Eat, Drink, Firms, Government: An Investigation of Corruption from Entertainment and Travel Costs of Chinese Firms*

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Abstract

Entertainment and travel costs (ETC) is a standard expenditure item for Chinese firms with an annual amount equal to about 3 percent of total value added. We use this objective accounting measure as a basis to analyze the composition of ETC and the effect of ETC on firm performance. Relying on the predictions from a simple model of managerial decision-making, we identify components of ETC by examining how the total ETC responds to different institutional environmental variables. We find strong evidence that firms' ETC consists of a mix that includes bribery to government officials both as "grease money" and "protection money," expenditures to build relational capital with suppliers and clients, and managerial excesses. ETC overall has a significantly negative effect on firm productivity, but its negative effect is much less pronounced for the firms located in cities with low-quality government service and those subject to severe government expropriation. The negative effect is also less pronounced for private firms (relative to state-owned enterprises), for larger firms, and for firms in low-income regions.

Keywords: corruption, government expropriation, corporate governance.

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1 Introduction

Corruption is one of the central issues in developing and transitional economies. Indeed, the Copenhagen Consensus identified "governance and corruption" as one of the global priority proposals (see Rose-Ackerman 2004). At least two crucial conditions need to be met to curb corruption effectively: first, we must have effective methods to detect corruption, and second, we must know the institutional determinants of corruption. Yet, due to its illicit nature, corruption is notoriously difficult to detect with objective data. As a result, most of the existing literature on corruption relies either on micro-level subjective surveys or country-specific corruption perception indices (see, e.g. Ades and Di Tella 1999; Mauro 1995; and Treisman 2000 for recent contributions and Bardhan 1997 for a literature review). However, it is well known that subjective survey data can suffer from a number of biases (see, for example, Bertrand and Mullainathan 2001 for a recent exposition).

Recent literature has proposed auditing or experimental approaches to identify evidence of corruption (see, e.g., Olken 2006, 2007 and Bertrand *et al.* 2007). While such objective measures of corruption is desirable, it is often costly to audit all public projects where corruption may arise, and the very act of auditing may affect the degree of corruption. Moreover, corruption can occur in many situations where an objective assessment is impossible. In such cases, researchers have attempted to rely on predictions from economic models for *indirect* evidence of corruption. For example, Duggan and Levitt (2002) use a simple game-theoretical model that highlights the nonlinear incentive structure of promotion in Japanese sumo wrestling to find evidence of match rigging. Di Tella and Schargrodsky (2003) use the negative correlation between hospital input prices in Buenos Aires and auditing intensity to infer that hospital procurement officers may be engaged in accepting bribes. Khwaja and Mian (2005) examine the relationship between whether firms have politicians on their board and their loan amount as well as default rate to make indirect inference of corruption in Pakistan. Hsieh and Moretti (2006) infer corruption in Iraqi's oil-for-food program from the underpricing of Iraqi oils.

While finding reliable and objective, albeit indirect, evidence of corruption is important, from a public policy viewpoint, it is equally critical to understand the institutional causes and economic consequences of corruption. Of course, corruption results from weak institutions; but, as argued in Acemoglu and Johnson (2005), not all weak institutions are alike. They proposed a dichotomy of "property rights" and "contracting institutions" and argued that weakness of the two types of institutions leads to distinct responses from economic parties and implies different social consequences.[1] Due to data limitations, empirical work has shed little light on the more detailed

[1] "Property right institutions" are weak when firms are subject to expropriation by government officials or other individuals. Firms, as a result, may be forced to pay bribes in exchange for protection (or less expropriation).

institutional causes of corruption. Moreover, most of the existing empirical research on the effect of corruption typically focus on whether corrupt governments lower the rates of economic growth at the macro level (see, for example, Mauro 1995); there is no systematic evidence regarding the private return to bribing government officials at the firm level.[2]

This paper makes four contributions to the vast literature on corruption. First, we rely on the predictions from a simple model of Chinese managers' behavior and use the indirect inference approach to *detect* corruption. Second, we empirically investigate various *institutional determinants* in firms' bribery decisions. Third, we examine how the *private returns* to firms from corruptive activities vary with institutional factors. Finally, our findings suggest an alternative proxy for corruption measure in China and possibly in other countries. This data effort could prove fruitful for future research given the notorious difficulties in collecting data on corruption.

Using a unique data set of around 15,000 Chinese firms, we investigate "entertainment and travel costs" (ETC), a standard expenditure item in the accounting books of Chinese firms. The information about ETC in our data set is *directly taken from firms' accounting books* and thus is not subject to the biases associated with subjective survey data. As the term indicates, ETC is used to cover entertainment (including eating, drinking, gifts, karaoke, and sports club membership) and travel expenditures.[3] Besides legitimate business travel and other expenses, Chinese managers commonly use the ETC accounting category to reimburse expenditures used to bribe government officials, to entertain clients and suppliers, or to accomodate managerial excess. Of course, such practice is not limited to China; it is observed also in many other countries (Bodrock 2005). Fake or inflated receipts are submitted for reimbursement of illegitimate expenses. While the central government is aware of such practices, to prove that a particular expenditure is illegitimate is close to impossible. In China, it is still the norm to do business transactions in cash, thus such practices are *de facto* legal. Some common business practices also implicitly encourage corruption. For example, many hotels operate boutiques for expensive gifts, and those gifts can be invoiced as room charges, which would be classified as traveling costs under ETC.

Corruption in such cases does not play a socially productive role. In contrast, "contracting institutions" are weak when governments do not provide high quality services to facilitate trade, such as slow license approvals or erratic contract enforcement. Firms will be induced to bribe government officials to "greases the wheel." Corruption under such circumstances can increase social welfare by "making things work" in an otherwise rigid and stifling bureaucratic system (see, for example, Lui 1985 for a formal argument and Kaufmann and Wei 1998 for an empirical inquiry).

[2] An exception is Fisman and Svensson (2002). They examine how bribery affects firm growth using firm-level data from Uganda. They rely on self-reported bribery payments in their analysis and find a strong negative effect of bribery payments on firm growth.

[3] Such practices are well known among multinationals operating in China. See *Washington Post* (August 22, 2005) for a report on how such practices affected the multinationals' operations in China.

On average firms in our data sets spend 1,740,000 Chinese yuan (more than $210,000) annually on ETC. Average ETC expenditures are about 1.5 percent of the total sales revenues and about 3 percent of the total value added. In contrast, ETC expenditure is about 0.74 percent of their total sales in 2000 to 2003 among all listed manufacturing firms in Korea.[4] Thus, as a percentage of total sales, Chinese firms in our sample spend about twice as much on ETC as Korean manufacturing firms.

To infer from the total ETC expenditure about its components, the key empirical challenge is that ETC likely contains both legitimate business expenses and corruptive expenses. Similar to the indirect inference approach described earlier, we develop a simple model of a Chinese manager's decisions over how much to spend on three different categories of expenditures: (1) normal business expenditures (to build relationship capital with suppliers and clients); (2) corruption payments to government officials in exchange for lower expropriation and/or better service; (3) managerial excesses (e.g., taking family and friends to restaurants, clubs, and trips at the firms' expense). The predictions from our model indicate that, *ceteris paribus*, if the expropriation by local government (proxied by effective tax rates) is responsive to bribery payments, total ETC will be higher for firms more prone to expropriation; similarly, if the quality of local government service is responsive to bribery payments, firms will bribe more in cities with a lower quality of government service. We also derive similar comparative statics predictions about how the total ETC is affected by firms' relational capital with clients and suppliers and by firms' governance structure. We use these comparative statics predictions to identify components of ETC by examining how ETC responds to different environmental variables constructed in our data set.

We find that ETC is higher when government expropriation is more severe and when the quality of government service is lower. From the theoretical predictions of the model, these findings suggest that corrupt payments to government officials account for a significant portion of ETC. Moreover, they also suggest that firms pay bribes both to buy "protection" against government expropriation and to "grease the wheel" in buying government services.

These findings are further reinforced in our analysis of the effects of ETC on firm performance as measured by total factor productivity (TFP) and labor productivity. We find that ETC overall has a negative effect on firms' TFP and labor productivity, a result that is robust when we include different sets of controls, when we instrument firms' ETC, and when we use various sub-samples. This result suggests that a big part of ETC is managerial excesses. More important, we find that the negative effect of ETC on firms' productivity is significantly less pronounced for firms with higher tax burdens and for firms receiving poorer quality of local government service. These results are exactly what our model predicts. These findings strongly suggest that components of ETC are

[4] We thank Keun Lee who calculated this number from the Korea Investors Services database.

spent as "protection money" to reduce government expropriation and "grease money" in exchange for better government service.

Our findings also suggest that some portion of ETC might also be used productively to build relational capital with suppliers and clients. Not surprisingly, we find that firms that sell their main products to other provinces spend more on ETC than those who do not, suggesting that ETC increases in the difficulties of maintaining long-distance relationships.

The remainder of this paper is structured as follows. In Section 2, we present a simple model to illustrate our identification strategy. Section 3 describes our data and presents descriptive statistics. In Section 4, we examine the determinants of total ETC expenditures. Section 5 investigates how ETC expenditures affect firm performance, and Section 6 concludes.

2 A Theoretical Model and Identification Strategy

In this section, we propose a simple model of ETC spending by Chinese managers. The predictions from the model are the key to our empirical strategy to distinguish different components of ETC. Our idea is simple: the optimal spending decision by a manager should yield specific predictions on how ETC should respond to institutional environment variables, which leads to testable empirical hypotheses for whether ETC is indeed used as, for example, bribery to corruptive government officials.

Consider a manager who decides the amount of firm funds to spend in three categories:

- Normal business expenditures, denoted by x_r, to build relational capital with suppliers and clients. This amount, among other things, includes travel expenses to meet suppliers and clients.

- Managerial excess, denoted by x_c, that goes directly to the manager's own pocket or to his or her family and friends.

