

薪酬委员会建立及其独立性对高管薪酬的影响¹

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摘要

中国证监会自 2002 年开始要求上市公司引入薪酬委员会制度。那么，这一制度的实施效果是否带来了上市公司高管薪酬的优化？本文对薪酬委员会的建立及其独立性与高管薪酬契约之间的关系进行了分析。我们的研究发现，薪酬委员会的建立及其独立性的提升都显著提高了上市公司高管薪酬水平和薪酬-业绩敏感度。进一步的分组检验表明，薪酬委员会的设立及其独立性对于薪酬水平和薪酬-业绩敏感度的提升主要存在于国有企业，支持了“最优契约论”的观点。与此同时，根据管理层权力大小划分后，在管理层权力较高的企业，薪酬委员会的设立在提高高管薪酬的同时不能相应的提高薪酬-业绩敏感度，其独立性也无法显著影响薪酬契约的制定，这些结果支持了“管理层权力论”的论点。我们的研究表明薪酬委员会制度在特定的情况下优化了上市公司的内部治理结构，增加上市公司高管薪酬契约的有效性。

关键词：薪酬委员会、高管薪酬、薪酬-业绩敏感度、公司治理

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一、引言

2001年至2002年,中国证监会相继颁布了《关于在上市公司建立独立董事制度的指导意见》和《中国上市公司治理准则》,要求上市公司建立独立董事制度和薪酬、提名、战略决策和审计等专业委员会,并要求薪酬委员会中独立董事人数达到1/2以上,但没有对专业委员会制度的建设规定具体时限。直到2007年,中国证监会要求上市公司全面展开公司治理专项活动并撰写自查报告,并要求从当年起上市公司年报中需每年披露“董事会下设的审计委员会的履职情况汇总报告和薪酬委员会的履职情况汇总报告”,因此大量上市公司伴随着公司治理专项自查活动建立了薪酬委员会等专业委员会,但由于仍然没有强制规定具体时限,也有极少数上市公司目前仍未建立完善的独立董事制度和专业委员会制度,而只是履行了证监会规定的披露义务。可见,在过去的十年里,我国大部分上市公司的专业委员会制度经历了从无到有的变革,而且这种变革在一定程度上来自外源性的强制要求。

监管部门要求上市公司建立薪酬委员会,并由薪酬委员会设置管理层的薪酬方案,是希望薪酬委员会能够帮助上市公司建立有效的高管薪酬体系。那么,这项制度的建立和完善是否实现了其最初的目的呢?作为公司治理的核心内容之一,董事会的治理效果特别是董事会设立专门委员会的实施效果,是当前受到格外关注的热点话题,但是由于董事会内部的专门委员会制度实施时间不长,针对薪酬委员会效果的研究还非常少。本文以中国开始引入这一制度近十年的数据为基础,收集了2001到2009年中国A股上市公司薪酬委员会的设立情况数据和总经理薪酬数据,首次采用大样本分析了薪酬委员会制度对高管薪酬的影响。我们的研究结果显示,薪酬委员会的成立和独立性对高管薪酬水平有显著的正向影响。考虑到中国上市公司中高管薪酬水平的提高,既可能是薪酬市场化、增强薪酬契约有效性的结果(“最优契约论”),也可能是因为高管权力的扩大(“管理层权力论”)。因此,我们进一步考察了薪酬委员会对高管薪酬-业绩敏感度的影响以区分上述的两个论点。结果显示,薪酬委员会的建立和独立性程度可以显著提升高管的薪酬-业绩敏感度,总体样本的实证结果支持了“最优契约论”的观点。

在此基础上,我们根据上市公司的股权属性(国有与民营)和管理层权力的大小(分别从两职合一与否和总经理任职时间考察)将样本进行分组检验。其中,国有企业的高管薪酬受到国资委和相关政府部门政策的限制(例如从2002年起监管部门要求国有上市公司高管薪酬不得超过该上市公司职工平均工资的12倍),导致薪酬水平普遍较低,难以招到一流人才,对上市公司发展不利。结合我国特定的制度背景,按照“最优契约论”观点,可以预期在国有企业样本中薪酬的水平和薪酬-业绩敏感度同时随着薪酬委员会的成立(及其独立性)而有所提升。相比之下,民营企业的薪酬水平不存在受限的问题,因此薪酬委员会的成立(及其独立性)对民营企业的高管薪酬影响主要在于薪酬-业绩敏感度的提升。根据管理层权力的大小区分样本后,我们预期在管理层权力较强的公司中,薪酬委员会的建立可以提升薪酬水平但是不能够提高薪酬-业绩敏感度。相比而言,在管理层权力较小的公司样本中,

薪酬委员会的建立及其独立性可以显著提升薪酬与业绩之间的关联程度，从而使高管与股东的利益更好的结合在一起。实证的检验结果支持了我们上述的观点。总体而言，“最优契约论”的观点更好的解释了国有企业高管薪酬契约的状况，而“管理层权力论”主要集中于管理层权力较强的样本组，因此对于这些公司而言通过加强其他治理机制削弱总经理的权力成为实现有效薪酬契约的更关键的环节。

最后，我们还采用不同方法定义薪酬委员会独立性并采用双重差分模型控制可能影响高管薪酬的其他因素进行敏感性测试，本文的主要结果仍然存在。这说明薪酬委员会的确可以提高上市公司高管薪酬契约的效率。总体而言，本文的研究结果表明，薪酬委员会制度对推动我国上市公司建立有效的高管薪酬体系起到了一定的积极作用。

后文的安排如下。第二部分总结了国内外相关文献；第三部分提出研究假说；第四部分介绍了研究设计、变量选取和研究样本；第五部分为实证结果；第六部分是结论。

二、文献回顾与假说的建立

关于高管薪酬，学术界主要存在两种观点：“最优契约论”和“管理层权力论”。其中，“最优契约论”认为，高管薪酬能够减小代理成本，因而更高的薪酬能带来更好的业绩。与“最优契约论”正好相反，“管理层权力论”认为高管薪酬是管理层寻租的一种途径(Bebchuk and Fried, 2003)，与此相对应，Dalton and Kesner(1987)的研究没有发现管理层持股与业绩之间存在显著关系；Jensen and Murphy(1990)则发现，虽然高管薪酬与公司业绩正相关，但总体来说薪酬-业绩敏感度很低。

“管理层权力论”认为，薪酬契约要达到最优，需要具有独立性的董事会、完善的产品、经理人和资本市场机制，以及有效的股东诉讼途径等三方面条件。现实中这些条件往往得不到满足。Jensen(1993)认为总经理能够影响新董事的提名决策，从而影响了董事会的独立性，使得董事会对管理层的监管缺乏效率。与此相对应，Lambert *et al.*(1993)发现当高管指定了董事会较高比例的成员时，会得到更高的薪酬。Core *et al.*(1999)、Cyert *et al.*(2002)也发现当总经理参与新董事提名、总经理同时任董事长时，高管薪酬水平更高。Grinstein and Hribar(2004)则发现当总经理参与新董事提名过程及总经理兼任董事长时，他们在兼并收购之后得到的奖金更高。Holderness and Sheehan(1988)发现当管理层同时也是公司大股东时会比其他高管获得更高薪酬，Lambert *et al.*(1993)则发现当董事会中存在一个不是总经理且至少持有5%股份的公司内部人员时，高管薪酬较低。Hallock(1997)发现，董事会中有董事存在连锁关系时两家公司的高管薪酬都会更高。

那么如何解决这些问题呢？一些学者认为外部董事能发挥重要作用。Fama(1980)和Fama and Jensen(1983)认为高管薪酬决策应该授权给外部董事，Allen(1981)和Core *et al.*(1999)的研究都发现高管薪酬与董事会中关联董事的比例存

在正相关关系。另一些学者则提出一些其他的解决方法。例如, John and Senbet (2003) 推荐由股东进行投票来确定薪酬安排, 以避免董事偏见, 而 Spatt (2006) 认为给予董事会成员激励性的薪酬可以激发他们更好地参与对管理层的监管, 保证有效率的薪酬方案。

我国学者关于董事会结构与高管薪酬之间关系的研究得出了不尽相同的结果。谌新民、刘善敏 (2003) 发现在两职兼任的经营者中, 年薪、持股比例与其绩效均不具有显著相关性。杜胜利、翟艳玲 (2005) 发现独立董事比例与高管薪酬之间存在正相关关系, 而两职兼任与报酬之间存在负相关关系。方军雄 (2009) 发现董事会独立性的增强有助于降低薪酬粘性, 在一定程度上说明了独立董事制度的有效性。但是另一方面, 黄志忠、郝群 (2009) 发现独立董事比例较高的公司高管薪酬较高但薪酬敏感度反而较低。

上述研究主要集中在董事会独立性对高管薪酬契约的影响, 李维安、刘绪光和陈靖涵 (2010) 的研究虽然发现存在薪酬委员会时, 高管薪酬的决定会更多地参照国际同行的标准, 但是该研究只是把薪酬委员会作为一个控制变量, 而且主要是看薪酬委员会对确定薪酬水平时将哪些因素考虑进去的影响, 并未对薪酬委员会的效果进行评价。

2001 年中国证监会发布《关于在上市公司建立独立董事制度的指导意见》, 第一次将独立董事制度纳入对上市公司的考察范畴; 2002 年证监会继续发布了《中国上市公司治理准则》, 为董事会结构做出了较为系统化的规定, 也为专门委员会的设置提出了指导性的要求。《中国上市公司治理准则》明确指出, “薪酬与考核委员会的主要职责包括: (1) 负责制定董事、监事与高级管理人员考核的标准, 并进行考核; (2) 负责制定、审查董事、监事、高级管理人员的薪酬政策与方案。”同时, 证监会对薪酬委员会的独立性提出了意见, 要求独立董事在薪酬委员会中起到监督和指导决策的作用。证监会实施薪酬委员会制度的初衷是为了降低管理层权力对高管薪酬的不良影响, 引导上市公司设立更加有效的高管薪酬契约。因此, 本文从薪酬的水平和薪酬-业绩敏感性两个维度来考察薪酬委员会的影响。

国外现有的研究发现, 如果薪酬委员会的建立 (及其独立性) 可以导致高管薪酬市场化, 其结果会表现在薪酬水平的降低和薪酬-业绩敏感度的提升两个方面 (如 Chhaochharia and Grinstein, 2009)。然而与其他西方国家 (特别是以美国为代表的发达市场) 不同, 近十年来, 虽然我国上市公司高管薪酬有了明显提高, 但与美国 CEO 的天价薪酬显然是有较大差距的。尽管非国有上市公司高管的人才市场近年来逐渐形成, 薪酬逐渐由市场化机制决定并控制在合理均衡的水平, 社会上较少出现认为非国有上市公司高管薪酬水平过高或者过低的声音; 但国有上市公司高管薪酬决定机制却非常特殊和复杂, 掺入了大量政府控制因素在内, 在考虑高管贡献的同时一定程度上也要考虑社会影响, 甚至后者成为更重要的决定因素, 这使得国有企业高管薪酬水平常常达不到市场水平。例如从 2002 年起监管部门要求国有上市公司高管薪酬不得超过该上市公司职工平均工资的 12 倍。国有上市公司高管薪酬水平较

低，难以招到一流人才，对上市公司发展不利。

在这个前提下，“最优契约论”预期薪酬委员会的建立（及其独立性）可以提高我国上市公司的高管薪酬水平。相对而言，“管理层权力论”同样预期薪酬委员会的建立可以显著的提高薪酬水平，但是在“管理层权力论”下，薪酬水平的提高是因为管理层权力较大，建立薪酬委员会给高管人员提供了一个通过控制薪酬委员会提升薪酬水平的机会。此外，“管理层权力论”下，薪酬委员会独立性的高低与高管薪酬水平不存在直接的影响。综合上述的两种观点，我们预期薪酬委员会的建立（及其独立性）与高管薪酬水平正相关。通过实证检验的结果，可以进一步判断上述两种观点哪个更符合我国上市公司的现状。

假说 1：在我国上市公司中，薪酬委员会的建立及其独立性与高管薪酬水平正相关。

市场化薪酬体系的表现除了薪酬水平之外，更重要的是薪酬-业绩敏感度。接下来，我们将重点分析薪酬委员会的建立（及其独立性）如何影响高管薪酬-业绩敏感度，从而对“最优契约论”和“管理层权力论”加以区分。“最优契约论”观点下，薪酬委员会制度是有效的，因此薪酬委员会的建立及其独立性均应该显著提升高管薪酬-业绩敏感度。但是，如果管理层权力的影响是主要因素，就可能使薪酬委员会制度流于形式，进入薪酬委员会的董事仍然受到管理层的控制或影响，成为管理层提升薪酬水平的工具，从而无法有效的提升薪酬-业绩敏感度。对两种观点的区分将通过实证检验的结果来做出判断。基于上述分析，我们提出以下假说 2。

假说 2：在我国上市公司中，薪酬委员会的建立及其独立性与高管薪酬-业绩敏感度正相关。

三、 样本来源与描述性统计

1、 样本来源

与证监会首次在上市公司中推行薪酬委员会制度的时间一致，本文选取了 2001 至 2009 年在上海证券交易所和深圳证券交易所主板上市的全部 A 股公司作为研究对象，这个窗口覆盖了我国上市公司薪酬委员会从无到有的整个发展历程。数据主要来自于 CSMAR 数据库和 WIND 数据库，但对于数据库中缺失的数据，我们从公司年报中查找到原始数据进行了补充。在 2001 到 2009 年度所有主板 A 股上市公司的样本（12,402 个）中，我们剔除了 ST 和退市的公司样本 915 个，金融行业公司样本 183 个，高管薪酬缺失的样本 1532 个，⁴ 以及总经理不在上市公司领取薪酬的

⁴ 高管薪酬数据缺失的样本主要来源于 2001 至 2003 年度，即证监会要求上市公司披露高管薪酬信息的早期，由于政策的执行力较差所致。我们对比了这些缺失薪酬数据的上市公司相比我们的样本公司在企业规模、行业分布、业绩和财务杠杆指标上的差异，没有发现显著的区别。此外，去除 2001 至 2003 年的全体数据后，本文的结果依然成立。

