



# Top executive pay and firm performance in China

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**Abstract**

The sensitivity of executive pay to share price performance has been the main focus of Western executive pay studies, reflecting shareholders' efforts to reduce agency problems by better aligning the rewards of executives with their own. However, these studies have ignored motivational effects and possible two-way pay–performance causation. This paper reports Chinese executive pay–performance sensitivity, with international comparisons, to examine whether China's unique institutional environment has produced outcomes consistent with those for Western market economies. This same unique environment makes possible the first estimates of two-way causation based on panel data analysis. The results show that executive pay and firm performance mutually affect each other through both reward and motivation.

*Journal of International Business Studies* (2008) 39, 833–850.

doi:10.1057/palgrave.jibs.8400386

**Keywords:** executive pay; causation; China

## INTRODUCTION

Research on the pay of main board executive directors (“executives”) is now a legitimate IB topic, since it motivates the strategies of peak-tier decision-makers in a variety of different institutional environments around the world. However, until recently, studying American executives has been the main concern of researchers in the USA, and the dominant metric in this research has been the sensitivity of executive pay to share price performance, relevant to pay packages supposedly designed to reduce agency problems by better aligning the rewards of shareholders and executives. However, studies of this kind have ignored motivational effects and possible two-way pay–performance causation, despite the fact that motivation is usually cited as the rationale for executive pay packages. For example, a seminal paper by Jensen and Murphy (1990: 226) observed that executive pay is “designed to give the manager incentives to select and implement actions that increase shareholder wealth”. In a meta-analysis of executive pay research, Tosi, Werner, Katz, and Gomez-Mejia (2000: 307) reported that all studies surveyed used pay as the dependent variable: that is, performance “caused” pay as a reward.

In general, executive pay is a subset of employee pay. In this more general context, motivation may be recognised as the desire or willingness to behave in a certain way, and reward follows such behaviour, acknowledging it, and motivating it to happen again

Received: 19 April 2005

Revised: 29 August 2007

Accepted: 10 December 2007

Online publication date: 17 April 2008

(Geen, 1995). Employees are motivated to achieve goals, and when they achieve progress towards goals that are personally important they experience more job satisfaction and organisational commitment (Maier & Brunstein, 2001).

Rewards may be intrinsic or extrinsic, where the latter includes money, and we emphasise money here. With executives, we acknowledge that it can be assumed that survival and physiological needs are already satisfied, and rewards enable them to satisfy various goals, including higher-order psychological goals, for example, relatedness, autonomy, felt competence, stability/security, and status (see Ronen, 1994).

This study therefore focuses on monetary rewards and executive motivation in China – that is, it disregards penalties – and it will be explained that the structure of Chinese executive pay does not include those Western-style share and option awards that may encourage higher-level job satisfaction through belongingness or other psychological needs. Otherwise, executive pay bears few similarities with monetary rewards for all employees, and many of the traditional motivators associated with work design or high-performance work practices, such as job autonomy or variety (Wood, 1999), are abundant in executive jobs. This presents problems in terms of motivating executives who already have intrinsic motivators and status in abundance.

In contrast with scientific management (at the opposite end of the HRM spectrum to executive pay in terms of performance-related monetary rewards), executive pay therefore faces three major differences (Tosi et al., 2000). First, the decisions of peak-level executives involve inputs and outputs that cannot be measured (e.g., tasks are mainly unprogrammable). Second, executives enjoy information asymmetries concerning organisational processes and decisions. Third, it follows that, with this information, executives may pursue their own personal objectives (e.g., via firm size) by diverting the firm's resources away from shareholders.

In these unique circumstances it has become the norm in the Western literature to adopt agency theory as an appropriate lens for the analysis of executive pay (Gomez-Mejia, Wiseman, & Dykes, 2005). With general employees, managers fix pay rates, but executives have no level of administration above them. Rather, with executive pay, *shareholders* are assumed to seek the alignment of their own motivation with that of executives by rewarding them with packages that link their rewards to

share price performance. The problem here is that share price may provide a noisy measure of executives' performance (Bertrand & Mullainathan, 2001).

Within this context of earlier Western studies, therefore, we extend the scope of executive pay research to embrace a comparative international study of China, with two main objectives. The first is to establish whether China's nascent market economy has generated pay responsiveness outcomes that are dimensionally comparable to the USA and other countries, or whether China's (generally still state-dominated) listed firms have produced executive pay packages that are bureaucratic, with weak links to share price, yet are more legitimate in relation to China's institutional environment, where this includes national culture as informal institutions (Peng, 2002). A Chinese national culture with high collectivism and high power-distance tolerance (Hofstede, 2003) means that there has been no tradition of performance-based pay for individual executives; the state still dominates the ownership and control of firms – even listed, privatised firms – and may not be entirely focused on share price appreciation as a stakeholder objective.

This institutional environment is also linked with the second aim of the paper, which is to advance theory by taking advantage of China's resulting unique executive pay structure. Share-based rewards (e.g., stock options) are virtually absent within Chinese listed firms, and this represents an opportunity for researchers, since it removes the main barrier in the West to the estimation of two-way causation between pay and performance. For the first time we are able to analyse separately what we describe as the reward and motivational aspects of executive pay and fill the gap in the existing studies, which have neglected motivation. Besides making a theoretical contribution, we argue that this analysis has practical implications for those who design pay packages, and for judgements concerning the marketisation of the Chinese economy.

The analysis is presented in six further sections. It begins with a literature review, summarising extant international executive pay studies, and then proceeds to an account of executive pay arrangements in China, emphasising the opportunities and challenges that they present. Hypotheses are generated in the fourth section, and the remainder of the paper follows with the usual sections on data and methodology, results and discussion, and conclusions.

## THE EXECUTIVE PAY LITERATURE

This section provides a brief survey of international executive pay research and theorising in order to identify the gaps in the literature that this paper aims to fill, and to generate research questions.

Executive pay comprises extrinsic monetary rewards in the form of cash pay (salary and bonus), long-term incentives (e.g., executive stock options) and perquisites (pension contributions, limousines, etc.), and has mainly been studied in the USA (see, e.g., the surveys and commentaries of Core, Guay, & Larcker, 2003; Daily, Dalton, & Rajagopalan, 2003; Tosi et al., 2000). Kaplan (1997, 1999), Buck and Shahrin (2005), Oxelheim and Randøy (2005) and Sanders and Tuschke (2007) provide notable IB exceptions to the focus of the literature on executives in the USA.

It was noted above that a predominantly Anglo-American executive pay literature typically exploits the paradigm of agency theory, where shareholder principals impose pay packages on their self-interested executive agents, trying to align their interests with their own, but “power” or “rent extraction” theorists would dispute this application. They claim that executives, and particularly CEOs, enjoy positions of power in relation to the design of pay packages, able to insulate themselves from constraints applied by regulators and shareholders.

From this rent-extraction perspective, agency theory is said to be “under-socialised” (Aguilera &

Jackson, 2003), and ignores social forces in favour of supposed arm’s length contracting. For example, the state in China can use its power to influence a firm’s share price more than executives do. In the West, self-interested executives have been accused of extracting rents for themselves by manipulating board structures in their own favour (e.g., by nominating so-called “independent” board members), subject mainly to an “outrage” constraint applied by the press and other media (Bebchuk & Fried, 2004). The CEO’s pay arrangements have, on this view, less to do with incentive alignment and more to do with CEO self-enrichment or “skimming” (Bertrand & Mullainathan, 2001).

