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The determinants of fiscal transparency in Chinese city-level governments

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The transparency of the fiscal performance of governments has attracted attention from researchers, policy-makers and practitioners around the world. This study examines the determinants of fiscal transparency in the city-level governments of China, which has become a key issue in the drive to modernise the Chinese state. Employing cross-sectional data from the 2017 Statistical Yearbooks published by the official statistical institutions and the 2017 Fiscal transparency report of city-level governments edited by the Tsinghua University, this study finds that economic development, economic openness, and dependence on transfer payments are associated with weaker fiscal transparency. Large cities, those with high levels of internet usage and cities higher up within the Chinese administrative hierarchy are associated with stronger fiscal transparency. The theoretical and practical implications of these findings are discussed.

Key words: fiscal transparency, local government, China, principal-agent theory

Forthcoming in *Local Government Studies*

Introduction

Public administration scholars argue that transparency can ensure the legitimacy of the government by optimising public services performance, reducing corruption, and enhancing people' trust in the government (Alt, Lassen, and Rose 2006; Heald 2003). Critically, fiscal transparency (FT) is considered a pivotal dimension of administrative transparency (Kopits and Craig 1998), because public policies are usually supported by public funds provided by taxpayers. Moreover, during the 1990s, a series of financial scandals in public organisations around the world lead to a stronger emphasis on strengthening government accountability through fiscal information disclosure and communication (Rubin 1996). Although knowledge on the determinants of FT has been steadily accumulating (Wehner and Renzio 2013), we need to know more about FT in local governments within developing countries, especially in non-western settings, such as China, which may display distinctive patterns of transparency. We aim to apply the classic principal-agent approach to the FT of Chinese city governments, and identify determinants of FT that have been under-analysed in previous research.

According to principal-agent theory, citizens can be considered principals in their relationships with government bureaucrats who should ideally act as their agents in promoting public welfare (Alt, Lassen, and Rose 2006). However, principals and agents both seek to maximise their own interests, and in the case of citizens and bureaucrats there are substantial asymmetries in information and capability between the two sides. As a result, the two groups tend to have divergent perspectives on the provision of fiscal information, and the respective factors shaping citizens' demand for, and bureaucrats supply, of fiscal information may differ greatly.

The findings from previous studies of FT from different countries might not be generalisable to China, due to the absence of partisan electoral competition (Wu and

Wang 2012). Therefore, while principal-agent theory may still apply in the Chinese context, it is necessary to supplement this perspective with ideas from legitimacy theory about the indicators of good government the authorities in China may prefer to use to incentivise bureaucrats, especially economic growth, which if positive may reduce the pressure on city governments to disclose fiscal information (Chen et al. 2017). The above argument does not mean that citizens' interest in government information has no impact on FT in Chinese cities, but that it might be more influential if conditions are favourable for both citizens and the government to demand and supply fiscal information. As a result, determinants of FT that have been comparatively neglected in prior research might matter, particularly factors related to transformation of the Chinese economy and society. For instance, urbanisation is rarely mentioned in Western transparency studies, but could increase demand for FT in China, where the urban population rate has increased from 36% to 58% in the past 20 years (National Bureau of Statistics of the PRC 2018). Likewise, Foreign Direct Investment (FDI) and internet usage may also increase the demand for FT in the Chinese context, where information asymmetry between government and other actors tends to be more serious than in other countries (Yim and Jung 2016).

Consistent with the aims of this study, we therefore ask: what economic, demographic, fiscal and institutional factors are related to FT in city-level governments in China? Following the introduction, previous FT studies are reviewed, and hypotheses about the determinants of FT in Chinese local government are developed based around the adaptation of principal-agent and legitimacy theory. The methods section presents the research design, the selected sample, the variables and the data sources. The results of statistical analysis are then reported, and Shapley-value decomposition is employed to identify the contributions made by different explanatory variables to changes in FT.

Following that, the findings are discussed, and the conclusion section summarises the contributions and limitations of the study, along with recommendations for further research.

Determinants of FT in Chinese local governments

According to Kopits and Craig (1998), FT implies that public organisations fully disclose information in relation to “government structure and functions, fiscal policies and activities, public sector accounts, and projections”. Efforts to promote FT by the IMF (2007), the OECD (2001) and the International Budget Partnership (a transnational NGO) have led fiscal information disclosure to become a legal requirement at all levels of government in many developed countries, such as the UK (HM Treasury 1998), Spain (Esteller-Moré and Otero 2012), and the USA (Alt, Lassen, and Skilling 2002). It has also become a statutory obligation in China, but, to date, researchers have mainly investigated determinants of FT at the provincial government level (Deng, Peng, and Wang 2013). To understand the determinants of FT in Chinese city-level governments, we bring together insights from principal-agent and legitimacy theory that have guided previous studies of FT at the local level (e.g. Bolívar, Muñoz, and Hernández 2013).

Principal-agent theory indicates that citizens and incumbents in the government can be respectively considered as agents and principals (Alt *et al.* 2006), with citizens the principals, and politicians and public servants the agents. Theoretically, agents (bureaucrats in the government) should advance the interests of their principals (citizens) rather than their own interests. However, information asymmetry can enable bureaucrats to maximise their interests in ways that do not benefit citizens – what is termed the agency problem (Zimmerman 1977). Alleviation of the agency problem relies on mechanisms that allow citizens to monitor government activity, such as the publication

of fiscal information. For citizens, two positive “countervailing effects” may arise from greater FT (Alt and Lassen 2006): firstly, it can help citizens to identify “good” agents (politicians and bureaucrats); secondly, it can limit the rent-seeking behaviour and opportunistic decision-making of “bad” agents.

In China, although there are no routine processes for citizens to hold politicians to account, there are still various incentives for local bureaucrats to maximise citizens’ interests by promoting FT. As Yang (2004) highlights, FT can be used as an indicator to measure the achievements of local bureaucrats. Personnel changes in Chinese local governments are largely determined by the Chinese Communist Party (CCP) and higher-level government (Chung 2016; Chen et al. 2017). Establishing a service-oriented government has become policy for the CCP, and providing governmental information can be considered a way to achieve this (Li 2016). Hence, it may be in the interests of local bureaucrats to promote FT to demonstrate their capability and loyalty to the CCP. This perspective on FT can be explained by legitimacy theory (Zimmerman 1977).

Zhu (2011) highlights that the legitimacy of unelected governments can be enhanced through good performance and governance. While the Chinese authorities have mostly relied on economic development as a source of legitimacy (Schubert 2008), information disclosure may become a more significant source of legitimacy if local economic conditions are unfavourable (Zeng 2014).

In practice, levels of FT reflect agents’ and principals’ assessment of the benefits versus the costs of disclosing fiscal information (Alt and Lassen 2006). From a public choice perspective, bureaucrats and politicians, could regard lower information asymmetry as a cost of promoting transparency (Mueller 1976; Guillamón et al. 2011). In a similar vein, high search costs can reduce citizens’ demand for transparency (Chan and Rubin 1987). Since it is difficult for Chinese citizens to influence local politicians

through direct elections or to “vote with their feet” under the household registration system (Chan 2010), FT might depend more on the incentives for bureaucrats to change their behaviour. Following prior research at the local government level (e.g. Bolívar, Muñoz, and Hernández 2013; Sol 2013), the potential determinants of FT in Chinese city-level governments examined here are therefore divided into four key types of factor: economic; demographic; fiscal; and, institutional.