样本 486 个。⁵ 具体的样本筛选过程如表 1 所示。最后本文得到 9,248 个公司-年度样本。

表 1 样本选择过程

	样本数量
2002-2009 年期间所有主板上市公司样本	12,402
减: ST 和退市公司样本	915
减: 金融行业样本	183
减: 高管薪酬数据缺失的样本	1,532
减: 总经理不在公司领薪的样本	486
样本数量	9,286

我们以上市公司年报中披露的总经理现金薪酬的自然对数衡量高管薪酬水平。⁶ 由于 2005 年以前上市公司并未对个人薪酬进行披露, 因此文中 2005 年之前的样本采用的薪酬值是上市公司披露的“前三名高级管理人员报酬总和”除以 3 的值取自然对数的结果。2005 年开始, 该数据手工从年报公布的数据摘录。⁷ 计算薪酬-业绩敏感度时采用的高管薪酬变化值, 以上述薪酬变量为基础用本年薪酬减去上年薪酬得到。

本文选取的薪酬委员会 (COMT) 相关变量包括两个, 一个是是否建立了薪酬委员会 (SETUP), 已建立则变量取 1, 否则取 0; 另一个是薪酬委员会的独立性 (INDE), 以独立董事委员占委员会总人数的比例衡量, 对于尚未建立薪酬委员会的样本该变量设定为缺失。此外, 本文选取了一系列可能对高管薪酬产生影响的控制变量, 包括表示规模的总资产的自然对数、表示盈利能力的总资产回报率和股票超额回报率, 表示成长性的营业收入增长率, 表示投资机会的市净率, 用来控制薪酬自然增长的总经理任职时间, 以及行业哑变量和年度哑变量等。针对变量中存在的极值问题我们进行了 Winsorize 上下各 1% 的处理。具体变量及定义在表 2 列示。

⁵ 感谢审稿人的建议, 我们进一步检查了这些不在上市公司领薪的高管特点。这些高管在上市公司的关联方 (以控股股东为主) 领取薪酬, 其中有一半同时兼任上市公司的董事长。因此, 我们认为这些高管人员更多的兼具上市公司控股股东代理人的特性, 而不是上市公司的管理人员。由于本文主要研究的是上市公司薪酬委员会制度对公司管理人员的薪酬影响, 因此我们认为这些样本使检验结果更加合理。

⁶ 虽然高管的收益包括现金薪酬、股票、期权和在职消费等, 但是在职消费很难衡量, 而且也不是通过薪酬委员会确定的, 所以本文不研究在职消费; 股票和期权的授予虽然与薪酬委员会有关, 但是目前在中国普遍性和规模都较低。我国股权激励制度从 2006 年 1 月 1 日才正式开始实施, 截止到 2008 年 12 月 31 日, 只有 133 家公司提出了股权激励计划草案, 其中还有不少公司并没有最终实施; 而管理层持股占公司股份总数的比例还不到两个百分点 (肖星、陈婵, 2013)。所以本文只讨论薪酬委员会对现金薪酬的影响。

⁷ 我们也试着在 2005 年后的年度使用“前三名高管薪酬的平均值”来代替手工数据, 结果一致。

表 2 变量定义

变量	变量定义
<i>COMP</i>	总经理在上市公司领取的薪酬的自然对数;(2005年起手工从年报摘录,2005年前选取CSMAR中“前三名高级管理人员报酬总和”除以3);
<i>COMP_CH</i>	总经理在上市公司领取的薪酬变化值,用本年薪酬减去上年薪酬。总经理薪酬自2005年起手工从年报摘录,2005年前选取CSMAR中“前三名高级管理人员报酬总和”除以3;
<i>COMT: SETUP</i>	薪酬委员会是否建立的哑变量,已建立该变量取1,否则取0;
<i>COMT: INDE</i>	薪酬委员会独立性,即独立董事委员人数/委员会总人数;
<i>COMT: INDE1</i>	薪酬委员会独立性,若薪酬委员会中独立董事的人数超过半数则为1,否则为0;
<i>ROA</i>	总资产回报率,=净利润/平均总资产;
<i>OI_CH</i>	营业利润的变化值;
<i>STATE</i>	企业性质哑变量,若为国有企业则变量取1,非国有企业变量取0;
<i>SIZE</i>	总资产的自然对数;
<i>SIZE_CH</i>	总资产的自然对数变化值,用本年 <i>SIZE</i> 减去上年 <i>SIZE</i> ;
<i>RETURN</i>	股票超额回报率;
<i>RETURN_CH</i>	股票超额回报率变化值,用本年 <i>RETURN</i> 减去上年 <i>RETURN</i> ;
<i>SALES_CH</i>	本期营业收入相对上年前同期营业收入增长率;
<i>LEV</i>	杠杆率,=负债/总资产*100;
<i>LEV_CH</i>	杠杆率变化值,用本年杠杆率减去上年杠杆率;
<i>MB</i>	市净率,=每股股价/每股净资产;
<i>MB_CH</i>	市净率变化值,用本年市净率减去上年市净率;
<i>GDP</i>	公司注册地省份GDP的自然对数;
<i>CEO_AGE</i>	总经理年龄的自然对数;
<i>TENURE</i>	总经理目前已任职时长;
<i>HOLDING</i>	总经理持股占总股本的比例;
<i>HOLDING_CH</i>	总经理持股变化,用本年末总经理持股比例减上年末总经理持股比例;
<i>STDROA</i>	以过去五年 <i>ROA</i> 计算的 <i>ROA</i> 标准差;
<i>STDROA_CH</i>	当年 <i>ROA</i> 标准差减去上年 <i>ROA</i> 标准差, <i>ROA</i> 标准差以过去五年的 <i>ROA</i> 计算;
<i>STDRET</i>	以过去五年月度股票超额收益率计算的股票超额收益率标准差;
<i>STDRET_CH</i>	当年股票超额收益率标准差减去上年股票超额收益率标准差,股票超额收益率的标准差以过去五年月度股票超额收益率计算;
<i>TIME1</i>	哑变量,若该年为2005年及以后则为1,否则为0;
<i>TIME2</i>	哑变量,若该年为2007年及以后则为1,否则为0;
<i>AFTER</i>	哑变量,若该年为薪酬委员会设立当年或后一年则为1,否则为0;
<i>CHANGE</i>	哑变量,若该公司在样本期间设立薪酬委员会则为1,否则为0。

2、样本描述性统计

表 3 描述了样本的总体情况。表 3 Panel A 描述的是公司基本特征的统计结果。结果显示，样本公司的规模在窗口期内一直在缓慢上升；平均总资产收益率在各年度相对稳定；平均销售增长率和市净率波动较大；国有上市公司在样本中的比例始终维持在略高于 65% 的水平，近年来略有下降。

表 3 Panel B 描述了薪酬委员会的建立情况以及相关的董事会特征统计。从 2001 年到 2009 年，建立薪酬委员会的公司逐年增加，从 2001 年仅仅有 1 家样本公司设立薪酬委员会的局面逐渐提高到了 2009 年 99.59% 的公司都设立了薪酬委员会。这个比例在 2007 发生了一次显著提升，一方面是由于证监会在 2007 年要求上市公司开展彻底的公司治理专项活动，大量公司借由这一契机建立了专门委员会；另一方面是由于证监会在 2007 年中出台政策要求上市公司从 2007 年起在年报中披露薪酬委员会和审计委员会的工作情况。证监会除了要求建立薪酬委员会，也对薪酬委员会的构成提出了具体要求，即独立董事委员要超过委员会人数的 1/2。从描述性统计可见，早期建立的薪酬委员会符合这一要求的并不多，符合要求的薪酬委员会比重持续提高，到 2009 年达到了 94.94%。与之一致，薪酬委员会的独立性也增加到 64.34% 的水平。

表 3 Panel C 提供了高管薪酬和特征的描述性统计。总经理薪酬的均值和中位数均持续上升，增幅稳定；总经理平均年龄在十年间几乎是稳定的；女性总经理的比例在这十年中略有提高，但总水平维持在 5% 以下；总经理平均任期从 2 年提高到了 4 年，显示出了这一岗位更高的稳定性。而总经理平均持股比例在 2004 年发生明显提升之后，平均仅持有 0.13%，由此可见相比西方其他市场，现金薪酬仍然是我国高管人员的主要薪酬组成部分。

四、 实证检验

1、薪酬委员会对高管薪酬水平的影响

为了检验假说 1，即薪酬委员会的成立及其独立性对高管薪酬水平的影响，本文建立回归模型（1）如下：

$$COMP = \alpha_0 + \alpha_1 * COMT + \alpha_2 * CONTROLS + \varepsilon \quad (1)$$

被解释变量是高管薪酬水平（*COMP*），即总经理在上市公司领取的薪酬的自然对数；解释变量中 *COMT* 为薪酬委员会变量，分别带入薪酬委员成立哑变量（*SETUP*）和薪酬委员会独立性变量（*INDE*）。

为了避免其他因素对高管薪酬水平的影响，我们控制了如下因素。Jensen and Meckling（1976）的研究表明，规模大的公司更难进行监督，从而更多采用激励手段，因此，我们将公司规模（*SIZE*）作为控制变量。由于公司盈利能力越强高管薪

表 3 描述性统计

Panel A: 样本综合描述统计										
	总体	2001	2002	2003	2004	2005	2006	2007	2008	2009
样本数量	9286	257	862	963	1134	1200	1216	1213	1226	1225
平均规模 (公司规模=log(总资产))	21.37	20.90	21.10	21.17	21.23	21.25	21.32	21.51	21.64	21.80
平均总资产收益率	2.25	2.33	1.97	2.27	2.01	0.96	2.15	3.61	2.00	2.66
平均销售增长率 (%)	16.59	15.25	18.99	20.71	24.52	12.42	15.74	23.41	11.77	7.60
平均股票超常收益率 (%)	39.28	-20.88	-19.80	-11.19	-14.29	-13.66	88.44	176.73	-55.63	139.17
平均杠杆率 (%)	51.75	45.74	47.20	49.31	51.26	53.02	53.88	52.96	53.14	53.68
平均市净率	3.31	4.72	3.61	2.86	2.26	1.86	2.63	5.49	2.36	4.49
国有上市公司比例 (%)	67.02	68.09	69.49	69.89	68.87	68.08	65.30	64.06	65.66	65.96
平均ROA 标准差	2.75	0.05	0.05	0.05	0.06	0.06	0.85	1.14	8.67	9.47
平均股票超常收益率标准差	3.04	5.81	5.81	4.68	4.81	3.77	2.52	1.76	1.39	0.90
Panel B: 薪酬委员会建立及相关董事会结构描述统计										
建立了薪酬委员会的公司数量	5364	1	95	259	421	554	650	1000	1164	1220
建立了薪酬委员会样本占全体上市公司比例 (%)	56.44	0.39	11.02	26.90	37.13	46.17	53.45	82.44	94.94	99.59
薪酬委员会独立性 (%)	33.92	0	5.04	14.44	20.59	27.07	31.86	47.86	59.29	64.34
薪酬委员会中独立董事达到 1/2 的董事会比例 (%)	49.94	0.00	7.31	21.08	30.07	39.42	47.04	70.57	87.68	94.94
Panel C: 高管薪酬及特征描述										
高管薪酬 平均值 (万元)	25.63	8.29	13.94	16.74	19.48	22.95	25.90	32.16	35.91	39.53
高管薪酬 中位数 (万元)	19.38	6.25	10.00	12.67	15.13	18.00	21.00	26.90	30.75	34.58
高管薪酬 方差	439.74	45.22	150.18	190.33	239.59	317.33	354.57	499.26	526.67	576.13
平均年龄 (岁)	46.01	44.17	45.12	45.35	45.42	45.74	46.01	46.36	46.86	47.40
女性比例 (%)	4.27	3.11	4.06	3.74	3.97	4.42	4.03	4.53	4.73	4.90
有同行业工作经历比例 (%)	73.03	70.82	66.71	70.09	75.93	75.08	74.34	74.69	72.76	73.14
平均任期 (年)	3.63	2.41	2.69	3.02	3.35	3.50	3.80	3.97	4.26	4.47
平均持股比例 (%)	0.13	0.00	0.02	0.04	0.13	0.16	0.14	0.16	0.18	0.19

酬越高,所以我们控制了总资产报酬率和市场收益率 (ROA 和 $RETURN$); 营业收入成长性 $SALES_CH$ 越高表明公司成长越快,一般来说高管薪酬也应该越高。Myers *et al.* (1977)、Smith and Watts (1992) 研究表明,具有较大成长机会的公司会为管理层提供更多与股票相关的薪酬激励,本文选用市净率 (MB) 作为公司成长性指标加以控制。从风险角度来看,Beatty and Zajac (1994) 研究表明,公司的风险将会降低使用股票期权的可能性,这是由于管理层的人力资本风险与公司的业绩有关,因此使得他们不情愿再次增加自身风险,由此我们将 ROA 和 $RETURN$ 标准差的变化 ($STDROA$ 和 $STDRET$) 作为风险指标在模型中加以控制。在资本结构方面,John and John (1993) 发现,为了避免管理层进行高风险的投资从而将债权人的财富转移给股东,公司会在杠杆上升时降低管理层薪酬,因此我们控制公司的杠杆系数 (LEV)。此外,我们还控制了公司所在省份的 GDP 的自然对数 (GDP)、总经理年龄的自然对数 (CEO_AGE)、总经理持股的变化 ($HOLDING$) 和总经理任职时长 ($TENURE$)。

由于本文的研究期间涵盖 2001 至 2009 年,除了证监会关于完善公司治理的规定外,同期发生的其他重大事项也可能对高管薪酬契约产生影响。2005 年开始上市公司对于高管薪酬披露的进一步透明化,投资者将更加关注高管薪酬,由此产生的外界压力也有可能提高薪酬契约的市场化和有效性;2007 年证监会开展的公司治理专项活动以及对薪酬委员会独立性的具体要求,上市公司建立薪酬委员会的比例以及独立董事在薪酬委员会中的比例大幅提高。同年,新企业会计准则体系也开始实施。如果会计信息质量确实得以提高,即使没有公司治理要求的出台,高管薪酬-业绩敏感度也将会因此增强。为此,我们控制了两个期间哑变量, $TIME1$ 和 $TIME2$, 二者分别在 2005 年和 2007 年以后各年度取 1, 否则取 0。⁸

