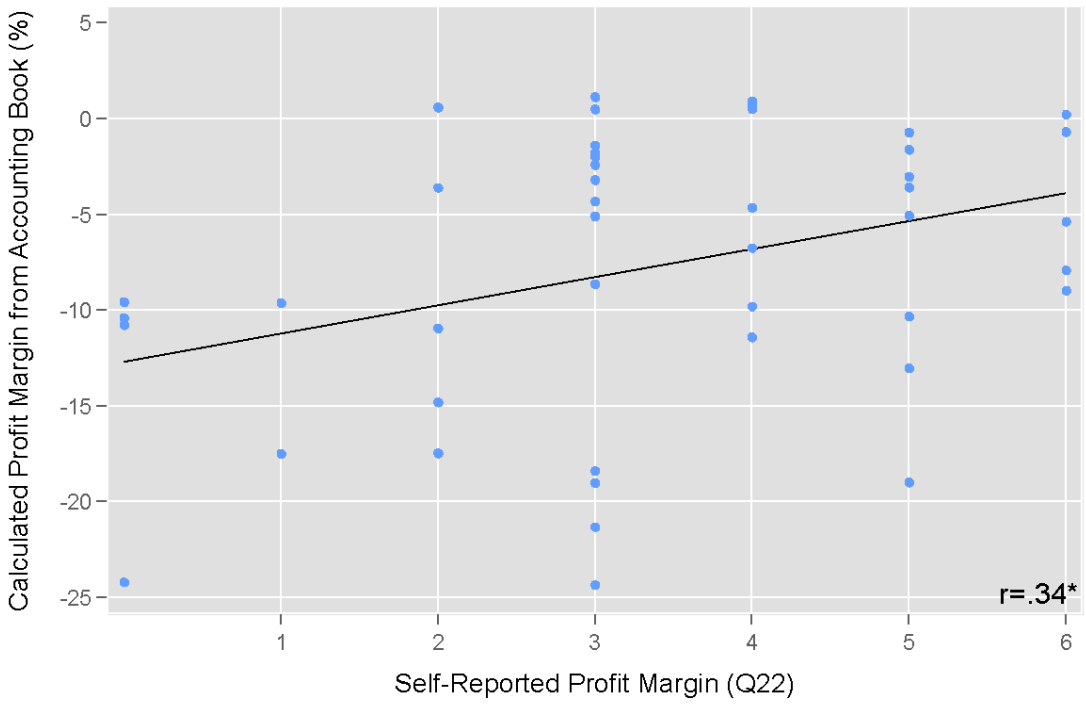

Figure 10: Accounting Book Productivity and Self-Reported Productivity are Correlated

4.5.4. Mechanism 2: Internal Controls

This internal controls mechanism is tested using the respondent's regulatory knowledge from three questions (endline survey questions 32, 33, 34). Respondents were given a score based on their ability to correctly answer the appropriate fine for a regulatory violation that might be uncovered during a fire safety or food sanitation inspection. In the first two questions, there was some ambiguity in the fines based on the severity and danger of the violation, so we allowed two possible answers. We obtained the correct answers from reading Decree 67/2013/ND-CP, "Regulation on penalties for administrative violations in the field of security, order, and social safety." Critically, these specific regulations were not covered in the Management Training or Internal Controls course content. We expected that restaurants that took the courses would be more likely to seek out the information themselves to improve their operations.

Q32. According to your knowledge, what's the official fine for this fire safety violation: *"No display of any signage denoting fire safety rules"?*

1) 100,000 VND - 500,000 VND
2) 500,000 VND – 1,000,000 VND
3) 1,000,000 VND – 2,000,000 VND
4) 2,000,000 VND – 3,000,000 VND

33. According to your knowledge, what's the official fine for this fire safety violation: *"Illegal possession of dangerously explosive and inflammable materials"?*

1) 1,000,000 VND – 2,000,000 VND
2) 2,000,000 VND – 10,000,000 VND
3) 10,000,000 VND – 15,000,000 VND
4) 15,000,000 VND – 25,000,000 VND

Q34. According to your knowledge, what's the official fine for this sanitation violation: "*Using food materials which are out of shelf life or without clear origin"?*

1) 1,000,000 VND – 2,000,000 VND
2) 2,000,000 VND – 10,000,000 VND
3) 10,000,000 VND – 15,000,000 VND
4) 15,000,000 VND – 25,000,000 VND

5. RESULTS

We present the results of our experiment in this section. We begin first with data covering our recruitment, sampling, uptake, and survey response. This information is important for conveying the difficulty we had in implementing the experiment and contextualizing the experimental effects in light of the small sample size. Next, we present descriptive statistics on our core variables of interest. After that, we move through our empirical results theoretically, beginning first with the impact of the courses on bribery before testing the mechanisms that delivered the results.

5.1. Recruitment, Sampling, Attrition and Non-Response

Difficulties caused by implementation during COVID-19 and the difficult recovery of the restaurant sector impacted our ability to recruit firms into the study. Using our recruitment strategies described above, we identified a list of 10,370 restaurants, coffee shops, and hotel cafeterias throughout the country that were suitable for taking the course. Building off that sample frame, we were able to reach 4,776 firms on the phone to encourage them to participate, offering them information on the course, monetary inducements, and graduation certificates. Ultimately, 196 firms enrolled and were randomly assigned to one of the three courses and roughly two dozen completed the entire six-week sequence.[4] Enrollment in the courses was relatively equal (Table 1), although a slightly higher absolute number signed up for the Restaurant Management course. Of those 196, only 17 restaurant owners finished the course, relatively evenly distributed across the three modules. In addition, 45 of the 196 enrollees made themselves available for the endline survey. Again, these numbers were relatively evenly distributed with 17 respondents from Management, 16 from Internal Controls, and 12 from the Marketing placebo.

Table 1: Non-Response and Attrition in Sample of Restaurants

Stage	**Total**	**Internal Controls**	**Marketing** (Placebo)	**Restaurant Management**
Sampling Frame	10,370			
Recruitment Contact	4,776			
Partially Completed Course	196	60	62	74
Fully Completed Course	17	5	5	7
Completed Survey	45	16	12	17

[4] Firms were assigned at the sampling stage using block random sampling, but they did not learn their treatment status until entering their randomly assigned ID code on the Vietcourse website.

Completed Course & Survey	13	4	4	5

5.2. Balance between Treatment Groups

The low response rates and small deviation in course enrollment raise concerns about selection bias. If these biases were associated with treatment conditions, we may not be able to definitively ascertain whether the course content or non-random selection into courses was driving the results. Fortunately, Figure 11 provides the results of a balance test on three pre-treatment covariates that shows no significant differences in pre-treatment status between respondents in the three different courses.

In the graph, the blue circles represent the average figure for each covariate, while the range bars represent 95% confidence intervals. Because the range bars overlap for all covariates and courses, we can conclude that differences between course participants on each item are not significantly different from zero. To take the top-left panel as an example, 25 percent of respondents from the Internal Controls course, 25 percent of respondents from Management, and 23.5 percent of respondents were coffee shop owners or CEOs as opposed to single-dish or multi-dish restaurants. While these numbers differ slightly, the gaps are not so great that the sector of the restaurant could be associated with differences in our outcome variables. Similar patterns are found for the location and gender of the respondent.

In sum, despite the small sample size, we can feel relatively confident that randomization ensured that the restaurants in each course at the time of the endline survey were sufficiently similar in observable and unobservable factors, and that differences in bribery can be attributed to the courses and not to the characteristics of the restaurants.