The extent to which shareholders’ agency problems are resolved, and “skimming” is prevented, has traditionally been assessed by associating executive pay with the performance of the firm. Performance is usually by share price (e.g., total shareholder return), and the responsiveness of pay to firm performance can be measured by pay–performance sensitivity or elasticity (see a footnote to Table 1 for an explanation of these terms). Thus pay–performance responsiveness associates the pay of executives with a firm’s capital market performance, implying that the higher the responsiveness, the lower the level of “skimming”. As Jensen and Murphy (1990: 242–243) observe: “Agency theory predicts that compensation policy will tie the agent’s expected utility to the principal’s objective. The objective of shareholders is to

**Table 1** Estimates of median executive pay sensitivities and elasticities compared (salary and bonus only)

Researcher(s) (date)	Country (Years studied)	Performance→pay sensitivity <sup>a</sup>	Performance→pay elasticity <sup>b</sup>	Pay→performance elasticity
Hall and Liebman (1998)	USA (1980–1994)	—	0.22	—
Benito and Conyon (1999)	UK (1990–1996)	—	0.26	—
Kato, Kim, and Lee (2005)	S. Korea	—	0.194	—
Firth, Fung, and Rui (2006)	China (1998–2000)	0.021 (insig.)	—	—
Kato and Long (2006)	China (1998–2002)	0.053	0.369	—
Current study (2007)	China (2000–2003)	0.027 (3.44)***	0.250 (2.71)**	0.015 (2.49)**

<sup>a</sup>Performance→pay sensitivity shows the absolute increment to pay associated with a 1000 unit (e.g., \$) increase in shareholder value: so a sensitivity of 0.053 (for China; Kato & Long, 2006) indicates that an additional \$1000 of shareholder value is associated with 5.3 cents of additional executive pay. It is calculated by regressing changes in executive pay on changes in shareholder value.

<sup>b</sup>Performance→pay elasticity shows the percentage responsiveness of pay to a percentage change in performance. For example, an elasticity of 0.10 denotes that a CEO associated with a 20% rate of return would be paid 1% more than a CEO associated with 10% (Hall & Liebman, 1998: 654). It is calculated by regressing the change in the log of executive pay on change in the log of shareholder value.

\*\*\* and \*\* represent significance at the 1 and 5% levels, respectively.

maximise wealth; therefore agency theory predicts that CEO compensation policies will depend on changes in shareholder wealth." If it succeeds, such a policy will produce high pay-performance responsiveness.

However, the direction of causation between executive pay and firm performance is not usually discussed in this literature (for an exception, see Abowd, 1990), where, according to the definitions proposed above, *reward* means that pay is based on past and current performance, and *motivation* implies that pay leads future performance. Furthermore, the very calculation of pay sensitivities and elasticities implies a reliance on Anglo-American corporate governance, or the means by which shareholders control senior managers (Shleifer & Vishny, 1997). Anglo-American governance features open, external information disclosure (and accounting rules to achieve this), single-tier boards, hostile takeovers, laws protecting minority shareholders, and a high proportion of a firm's stock in "free float". Finally, it embraces a high proportion of equity-based pay for executives (La Porta, López-de-Silanes, & Shleifer, 1999; Shleifer & Vishny, 1997).

This raises questions concerning the general applicability of executive pay research when Anglo-American governance is not universal. For example, Ferdinand Piëch, grandson of the Porsche company's founder, and chairman of the Volkswagen supervisory board, observed: "Yes, we have heard of shareholder value. But we put customers first, then workers, business partners, suppliers and dealers, and then shareholders" (*Financial Times*, 2006). Such a stakeholder model of corporate governance (Dore, 2000) is further complicated when stakeholders are also shareholders and enjoy board representation. For example, the state is a stakeholder in all economic systems, since its tax revenue and political popularity depend to some extent on firm performance. In China, it will be seen that its most distinctive institutional feature is the continued state ownership and control of firms, reinforced by a culture of high collectivism and high power-distance tolerance (Hofstede, 2003).

To incorporate stakeholder influence in an alternative theoretical perspective to agency and rent extraction, institutional theory has recently been proposed as a lens for the analysis of executive pay (Bruce, Buck, & Main, 2005) and its first applications have appeared (Buck & Shahrin, 2005; Sanders & Tuschke, 2007). This institutional perspective does have relevance for executive pay in China, with its emphasis on the need for pay

innovations to be legitimate in relation to the prevailing network of institutions. As in Germany, the adoption of equity-based rewards in the form of gifts of shares and stock options for executives may have been illegitimate (Sanders & Tuschke, 2007) and therefore resisted in China, where strong state and employee influence still applies to the strategic decisions of listed firms. It is fascinating to note that state influence is consistent with China's prevailing national culture of high collectivism and power-distance tolerance (Hofstede, 2003), and institutions and culture may co-evolve (Lewin & Kim, 2004). Chinese institutions (including culture as an informal institution) may have inhibited the adoption of long-term incentives in the form of equity-based pay, and thus reduced the responsiveness of pay to share price performance.

At the same time, rent-extraction and institutional perspectives suggest that executive "skimming" and institutional constraints may each inhibit arm's length contracting between shareholders and executives, further reducing the responsiveness of executive pay to firm performance. The question arises, therefore, whether pay-performance responsiveness is uniform around the world, where different governance regimes and institutional environments apply. Table 1 reports two seminal Western studies of pay sensitivity, and shows that pay elasticity is typically positive and significant, but fairly weak, with firm size a more important influence on executive pay than share price.

In addition, replications of Western research have recently emerged for Asian countries with stakeholder governance, for example, South Korea (Kato, Kim, & Lee, 2005) and Japan (Kato & Kubo, 2006), and also for China (Firth, Fung, & Rui, 2006; Kato & Long, 2006), where governance is founded upon relationships and networks rather than prices and markets (Goetzmann & Köll, 2005; Lovett, Simmons, & Kali, 1999), although recent Chinese economic reforms have begun to adopt some of the essential elements of "stock market capitalism" (Dore, 2000).

Despite major differences in corporate governance and the institutional and cultural environments, it can be seen from Table 1 that elasticity estimates in some Asian studies are dimensionally related to results from those comparable studies in the USA and UK that focus on salary and bonus only. This interesting finding, of uniformity despite heterogeneous governance systems and other institutions, is mirrored by parallel results in relation to the



uniform responsiveness of CEO dismissal to share price declines in Germany, Japan and the USA (Kaplan, 1997, 1999). It would appear that different governance systems can achieve similar outcomes on executive labour and product markets (Grandori, 2004), and that different governance elements may act as substitutes for each other (Rutherford, Buchholtz, & Brown, 2007).

Of course, if the long-term incentives paid to executives in the USA and UK are included in regressions, the sensitivity and elasticity results for China and South Korea, which, it will be seen, relate to bonus and salary only, are dwarfed in comparison with these countries, since the Black–Scholes stock option formula directly links pay with share price. Options automatically raise the responsiveness of pay to share price. For example, Hall and Liebman (1998) estimate the pay sensitivity for the USA to be 6.00, compared with Kato and Long's (2006) estimate of 0.053 for China, and this emphasises the need to compare like with like.