由于薪酬委员会的设立及其独立性很可能受到一些公司特征的影响,而这些特征可能同时影响高管薪酬,所以研究薪酬委员会对高管薪酬的影响必须控制这些以公司特征为主的其他可能影响因素 (*confounding factors*)。Angrist and Pischke (2009) 指出,有两种效果完全相同的方法可以控制这一问题,一种是在回归模型中加入公司固定效应 (*firm fixed effect*), 另一种方法是采用双重差分法。为此,我们在所有回归中均加入公司固定效应,同时在稳健性检验中采用双重差分法进行了检验。

模型 (1) 的回归结果见表 4。在总体样本中,薪酬委员会的建立及其独立性的提高均与高管薪酬显著正相关,显著性水平低于 10%。例如,薪酬委员会的独立性 ($INDE$) 在模型 (1) 中的系数为 0.071, t 值为 2.22, 说明薪酬委员会的独立性越高,高管薪酬越高。表 4 的结果与假说 1 一致,即薪酬委员会的建立及其独立性均显著地对高管薪酬水平存在正向影响。其中,薪酬委员会独立性对薪酬水平的影响更加符合“管理层权力论”的预期。

⁸ 此外,我们还根据审稿人的建议分别就 2005 年之前、2005 至 2007 之间以及 2007 之后的样本分组进行回归,结果在 2005 年前以及 2005 至 2007 阶段与总样本的结果保持一致,2007 年以后阶段的显著性减弱。

表 4 薪酬委员会设立及其独立性对薪酬水平的影响

	被解释变量 = <i>COMP</i>	
	<i>COMT = SETUP</i>	<i>COMT = INDE</i>
	(1)	(2)
Constant	4.594** (2.20)	6.455** (2.04)
<i>COMT</i>	0.037* (1.77)	0.118* (1.69)
<i>STATE</i>	-0.029 (-0.58)	-0.031 (-0.62)
<i>SIZE</i>	0.254*** (10.50)	0.211*** (6.74)
<i>ROA</i>	0.012*** (6.97)	0.009*** (4.46)
<i>RETURN</i>	-0.000*** (-2.79)	-0.000 (-0.78)
<i>SALES_CH</i>	0.000 (1.05)	0.000 (0.80)
<i>LEV</i>	-0.004*** (-4.65)	-0.003*** (-2.79)
<i>MB</i>	0.019*** (3.92)	0.011* (1.82)
<i>GDP</i>	1.212 (1.35)	0.921 (0.67)
<i>CEO_AGE</i>	-0.022 (-0.26)	0.040 (0.34)
<i>HOLDING</i>	0.015 (1.42)	0.012 (1.04)
<i>TENURE</i>	0.012*** (2.97)	0.017*** (3.23)
<i>STDROA</i>	-0.000*** (-11.51)	0.000 (1.12)
<i>STDRET</i>	0.004** (2.42)	0.004 (1.63)
<i>TIME1</i>	0.564*** (9.21)	0.132*** (2.70)
<i>TIME2</i>	0.232*** (5.58)	0.154*** (4.80)
Year fixed effect	控制	控制
Firm fixed effect	控制	控制
Observations	9024	5352
Adjusted R^2	0.781	0.806

控制变量对薪酬的影响与预期的方向一致，例如规模 (*SIZE*)、总资产回报率 (*ROA*)、市净率 (*MB*)，以及总经理任期 (*TENURE*) 均与高管薪酬呈显著正相关关系，说明规模大、盈利能力强、投资机会多的公司，以及任期时间较长的总经理会获得更高的薪酬。资产负债率 (*LEV*) 的系数显著为负，则显示出债权方对高管薪酬的遏制效应。

2、薪酬委员会建立对高管薪酬-业绩敏感度的影响

接下来，我们将检验本文的假说 2，即薪酬委员会制度对高管薪酬-业绩敏感度的影响，具体而言，本文建立了回归方程 (2) 如下：

$$\begin{aligned} COMP_CH = & \alpha_0 + \alpha_1 * OI_CH + \alpha_2 * COMT \\ & + \alpha_3 * COMT * OI_CH + \alpha_4 * CONTROLS + \varepsilon \end{aligned} \quad (2)$$

其中，被解释变量 *COMP_CH* 为高管薪酬变化值；*OI_CH* 为上市公司业绩变化，具体采用经营利润的变化值衡量；⁹ *COMT* 是薪酬委员会相关变量，包括薪酬委员会成立变量 *SETUP* 和薪酬委员会独立性变量 *INDE*；*OI_CH*COMT* 为业绩变化值和薪酬委员会相关变量的交互项，如果这项交互项的系数为正，意味着建立薪酬委员会能够提高薪酬-业绩敏感度，反之则为降低。控制变量与模型 (1) 的选取原则一致，由于被解释变量是薪酬的变化值，因此相应的将控制变量取值为两年之间的变化（企业性质和虚拟变量除外）。

模型 (2) 的回归结果见表 5。回归结果显示 *OI_CH* 的系数不显著，说明没有建立薪酬委员会的样本年度薪酬的变化与业绩变化之间不存在显著的关联。*COMT* 与 *OI_CH* 的交叉项系数显著为正（在 *COMT = SETUP* 时系数为 0.061，*t = 2.99*；*COMT = INDP* 时系数为 0.106，*t = 1.74*），说明薪酬委员会的建立（及其独立性）显著提高了企业的薪酬-业绩敏感度。根据第 (1) 列的回归结果，相对于没有建立薪酬委员会的公司，建立薪酬委员会样本的薪酬-业绩敏感度提高了 0.061，即在没有建立薪酬委员会的样本中，经营利润每提高 1000 元，高管薪酬提高 7 元，而在建立了薪酬委员会的样本中，经营利润每提高 1000 元，高管薪酬提高 68 元。结果支持假说 2，支持了“最优契约论”的观点，即薪酬委员会的成立（及其独立性）并非仅仅提高了高管的薪酬，更为重要的是提升了薪酬-业绩敏感度，从而使高管的利益与公司业绩更加紧密的结合在一起。

此外，控制变量的影响与预期一致，例如规模变化 (*SIZE_CH*)、销售收入变化 (*SALES_CH*)，以及市净率变化 (*MB_CH*) 都对高管薪酬有显著的正向影响，表明公司规模的增长和增长率的提升都对高管薪酬有提升作用；财务杠杆变化 (*LEV_CH*) 对高管薪酬的变化有显著的负向作用，即财务杠杆增加会降低高管薪酬。

⁹ 业绩变化的衡量采用 *ROA* 的变化或者超额市场收益率，结果一致。

表 5 薪酬委员会设立及其独立性对薪酬-业绩敏感性的影响

	被解释变量 = <i>COMP_CH</i>	
	<i>COMT = SETUP</i>	<i>COMT = INDE</i>
	(1)	(1)
Constant	-2.945 (-1.11)	-4.650 (-1.09)
<i>OI_CH</i>	0.007 (0.40)	-0.001 (-0.03)
<i>COMT</i>	0.005 (0.17)	0.067 (0.64)
<i>STATE</i>	0.031 (0.67)	-0.010 (-0.16)
<i>COMT*OI_CH</i>	0.061*** (2.99)	0.106* (1.74)
<i>SIZE_CH</i>	0.221*** (3.27)	0.243** (2.34)
<i>LEV_CH</i>	-0.468*** (-3.68)	-0.519*** (-2.62)
<i>RETURN</i>	0.000 (0.69)	0.000 (0.27)
<i>SALES_CH</i>	0.001*** (2.71)	0.001** (2.03)
<i>MB_CH</i>	0.009* (1.91)	0.012* (1.84)
<i>GDP</i>	0.926 (0.80)	1.445 (0.77)
<i>CEO_AGE</i>	0.294*** (2.96)	0.438*** (2.60)
<i>HOLDING_CH</i>	0.034** (2.31)	0.033* (1.72)
<i>STDROA_CH</i>	0.000*** (2.77)	0.000** (2.41)
<i>STDRET_CH</i>	0.002 (0.77)	0.001 (0.18)
<i>TIME1</i>	-0.082 (-1.20)	-0.138* (-1.75)
<i>TIME2</i>	0.079 (1.31)	-0.010 (-0.09)
Year fixed effect	控制	控制
Firm fixed effect	控制	控制
Observations	7721	5080
Adjusted R^2	0.039	0.028

3、分组结果

为了进一步区分“最优契约论”和“管理层权力论”的观点如何影响薪酬委员会制度在我国上市公司的影响，我们根据上市公司的属性（国有与民营）和管理层权力的大小（分别从两职合一与否和总经理任职时间考察）将样本进行分组检验。

“最优契约论”对于提高薪酬的合理性论述主要针对的是国有企业。如前论述的，由于国有企业的薪酬受到非市场因素的限制，提高薪酬水平，吸引有能力的管理者，也是薪酬委员会制度的一个目标。因此，我们预期在国有企业样本中薪酬的水平和薪酬-业绩敏感度同时随着薪酬委员会的成立（及其独立性）而有所提升。相比之下，民营企业的薪酬水平不存在受限的问题，因此薪酬委员会制度对民营企业的高管薪酬影响主要在于薪酬-业绩敏感度的提升。如果在民营企业样本中也存在薪酬水平的提升，那么这种结果更可能是由于“管理层权力论”所导致。

接下来，我们根据管理层权力的大小对上市公司样本进行区分，具体而言，我们定义总经理和董事长两职合一的样本组、总经理任期时间长于中位数的样本组是管理层权力较强的一组。我们预期，“管理层权力论”在总经理权力较大的样本组会产生较强影响，由于总经理的优势地位，薪酬委员会的建立更可能是满足政策要求的形式，甚至成为管理层的工具，提升薪酬水平却无法提升薪酬-业绩敏感度；而在总经理权力较小的样本中，薪酬委员会的建立更可能真正发挥作用，即提升薪酬-业绩敏感度。如假说1的论述中提到，“管理层权力论”对于薪酬委员会独立性的影响没有直接的预期。因此，进一步区分管理层权力大小后，我们预期在管理层权力较强的公司，薪酬委员会的独立性程度与薪酬契约之间不存在直接的影响。在管理层权力较弱的公司，“最优契约论”则预期薪酬委员会独立性与薪酬水平和薪酬-业绩敏感度存在正相关的关系。

表6至表9给出了相应的分组检验结果。其中表6和表7是针对模型（1）薪酬水平的分组测试，分别采用薪酬委员会成立（*SETUP*）和独立性（*INDE*）作为主要解释变量。表8和表9是针对模型（2）薪酬-业绩敏感度的分组测试，同样分别采用薪酬委员会成立（*SETUP*）和独立性（*INDE*）作为主要解释变量。

区分国有和民营样本后的结果显示，薪酬委员会的建立及其独立性可以显著提升国有企业的薪酬水平和薪酬-业绩敏感度。如表6中Column（1）显示，*SETUP*的系数为0.046（*t*值为2.15），表8的Column（1）结果显示*SETUP*OI_CH*的系数也显著为正（0.054，*t*值为2.20），这表明在国有企业中建立薪酬委员会可以显著提高薪酬水平同时提高薪酬-业绩敏感度。相对而言，在民营企业高管薪酬的水平并没有随着薪酬委员会制度而受到影响。这部分分组结果支持了“最优契约论”的观点，说明薪酬委员会制度可以为国有企业带来更有效的高管薪酬契约体系。

区分管理层权力强弱的分组结果表明，在管理层权力较大的样本组（即两职合一和CEO任期长）中，薪酬委员会的建立仅仅提升了高管的薪酬水平，却不能影响薪酬-业绩敏感度（如表6和表8中Column 3和5分别展示）。这说明，在管理层权力大的时候，薪酬的提升不仅不能缓解管理层的代理问题，实际上是代理问题

表 6 薪酬委员会设立对薪酬水平的影响在分组样本中的差异

被解释变量= <i>COMP</i>	国有 (1)	民营 (2)	两职 合一 (3)	两职 分离 (4)	CEO 任期长 (5)	CEO 任期短 (6)
Constant	5.934*** (2.78)	8.823** (2.09)	10.002 (1.13)	3.522* (1.67)	-0.260 (-0.08)	5.249** (2.12)
SETUP	0.046** (2.15)	0.044 (1.20)	0.102* (1.70)	0.015 (0.75)	0.070** (2.32)	0.012 (0.50)
STATE			-0.114 (-0.78)	-0.047 (-1.07)	-0.026 (-0.45)	-0.050 (-1.06)
SIZE	0.228*** (9.25)	0.245*** (6.01)	0.232*** (2.87)	0.251*** (10.46)	0.247*** (6.14)	0.231*** (9.07)
ROA	0.021*** (9.87)	0.006** (2.36)	0.006 (1.61)	0.014*** (8.07)	0.018*** (6.19)	0.014*** (7.77)
RETURN	-0.000*** (-3.43)	-0.000 (-1.06)	-0.000 (-0.15)	-0.000*** (-2.82)	-0.000** (-2.37)	-0.000 (-1.36)
SALES_CH	0.000 (0.72)	0.000 (0.48)	-0.000 (-0.14)	0.000 (0.77)	0.000 (0.43)	0.000 (0.40)
LEV	-0.003*** (-3.53)	-0.004*** (-2.59)	-0.005** (-2.25)	-0.004*** (-4.28)	-0.003** (-2.29)	-0.003*** (-2.78)
MB	0.025*** (3.88)	0.008 (1.16)	0.013 (1.08)	0.019*** (3.78)	0.031*** (3.91)	0.016*** (2.81)
GDP	0.901 (0.96)	-0.622 (-0.33)	-0.227 (-0.06)	1.745* (1.91)	2.876** (2.11)	1.083 (0.99)
CEO_AGE	-0.071 (-0.76)	0.028 (0.22)	-0.390 (-0.90)	-0.044 (-0.50)	0.294 (1.20)	0.012 (0.15)
HOLDING	0.032*** (3.45)	0.005 (0.53)	0.033** (1.99)	0.009 (0.79)	0.029*** (2.93)	0.026*** (2.91)
TENURE	0.017*** (4.15)	0.005 (0.52)	0.053*** (2.83)	0.014*** (3.11)		
STDROA	0.091 (0.79)	-0.000*** (-7.69)	-0.036 (-1.06)	-0.000*** (-13.80)	-0.029 (-1.44)	-0.000*** (-10.81)
STDRET	0.002 (1.21)	0.010*** (3.01)	0.003 (0.48)	0.004** (2.12)	0.005** (2.16)	0.003 (1.48)
TIME1	0.509*** (10.28)	0.555*** (4.37)	0.0976 (0.63)	0.573*** (9.15)	0.1633*** (3.25)	0.518*** (7.14)
TIME2	0.317*** (6.49)	0.350*** (4.11)	0.461 (1.25)	0.199*** (4.95)	0.674*** (4.83)	0.123*** (4.09)
Year fixed effect	控制	控制	控制	控制	控制	控制
Firm fixed effect	控制	控制	控制	控制	控制	控制
Chow-test	0.00		2.85*		3.50*	
p-value	0.9675		0.0911		0.0612	
Observations	6044	2980	1080	7944	3939	5085
Adjusted R^2	0.845	0.761	0.863	0.806	0.882	0.838