Economic determinants of FT

From a principal-agent theory perspective, economic determinants of FT impact on citizens and bureaucrats because they are ever-present influences on their attitudes and behaviours (Piotrowski and Van Ryzin 2007). Hence, it is anticipated that economic development, the openness of the local economy and the relative economic well-being of citizens is likely to influence FT in Chinese city governments.

Economic development

Researchers claim that economic development can bring about a higher level of FT, because wealthier regions are able to establish institutions, which protect people’s right to know and to participate in public debates (Bastida and Benito 2007; Schick 2003). Moreover, affluent taxpayers have a stronger sense of their rights and may demand more FT to better monitor how their tax monies are spent (Guillamón, Bastida, and Benito 2011). Several studies confirm that the supply and demand for FT grows with economic prosperity (e.g. Cicatiello, Simone, and Gaeta 2017; Wehner and Renzio 2013). However, some researchers claim that citizens in less developed economies or experiencing economic downturns are more motivated to exert pressure on governments to improve transparency (e.g. Rios, Bastida, and Benito 2016; Grigorescu 2003; Zeng 2014). From

the perspective of legitimacy theory, economic development and FT might also be negatively related in China because the authorities and citizens regard economic development as a more important indicator of legitimacy than transparency. Opaque fiscal information may therefore be acceptable when economic growth is favourable, but become more politically salient when economic difficulties occur. Hence:

Hypothesis 1: Economic development is negatively related to FT in Chinese city-level governments

Economic openness

Previous research (e.g. Deng, Peng, and Wang 2013) has found that foreign investors are more sensitive to information asymmetry than local investors. Accordingly, the more important the role that FDI plays in a region, the more likely that local governments may be under pressure from foreign investors to increase FT. It is expected that this argument will still hold true within the unique Chinese context since there are large variations in economic openness across China (Tisdell 2009). Thus:

Hypothesis 2: Economic openness is positively related to FT in Chinese city-level governments.

Unemployment

Tejedo-Romero and Araujo (2018) argue that high unemployment represents a poor economic situation, which motivates local bureaucrats to conceal fiscal performance from the public in order to maintain social stability and their position in government. Zuccolotto and Teixeira (2014) contend that high unemployment is associated with lower

average incomes and tax burdens, which renders citizens less interested in how government spends their money. Although unemployment might increase citizens' dissatisfaction with government and prompt complaints about an absence of transparency, policy changes in China are largely driven top-down by the ruling party. Hence, cities with high unemployment will likely have lower levels of FT. Therefore:

Hypothesis 3: Unemployment is negatively related to FT in Chinese city-level governments.

Demographic determinants of FT

Demographic features of an area can impact on FT, because they may shape people's demand for government information and their capacity to influence local policies (Andreula and Chong 2016). Following previous studies, we consider population size, education level, and the income of local residents, plus the level of urbanisation.

Size of urban population

Identified by most empirical studies of fiscal transparency (e.g. Caamaño-Alegre et al. 2013; Guillamón, Bastida, and Benito 2011), a larger population size can bring about greater transparency. From a principal-agent perspective, the number of public service users and the amount of tax payment are positively linked with population size (de Araujo and Tejedo-Romero 2016; Alcaraz-Quiles, Navarro-Galera, and Ortiz-Rodríguez 2014), while information disclosure can be an effective means of reducing agency costs paid by citizens (Zhou et al. 2018). Simultaneously, researchers (e.g. Ríos, Benito and Bastida 2013) also imply that potential conflicts caused by information asymmetry might be more serious in larger cities. Therefore, with the expansion of population size, both the

motivations for citizens and the government to promote fiscal transparency might become stronger. In China there is a vast urban-rural gap in residents' level of education and income (Wu and He 2016), and most rural residents are not taxpayers (Shi and Ye 2018), indicating that their demand for fiscal information is likely to be extremely limited. To better capture the principal-agent relationship in city governments, this research specifically focuses on the number of urban residents in an area. Hence:

Hypothesis 4: Urban population size is positively related to FT in Chinese city-level governments.

Urbanisation

Andreula and Chong (2016) argue that urbanisation increases the quantity and complexity of public service demands. Since the expansion of public services relies on taxpayer monies (Robinson 2007), citizens' demand for fiscal information might increase in line with urbanisation. Although scant research has explicitly addressed urbanization and FT in local governments, the following is advanced:

Hypothesis 5: Urbanisation is positively related to FT in Chinese city-level governments.

Education level

Well-educated citizens are more likely to be aware of the importance and benefits of information disclosure (Harrison and Sayogo 2014). A larger proportion of well-educated residents living in a city can not only reduce the costs of disclosing fiscal information, but also indicate that there might be more citizens and interest groups with enthusiasm for FT (Ingram 1984). In other words, education levels might increase

citizens' demand for information and reduce resistance to information disclosure (Rios, Benito, and Bastida 2013). Accordingly:

Hypothesis 6: Education is positively related to FT in Chinese city-level governments.

Internet usage

Rios, Benito, and Bastida (2013) claim that internet usage is positively related to the level of FT. This is because the internet enables the government and citizens to provide and acquire fiscal information in a convenient and cost-effective way (Muñoz, Bolívar, and Hernández 2017). In other words, the willingness to supply and demand fiscal information can be increased by a higher level of internet and E-government usage (Gallego-Álvarez, Rodríguez-Domínguez, and García-Sánchez 2010; Mergel 2013). Since this variable is associated with bureaucrats (the agents) and citizens (the principals), it is likely that it has a strong impact within the Chinese context. Thus:

Hypothesis 7: Internet usage is positively related to FT in Chinese city-level governments.

Fiscal determinants of FT

Fiscal determinants of FT alter bureaucrats' incentive to disclose fiscal information. The impacts of fiscal status on transparency have been widely studied by researchers utilising a principal-agent framework. Central to this approach has been a focus on fiscal deficits and government dependence upon external revenue sources.

Fiscal surplus/deficit

Researchers usually claim that a fiscal surplus will be positively related to FT, since a

surplus suggests that incumbents spend public money efficiently and that the costs to them of disclosing fiscal information are small (Alt, Lassen, and Rose 2006; Caamaño-Alegre et al. 2013). By contrast, Cicatiello, Simone, and Gaeta (2017) suggest that there could be a positive relationship between fiscal deficit and transparency since a perception of poor fiscal performance might amplify voters' demand for fiscal information. However, if the deficit ratio far exceeds expectations, bureaucrats seem more likely to be motivated to conceal information to maintain their positions and status in government (Andreula and Chong 2016). As the deficit ratio is well-known to fiscal information providers and users, it is expected that the above argument will hold true within the Chinese context. Hence:

Hypothesis 8: A fiscal deficit is negatively related to FT in Chinese city-level governments.