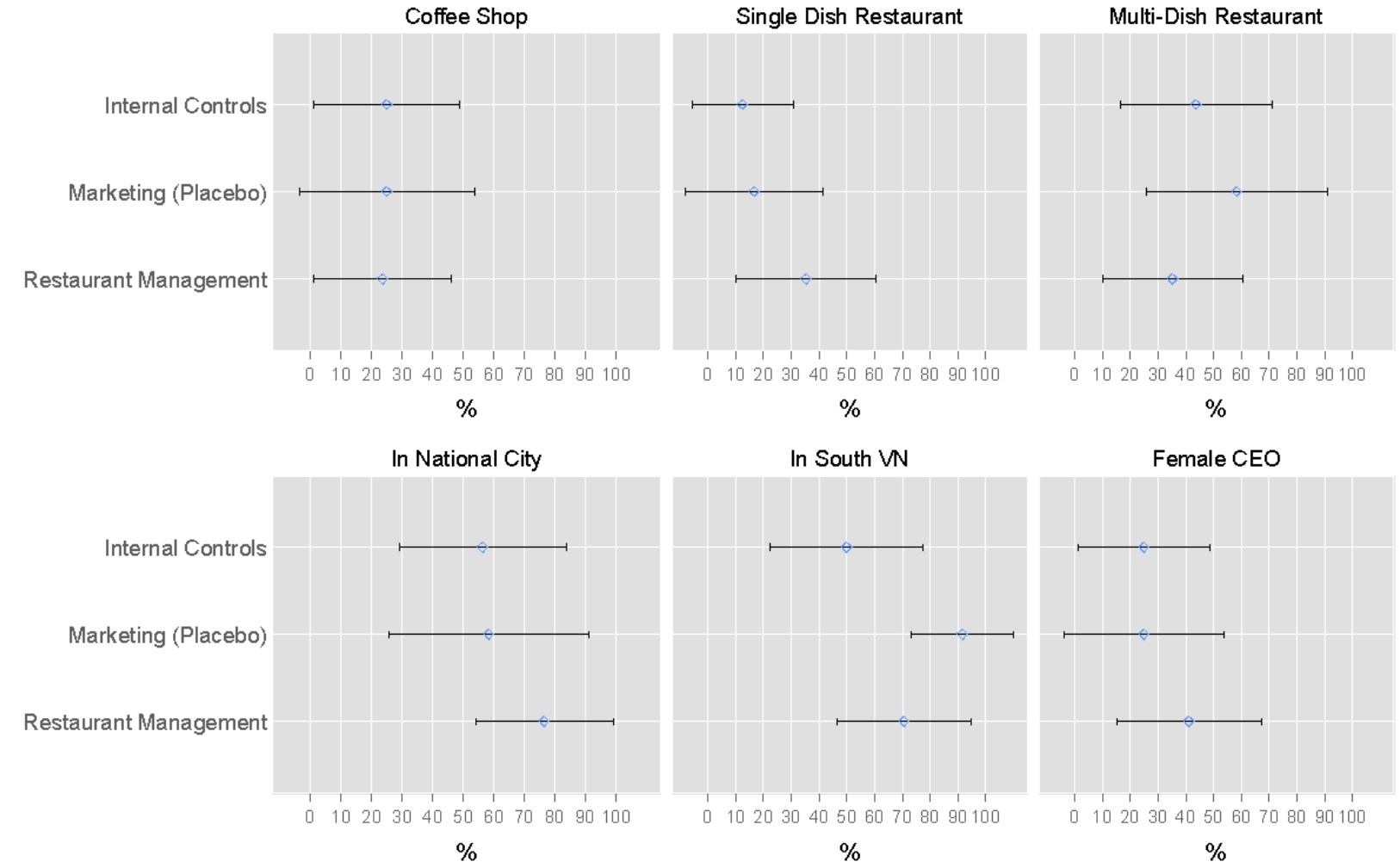

Figure 11: No Difference Between Treatment Groups in Potential Pre-Treatment Confounders

5.3. Descriptive Statistics

Table 2 reports the descriptive statistics on key variables that will be used in the econometric analysis below. The table is divided into four panels. The first panel reports the data on our main outcome variables of interest related to bribery. Fifty-one percent of firms in our sample paid a bribe last month, averaging about $203 USD, roughly 2.1 percent of total sales revenue that month.

The second panel reports the measures used to test the productivity theory of change, including last month's revenue, total expenditures, profit, and profit margin. As previously mentioned, we record both the restaurant's self-reported and accounting book profit margins. The key insight here is that the accounting books show that most firms suffered substantial losses in the month preceding the survey. Only seven firms reported financial data that showed positive profits. This result confirms statistical data and journalist reporting over this period, indicating that the summer and spring of 2023 was a very challenging period for the domestic service sector (GSO 2023, Janssen 2023, World Bank 2023). However, it's worth noting that firms' self-reported profits are more optimistic, with 75 percent of businesses reporting profit margins greater than 10 percent (above three on the six-point scale).

The third panel records data on regulatory knowledge and experiences. The average score on the three-point test of regulatory knowledge was just above one, only 7 percent of firms answered all three questions correctly. Moreover, all restaurants recorded substantial regulatory interactions in the month preceding month. The average restaurant was inspected just under three times with some restaurants receiving up to seven visits from regulators. Most were not fined during these inspections; 82 percent reported zero fines, leading to an average fine number in the sample of 0.38. However, some restaurants were severely punished with one firm receiving five regulatory fines.

Finally, the fourth panel reports pre-treatment variables regarding the demographic and type of businesses in the experiment. Just under 70 percent are in southern Vietnam, 64 percent are in major cities, and the most common participants were the owners of restaurants serving more than one type of dish (44 percent). Just under a quarter of the course participants were owners or managers of single-dish restaurants that serve a single specialty, such as noodle dishes like *phở* or *bún chả.* Another 22 percent operate coffee shops or other beverage outlets. About 31 percent of the owners are female entrepreneurs.

As we showed above, these demographic and sector variables do not vary across treatment groups. This is important because it means they are unlikely to lead to confounding in the determination of experimental effects.

Table 2: Descriptive Statistics on Key Variables

Variable	N	Mean	Std. Dev.	Min	Max
Outcome Measures					
Bribe Amount (USD)	45	202.7	519.3	0.0	2,050
Bribe Frequency (%)	45	51.1	50.6	0.0	100.0
Productivity Hypothesis Measures					
Last Month's Revenue (USD)	45	9,644	11,398	779	41,009
Last Month's Expenditures (USD)	45	68,997	114,892	-3,398	511,653
Profit (USD)	45	-59,353	107,726	-475,155	28,003
Accounting Profit Margin (%)	45	-7.71	7.27	-24.33	1.14
Self-Reported Profit Margin	45	3.38	1.70	0.00	6.00
Internal Control Measures					
Regulatory Knowledge (1-3)	45	1.11	0.93	0.00	3.00
Number of Regulatory Inspections	45	2.56	2.24	0.00	7.00
Number of Regulatory Fines	45	0.38	0.98	0.00	5.00
Pre-Treatment Variables					
In National City (%)	45	64.4	48.4	0.0	100.0
In South VN (%)	45	68.9	46.8	0.0	100.0
Female CEO (%)	45	31.1	46.8	0.0	100.0
Coffee Shop (%)	45	24.4	43.5	0.0	100.0
Single Dish Restaurant (%)	45	22.2	42.0	0.0	100.0
Multi-Dish Restaurant (%)	45	44.4	50.3	0.0	100.0
Hotel Restaurant (%)	45	8.9	28.8	0.0	100.0

5.4. Restaurants in Both Management and Internal Controls Reduce Bribery

Our primary interest is whether the Restaurant Management or Internal Control courses reduced bribery. In this section, we test this relationship through reports on an endline accounting book exercise and through a list experiment. In both analyses, we estimate both the share of bribe-paying firms and the average bribe sizes for all treatment groups. The balance of evidence indicates that students in the Management and Internal Controls courses paid bribes less frequently and in smaller amounts than firms in the placebo Marketing course. However, in contrast to our predictions in Hypothesis 6, the reductions in bribery were marginally greater for the Internal Controls students. This provides tentative evidence that improved accounting and auditing procedures are more responsible for reductions in corruption than productivity improvements. We address the differences in these mechanisms more formally in Section 5.5.

5.4.1. Bribery Measured from Accounting Books

We begin by analyzing bribery reported in restaurants' accounting provided in the endline survey. Vietnamese restaurants must keep track of bribes to calculate the total financial health of

their business and to make long-term estimations about future costs and profitability. Normally, these bribes are recorded in separate accounting books that are not shared with tax authorities. However, the amounts are well-known by managers and directors (Cole and Tran 2011). Critically, Vietnamese businesses do not mind sharing the amounts of bribes they pay in a confidential survey, but they are extremely reluctant to identify the recipient of the bribe due to fears of reprisal. Thus, in our accounting book exercise, we simply asked businesses to record their total bribe amounts in millions of VND as a line item in the overall budgeting exercise. Only two firms refused to answer or claimed they didn't know. In the estimation below, we impute the mean score of the sample for their answer, but the analyses are robust to alternative forms of imputation and multiple imputation.

Figure 12 provides the unadjusted bribery amounts for each course, demonstrating striking reductions in bribery for those in the treatment courses. Less than half of the students in the Restaurant Management course (41.2 percent) and Internal Controls course (43.8 percent) reported paying bribes in the previous month, compared to 75 percent of businesses in the placebo Marketing Course. These differences also had a significant impact on the bottom line. The average cost of bribery in the previous month for Marketing students was $427 USD, which was close to three times as much as that paid by those in Restaurant Management ($153 USD) and five times more than students in the Internal Controls course ($87 USD).

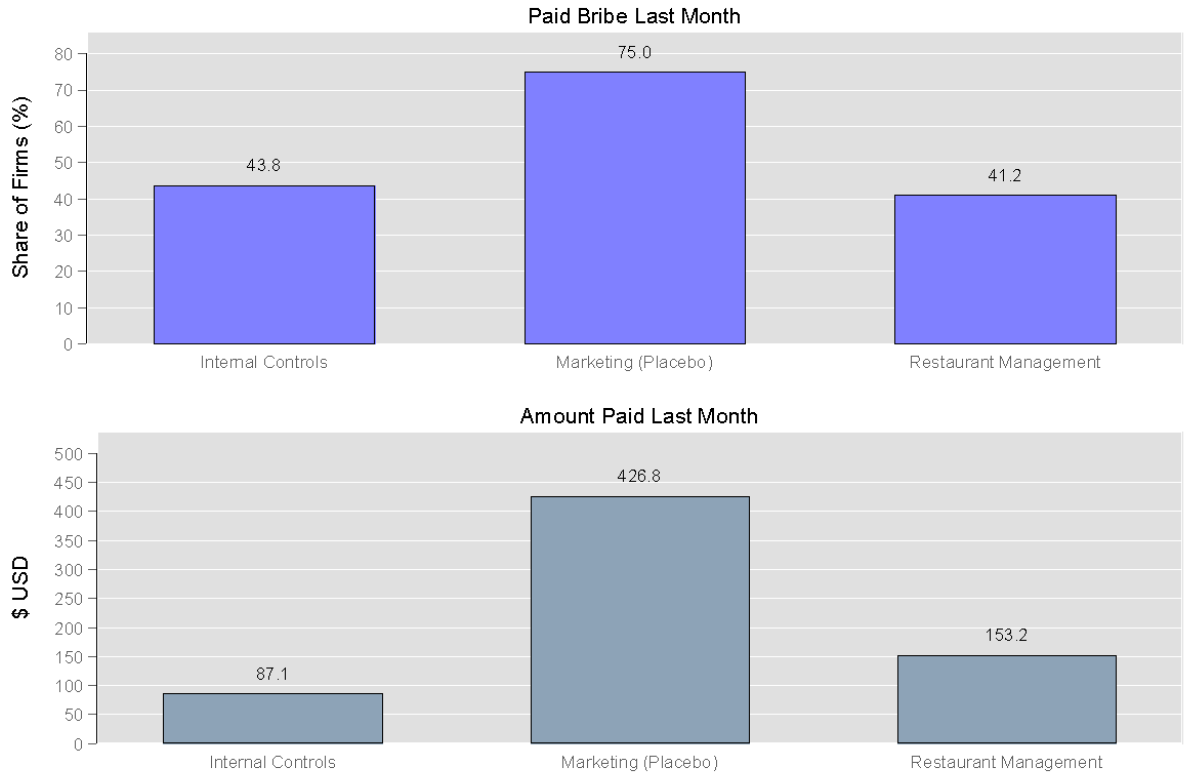

Figure 12: Firms in Placebo Course Pay Far More in Bribes than Two Treatment Groups