表 7 薪酬委员会独立性对薪酬水平的影响在分组样本中的差异

被解释变量= <i>COMP</i>	国有	民营	两职合一	两职分离	CEO 任期长	CEO 任期短
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	6.927* (1.81)	13.088* (1.87)	3.885 (0.37)	6.286* (1.88)	-0.890 (-0.17)	12.090** (2.46)
<i>INDE</i>	0.143** (1.98)	0.083 (0.56)	-0.072 (-0.24)	0.151** (2.20)	0.029 (0.36)	0.241** (1.99)
<i>STATE</i>			-0.089 (-0.44)	-0.053 (-1.01)	-0.065 (-0.72)	-0.007 (-0.08)
<i>SIZE</i>	0.178*** (4.50)	0.188*** (3.88)	0.249 (1.62)	0.206*** (6.51)	0.182*** (3.06)	0.185*** (4.18)
<i>ROA</i>	0.017*** (6.19)	0.005* (1.70)	0.005 (0.80)	0.013*** (5.93)	0.014*** (3.84)	0.010*** (3.46)
<i>RETURN</i>	-0.000* (-1.93)	0.000 (0.19)	0.000 (0.40)	-0.000 (-1.61)	-0.000* (-1.79)	0.000 (0.26)
<i>SALES_CH</i>	-0.000 (-0.19)	0.000 (0.71)	-0.000 (-0.17)	0.000 (0.09)	0.000 (0.28)	-0.000 (-0.26)
<i>LEV</i>	-0.002 (-1.44)	-0.005** (-2.28)	-0.002 (-0.61)	-0.003*** (-2.66)	-0.002 (-0.87)	-0.004** (-2.10)
<i>MB</i>	0.018*** (2.60)	0.005 (0.54)	0.019 (1.06)	0.011* (1.95)	0.021** (2.09)	0.011 (1.42)
<i>GDP</i>	1.200 (0.71)	-1.958 (-0.64)	2.812 (0.57)	1.128 (0.77)	4.109* (1.89)	-1.415 (-0.66)
<i>CEO_AGE</i>	-0.081 (-0.56)	0.169 (0.85)	-0.667 (-0.79)	-0.011 (-0.09)	0.127 (0.34)	0.093 (0.64)
<i>HOLDING</i>	0.018 (0.97)	0.008 (0.62)	0.045*** (3.16)	0.005 (0.39)	0.003 (0.18)	0.026 (1.40)
<i>TENURE</i>	0.013** (2.14)	0.020* (1.89)	0.060* (1.90)	0.014*** (2.62)		
<i>STDROA</i>	-0.099 (-0.47)	0.000** (1.97)	-0.037 (-0.74)	0.000** (2.27)	-0.023 (-1.02)	0.001*** (3.00)
<i>STDRET</i>	0.000 (0.05)	0.011** (2.50)	0.006 (0.73)	0.003 (1.41)	0.002 (0.60)	0.002 (0.59)
<i>TIME1</i>	0.188*** (3.43)	0.136 (1.16)	0.071 (0.31)	0.149*** (3.02)	0.135* (1.69)	0.168** (2.25)
<i>TIME2</i>	0.223*** (3.56)	0.424*** (3.49)	0.109 (0.46)	0.141*** (4.48)	0.568** (2.48)	0.350*** (4.08)
Year fixed effect	控制	控制	控制	控制	控制	控制
Firm fixed effect	控制	控制	控制	控制	控制	控制
Chow test	0.07		0.94		3.53*	
P-value	0.7892		0.3324		0.060	
Observations	3626	1726	651	4701	2520	2832
Adjusted R^2	0.837	0.822	0.852	0.832	0.860	0.816

表 8 薪酬委员会设立对薪酬-业绩敏感度的影响在分组样本中的差异

被解释变量= <i>COMP_CH</i>	国有	民营	两职合一	两职分离	CEO 任期长	CEO 任期短
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-3.884 (-1.16)	-2.116 (-0.39)	-14.723 (-1.29)	-4.163 (-1.42)	-10.794* (-1.94)	1.586 (0.35)
<i>OI_CH</i>	0.003 (0.14)	0.005 (0.16)	0.016 (0.25)	0.011 (0.59)	0.002 (0.06)	0.011 (0.40)
<i>SETUP</i>	0.009 (0.23)	-0.031 (-0.53)	0.214* (1.77)	-0.017 (-0.48)	0.004 (0.06)	-0.022 (-0.42)
<i>SETUP*OI_CH</i>	0.054** (2.20)	0.079* (1.83)	0.107 (1.29)	0.050** (2.21)	0.058 (1.58)	0.063* (1.93)
<i>STATE</i>			0.093 (0.43)	0.027 (0.55)	0.019 (0.20)	0.035 (0.50)
<i>SIZE_CH</i>	0.229** (2.26)	0.158 (1.47)	-0.171 (-0.69)	0.259*** (3.53)	0.303** (2.04)	0.168* (1.76)
<i>LEV_CH</i>	-0.539*** (-2.80)	-0.381* (-1.76)	-0.548 (-1.26)	-0.435*** (-3.11)	-0.698** (-2.53)	-0.324* (-1.88)
<i>RETURN</i>	0.000 (0.78)	-0.000 (-0.35)	0.000 (0.50)	0.000 (0.39)	0.000 (0.60)	0.000 (0.98)
<i>SALES_CH</i>	0.002*** (3.71)	-0.001 (-0.98)	-0.002 (-1.31)	0.001*** (3.19)	0.001* (1.65)	0.001* (1.75)
<i>MB_CH</i>	0.011 (1.58)	0.007 (1.07)	0.013 (0.90)	0.010* (1.95)	0.009 (0.89)	0.008 (1.17)
<i>GDP</i>	1.216 (0.83)	0.740 (0.31)	5.608 (1.22)	1.541 (1.20)	3.771 (1.60)	-0.983 (-0.48)
<i>CEO_AGE</i>	0.370*** (2.68)	0.203 (1.22)	0.568 (0.51)	0.251** (2.25)	0.687** (2.01)	0.220 (1.63)
<i>HOLDING_CH</i>	-0.020 (-0.20)	0.031* (1.85)	0.038 (1.46)	0.024 (1.05)	-0.004 (-0.18)	0.041** (2.16)
<i>STDROA_CH</i>	-0.248 (-0.65)	0.000 (1.04)	0.003 (0.09)	0.000*** (2.66)	0.024 (0.80)	0.000** (2.50)
<i>STDRET_CH</i>	0.002 (0.46)	0.005 (0.87)	-0.010 (-0.78)	0.003 (0.90)	0.004 (0.83)	-0.000 (-0.08)
<i>TIME1</i>	-0.157** (-2.49)	-0.101 (-0.76)	-0.291** (-2.18)	-0.104 (-1.39)	-0.267*** (-2.68)	-0.014 (-0.12)
<i>TIME2</i>	0.208** (2.53)	0.189* (1.67)	-0.081 (-0.27)	0.104** (2.19)	0.136 (1.08)	0.131* (1.93)
Year fixed effect	控制	控制	控制	控制	控制	控制
Firm fixed effect	控制	控制	控制	控制	控制	控制
Chow-test	0.32		0.41		0.01	
P-value	0.5704		0.5195		0.9054	
Observations	5137	2584	946	6775	3568	4153
Adjusted R^2	0.044	0.041	0.067	0.038	0.064	0.002

表 9 薪酬委员会独立性对薪酬-业绩敏感度的影响在分组样本中的差异

	被解释变量 = <i>COMP_CH</i>					
	国有 (1)	民营 (2)	两职合一 (3)	两职分离 (4)	CEO 任期长 (5)	CEO 任期短 (6)
Constant	-6.544 (-1.20)	-0.939 (-0.10)	-19.668 (-1.15)	-5.549 (-1.16)	2.580 (0.41)	-0.376 (-0.07)
<i>OI_CH</i>	-0.054 (-1.24)	0.211* (1.70)	0.301 (1.32)	-0.015 (-0.36)	0.008 (0.17)	-0.029 (-0.65)
<i>INDE</i>	0.035 (0.27)	0.115 (0.55)	0.526 (1.15)	0.059 (0.52)	0.044 (0.34)	0.135 (1.30)
<i>INDE*OI_CH</i>	0.164** (2.49)	-0.189 (-0.97)	-0.299 (-0.79)	0.119* (1.88)	0.082 (1.21)	0.161** (2.31)
<i>SIZE_CH</i>			0.258 (0.84)	-0.042 (-0.62)	0.080 (0.76)	0.039 (0.56)
<i>LEV_CH</i>	0.318** (2.19)	0.159 (0.95)	-0.159 (-0.45)	0.263** (2.34)	0.229* (1.77)	0.078 (0.96)
<i>RETURN</i>	-0.722*** (-2.62)	-0.384 (-1.22)	-0.713 (-1.18)	-0.425* (-1.93)	-0.101 (-0.38)	-0.177 (-1.13)
<i>SALES_CH</i>	0.000 (0.87)	-0.000 (-0.79)	0.000 (0.12)	-0.000 (-0.07)	0.000 (0.76)	0.001** (2.07)
<i>MB_CH</i>	0.002** (2.56)	-0.000 (-0.04)	-0.002 (-1.16)	0.001*** (2.67)	0.001* (1.89)	0.000 (0.51)
<i>GDP</i>	0.014 (1.46)	0.016 (1.57)	0.023 (1.06)	0.013* (1.74)	0.007 (0.77)	0.010* (1.93)
<i>CEO_AGE</i>	2.451 (1.02)	-0.421 (-0.10)	8.156 (1.18)	1.937 (0.92)	-1.070 (-0.39)	-0.246 (-0.11)
<i>HOLDING_CH</i>	0.353 (1.55)	0.585** (2.08)	0.420 (0.22)	0.396** (2.10)	0.025 (0.06)	0.263** (1.98)
<i>STDROA_CH</i>	-0.040 (-0.33)	0.031 (1.48)	0.047* (1.71)	0.023 (0.73)	0.002 (0.11)	0.078*** (3.38)
<i>STDRET_CH</i>	-0.271 (-0.90)	0.000 (0.93)	0.019 (0.47)	0.000** (2.11)	0.032* (1.76)	0.000* (1.65)
<i>TIME1</i>	0.001 (0.10)	0.001 (0.11)	-0.013 (-0.58)	0.001 (0.29)	0.002 (0.44)	0.001 (0.16)
<i>TIME2</i>	-0.227 (-1.61)	0.1064 (0.54)	-0.723 (-1.29)	-0.197 (-1.57)	0.0306 (0.23)	-0.054 (-0.58)
Year fixed effect	控制	控制	控制	控制	控制	控制
Firm fixed effect	控制	控制	控制	控制	控制	控制
Chow-test	0.06		0.01		1.24	
P-value	0.8088		0.9201		0.2662	
Observations	3434	1646	621	4459	2444	2636
Adjusted R^2	0.032	0.031	0.090	0.027	0.199	0.315

所引起的后果。相比而言，在管理层权力较弱的一组（即两职分离、CEO任期短），薪酬水平没有显著变化，薪酬-业绩敏感度却随着薪酬委员会的建立得到大幅度的提升。

如表 7 和表 9 中 Column (3) 和 (5) 分别所示，在管理层权力较强的时候，薪酬委员会独立性对高管薪酬契约不能产生影响，这与我们的预期一致。相比之下，在管理层权力较弱的子样本中（如表 7 和表 9 中 Column 4 和 6 分别展示），独立性越高的企业，薪酬水平和薪酬业绩的关联程度都显著上升，支持了“最优契约论”的观点。这些结果说明，薪酬委员会的建立和独立性发挥作用有一定的前提条件，即管理层的权力需要得到适当的控制。

总体而言，分组结果表明，“最优契约论”的观点在国有企业和管理层权力较弱的上市公司中影响更大，而“管理层权力论”的影响主要集中于管理层权力较强的样本组，该结果表明，在总经理权力过大时，薪酬委员会的建立不仅不能发挥原定的效果，反而可能成为管理层单纯提高其薪酬的工具。