Dependence on unconditional transfer payments

Dependence on transfer payments might motivate funding providers (e.g. the central government or international organisations) to closely monitor usage of those payments (Bolívar, Muñoz, and Hernández 2013). Accordingly, funding users could be required to disclose more fiscal information to the public (Ingram and DeJong 1987) – a perspective confirmed by Guillamón, Bastida, and Benito (2011) and Bastida and Benito (2007). However, researchers (e.g. Baldissera et al., 2018) also suggest that reliance on transfer payments might reduce FT due to the 'flypaper effect', because unlike tax revenues, transfer payments (especially unconditional grants), can be more easily retained within local governments (Liu and Zhao 2011). Intergovernmental transfers may thereby promote citizens' wellbeing less than expected (Lee and Vuletin 2012), possibly

motivating bureaucrats to conceal relevant information. Moreover, reliance on unconditional transfer payments reduces tax effort and therefore citizens' interest in local governments (Liu and Zhang 2011), undermining the principal-agent relationship between citizens and the government. Thus:

Hypothesis 9: Dependence on unconditional transfer payments is negatively related to FT in Chinese city-level governments.

Dependence on non-tax revenues

Dependence on other non-tax revenues might also affect FT. If local governments are more reliant on non-tax revenues (e.g. commercial income and penalty charges), the principal-agent relationship between taxpayers and the government can be weakened. Government officials might then consider it unnecessary to fully disclose fiscal information to local residents who contribute less to the revenue stream (Brautigam, Fjeldstad, and Moore 2008). This seems likely to apply in China, where a competitive electoral system does not exist, and tax is a critical link between taxpayers (principals) and their agent (the government). Accordingly:

Hypothesis 10: Dependence on non-tax revenues is negatively related to FT in Chinese city-level governments.

Institutional determinants of FT

Recent studies have considered the impacts of political and administrative institutions on government transparency (Hollyer, Rosendorff, and Vreeland 2011). Due to the absence

of partisan elections in China, only government size and administrative rank are considered in our research.

Government size

Bigger governments provide more public services, and increase citizens' agency costs (Rios, Benito, and Bastida 2013). The above two points, in turn, indicate that recipients of services from large governments probably demand more performance information (Baber 1983). At the same time, the sheer scale of a large local government may mean that incumbents disclose information to bridge the gap between citizens and the government (Serrano-Cinca, Rueda-Tomás, and Portillo-Tarragona 2009). Although FT has sometimes been found to be worse in large governments (Bastida and Benito 2007), bigger governments have greater intellectual and technical capacity for information disclosure (Rios, Benito, and Bastida 2013). Thus:

Hypothesis 11: Government size is positively related to FT in Chinese city-level governments.

Administrative ranking

A local government's administrative power might influence its ability and willingness to undertake policy innovations, such as promoting FT (Liu 2008). Under the unitary political system of China, different types of city government occupy a higher and lower rank within the overall administrative hierarchy (Li et al. 2015; Chung 2008). The highest ranking provincial-level city governments (municipalities) have much wider administrative responsibilities than the lowest ranking prefectural cities, with fifteen sub-provincial level cities in between these two administrative ranks having enhanced

responsibilities for local economic development and fiscal policy (Yu and Gao 2013; Zhu and Zhang 2019). Empirical research indicates that a Chinese city's administrative ranking is positively related to its overall power over administrative decision-making and the formulation of socio-economic policies (Li et al. 2015; Chung 2008). Since cities with a higher administrative ranking have more responsibilities for information disclosure in accordance with their greater power and socio-economic responsibilities, we therefore propose:

Hypothesis 12: Administrative ranking is positively related to FT in Chinese city-level governments.

Data and sample

The Chinese context is a particularly interesting one for the study of FT. Budget drafts and reports were state secrets in the 1997 version of the Chinese Budget Law. However, since the 2000s, anti-corruption drives, e-government initiatives, and openness to foreign investment have encouraged the disclosure of fiscal information (Deng, Peng, and Wang 2013). In May 2014, the new and revised Budget Law stated that public revenues and expenditures should be published in four statements: i) the general public budget statement; ii) the government fund statement; iii) the state-owned capital operating statement; and iv) the social insurance fund statement (Budget Law 2014).

To evaluate the determinants of FT in Chinese cities, the sample of local governments for this study includes all of the four municipalities (provincial level), 15 sub-provincial cities under separate state planning, and 294 prefecture-level cities in mainland China.¹ Twenty prefecture-level cities are excluded from the sample due to a lack of data. However, since more than 90% of the cities have been included, and the

excluded cities are small and located in remote areas (e.g. the Tibet, Ningxia and Qinghai provinces), the sample is highly representative of the population of Chinese city-level governments.

Dependent variable

For the dependent variable, the study utilises the FT scores from the 2017 Annual Fiscal Transparency Report of Chinese City-level Governments, which is produced and made publicly available by the School of Public Policy and Management at Tsinghua University. Using data mining techniques, publicly accessible fiscal information was collected from the websites of all cities and representative counties in mainland China, offering the most comprehensive coverage of cities' fiscal information disclosure for the fiscal year of 2016 (Tsinghua University 2017). This information is made available by municipalities to the citizens that they serve online or on request.

Weighted FT scores for cities are calculated according to the amount and quality of the fiscal data that could be collected from the websites.² The maximum possible transparency score is 670, so the actual scores are divided by 6.7 to simplify interpretation. Table 1 indicates that the FT scores range from 6.04 to 84.63. Although more than half of the cities score higher than 50, the standard deviation is quite high (17.79), indicating that FT varies considerably across Chinese cities. Two out of three normality tests (standard deviation and Kolmogorov-Smirnov) suggest that those scores are normally distributed, as is also indicated by the distribution of the scores shown in Figure 1. Hence, we use the published FT scores for our analysis.

[Figure 1]

Independent variables

Regarding independent variables, data for the year of 2016 are collected from the 2017 provincial and city statistical yearbooks, edited by the Chinese National Bureau of Statistics and provincial statistical departments. Such data have been used in previous studies (e.g. Cheung and Lin 2004).

Following Grigorescu (2003) and Hameed (2005), GDP per capita (*GDPPC*) is our measure of *economic development*. *Economic openness* is measured by dividing FDI by GDP (*FDIGDP*), as per previous studies (e.g. Deng, Peng, and Wang 2013; Hameed 2005). *Unemployment* is directly measured as the percentage of registered unemployed among the total labour force in a city (*UNEMP*).

Following previous studies (e.g. Bolívar, Muñoz, and Hernández 2013), the natural logarithm of a city's number of urban residents (*LNPOP*) is chosen as the measure of *population size*. The ratio of a city's urban residents to the total permanent population (*URBAN*) is then used to measure *urbanisation*. Since data on citizens' educational achievement for the fiscal year of 2017 are unavailable, the number of a city's residents per 100,000 with an undergraduate or higher degree (*EDU*) is adopted, using information published in the National Population Census Report of 2010. The percentage of internet users among the permanent resident population is calculated using figures from the Chinese provincial statistical yearbooks to capture *internet usage* (*INTERNET*).