While these findings are impressive, it is possible that the small sample size and non-random selection into treatment may be biasing the estimates. Consequently, we present econometrics analyses in Tables 3 and 4. Both tables study the differences in bribery frequency (models 1-4) and amount (models 5-8) between treatment and placebo groups. The difference is that in Table 3, we group the Management and Internal Controls courses as a single treatment, while in Table 4, we study their separate effects. Models 1 and 5 provide the unadjusted results without any control variables. Models 2 and 6 control for firm location in a national-level city or southern Vietnam. Models 3 and 7 control for the gender of the owner or CEO. And Models 4 and 8 control for whether the business is a coffee shop without a full kitchen and thus less likely to experience strict regulatory inspections in food sanitation, food handling, and even fire safety than other restaurant types.

Each model presents the coefficient, which shows the intention to treat effect (ITE) and the standard error around that estimate. For the experimental treatment groups, we also provide the randomization inference p-value in brackets, which results from a permutation test with 1,000 replications, where we randomly shuffle the treatments, comparing the ITE from our experiment to all other conceivable treatment assignments. The RI p-value illustrates the number of alternative replications was greater than our ITE. For example, if 50 permutations were greater than our estimated ITE, this would produce an RI p-value of .05. The RI p-value is extremely helpful for providing a sharp null hypothesis in designs with small sample sizes when we worry that one or two observations may be driving the results (Ding at el. 2016).

Focusing on the fully specified Model 4 in Table 3, we find that treated firms were 32 percent less likely to pay any bribes in the previous month than firms in the Marketing placebo. In short, the courses reduced bribery from 74 percent of restaurants to 4 percent. This ITE is statistically significant at the .1 level with an RI p-value of .085. Given the small sample size, this figure is reassuring, illustrating that the finding is unlikely to be statistically anomalous.

Model 8 in Table 3 looks at the fully specified estimates for bribe amounts, finding that firms in the combined treatment groups paid $125 in bribes on average, $290 USD less in bribes than firms in the placebo Marketing course, who paid ($415). This implies a 70 percent reduction in bribery that can be attributed to participation in the courses. While the unadjusted bribe amount analysis in Model 4 is statistically significant, the ITE in Model 8 has an RI p-value of .103, which is slightly above conventional standards.

Table 3: Restaurants in Combined Treatments Pay Less Bribes Than Those in Marketing Placebo

Variables	Paid Any Bribe=1				Amount of Bribe ($ USD)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mgmt. or Internal Controls=1	-0.326	-0.338	-0.316	-0.316	-305.640	-311.427	-286.021	-290.307
	(0.165)	(0.173)	(0.173)	(0.175)	(170.850)	(182.280)	(181.975)	(179.331)
	[.106]	[.057]	[.086]	[.085]	[.047]	[.068]	[.114]	[.103]
National City=1		0.235	0.289	0.292		-124.160	-61.353	-23.371
		(0.152)	(0.159)	(0.163)		(160.812)	(166.976)	(166.510)
South Vietnam=1		0.023	0.057	0.056		-51.944	-13.401	-23.711
		(0.164)	(0.166)	(0.168)		(173.601)	(174.893)	(172.469)
Female CEO=1			-0.193	-0.197			-224.025	-273.146
			(0.167)	(0.172)			(175.252)	(175.831)
Coffee Shop=1				-0.019				-265.610
				(0.175)				(179.113)
Constant	0.750	0.591	0.578	0.582	426.833	546.876	530.913	596.891
	(0.141)	(0.223)	(0.222)	(0.229)	(146.307)	(235.396)	(233.930)	(234.756)
Observations	45	45	45	45	45	45	45	45
R-squared	0.083	0.134	0.162	0.163	0.069	0.085	0.121	0.168
RMSE	0.490	0.487	0.485	0.491	506.8	514.7	510.7	503.3

OLS coefficients with standard errors in parentheses and randomization inference p-values in brackets.

Table 4 disaggregates the effect of the two courses to uncover which course content has the larger impact on bribery. Here, the results are fascinatingly mixed. The Management course is significantly associated with lower bribe frequency, but the respondents in the Internal Controls course had lower briber payments.

Model 4 of Table 4 shows that respondents in the Management course were 35 percent less likely to pay bribes than those in the placebo course, an ITE that is statistically significant (RI p-value =.09). However, firms in the Internal Controls course were only 28 percent less likely to pay bribes than the placebo, an ITE that is not statistically distinguishable from zero. Notice that we can only compare the two different courses to the placebo. The seven-percentage point difference in ITEs for the Marketing and Internal Control courses is not statistically distinguishable from zero.

Model 8 of Table 4, however, shows the reverse pattern. In this case, we observe that the Internal Controls course paid average bribe amounts that were $360 USD less than the placebo course, which is statistically significant (RI p-value=.08), but the estimates for the Management Course, while a sizable reduction of $234, are not statistically significant from the placebo.

The bottom line is that the treatment courses appear to have a substantial impact on reducing bribery in both scale and scope, and content from both courses appears to be playing a role. At this stage, it is not clear whether the productivity or internal controls theory of change is most responsible for the differences. Certainly, the small sample size of only 45 observations is generating greater uncertainty, as only extremely large experimental effects are statistically distinguishable.

Table 4: Management Graduates Bribe Less Often, Internal Controls Graduates Pay Less

Variables	Paid Any Bribe=1				Amount of Bribe ($ USD)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Management Treatment	-0.338	-0.375	-0.347	-0.348	-273.593	-263.236	-229.192	-234.199
	(0.187)	(0.191)	(0.192)	(0.194)	(193.037)	(201.387)	(201.247)	(198.357)
	[.101]	[.066]	[.091]	[.09]	[.17]	[.208]	[.276]	[.266]
Internal Controls Treatment	-0.312	-0.291	-0.277	-0.278	-339.690	-372.891	-356.283	-359.652
	(0.189)	(0.201)	(0.200)	(0.203)	(195.517)	(211.685)	(210.161)	(207.125)
	[.122]	[.178]	[.198]	[.197]	[.08]	[.083]	[.095]	[.092]
National City=1		0.248	0.299	0.302		-141.486	-79.026	-40.922
		(0.156)	(0.162)	(0.166)		(164.802)	(170.086)	(169.615)
South Vietnam=1		0.039	0.069	0.068		-72.608	-35.873	-45.865
		(0.169)	(0.171)	(0.173)		(178.541)	(179.127)	(176.659)
Female CEO=1			-0.188	-0.192			-232.616	-281.487
			(0.169)	(0.174)			(176.883)	(177.465)
Coffee Shop=1				-0.019				-264.862
				(0.177)				(180.353)
Constant	0.750	0.569	0.559	0.564	426.833	575.924	563.969	629.335
	(0.143)	(0.230)	(0.229)	(0.236)	(147.797)	(242.449)	(240.440)	(241.096)
Observations	45	45	45	45	45	45	45	45
R-squared	0.084	0.139	0.166	0.166	0.072	0.093	0.131	0.178
RMSE	0.495	0.492	0.490	0.497	512.0	518.9	514.2	506.7

OLS coefficients with standard errors in parentheses and randomization inference p-values in brackets.

5.4.1. Bribery Measured through List Experiments

A key concern with the accounting book estimations is that the findings may be driven by social desirability bias. Firms in the Management and Internal Controls courses may have been more aware of regulatory monitoring and therefore more likely to report lower bribe payments in the endline survey. Consequently, as we described in Section 4.4.2, we employed a list experiment that provides plausible deniability to respondents. Because they are answering only the number of activities they engaged in, which contain several non-sensitive behaviors, they can report honestly without having their answers specifically tied to corruption. An additional feature of the list experiment is that it allows us to target bribery in a specific activity. As regulatory inspections are core to our theory of change, we focused our attention on regulatory bribery.

We find extremely similar results to the accounting book exercise. Restaurants in the Management and Internal Controls courses report paying less frequent and smaller bribes than those in the placebo Marketing course.