4、敏感性分析

4.1 改变薪酬委员会独立性的定义

前面的分析中，我们直接以独立董事在薪酬委员会中所占比例衡量薪酬委员会独立性。由于薪酬委员会人数一般较少，独立董事所占比例不可能连续变化，一些公司独立董事比例较高并不一定是其自身选择，而只是为了满足证监会关于独立董事不少于 1/2 的要求。例如，一家公司薪酬委员会人数为 3 人，为了满足这一要求，最少要有 2 人为独立董事，这样计算出来的独立董事所占比例就成为 2/3。虽然这种情况下独立董事的比例确实比 4 人薪酬委员会中 2 人为独立董事的情况高，从而可能发挥更好的作用，但也存在一种可能，即这种高比例仅仅是为了合规的要求，并不能真正发挥作用。为此，我们将上述因素考虑在内，重新定义了薪酬委员会的独立性，看表 4 的结果是否仍然成立。具体来说，我们定义了 *INDEI* 变量，当独立董事人数大于 1/2 时取 1，否则取 0，以 *INDEI* 取代 *INDE* 重新对表 4 和表 5 进行回归，结果见表 10。

从表 10 的结果可以看出，*INDEI* 对薪酬水平的影响与 *INDE* 的结果保持一致，对薪酬-业绩敏感度的影响较弱（*INDEI*OI_CH* 的系数为正，但是不再显著大于 0），但是在国有企业和管理层权力较低子样本中，该系数仍然显著大于 0。这个结果支持了我们的发现，说明上述薪酬委员会独立性提高高管薪酬以及薪酬-业绩敏感度的发现并非仅仅在特定的薪酬委员会独立性定义下成立。

4.2 采用双重差分方法

在模型 (1) 和模型 (2) 中我们采用了公司固定效应的方法控制了其他公司特征因素同时对高管薪酬和薪酬委员会建立产生影响，从而检验薪酬委员会对高管薪酬的影响。在敏感性分析部分，我们进一步采用双重差分的方法（*difference-in-difference*）来控制其他因素带来的影响。

表 10 改变薪酬委员会独立性定义的结果

	被解释变量 = <i>COMP</i> (1)	被解释变量 = <i>COMP_CH</i> (2)
Constant	6.446** (2.10)	-4.704 (-1.10)
<i>OI_CH</i>	0.012*** (5.74)	0.035 (1.30)
<i>INDE1</i>	0.062* (1.96)	0.054 (1.06)
<i>INDE1*OI_CH</i>		0.035 (1.14)
<i>STATE</i>	-0.018 (-0.35)	-0.010 (-0.16)
<i>SIZE_CH</i>	0.207*** (7.13)	0.240** (2.32)
<i>RETURN</i>	-0.000 (-1.62)	0.000 (0.25)
<i>SALES_CH</i>	0.000 (0.10)	0.001** (2.01)
<i>LEV_CH</i>	-0.003** (-2.56)	-0.509** (-2.58)
<i>MB_CH</i>	0.011** (2.08)	0.012* (1.85)
<i>GDP</i>	0.887 (0.65)	1.474 (0.79)
<i>CEO_AGE</i>	0.047 (0.40)	0.434** (2.57)
<i>HOLDING_CH</i>	0.014 (1.15)	0.033* (1.70)
<i>STDROA_CH</i>	0.000*** (3.13)	0.000** (2.35)
<i>STDRET_CH</i>	0.003 (1.30)	0.001 (0.21)
<i>TIME1</i>	0.168*** (3.64)	-0.139* (-1.75)
<i>TIME2</i>	0.315*** (5.27)	-0.012 (-0.10)
Year fixed effect	控制	控制
Firm fixed effect	控制	控制
Observations	5352	5080
Adjusted R^2	0.831	0.028

具体而言，对每一年的样本公司，我们选取那些之前没有设立薪酬委员会的样本，并且删去那些在下一年新设立薪酬委员会的样本，对于剩下的公司，选择其前两年、当年和后一年一共四年的数据作为该年度的样本公司，然后把各年的样本公司合并，成为我们的研究样本。由于需要前两年的数据，而且我们的高管薪酬数据从 2001 年开始，能够计算高管薪酬变化的第一个年度是 2002 年，所以这个样本的起始年度是 2004 年；由于需要当年和下一年的数据，我们的数据截止到 2009 年，所以这个样本的截止年度是 2008 年。

在这个样本中的所有观察值在其有数据的四个年度中薪酬委员会的设立情况只有 0、0、1、1 和 0、0、0、0 两种情况。通过对比这两组公司薪酬委员会设立的作用，可以排除其他因素对薪酬委员会和高管薪酬的共同影响。具体来说，我们定义了两个哑变量：*AFTER* 和 *CHANGE*。对于每个观察值来说，*AFTER* 变量在其后面两个年度取 1，否则取 0。如果该样本在第三个年度设立了薪酬委员会，则 *CHANGE* 变量取 1，否则取 0。

针对薪酬水平模型（1）我们在回归中加入 *AFTER* 变量和 *CHANGE* 变量外，还加入了两者的交乘项，如果交乘项为正，则说明薪酬委员会的建立可以有效地提高薪酬水平。针对薪酬-业绩敏感度模型（2），我们分别加入了 *AFTER*、*CHANGE* 和 *OI_CH* 三个变量两两交乘和三个变量的交乘项。如果这三个变量的交乘项显著为正，就表明在控制了其他因素对后两个年度与前两个年度高管薪酬-业绩敏感度的影响（*AFTER*OI_CH*）之后，薪酬委员会的设立对高管薪酬-业绩敏感度的影响仍然显著为正。采用双重差分法进行检验的结果见表 11。结果与之前的发现保持一致，进一步支持了薪酬委员会制度的影响。

4.3 采用其他业绩变动指标进行薪酬-业绩敏感度回归

在模型 2 的检验中，上市公司业绩变化采用经营利润的变化值衡量（*OI_CH*）来衡量。为了避免本文的结论即薪酬委员会制度对薪酬-业绩敏感度的作用受到特定业绩变动指标的影响，我们参考审稿人建议采用了总资产收益率的变化（*ROA_CH*）作为业绩变动的衡量变量，¹⁰ 替换模型 2 中的 *OI_CH* 进行了敏感性测试。结果在表 12 中汇报。结果显示，*COMT* 和 *ROA_CH* 的交叉项系数显著为正，表明薪酬委员会的成立（*SETUP*）及其独立性（*INDE*）均能够显著提高薪酬-业绩敏感度。

五、 结论

本文分析了薪酬委员会制度对我国上市公司高管薪酬的影响。我们的研究发现，引入薪酬委员会制度后高管薪酬的水平以及薪酬-业绩敏感度均得到显著提升。进一步，我们还发现薪酬委员会制度对于薪酬水平和薪酬-业绩敏感度的提升主要存

¹⁰ 此外，我们还采用超额市场收益率（*AB_RET*）作为业绩变动的替代指标进行了敏感性测试，结果一致。

表 11 采用双重差分法的结果

	被解释变量 = <i>COMP</i>	被解释变量 = <i>COMP_CH</i>
Constant	-0.962*** (-2.83)	-2.924* (-1.77)
<i>OI_CH</i>	0.024*** (17.76)	0.000 (0.00)
<i>CHANGE</i>	0.033*** (3.39)	-0.044** (-2.22)
<i>AFTER</i>	0.047*** (2.90)	-0.006 (-0.21)
<i>STATE</i>	-0.105*** (-6.32)	-0.060 (-0.71)
<i>CHANGE*AFTER</i>	0.051*** (2.62)	0.084** (2.08)
<i>CHANGE*OI_CH</i>		-0.008 (-0.39)
<i>AFTER*OI_CH</i>		-0.023 (-0.77)
<i>CHANGE*AFTER*OI_CH</i>		0.077* (1.75)
<i>SIZE_CH</i>	0.320*** (37.39)	0.253*** (2.96)
<i>LEV_CH</i>	-0.001 (-1.45)	-0.410** (-2.57)
<i>RETURN</i>	-0.000*** (-2.97)	0.001* (1.77)
<i>SALES_CH</i>	-0.000 (-0.61)	0.001 (1.16)
<i>MB_CH</i>	0.027*** (6.39)	0.006 (1.04)
<i>GDP</i>	2.558*** (19.72)	1.024 (1.38)
<i>CEO_AGE</i>	0.227*** (4.36)	0.231 (1.63)
<i>HOLDING_CH</i>	-0.027*** (-4.16)	0.051*** (3.88)
<i>STDROA_CH</i>	-0.000*** (-37.66)	0.000*** (6.80)
<i>STDRET_CH</i>	0.011*** (10.08)	0.002 (0.65)
Year fixed effect	控制	控制
Firm fixed effect	控制	控制
Observations	7731	7566
Adjusted R^2	0.834	0.144

表 12 采用总资产收益率变化作为业绩变动的薪酬-业绩敏感度回归结果

	被解释变量 = <i>COMP_CH</i>	
	<i>COMT = SETUP</i>	<i>COMT = INDE</i>
	(1)	(2)
Constant	-2.209*	-4.972
	(-1.68)	(-1.15)
<i>ROA_CH</i>	0.058	-0.541
	(0.48)	(-0.39)
<i>COMT</i>	0.028*	0.097
	(1.82)	(0.94)
<i>STATE</i>	0.033	0.013
	(1.53)	(0.20)
<i>COMT*ROA_CH</i>	1.111***	4.233*
	(6.90)	(1.87)
<i>SIZE_CH</i>	0.329***	0.321***
	(10.13)	(3.13)
<i>LEV_CH</i>	-0.276***	-0.519**
	(-4.38)	(-2.52)
<i>RET_CH</i>	0.000***	0.000
	(3.47)	(0.31)
<i>SALE_CH</i>	0.001***	0.001*
	(5.75)	(1.90)
<i>MB_CH</i>	0.007***	0.011*
	(3.76)	(1.71)
<i>GDP</i>	0.772	1.556
	(1.32)	(0.82)
<i>CEO_AGE</i>	0.161***	0.450***
	(3.21)	(2.66)
<i>HOLDING_CH</i>	0.029***	0.034*
	(3.40)	(1.72)
<i>STDROA_CH</i>	0.000***	0.000***
	(4.74)	(4.30)
<i>STDRET_CH</i>	0.003**	0.001
	(2.28)	(0.19)
<i>TIME1</i>	-0.066**	-0.140*
	(-2.01)	(-1.76)
<i>TIME2</i>	0.099***	-0.004
	(4.46)	(-0.04)
Year fixed effect	控制	控制
Firm fixed effect	控制	控制
Observations	7720	5079
Adjusted R^2	0.441	0.033

在于国有企业，支持了“最优契约论”的观点。与此同时，根据管理层权力大小划分后，在管理层权力较高的企业，薪酬委员会的建立和提高高管薪酬的同时不能相应地提高薪酬-业绩敏感度，支持了“管理层权力论”的论点。

我们的结果表明，总体而言薪酬委员会制度的引入对于帮助我国上市公司特别是国有企业建立更加有效的高管薪酬体系起到了明显的推动作用，但是当管理层权力过高的时候会失去其本身的效果，因此加强综合公司治理降低管理层权力是保证薪酬委员会制度有效实施的基本措施。

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The Effect of Compensation Committee on CEO Compensation Contracts: Evidence from China¹

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Abstract

Since 2002, the China Securities Regulatory Commission (CSRC) has required companies listed in China to set up compensation committees. In response to this requirement, this paper examines the relationship between CEO compensation and the establishment and independence of such committees. Our results show that the existence of compensation committees (and their greater independence) can improve both the level of pay and the pay-performance sensitivity of CEO compensation in SOEs, supporting the optimal contracting argument. In contrast, when managerial power is stronger than that of the compensation committee, pay increases but not the pay-performance sensitivity, with the committee's independence having no significant impact on compensation contracts. These findings are in line with the managerial power argument. Our results indicate that the CSRC's requirement that listed companies form independent compensation committees is effective under certain conditions.

Keywords: Compensation Committee, CEO Compensation, Pay-Performance Sensitivity, Corporate Governance

CLC Code: F230

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I. Introduction

During the period from 2001 to 2002, the China Securities Regulatory Commission (CSRC) promulgated the *Guiding Opinions on Establishment of Independent Director Systems by Listed Companies* and the *Code of Corporate Governance for Listed Companies in China*. These require listed companies to establish an independent director system and professional committees covering compensation, nomination, strategic decision making, and auditing. The proportion of independent directors on a compensation committee must be 50 percent or more. However, no specific time limit was placed on the establishment of the professional committee system.

Since 2007, the CSRC has demanded that listed companies fully implement all corporate governance requirements and produce self-inspection reports. Companies must now disclose their *Summary Report on the Performance of the Audit Committee and the Compensation Committee Subordinate to the Board of Directors* in their annual reports. Therefore, many listed companies have established compensation and other professional committees and implemented special self-inspection procedures as part of their corporate governance. Nevertheless, in the absence of mandatory regulations imposing a time limit for establishing an independent director system and compensation committee, a small minority of listed companies have not yet implemented these requirements, although they have fulfilled their disclosure obligations. It is clear that while the majority of listed companies in China have established professional committee systems over the last decade, to some extent this has been the result of exogenous mandatory requirements.

The regulatory authorities require listed companies to establish a committee responsible for determining management compensation. In principle, these committees should be able to help listed companies establish an effective executive compensation system. Accordingly, it is of interest to investigate whether the establishment and refinement of this system has accomplished its initial purpose. As one of the core elements of corporate governance, the effect of establishing a board of directors, and in particular of setting up professional subcommittees, has received special attention. Nonetheless, little research so far has been devoted to the effects of compensation committees specifically, because of the relative lack of implementation of the professional committee system by boards of directors.

In this paper, using data from the decade (2001-2009) since the introduction of this system in China, we examine how the establishment of compensation committees has affected the remuneration of Chief Executive Officers (CEOs) in A-share listed companies. Our results show that the establishment and independence of such committees has had a significantly positive impact on executive compensation. The increase in pay among listed companies in China may either be down to the marketisation

of compensation and the enhanced effectiveness of contracts (known as the “optimal contract perspective”) or the expansion of executive power (the “management power theory”). Hence, this paper also investigates the impact of compensation committees on pay-performance sensitivity in order to distinguish between these theoretical perspectives. The results show that the establishment and independence of compensation committees can significantly promote pay-performance sensitivity. The empirical results for the sample as a whole support the explanation based on optimal contracting theory.