Fiscal deficit is represented by the deficit ratio, which is total public finance expenditure minus public finance revenue divided by a city's GDP (*DEFICIT*). *Dependence on transfer payments* (*TPRATIO*) is calculated as the number of unconditional transfer payments a city receives from higher-level governments divided by the sum of a city's public finance revenues and total transfer payment revenues.³ The

ratio of non-tax income to total fiscal income is used to measure overall *reliance on non-tax revenues (NONTAX)*.

The natural logarithm of each city's spending on general administration is used to measure government size (LNGOVSIZE) due to the high skewness of the raw figures (skewness = 4.38). Following previous studies (e.g. Li et al. 2015; Yang, Lei, and Li 2019), two dummy variables for administrative rank are adopted (RANK1 and RANK2). For RANK1, "1" is given to municipalities and "0" to all other cities. For RANK2, "1" is given to sub-provincial level cities, and "0" to all other cities. Finally, the potential effects of region on FT are controlled by creating a dichotomous variable (*EAST*) coded '1' for cities in the more-developed eastern part of China, and '0' for those in the Western part.

Summary statistics are shown in Table 1. Correlations are shown in Table 1A in the Appendix. The final regression model is as follows:

$$FT_i = \alpha + \beta_1 GDPPC_i + \beta_2 FDIGDP_i + \beta_3 UNEMP_i + \beta_4 LNPOP_i + \beta_5 URBAN_i + \beta_6 EDU_i + \beta_7 INTERNET_i + \beta_8 DEFICIT_i + \beta_9 TPRATIO_i + \beta_{10} NONTAX_i + \beta_{11} LNGOVSIZE_i + \beta_{12} RANK1_i + \beta_{13} RANK2_i + \beta_{14} EAST_i + \mu_i$$

[Table 1]

Statistical results

The results of the Ordinary Least Squares regression modelling are shown in Table 2. Because the data are cross-sectional, autocorrelation is not an issue (Andrews 1991). Severe multicollinearity is not a problem as the Variance Inflation Factor values are all below 10, with most smaller than 3.5 (Lind, Marchal, and Wathen 2010) – see final

column in Table 2. Robust estimation of standard errors counters heteroscedasticity (Long and Ervin 2000).

[Table 2]

The R-squared value is 0.395, suggesting about 40% of the variation in FT in Chinese cities can be predicted by the independent variables included in the regression model. GDPPC, FDIGDP, LNPOP, INTERNET, TPRATIO, and RANK2 are statistically significant determinants of FT.⁴ To understand the substantive contributions of the different independent variables, the Shapley-value decomposition method is applied to the regression results (see Li, Ran, and Wang 2007). Since this method can only decompose 11 independent variables at a time, the variables with the largest p-values (NONTAX, RANK1, and EAST) were excluded from the analysis. Table 3 therefore depicts the contributions to FT made by 11 of the 14 original explanatory variables.

[Table 3]

Column 2 displays the Shapley values of the contributions made by the explanatory variables to the R-squared value (0.395), while column 3 presents the percentage contributions. Nearly half of the model's contribution to FT (50.04%) is attributable to the variable INTERNET, followed by LNPOP (15.10%), both demographic features of an area. Additionally, TPRATIO, LNGOVSIZE, and DEFICIT each account for more than 4% of the model's explanatory power, in which DEFICIT and LNGOVSIZE is statistically insignificant. The contributions of FDIGDP, RANK2,

GDPPC, and EDU account for 3.79%, 3.46%, 3.45%, and 3.03% respectively, with FDIGDP, RANK2, and GDPPC also being statistically significant.

Discussion

Six explanatory variables appear to be important determinants of FT in Chinese city-level governments: GDPPC, FDIGDP, LNPOP, INTERNET, TPRATIO, and RANK2. Two of these variables are economic determinants (GDPPC and FDIGDP), two are demographic (LNPOP and INTERNET), and the other two are fiscal (TPRATIO) and institutional (RANK2) determinants.

The finding for GDPPC, suggests that economic development has a statistically significant and negative relationship with FT – a result consistent with hypothesis 1 and the arguments of Harrison and Sayogo (2014). The coefficient value (-0.0000996) indicates only a small substantive relationship between GDPPC and the FT scores. Nevertheless, this finding accords with a legitimacy theory perspective on FT in China, with city governments regarding economic growth as sufficient to maintain legitimacy (Monshipouri, Welch, and Egoávil 2011), rather than as a precondition for increasing transparency to reduce agency problems as in most previous empirical studies (e.g. Cicatiello, Simone, and Gaeta 2017; Grigorescu 2003).

According to the results for FDIGDP, a significant and negative relationship exists between economic openness and FT, contrary to hypothesis 2. Here, the coefficient value (-12.28) suggests a strong substantive relationship. If the ratio of FDI to GDP increases by 1% in a Chinese city, the FT score will decrease, on average, by 12.28 points. Although this result is opposite to the provincial-level study of Deng, Peng, and Wang (2013), it highlights the cultural particularity of the Chinese local context. Weiss (1995) explains that informal communication and personal relationships (*'guanxi'* in Chinese)

play an important role in connecting business and government in China. Most FDI in mainland China comes from countries/regions familiar with Chinese culture and society (e.g. Hong Kong, Japan, Singapore, South Korea; Hofstede and Bond 1988), that may be less demanding of fiscal information. In other words, the typical principal-agent relationship between governments and investors may not apply in China.

Although the sign for the coefficient for UNEMP is positive, it does not achieve statistical significance – a result contrary to hypothesis 3 and many previous studies (e.g. Caamaño-Alegre et al. 2013; Tavares and Cruzc 2017). Nearly all of the selected cities have unemployment rates below 4.6%, so the limited impact of this variable is perhaps unsurprising.

Urban population size (LNPOP) has a statistically significant and positive relationship with FT – a result consistent with hypothesis 4 and most prior research (e.g. Caamaño-Alegre et al. 2013; Rios, Benito, Bastida 2013). The coefficient suggests a substantive relationship: FT increases by 3.96 points if LNPOP increases by one unit. Moreover, this variable makes the second greatest contribution to the FT model (see Table 3), implying, as principal-agent theory predicts, that demand for fiscal information and capacity for information disclosure is greater in more populous cities.

Both urbanisation (URBAN) and EDU are unrelated to FT, meaning hypotheses 5 and 6 cannot be accepted. These findings can be partially explained by the Chinese context, in which agents (citizens) only play limited roles in comparison with the principal (the government). By contrast, the coefficient for INTERNET is positive and statistically significant, confirming that internet usage is positively related to FT and that hypothesis 7 should be accepted. Despite the differences in political and socio-economic institutions between China and western countries, this finding mirrors previous studies (e.g. Rios, Benito, and Bastida, 2013; Kim, 2007). Moreover, the coefficient value (0.918)

represents a sizeable substantive relationship, and the Shapley value (50.04%) indicates that INTERNET makes the greatest contribution to variations in FT. Internet usage might be a particularly influential determinant of FT because it is associated with greater demand for *and* supply of fiscal information.

The coefficient for DEFICIT is negative but statistically insignificant, therefore Hypothesis 8 cannot be accepted. The positive results from prior research have been found in western political systems, where taxpayers and opposition politicians openly debate the use of public money by incumbents (Guillamón, Bastida, and Benito 2011). Such electoral pressures do not exist in the Chinese context (Wu and Wang, 2012).