- Corruption payments (bribes) to government officials, denoted by x_b. We further divide x_b into two sub-components: bribes in exchange for government services ("grease money") denoted by x_g, and bribes in exchange for lower government expropriation ("protection money") denoted by x_p. We also think of x_g as bribes to service-related government agencies, such as licensing and utilities, and x_p as bribes to tax agencies. Of course $x_b \equiv x_g + x_p$.

For simplicity, we assume that the firm's performance is given by

$$\pi = a_0 + \alpha_g ln(K_g) + \alpha_r ln(K_r) - \alpha_p ln(K_p) - x_g - x_r - x_p - x_c \quad (1)$$

where K_g is the actual quality of service a firm receives from the government, K_r is the firm's actual relational capital with its suppliers and clients, K_p is the actual governmental expropriation the firm faces, while a_0 and $\alpha_g, \alpha_r, \alpha_p$ are non-negative parameters. Thus, the firm's performance improves if it gets better quality government services, has better relationships with its suppliers and clients, or faces less government expropriation.

In that specification, we abstract away the conventional production factors (capital and labor) whose contributions to firm profits are summarized in the parameter a_0 to focus on the variables of central interest to us. To have the simplest model possible, we also abstract away from any interaction between these variables by using an additive specific functional form to derive closed form solutions.[5]

We assume that K_g, K_r, and K_p are given as follows:[6]

$$K_g = K_g^0 + a_g x_g \tag{2}$$

$$K_r = K_r^0 + a_r x_r \tag{3}$$

$$K_p = K_p^0 - a_p x_p \tag{4}$$

where K_g^0 is the *baseline* quality of service from the government with no additional "grease money" bribes; K_r^0 is the *baseline* level of the firm's relational capital with its suppliers and clients without any additional relational investment; K_p^0 is the *baseline* government expropriation in the absence of any additional "protection money" bribes; and a_g, a_r, and a_p are non-negative parameters. The interpretation of these equations is as follows. Take Equation (2) as an example. The actual quality of government service the firm receives depends on two parts: (a) the baseline quality K_g^0 that reflects the general attitude of the government toward business and the existing relationship of the particular firm with the government; and (b) the "grease money" bribery the firm invests in exchange for better government services. The parameter a_g measures the effectiveness of the "grease money" bribes to government officials x_g in increasing K_g. Thus, K_g^0 is the existing stock of the firm's relational capital with the government, while $a_g x_g$ is the additional relational capital accumulated as a result of the firm's investment of x_g.

[5] In an earlier version (Cai, Fang, and Xu 2005), we develop a more general model that allows general functional forms and interactions between the variables of central interests and considers a more complicated managerial decision problem than in the current model. In that version, we obtain similar qualitative results, thus the implications derived from the current model are more robust than what the simple functional forms would suggest.

[6] We make an important linearity assumption in the "production equation" for K_g, K_r, and K_p . While admittedly restrictive, this type of accumulation technology is commonly used especially in economic growth literature. The qualitative results of our model still hold, though not as clean, if the actual accumulation technologies are approximately, but not exactly, linear.

The manager's problem is to choose $\left\{x_c^*, x_r^*, x_g^*, x_p^*\right\}$ to maximize:

$$U\left(x_c, x_r, x_g, x_p\right) = \alpha_c ln(x_c) + \lambda\pi \tag{5}$$

where the first term $\alpha_c ln(x_c)$ is the manager's utility from self-consumption, and the second term $\lambda\pi$ represents how much his incentives are aligned with maximizing the firm's performance. The parameter α_c measures how much the manager values self-consumption through ETC, and the parameter λ measures the congruity of managerial incentives with the firm owners' incentives. Note that this formulation of managerial incentives allows multiple (and not necessarily exclusive) interpretations. The most direct interpretation is that $\lambda\pi$ is the manager's incentives from his compensation contract (i.e., through bonus or share-holding). Another interpretation is that the probability of the manager keeping his job is increasing (and approximately linear) in firm performance. Then as long as the manager values the job, his expected utility from keeping the job can be expressed as $\lambda\pi$. A third interpretation is that the manager's future career and reputation in the managerial market depends on firm performance that he generates for the current employer, which again can be approximated by $\lambda\pi$. In the latter two interpretations, λ is higher if the firm has better governance structure and the managerial market is well functioning.

It can be shown that the manager's optimal expenditure decisions are the following:

$$x_g^* = \max\left\{\alpha_g - K_g^0/a_g, 0\right\}, \tag{6}$$

$$x_r^* = \max\left\{\alpha_r - K_r^0/a_r, 0\right\}, \tag{7}$$

$$x_p^* = \max\left\{K_p^0/a_p - \alpha_p, 0\right\}, \tag{8}$$

$$x_c^* = \alpha_c/\lambda. \tag{9}$$

In our data, we only observe the total amount of ETC spent by firms, that is, $ETC = x_g^* + x_r^* + x_p^* + x_c^*$, and some proxies for K_g^0, K_r^0, K_p^0, and λ, which will be described later. To test the model, we thus rely on the comparative statics results of the solution described by equations (6) through (9). Specifically, we have the following implications.

Implication 1: If ETC is spent as "grease money" ($x_g^* > 0$), then it should be *decreasing* in the baseline level of government service K_g^0; otherwise, ETC should not be correlated with K_g^0 in any statistically significant way.

Implication 1 follows from equation (6), and its intuition is simple. If the quality of government services is not sufficiently responsive to bribery payments (i.e., low a_g), firms will not bribe at all for better government services. In this case, ETC will be unrelated with the baseline government services. When the quality of government services is sufficiently responsive to bribery payments

(i.e., high a_g), then firms will invest through ETC to obtain better government services. From the standard assumption of a concave production function, the marginal return of the "grease money" bribery is decreasing in the baseline government service quality. So a higher baseline government service quality means that the firm needs to spend less money to ensure getting high-quality government services. Therefore, whenever the firm does spend "grease" money in buying government services, ETC will decrease in the baseline government service quality. Similarly, from equation (7), we have the following implications:

Implication 2: If ETC is spent in building business relationships ($x_r^* > 0$), then it should be *decreasing* in the baseline level of relational capital with suppliers and clients K_r^0; otherwise, ETC should not be correlated with K_r^0 in any statistically significant way.

Implication 3: If ETC is spent as "protection money" ($x_p^* > 0$), then it should be *increasing* in the baseline level of government expropriation K_p^0; otherwise, ETC should not be correlated with K_p^0 in any statistically significant way.

Implication 3 follows from equation (8), and its intuition is similar to those of the previous two results, except that ETC is increasing instead of decreasing in the baseline level of government expropriation K_p^0 when the manager spends ETC as protection money. This is because the firm's investment x_p is to reduce K_p^0, thus the usual concavity assumption implies that the greater K_p^0, the greater the marginal return of x_p, hence the more ETC spent as "protection money."

Implication 4: If ETC is spent as managerial excess ($x_c^* > 0$), then it should be *decreasing* in the congruity of managerial incentives λ; otherwise, ETC should not be correlated with λ in any statistically significant way.

Implication 4 follows from equation (9) and it is easy to understand. That managerial excess is decreasing in the congruity of managerial incentives follows from any standard model of managerial incentives. As managerial self-interests are prevalent and no corporate structure is perfect, managerial excess is present in one form or another. In our context, we focus on a specific form of managerial excess, that is, in the form of ETC. Our prior is that a portion of ETC is used by the manager for self-enjoyment. The question is whether it is statistically significant in our data and what the magnitude and the effect are.

How does ETC affect firm performance? From Equation (1), the possible components of ETC, x_g, x_r, and x_p, are all investments of various kinds. Since the manager chooses these investment levels to maximize firm performance π (see equation (5)), at the optimum, firm performance will be higher whenever the optimal investment levels are positive than when they are zero. Thus, this

implies that the firm's performance will be positively correlated with ETC. However, the managerial excess component of ETC, x_c, is completely unproductive to firm performance, which leads to a negative correlation between firm performance and ETC. Therefore, on the net whether ETC and firm performance are positively or negatively correlated is theoretically ambiguous and remains to be seen empirically.

Despite this ambiguity, we can still gain useful information in identifying components of ETC from examining the correlation between ETC and firm performance. Note that ETC is endogenously chosen by the manager and can only change if one of its components responds to some change in parameter values. So what is the marginal return of ETC on firm performance, that is, how much would the firm performance change for one unit of change in ETC? To answer this question, one needs to know what parameter change causes the one unit change in ETC. Take the "grease money" component x_g as an example. Suppose $x_g^* = 0$, that is, ETC is not spent as "grease money" at all. Then ETC is independent of K_g^0, α_g, and a_g, hence, one unit change of ETC *cannot* be caused by changes in these parameters. Thus, the marginal return of ETC to firm performance would not be correlated with K_g^0. Now suppose ETC is spent as "grease money," i.e., $x_g^* > 0$. Consider changes of parameter values in K_g^0, α_g and a_g that leads to one unit change in x_g^*, and, hence, one unit change in ETC (holding other parameters constant). By the envelope theorem, we can show the following:[7]

Implication 5: If ETC is spent as "grease money" ($x_g^* > 0$), then its marginal return to firm performance should be *decreasing* in the baseline level of government service K_g^0; otherwise, it should not be correlated with K_g^0 in any statistically significant way.

The intuition for this result is clear. When the baseline level of government service is lower, "grease money" spent in ETC will be more effective and, thus, have greater marginal contributions to firm performance. Similarly, we have the following:

Implication 6: If ETC is spent as "protection money" ($x_p^* > 0$), then its marginal return to firm performance should be *increasing* in the baseline level of government expropriation K_p^0; otherwise, it should not be correlated with K_p^0 in any statistically significant way.