In the UK and USA, however, the presence of long-term incentives on a large scale precludes an investigation of pay–performance causality. The cost of executive stock options to shareholders (but not their value to recipient executives) can be estimated using the familiar Black–Scholes formula, though this is strictly not applicable to executive options, which cannot be traded continuously thanks to vesting and holding periods (Hall & Murphy, 2002). The attachment of complex performance conditions to long-term incentive plans in the UK and many post-Enron stock options in the USA provides another barrier to the valuation of long-term incentives. In any case, valuations of stock option gains cannot be accurately apportioned to single years, with a typical option scheme facilitating option exercise between the third and tenth year after option award. Without annual pay valuations, pay–performance responsiveness cannot be estimated, and the appeal of Chinese executive pay without long-term incentives now becomes attractive to researchers.

Even without long-term incentives, Table 1 reports that Firth et al. (2006) find that the pay of their proxy for the CEO in Chinese listed firms is generally positively but insignificantly associated with firm performance for the period 1998–2000, but their sensitivity measure for firms with lower state ownership becomes positive and significant. Kato and Long (2006) extend this analysis to 2002, and they obtain a higher and significantly positive result for their overall sample. In a period of rapid

economic reform it is necessary to advance the analysis in time and note any emerging trends. Moreover, the motivational effect from pay to performance needs to be taken into account, which is a central theme of this paper.

Therefore the next section will further explain the features of executive pay in China and reflect more generally on China's institutional environment in relation to the executive pay literature reviewed above. Specifically, it will provide the basis for subsequent analysis of our key research questions. For example, is the executive pay–performance responsiveness for China consistent across different periods, is it broadly in line with international comparisons, and does it reflect market-like processes at work during a period of economic reform? Finally, does the special Chinese environment offer opportunities for theoretical advance in terms of the separation of reward and motivational effects?

### THE CHINESE INSTITUTIONAL ENVIRONMENT

While developments in neo-institutional theory (e.g., Chizema & Buck, 2006; Greenwood & Hinings, 1996) have embraced the possibility of institutional *change* when key interest groups are dissatisfied or value commitment is low (Greenwood & Hinings 1996), earlier, less radical institutional theory from the traditions of economics (e.g., North, 1990), political science (e.g., Hall & Gingerich, 2004) and sociology (e.g., Granovetter, 1985) has always emphasised isomorphism and institutional *inertia*, with actors (e.g., firms and their executives) embedded in their institutional environment. Based on this framework, we review the Chinese institutional environment in terms of continued institutional inertia, any evidence of real institutional change, and how this all impinges on executives and their pay. We also note the data constraints created by Chinese institutions in relation to the measurement of executive pay and firm performance that must be borne in mind with this study.

#### Institutional Inertia

Privatisation has been an important branch of the Chinese reform process that generated our sample of listed firms, below. The privatisation process began in a local, piecemeal fashion in the early 1990s, and gradually gained momentum until 1,278 firms were listed on stock exchanges by 2003. However, the main aim of privatisation does not seem to have been increases in enterprise

efficiency under private ownership and control, with share price acting as a discipline on executives. Rather, its main purpose seems to have been to raise revenue for the state and get rid of loss-making state-owned enterprises (SOEs) (Liu & Green, 2005; Wang, Xu, & Zhu, 2004). Most stock market listings amounted to “carve-outs” of valuable assets from SOEs (Liu & Sun, 2005: 113), and many senior managers typically pushed for privatisation when their business was profitable (Guo & Yao, 2005). Thus executives themselves had a key role in the carving out of assets from SOEs for privatisation (Green & Liu, 2005), and, consequently, “the control of China’s listed companies rests primarily with the insider-managers who are often in turn controlled and supported in various forms by their Communist Party and ministerial associates” (Lin, 2004: 8). In these circumstances, executives may be able to use their networks and relative power within firms to extract rents from shareholders, for example, through soft, performance-related rewards that amount to guaranteed pay (Bertrand & Mullainathan, 2001).

However, the state’s power should not be underestimated. Although an average 43.9% of a listed firm’s shares in 2001 were sold off to the stock exchanges in Shenzhen and Shanghai (Green & Liu, 2005), and this percentage has subsequently increased, the state did not intend to relinquish all enterprise control to private shareholders. A policy of “retreat and retain” (Green & Liu, 2005) describes the state’s intention to retreat from control over small and medium-sized enterprises (mostly start-ups) that operate in highly competitive markets, yet retain dominant ownership and control over large firms in sectors considered to be “strategic”, including the natural monopolies, defence-related firms (aviation and nuclear power), and key industrial sectors such as shipbuilding, autos and petrochemicals. The state has even managed to retain majority control of 81.6% of all listed firms, despite “privatisation” (Liu & Sun, 2005), though the extent to which this potential control is exercised is unclear. State control is further enhanced by the use of a portfolio of devices aimed to reduce the power of minority shareholders (pyramids of shareholdings, golden shares, dual class shares, etc.).

In addition, it was noted above that poor information disclosure by firms may have contributed to weak, imperfect equity markets. The information that listed firms disclose in annual reports, which must be submitted to the stock

exchanges, is audited mainly by local accounting firms of unknown standing (Liu, 2005). In 2001 the Ministry of Finance introduced its uniform Enterprise Accounting System, but this is geared more towards collecting information to help the central authorities with tax collection and macroeconomic coordination, than providing information for investors. There is progress towards the International Accounting Standard, but the Chinese government is not anxious to create even more loss-making enterprises, when a main objective of privatisation was to dispose of them (Xiao, Weetman, & Sun, 2004). Thus “earnings management” and deceptions that massage enterprise profits are undoubtedly major problems in listed firms (Lin, 2004). However, such deception is motivated mainly by laws such as the one that requires all firms to achieve a rate of return of 10% on net assets before they can be given permission to issue shares (Xiao et al., 2004), and by stock exchange rules: for example, firms may be de-listed if they persistently report negative earnings.

The development of stock markets dependent upon open information disclosure in China has therefore disappointed investors and the government, and raises doubts about real institutional change and the operation of the capital market mechanism, even during a period when the economy was thriving. Between 2000 and 2004 real GDP increased by 53%, but the Shanghai and Shenzhen indexes fell by one-third each, down by almost 50% from their 2001 high (Lin, 2004), reaching an 8-year low by June 2005. This may be partially explained by weak governance: concentrated state ownership and associated anti-minority shareholder devices, management-friendly boards, and an inactive takeover mechanism (Wang et al., 2004). However, despite this institutional inertia and these disappointments, some evidence of real institutional change exists.

### **Institutional Change**

Although the Chinese state may wish to preserve its power over the economy, it has had to face the imperatives generated by massive budget deficits, leaving the state desperately seeking to boost its revenues through share sales on prosperous stock markets. The Chinese state did try to reduce its overall level of share ownership (but probably not control) significantly in 2001 in order to finance its social security budget, but stock market prices collapsed, and the sales were abandoned in June 2002. In May 2005 a state still anxious to fund new



expenditures (e.g., investments in railway infrastructure) embarked on a new pilot scheme whereby 46 listed firms were to make all their shares tradable, including the state's shares.

This anxiety on the part of the state to boost share prices in order to use stock markets to raise funds (Liu & Green, 2005; Wang et al., 2004) has important implications for this paper. In many ways, the Chinese state may act like a progressive institutional blockholder in the West, seeking increased shareholder value, rather than a "grabbing hand" that damages enterprise performance (Shleifer & Vishny, 1998). This would represent genuine institutional change.