TPRATIO is significantly and negatively related to FT – a result consistent with Hypothesis 8 but contrary to most previous studies (e.g. Bolívar, Muñoz, and Hernández 2013). Although the coefficient indicates that FT decreases by only 0.27 points if reliance on unconditional transfer payments increases by 1%, this may be enough to damage the principal-agent relationship between the local government and citizens. The coefficient (0.0093) for NONTAX is statistically insignificant, therefore Hypothesis 10 cannot be accepted.

Although the positive value of the coefficient of LNGOVSIZE (0.635) is consistent with prior research (e.g. Bastida and Benito 2007; Rios, Benito, and Bastida 2013), it is statistically insignificant. Hence, hypothesis 11 is not accepted. The coefficients for RANK2 (6.411) and RANK1 (1.371) are both positive, but RANK1 is not statistically significant. These results therefore provide partial confirmation of hypothesis 12. It is possible that FT is a slightly less important indicator of legitimacy for the highest ranked cities due to their closeness to the central government. Qualitative research could potentially explore the issue of administrative power, FT and perceived legitimacy in more depth. Finally, the coefficient for EAST (0.755), which represents Eastern Chinese

cities, is positive but not statistically significant, suggesting that large-scale regional effects on cities' FT are not present within China.

Conclusion

This quantitative research explored the determinants of FT in Chinese city-level governments. Two economic factors (economic development and economic openness), two demographic factors (urban population size, and internet usage), one fiscal (dependence on transfer payments) and one institutional factor (RANK2 – administrative ranking) influence FT. While the results for the demographic, fiscal, and institutional factors mirror those from most previous studies undertaken in developed countries, the findings for economic factors differ greatly. This divergence can plausibly be attributed to the Chinese context, where bureaucrats (agents) have much greater power than citizens (principals) and the authorities often prioritize economic performance over transparency as means for maintaining legitimacy. Moreover, in the absence of a voter-politician relationship, the views of citizens and bureaucrats, as taxpayers and tax-users, should be emphasised when applying the principal-agent perspective to Chinese local government. This insight may be applicable in other non-western and developing countries.

In addition to casting light on the applicability of principal-agent and legitimacy theory in the Chinese context, the findings of this study can provide useful information for citizens and policy-makers in China. Although it might be difficult to involve citizens in government activities, many of them are now able to communicate with local legislators via the internet (Yan and Ting 2018). As such, the findings for the positive effect of internet usage on FT suggest that policy-makers and legislators in China can seek to improve FT in city governments by taking measures to increase the degree of internet penetration within the jurisdictions that they serve.

Despite its strengths, the study has some limitations, which could be addressed in future studies. Firstly, a cross-sectional research design is employed using the most recent and complete FT scores. As information quality and availability improves, longitudinal research designs could establish a more robust causal relationship between different factors and FT. Secondly, the impact of the personal characteristics of local bureaucrats (e.g. educational background, previous work experiences) were not incorporated within the study due to the difficulty of collecting comprehensive data on the background of Chinese bureaucrats across almost 300 cities. This is something that could form the basis for smaller, more focused research designs using samples of city governments or bureaucrats with responsibility for complying with the Budget Law. Finally, it would be valuable in the future to conduct comparative studies of the determinants of FT in local governments in developed and developing countries across the world.

In sum, this study has provided vital information on the determinants of FT in Chinese city-level governments. To drive further improvements in our understanding of this key issue, a research agenda explicitly addressing approaches to promoting FT and its effects would prove invaluable.

Notes

1. There are five main subnational administrative divisions in China. The highest level includes the provinces and the four municipalities directly under the Central government. Fifteen sub-provincial cities and 294 prefecture-level cities are located at the second and third level. Counties, townships, and villages are classified into the third, fourth, and fifth levels. Cities in this study therefore refer to municipalities, sub-provincial and prefecture-level cities.
2. The FT report classifies fiscal information into the following four categories: i) basic information on the city government and public institutions (maximum possible score = 50); ii) annual budget plan and the budget report for the last fiscal year (maximum possible score = 340); iii) other significant fiscal information such as audit reports (maximum possible score = 250); and, iv) the three advanced principles - the 'one-stop service' principle, the 'sufficiency' principle, and the 'user-friendly' principle (maximum possible score = 30).
3. A city's transfer payment revenues in China include revenues from unconditional transfer payments ('general transfer payments' or financial grants in Chinese), specific transfers (grants for specific projects or purposes), and tax rebates (Zhang and Wu 2009). Transfer payment revenues are not included in public finance revenue and are listed separately in financial statements.
4. The Durbin-Wu-Hausman (DWH) test suggests that all the explanatory variables are exogenous. However, previous studies (e.g. Hameed 2005) found that a high level of FT in governments can bring in more foreign investment. Hence, to evaluate in more depth whether the relationship between FT and FDIGDP is endogenous, the values for FDIGDP for 2016, 2015, and 2014 were employed as instrumental variables in a 2-stage Least Squares (2SLS) regression model. The F statistic derived from the first stage of the 2SLS regression is large enough to prove that the three instrumental variables were highly correlated with the potentially endogenous variable, but the subsequent DWH test did not reject the null hypothesis of exogeneity, meaning that we find no evidence of an endogenous relationship between FDI and FT.

References

- Alcaraz-Quiles, F., A. Navarro-Galera, and D. Ortiz-Rodríguez. 2014. "Factors Influencing the Transparency of Sustainability Information in Regional Governments: An Empirical Study." *Journal of Cleaner Production* 82: 179-191.
- Alt, J. E., D. Lassen, and D. Skilling. 2002. "Fiscal Transparency, Gubernatorial Approval, and the Scale of Government: Evidence from the States." *State Politics & Policy Quarterly* 2 (3): 230-250.
- Alt, J. E., D. Lassen, and S. Rose. 2006. "The Causes of Fiscal Transparency: Evidence from the U.S. States." *International Monetary Fund Working Paper* 53. Washington, DC: IMF.
- Alt, J. E., and D. Lassen, 2006. "Fiscal Transparency, Political Parties, and Debt in OECD Countries." *European Economic Review* 50 (6): 1403-1439.
- Andreula, N., and A. Chong. 2016. "Do Good Institutions Improve Fiscal Transparency?" *Economics of Governance* 17 (3): 241-263.
- Andrews, D. 1991. "Heteroskedasticity and Autocorrelation Consistent Covariance Matrix Estimation." *Econometrica* 59 (3): 817.
- Baber, W. R. 1983. "Towards Understanding the Role of Auditing in the Public Sector." *Journal of Accounting and Economics* 5 (3): 213-227.
- Baldissera, J. F., D. Dall'Asta, J. E. Scarpin, and C. Fiirst. 2018. Determinantes da Transparência Pública: um Estudo em Municípios Brasileiros sob a ótica da Teoria da Escolha Pública In EnANPAD. Curitiba, Brasil.
- Bastida, F., and B. Benito. 2007. "Central Government Budget Practice and Transparency: an International Comparison." *Public Administration* 85 (3): 667-716.
- Benito, B., and F. Bastida. 2009. "Budget Transparency, Fiscal Performance, and Political Turnout: an International Approach." *Public Administration Review* 69 (3): 403-17.
- Bolívar, M., L. A. Muñoz, and A. Hernández. 2013. "Determinants of Financial Transparency in Government." *International Public Management Journal* 16 (4): 557-602.