Together implications 1 to 6 form the basis of our identification strategy, and we shall take them to our data later. Before doing so, there is one caveat. In our model, we focus on the

[7] We want to show that $d\pi/d(ETC)$ is decreasing in K_g^0. Equivalently, we show that $d(ETC)/d\pi$ is increasing in K_g^0, which is equivalent to $dx_g^*/d\pi$ increasing in K_g^0. Using the fact that $dx_g^* = dK_g^0\ \partial x_g^*/\partial K_g^0 + d\alpha_g\ \partial x_g^*/\partial \alpha_g + da_g \partial x_g^*/\partial a_g$, we have $dx_g^*/d\pi = -(dK_g^0/d\pi)(1/a_g) + d\alpha_g/d\pi + (da_g/d\pi)(K_g^0/a_g^2)$. By the envelope theorem, it can be shown that at the optimum $d\pi/dK_g^0 = 1$, $d\pi/d\alpha_g = ln(\alpha_g)$, and $d\pi/da_g = \alpha_g - K_g^0/a_g$. Thus, $dx_g^*/d\pi = -1/a_g + 1/ln(\alpha_g) + (K_g^0/a_g^2)/(\alpha_g - K_g^0/a_g)$, which is clearly increasing in K_g^0.

manager's single-period decision problem. Presumably, dynamic considerations are pertinent when parts of ETC expenditures are equivalent to investments in long-term relationships with government officials, suppliers, and clients. This modeling assumption is partly for simplicity and partly due to data limitations. Thus, even though the model talks about a representative firm, our empirical exercise relies on variations across firms to test the implications of the model.

3 Data and Measurements of Key Variables

3.1 Three Firm-Level Surveys

Our data come from three firm-level surveys conducted jointly by the World Bank and the Enterprise Survey Organization of China. The first survey, fielded during 2000-02, covers 2,400 firms from 18 cities, representatively located across five regions of China. The second survey covers 1,070 firms located in 15 cities of Liaoning Province during 2001-03. The third survey covers 12,400 firms located in 120 cities of all Chinese provinces (except Tibet). There are a total of 128 unique cities in the three surveys. Since the first and the last surveys were designed to be representative geographically, the data set covers representative regions and cities in China. In fact, the 120 cities in the last survey covers between 70 to 80 percent of Chinese GDP. See World Bank (2007) for more detailed discussions of these surveys.

In the first survey, either 100 or 150 firms were randomly sampled for each city from an electronic database of firms subject to the following constraints. First, firms were selected to ensure that both manufacturing and service industry firms were adequately represented.[8] Second, only firms above a certain minimum size requirement (20 in manufacturing industries and 15 in service industries) were sampled.[9] The second survey covered all major cities in Liaoning Province. Eighty firms were sampled in the cities of Shenyang and Dalian, the two largest cities in the province, and 70 firms were sampled in all other 13 cities. The third survey covers 120 cities in all Chinese provinces except Tibet. For each province, the provincial capital (most often the most populous city) was automatically covered, and optionally additional cities were selected based on the economic size of a province (as measured by GDP and industrial output). One hundred firms were sampled in each city except the four mega cities (Shanghai, Tianjin, Beijing, and Chongqing) for which 200 firms were selected. The three surveys cover a combined total of 15,870 firms located in 128 cities that

[8] The manufacturing industries include apparel and leather goods, electronic equipment, electronic components, consumer products, vehicles and vehicle parts. The service industries include accounting and related services, advertising and marketing, business logistics services, communication services, and information technology services.

[9] The size criterion was loosened when there were not enough firms from a particular sector in a city. As a result, roughly 3 percent of firms in our sample had less than 15 employees.

are at very different stages of economic development. Within this sample of cities, GDP per capita (in 2002 value) ranges from 3,600 yuan (about $430) in Chaoyang to 72,000 yuan (about $8,700) in Dongguan.

For the variables we use in our analysis the questionnaires for the three surveys are identical, and they consist of two parts. The first part is filled out by firms' senior managers and asks for *qualitative* information about the firm in the survey year. The second part covers *financial and quantitative* information going back three years about the firms' production and operation and is *directly obtained from the firms' accounting books* through the assistance from the firms' chief accountants. Thus, our data sets contain detailed information about firm characteristics and performance. The average (median, respectively) firm in our sample has 866 (215, respectively) employees and has been in business for 14 (9, respectively) years. The average (median, respectively) annual total sales revenue is about 419 (37.0, respectively) million yuan. While the average firm makes a profit equal to approximately 1.1 percent of its total sales, the median firm makes a profit of 1.6 percent of its total sales. Close to three quarters of the firms in our sample sell their main products to other provinces. The average share of private ownership is 38 percent, and foreign ownership is 12 percent.

3.2 Measurement of Key Variables

Measurement of ETC. The variable of central interest is *ETC*. As we mentioned earlier, and it is worth emphasizing again, this variable is directly obtained from the firms' accounting books with the assistance from the firms' chief accountants. As a part of management expenses (*guan li fei yong* in Chinese), these expenditures are measured with little error because each reimbursement item in this category needs a "receipt." ETC is supposedly for the purpose of reimbursing expenses related to conducting normal businesses. However, accounting practice in China is sufficiently lax so that managers may get reimbursed for almost any kind of entertainment and travel for any purpose, often with fake or inflated receipts.

ETC represents a significant portion of firms' expenditures. The ratio of these costs to value-added has a median of 1.4 percent and a mean of 3.0 percent. In our empirical analysis, we normalize ETC by total sales, and *from now on the term ETC refers to the ratio of entertainment and travel costs to total sales.* In our data, ETC has a median of 0.6 percent and a mean of 1.5 percent. The few firms with ETC of more than 100 percent (less than 0.5 percent of the data) are dropped as outliers in our regression analysis. ETC also varies substantially across firms, with a sample standard deviation of 3.8 percent. Across cities, the firm average of ETC ranges from 0.3 percent in Dongguan, a coastal city and the richest in our sample, to 3.8 percent in Guiyang, an inland and relatively backward city.

Measurement of K_g^0. Our identification strategy presented in Section 2 relies on the relationship between ETC and key environment variables K_g^0, K_p^0, and K_r^0. We now describe how these variables are proxied in our empirical analysis. Recall that K_g^0 is meant to capture the baseline quality of government service in the absence of additional bribes. We proxy K_g^0 for each firm in our data by the manager's answer to the following question: "Among the government officials that your firm regularly interacts with, what is the percentage that tends to help the firm develop?" The answer to this question reflects the firm's evaluation of the tendency of government officials to help them; hence, we will hereafter call this variable *government help*. Government help is a firm-specific measure of government helpfulness that depends on the overall government quality and the lagged relational capital each firm has with government officials. To avoid endogeneity, we use the *median of the city-industry cell* of government help as the measure of the baseline level of government services. We allow the baseline K_g^0 to differ by city-industry cells because there are vast regional variations in both development level and governance, and the need for government services tend to differ by industry. Since we also control for province (or other regional) dummies and industry dummies, this city-industry tendency for government help is unlikely to be correlated with the error term at the firm level. For the rest of the paper, government help will refer to the city-industry median of firm-level observations of government help.

Measurement of K_p^0. Recall that K_p^0 is the baseline government expropriation in the absence of any additional bribe to the government officials. For each firm we proxy K_p^0 by its *total tax burden in the previous year*," as measured by total taxes divided by total sales in the previous year. This variable is calculated from the firms' accounting books. There is a substantial amount of across-firm variation in tax burdens. Tax rates differ across firm types (due to, e.g., tax incentives to attract foreign investments) and across regions (due to, e.g., negotiations between the central government and provinces, tax reductions for special economic zones). Moreover, tax law enforcement and collection efforts differ greatly across cities and firms within each city, so a firm's actual tax burden depends on the vigilance level of local tax officials and the firm's relationship with them. Again, to avoid endogeneity, we measure tax burden by the *median of city-industry cell* of total tax burden in the previous year. For the rest of the paper, tax burden refers to the city-industry median of this one-year lagged firm-level tax burden measure. The sample average of tax burden is 4.1 percent of sales, with a standard deviation of 1.9 percentage points. The 10th percentile in the tax burden is 1.7 percent, and the 90th percentile is 6.5 percent.

Measurement of K_r^0. To measure a firm's baseline relational capital with its suppliers and clients K_r^0, we construct a variable called *years of relationship*, which is the sum of the years that the firm

has known its most important supplier and the years that it has known its most important client. The two components of this variables are very closely correlated, and including both of them would lead to multicollinearity. We thus bundle them together as a single variable. This variable shows substantial variation across cities, with a low of 8 years on average in Chaoyang to a high of 15 years on average in Tianjin. The sample mean is 11.8 years, and the sample standard deviation is 5.7 years.

Other Variables. In our theoretical framework, the corporate governance and managerial incentive parameter λ affects the manager's ETC expenditure. However, the incentive structure for managers in Chinese firms is not at all transparent, and no good data are available on managerial incentives. We use *private ownership*, both domestic and foreign, to gauge how a manager's incentives are aligned with those of the firm. Private owners are more motivated by profits and are, thus, likely to have stronger incentives to monitor managers' behavior. In our sample, the share of private ownership varies across firms from 0 (purely state-owned) to 1 (purely private), and the average firm in our sample has 38 percent of private ownership, with a standard deviation of 45 percent. The city averages of domestic private ownership vary from 78 percent in Wenzhou, a coastal city known for its private enterprises, to less than 2 percent in Dongguan; the city average of foreign ownership varies from 0 percent in Wuzhong and Tieling to 81 percent in Dongguan.

Besides ownership, we also include in our empirical analysis basic firm characteristics such as the number of employees, firm age, and whether the firm sells to other provinces. Selling to other provinces also partly captures normal business expenditure because more cross-provincial traveling implies higher traveling costs. We capture regional characteristics by including city-level GDP per capita (in 2002 value) and dummies of regions (either regional dummies, provincial dummies, or city dummies).[10] Although all three surveys were implemented by the same survey team from the China National Bureau of Statistics along with the World Bank, we use the two dummies indicating the later two surveys to control for variations in enumerator quality and survey implementation. The data dummies also function as control for macro trend because the data dummies and year dummies are perfectly collinear. Table 1 lists the detailed definition of each variable and its mean and standard deviation.