On the basis of these findings, we further separate the sample according to the ownership (state-owned or private) of the listed companies and the degree of management power (measured by CEO duality and tenure). The compensation of CEOs of state-owned enterprises (SOEs) is subject to monitoring by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and related government departments. For example, since 2002, the government has required that the CEO compensation of a state-owned listed company should not be more than 12 times the average wage of the company’s workers. Typically, this has resulted in a low level of CEO compensation and a difficulty in recruiting top talent to SOEs. These policies are not conducive to the development of listed companies. Combined with the specific institutional context of China, and in accordance with the optimal contracting theory argument, it may be expected that compensation levels and pay-performance sensitivity in the SOE subsample will be enhanced by the establishment and independence of compensation committees. In contrast, the compensation levels of private enterprises are not subject to the same constraints, so the effect of such committees on CEO compensation will mainly manifest itself in enhanced pay-performance sensitivity.

In terms of the classification of the sample according to management power, it is expected that in companies where this is strong, the establishment of a compensation committee will increase compensation levels but not pay-performance sensitivity. In contrast, in firms where management power is weaker, there will be a significant improvement in the correlation between compensation and performance, such that the interests of executives and shareholders become more consistent. The empirical results support this proposition. Overall, the optimal contracting argument provides a good explanation for CEO compensation in SOEs, whereas the management power argument applies primarily to companies with more powerful executives. Hence, it is critical for those companies to strengthen their governance mechanisms and weaken the power of their general managers to secure effective compensation contracts for themselves.

Finally, in our sensitivity tests, we use different methods to measure the independence of compensation committees and to control for other factors that may affect CEO compensation using a difference-in-difference (DID) model. Our results remain

unchanged. Consequently, our study shows that compensation committees can improve the efficiency of the CEO compensation of listed companies. In summary, we demonstrate that the compensation committee system can play a positive role in encouraging China's listed companies to set up effective compensation systems for CEOs.

The remainder of this paper is organised as follows. Section II summarises the relevant domestic and international literature; Section III presents the hypotheses; Section IV describes the study design, variable selection, and study samples; Section V presents the empirical results; and Section VI sets out our conclusions.

II. Literature Review and Hypothesis Development

There are two main arguments to explain CEO compensation; the optimal contracting and management power theories. Specifically, the optimal contracting theory suggests that CEO compensation can reduce agency costs, such that higher compensation can lead to better performance. In contrast, the management power theory argues that CEO compensation is a method of rent-seeking for management (Bebchuk and Fried, 2003). Correspondingly, Dalton and Kesner (1987) find no significant relationship between management shareholding and performance. Jensen and Murphy (1990) demonstrate that although there is a positive correlation between CEO compensation and corporate performance, such pay-performance sensitivity is generally very low.

The management power theory suggests that to achieve optimal compensation contracts, firms should establish independent boards of directors; sound product, management, and capital market mechanisms; and effective methods of shareholder litigation. However, these conditions are often not fully satisfied in real life. Jensen (1993) argues that general managers can affect the nomination of new directors, thereby influencing the independence of the board and making them less effective in supervising management. Correspondingly, Lambert *et al.* (1993) find that CEOs secure higher compensation when they have appointed a greater proportion of the members of the board of directors. Core *et al.* (1999) and Cyert *et al.* (2002) find that CEOs obtain more compensation when they are also the chair of the company, and when general managers participate in the nomination of new directors; Grinstein and Hribar (2004) find that CEOs receive higher bonuses after mergers and acquisitions under the same conditions. Holderness and Sheehan (1988) show that managers who are also major shareholders in the company receive more compensation than other executives. Lambert *et al.* (1993) demonstrate that the CEO receives lower compensation when the board of directors includes an executive that holds at least five percent of the shares and is not the general

manager. In addition, Hallock (1997) finds that when two companies have overlapping boards of directors, the compensation of both CEOs is higher.

The question which arises is then how best to solve these problems. Some academics believe that outside directors can play an important role. Fama (1980) and Fama and Jensen (1983) argue that decision making about CEO compensation should be the responsibility of outside directors. Allen (1981) and Core *et al.* (1999) both find a positive correlation between CEO compensation and the proportion of affiliated directors on the board. Others propose a number of alternative solutions. For instance, John and Senbet (2003) recommend that shareholders vote to determine compensation arrangements to avoid the influence of directors' prejudices. Spatt (2006) argues that providing incentivised compensation to board members may motivate them to participate more effectively in the supervision of management, thus guaranteeing more efficient compensation packages.

In China, studies of the relationship between the structure of the board of directors and levels of CEO compensation have obtained mixed results. Chen and Liu (2003) find that with respect to the duality of CEOs, their annual salary, shareholding percentage, and performance demonstrate no significant correlation. Du and Zhai (2005) show a positive correlation between the proportion of independent directors and CEO compensation, but a negative relationship between the latter and CEO duality. Fang (2009) finds that enhancing the independence of the board of directors reduces compensation viscosity, which to some extent indicates the effectiveness of the independent director system. However, Huang and Xi (2009) show that companies with a greater proportion of independent directors have higher CEO compensation but lower compensation sensitivity.

These studies focus on the effect of the independence of the board of directors on CEO compensation contracts. Although Li, Liu, and Chen (2010) find that in the presence of a compensation committee, decisions about CEO compensation are made by reference to the standards of a firm's international counterparts, their research treats compensation committees as a control variable only. Moreover, the principal goal of this study is to ascertain the effect of compensation committees on the determination of pay levels and to identify the most important factors in that decision.

In 2001, the CSRC promulgated the *Guiding Opinions on Establishment of Independent Director Systems by Listed Companies* and incorporated the independent director system into the requirements for listed companies for the first time. In 2002, the CSRC went on to release the *Code of Corporate Governance for Listed Companies in China*, which sets out more systematic provisions governing the structure of the board of directors and also provides guidance on the establishment of special committees. The

Code of Corporate Governance for Listed Companies in China clearly states that “the main responsibilities of the Compensation and Appraisal Committee shall include: (1) developing the evaluation standards for directors, supervisors, and senior executives, and conducting evaluations; and (2) formulating and reviewing the compensation policies and programmes for directors, supervisors, and senior executives”. Meanwhile, the CSRC put forward some propositions about the independence of compensation committees and required independent directors to be put in place to provide oversight and guide decision making. The initial intention behind the establishment of the compensation committee system by the CSRC was to reduce the adverse effects of management power on CEO remuneration and to encourage listed companies to establish more effective compensation contracts. Therefore, the purpose of this paper is to investigate the effect of these committees in terms of compensation level and pay-performance sensitivity.

The findings of research carried out in Western contexts indicate that if the establishment (and independence) of compensation committees can lead to the marketisation of CEO compensation, this will be reflected in decreased salaries and greater pay-performance sensitivity (Chhaochharia and Grinstein, 2009). However, although the compensation of CEOs of listed companies in China has generally increased over the past decade, it clearly remains very significantly lower than in the United States. Despite the fact that a talent market has gradually formed in recent years for executives of non-SOEs, and that CEO compensation in these companies is increasingly determined and controlled at a reasonable and balanced level by market mechanisms, the decision-making mechanism for management pay in SOEs is very special and complex and incorporates a large number of government-controlled factors that take into account both the contribution of CEOs and the consequent social impact. Since social impact is the determining factor, the compensation of CEOs of SOEs is often lower than the market level. For instance, since 2002, the regulatory authorities have required that the compensation paid to the CEO of a SOE should not be more than 12 times its workers’ average wage. This means that CEOs in these companies receive relatively low compensation, making it difficult to recruit first-class talent and having a detrimental effect on the firms’ development.

In this context, the optimal contracting theory anticipates that the establishment of compensation committees (and their independence) can enhance the level of CEO compensation for listed companies in China. The management power theory also anticipates such a consequence, but proposes that the increase in compensation is caused by stronger management power; in other words, executives can control the committee, providing an opportunity to enhance their own compensation. In addition, according to the management power theory, there is no direct relationship between the level of

independence of the committee and the level of CEO compensation. In summary, in this paper, it is expected that the establishment of compensation committees (and their independence) will be positively correlated with the level of CEO compensation. The empirical results will also enable us to determine which of these competing theoretical perspectives is more consistent with the current situation of listed companies in China.

Hypothesis 1: The establishment of compensation committees and their independence are positively correlated with CEO compensation.

The market-oriented compensation system is manifested in compensation levels and, more importantly, in pay-performance sensitivity. Accordingly, in this paper we analyse how the establishment of compensation committees (and their independence) affects CEO pay-performance sensitivity, in order to distinguish between the optimal contracting and management power theories. According to the former, the compensation committee system is effective, so its establishment and independence should significantly increase CEO pay-performance sensitivity. However, if the effect of management power is a principal factor, the committee may become a mere formality, and its members will still be subject to the control or influence of management. Accordingly, management power will become a tool for executives to increase their compensation, leaving the committee unable to effectively increase pay-performance sensitivity. The distinction between those two theories can be determined empirically. Based on the above analysis, Hypothesis 2 is proposed as follows:

Hypothesis 2: The establishment of compensation committees and their independence are positively correlated with CEO pay-performance sensitivity.

III. Sample and Descriptive Statistics

3.1 Sample

The research sample consists of all A-share companies listed on the main boards of the Shanghai and Shenzhen Stock Exchanges from 2001 to 2009, with 2001 being the year the CSRC first required listed companies in China to convene compensation committees. The data are primarily taken from the China Stock Market and Accounting Research (CSMAR) and WIND databases. We also manually ingather original data from corporate annual reports to supplement missing data from the databases. We then remove observations with incomplete data, including 915 specially treated and delisted firm-year observations, 183 observations from the financial industry, 1,532 observations with

missing CEO compensation data,⁴ and 486 observations in which the general managers receive no compensation from the listed companies.⁵ The specific sample selection process is set out in Table 1. A total of 9,248 firm-year observations are finally obtained.

Table 1 Sample Selection Process

	Sample Size
The sample of all mainboard listed companies during 2002-2009	12,402
Minus: sample of ST and delisting companies	915
Minus: sample from the financial sector	183
Minus: sample missing CEO compensation data	1,532
Minus: sample that the general manager is not salaried from the company	486
Sample size	9,286

In this paper, the natural logarithm of the general manager's cash compensation as disclosed in the corporate annual reports is used to measure the level of CEO compensation.⁶ Because listed companies did not disclose the compensation paid to individuals before 2005, the values for the samples before 2005 are taken as the natural logarithm of the result of dividing the total compensation of the Top Three senior executives as disclosed by the listed companies by three. Data after 2005 are manually

⁴ Samples with missing data for CEO compensation are primarily found in the period 2001 to 2003. The missing data are a result of the weak execution of the CSRC disclosure requirements during the first few years after the introduction of the policy. In terms of indicators such as enterprise size, industry distribution, performance, and financial leverage, the companies with missing compensation data do not differ significantly from the other companies in our sample. In addition, the results presented here are still valid after all data from 2001 to 2003 have been removed.

⁵ The authors would like to thank the reviewers for their suggestion that we further investigate the features of CEOs who do not receive compensation from listed companies. These CEOs are paid by affiliated parties (dominated by the controlling shareholders) of the listed companies, and half of them also concurrently serve as board chairmen for these firms. Therefore, we believe that these executives are typically the agents of the controlling shareholders rather than executives of the listed companies. Because the principal goal of this paper is to determine the effect of the compensation committee system of listed companies on their executives' compensation, we believe that the data used will yield the most robust results.

⁶ The benefits for a CEO include cash compensation, equity, stock options, and perks; however, it is difficult to measure the latter, which are not determined by the compensation committee, so we do not address them in this paper. Although the granting of equity and stock options is determined by the compensation committee, the universality and scale of such benefits in China are currently relatively low. The stock ownership incentive system officially began on 1 January 2006. Up to 31 December 2008, a total of 133 companies had proposed draft stock ownership incentive plans, but many have never been implemented. Furthermore, the shareholding proportion of management accounts for less than two percent of total corporate shares (Xiao and Chen, 2013). Therefore, this paper discusses the effect of the compensation committee on cash compensation only.

extracted from the corporate annual reports.⁷ The change in CEO compensation applied in the calculation of pay-performance sensitivity is obtained by deducting the previous year's compensation from the current year, on the basis of the above-mentioned variables.

In this paper, the two variables related to the compensation committee (*COMT*) are defined as follows: (1) whether the company has set up a compensation committee (*SETUP*), which equals 1 if the firm has done so, and 0 otherwise; and (2) the independence of the compensation committee (*INDE*), which is measured by the proportion of independent board members on the committee and is set as missing for the firms in the sample that did not establish one at all. Additionally, we select a range of control variables that may have an impact on CEO compensation, including the natural logarithm of total assets, to represent firm size; the return on total assets and stock excess returns, to represent profitability; the revenue growth rate, to represent growth; the market-to-book ratio, to represent investment opportunities; the serving time of general managers, to control for the natural growth of compensation; and industry and year dummy variables. With regard to the extreme-value problem in variables, we use the Winsorisation treatment (excluding the top and bottom one percent of values). The specific variables and definitions are reported in Table 2.

3.2 Sample Descriptive Statistics

Table 3 describes the general characteristics of the sample. Panel A presents statistics for the companies' basic features. These indicate that the scale of the sample companies increases slowly during the study period; return on assets (*ROA*) is relatively stable over the years; the average sales growth rate and market-to-book ratio fluctuate considerably; and the proportion of SOEs in the sample remains at a level slightly above 65 percent but decreases slightly towards the end of the sample period.

In Table 3, Panel B describes the establishment of compensation committees and the statistical characteristics of the relevant boards of directors. From 2001 to 2009, the number of companies establishing compensation committees increases each year. Specifically, only one company established a committee in 2001, but the proportion gradually increased to 99.59 percent in 2009. In 2007, this figure increased significantly because in that year, the CSRC required listed companies to engage in a comprehensive package of corporate governance activities, and so many companies seized the opportunity to establish specialised committees. Furthermore, in mid-2007, the CSRC also enacted policies that required listed companies to disclose the work of their compensation and audit committees in their 2007 annual reports. In addition to requiring

⁷ We also use the mean of the Top Three executive compensation after 2005 instead of the manual data and obtain consistent results.