Brautigam, D. A., O. Fjeldstad, and M. Moore. 2008. *Taxation and State-building in Developing Countries: Capacity and Consent*. Cambridge: Cambridge University Press.

Budget law of the People's Republic of China 2014, c. 5. Available at: <http://www.lawinfochina.com/display.aspx?lib=law&id=3068&CGid=> (Accessed: 2 March 2019).

Caamaño-Alegre, J., S. Lago-Penas, F. Reyes-Santias, and A. Santiago-Boubeta. 2013. "Budget Transparency in Local Governments: An Empirical Analysis." *Local Government Studies* 39 (2): 182-207.

Chan, J. L., and M. A. Rubin. 1987. "The Role of Information in a Democracy and in Government Operations: The Public Choice Methodology." *Research in Governmental and Nonprofit Accounting* 3 (Part B): 3-27.

Chan, K. W. 2010. "The Household Registration System and Migrant Labor in China: Notes on a Debate." *Population and Development Review* 26 (2): 357-364.

Chen, Z., J. Tang, J. Wan, and Y. Chen. 2017. "Promotion Incentives for Local Officials and the Expansion of Urban Construction Land in China: Using the Yangtze River Delta as a Case Study." *Land Use Policy* 63: 214-225.

Cheung, K., and P. Lin. 2004. "Spill Over Effects of FDI on Innovation in China: Evidence from the Provincial Data." *China Economic Review* 15 (1): 25-44.

Chung, H. 2008. "State Regulation and China's Administrative System: A Spatial Perspective." *The China Review* 8(2): 201-230.

Chung, J. 2016. "China's Local Governance in Perspective: Instruments of Central Government Control." *The China Journal* 75: 38-60.

Cicatiello, L., E. D. Simone, and G. L. Gaeta. 2017. "Political Determinants of Fiscal Transparency: a Panel Data Empirical Investigation." *Economics of Governance* 18 (4): 315-336.

de Araujo, G. F. F. E., and F. Tejedó-Romero. 2016. "Local Government Transparency Index: Determinants of Municipalities' Rankings." *International Journal of Public Sector Management* 29 (4): 327-347.

Deng, S., J. Peng, and C. Wang. 2013. "Fiscal Transparency at the Chinese Provincial Level." *Public Administration* 91 (4): 947-963.

Esteller-Moré, A., and J. Otero. 2012. "Fiscal Transparency." *Public Management Review* 14 (8): 1153-1173.

Gallego-Álvarez, I., and L. Rodríguez-Domínguez, and I. García-Sánchez. 2010. "Are Determining Factors of Municipal E-government Common to a Worldwide Municipal view? An Intra-country Comparison." *Government Information Quarterly* 27 (4): 423-430.

Grigorescu, A. 2003. "International Organizations and Government Transparency: Linking the International and Domestic Realms." *International Studies Quarterly* 47 (4): 643-667.

Guillamón, M., F. Bastida, and B. Benito. 2011. "The Determinants of Local Government's Financial Transparency." *Local Government Studies* 37 (4): 391-406.

Hameed, F. 2005. "Fiscal Transparency and Economic Outcomes." *International Monetary Fund Working Paper No. 05*. Washington, DC: IMF.

Harrison, T., and D. Sayogo. 2014. "Transparency, Participation, and Accountability Practices in Open Government: a Comparative Study." *Government Information Quarterly* 31 (4): 513-525.

Heald, D. 2003. "Fiscal Transparency: Concepts, Measurement and UK Practice." *Public Administration* 81 (4): 723-759.

HM Treasury. 1998. *The code for fiscal stability*. London: HM Treasury.

Hofstede, G., and M. Bond. 1988. "The Confucius Connection: from Cultural Roots to Economic Growth." *Organizational Dynamics* 16 (4): 5-21.

Hollyer, J. R., B. P. Rosendorff, and J. R. Vreeland. 2011. "Democracy and Transparency." *Journal of Politics* 73 (4): 1191-1205.

Ingram, R. W. 1984. "Economic Incentives and the Choice of State Government Accounting Practices." *Journal of Accounting Research* 22 (1): 126-44.

Ingram, R.W., and D. V. DeJong. 1987. "The Effect of Regulation on Local Government Disclosure Practices." *Journal of Accounting and Public Policy* 6 (4):

245–270.

International Monetary Fund. 2007. *Manual For Fiscal Transparency* (2007 Edition). Washington, DC: IMF.

Jia, J., Q. Guo, and J. Zhang. 2014. “Fiscal Decentralization and Local Expenditure Policy in China.” *China Economic Review* 28: 107-122.

Kim, C. K. 2007. “A Cross-national Analysis of Global E-government.” *Public Organization Review* 4 (7): 317– 329.

Kopits, G., and J. D. Craig. 1998. “Transparency in Government Operations.” *International Monetary Fund Occasional Paper No. 158*. Washington, DC: IMF.

Lee, L. and G. Vuletin. 2012. “The Flypaper and Teflon Effects: Evidence from China.” *Modern Economy* 3: 811-816.

Li H., Y. D. Wei, H. F. Liao, and Z. J. Huang. 2015. “Administrative Hierarchy and Urban Land Expansion in Transitional China.” *Applied Geography* 56: 177-186.

Li, K. Q. 2016. “Interviewed by Yue Zhang 31 October 2016.” *The State Council of the PRC*, 31 October 2016.

http://english.gov.cn/premier/news/2016/10/31/content_281475479850579.htm

Li, J., G. Ran, and G. Wang. 2007. “Study on the Disparities of Regional Financial Development in China: Based on the Theory of Division of Labor and Decomposition Method of Shapley Value.” *Economic Research Journal* 5: 42-54.

Lind, D., W. Marchal, and S. Wathen. 2010. *Statistical Techniques in Business and Economics*. 14 ed. New York, USA: McGraw-Hill.

Liu, C. 2008. “Empowered Autonomy: the Politics of Community Governance Innovations in Shanghai.” *Chinese Public Administration Review* 5(1/2): 61-71.

Liu, Y. Z., and J. M. Zheng. 2011. “Intergovernmental Fiscal Transfers and Local Tax Efforts: Evidence from Provinces in China.” *Journal of Economic Policy Reform* 14 (4): 295-300.

Long, J. S., and L. H. Ervin. 2000. “Using Heteroscedasticity Consistent Standard Errors in the Linear Regression Model.” *The American Statistician* 54 (3): 217-224.