In addition, there is evidence that China's market reforms are gathering pace. For example, more than half of all bankruptcies (a typical market phenomenon) are now of SOEs (Green & Liu, 2005; Liu, 2005). Higher productivity is now associated with the non-state ownership of firms, though this result is complicated by possible selection bias (e.g., private capital attracted to better-performing firms), soft credits, and the social liabilities of SOEs (Green & Liu, 2005). Furthermore, higher foreign ownership, lower state ownership, minority shareholder rights, and the state relinquishing its right to appoint the CEO are all associated with improved financial performance (Xu, Zhu, & Liu, 2005). In a Western-style survey and analysis of 248 listed Chinese firms in 2000, it was found that "Party branches have indeed lost their dominant power and have no final say in any of the major enterprise decisions ... However, Party branches still enjoy limited power in almost all decision types" (Opper, Wong, & Hu, 2002: 25). Finally, there has evidently been a rapid transition from a centralised, government-led process for initiating new ventures towards a vigorous new venture capital industry (White, Gao, & Zhang, 2005). Nevertheless, the question arises whether market-oriented institutional change in China warrants Western-style studies of executive pay.

### Executive Pay

Until recently, all executive appointments within Chinese firms were made by the state, and pay was calculated according to seniority and civil service formulae that implied equality or near-equality between workers and managers (Firth et al., 2006). Since 1994, however, boards of listed firms have supposedly been free to appoint executives and set their own executive pay, though stock options are still forbidden. However, although the 1994

Company Law ostensibly reduced the power of the Communist Party within firms, it actually institutionalised the presence of local Party representatives within firms and their involvement in all personnel decisions, including CEO appointments, and the remuneration and performance appraisal of Board members (Wong, Opper, & Hu, 2003). In addition, over half of listed firms have an "administrative superior", nominated by the relevant ministry as a formal ministerial contact for the firm (Wong et al., 2003).

Perhaps for these reasons, reported executive pay is still very low by international standards, even after taking account of differences in per capita income. For example, average pay for the three highest-paid executives (HPEs) in quoted firms was only around \$12,000 in 1998–2002 (Kato & Long, 2006). This compares with average CEO rewards in 2001 in large firms of around \$2 million in the USA (mainly as a result of stock options), around \$0.7 million in the UK and less than \$0.5 million in Germany (Towers Perrin, 2003). However, it should of course be remembered that *per capita* GDP is very different in these countries: \$41,400 in the USA in 2004, \$33,940 in the UK, \$30,120 in Germany, but only \$1,290 in China, all at official dollar parities (World Development Indicators, 2005).

As noted above, a distinctive feature of executive rewards in China of crucial importance to this paper is that they comprise almost exclusively salary and annual bonus only, with virtually no stock options or share awards. Since the latter, long-term incentives are responsible for most of the responsiveness of executive pay to shareholder value in the West, how does this affect estimates of responsiveness for China? Even without long-term incentives, it is possible that bonus and salary may be associated with share price. For example, bonus may depend on some accounting or other target (e.g., sales or market share) that has an association with share price performance. Similarly, salary may increase when some key performance indicator such as sales is attained. Once their packages have been approved, executives may respond by making greater efforts to attain such targets that indirectly raise share price. In other words, reward and motivational effects may still be present, despite the absence of options and grants of shares, which are the main executive incentives in the West.

In addition to such cash pay, however, it must be conceded that substantial prerequisites are available to many Chinese executives in the form of housing

provision, imported cars, telecom equipment and food and drink expenses (Fryxell, Butler, & Choi, 2004). Of course, hidden “perks” also exist in the West. For example, assistance with top directors’ housing costs, the provision of low-interest loans and entertainment allowances were not fully disclosed in the USA in 2003 (Towers Perrin, 2003). It must be conceded that undisclosed perks are an important omission in China, but they would bias the analysis of this paper only if they systematically influenced the relationship between disclosed pay and firm performance.

In view of China’s distinctive governance institutions, therefore, and in spite of recent institutional changes, it seems wise to proceed cautiously with the analysis of executive pay–performance relations. It certainly cannot be concluded that established, market-based Western research methodologies may be applied indiscriminately to China. However, it is proposed that, in relation to executive pay, such techniques may be applied tentatively, to see whether the results they produce make sense in relation to nascent market forces, and whether they are dimensionally sensible, and to judge the extent to which they replicate and extend Western findings.

### HYPOTHESES

The applicability of a Western agency approach to Chinese executive pay has been seen to be questionable, given its roots in stock market capitalism and arm’s length contracting. Institutional inertia and the power of insider managers in China is considerable, and many features of Anglo-American corporate governance are missing in China, particularly equity-based pay. Above all, the power of the Chinese state modifies, and sometimes reinforces, the power of managers, and this power cannot be measured accurately.

Extensive state ownership elsewhere has been found to have had an anti-market influence on firms’ strategies. For example, Li, Lam, and Moy (2005) found that state ownership constrained product diversification strategies in China; and Filatotchev, Buck, and Zhukov (2000) found a similar situation in relation to needed downsizing in East European privatised firms. Wei, Varela, D’Souza, and Hassan (2003) report that this state interference with strategies has damaged performance outcomes in Chinese firms. It may be considered, therefore, that the state will constrain executive pay strategies and firm performance in China. In the context of Chinese executive pay, the

influence of local institutions (particularly insider managerial power and state influence – through a number of channels) should show up in lower pay–performance responsiveness, as managers divert income from shareholders towards employees and the state.

The modern Chinese state may therefore be anxious to secure fairly egalitarian, socially legitimate pay packages under China’s unique institutional pressures, and a consequent absence of equity-based pay may produce low pay–performance responsiveness. On the other hand, it may be concerned with shareholder value, for reasons already explained, and may want to align the interests of executives with those of the state by rewarding executives with higher cash pay after share price increases. Despite an absence of equity-based pay, it was noted that, through some market or bureaucratic mechanism, executives’ salary and bonus may be linked with some element of firm performance (e.g., the value of total sales) that is itself linked with share price.

On balance, therefore, in the special institutional circumstances of a Chinese state concerned with share prices and the buoyancy of the stock market, we propose a reward function (i.e., where reward follows performance) for Chinese executives that parallels similar hypotheses in the USA and UK (Conyon & Murphy, 2000). We argue that the state will somehow promote salaries and bonuses for executives that implicitly link their pay with share price. In other words, we test for the existence of an agency-derived, performance→pay executive pay relation, though not agency theory itself. Thus:

**Hypothesis 1:** There will be a positive relation between executive pay and past and current firm performance, running from performance to pay.

In the context of Hypothesis 1, large, diversified Chinese firms will tend to be technologically and organisationally complex, and thus less susceptible to the monitoring of executive pay by private or state shareholders (Zeckhauser & Pound, 1990). A positive relation between firm size and executive pay is one of the strongest in the extant literature, and a recent meta-analysis (Tosi et al., 2000) concluded that firm size accounted for more than 40% of the variance in total CEO pay, and firm performance less than 5%. Therefore size appears as a control variable in this paper, which focuses on causation. Board size and supervisory board size



are also controlled for, as potential governance influences.