Figure 13 displays the simplest approach for analyzing list experiments by simply calculating the difference in means. Looking at the Internal Controls panel, we see that firms assigned to the non-sensitive category within the Internal Controls group reported 1.29 regulatory activities on average. At the same time, firms assigned to the list with the sensitive item reported 1.67 activities. The difference between these two estimates is 0.38, implying that 38 percent of firms in the Internal Course paid bribes, which is very close to the 44 percent we estimated from the accounting books. Using the same approach, we estimate that 40 percent of firms in the Management course paid bribes, which is again very similar to the 41.2 percent estimated from the accounting books. Critically, in both Internal Controls and Management the 95 percent confidence intervals for the estimates of the sensitive and non-sensitive items overlap. This means that despite the large estimates, due to our small sample sizes, we cannot be certain of whether we would estimate the same differences in repeated samples.

This is in sharp contrast to firms in the Marketing placebo course, where restaurants assigned to the non-sensitive list reported 0.2 inspection activities and firms with the sensitive list reported 1.7 activities. This implies a difference of 1.5 or over 150 percent. The larger number than 100 percent is certainly due to the small sample size and two firms in the sensitive reporting three activities out of four. Dropping these restaurants, however, still leads to a bribery estimate of exactly 100%. In addition, notice that the 95 percent confidence intervals between sensitive and non-sensitive items do not overlap, indicating that the activity estimates are statistically significant and likely to be recovered in repeated samples.

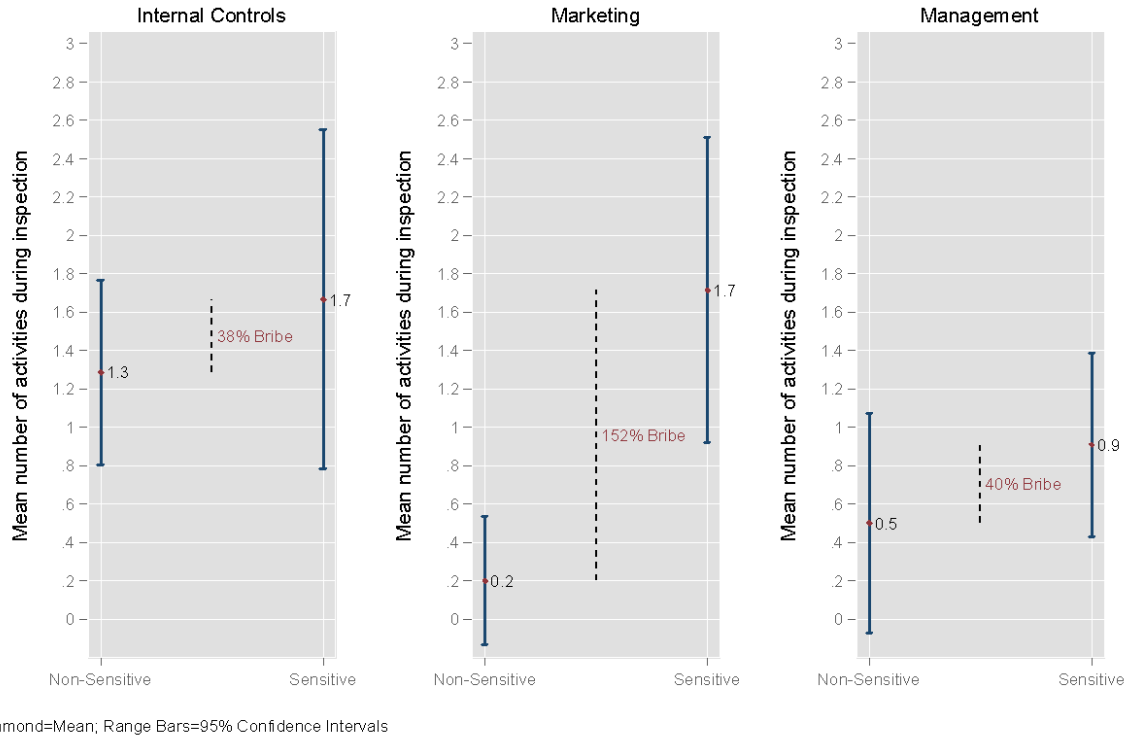

Figure 13: Management and Internal Controls Students Pay Bribes Less Frequently than Marketing Placebo Using Unmatched Count Technique

To estimate the size of the bribe payments, in Figure 14, we apply the same difference-in-means approach to the cost of each inspection-related activity that a firm might have engaged in. We find a very similar pattern as in the previous analyses. Bribery costs during inspections are extremely low for firms that took the Management and Internal Controls course. Respondents paid $3 USD and $4.20 USD respectively during inspection bribes in the past month. These differences are so small that they are not significantly different from zero, as illustrated by the overlapping confidence intervals. By contrast, students from the placebo Marketing course paid $34 USD in inspection bribes last month. Again, only the estimates in the Marketing group are sizable enough to be statistically significant.

Appendix C tests the list experiment results econometrically with control variables and randomization inference, using the two-stage econometrics procedure recommended by Blair et al. (2019). This process allows for more complex evaluation and theory testing which makes use of the rich descriptive information available in the survey. The results confirm the estimates above. Firms in the Management and Internal Controls course are over 60 percentage points less likely to pay bribes than the placebo course and paid about $30 USD less on average. However, due to the small sample size, estimates are no longer significant when pre-treatment control variables are included. As with the accounting estimations above, we do not find significant differences between the Management and Internal Controls classes.

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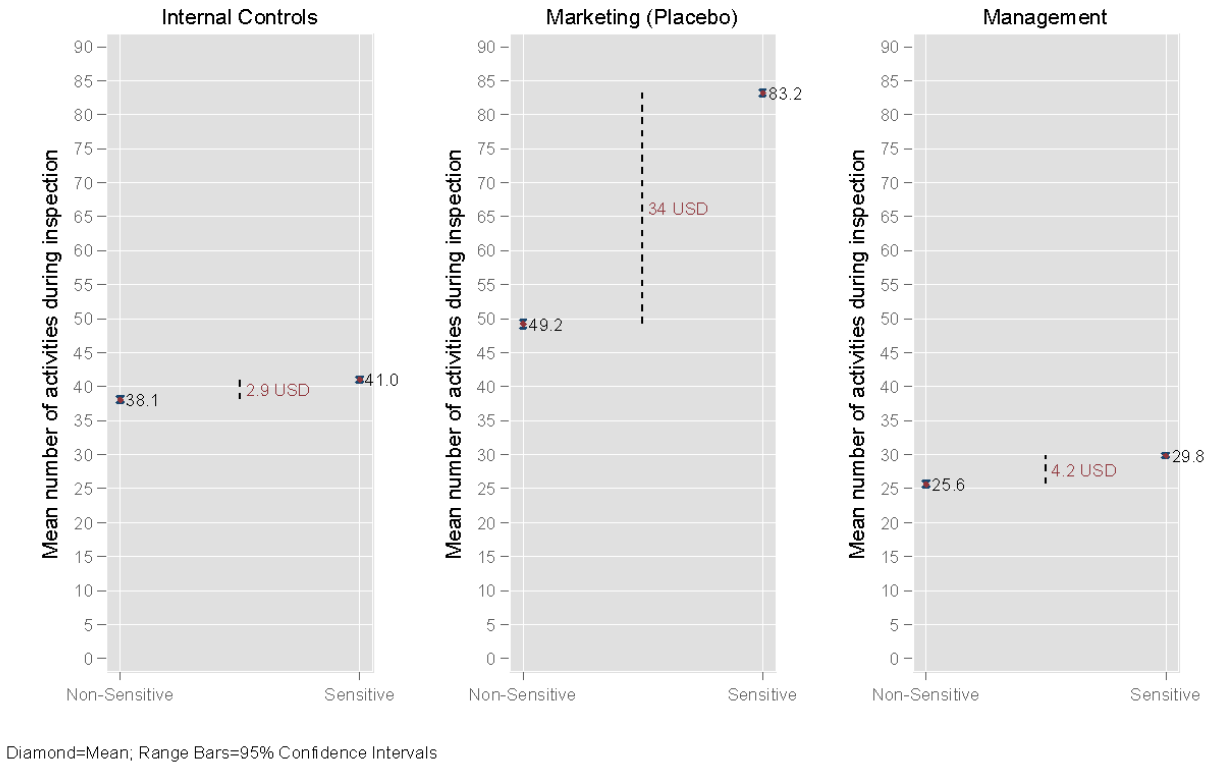

Figure 14: Management and Internal Controls Students Pay Lower Inspection Bribes than Marketing Students

5.5. Testing the Productivity Mechanism

This section studies whether the Management courses significantly improved productivity after the experiment. Drawing on firms' accounting workbooks from the previous month, we do not observe any significant differences in business performance across groups. This can be seen by the overlapping 95-percent confidence intervals in Figure 15. Restaurants report between $8,200 and $12,000 in monthly revenue, but these do not vary significantly by treatment group, and counter to our theory, the Marketing placebo had the highest sales revenue. Similarly, both accounting and self-reported profit margins do not differ across groups. The vast majority of firms in all treatments reported losses equivalent to about 8 percent of sales revenue in the past month.

The one interesting difference occurs in the calculation of total expenditures. In line with the productivity theory, Management students do report lower monthly costs of $33,645 USD than their peers in the other treatment groups, who report $87,650 (Marketing) and $92,800 (Internal Controls) respectively. In addition, the variation among Management students is much smaller than the other groups, as demonstrated by the much narrower confidence interval. Unfortunately, this result appears to be due to a few firms in the other groups reporting very high costs and is not significantly robust.

Testing this more rigorously with econometric analysis in Table 6 and randomization inference, however, we find no evidence of significant differences in business performance across groups.