- Mergel, I. 2013. "Social Media Adoption and Resulting Tactics in the U.S. Federal Government." *Government Information Quarterly* 30(2): 123-130.
- Monshipouri, M., C. E. Welch, and S. B. Egoávil. 2011. "China's Rising Power: Economic Growth vs. Freedom Deficit." *Journal of Human Rights* 10 (3): 290-310.
- Mueller, D. C. 1976. "Public Choice: A survey." *Journal of Economic Literature* 14 (2): 395-433.
- Muñoz, L. A., M. P. R. Bolívar, and A. M. L. Hernández. 2017. "Transparency in Governments: A Meta-Analytic Review of Incentives for Digital Versus Hard-Copy Public Financial Disclosures." *American Review of Public Administration* 47(5):550-573.
- National Bureau of Statistics. 2018. "Series of Reports on Economic and Social Development Achievements in the 40 Years of Reform and Opening." *National Bureau of Statistics*, 27 August 2018.
http://www.stats.gov.cn/zjtj/zfx/ggkf40n/201808/t20180827_1619235.html
- Organisation for Economic Cooperation and Development. 2001. "Best practices for budget transparency." Accessed 30 October 2018.
<http://www.oecd.org/governance/budgeting/Best%20Practices%20Budget%20Transparency%20-%20complete%20with%20cover%20page.pdf>
- Piotrowski, S. J., and G. G. Van Ryzin. 2007. "Citizen Attitudes Toward Transparency in Local Government." *The American Review of Public Administration* 37 (3): 306–323.
- Rios, A., B. Benito, and F. Bastida. 2013. "Determinants of Central Government Budget Disclosure: An International Comparative Analysis." *Journal of Comparative Policy Analysis: Research and Practice* 15 (3): 235-254.
- Rios, A., F. Bastida, and B. Benito. 2016. "Budget Transparency and Legislative Budgetary Oversight: an International Approach." *American Review of Public Administration* 46 (5): 546-568.
- Robinson, M. 2007. "Does Decentralisation Improve Equity and Efficiency in Public Service Delivery Provision?" *IDS Bulletin* 38 (1): 7-17.

- Rubin, I. 1996. "Budgeting for Accountability: Municipal Budgeting for the 1990s." *Public Budgeting and Finance* 16 (2):112-132.
- Schick, A. 2003. "The Role of Fiscal Rules in Budgeting." *OECD Journal on Budgeting* 3 (3): 7-34.
- Serrano-Cinca, C., M. Rueda-Tomás, and P. Portillo-Tarragona. 2009. "Factors Influencing E-disclosure in Local Public Administrations." *Environment and Planning C: Government and Policy* 27 (2): 355–378.
- Schubert, G. 2008. "One-Party Rule and the Question of Legitimacy in Contemporary China: Preliminary Thoughts on Setting Up a New Research Agenda." *Journal of Contemporary China* 17 (54): 191-204.
- Shi, H., and B. Ye. 2018. "China's Abolition of the Agricultural Tax, Local Governments' Responses and Economic Growth." *Fiscal studies* 39 (3): 517-542.
- Sol, D. A. D. 2013. "The Institutional, Economic and Social Determinants of Local Government Transparency." *Journal of Economic Policy Reform* 16 (1): 90-107.
- Tejedo-Romero, F., and J. Araujo. 2018. "Determinants of Local Governments' Transparency in Times of Crisis: Evidence from Municipality-level Panel Data." *Administration & Society* 50 (4): 527-554.
- The State Council of the People's Republic of China. "Administrative Division." *The State Council*, 26 August 2014.
http://english.gov.cn/archive/china_abc/2014/08/27/content_281474983873401.htm
- Tisdell, C. 2009. "Economic Reform and Openness in China: China's Development Policies in the Last 30 Years." *Economic Analysis and Policy* 39 (2): 271-294.
- Tsinghua University. 2017. *Fiscal transparency report of Chinese city-level governments*. Beijing: Tsinghua University.
- Wehner, J. and P. Renzio. 2013. "Citizens, Legislators, and Executive Disclosure: the Political Determinants of Fiscal Transparency." *World Development* 41: 96-108.
- Weiss, L. 1995. "Governed Interdependence: Rethinking the Government- business Relationship in East Asia." *The Pacific Review* 8 (4): 589-616.

- Wu, J. N. and L. Y. He. 2016. "Urban-rural Gap and Poverty Traps in China: a Prefecture Level Analysis." *Applied Economics* 50 (30): 3300-3314.
- Wu, Y., and W. Wang. 2012. "Does Participatory Budgeting Improve the Legitimacy of the Local Government: a Comparative Case Study of Two Cities in China." *Australian Journal of Public Administration* 71 (2): 122-135.
- Yan, H., and Y. Ting. 2018. "The Effectiveness of Online Citizen Evaluation of Government Performance: A Study of the Perceptions of Local Bureaucrats in China." *Public Personnel Management* 47 (4): 419-444.
- Yang, D. L. 2004. *Remaking the Chinese Leviathan*. Stanford: Stanford University Press.
- Yang, Z., L. Lei, and J. G. Li. 2019. "Identifying the Determinants of Urbanization in Prefecture-Level Cities in China: a Quantitative Analysis Based on Spatial Production Theory." *Sustainability* 11 (4): 1-18.
- Yim, H., and W. Jung. 2016. "Sequential Foreign Direct Investment Under Information Asymmetry: Lessons from Korean Companies' Outward FDIs to China." *Transformations in Business & Economics* 15 (3): 141-155.
- Yu, J. X. and Y. Gao. 2013. "Redefining Decentralization: Devolution of Administrative Authority to County Governments in Zhejiang Province." *Australian Journal of Public Administration* 72 (3): 239-250.
- Zeng, J. 2014. "The Debate on Regime Legitimacy in China: Bridging the Wide Gulf Between Western and Chinese Scholarship". *Journal of Contemporary China* 23(88): 612-635.
- Zhou, Z., H. Zhou, D. Peng, X. Chen, and S. Li. 2018. "Carbon Disclosure, Financial Transparency, and Agency Cost: Evidence from Chinese Manufacturing Listed Companies." *Emerging Markets Finance and Trade* 54 (12): 2669-2686.
- Zhu, Y. 2011. "Performance Legitimacy and China's Political Adaptation Strategy." *Journal of Chinese Political Science* 16 (2): 123-140.
- Zhu, X. F., and Y. L. Zhang. 2019. "Diffusion of Marketization Innovation with Administrative Centralization in a Multilevel System: Evidence from China." *Journal of Public Administration Research and Theory* 29(1): 133-150.

Zimmerman, J. L. 1977. "The Municipal Accounting Maze: An Analysis of Political Incentives." *Journal of Accounting Research* 15: 107–144.

Zuccolotto, R., and M. Teixeira. 2014. "The Causes of Fiscal Transparency: Evidence in the Brazilian States." *Revista Contabilidade & Finanças* 25 (66): 242-254.