In addition to the performance→pay relation posited in Hypothesis 1, this paper addresses the “blind alley” into which Western executive pay–performance studies have been driven (Barkema & Gomez-Mejia, 1998: 135). The whole rationale for executive pay packages is that they are supposed to motivate CEOs’ efforts, that is, pay leads performance, constituting reverse causation running from pay to performance, but Hypothesis 1 and cross-section pay–performance regressions ignore this important possibility. Thus most Western studies necessarily ignore the possible *ex ante* motivational effects of executive pay, which are supposed to be their whole *raison d’être*. This contrasts with the attention paid to the *ex post*, reward effects of firm performance on executive rewards, and incentives and rewards are conceptually as well as empirically quite distinct (Rajagopalan, 1996).

By definition, the value of an executive’s stock options as a reward in the West depends mechanically upon share price performance, since increases in share price automatically raise the value of options, and options formulae virtually guarantee a significant positive association running from performance to pay. Where options are unavailable to executives, however, as in China, and salary and bonus are based on targets such as the value or volume of turnover (or profit), it is more meaningful to ask whether these payments act as motivation to raise shareholder value.

The identification of a direction of causation between pay and performance is an important issue. Executives are rewarded for their efforts that are associated positively with shareholder value, but in addition they may be expected to anticipate these rewards, increasing their efforts accordingly, producing a motivational (pay→performance) relation. The identification of motivational effects is important to the development of an agency approach that relies upon principal–agent incentive alignment, yet motivational effects cannot be addressed using Western data. In China, however, an alternative approach to the traditional methodology exploits a research environment where capital markets are in their infancy, and where the virtual absence of executive stock options and other long-term incentives means that time lags and valuation are not important concerns.

As noted already, most Western executive pay studies have failed to differentiate these two

relations, with the exception of Abowd (1990). However, he omits long-term incentives from his analysis, though stock options did exist at the time, and they must have influenced firm performance. With China’s emphasis on short-term executive pay, local circumstances mean that the analysis can legitimately focus separately on the performance→pay and pay→performance aspects of executive pay.

While executive pay adds to a firm’s costs as well as having a possible motivational effect, the rather trivial payments to executives in China seem unlikely to damage firm performance, thus ruling out the possibility of a negative relation. Thus we propose a positive, motivational relation between executive pay, which motivates subsequent executive effort and thus share price performance. In other words, we propose to adopt the positive relation already used in Hypothesis 1, but with a reverse, that is, pay→performance, direction of causation:

**Hypothesis 2:** Firm performance will be positively related to levels of executive rewards, running with pay leading performance.

Other possible explanations for the kind of relationship proposed in Hypothesis 2 may be considered besides the motivational effects of straightforward cash inducements paid to managerial agents. For example, beyond the simple lure of cash pay, equity theory (Adams, 1963) emphasises that employees, who may consider themselves overpaid in relation to social comparisons, may reduce dissonance by providing extra effort and raising performance, though it may be expected that relatively low levels of executive pay in China will weaken this effect. Relatedly, efficiency wage theory (Katz, 2004) would anticipate that executive pay may exceed market-clearing levels because firms minimise unit labour costs by paying higher rewards and subsequently enjoy higher productivity as a result of lower levels of turnover, vacancies, labour unrest etc. Both equity and efficiency wage theory go beyond the simple cash nexus of agency theory, but nevertheless lead to a more socialised form of motivational effect.

Finally, there is the whole question of how important monetary rewards are to the recruitment and motivation of employees, which may be culturally specific. In the West, individual pay-for-performance schemes (e.g., merit pay, individual incentives or bonuses) have been found to be most

important for individuals who are likely to become business leaders and top performers, for example, CEOs (Rynes, Gerhart, & Minette, 2004), but Chinese culture and institutions may inhibit this individual cash motivation and weaken any Chinese incentive effected detected in tests on Hypothesis 2.

In these circumstances, however, it does seem at least worthwhile to test our pair of hypotheses during the window of opportunity offered by executive pay in the current stage of China's transition.

### DATA AND METHODOLOGY

This study is based on information collected from the Shanghai Stock Exchange Market ([www.sse.com.cn](http://www.sse.com.cn)) and Shenzhen Securities Information Co. Ltd ([www.cninfo.com.cn](http://www.cninfo.com.cn)), which are authorised by the Chinese Securities Association to disclose relevant information relating to Chinese quoted companies. Regulated by the China Securities Regulatory Commission (CSRC), listed Chinese companies have been required to publish their annual report via the official internet of the Shanghai and Shenzhen Stock Exchanges since 1999. The annual report of listed companies contains basic information on the firms' ownership structure, investment decisions and financial conditions. In particular, top executive compensation, including total remuneration to the members of the board of directors, the supervisory board and senior management, must be disclosed. These disclosure requirements represent substantial progress in terms of corporate governance and convergence on Western standards, and enable us to collect the data needed for the current study.

Although the disclosure of CEO pay is reported only as aggregate salary and bonuses for the three HPEs, the Chinese data are an improvement on the position in Japan and Korea, where only cash pay for the entire board is available, including part-time directors and other anomalies (see Kato & Kubo, 2006; Kato et al., 2005), and in Germany, where only 12 DAX30 firms currently disclose executive pay for individual directors while the rest disclose only for the board as a whole (Buck & Shahrin, 2005). Nevertheless, the use of top-three HPE cash pay in China is obviously inferior to data for individuals.

The data on 4 years of executive pay, 2000–2003, were collected from a sample of 601 firms taken from a total of 934 listed companies in 2000. Firms were deleted because they did not have independent directors representing one-third of their

boards – a CSRC requirement from 2001 onwards. This left 697 firms. In addition, 51 firms were removed because of missing values, and 45 were de-listed, leaving our sample of 601.

In addition to the executive pay and performance measures, the impact of board characteristics on executive pay is considered, thus permitting comparisons with the USA and UK. Guided by the existing literature, the following variables are defined:

- Executive pay (PAY): average cash salaries and bonus 2000–2003 for the three HPEs at 1995 prices
- Performance measures:
  - P1: shareholder value at 1995 prices
  - P2: total shareholder return
  - P3: pre-tax profit at 1995 prices
  - P4: return on assets
- Control variables:
  - Firm size (FS): measured by sales at 1995 prices
  - Board size (BS): represented by the number on the board of directors
  - Supervisory board size (SBS): denoted by the number on the board of supervisors.

### Methodology

We adopt a two-stage modelling strategy to test our two hypotheses. In order to correctly identify reward effects by distinguishing them from incentives, we test whether there are two-way causal links between executive pay and firm performance by conducting panel Granger causality tests using the following equations:

$$X_{it} = \phi_0 + \sum_{j=1}^n \phi_{1j} X_{it-j} + \sum_{k=1}^n \phi_{2k} Y_{it-k} + \sum_{l=1}^n \phi_{3l} Z_{it-l} + u_{it} \quad (1)$$

$$Y_{it} = \theta_0 + \sum_{j=1}^p \theta_{1j} Y_{it-j} + \sum_{k=1}^p \theta_{2k} X_{it-k} + \sum_{l=1}^p \theta_{3l} Z_{it-l} + \varepsilon_{it} \quad (2)$$

where  $i=1, \dots, N$ ,  $t=1, \dots, T$ ,  $n$  and  $p$  are lag lengths. In Eqs. (1) and (2)  $X$  and  $Y$  are the two variables (executive pay and firm performance in this case) proposed to have interacting relationships, given a set of control variables  $Z$ . The null hypothesis



" $Y$  does not Granger-cause  $X$ ", given  $Z$ , is tested via a standard Wald test on the joint significance of  $\phi_{2k}$  in Eq. (1).  $Y$  is said to cause  $X$  in the Granger sense if the  $\phi_{2k}$  are jointly significant. Similarly, if the  $\theta_{2k}$  are jointly significantly different from zero, the null hypothesis that  $X$  does not Granger-cause  $Y$  is rejected.