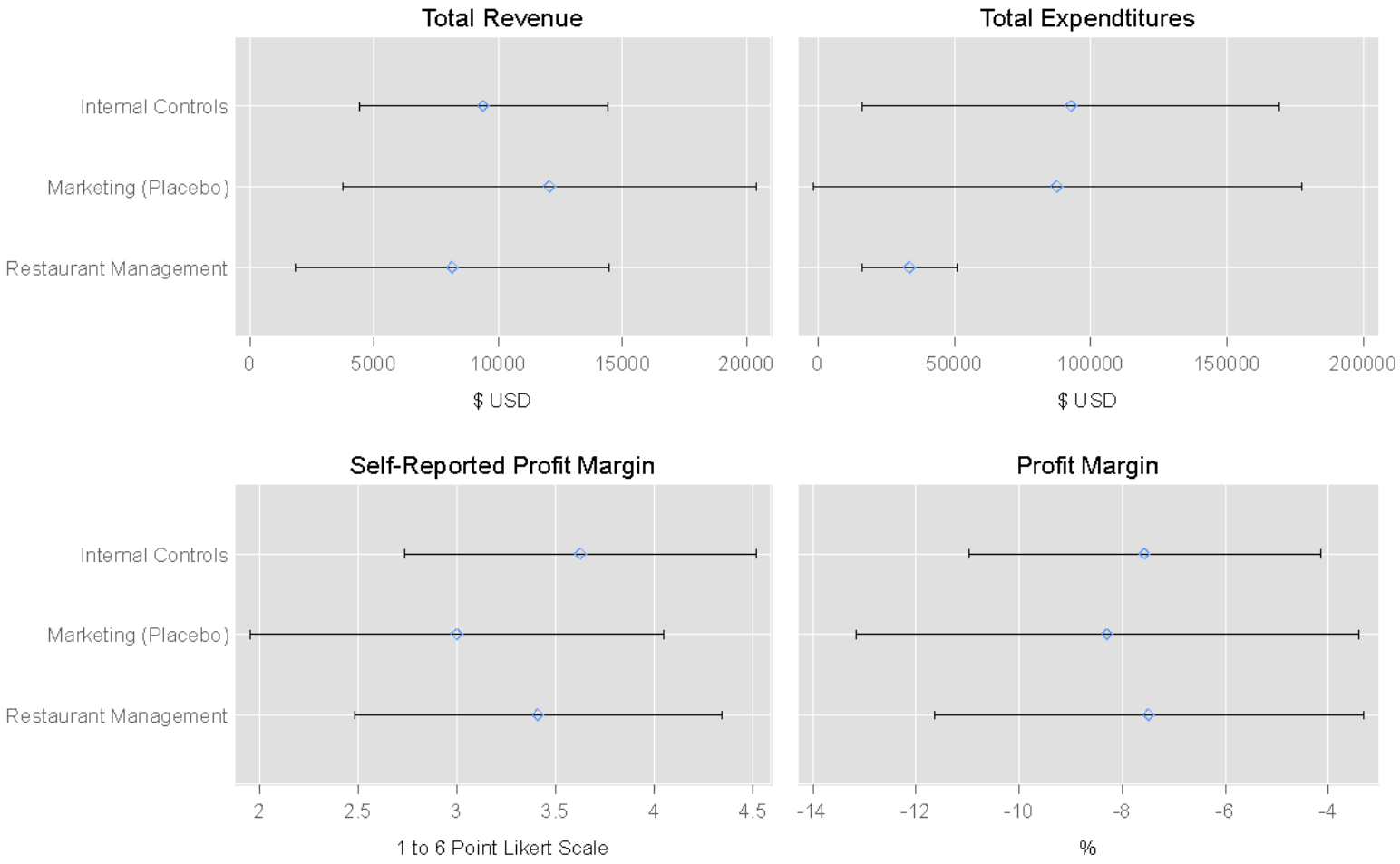

Figure 15: No Difference Between Treatment Groups on Post-Treatment Performance Measures

Table 5: No Evidence that Treatments Influenced Productivity

Variables	Total Expenditures ($1000s USD)				Productivity (Profits/Revenue, %)				Self-Reported (Profits/Revenue, %)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(5)	(6)	(7)	(8)
MBA or Internal Controls	-25.332	-53.099			0.763	0.607			0.515	0.155		
	(38.972)	(39.105)			(2.469)	(2.734)			(0.573)	(0.583)		
	[.531]	[.202]			[.754]	[.825]			[.378]	[.790]		
MBA Treatment			-54.005	-74.469			0.803	0.799			0.412	0.095
			(42.985)	(42.705)			(2.794)	(3.042)			(0.647)	(0.648)
			[.214]	[.093]			[.801]	[.775]			[.506]	[.885]
Internal Controls Treatment			5.132	-26.688			0.720	0.370			0.625	0.230
			(43.537)	(44.593)			(2.830)	(3.176)			(0.656)	(0.677)
			[.906]	[.594]			[.796]	[.905]			[.350]	[.733]
National City=1		-21.235		-14.550		-0.636		-0.696		0.755		0.774
		(36.309)		(36.517)		(2.539)		(2.601)		(0.541)		(0.554)
South Vietnam=1		-84.077		-75.639		-0.728		-0.803		-1.010		-0.986
		(37.609)		(38.034)		(2.629)		(2.709)		(0.561)		(0.577)
Female CEO=1		35.009		38.186		-0.204		-0.233		-0.141		-0.132
		(38.342)		(38.208)		(2.681)		(2.721)		(0.572)		(0.580)
Coffee Shop=1		-66.533		-66.818		0.084		0.086		0.648		0.647
		(39.058)		(38.829)		(2.731)		(2.766)		(0.582)		(0.589)
Constant	87.650	184.988	87.650	172.631	-8.286	-7.218	-8.286	-7.107	3.000	3.359	3.000	3.323
	(33.374)	(51.191)	(32.911)	(51.907)	(2.114)	(3.579)	(2.139)	(3.697)	(0.491)	(0.763)	(0.496)	(0.788)
Observations	45	45	45	45	45	45	45	45	45	45	45	45
R-squared	0.010	0.191	0.059	0.221	0.002	0.007	0.002	0.007	0.018	0.175	0.021	0.177
RMSE	115.6	109.7	114.0	109.1	7.324	7.672	7.410	7.770	1.700	1.636	1.717	1.656

OLS coefficients with standard errors in parentheses and randomization inference p-values in brackets.

5.6. Testing the Internal Controls Hypotheses

The internal controls mechanism predicts that well-trained managers have a better understanding of their firms' compliance procedures and potential exposure to regulatory violations. Thus, the clearest observable implication of the theory is better regulatory knowledge among those who experienced the course. Secondly, the theory predicts that there should be no difference in the fines paid by firms despite this regulatory knowledge. This is because the internal controls hypothesis predicts two equilibria. In the first, firms comply with regulations and pay fewer fines during inspections due to their higher management practices and regulatory knowledge. In the second, firms do not comply but avoid regulatory fines by paying bribes.

We explore these predictions in Figure 15 below, which presents bar graphs with 95 percent confidence intervals for three variables. First, we find that in line with the theory that firms taking the Internal Controls course have greater regulatory knowledge than their peers, answering half of the questions correctly, compared to 1 and 0.75 for the Management and Marketing courses. These results are confirmed through regression analysis in Table 7, which shows that the 0.75-point knowledge difference is statistically significant (RI p-value =.038) in the fully specified model with pre-treatment controls.

Critically, however, there are no differences between courses in the number of regulatory inspections that firms experienced or in the cost of fines levied during those experiments. Average inspections ranged between two and three for all groups, which is consistent with randomly allocated versus directed investigations.

Similarly, fines during those inspections occurred at similar rates across groups, with the Management group actually suffering marginally more fines of 0.53, compared to 0.17 in the Marketing group. This makes sense, as Internal Controls training firms are less susceptible to fines, but bribery also allows restaurant owners to avoid them as well. Again, these results are confirmed through regression analysis in Models 3-6 of Table 7.

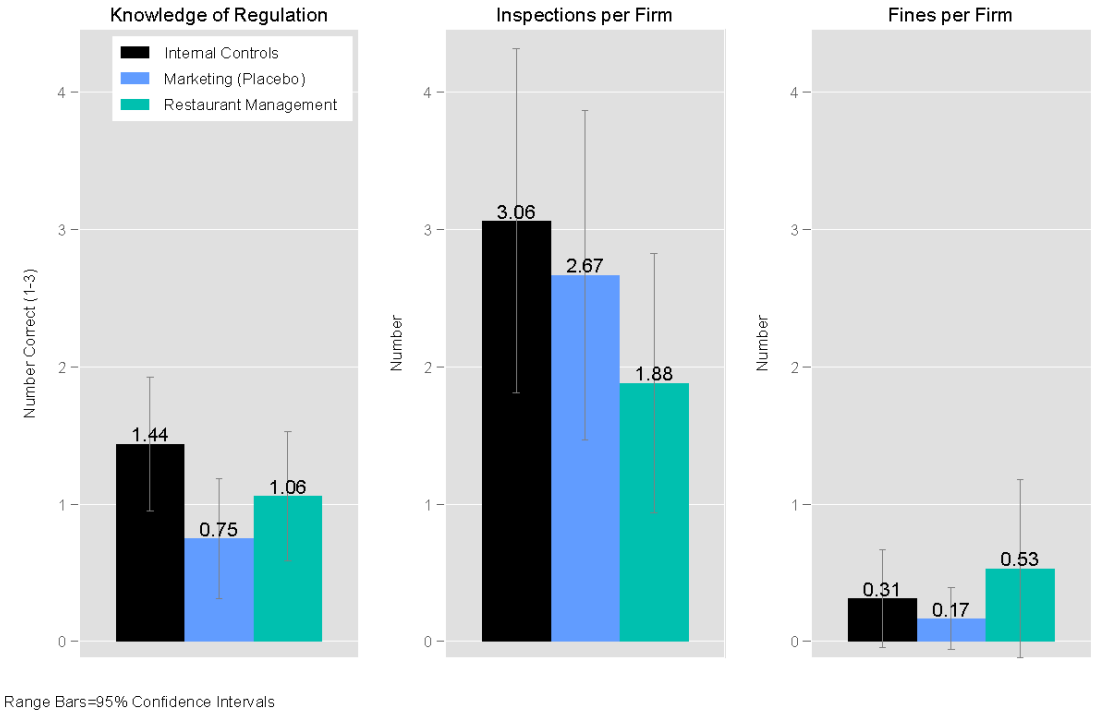

Figure 16: Those in Internal Controls Have Greater Knowledge but Experience No Differences in Fines or Inspections