Table 2 Variable Definitions

Variable	Variable Definitions
<i>COMP</i>	The natural logarithm of compensation received from the listed companies by the general manager, manually extracted from the corporate annual reports from 2005; before 2005, using the compensation sum of Top 3 senior executives disclosed in the CSMAR and then divided by 3.
<i>COMP_CH</i>	The change in compensation received from the listed companies by the general manager, calculated by subtracting the compensation of the previous year from that of the current year. CEO compensation is manually extracted from corporate annual reports from 2005; before 2005, using the compensation sum of Top 3 senior executives disclosed in the CSMAR and then divided by 3.
<i>COMT: SETUP</i>	A dummy variable indicating whether a compensation committee is established, and takes the value of 1 if so, and 0 otherwise.
<i>COMT: INDE</i>	Independence of the compensation committee, namely the total number of independent directors / committee members.
<i>COMT: INDEI</i>	Independence of the compensation committee; if the number of independent directors in the committee exceeds 1/2, it shall be 1, and 0 otherwise.
<i>ROA</i>	The return on assets = net profit / average total assets.
<i>OI_CH</i>	Change in operating profit.
<i>STATE</i>	Dummy variable for company ownership, which takes the value of 1 for SOEs, and 0 for non-state-owned enterprises.
<i>SIZE</i>	The natural logarithm of total assets.
<i>SIZE_CH</i>	Change in the natural logarithm of total assets, which is calculated by subtracting the <i>SIZE</i> of the previous year from that of the current year.
<i>RETURN</i>	Stock abnormal return.
<i>RETURN_CH</i>	Change in stock abnormal return, which is calculated by subtracting the <i>RETURN</i> of the previous year from that of the current year.
<i>SALES_CH</i>	Sales revenue growth rate of the current year compared with that of the previous year over the same period.
<i>LEV</i>	Leverage ratio = liabilities / total assets*100
<i>LEV_CH</i>	Change in leverage ratio, which is calculated by subtracting the leverage ratio of the previous year from that of the current year.
<i>MB</i>	Market-to-book ratio = price per share / net assets per share.
<i>MB_CH</i>	Change in market-to-book ratio, which is calculated by subtracting the market-to-book ratio of the previous year from that of the current year.
<i>GDP</i>	The natural logarithm of GDP of the province where the company is registered.

<i>CEO_AGE</i>	The natural logarithm of the general manager's age.
<i>TENURE</i>	The tenure of the general manager currently.
<i>HOLDING</i>	The shareholding ratio of the general manager in capital stocks.
<i>HOLDING_CH</i>	Change in the shareholding ratio of the general manager, which is calculated by subtracting the shareholding ratio of the general manager at the end of the year from that of the previous year.
<i>STDROA</i>	The standard deviation in <i>ROA</i> calculated according to the <i>ROA</i> of the past 5 years.
<i>STDROA_CH</i>	The change in standard deviation by subtracting the standard deviation in <i>ROA</i> of the current year from that of the previous year, while the standard deviation in <i>ROA</i> should be calculated according to the <i>ROA</i> over the past 5 years.
<i>STDRET</i>	The standard deviation in stock abnormal return calculated by the monthly stock abnormal return over the past 5 years.
<i>STDRET_CH</i>	The change in standard deviation by subtracting the standard deviation in stock abnormal return of the current year from that of the previous year, while the standard deviation in stock abnormal return should be calculated according to the monthly stock abnormal return over the past 5 years.
<i>TIME1</i>	A dummy variable; if the year is 2005 and later, it takes the value of 1, and 0 otherwise.
<i>TIME2</i>	A dummy variable; if the year is 2007 and later, it takes the value of 1, and 0 otherwise.
<i>AFTER</i>	A dummy variable, which takes the value of 1 for the year in which a compensation committee is established, and 0 otherwise.
<i>CHANGE</i>	A dummy variable; if the year is after the establishment of a compensation committee, it takes the value of 1, and 0 otherwise.

a compensation committee to be set up, the CSRC also prescribed specific requirements for its composition. Specifically, it mandated that at least half of the committee members must be independent directors. The descriptive statistics indicate that only a few of the early committees met these requirements, but the proportion of those which complied subsequently increased, reaching 94.94 percent in 2009. The independence of the compensation committee also increased to 64.34 percent, which is consistent with this observation.

In Table 3, Panel C sets out descriptive statistics for CEO compensation and its features. The mean and median of general managers' compensation increases continuously at a stable rate; their average age is almost stable; the proportion of female general managers increases slightly over the study period, but the overall level remains below five percent; and the average tenure of general managers increases from two to four years, indicating increased stability in such posts. However, the average

Table 3 Descriptive Statistics

	Overall	2001	2002	2003	2004	2005	2006	2007	2008	2009
Panel A: The Comprehensive Descriptive Statistics of the Sample										
Sample Size	9286	257	862	963	1134	1200	1216	1213	1226	1225
Average Size (Company Size = Log (Total Assets))	21.37	20.90	21.10	21.17	21.23	21.25	21.32	21.51	21.64	21.80
Return on Average Assets (ROAA)	2.25	2.33	1.97	2.27	2.01	0.96	2.15	3.61	2.00	2.66
Average Sales Growth (%)	16.59	15.25	18.99	20.71	24.52	12.42	15.74	23.41	11.77	7.60
Average Stock Abnormal Return (%)	39.28	-20.88	-19.80	-11.19	-14.29	-13.66	88.44	176.73	-55.63	139.17
Average Leverage Ratio (%)	51.75	45.74	47.20	49.31	51.26	53.02	53.88	52.96	53.14	53.68
Average Market-to-Book Ratio	3.31	4.72	3.61	2.86	2.26	1.86	2.63	5.49	2.36	4.49
Proportion of State-Owned Listed Companies (%)	67.02	68.09	69.49	69.89	68.87	68.08	65.30	64.06	65.66	65.96
Average Standard Deviation of ROA	2.75		0.05	0.05	0.06	0.06	0.85	1.14	8.67	9.47
Average Standard Deviation of Stock Abnormal Return	3.04		5.81	4.68	4.81	3.77	2.52	1.76	1.39	0.90
Panel B: The Descriptive Statistics of the Establishment of the Compensation Committee and the Relevant Structure of the Board of Directors										
The number of companies that have set up the Compensation Committee	5364	1	95	259	421	554	650	1000	1164	1220
The proportion of samples that have set up the Compensation Committee in all listed companies (%)	56.44	0.39	11.02	26.90	37.13	46.17	53.45	82.44	94.94	99.59
Independence of the Compensation Committee (%)	33.92	0	5.04	14.44	20.59	27.07	31.86	47.86	59.29	64.34
The proportion of the Board of Directors that the ratio of independent directors accounts for 1/2 in the Compensation Committee (%)	49.94	0.00	7.31	21.08	30.07	39.42	47.04	70.57	87.68	94.94
Panel C: CEO Compensation and Characterization										
Average CEO Compensation (RMB 10,000)	25.63	8.29	13.94	16.74	19.48	22.95	25.90	32.16	35.91	39.53
Median CEO Compensation (RMB 10,000)	19.38	6.25	10.00	12.67	15.13	18.00	21.00	26.90	30.75	34.58
CEO Compensation Variance	439.74	45.22	150.18	190.33	239.59	317.33	354.57	499.26	526.67	576.13
Average Age (years)	46.01	44.17	45.12	45.35	45.42	45.74	46.01	46.36	46.86	47.40
Ratio of Females (%)	4.27	3.11	4.06	3.74	3.97	4.42	4.03	4.53	4.73	4.90
The proportion that has work experience in the same industry (%)	73.03	70.82	66.71	70.09	75.93	75.08	74.34	74.69	72.76	73.14
Average Tenure (years)	3.63	2.41	2.69	3.02	3.35	3.50	3.80	3.97	4.26	4.47
Average Shareholding Ratio (%)	0.13	0.00	0.02	0.04	0.13	0.16	0.14	0.16	0.18	0.19

shareholding ratio of general managers is only 0.13 percent after a significant increase in 2004; thus, compared with Western markets, cash compensation is still a major component of CEO remuneration in China.

IV. Empirical Tests

4.1 Effect of Compensation Committees on CEO Compensation Level

To test Hypothesis 1, namely the effect of the establishment of compensation committees and their independence on CEO compensation levels, regression model (1) is established as follows:

$$COMP = \alpha_0 + \alpha_1 * COMT + \alpha_2 * CONTROLS + \varepsilon \quad (1)$$

The dependent variable is the CEO compensation level (*COMP*), specifically, the natural logarithm of the compensation received by the general manager; the explanatory variable, *COMT*, corresponds to the compensation committee variable, which is measured by *SETUP* and *INDE*.

To control for the effect of other factors, we include the following variables in the regression. Jensen and Meckling (1976) show that it is more difficult for large companies to manage themselves, so we adopt company size (*SIZE*) as a control variable. Because the greater profitability of a company is correlated with higher CEO compensation, *ROA* and market return (*RETURN*) are also used as controls. Greater operating profit growth (*SALES_CH*) indicates that a company is growing faster, and the CEO compensation should generally be higher for these firms. Myers *et al.* (1977) and Smith and Watts (1992) find that companies with more growth opportunities provide significantly more equity-related compensation incentives to management; consequently, the market-to-book ratio (*MB*) is selected as the company growth index and used as a control. From the risk perspective, Beatty and Zajac (1994) demonstrate that an increase in risk for a company reduces the possibility of using stock options because of the correlation between the human capital risk of management and the company's performance. Accordingly, the standard deviations of *ROA* and *RETURN* (*STDROA* and *STDRET*, respectively) are adopted as the risk index to be controlled for in the model. In terms of capital structure, John and John (1993) find that companies reduce management compensation when leverage is increased, to avoid high-risk investment by management and the transfer of creditors' wealth to shareholders; hence, we control for a company's leverage factor (*LEV*). In addition, we control for the natural logarithm of the gross domestic product (*GDP*) of the province in which the company is located, the natural logarithm of the

general manager's age (*CEO_AGE*), the shareholding of the general manager (*HOLDING*), and his/her tenure (*TENURE*).

In addition to the CSRC regulations, with their attempt to improve corporate governance, other significant events over the period 2001-2009 may also have had an impact on CEO compensation contracts. Since 2005, the remuneration disclosure requirements have been made more transparent, and investors pay more attention to this information. The resulting external pressure may therefore have increased the marketisation and effectiveness of compensation contracts. In 2007, in the wake of enhanced corporate governance activities and the CSRC's specific requirements for the independence of compensation committees, the proportion of listed companies that had established such committees, and the proportion of independent directors serving on them, both increased substantially. The new corporate accounting standard system came into effect in the same year. If the quality of accounting information has improved, the CEO pay-performance sensitivity will increase accordingly, even without the introduction of the corporate governance requirements. To this end, we also control for two period dummy variables, *TIME1* and *TIME2*, which take the value of 1 after the years 2005 and 2007, respectively, and 0 otherwise.⁸

The establishment and independence of compensation committees are likely to be subject to the effect of certain firm-level characteristics which may also affect CEO compensation. Thus, research on the effect of compensation committees on CEO compensation must control for other confounding factors that are dominated by such company characteristics. Angrist and Pischke (2009) note that two methods can be used to address this, which have exactly the same effect: one is to incorporate a firm-fixed effect in the regression model, and the other is to use the DID method. Thus, we use the firm-fixed effect in model (1), and then use the DID method to perform a robustness test.

The regression results of model (1) are reported in Table 4. In the sample as a whole, the establishment of compensation committees and the enhancement of their independence are positively and significantly correlated with CEO compensation, but the significance level is less than 10 percent. For instance, *INDE* has a coefficient of 0.071 in model (1) with a t value of 2.22, thus indicating that a more independent compensation committee is associated with higher CEO compensation. The results in Table 4 are consistent with Hypothesis 1, namely that the establishment and independence of compensation committees have a significantly positive effect on CEO compensation. In particular, the effect of independence is consistent with the predictions of the management power theory.

⁸ In addition, samples before 2005, 2005-2007, and after 2007 are grouped, and the regression performed for each sample independently, as recommended by the reviewers; the results show that the data before 2005 and during 2005-2007 are consistent with the overall sample, whereas the significance for samples after 2007 is weaker.

Table 4 The Effect of the Establishment of the Compensation Commission and Its Independence on Compensation Level

	Explained Variable = <i>COMP</i>	
	<i>COMT = SETUP</i>	<i>COMT = INDE</i>
	(1)	(2)
Constant	4.594** (2.20)	6.455** (2.04)
<i>COMT</i>	0.037* (1.77)	0.118* (1.69)
<i>STATE</i>	-0.029 (-0.58)	-0.031 (-0.62)
<i>SIZE</i>	0.254*** (10.50)	0.211*** (6.74)
<i>ROA</i>	0.012*** (6.97)	0.009*** (4.46)
<i>RETURN</i>	-0.000*** (-2.79)	-0.000 (-0.78)
<i>SALES_CH</i>	0.000 (1.05)	0.000 (0.80)
<i>LEV</i>	-0.004*** (-4.65)	-0.003*** (-2.79)
<i>MB</i>	0.019*** (3.92)	0.011* (1.82)
<i>GDP</i>	1.212 (1.35)	0.921 (0.67)
<i>CEO_AGE</i>	-0.022 (-0.26)	0.040 (0.34)
<i>HOLDING</i>	0.015 (1.42)	0.012 (1.04)
<i>TENURE</i>	0.012*** (2.97)	0.017*** (3.23)
<i>STDROA</i>	-0.000*** (-11.51)	0.000 (1.12)
<i>STDRET</i>	0.004** (2.42)	0.004 (1.63)
<i>TIME1</i>	0.564*** (9.21)	0.132*** (2.70)
<i>TIME2</i>	0.232*** (5.58)	0.154*** (4.80)
Year fixed effect	Control	Control
Firm fixed effect	Control	Control
Observations	9024	5352
Adjusted R^2	0.781	0.806

The effects of the control variables on compensation are also in line with our expectations. For example, *SIZE*, *ROA*, *MB*, and *TENURE* are all significantly and positively correlated with CEO compensation, indicating that large companies, those with strong profitability and more investment opportunities, and general managers with longer tenure are all associated with higher compensation. The coefficient of *LEV* is significantly negative, demonstrating the containment effect of creditors on CEO compensation.