When the number of cross-sectional units ( $N$ ) is much larger than the number of time periods ( $T$ ), the non-stationarity problem commonly seen in time-series data may be present in the case of panel data (Holtz-Eakin, Newey, & Rosen, 1988). Hence we need to test the stationarity property of the variables in order to adopt an appropriate estimation method. Moreover, a dynamic panel model including an individual effect, together with a lagged dependent variable, generates biased estimates for a standard least squares dummy variable estimator, especially when combined with  $N$  being much larger than  $T$  (Hsiao, 2003). One way to deal with this problem is to estimate first differences using GMM as an estimation method (Arellano, 2003; Arellano & Bond, 1991). This is because the first-differenced GMM estimator is able to eliminate unobserved, time-invariant, individual-specific effects and provide consistent estimation results in causality tests. Therefore we use the first difference of the executive pay, firm performance and control variables to test causality in Eqs. (1) and (2) by applying the GMM method.

The short-run and dynamic interactions between executive pay and performance are the main focus, given that our sample period is relatively short, from year 2000 to 2003. The long-run relationship between the variables and deterministic components, such as trends, are not relevant to our study. A set of control variables, such as firm size measured by the value of sales, the size of the board of directors and the size of the board of supervisors, are also included in the test, guided by the existing literature (e.g., Conyon & Murphy, 2000; Kato & Long, 2006).

Based on the results of causality tests that denote two-way relationships between the pay and performance variables, we go a step further to search for an appropriate model to estimate the strength of these relations. For example, if reverse causation from executive pay to firm performance exists (i.e., an incentive effect), the impact of performance on executive pay would be overstated by estimating a single equation using ordinary least squares. Instead, panel system equations should be applied, using two-stage least squares in order to take two-way causation into account. This modelling

strategy allows us to examine how executive pay and performance are jointly determined.

In addition, we also calculate pay-performance sensitivities and elasticities (see the footnote to Table 1), and make an international comparison with earlier estimates for China and other countries where the studies did not correctly identify causation between pay and performance. This comparison will provide evidence of the extent to which the pay-performance relationship in a transition economy can be explained by agency theory.

## RESULTS AND DISCUSSION

According to our data, the minimum, average HPE pay was about 9,000 RMB, whereas the highest average HPE pay reached 3 million RMB. On average, the three HPEs each earned 132,000 RMB. With around 8 RMB to the US dollar, this is equivalent to only around US\$17,000, a very small figure. Comparisons with the USA relate to individual CEO data, unknowable in China, and top-three average executive pay is expected to understate the pay of CEOs, thus overstating the pay gap. On the other hand, the American data include stock options.

This gap has implications for pay-sensitivity comparisons. Because executive pay levels are so low by international standards, but shareholder value is quite a large figure by comparison, one of the two traditional measures of sensitivity, based on absolute change valued in the local currency, is likely to produce very low estimates. In these circumstances, emphasis may be placed on the elasticity of executive pay in relation to firm performance, measured in terms of percentage changes.

In terms of firm characteristics, the 601 quoted companies in our sample employed an average of 3,224 employees, had 1.59 billion RMB sales at 1995 prices, and average shareholder value was 1.26 billion RMB. The data also reveal that the average board consisted of ten directors, whereas the average size of the board of supervisors was smaller, having four members. Regarding ownership structures in our sample, state shares accounted for 23% of the total issued share capital of the firms, while another 12% was held indirectly by the state through legal persons. Despite privatisation and other economic reforms, the state clearly still has a strong presence within Chinese quoted firms.

Table 2 shows a significant (1%) positive correlation between the variable for executive pay (PAY) and shareholder value (P1, 0.23) as well as between pay and pre-tax profits (P3, 0.29, 0.1% level). The

**Table 2** Correlation matrix, mean and standard deviation

	Mean	Std. dev.	PAY	FS	P1	P2	P3	P4	BS	SBS
PAY	131,786.1	0.84	1.00							
FS	1.59 (billion)	1.15	0.32***	1.000						
P1	1.26 (billion)	0.84	0.23**	0.39***	1.00					
P2	0.054	0.18	0.07	0.14	0.16*	1.00				
P3	0.149 (billion)	1.15	0.29***	0.40***	0.74***	0.55***	1.000			
P4	0.052	0.05	0.11	0.20**	0.19*	0.61***	0.592***	1.000		
BS	9.81	2.52	0.08	0.22**	0.21**	0.06	0.195*	0.053	1.000	
SBS	4.37	1.40	-0.05	0.14	0.14	-0.01	0.118	0.025	0.322***	1.000

\*p<0.05 (two tailed); \*\*p<0.01 (two tailed); \*\*\*p<0.001(two tailed).

**Table 3** Results from panel unit root tests

Variables (Level)	Levin, Lin and Chu's t-test Assume common unit root process	Im, Pesaran and Shin's Wald test Assume individual unit root process
log(Pay)	-13.15***	-16.18***
log(P1)	15.79***	-21.96***
P2	-20.05***	21.07***
log(P3)	-20.41***	-27.16***
P4	20.67***	20.48***
log(Firm size)	-15.96***	-22.15***
log(Board size)	-20.96***	-22.69***
log(Supervisory board size)	-20.57***	-22.58***

Note: \*\*\* represents 1% significance.

Null hypothesis: log(Pay), log(P1), P2, log(P3), P4, log(FS), log(BS), log(SBS) contain panel unit roots.

correlation (0.32) between pay and firm size is also statistically significant at the 0.1% level. These correlations provide preliminary evidence that there is a positive relationship between pay and performance. However, correlations of this kind measure only contemporaneous relationships between variables without reflecting the time dimension. In addition, correlation is symmetrical, not providing evidence of the direction of causation. For these reasons, causality tests are needed as well as estimations on pay and performance sensitivities and elasticities. In particular, the calculation of pay→performance elasticities enables us to differentiate the reward from the motivational effect, which has been necessarily neglected in previous studies.

In the regressions, the variables for executive pay and two performance measures (shareholder value, P1; pre-tax profits, P3; and a control for size measured by the value of sales) are transformed into logarithms. The other two performance variables, total shareholder return (P2) and return on assets (P4), are measured as ratios. Thus the first difference corresponds to the growth rate of a

variable. One lag is permitted to test short-run causality with  $T=4$ .

The results (Table 3) from panel unit-root tests show that the (de-meanded) variables under investigation contain neither common unit root nor individual unit root as Levin, Lin and Chu's (2002) *t*-test and Im, Pesaran and Shin's (2003) Wald test both reject the null hypothesis that the variables contain the unit root process at the 1% significance level. The results confirm that the variables evolve as stationary processes. Thus cointegration tests and long-run relationships between the variables are not applicable to our data.