[Table 1 About Here]

[10] We follow the traditional classification of the provinces into six regions: North Coast, South Coast, Central, Northwest, Southwest, and Northeast (details are available from the authors upon request). Each region contains geographically adjacent provinces, and the provincial levels of economic development within a region tend to be similar.

Table 2 shows the correlation of ETC with some key variables. Overall, we can see that ETC is lower for firms that are more efficient, are larger, are located in richer cities, have more foreign ownership shares, have stronger trading relationships, and pay their chief executive officers (CEOs) higher salaries. Moreover, ETC is lower in economic environments with better government services and lower tax burden. Table 2 also highlights one of the advantages of using micro data to analyze corruption. In cross-country regressions using macro data, it is often found that there is a very high correlation between corruption indices and other variables, such as GDP per capita. For example, the correlation between the International Country Risk Guide (ICRG) corruption indices (for around 100 countries between 1982 to 2001) and the countries' logged GDP per capita (in constant U.S. dollars) is about -0.60. This high multicollinearity makes any inference on the effect of corruption on economic performance difficult. In contrast, in our micro data, the correlation coefficient between logged GDP per capita (in the city) and firms' ETC is only -0.03.

[Table 2 about Here]

4 Composition of ETC

In this section, we empirically examine the determinants of ETC, using regression specifications suggested by our simple model in Section 2. The dependent variable is ETC, and the list of explanatory variables differs by specification. For each regression specification, we only use the sample of firms for which there is no missing value for any of the explanatory variables. For each firm, we use the data from the last year in the respective survey because ETC is observed only for that year. The specification we estimate is:

$$ETC_{ijc} = \alpha_{1j} IND_j + \alpha_2 X_c + \boldsymbol{\alpha}_3 \mathbf{Z}_{ijc} + \boldsymbol{\alpha}_4 \mathbf{X}_{ijc} + \epsilon_{ijc}, \tag{10}$$

where the subscripts ijc stand for firm i in industry j located in city c. We include industry dummy IND_j to filter out industry-specific needs for business expenditures in ETC; X_c is a city-level variable aimed to control for various aspects related to economic development. Depending on specifications, X_c will either be the logarithm of the per capita GDP of the city, denoted by $\ln(GDP\_PC_c)$, or alternatively various types of dummies for locations (such as regional dummies, provincial dummies, or city dummies). The vector $\mathbf{Z}_{ijc}$ is a list of basic firm characteristics that includes firm size (logarithm of the number of employees, lagged by one period), age (logarithm of firm age), and whether it sells to other provinces. The vector $\mathbf{X}_{ijc}$ includes the variables discussed in the above section: government help (proxy for K_g^0), total tax burden in the previous year" (proxying K_p^0), years of relationship (proxying K_r^0), private ownership and foreign ownership (proxy for incentives). Note that government help and total tax burden in the previous year are medians

of the city-industry cell, while the other three variables are firm-level observations. Because some of our variables are measured at the group level (i.e., city-industry-specific), in our least-square regressions, we allow the disturbances to be correlated at the city level to avoid overstating the prevision of our estimation (Moulton 1990). We also tried clustering the standard errors at the city-industry level, and the results are similar.

Table 3 presents the basic results from a series of ordinary least squares (OLS) regressions as specified in equation (10). Note that for the ease of displaying the results, ETC is in percentage point in Table 3, and in shares (i.e., bounded by 0 and 1) for the rest of the paper. Column (1) presents the results from the simplest regression with only $\mathbf{X}_{ijc}$, controls of basic firm characteristics, and $\ln(GDP\_PC_c)$. We gradually add controls in Column (2) to Column (4). In Column (2), we add regional dummies, industry dummies, and survey dummies; in Column (3), regional dummies is replaced with more finely measured provincial dummies; and in Column (4), we add the log of CEO compensation. In unreported specifications, we also experimented with city dummies, and the qualitative results are similar.

[Table 3 about Here]

From Table 3, it is clear that the key results are quite similar across the specifications once we control for area, industry, and survey dummies. Thus multicollinearity is not a serious issue here. Later we shall focus on column (3) when we discuss magnitudes.

Our results show that larger firms, as measured by the number of employees, have lower ETC. A one-standard deviation increase in the logarithm of number of employees (1.53, see Table 1) reduces ETC by about 0.5 percentage points, which is a 33 percent reduction of the ETC sample mean (1.5 percentage points). This suggests that entertainment and travel costs exhibit strong economies of scale. There is also some evidence that older firms tend to spend more on ETC. This result suggests that ETC is not a once-for-all fixed costs in establishing relationships (with either officials or trading partners). However, the negative relationship between ETC and GDP per capita of the city we saw in Table 2 does not survive in the regression framework.

In all specification, we find that the proxy for K_g^0, government help, has a statistically significant negative effect on ETC, consistent with the raw correlation reported in Table 2. A one-standard-deviation increase in government help decreases ETC by 0.11 percentage point (or 7 percent of the mean ETC). By Implication 1, this suggests that part of ETC is spent to entertain or bribe government officials in exchange for higher quality of government services, thus providing support for the "grease money" view of corruption.

We find that the proxy for baseline government expropriation K_p^0, tax burden in the previous year, has a strong and positive effect on ETC. This confirms the positive raw correlation between

lagged tax burden and ETC shown in Table 2. In the specification reported in Column (3), tax burden in the previous year is significant at the 1 percent level; a one-standard-deviation increase in this variable will increase ETC by 0.13 percentage points (or 9 percent of the mean ETC). From Implication 3, this evidence suggests that part of ETC is spent as "protection money" bribes to government officials in exchange for lower expropriation.

We find that the variable years of relationship (proxy for baseline relational capital with its suppliers and clients) K_r^0 has no statistically robust relationship with ETC. Only when we do not control for regional, industry, and data dummies do we find a statistically significant and negative coefficient for logged years of relationship. Once we control for regional and industry dummies, this negative result largely disappears. Thus, once we net out the average industry and regional ETC (which may contain normal business expenditure), we do not find strong support for the view that managers also use ETC to conduct normal business and to build relationships with suppliers and clients.[11] In contrast, we do find that firms that sell to other provinces tend to have higher ETC. Other things being equal, ETC in firms that sell to other provinces is 0.4 percentage points higher than that in firms that do not.

We use private and foreign ownership to proxy for corporate governance. Column 3 in Table 3 shows that private ownership and foreign ownership have a negative but statistically insignificant effect on ETC once we control for regional and industry dummies. We have also tried replacing the continuous ownership variables with two dummy variables for domestic and foreign private ownership. Consistent with a common way to define ownership, domestic private dummy is defined to be domestic private ownership surpassing 50 percent, and the foreign dummy as foreign ownership being positive. With the other controls the same as in Column (3), we find that both the domestic private and the foreign dummy variables are negative and insignificant.

An alternative explanation for high ETC in China is lower CEO pay. It is well known that Chinese firms pay their CEOs lower than typical Western firms. Thus, it is possible that part of ETC functions as a substitute for regulated CEO pay or as an income tax-free supplement to regular CEO salary and, thus, is a part of the optimal CEO incentive structure. To evaluate this hypothesis, Column (4) reports the regression results from a specification in which we include logged CEO pay.[12] If the implicit CEO pay hypothesis is true, we would expect a statistically significant negative relationship between logged CEO pay and ETC. The results in Column (4) support this

[11] Some may argue that it may make more sense to separate the years of relationship with clients and those with suppliers. We have tried that. The two variables are closely correlated, and the qualitative results are similar.

[12] We do not directly observe CEO pay. We observe the relative ratio of CEO pay to average middle-manager pay, and the ratio of the latter to average worker pay. We compute the absolute CEO pay as the product of the two ratios times the average wage of the firm.

hypothesis: the logged CEO pay variable is highly statistically significant and negative. Reducing logged CEO pay by one-standard deviation would increase ETC by 0.18 percentage point. Of course, this result is also consistent with the interpretation that stronger managerial incentives reduce manager excess and waste. We cannot distinguish the two hypotheses. However, the other main results, in particular, those on government help and tax burden in the previous year, remain intact after including CEO pay in the regression. Even the magnitudes do not change much, for example, the coefficient of government help changes from -0.40 to -0.37.

Remark 1. One potential concern is that the coefficient of government help does not capture the effect of baseline government services on ETC; rather, it captures reverse causality: higher ETC causes a change in government help. However, the reverse causality story would imply a positive sign of government help, while our estimated coefficient of government help in Table 3 is *negative* and significant in all specifications. Moreover, as we described in Section 3, we use the city-industry median as our measure of government help, which is arguably not directly affected by firm-specific ETC.

Remark 2. Another potential concern is that the positive effect of tax burden in the previous year on firm ETC is aimed to evade taxes, not to bribe the government officials to lower the tax rates in the future. However, this alternative story is not plausible because the tax base in China is *revenue*, not profit. Indeed, many firms in our sample had net losses, yet they all paid positive taxes. Thus, spending more on ETC would not have served the tax evasion purpose. Also, as we described in Section 3, we use the city-industry median as our measure of tax burden in the previous year, which is less likely to be directly affected by firm-specific ETC.