Table 6: Restaurants in Internal Controls Treatment Have Greater Regulatory Knowledge

Variables:	Regulatory Knowledge (0-3)		Number of Inspections		Amount of Fines	
	(1)	(2)	(3)	(4)	(3)	(4)
MBA or Internal Controls	0.565		-0.647		0.212	
	(0.339)		(0.760)		(0.339)	
	[.08]		[.39]		[.558]	
MBA Treatment		0.402		-1.190		0.306
		(0.372)		(0.818)		(0.375)
		[.288]		[.163]		[.439]
Internal Controls Treatment		0.768		0.025		0.096
		(0.388)		(0.854)		(0.392)
		[.038]		[.981]		[.809]
National City=1	-0.208	-0.156	0.503	0.673	-0.105	-0.135
	(0.315)	(0.318)	(0.705)	(0.700)	(0.314)	(0.321)
South Vietnam=1	0.136	0.201	-1.139	-0.924	-0.076	-0.113
	(0.326)	(0.331)	(0.731)	(0.729)	(0.326)	(0.334)
Female CEO=1	-0.162	-0.138	0.320	0.401	0.407	0.393
	(0.333)	(0.333)	(0.745)	(0.732)	(0.332)	(0.335)
Coffee Shop=1	-0.018	-0.020	-1.603	-1.611	0.449	0.450
	(0.339)	(0.338)	(0.759)	(0.744)	(0.338)	(0.341)
Constant	0.791	0.696	3.738	3.424	0.084	0.138
	(0.444)	(0.452)	(0.994)	(0.994)	(0.443)	(0.456)
Observations	45	45	45	45	45	45
R-squared	0.081	0.107	0.161	0.214	0.081	0.090
RMSE	0.952	0.950	2.132	2.090	0.950	0.958

6. CONCLUSIONS AND POLICY IMPLICATIONS

Our randomized experiment provides substantial evidence that better managers are less likely to pay regulatory bribes and pay far smaller average bribe amounts when they are forced to pay. Contrary to our expectations, however, the reduction in bribe payments is not because better management quality makes firms more productive, thereby reducing the need for bribes to limit their competitive disadvantage. Rather, bribe reductions result from better managers putting in place greater systems of internal controls for accounting and auditing, which makes them more aware of the compliance of their subordinates and therefore less likely to unknowingly engage in regulatory violations.

We arrived at these conclusions after conducting a two-year randomized experiment that exposed selected restaurant owners and managers to six-week online courses in Management Training to test the productivity mechanism, Internal Controls training to test the internal control mechanism, and a Marketing placebo designed to keep participants interested in the course while not training on the specific skills we expected were necessary to reduce bribery.

Capturing bribe payments submitted as part of an accounting workbook during the endline survey, we find that less than half of the students in the Restaurant Management course (41.2 percent) and Internal Controls course (43.8 percent) reported paying bribes in the previous month, compared to 75 percent of businesses in the placebo Marketing Course. These differences had startling results on the bottom line. The average cost of bribery in the previous month for Marketing students was $427 USD, which was close to three times as much paid by those in Restaurant Management ($153 USD) and five times more than students in the Internal Controls course ($87 USD). These results were also validated using a shielded-response technique that provided firms with plausible deniability, reducing social desirability bias and threats of reprisals. Further testing reveals that greater regulatory knowledge rather than productivity is responsible for these dramatic changes.

The policy implications of this study are very clear. Practitioners can potentially place a large dent in corruption payments through broadscale Internal Controls training that increases manager awareness of regulations and compliance within their firm. This will insulate them from malicious bribe requests, as regulatory inspectors are less likely to find obvious violations for which they can threaten fines to extract bribes.

In Vietnam, we have already taken one large step toward achieving this goal by making the courses designed by ISD-NEU openly available on the Vietcourse to all participants. The course lecture, evaluation materials, and recording of peer-to-peer instruction are available for all participants. Unlike the Restaurant Management course, the Internal Controls training course is fungible and can be applied to firms in multiple industries.

While the results are sizable and in line with one of our pre-registered theories of change, sufficient caution is in order. Due to difficulties in recruitment, course completion, and attrition, our final sample is simply too small to draw definitive conclusions. It is possible that a small number of observations may be driving the results, reducing the ability to generalize to the larger population of Vietnamese businesses.

Before drawing definitive policy conclusions, we offer three recommendations for verifying these findings. First, we recommend scaling up the project by expanding to other industries to increase the sample and increase the take-up of the courses. Second, we recommend moving to in-person rather than online training to ensure greater commitment and higher completion rates. Finally, we recommend greater financial inducements to convince firms to enroll, complete courses, and fill out their accounting workbooks. Entrepreneurs of SMEs are extremely busy and operate at very narrow financial margins. Every moment away from the business counts, and these pressures challenge their dutiful commitment to external coursework, even free and well-designed ones.

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Appendix A: Formal Models of Theories of Change

A critical gap in corruption research concerns how SMEs interface with the bureaucracy. Existing academic literature on corruption focuses on the role of public officials and bureaucrats in extorting bribes from firms and citizens. While delivering important findings, this literature typically neglects the fact that the causal pathway also runs in the reverse direction. That is, less productive SMEs are often willing participants and active beneficiaries of corrupt transactions, and thus seek to initiate, sustain, and deepen corrupt relationships with bureaucrats. This may happen for two reasons. First, uncompetitive businesses may feel the need to bribe public officials to level the playing field. For example, restaurants may be unable to afford newer technology, and therefore resort to outdated or polluting technologies or unsanitary cooking and cleaning processes. To avoid punishment for these transgressions, they bribe regulators to look the other way. Second, corruption may arise from deviant activities by subordinates in the firm without higher managers' knowledge (Cole and Tran, 2011). We illustrate the choices firms face regarding regulatory compliance and bribery with a formal model.

A1. Production Function

We assume that each restaurant entrepreneur is endowed with an initial managerial capital ϕ. Consistent with the standard span-of-control assumption in the literature, we assume the entrepreneur faces a decreasing return-to-scale production technology.[5] Let q_i be the number of orders each restaurant serves. We conjecture a production function:

$$\log(q_i) = \phi_i + \beta_l \log(l_i) + \beta_v \log(v_i) + \epsilon_i$$

where l_i and v_i are respectively labor and variable inputs (such as food ingredients, electricity, fuel). $\beta_l + \beta_v \equiv \beta < 1$ indicates DRS.

Demand and Regulatory Standards

The restaurant also has an exogenous demand shifter ξ which depends on the restaurant's location and long-term reputation. A representative consumer allocates expenditure across restaurants based on their prices and demand shifters.[6] The restaurant's demand is then:

$$qiD = \xi i \, (pi/P) - \sigma$$

where P is the aggregate price index of all competing restaurants and σ is interpreted as the elasticity of demand.

All the restaurants also need to incur a compliance cost to achieve the government regulatory standards (for instance, hygiene, fire safety, etc.). We assume the cost is firm-specific and

[5] This is reasonable given the space constraint of each restaurant, at least, in the short run.

[6] It is isomorphic to a setting where a large group of consumers make discrete choice of restaurants.

denoted as F_i. If the firm complies with the regulation by incurring this cost, then it can always operate. However, firms can also choose to "save" the cost by cutting corners. The government will randomly inspect each restaurant with probability s_i. The restaurant will forfeit a fraction α of its operating profit if it were caught.