The results from the causality tests summarised in Table 4 reveal the existence of significant two-way causality between executive pay and all four performance measures, suggesting that executive pay and performance mutually affect each other. It is straightforward to interpret the causation from performance to pay, as found in some prior studies (Firth et al., 2006; Kato & Long, 2006), as reward is performance based.

However, the significant reverse causation running from pay to performance, which is shown

**Table 4** Results from the panel causality test

Causality	Wald test	Inferences
$\Delta \log P1 \rightarrow \Delta \log Pay$	6.48***	Yes
$\Delta \log Pay \rightarrow \Delta \log P1$	4.6**	Yes
$\Delta P2 \rightarrow \Delta \log Pay$	3.36*	Yes
$\Delta \log Pay \rightarrow \Delta P2$	2.90*	Yes
$\Delta \log P3 \rightarrow \Delta \log Pay$	9.53***	Yes
$\Delta \log Pay \rightarrow \Delta \log P3$	3.59*	Yes
$\Delta P4 \rightarrow \Delta \log Pay$	3.42*	Yes
$\Delta \log Pay \rightarrow \Delta P4$	7.49***	Yes
Two-way causality		$\Delta \log P1 \leftrightarrow \Delta \log Pay$ $\Delta P2 \leftrightarrow \Delta \log Pay$ $\Delta \log P3 \leftrightarrow \Delta \log Pay$ $\Delta P4 \leftrightarrow \Delta \log Pay$

Note: \*\*\*, \*\* and \* represent significance levels of 1, 5 and 10%, respectively.

with one lag, indicates that there is also feedback from pay to performance, thus supporting Hypothesis 2. This interplay between executive pay and performance constitutes a distinctive feature of quoted companies in China that is difficult to detect in the USA and UK, owing to the existence of long-term financial incentives in executive pay.

The novel aspect of our causality test reveals that motivational effects, representing an important dimension of executive pay, should not be neglected. It is also evident that previous studies on Chinese executive pay may have overestimated the reward effect of performance on pay without taking into account reverse causation via motivations.

The results from the panel system equations presented in Table 5 show that each of the four performance measures is statistically significant in the pay equation (i.e., pay is regressed on different performance measures), suggesting that executive pay is positively affected by firm performance pro- xied by share and accounting performance measures, thus supporting Hypothesis 1. This positive association between executive pay and performance again indicates that an increase in firm performance will result in a rise in executive reward.

The variable for firm size has a positive sign and is statistically significant. This result corroborates previous studies around the world, which have found that there is a positive link between firm size and executive pay (Kato & Long, 2006; Tosi et al., 2000). At the same time, the variables for the size of board of directors and board of supervisors are not statistically significant. This may reflect the

formation and function of these boards in the Chinese context, as discussed above in “The executive pay literature”.

In the performance equation (where performance measures are regressed on pay), the variable executive pay is statistically significant, again supporting Hypothesis 2. However, the magnitude of the impact of pay on performance is much smaller than that of performance on pay, showing that motivation-induced efforts have a limited impact on performance. The variable for firm size has a positive, significant association with the four performance measures. Again, the size of the board of directors and the board of supervisors has little impact on performance, indicating that corporate governance, running from board composition to executive pay, does not play a significant role in enhancing firm performance. This result may reflect the fact that corporate governance is relatively weak within Chinese listed companies, as discussed in “The Chinese institutional environment”.

We also performed additional tests to measure the size of the effects of coefficients. We found that the effects for the pay equation with the four performance measures as the independent variables are over 0.75, P4 being the largest with 0.81. These effect sizes confirm that the statistical significance in Tables 4 and 5 are meaningful, even for the large sample size.

An important output of this research is a comparison of pay–performance sensitivities and elasticities with earlier estimates, in China and elsewhere, that do not distinguish between Hypothesis 1 (reward effects) and Hypothesis 2 (motivational effects). We now review our results, with international comparisons.

Research on executive pay generally has gone through a number of phases. A seminal paper by Jensen and Murphy (1990) reported sensitivities in terms of cash pay (salary plus bonus) and also rewards that included executives’ gains from options and shareholdings. Their results were described as being inconsistent with agency theory and Hypothesis 1, concluding that “The empirical relation between the pay of top-level executives and firm performance, while positive and statistically significant, is small” (Jensen & Murphy, 1990: 227). While this “small” sensitivity increased when extended to include options and shares, it must be remembered that the period up to 1986 did not experience rapidly rising share prices. Hall and Liebman (1998) reported a higher sensitivity for the bull markets of the 1990s, though in the UK

Table 5 Results from the panel system equations

	<i>P1 coefficient (Standard errors)</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>
<i>Pay equation</i>				
P1 (Shareholder value)	0.176*** (0.058)			
P2 (Total shareholder return)		0.086* (0.051)		
P3 (Pre-tax profits)			0.085*** (0.022)	
P4 (Return on assets)				0.513** (0.217)
<i>Control variables</i>				
FS (Firm size)	0.148*** (0.032)	0.156*** (0.032)	0.101*** (0.039)	0.148*** (0.032)
BS (Board size)	0.002 (0.005)	0.002 (0.005)	0.001 (0.005)	0.001 (0.005)
SBS (Supervisory board size)	0.008 (0.008)	0.008 (0.008)	0.009 (0.009)	0.008 (0.008)
Constant	0.190*** (0.052)	0.20*** (0.052)	0.217*** (0.054)	0.216*** (0.052)
<i>Performance equation</i>				
Pay (Executive pay)	0.029*** (0.010)	0.019* (0.011)	0.116*** (0.031)	0.006** (0.003)
<i>Control variables</i>				
FS	0.101*** (0.012)	0.101*** (0.015)	0.708*** (0.043)	0.101*** (0.013)
BS	-0.002 (0.002)	0.0009 (0.002)	0.005 (0.006)	0.031 (0.003)
SBS	0.001 (0.003)	0.002 (0.004)	0.007 (0.010)	0.0007 (0.0005)
Constant	0.062*** (0.021)	-0.048* (0.024)	-0.222*** (0.065)	-0.023*** (0.006)
Adjusted R	0.04	0.035	0.17	0.058
Observations	1803	1803	1803	1803

Standard errors are in parentheses.

\*\*\*, \*\* and \* represent significance at the 1, 5 and 10% levels, respectively.

Dependent variables: pay and performance

sensitivities were lower (Buck, Bruce, Main, & Udueni, 2003; Conyon & Murphy, 2000).

In terms of relations between absolute values of additional pay and shareholder value, the sensitivities calculated by Kato and Long (2006) and by this study (0.027) for China are low by international standards, though higher than the original estimates for the USA by Jensen and Murphy (1990) for cash pay only, in a quiet period for capital markets. Only to this extent Hypothesis 1 is supported.

Nevertheless, the very low absolute magnitudes of average HPE pay in China obviously distort performance-pay sensitivity as a basis for hypothesis testing. Performance-pay elasticities expressed in percentage terms arguably provide a more realistic basis for tests. Our elasticity estimate for China (0.25) is dimensionally similar to other studies reporting elasticities in the USA and UK (see Table 1), which are generally considered to be consistent with agency theory and Hypothesis 1. For example, Hall and Liebman use their elasticity



estimates to conclude that they (1998: 656) “contradict the claim that current contracts are necessarily inefficient simply because pay to performance sensitivities are too low.”