Table 1 Summary Statistics

Variables	Mean	Min	Max	Sd	Skewness
FT	49.85	6.040	84.63	17.73	-0.369
GDPPC	53,650	11,892	215,488	31,513	1.640
FDI (in 10,000USD)	91,906	0	1,851,378	203,135	4.745
FDIGDP	0.236	0	1.403	0.248	1.526
UNEMP	2.694	0.290	13.51	1.893	-0.353
POP	1,729,030	150,000	30,484,300	2,841,081	6.810
LNPOP	13.95	11.92	17.23	0.797	0.736
URBAN	56.01	30.48	100	13.20	0.920
EDU	7,973	986	31,499	4,883	1.833
INTERNET	21.44	4.749	79.16	9.937	2.161
DEFICIT	12.90	-0.730	80.57	10.39	2.036
TPRATIO	29.98	0.371	72.38	13.90	-0.256
NONTAX	32.44	8.100	59.44	9.837	0.219
GOVSIZE	384,878	21,954	3.672e+06	416,208	4.376
LNGOVSIZE	12.57	9.997	15.12	0.716	0.429
RANK1	0.014	0	1	0.120	8.140
RANK2	0.051	0	1	0.220	4.104
EAST	0.4332	0	1	0.497	0.270

N=277

Table 2 Determinants of Financial Transparency in Chinese City Governments

Factors	Variables	Model	<i>p-value</i>	VIF
Economic	GDPPC	-9.96e-05** (4.51e-05)	0.028	3.83
	UNEMP	0.260 (0.556)	0.646	1.23
	FDIGDP	-12.28*** (3.333)	0.000	1.32
Demographic	LNPOP	3.962** (1.915)	0.039	2.66
	URBAN	-0.137 (0.0956)	0.152	2.01
	EDU	-0.000248 (0.000249)	0.321	3.22
	INTERNET	0.918*** (0.236)	0.000	1.69
Fiscal	DEFICIT	-0.133 (0.144)	0.355	2.51
	TPRATIO	-0.273** (0.130)	0.036	4.44
	NONTAX	0.00927 (0.109)	0.932	1.53
Institutional	LNGOVSIZE	0.635 (1.712)	0.711	2.27
	RANK1	1.372 (11.00)	0.901	1.66
	RANK2	6.411* (3.765)	0.090	1.77
	EAST	-0.614 (2.003)	0.759	1.39
	Constant	-6.337	0.823	
	F(14, 262)	16.32		
	Observations	277		
	R-squared	0.395		

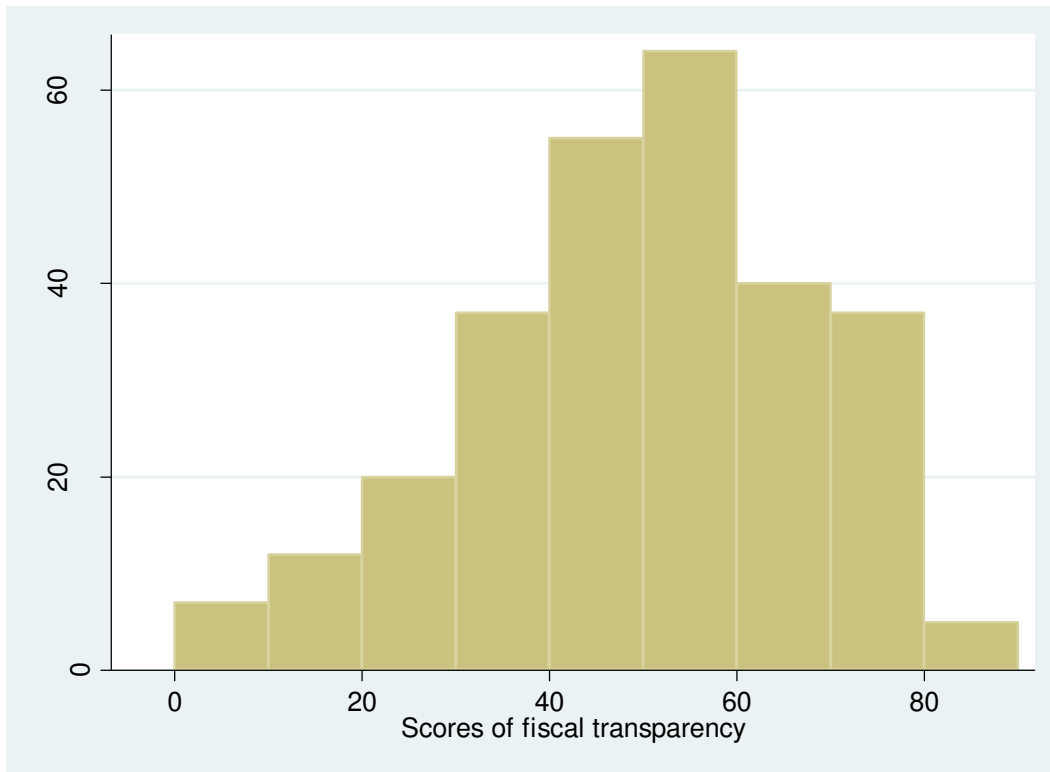
p values*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors shown in parentheses.

Table 3 Shapley-value decomposition

Variable	Shapley value (estimate)	Percent (estimate)
INTERNET***	0.19735	50.04 %
LNPOP**	0.05956	15.10 %
TPRATIO**	0.02866	7.27%
LNGOVSIZE	0.02609	6.62%
DEFICIT	0.01877	4.76%
FDIGDP***	0.01494	3.79%
RANK2*	0.01363	3.46%
GDPPC**	0.01359	3.45%
EDU	0.01194	3.03%
URBAN	0.00739	1.87%
UNEMP	0.00242	0.61%
TOTAL	0.39436	

p values*** p<0.01, ** p<0.05, * p<0.1.

Figure 1 Distribution of FT scores



Appendix

Table 1A Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. FT	1													
2. GDPPC	0.249**	1												
3. UNEMP	-0.111*	-0.228**	1											
4. FDIGDP	0.0271	0.314**	-0.0320	1										
5. LNPOP	0.419**	0.388**	-0.101*	0.224**	1									
6. URBAN	0.181**	0.619**	-0.0799	0.194**	0.307**	1								
7. EDU	0.266**	0.697**	-0.0305	0.292**	0.485**	0.621**	1							
8. INTERNET	0.559**	0.524**	-0.197**	0.224**	0.451**	0.432**	0.508**	1						
9. DEFICIT	-0.297**	-0.638**	0.248**	-0.336**	-0.454**	-0.439**	-0.446**	-0.414**	1					
10. TPRATIO	-0.337**	-0.804**	0.215**	-0.396**	-0.472**	-0.621**	-0.666**	-0.529**	0.726**	1				
11. NONTAX	-0.213**	-0.419**	0.248**	-0.203**	-0.354**	-0.292**	-0.397**	-0.329**	0.405**	0.476**	1			
12. LNGOVSIZE	0.336**	0.450**	-0.225**	0.297**	0.671**	0.257**	0.402**	0.419**	-0.405**	-0.478**	-0.311**	1		
13. RANK1	0.194**	0.199**	-0.0411	0.175**	0.448**	0.142**	0.296**	0.306**	-0.0847	-0.172**	-0.0906	0.386**	1	
14. RANK2	0.246**	0.374**	-0.0611	0.252**	0.406**	0.302**	0.489**	0.333**	-0.216**	-0.353**	-0.280**	0.408**	-0.0279	1
15. EAST	0.178**	0.290**	-0.0209	-0.0170	0.270**	0.269**	0.144**	0.265**	-0.257**	-0.273**	-0.352**	0.141**	0.169**	0.213**

p values*** p<0.01, ** p<0.05, * p<0.1.