5 ETC and Firm Performance

In this section, we examine the impact of ETC on firm performance to shed further light on the nature of ETC. Specifically we test Implications 5 and 6. To do so, we estimate the following two regression equations:

$$Y_{ijc} = \beta_{1j} + \beta_2 X_c + \boldsymbol{\beta}_3 \mathbf{Z}_{ijc} + \boldsymbol{\beta}_4 \mathbf{IN}_{cj} + \beta_5 ETC_{ijc} + \mu_{ijc}, \quad (11)$$

$$Y_{ijc} = \gamma_{1j} + \gamma_2 X_c + \boldsymbol{\gamma}_3 \mathbf{Z}_{ijc} + \boldsymbol{\gamma}_4 \mathbf{IN}_{cj} + \gamma_5 ETC_{ijc} + \boldsymbol{\gamma}_6 ETC_{iic} \times \mathbf{IN}_{cj} + \sigma_{ijc}, \quad (12)$$

where the dependent variable Y_{ijc} is a performance measure for firm i in industry j located in city c. $\mathbf{IN}_{jc}$ are the *city-industry medians* of government help and tax burden in the previous year. The vector of firm level characteristics $\mathbf{Z}_{ijc}$ is the same as in the previous section. Both regression

equations (11) and (12) estimate the effect of $\mathbf{IN}_{cj}$ variables on firm performance. However, by including interaction terms of ETC_{ijc} and the $\mathbf{IN}_{cj}$ variables, equation (12) allows us to directly test Implications 5 and 6. In unreported results, we have also tried interacting ETC_{ijc} with years of relationship (for K_r^0), and the interaction is largely insignificant. This is not surprising as we have found earlier that this variable is not a significant predictor for ETC. Including the interaction of ETC with years of relationship also leaves the other results intact.

In our empirical analysis the performance measure is productivity, primarily TFP, and in sensitivity checks, labor productivity as well. We estimate TFP using the Levinsohn and Petrin (2003) procedure (TFPLP henceforth). The Levinsohn-Petrin estimator is easy to implement and addresses the simultaneity issue raised by Marschak and Andrews (1944) (see Petrin, Levinsohn, and Poi 2004). We also report estimates from a firm-level fixed effects specification with both the Cobb-Douglas and the translog functional forms. The fixed-effects specification allows for firm-specific productivity, but imposes the restriction that the firm-specific productivity to be time-invariant. The Levinsohn-Petrin approach is, thus, less restrictive because it allows the firm-specific productivity to vary over time and be correlated with input choices. However, our findings are robust to different estimators of productivity.[13]

5.1 OLS Regression

Table 4 reports the regression results of the effects of ETC on TFPLP. Column (1) gives the results from the basic OLS regression with industry, survey, and regional dummies. Column (2) adds logged GDP per capita. Column (3) replaces regional dummies with more disaggregated provincial dummies, and Column (4) further allows for city dummies. Columns (5) and (6) replicate Columns (3) and (4), but allow for ETC interaction terms with the institutional environment variables.

[Tables 4 About Here]

Overall, the results are reassuringly robust across columns. The coefficient estimates for most of the control variables $\mathbf{Z}_i$ and $\mathbf{IN}_{cj}$ have the expected sign. For instance, firm productivity is higher for larger, younger, foreign-owned firms. Firms located in cities with higher logged GDP per capita have higher productivity. Firms that have stronger relationships with trading partners also

[13] Other proxy methods include Olley and Pakes (1996) and the modified-Levinsohn-Petrin estimator suggested by Ackerberg, Caves, and Fraser (2006), which uses the same invertibility condition as Levinsohn-Petrin but only a subset of the moments proposed by Levinsohn-Petrin in their estimation. For the Levinsohn-Petrin method to work, the variable input must not be a deterministic function of state and proxy variables (Woodridge 2005). This assumption is apparently satisfied in our context: the regression of logged labor on logged capital and logged material yields R^2 of 0.6 to 0.8 for various industries.

have higher productivity. One surprising result is that domestic private ownership is associated negatively with productivity. This perhaps reflects the fact that domestic private ownership is measured with systematic errors: it captures only individual (but not institutional) private ownership and, therefore, does not capture the benefits of large private shareholders who can internalize the benefits of monitoring. Also note that the magnitude for domestic private ownership is quite small.

ETC has a strong negative effect on TFP: increasing ETC by one standard deviation (0.038) reduces TFP by approximately 19 percentage points (Columns (3) and (4)). The effect is thus quite large. Columns (5) and (6) present the regression results of equation (12). The effect of ETC on TFP and the two interaction terms of ETC are all statistically significant at the 1 percent level. Consistent with our model, the private returns from ETC on TFP depend on the proxy variables for K_g^0 and K_p^0. The negative coefficient of the interaction term of ETC and "government help" means that if the government can provide higher quality public service, then ETC has smaller marginal contributions to firm productivity, indicating that part of ETC is used as "grease money" to bribe for better government services. The positive coefficient of the interaction term of ETC and "tax burden in the previous year" means that if a firm faces more government expropriation, ETC has larger marginal contributions to firm productivity, indicating that part of ETC is spent as "protection money" bribery to reduce government expropriation. These results lend strong support to our hypotheses.

With both the direct and the interaction effects of ETC, it is more useful to understand the effects by looking at the marginal effects of ETC on TFP, evaluated at the mean of the variables of $\mathbf{IN}_{cj}$. From equation (12), we have $\partial Y/\partial ETC = \gamma_5 + \boldsymbol{\gamma}_6 \bar{\mathbf{IN}}_{cj}$. The marginal effects are reported at the bottom of Columns (5) and (6). At the mean of $\mathbf{IN}_{cj}$, the marginal effect of ETC on TFP is -6.3. However, when the institutional environment is worse, the negative effect of ETC becomes less pronounced: when "government help" (respectively, "tax burden in the previous year") decreases (increases) by one standard deviation, the marginal effect of ETC becomes -4.0 (respectively, -5.2), or the magnitude drops by roughly 1/3 (respectively, 1/5).

5.2 GMM Estimation

One issue with the OLS regression is that ETC is an endogenous variable, so if there are omitted factors that affect both a firm's ETC and its performance, the OLS estimates will be inconsistent. For instance, both the corruption level and firm productivity can be affected by local business environments, such as the ease with which to enter the local market, to obtain financing, and so on.

To deal with this issue, we need to find an instrumental variable that is significantly correlated

with firm ETC but does not directly affect the outcome except through the indirect effect through ETC. We propose the following instrument for each firm$'s$ ETC: the median ETC in the firm$'s$ city and industry cell. The choice of the instrument is justified by our theoretical model. In Section 2, we show that a firm's "grease money" bribery x_g^* is a function of government service quality K_g^0, and its "protection money" bribery x_p^* is a function of K_p^0. To the extent that some components in K_g^0 and K_p^0 are not fully captured by their respective proxies, and firms within the same city and industry will all have to deal with these unmeasured components (some are common for them, and some are firm specific), then their expenditures x_g^* and x_p^* should be correlated. These arguments are similar to those of Nevo (2001), who argued that regional average prices (excluding the city being instrumented) can be used as an instrument for the city-level price because both prices respond to the product's common marginal cost. Here, our identifying assumption is that the city-industry median ETC as a proxy of local corruption tendency is correlated with firm ETC but does not directly affect firm TFP when the regression directly controls for other city-industry controls (including both regional and industry dummies).

[Tables 5 About Here]

We find that the median ETC in a firm's city-industry cell is strongly correlated with the firm's own ETC: the instrumental variable is highly statistically significant in the first stage regression, and we will present evidence later that it appears to be a strong instrument in the sense of Bound, Jager, and Baker (1995). Moreover it is plausible that the instrument is not correlated with other firm-specific performance shocks after controlling for provincial and industry dummies and other firm characteristics. When we have ETC interacting with $\mathbf{IN}_{cj}$, the corresponding instruments are the city-industry median ETC $\times$ $\mathbf{IN}_{cj}$.

Table 5 reports the GMM results of the ETC effect on firm productivity. The table also reports the first-stage F-statistics and Shea partial R^2, and the statistics suggest that we have reasonably strong instruments. For instance, the first-stage F-statistics for our instrument is 39.2, far surpassing the commonly required threshold for strong instruments of 10. Overall, the GMM results are similar to what we found earlier on with the OLS specification. A noticeable difference is that in specification (2) of Table 5, "government help" becomes positive and significant, and "tax burden in the previous year" becomes negative and significant. Thus, the institutional environment variables have the expected effects on firm productivity. The GMM results also differ from the OLS results in that the magnitudes of the negative effect of ETC have become larger. For the no-interaction specification, the ETC effect changes from around -5.0 in OLS to around -8.5 in GMM, which suggests that ETC is positively correlated with the unobservable determinants of firm performance. However, the relative declines in magnitude when the institutional environment

gets worse are similar: by -25 percent when "tax burden in the previous year" increases by one standard deviation, and by -44 percent when "government help" drops by 1 standard deviation.

Further Checks on the Identifying Assumption. While our identifying assumption seems to be plausible, one can also imagine cases in which it is violated. For instance, we can imagine omitted city-industry specific variables, such as the local access to finance, infrastructure, and local competition, that may affect both firm corruption and firm productivity. This concern is partially alleviated by the inclusion of provincial, city, and industry dummies in Table 4, which control for all city-specific aggregate variables. It remains possible that there are omitted city-industry factors directly correlated with firm TFP. It is ultimately impossible to justify our identifying assumption with certainty because there are more unobserved city-industry factors than we have data for. However, we can still check whether there are prominent omitted city-industry factors whose inclusion would alter our key findings.

We conduct five such checks. First, Chinese regions differ in their pace of ownership restructuring. For instance, the Northwest region lags behind in privatizing state-owned enterprises. It is possible that firm ETC is correlated with regional pace in ownership restructuring, which, in turn, affects firm performance through exerting different levels of competitive pressure associated with private and foreign entries. We thus create city-industry median shares of domestic and foreign ownerships, and we include them in the GMM estimation. This would eliminate one potential source of invalid instrument: the correlation of median ETC with median ownership composition. Second, regions differ by access to finance, and local access to finance significantly affects local performance (Becker 2007). Since in China both formal (bank loans) and informal finances matter (Cull and Xu 2005), we create city-industry median of the dummy of having access to bank loans and the share of input purchase through trade credit. Third, local competition (through entry and exit) may affect firm performance. We do not have direct measures for entry and exit. However, the city-industry median in firm age would serve as a proxy. For instance, a higher share of younger firms in a region would imply more competition and lower entry barriers. We thus create (city-industry) median firm age (in logarithm). Fourth, locations may differ in infrastructure services, which may be correlated with median ETC and firm performance as well. We thus create the median share of sales lost due to infrastructure losses (i.e., power outage or transportation theft). Finally, we include all the four groups of city-industry median variables.