While these results are consistent with agency theory, and with the notion that economic reforms in China are releasing market forces that produce similar outcomes to developed market economies, the novel aspect of this paper is provided by its estimates of motivational effects, with causation running from pay to performance. Again, it seems preferable to focus on elasticity as a metric, since the low level of executive pay in China would produce tiny and meaningless magnitudes of pay → performance sensitivity.

In this respect, our study produces a statistically significant, positive pay → performance elasticity of 0.015. To this extent, Hypothesis 2 is supported. However, comparisons with earlier estimates of performance–pay elasticity in the USA and UK, which do not identify causation, suggest that this estimate of the motivational effects of executive pay is low, ranging from 7.7 to 12.4% of elasticities (between 0.194 and 0.369) reported in Table 1 as being measured elsewhere. Notably, a Chinese pay → performance elasticity of 0.015 constitutes only 6.0% of our estimate of performance → pay elasticity (0.25) measured without addressing the direction of causation, indicating that the extent of motivational effects is much weaker than reward effects running from performance to pay. Such a low pay → performance elasticity may reflect the fact that Chinese stock markets were in decline during the sample period, and motivational effects were a question of whether executive pay motivated executives to secure a less negative share price performance.

## CONCLUSIONS

The Chinese institutional environment provides a fascinating opportunity for the analysis of executive pay. On the face of it, the state continues to dominate enterprise structures and strategies, including the design of executive pay packages. Nevertheless, institutional change has undoubtedly occurred to a degree, and the realities of a state budget crisis may have caused the state in some respects to have behaved like a Western institutional investor concerned with share price appreciation. In this case, executive reward packages that are to some extent performance-related may be expected by executives to improve their motivation.

Our paper therefore had two objectives: international comparisons of executive pay–performance responsiveness, and the exploitation of Chinese pay data to distinguish these motivational effects. While China offers a window of opportunity in relation to the separate estimation of the reward and motivational effects of executive pay, it must be recognised that this relationship has been studied at a time when market mechanisms in China are still subject to extensive state interference, and of course executive pay and firm performance are embedded in the prevailing national cultural and institutional context. Nevertheless, the approach of this paper has been to conduct Western-style analysis, with certain innovations, while conscious of its limitations. The approach is tentative and exploratory, and results may not be generalisable to all market economies.

Despite a quite different institutional context, however, calculations of pay–performance elasticities have produced results that nevertheless seem to be dimensionally sensible for China (and also for South Korea and Japan), although it should be emphasised that individual executive pay data are unavailable in these countries, and some averaging is unavoidable. Executives anxious to conceal their individual pay may use this aggregation as a smokescreen, and severance payments to HPEs who leave the firm may further obscure the picture.

At the same time, however, our estimate of a pay–performance elasticity of 0.25 for China 2000–2003 is almost identical to similar findings for the USA (0.22: Hall & Liebman, 1998) and the UK (0.26: Benito & Conyon, 1999): see Table 1. Although this outcome of fairly uniform international pay elasticities may be coincidental, it does correspond with parallel findings in relation to the responsiveness of executive dismissal to share price around the world (Kaplan, 1999). Taken together, these findings seem to be consistent with the notion that weak enterprise efficiency may be corrected in many different ways, for example, by takeover threats following a firm’s weak stock market performance, by actions taken by dissatisfied long-term, relational investors, by state influence, or by executive rewards and penalties. In the face of such governance and other contextual differences in South Korea, Taiwan, Spain and Argentina, Biggart and Guillén (2000: 723) conclude that “development depends on successfully linking a country’s historical patterns of social organisation with opportunities made available by global markets.” No one form of governance is likely to be appropriate in all

institutional and cultural circumstances, and diverse international governance institutions seem to provide different, but equally successful, solutions to the complex problem of disciplining enterprise performance. They also seem to produce uniform executive pay–dismissal relationships in relation to firm performance, and the substitute nature of governance elements (Rutherford et al., 2007) may be responsible for these outcomes. Executive pay–performance elasticities in China seem broadly comparable with the West, despite continued institutional differences.

Our second objective concerned motivation. Motivational (pay → performance) effects are often cited as the main agency-based justification for massive resources being spent in the West on executive pay. For example, Bertrand and Mullainathan (2001: 901) claimed that “shareholders optimally design the pay package in order to increase the CEO’s incentive to maximize firm value”, and Core et al. (2003: 29) focused explicitly on “incentives to increase the stock price”. However, such motivational effects have necessarily not been measured in the West.

This implies that firms can have little idea of the appropriate executive reward package to motivate executives. By applying Granger causality analysis to a 4-year panel of data in the context of a country without long-term incentives, this study has for the first time estimated these two distinct functions of executive pay separately.

The statistically significant value of the pay → performance (motivation) elasticity for China supports Hypothesis 2, and suggests that earlier estimates of performance–pay responsiveness may have over-stated performance → pay (reward) relations by up to 7.7%. However, quite a low pay → performance elasticity of 0.015 is found. It is obviously too big a stretch to extend this result to Western economies, but such a low elasticity at least raises questions concerning the effectiveness of cash executive pay as motivation to achieve improved firm performance, in China at least. Dominant Chinese shareholders (especially the state) should ask themselves whether the resources spent on executive salary and bonus are justified in the context of such a low pay → performance elasticity as 0.015.

At the same time, Chinese policymakers and regulators can feel satisfied that the gradualism of Chinese economic reforms has produced performance–pay sensitivities and elasticities that are dimensionally similar to comparable results for the USA and UK. This outcome may reinforce the

notion that the Chinese economy has achieved real institutional change, converging on the West in the sense that it generates results in relation to executive pay that are consistent with the operation of market-like forces in executive pay and capital markets.

Some limitations of our study should be acknowledged, however. First, only aggregate salary and bonuses for the three HPEs are disclosed. Average top-three directors pay may lack variation in our analysis compared with individual pay, resulting in a limited power to reveal the complex relationships between executive pay and performance. Second, the quality of reported executive pay data in China is still unknown, and unreported perquisites are undoubtedly important. Such hidden income could conceivably result in the underestimation of the strength of the incentive effect running from pay to performance. Similarly, this study of executive rewards and motivations was carried out during a period when Chinese stock markets were in decline. Motivational effects may turn out to be stronger with bull markets.

Nevertheless, our study does suggest new avenues for future research. For example, the study could be replicated during a period of rising, as well as falling, Chinese share prices. In addition, estimates of causation could be produced in the USA and UK, but this will always be difficult with a wide range of incentives being applied simultaneously, all subject to change. For example, executive stock options typically bring rewards to executives over a period of between 3 and 10 years. The identification of causation in this environment is extremely complex, requiring the application of Granger causality techniques to large panels of data over many years.

The passage of time should bring improved information disclosure in China for the pay of individual executives. Ironically, however, time may also bring the very executive stock options to China that reduce the value of Chinese data for international pay research. Another irony is that more bullish Chinese stock markets may result from less state interference in corporate governance and the disappearance of the fascinating institutional context that characterised this study. The window of opportunity exploited by this paper may prove to be short.

#### ACKNOWLEDGEMENTS

Thanks to four anonymous reviewers and a Departmental Editor for their comments.



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Accepted by Helen De Cieri, Departmental Editor, 10 December 2007. This paper has been with the authors for three revisions.