A2. Model Restaurant Profitability

Given the demand for orders q_i^D, the restaurant minimizes its total operating cost such that

$$minl,vwli + pvvi \quad \phi_i l_i^{\beta_l} v_i^{\beta_v} \geq q_i^D$$

The FOC implies that $\frac{w}{p_v} = \frac{\beta_l}{\beta_v}\frac{v_i}{l_i}$. It is straightforward to show that the total cost function is

$$C(\phi_i, q) = \left(\frac{q}{\phi_i}\right)^{\frac{1}{\beta}} \underbrace{\beta\left(\beta_l w\right)^{\frac{\beta_l}{\beta}}\left(\beta_v p_v\right)^{\frac{\beta_v}{\beta}}}_{C_{wv}}$$

The total cost is decreasing in managerial capital ϕ_i, but convex in a total number of orders q, reflecting the decreasing returns. Faced with downward-sloping demand, the restaurant sets the optimal price (and its implied quantity)

$$max_q P\left(q\right)^{1-\frac{1}{\sigma}} \xi_i^{\frac{1}{\sigma}} - C_{wv}\left(\frac{q}{\phi_i}\right)^{\frac{1}{\beta}}$$

The FOC implies that $q^{\frac{1}{\beta}-\frac{\sigma-1}{\sigma}} = \left[\frac{P}{C_{wv}}\beta\left(\frac{\sigma-1}{\sigma}\right)\right]\phi_i^{\frac{1}{\beta}}\xi_i^{\frac{1}{\sigma}}$. The total revenue is

$$R(\phi_i, \xi_i) = \left(\xi_i \phi_i^{\sigma-1}\right)^{\frac{1}{\sigma-\beta(\sigma-1)}}\left(P^{\sigma} C_{wv}^{\beta(1-\sigma)}\right)^{\frac{1}{\sigma-\beta(\sigma-1)}}\left[\beta\left(\frac{\sigma-1}{\sigma}\right)\right]^{\frac{\beta(\sigma-1)}{\sigma-\beta(\sigma-1)}}$$

and the total cost is $C(\phi_i, \xi_i) = \left(\xi_i \phi_i^{\sigma-1}\right)^{\frac{1}{\sigma-\beta(\sigma-1)}}\left(P^{\sigma} C_{wv}^{\beta(1-\sigma)}\right)^{\frac{1}{\sigma-\beta(\sigma-1)}}\left[\beta\left(\frac{\sigma-1}{\sigma}\right)\right]^{\frac{\sigma}{\sigma-\beta(\sigma-1)}}$.

It is easy to show then the total profit of the restaurant is increasing in both the demand shifter ξ_i and the managerial capital ϕ_i

$$\pi(\phi_i, \xi_i) = \left(\xi_i \phi_i^{\sigma-1}\right)^{\frac{1}{\sigma-\beta(\sigma-1)}} \underbrace{\left(P^{\sigma} C_{wv}^{\beta(1-\sigma)}\right)^{\frac{1}{\sigma-\beta(\sigma-1)}}\left[\beta\left(\frac{\sigma-1}{\sigma}\right)\right]^{\frac{\beta(\sigma-1)}{\sigma-\beta(\sigma-1)}}\left(1-\beta\left(\frac{\sigma-1}{\sigma}\right)\right)}_{C_{\pi}}$$

A3. Compliance with No Bribe

We start with a baseline setting that the government official can not be bribed. In this case, the firm will need to decide whether to pay the compliance cost F_i. If the restaurant does not comply, then upon inspection it will retain a fraction τ of the demand ξ (think of it as the number of business days lost to punishment closure or a bad reputation with customers). The trade-off is then simply the firm will choose to comply if

$$\pi(\phi_i, \xi_i) - F_i \geq s_i \left[\pi(\phi_i, \xi_i)\tau^{\frac{1}{\sigma-\beta(\sigma-1)}}\right] + (1 - s_i)\pi(\phi_i, \xi_i)$$

$$F_i \leq s_i \left[\pi(\phi_i, \xi_i)(1 - \tau^{\frac{1}{\sigma-\beta(\sigma-1)}})\right]$$

Assume that $F_i = F$, i.e., the compliance cost is the same. Then it is clear that the more productive restaurants (larger ϕ_i) will comply since they have more profit at stake.

A4. Compliance with Bribes

Assume that now the restaurants could incur a bribe cost $B_i < F_i$ such that the government official will allow the firm to pass even upon random inspection. However, since non-compliance (such as hygiene and safety) still impacts real customer demand, we assume that the bribing (non-compliance) restaurants retain $1 > \tau^B > \tau$ of the demand ξ.

A4.1. Productivity Theory of Change

Restaurants now can decide whether to bribe, truly comply, or do nothing. They will choose to truly comply if

$$\pi(\phi_i, \xi_i) - F_i \geq \pi(\phi_i, \xi_i)(\tau^B)^{\frac{1}{\sigma-\beta(\sigma-1)}} - B_i$$

$$\pi(\phi_i, \xi_i) - F_i \geq s_i \left[\pi(\phi_i, \xi_i)\tau^{\frac{1}{\sigma-\beta(\sigma-1)}}\right] + (1 - s_i)\pi(\phi_i, \xi_i)$$

Compared with the previous constraint (i.e. no bribe), we have more condition

$$F_i - B_i \leq \left[\pi(\phi_i, \xi_i)(1 - (\tau^B)^{\frac{1}{\sigma-\beta(\sigma-1)}})\right]$$

The left-hand side is the savings from bribing, however, the right-hand side is the real customer capital loss. Again if $F_i = F, B_i = B$, then the more productive firm has more to lose and will be less inclined to bribe.

A4.2. Internal Control Theory of Change

One way to interpret the internal control is to assume that the compliance cost F_i is a decreasing function of ϕ_i. In other words, better managers can monitor the lower-level employees and

facilitate compliance procedures better. It then reinforces the productivity theory of change. We have

$$F(\phi_i) - B \leq \left[\pi(\phi_i, \xi_i)(1 - (\tau^B)^{\frac{1}{\sigma - \beta(\sigma-1)}})\right]$$

where the left-hand side (incremental saving of bribes) is decreasing in ϕ, and the right-hand side (benefit of compliance) is increasing in ϕ.

Appendix B: Endline Survey Instrument

Restaurant Performance Survey

The Restaurant Performance Survey is a self-help tool that is meant to assist you in keeping track of your business performance by recording expenses and revenue in addition to regulatory compliance requirements in the food service industry. The survey was designed by economists at Duke University in the United States with the assistance of Vietnamese economic and regulatory experts at National Economics University and the Vietnam Chamber of Commerce and Industry. The Restaurant Performance Survey is designed to help you, the owner of the business, and only you. After you fill out the digital workbook, a composite report of your monthly performance will be produced automatically.

Please keep in mind all data derived from the application is strictly confidential and will stored outside of Vietnam. You do not need to answer every question and can stop the survey at any time. No data will be sold or transmitted to external parties, including central and local government officials in Vietnam, in any way. Aggregate data will only be used anonymously by academic researchers for the sole purpose of improving the business environment for entrepreneurs like you. If you agree to participate in this survey, please click the Yes button below.

Yes/No

This survey has four major sections. First, we would like you to take a few pictures of your business establishment. This will allow you to record physical changes in your operations over time. Second, please record your monthly expenses and sales data, which will allow the app to calculate your performance metrics. Finally, record some basic data on your experiences with government regulations that influence your business performance. This will help you calculate how much time and energy you spend on these activities during your daily operations.

Please click HERE if you agree to continue using this anonymous application.

Note that "Your business" refers to this establishment – that is, this physical location. Even if your restaurant has other locations or branches, please answer the questions for this specific location. To save time, for questions about monetary value, please put the answers in millions of VND. For example, if your answer is 3,000,000 VND, please input "3". If your answer is 500,000 VND, please input "0.5".

I. Finance and Business Performance

Business outputs

1. What is the average price you receive for each person's order?

Business revenues and value of inventories

2. In the last month, what were your total revenues?
3. In the last month, what were your total revenues from sales of food, drink, and other products?
4. In the last month, what were your total revenues from any other activities (such as space rental, equipment rental, or earnings on investments)?

The next three questions address the value of *inventories*. These include (1) ingredients for dishes you cook and serve on-site, including fresh fruits and vegetables, raw or cooked meats, rice, and other grains, or other types of foods; (2) prepared ingredients such as sauces and condiments; and (3) prepared items such as canned or bottled beverages that you plan to resell to customers.

5. What was your total spending on inventories in the most recent calendar month?
6. What percent of the inventories that you purchased in the most recent calendar month were <u>used</u> in the most recent calendar month?
7. What percent of the inventories that you purchased in the most recent calendar month were <u>left over</u> until this month?
8. What percent of the inventories that you purchased in the most recent calendar month became <u>spoiled or wasted</u>?

Business expenses in the last month

For each of questions 8-18, please report the amount you have spent on each of the following categories of business expenses during the most recent calendar month.

9. Purchase of cooking or serving materials
10. Purchase of electricity, water, gas, fuel, and cell phones (either through a plan, or usage for talk, text, and data)
11. Wages, salaries, bonuses, and social payments for employees and contract workers
12. Owner's salary (if there is no official salary and the owner's salary is simply the business profit, then enter zero)

13. Informal charges (e.g., payments or gifts to regulators, inspectors, or any other official)
14. Rent for machinery, equipment, land, and/or buildings
15. Interest paid on loans
16. Value-added tax (VAT)
17. Corporate income taxes (CIT)
18. Maintenance and repairs
19. Other expenses (specify the type of expense and the amount)

Profits; owner's income

20. In the most recent calendar month, what were your gross profit margins? That is the ratio of your profits (total revenues minus total expenses) to total revenues. For example, if your revenues are 50 million VND and your total expenses are 40 million VND, your total profits are 10 million and your profit margin is 20%.

    - Below 0%
    - 0% -5%
    - 5% - 10%
    - 10% - 20%
    - 20% - 30%
    - 30% - 50%
    - Above 50%

Household/business alignment

21. Did you use revenues from your business – other than your salary or the business income that you paid to yourself – to pay for expenses in your household?
22. *This question appears only if the answer to #19 is yes*: When estimating the profits for your business, are you accounting for these household expenses either by reducing revenues or including them as itemized expenses?
23. *This question appears only if the answer to #19 is yes:* How much did you pay for these household expenditures during the most recent calendar month?
24. During the most recent calendar month, did you consume any food items (either fresh or prepackaged) in your household, that were purchased for the business?
25. *This question appears only if the answer to #22 is yes.* During the last month, what is the value of food items (either fresh or prepackaged) that you consumed in your household, that were purchased for the business?