The results are reported in Table 6. Panel A reports the five specification checks for the non-interaction specification along with the base specification; Panel B allows ETC to interact with "government help" and "tax burden in the previous year." The instrumental variables are the same as those used in Table 5, and the only difference is that we control for additional city-industry

determinants of firm performance. In Panel A, the estimates of the parameter of interest for ETC are all similar, between -7 to -8.8, covering the original estimate (without the additional controls) of -8.5. In Panel B, the qualitative results are again very similar. ETC and the two interactions remain statistically significant, with similar magnitudes and the same signs. Thus, the specification checks lend support to our identifying assumption.

[Table 6 About Here]

5.3 Alternative Explanations and Further Results

Measurements of Productivity In this section, we consider some alternative explanations for our results. One concern is that the relationship between productivity and ETC that we found may be driven by our ways of estimating productivity. To address this concern, we use three alternative measures of productivity. The first is the fixed-effect estimates of productivity, assuming Cobb-Douglas production function. Here, the productivity is estimated individually for each two-digit industry, allowing for firm fixed effects and using the value-added-capital-labor framework. Note that although our regression is based on cross sectional data because our key variables (ETC from accounting books and qualitative variables from the manager survey) are available for the last year of the three year panel, for the purpose of estimating productivity, we have full three-year panel data so that the fixed-effects estimation is possible. The second is again the fixed-effect estimates of productivity but allows a more general functional form (the translog production function). The third is more primitive, simply labor productivity, as measured as logged value added per employee. For each measure of productivity, we present both the OLS and GMM results in Table 7. For the OLS specification, we again allow the disturbance terms among firms to be correlated at the city level. For all three measures, the qualitative results are basically the same as in the previous section. Thus, our result of the negative relationship between ETC and productivity is robust to different measures of productivity.

[Table 7 About Here]

Do ETC Effects Differ by Regions of Different Income Levels? From Table 2, ETC is higher in low-income regions. In our data, low-income regions tend to have worse institutional environments in terms of lower "government help" and higher "tax burden in the previous year". Then our theory would suggest that low-income regions should see more effective ETC investments in improving productivity (in a relative sense); in other words, the marginal effect of ETC on productivity should be higher in lower-income regions than in higher-income regions. To check this, we separate the sample into subsamples of firms from high- and low-income cities, according

to whether the city's real GDP per capita is above or below the median. The results are contained in Table 8. Consistent with our theory, the negative effects of ETC are much more pronounced in the rich subsample. In addition, when "government help" drops or "tax burden in the previous year" increases by one standard deviation (from the mean), the ETC effect becomes statistically insignificant in low-income regions while it does not change much in high-income regions. Thus, for low-income regions featuring particularly a bad institutional environment, ETC can be a quite productive investment in helping firms obtain better government services and protect them from excessive government expropriation.

[Tables 8 About Here]

Do ETC Effects Differ by Firm Size? Small and large firms differ in their ability to deal with the government. Large firms should have stronger relationship with the government, and they may have stronger bargaining power. For instance, they may have better connections, and their voices may carry more weight. It is, therefore, plausible that they should be less worried about government services and expropriation. With less connections and bargaining power, small firms should, therefore, be more sensitive to the institutional environment; their ETC investment on government officials should have a higher relative jump in payoffs when moving from a good- to bad-institution location. Note that the average payoff to ETC may be higher for large firms (relative to small firms) due perhaps to the economy of scale in ETC investment. However, the relative increase in ETC payoff for low-institution relative to high-institution locations should be higher for small (relative to large) firms. To check this difference in the relative sensitivity of ETC return to institutions, Table 10 reports the empirical results on ETC effects on TFPLP for large and small firms. Large (small) firms are defined to be firms above (below) the median in the number of employees in the previous year.

[Tables 9 About Here]

The results conform to our priors. For large firms, the GMM results show that the marginal effects of ETC, both evaluated at the mean and the points with the institutional variables one standard deviation away from the mean, are either marginally significant or insignificant. Moreover, "government help" and "tax burden in the previous year" are both statistically insignificant in directly affecting TFPLP. In contrast, small firms witness a more pronounced negative average ETC effect. The effect is significantly contained when institutions get worse: the average ETC effects decline by slightly more than 50 percent when "government help" drops by one standard deviation, and by 25 percent when "tax burden in the previous year" increase by one standard deviation (see Column 4). In addition, the direct effects of both institutional variables on TFPLP

are highly significant with the right sign, again pointing toward strong effects of institutions on small firms. Thus, the returns to ETC are much more sensitive to local institutions for small (relative to large) firms.

Non-Business-Related ETC Another concern is that since ETC has been shown to be a mixture of normal business expenditure (including implicit CEO pay), managerial excesses, and bribes for the government, it may make sense to simply focus on the non-business-related ETC to see how it affects firm performance. To see if our qualitative results are affected by this concern, we first construct a non-business-related ETC (NB-ETC), which is the regression residual of ETC on several variables that can be plausibly classified as business-related (including log of lagged employment, log of firm age, the dummy variable for selling to other provinces, log of years of relationship with trading partners, and log of CEO pay). We then relate TFPLP to NB-ETC in the same way that we relate TFPLP to ETC before. The results are in Table 11. The qualitative results regarding ETC effects and its interaction with the institution environment variables are the same as what we found before.

[Tables 10 About Here]

6 Conclusion

We use unique large firm-level data sets from China to analyze the determinants and effects of entertainment and travel costs of Chinese firms, a standard expenditure item in the accounting book of Chinese firms. We rely on the predictions from a simple model of managerial decision-making to identify components of ETC by examining how the total ETC responds to different institutional environment variables. In our empirical analysis, we find strong evidence that firms' ETC consists of a mix that includes expenditures on government officials both as "grease money" and "protection money," implicit CEO pay, and managerial excesses. Overall, ETC has a significantly negative effect on firm productivity, but its negative effect is much less pronounced for those firms located in cities with low-quality government services, those subject to severe government expropriation and those that are located in poor regions.

Our paper echoes the message of Acemoglu and Johnson (2005) in demonstrating that corruption is affected by various institutional factors; as a result, a negative overall correlation between corruption and firm performance does not necessarily indicate that all corruption components worsen firm performance. It is important to point out, however, that while we find that parts of ETC expenditures have a positive influence on firm performance, it does *not* necessarily imply that these components of ETC expenditures are socially "efficient grease." Our finding implies that, in

economies with weak institutions, firms may find it individually rational to pay bribes, and government officials find it individually rational to accept bribes. However, to evaluate the social efficiency of bribes, we have to take into account the possibility that bribing and government institutions are determined jointly in equilibrium. If, for example, government officials were intentionally lowering their service quality to extort more bribes, then banning corruption in the whole economy can improve the quality of government service.

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Table 1. Summary Statistics

Variables	Definitions	Mean	Standard Deviation
ETC	Entertainment and travel costs over total sales	0.015	0.038
ln(LP)	The logarithm of total real sales over the number of employees. Nominal sales converted to real sales by the industrial output price index.	4.349	1.211
TFPLP	The Levinsohn-Petrin estimator of total factor productivity, estimated separately for each industry.	4.25	1.433
TFPFE	The fixed effects estimator of total factor productivity, estimated separately for each industry, assuming the Cobb-Douglas functional form.	0.103	1.494
TFPFE_Translog	The fixed effects estimator of total factor productivity, estimated separately for each industry, assuming the translog functional form.	0.152	2.016
Ln(GDP_PC)	Logarithm of real GDP per capita in a city.	9.614	0.614
$Ln(L_{t-1})$	Logarithm of the number of employees in the previous year.	5.389	1.531
Ln(firm age)	Logarithm of firm age.	2.282	0.804
Private Share	Share of domestic private ownership.	0.378	0.449
Foreign Share	Share of foreign ownership.	0.122	0.291
Sell to Other Provinces	A dummy variable indicating the firm selling to other provinces.	0.738	0.44
Ln(years of relationship)	Logarithm of the number of years that the firm has known its main client plus the number of years that the firm has known its main supplier.	2.352	0.505
Tax Burden	The city-industry median of firm tax burden in the previous year. Firm tax burden is the ratio of total tax over total sales.	0.041	0.019
Government Help	The city-industry median of the share of government officials being helpful to the development of the interviewed firm.	0.316	0.283
Ln(CEO pay)	Logarithm of CEO pay. CEO pay is obtained as average firm pay * (the ratio of CEO pay to worker pay)	3.63	1.389

Note: The number of observations for the variables hover around 15,000.

Table 2. Correlation Coefficients of ETC with our Key Variables

Variables	Correlation Coefficients (*p*-value)
Ln(LP)	-0.1562 (0.0000)
TFPLP	-0.2349 (0.0000)
TFPFE	-0.0389 (0.0000)
Ln(GDP_PC)	-0.0325 (0.0001)
$Ln(L_{t-1})$	-0.1576 (0.0000)
Ln(firm age)	-0.0191 (0.0182)
Private Share	0.0166 (0.0398)
Foreign Share	-0.0564 (0.0000)
Sell to Other Provinces	-0.0141 (0.0815)
Ln(years of relationship)	-0.0644 (0.0000)
Tax Burden	0.1264 (0.0000)
Government Help	-0.0528 (0.0000)
Ln(CEO pay)	-0.1006 (0.0000)

Table 3. Determinants of ETC

	(1)	(2)	(3)	(4)
Ln(GDP_PC)	0.040	-0.050	-0.042	-0.005
	(0.063)	(0.069)	(0.072)	(0.079)
Ln(number of employees, lagged)	-0.360***	-0.314***	-0.305***	-0.276***
	(0.032)	(0.029)	(0.028)	(0.025)
Log(firm age)	0.095***	0.068*	0.070*	0.057
	(0.036)	(0.039)	(0.039)	(0.037)
Sell to other provinces	0.329***	0.431***	0.445***	0.459***
	(0.071)	(0.073)	(0.076)	(0.070)
Ln(years relationship)	-0.159*	-0.022	-0.023	0.031
	(0.085)	(0.072)	(0.071)	(0.062)
Private share	-0.167**	-0.086	-0.061	-0.028
	(0.085)	(0.067)	(0.067)	(0.069)
Foreign share	-0.165	-0.186*	-0.154	-0.006
	(0.104)	(0.101)	(0.104)	(0.112)
Government help	-0.358***	-0.382***	-0.396***	-0.365***
	(0.134)	(0.116)	(0.139)	(0.139)
Tax burden in the previous year	18.491***	8.901***	6.761***	6.856***
	(2.646)	(2.240)	(2.373)	(2.459)
Ln(CEO pay)				-0.132***
				(0.037)
Area dummies	No	Yes	No	No
Industry dummies	No	Yes	Yes	Yes
Survey dummies	No	Yes	Yes	Yes
Province dummies	No	No	Yes	Yes
Observations	14976	14976	14976	14532
R-squared	0.038	0.080	0.082	0.087

Notes: The dependent variable is ETC, in percentage points.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Robust standard errors clustered at the city level.
ETC stands for "entertainment and traveling costs of the firm" over firm sales.

Table 4. Effects of ETC on TFPLP

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Ln(number of employees,	0.211***	0.203***	0.204***	0.199***	0.202***	0.197***
lagged)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Log(firm age)	-0.207***	-0.210***	-0.208***	-0.210***	-0.206***	-0.209***
	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Sell to other provinces	0.284***	0.300***	0.275***	0.257***	0.278***	0.260***
	(0.030)	(0.030)	(0.028)	(0.028)	(0.027)	(0.028)
Private share	-0.065**	-0.047*	-0.064**	-0.061**	-0.067**	-0.064**
	(0.028)	(0.027)	(0.027)	(0.026)	(0.027)	(0.026)
Foreign share	0.348***	0.274***	0.332***	0.339***	0.325***	0.332***
	(0.067)	(0.065)	(0.063)	(0.062)	(0.063)	(0.061)
Ln(years relationship)	0.179***	0.175***	0.175***	0.175***	0.175***	0.176***
	(0.023)	(0.022)	(0.022)	(0.021)	(0.022)	(0.021)
Government Help	-0.135*	-0.040	-0.021	0.034	0.068	0.098
	(0.080)	(0.064)	(0.064)	(0.116)	(0.068)	(0.117)
Tax burden in the previous year	0.546	0.833	-0.504	0.063	-1.290	-0.627
	(1.036)	(0.937)	(0.889)	(0.855)	(0.988)	(0.990)
Ln(GDP_PC)		0.320***	0.307***		0.303***	0.354
		(0.038)	(0.038)		(0.038)	(0.250)
ETC	-5.108***	-5.068***	-5.113***	-4.981***	-6.076***	-5.498***
	(0.700)	(0.708)	(0.709)	(0.706)	(1.631)	(1.620)
ETC*Government Help					-8.026***	-8.234***
					(1.946)	(1.920)
ETC*Tax burden in the					53.650**	45.600**
previous year					(21.697)	(22.380)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Survey dummies	Yes	Yes	Yes	Yes	Yes	Yes
Area dummies	Yes	Yes	No	No	No	No
Province dummies	No	No	Yes	No	Yes	No
City dummies	No	No	No	Yes	No	Yes
Observations	14503	14503	14503	14503	14503	14503
R-squared	0.490	0.500	0.507	0.518	0.509	0.520
Effects of ETC at:						
the mean "government help"					-6.286***	-6.122***
and the mean "tax burden"					(0.718)	(0.714)
"tax burden" 1 SD above the mean,					-5.210***	-5.208***
and the mean "government help"					(0.633)	(0.644)
"government help" 1 SD below mean,					-4.011***	-3.789***
and the mean "tax burden"					(0.880)	(0.861)

Notes: *, **, and *** imply statistical significance at the 10, 5 and 1 percent levels.
Robust standard errors clustered at the city level.
ETC stands for "entertainment and traveling costs of the firm" over firm sales.

Table 5. GMM Estimation of the Effects of ETC on TFPLP

Variables	(1)	(2)
Ln(GDP_PC)	0.306***	0.290***
	(0.020)	(0.020)
Ln(number of employees, lagged)	0.193***	0.180***
	(0.011)	(0.012)
Log(firm age)	-0.206***	-0.199***
	(0.012)	(0.012)
Sell to other provinces	0.291***	0.315***
	(0.026)	(0.026)
Private share	-0.065***	-0.073***
	(0.021)	(0.022)
Foreign share	0.328***	0.301***
	(0.034)	(0.035)
Ln(years relationship)	0.174***	0.174***
	(0.020)	(0.021)
Government help	-0.036	0.205***
	(0.039)	(0.076)
Tax burden in the previous year	-0.301	-2.846***
	(0.637)	(0.895)
ETC	-8.516***	-15.362***
	(2.943)	(4.249)
ETC*Government Help		-22.963***
		(5.505)
ETC*Tax burden in the previous year		180.934***
		(40.207)
Industry dummies	Yes	Yes
Province dummies	Yes	Yes
Survey dummies	Yes	Yes
Observations	14503	14503
First-stage F statistics	39.25	16.4 ; 40.7; 13.8
Shea partial R^2	0.011	0.044 ; 0.057 ; 0.097
Effects of ETC at:		
the mean "government help" and the mean "tax burden"		-14.77***
		(3.21)
"tax burden" 1 SD above the mean, and the mean "government help"		-11.15***
		(3.01)
"government help" 1 SD below mean, and the mean "tax burden"		-8.26***
		(3.34)

Notes: *, **, and *** imply statistical significance at the 10, 5 and 1 percent levels.
There are three first-stage F-statistics and Shea partial R^2 in Column (2) for the three endogenous variables included in the specification respectively.
ETC stands for "entertainment and traveling costs of the firm" over firm sales.
The instrumental variable for ETC is the city-industry median of ETC; the instrumental variables for ETC's interaction terms are the instrument for ETC times the interaction terms.

Table 6. GMM Estimates of ETC Effects: Checking Identifying Assumptions

Panel A. No interaction terms

ETC	-8.516***	-8.811***	-7.074**	-8.367***	-8.582***	-7.065**
	(2.943)	(2.935)	(2.916)	(2.942)	(2.946)	(2.907)
Control for all variables in Table 5?	yes	yes	yes	yes	yes	yes
Additional city-industry median variables:	No (Base specification)	private & foreign ownership	access to bank loan & trade credit	firm age	share of sales lost due to infrastructure losses	All together
Number of observations	14,503	14,503	14,503	14,503	14,503	14,503

Panel B. With interaction terms

ETC	-15.362***	-17.573***	-14.150***	-15.234***	-15.469***	-16.031***
	(4.249)	(4.304)	(4.193)	(4.248)	(4.249)	(4.232)
ETC*Government Help	-22.963***	-24.455***	-23.126***	-22.525***	-22.670***	-23.463***
	(5.505)	(5.605)	(5.514)	(5.507)	(5.516)	(5.599)
ETC*Tax burden in the	180.934***	216.513***	183.023***	179.038***	180.814***	213.232***
previous year	(40.207)	(41.005)	(39.665)	(40.189)	(40.220)	(40.502)
Control for all variables in Table 5?	yes	yes	yes	yes	yes	yes
Additional city-industry median variables:	No (Base specification)	private & foreign ownership	access to bank loan & trade credit	firm age	share of sales lost due to infrastructure losses	All together
Number of observations	14,503	14,503	14,503	14,503	14,503	14,503

Notes: *, **, and *** imply statistical significance at the 10, 5 and 1 percent levels.
Standard errors in parentheses.
The instrumental variables are the same as in Table 5.
ETC stands for "entertainment and traveling costs of the firm" over firm sales.

Table 7. Effects of ETC on Alternative Measures of Productivity

Variables	FE estimates of TFP: Cobb-Douglas Function		FE estimates of TFP: Translog Function		Ln(Labor productivity)	
	(1) OLS	(2) GMM	(3) OLS	(4) GMM	(5) OLS	(6) GMM
Ln(number of employees, lagged)	0.090***	0.068***	0.092***	0.076***	0.056***	0.030***
	(0.012)	(0.012)	(0.011)	(0.012)	(0.011)	(0.011)
Log(firm age)	-0.199***	-0.193***	-0.198***	-0.192***	-0.186***	-0.180***
	(0.017)	(0.013)	(0.017)	(0.013)	(0.017)	(0.012)
Sell to other provinces	0.312***	0.348***	0.299***	0.325***	0.403***	0.447***
	(0.030)	(0.027)	(0.032)	(0.027)	(0.031)	(0.027)
Private share	-0.103***	-0.109***	-0.094***	-0.099***	-0.168***	-0.174***
	(0.028)	(0.023)	(0.029)	(0.023)	(0.028)	(0.023)
Foreign share	0.363***	0.341***	0.283***	0.263***	0.413***	0.397***
	(0.069)	(0.037)	(0.069)	(0.037)	(0.072)	(0.037)
Ln(years relationship)	0.155***	0.155***	0.172***	0.172***	0.174***	0.174***
	(0.022)	(0.021)	(0.022)	(0.022)	(0.021)	(0.021)
Government help	0.058	0.118	0.074	0.116	0.132*	0.151**
	(0.078)	(0.075)	(0.082)	(0.075)	(0.080)	(0.077)
Tax burden in the previous year	-1.583	-3.037***	-1.755	-3.536***	-2.667**	-3.883***
	(1.108)	(0.932)	(1.141)	(0.945)	(1.079)	(0.923)
Ln(GDP_PC)	0.301***	0.292***	0.320***	0.311***	0.360***	0.349***
	(0.042)	(0.021)	(0.043)	(0.021)	(0.046)	(0.021)
ETC	-6.693***	-17.281***	-6.461***	-15.907***	-6.888***	-19.265***
	(1.806)	(4.131)	(1.907)	(4.070)	(1.547)	(4.249)
ETC * gov help	-6.191***	-14.806***	-6.692***	-12.885**	-7.057***	-12.461**
	(1.977)	(5.482)	(2.040)	(5.386)	(1.676)	(5.544)
ETC * Tax burden in the	47.719**	166.057***	44.073*	171.409***	69.521***	175.965***
Previous year	(23.876)	(42.136)	(26.026)	(41.884)	(19.250)	(42.267)
Province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Data dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14509	14509	14548	14548	14561	14561
R-squared	0.51		0.72		0.28	
Effects of ETC at:						
the mean "government help"	-6.58***	-14.75***	-6.66***	-12.54***	-6.10***	-15.57***
and the mean "tax burden"	(0.73)	(3.07)	(0.78)	(3.01)	(0.72)	(3.05)
"tax burden" 1 SD above the mean, and	-5.62***	-11.43***	-5.78***	-9.11***	-4.71***	-12.04***
the mean "government help"	(0.59)	(2.83)	(0.66)	(2.76)	(0.58)	(2.82)
"government help" 1 SD below mean,	-4.82***	-10.56***	-4.77***	-8.89***	-4.10***	-12.03***
and the mean "tax burden"	(0.91)	(3.06)	(0.96)	(2.99)	(0.84)	(3.19)

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.
The first-stage statistics are similar in the order of magnitudes to previous tables and are not reported.
Robust Standard errors for OLS clustered at the city level.
ETC stands for "entertainment and traveling costs of the firm" over firm sales.