II. Experience with Food Service Regulations

24. Did you get visited by inspectors from any of these following regulatory authorities in the past month?

- Food sanitation
- Fire safety
- Social insurance
- Taxes
- Market Regulation
- Environment
- Other, please specify:

25. Were you fined by inspectors from any of these following regulatory authorities in the past month?

- Food sanitation
- Fire safety
- Social insurance
- Taxes
- Market Regulation
- Environment
- Other, please specify:

26. According to your knowledge, what's the official fine for this fire safety violation: *"No display of any signage denoting fire safety rules"?*

100,000 VND - 500,000 VND
500,000 VND – 1,000,000 VND
1,000,000 VND – 2,000,000 VND
2,000,000 VND – 3,000,000 VND

27. According to your knowledge, what's the official fine for this fire safety violation: *"Illegal possession of dangerously explosive and inflammable materials"?*

1,000,000 VND – 2,000,000 VND
2,000,000 VND – 10,000,000 VND
10,000,000 VND – 15,000,000 VND
15,000,000 VND – 25,000,000 VND

28. According to your knowledge, what's the official fine for this sanitation violation: "*Using food materials which are out of shelf life or without clear origin"?*

1,000,000 VND – 2,000,000 VND
2,000,000 VND – 10,000,000 VND
10,000,000 VND – 15,000,000 VND
15,000,000 VND – 25,000,000 VND

LIST EXPERIMENTS

General bribery

27a. Please read this list of common activities that people normally engage in while running a restaurant like yours. Please tell us how many of these activities your business, personally, engaged in in the past 30 days. **Do not tell us which activities**; We only need to know the **total number of actions** you engaged in**.**

(Version A)	(Version B)
- Hired new employees - Modified the seating arrangements - Gave informal payments or presents to local government officials - Opened new branches under your restaurant's brand name in the same city/province ☐ 0 activities ☐ 1 activities ☐ 2 activities ☐ 3 activities ☐ 4 activities	- Hired new employees - Modified the seating arrangements - Hired a professional data analytics firm to assess your restaurants' sales numbers - Opened new branches under your restaurant's brand name in the same city/province ☐ 0 activities ☐ 1 activities ☐ 2 activities ☐ 3 activities ☐ 4 activities

27b. Please tell us your total expenditures on these activities in the past 30 days. There is no need to indicate the amount for specific items. We only need to know the **total amount** you spent on these activities.

(Version A)	(Version B)
- Hired new employees - Modified the seating arrangements - Gave informal payments or presents to local government officials - Opened new branches under your restaurant's brand name in the same city/province **TOTAL EXPENDITURE: _____ (VND)**	- Hired new employees - Modified the seating arrangements - Hired a professional data analytics firm to assess your restaurants' sales numbers - Opened new branches under your restaurant's brand name in the same city/province **TOTAL EXPENDITURE: _____ (VND)**

Bribery during inspections

28a. Please read this list of common activities that establishments like yours normally engage in while being visited by government regulatory inspectors. Please tell us how many of these activities your business, personally, engaged in the **last time such a visit took place**. **Do not tell us which activities**; We only need to know the **total number of actions** you engaged in**.**

(Version A)	(Version B)
- Closed the business temporarily during the inspections - Presented gifts (monetary or in-kind) to government inspectors - Checked for violations before the inspectors arrived - Retrain your employees after inspections to improve regulatory compliance ☐ 0 activities ☐ 1 activities ☐ 2 activities ☐ 3 activities ☐ 4 activities	- Closed the business temporarily during the inspections - Consulted lawyers/legal counsel - Checked for violations before the inspectors arrived - Retrain your employees after inspections to improve regulatory compliance ☐ 0 activities ☐ 1 activities ☐ 2 activities ☐ 3 activities ☐ 4 activities

28b. Please tell us your total expenditures for the following items the **last time such a visit took place**. There is no need to indicate the amount for specific items. We only need to know the **total amount** you spent on these activities.

(Version A)	(Version B)
- Closed the business temporarily during the inspections - Presented gifts (monetary or in-kind) to government inspectors - Checked for violations before the inspectors arrived - Retrain your employees after inspections to improve regulatory compliance **TOTAL EXPENDITURE: _____ (VND)**	- Closed the business temporarily during the inspections - Consulted lawyers/legal counsel - Checked for violations before the inspectors arrived - Retrain your employees after inspections to improve regulatory compliance **TOTAL EXPENDITURE: _____ (VND)**

III. Photographs

Please take a picture of:

29. Your kitchen and cooking facilities in today's conditions. Please make sure the primary stove is visible in the picture.
30. Your customer seating area in today's conditions.
31. Your solid waste disposal bins in today's conditions
32. The fire extinguisher with the last maintenance data visible. Upload a picture of the ceiling if there is no fire extinguisher on the premises.
33. The first page of the main entrées in your most current restaurant menu.

Appendix C: Two-Stage Multiple Regression Test of List Experiment

Appendix C tests the list experiment results econometrically with control variables and randomization inference, using the two-stage econometrics procedure recommended by Blair et al. (2019). This process allows for more complex evaluation and theory testing which makes use of the rich descriptive information available in the survey. The Imai process involves fitting a model to describe the control group, then using the estimated coefficients to predict new values for the treated group, and finally fitting the imputed values over the observed in the treated group through an expectation algorithm to produce estimators for each variable included in the following model:

$$Y_i = f(X_i\gamma) + T_i(X_i\delta) + \varepsilon_i, where:$$

- Y_i : response variable (total number of activities),
- T_i : treatment variable (received survey with sensitive item),
- X_i : matrix of covariates,
- $f(X_i\gamma)$: model for non-sensitive items (negative binomal regression),
- $g(X_i\delta)$: model for sensitive items (non-linear least squares).

In the first stage of the adapted procedure, we fit the $f(X_i\gamma)$ model to the control group and obtain $\hat{\gamma}$, which is the relationship between participating in the nonsensitive behavior and each independent variable. In the second stage, we fit the $g(X_i\delta)$ model to the treatment group, after subtracting $f(X_i\hat{\gamma})$ from and obtain $\hat{\delta}$, the relationship between participating in the sensitive behavior and each independent variable.

When there are no covariates (independent variables) introduced in the model, the estimator reduces to the difference-in-means estimator. This can be seen in Model 5 of ***Table 5***, which replicates the difference-in-means estimator from Figure 12 above. Note that the constant is 1.51, indicating the 151 percent that we uncovered for the placebo group. We can obtain the bribery amounts for Management and Internal Controls by subtracting their estimates from 1.51. Thus, 1.51 minus 1.13 equals .38 or the 38% estimate of bribery we calculated for Internal Controls. Also note that the number of observations (27) is about half of the true sample of firms, as the second stage is only performed on the treatment group.[7]

Models 1, 2, 5, and 6 study the share of firms paying bribes, while Models 3, 4, 7, and 8 study bribe amounts. Each analysis begins with an unadjusted model first before adding pre-treatment controls in a fully-specified model.

[7] Due to space considerations, first stage estimations of nonsensitive items are not reported in the paper, but are available upon request and are documented in our replication materials.

The results confirm the estimates above. Firms in the Management and Internal Controls course are over 60 percentage points less likely to pay bribes than the placebo course about $30 USD less on average. However, due to the small sample size, estimates are no longer significant when pre-treatment control variables are included. As with the accounting estimations above, we do not find significant differences between the Management and Internal Controls classes.

Table 7: List Experiment Estimates Using Two-Stage Blair et al. (2019) Estimator.

Variables	Paid Any Bribe=1		Amount ($)		Paid Any Bribe=1		Amount ($)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mgmt. or Internal Controls	-1.187	-0.811	-31.455	-10.385				
	(0.564)	(0.601)	(29.654)	(31.482)				
	[.054]	[.218]	[.305]	[.717]				
Management Treatment					-1.105	-0.699	-29.785	-9.086
					(0.611)	(0.650)	(33.231)	(35.002)
					[.081]	[.324]	[.352]	[.758]
Internal Controls Treatment					-1.133	-0.764	-31.050	-12.270
					(0.637)	(0.698)	(34.637)	(37.600)
					[.082]	[.311]	[.376]	[.72]
National City=1		-1.535		-16.892		-1.344		-17.843
		(0.660)		(34.563)		(0.680)		(36.636)
South Vietnam=1		0.368		-3.113		0.570		-4.150
		(0.631)		(33.072)		(0.657)		(35.405)
Female CEO=1		0.624		8.244		0.487		8.350
		(0.660)		(34.563)		(0.658)		(35.417)
Coffee Shop=1		0.372		-7.525		0.279		-7.243
		(0.723)		(37.859)		(0.722)		(38.879)
Constant	1.514	1.695	33.979	27.364	1.514	1.456	33.979	28.881
	(0.485)	(0.869)	(25.522)	(45.510)	(0.478)	(0.910)	(25.978)	(49.022)
Observations	27	27	27	27	27	27	27	27
R-squared	0.151	0.336	0.043	0.029	0.145	0.326	0.040	0.030
RMSE	1.283	1.258	67.53	65.89	1.264	1.253	68.73	67.50

OLS coefficients with standard errors in parentheses and randomization inference p-values in brackets.