Table 8. Effects of ETC on TFPLP:
Rich versus Poor Cities

Variables	Rich Cities		Poor Cities	
	OLS	GMM	OLS	GMM
Ln(number of employees, lagged)	0.225***	0.174***	0.177***	0.168***
	(0.015)	(0.029)	(0.012)	(0.015)
Log(firm age)	-0.212***	-0.208***	-0.200***	-0.192***
	(0.024)	(0.018)	(0.021)	(0.017)
Sell to other provinces	0.290***	0.373***	0.235***	0.250***
	(0.042)	(0.053)	(0.038)	(0.036)
Private share	-0.112***	-0.116***	-0.013	-0.022
	(0.039)	(0.035)	(0.035)	(0.029)
Foreign share	0.291***	0.265***	0.459***	0.414***
	(0.071)	(0.047)	(0.108)	(0.066)
Ln(years relationship)	0.128***	0.125***	0.214***	0.218***
	(0.031)	(0.035)	(0.028)	(0.027)
Government help	-0.122	-0.081	0.056	0.259**
	(0.105)	(0.129)	(0.091)	(0.117)
Tax burden in the previous year	-0.203	-0.773	-2.191*	-6.071***
	(1.477)	(1.390)	(1.298)	(1.517)
Ln(GDP_PC)	0.378***	0.331***	0.338***	0.361***
	(0.083)	(0.057)	(0.088)	(0.052)
ETC	-5.163**	-24.954**	-7.139***	-17.368***
	(2.042)	(11.979)	(2.130)	(5.314)
ETC*Government Help	-7.300**	-15.022	-8.364***	-27.726***
	(3.234)	(9.801)	(2.451)	(8.490)
ETC*Tax burden in the previous year	30.038	145.309*	77.791**	312.191***
	(27.240)	(78.325)	(31.622)	(78.266)
Province dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Survey dummies	Yes	Yes	Yes	Yes
Observations	7308	7308	7269	7269
R-squared	0.50		0.51	
First-stage F Statistics		4.32, 18.31, 5.43		9.50, 21.54, 9.91
Shea partial R^2		0.017, 0.067, 0.073		0.060, 0.041, 0.071
Effects of ETC at:				
the mean "government help"	-6.17***	-23.40***	-6.41***	-12.59***
and the mean "tax burden"	(1.02)	(8.73)	(0.68)	(3.81)
"tax burden" 1 SD above the mean, and	-5.56***	-20.49**	-4.85***	-6.33
the mean "government help"	(0.97)	(7.86)	(0.72)	(4.13)
"government help" 1 SD below mean, and	-4.10***	-19.14**	-4.04***	-4.73
the mean "tax burden"	(1.19)	(9.63)	(0.95	(3.65)

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.
OLS robust standard errors clustered at the city level.
There are three first-stage F-statistics and Shea partial R^2 in Column (2) for the three endogenous variables included in the specification respectively.
ETC stands for "entertainment and traveling costs of the firm" over firm sales.

Table 9. Effects of ETC on TFPLP: Large versus Small Firms

Variables	Large Firms		Small Firms	
	OLS	GMM	OLS	GMM
Ln(number of employees, Lagged)	0.237***	0.224***	0.179***	0.145***
	(0.014)	(0.018)	(0.023)	(0.026)
Log(firm age)	-0.178***	-0.176***	-0.248***	-0.230***
	(0.016)	(0.014)	(0.027)	(0.022)
Sell to other provinces	0.347***	0.369***	0.226***	0.278***
	(0.038)	(0.037)	(0.033)	(0.038)
Private share	-0.028	-0.036	-0.087**	-0.088***
	(0.035)	(0.030)	(0.035)	(0.032)
Foreign share	0.208***	0.181***	0.509***	0.514***
	(0.068)	(0.048)	(0.077)	(0.059)
Ln(years relationship)	0.099***	0.099***	0.225***	0.221***
	(0.026)	(0.027)	(0.029)	(0.032)
Government help	-0.042	0.024	0.147	0.365***
	(0.089)	(0.114)	(0.091)	(0.127)
Tax burden in the previous year	0.081	-0.990	-2.608**	-4.999***
	(1.124)	(1.109)	(1.298)	(1.515)
Ln(GDP_PC)	0.328***	0.320***	0.260***	0.241***
	(0.041)	(0.027)	(0.049)	(0.031)
ETC	-8.567***	-16.786*	-5.200***	-16.375***
	(2.350)	(9.691)	(1.776)	(5.025)
ETC*Government Help	-1.883	-11.636	-9.477***	-29.094***
	(3.696)	(9.983)	(2.068)	(8.197)
ETC*Tax burden in the previous year	47.869	153.430**	48.868**	204.090***
	(34.843)	(63.887)	(22.884)	(59.729)
Province dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Survey dummies	Yes	Yes	Yes	Yes
Observations	7297	7297	7266	7266
R-squared	0.51		0.47	
First-stage F Statistics		16.93, 26.76, 10.19		8.26, 17.95, 7.03
Shea partial R^2		0.021, 0.048, 0.125		0.052, 0.049, 0.069
Effects of ETC at:				
the mean "government help"	-7.09***	-13.81**	-6.08***	-16.72***
and the mean "tax burden"	(0.92)	(6.46)	(0.80)	(4.13)
"tax burden" 1 SD above the mean, and	-6.13***	-10.73*	-5.10***	-12.63***
the mean "government help"	(0.98)	(5.84)	(0.66)	(4.15)
"government help" 1 SD below mean, and	-6.55***	-10.51	-3.40***	-8.47**
the mean "tax burden"	(1.42)	(7.93)	(0.91)	(3.83)

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.
OLS robust standard errors clustered at the city level.
There are three first-stage F-statistics and Shea partial R^2 in Column (2) for the three endogenous variables included in the specification respectively.
ETC stands for "entertainment and traveling costs of the firm" over firm sales.

Table 10. The Effects of Non-Business-Related ETC on TFPLP

Variables	(1) OLS	(2) OLS	(3) GMM	(4) GMM
Ln(GDP_PC)	0.311***	0.309***	0.311***	0.304***
	(0.038)	(0.038)	(0.020)	(0.020)
Ln(number of employees, lagged)	0.221***	0.224***	0.221***	0.232***
	(0.010)	(0.010)	(0.007)	(0.007)
Log(firm age)	-0.215***	-0.215***	-0.216***	-0.219***
	(0.017)	(0.017)	(0.012)	(0.012)
Sell to other provinces	0.259***	0.257***	0.260***	0.258***
	(0.028)	(0.028)	(0.022)	(0.022)
Private share	-0.064**	-0.065**	-0.064***	-0.068***
	(0.026)	(0.026)	(0.021)	(0.022)
Foreign share	0.334***	0.333***	0.334***	0.329***
	(0.063)	(0.062)	(0.034)	(0.035)
Ln(years relationship)	0.187***	0.190***	0.187***	0.202***
	(0.023)	(0.023)	(0.020)	(0.020)
Government help	-0.007	-0.035	-0.008	-0.096**
	(0.064)	(0.063)	(0.038)	(0.043)
Tax burden in the previous year	-0.662	-0.672	-0.648	-0.631
	(0.888)	(0.887)	(0.624)	(0.645)
NB-ETC	-4.840***	-6.293***	-5.074***	-16.965***
	(0.582)	(1.319)	(1.656)	(3.282)
NB-ETC * Government help		-7.189***		-17.210***
		(1.811)		(5.736)
NB ETC * Tax burden in the previous year		58.886***		239.268***
		(17.698)		(44.830)
Industry dummies	Yes	Yes	Yes	Yes
Province dummies	Yes	Yes	Yes	Yes
Survey dummies	Yes	Yes	Yes	Yes
Observations	14086	14086	14086	14086
R-squared	0.51	0.51		
Effects of ETC at:				
the mean "government help"		-6.01***		-12.03***
and the mean "tax burden"		(0.48)		(2.19)
"tax burden" 1 SD above the mean, and		-4.83***		-7.23***
the mean "government help"		(0.47)		(1.87)
"government help" 1 SD below mean, and		-3.97***		-7.15***
the mean "tax burden"		(0.72)		(1.83)

Notes: ETC stands for "entertainment and traveling costs of the firm" over firm sales.
NB-ETC is the residual from the regression of ETC on log(lagged employment), log(firm age), 1(sell to other province), log(years having known the important trading partners), and ln(CEO compensation).
Robust standard errors clustered at the city level for OLS.
The first-stage F statistics are similar to what we found earlier, and are not reported.