4.2 The Effect of Compensation Committees on Pay-Performance Sensitivity

Next, we test Hypothesis 2 to address the effect of compensation committees on pay-performance sensitivity. Specifically, the regression equation (2) is set up as follows:

$$\begin{aligned} COMP_CH = & \alpha_0 + \alpha_1*OI_CH + \alpha_2*COMT \\ & + \alpha_3*COMT*OI_CH + \alpha_4*CONTROLS + \varepsilon \end{aligned} \quad (2)$$

The dependent variable (*COMP_CH*) is the change in CEO compensation from year *t* to year *t-1*; *OI_CH* is the change in firm performance, which is measured by the change in operating income from year *t* to year *t-1*;⁹ *COMT* corresponds to the features of the compensation committee, including setup (*SETUP*) and independence (*INDE*). *OI_CH*COMT* is the interaction term between changes in performance and the variables representing the committee characteristics. A positive coefficient for the interaction term means that the establishment of a committee increases pay-performance sensitivity, and vice versa. The principle of the selection of the control variables is consistent with that of model (1). Because the dependent variable is the change in compensation, the control variables are correspondingly set as the changes between two years (except for the corporate nature and dummy variables).

The regression results of model (2) are reported in Table 5. It can be seen that the coefficient of *OI_CH* is not significant, indicating that there is no significant correlation between changes in annual compensation and in performance for companies that have not established compensation committees. The coefficient of the cross-term for *COMT* and *OI_CH* is significantly positive (when *COMT* = *SETUP*, the coefficient is 0.061 and *t* = 2.99 and when *COMT* = *INDP*, the coefficient is 0.106 and *t* = 1.74), indicating that the establishment and independence of compensation committees significantly increases a company's pay-performance sensitivity. In accordance with the regression results in column (1), in comparison with companies that have not established compensation committees, the pay-performance sensitivity of those who have increases by 0.061.

⁹ The change in performance is measured by the change in *ROA* or abnormal return; the two terms are consistent.

Table 5 The Effect of the Establishment of the Compensation Commission and Its Independence on Pay-Performance Sensitivity

	Explained Variable = <i>COMP_CH</i>	
	<i>COMT = SETUP</i>	<i>COMT = INDE</i>
	(1)	(2)
Constant	-2.945 (-1.11)	-4.650 (-1.09)
<i>OI_CH</i>	0.007 (0.40)	-0.001 (-0.03)
<i>COMT</i>	0.005 (0.17)	0.067 (0.64)
<i>STATE</i>	0.031 (0.67)	-0.010 (-0.16)
<i>COMT*OI_CH</i>	0.061*** (2.99)	0.106* (1.74)
<i>SIZE_CH</i>	0.221*** (3.27)	0.243** (2.34)
<i>LEV_CH</i>	-0.468*** (-3.68)	-0.519*** (-2.62)
<i>RETURN</i>	0.000 (0.69)	0.000 (0.27)
<i>SALES_CH</i>	0.001*** (2.71)	0.001** (2.03)
<i>MB_CH</i>	0.009* (1.91)	0.012* (1.84)
<i>GDP</i>	0.926 (0.80)	1.445 (0.77)
<i>CEO_AGE</i>	0.294*** (2.96)	0.438*** (2.60)
<i>HOLDING_CH</i>	0.034** (2.31)	0.033* (1.72)
<i>STDROA_CH</i>	0.000*** (2.77)	0.000** (2.41)
<i>STDRET_CH</i>	0.002 (0.77)	0.001 (0.18)
<i>TIME1</i>	-0.082 (-1.20)	-0.138* (-1.75)
<i>TIME2</i>	0.079 (1.31)	-0.010 (-0.09)
Year fixed effect	Control	Control
Firm fixed effect	Control	Control
Observations	7721	5080
Adjusted R^2	0.039	0.028

In other words, in companies that have not set up such committees, the CEO compensation increases by 7 renminbi for every 1,000 renminbi increase in operating profit. In contrast, in companies that have established committees, the CEO compensation increases by 68 renminbi for every 1,000 renminbi increase in the operating profit. The results support Hypothesis 2 and are in line with the optimal contracting theory, namely that the establishment and independence of a compensation committee can increase both CEO compensation and pay-performance sensitivity, such that the CEO's benefits are more closely connected to the company's performance.

In addition, the effects of the control variables are consistent with expectations. For instance, *SIZE_CH*, *SALES_CH*, and *MB_CH* all have a significant positive effect on CEO compensation, indicating that an increase in firm size and higher growth rate are correlated with higher remuneration. Moreover, *LEV_CH* has a significant negative effect on changes in CEO compensation; that is, an increase in *LEV* decreases the compensation paid to the CEO.

4.3 Subsample Results

To further distinguish how well the optimal contracting theory and management power theory describe the effects of the compensation committee system on listed companies in China, we perform subsample tests by separating the companies according to their ownership attributes (state-owned or private) and management power (measured by CEO duality and tenure). The optimal contracting theory primarily addresses SOEs, in terms of the consideration of reasonable increases in compensation. As discussed earlier in this paper, because the compensation of CEOs of SOEs is constrained by nonmarket factors, the committee system has the objective of increasing the level of compensation available in order to attract competent managers. Therefore, it is expected that the compensation level and pay-performance sensitivity in the SOE samples will increase with the establishment and independence of compensation committees. In comparison, private enterprises are not subject to the same constraints, so the effect of the compensation committee system should manifest itself primarily as an increase in pay-performance sensitivity. An increase in compensation level in private enterprises would be more likely to be consistent with the management power theory.

Next, the listed companies are distinguished according to their management power. Specifically, the sample group is characterised by the duality of the general manager and board chair, and the sample for which the general manager's tenure is greater than the median is categorised as having more management power. We might expect that the management power theory will better describe this subgroup of the sample. Owing to the dominant position of these general managers, the establishment of a compensation

committee is more likely to conform to government policy requirements. Furthermore, the committee can even become a tool of the management. Thus, an increase in compensation level cannot improve pay-performance sensitivity in such firms. In contrast, for firms with weaker general managers, the establishment of a compensation committee is more likely to play a genuine role in enhancing pay-performance sensitivity. As mentioned in the discussion of Hypothesis 1, there can be no clear expectations about the effect of the independence of the compensation committee. Therefore, after distinguishing between firms on the basis of management power, it may be expected that the degree of independence of the committee should have no direct effect on compensation in companies with strong management. For companies with weaker management, the optimal contracting theory suggests that the independence of the committee should be positively correlated with the compensation level and pay-performance sensitivity.

Tables 6 to 9 summarise the corresponding subsample test results. Specifically, Tables 6 and 7 present the subsample tests of compensation level for model (1), and Tables 8 and 9 the tests of pay-performance sensitivity for model (2), both using *SETUP* and *INDE*, respectively, as the major explanatory variables.

The distinction between the state-owned and private company subsamples demonstrates that the establishment and independence of compensation committees can significantly improve the compensation level and pay-performance sensitivity of SOEs. As indicated in column (1) of Table 6, the coefficient of *SETUP* is 0.046 (the t value is 2.15) and the results in column (1) of Table 8 indicate that the coefficient of *SETUP*OI_CH* is significantly positive (0.054, and the t value is 2.20). This indicates that the establishment of compensation committees in SOEs can significantly improve both the compensation level and pay-performance sensitivity. In contrast, the level of CEO compensation in private enterprises is not subject to the effects of the compensation committee system. The subsample results for these firms support the viewpoint of the optimal contracting theory, indicating that the committee system can lead to more effective CEO compensation contracts for SOEs.

The results for the subsamples as distinguished by management power demonstrate that for the group with stronger management (that is, those firms in which the CEO also chairs the board and/or the CEO's tenure is above the median value), the establishment of compensation committees only improves the compensation of the CEO without affecting pay-performance sensitivity (see columns (3) and (5) of Tables 6 and 8, respectively). This suggests that when managers are powerful, the increase in remuneration cannot relieve the agency problem of management; in fact, the higher pay is actually a consequence of it. In contrast, for the subsample with weaker management (that is, firms

Table 6 The Differences of the Effect of the Compensation Committee Establishment on Compensation Level in the Sub-Sample

<u>Explained</u> <u>Variable = COMP</u>	<u>State-</u> <u>owned</u>	<u>Private</u>	<u>CEO</u> <u>Duality</u>	<u>CEO</u> <u>Separation</u>	<u>Long CEO</u> <u>Tenure</u>	<u>Short CEO</u> <u>Tenure</u>
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	5.934*** (2.78)	8.823** (2.09)	10.002 (1.13)	3.522* (1.67)	-0.260 (-0.08)	5.249** (2.12)
SETUP	0.046** (2.15)	0.044 (1.20)	0.102* (1.70)	0.015 (0.75)	0.070** (2.32)	0.012 (0.50)
STATE			-0.114 (-0.78)	-0.047 (-1.07)	-0.026 (-0.45)	-0.050 (-1.06)
SIZE	0.228*** (9.25)	0.245*** (6.01)	0.232*** (2.87)	0.251*** (10.46)	0.247*** (6.14)	0.231*** (9.07)
ROA	0.021*** (9.87)	0.006** (2.36)	0.006 (1.61)	0.014*** (8.07)	0.018*** (6.19)	0.014*** (7.77)
RETURN	-0.000*** (-3.43)	-0.000 (-1.06)	-0.000 (-0.15)	-0.000*** (-2.82)	-0.000** (-2.37)	-0.000 (-1.36)
SALES_CH	0.000 (0.72)	0.000 (0.48)	-0.000 (-0.14)	0.000 (0.77)	0.000 (0.43)	0.000 (0.40)
LEV	-0.003*** (-3.53)	-0.004*** (-2.59)	-0.005** (-2.25)	-0.004*** (-4.28)	-0.003** (-2.29)	-0.003*** (-2.78)
MB	0.025*** (3.88)	0.008 (1.16)	0.013 (1.08)	0.019*** (3.78)	0.031*** (3.91)	0.016*** (2.81)
GDP	0.901 (0.96)	-0.622 (-0.33)	-0.227 (-0.06)	1.745* (1.91)	2.876** (2.11)	1.083 (0.99)
CEO_AGE	-0.071 (-0.76)	0.028 (0.22)	-0.390 (-0.90)	-0.044 (-0.50)	0.294 (1.20)	0.012 (0.15)
HOLDING	0.032*** (3.45)	0.005 (0.53)	0.033** (1.99)	0.009 (0.79)	0.029*** (2.93)	0.026*** (2.91)
TENURE	0.017*** (4.15)	0.005 (0.52)	0.053*** (2.83)	0.014*** (3.11)		
STDROA	0.091 (0.79)	-0.000*** (-7.69)	-0.036 (-1.06)	-0.000*** (-13.80)	-0.029 (-1.44)	-0.000*** (-10.81)
STDRET	0.002 (1.21)	0.010*** (3.01)	0.003 (0.48)	0.004** (2.12)	0.005** (2.16)	0.003 (1.48)
TIME1	0.509*** (10.28)	0.555*** (4.37)	0.0976 (0.63)	0.573*** (9.15)	0.1633*** (3.25)	0.518*** (7.14)
TIME2	0.317*** (6.49)	0.350*** (4.11)	0.461 (1.25)	0.199*** (4.95)	0.674*** (4.83)	0.123*** (4.09)
Year fixed effect	Control	Control	Control	Control	Control	Control
Firm fixed effect	Control	Control	Control	Control	Control	Control
Chow-test	0.00		2.85*		3.50*	
p-value	0.9675		0.0911		0.0612	
Observations	6044	2980	1080	7944	3939	5085
Adjusted R ²	0.845	0.761	0.863	0.806	0.882	0.838

Table 7 The Differences of the Effect of Compensation Committee Independence on Compensation Level in the Sub-Sample

<u>Explained</u> <u>Variable = COMP</u>	<u>State-</u> <u>owned</u>	<u>Private</u>	<u>CEO</u> <u>Duality</u>	<u>CEO</u> <u>Separation</u>	<u>Long CEO</u> <u>Tenure</u>	<u>Short CEO</u> <u>Tenure</u>
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	6.927* (1.81)	13.088* (1.87)	3.885 (0.37)	6.286* (1.88)	-0.890 (-0.17)	12.090** (2.46)
<i>INDE</i>	0.143** (1.98)	0.083 (0.56)	-0.072 (-0.24)	0.151** (2.20)	0.029 (0.36)	0.241** (1.99)
<i>STATE</i>			-0.089 (-0.44)	-0.053 (-1.01)	-0.065 (-0.72)	-0.007 (-0.08)
<i>SIZE</i>	0.178*** (4.50)	0.188*** (3.88)	0.249 (1.62)	0.206*** (6.51)	0.182*** (3.06)	0.185*** (4.18)
<i>ROA</i>	0.017*** (6.19)	0.005* (1.70)	0.005 (0.80)	0.013*** (5.93)	0.014*** (3.84)	0.010*** (3.46)
<i>RETURN</i>	-0.000* (-1.93)	0.000 (0.19)	0.000 (0.40)	-0.000 (-1.61)	-0.000* (-1.79)	0.000 (0.26)
<i>SALES_CH</i>	-0.000 (-0.19)	0.000 (0.71)	-0.000 (-0.17)	0.000 (0.09)	0.000 (0.28)	-0.000 (-0.26)
<i>LEV</i>	-0.002 (-1.44)	-0.005** (-2.28)	-0.002 (-0.61)	-0.003*** (-2.66)	-0.002 (-0.87)	-0.004** (-2.10)
<i>MB</i>	0.018*** (2.60)	0.005 (0.54)	0.019 (1.06)	0.011* (1.95)	0.021** (2.09)	0.011 (1.42)
<i>GDP</i>	1.200 (0.71)	-1.958 (-0.64)	2.812 (0.57)	1.128 (0.77)	4.109* (1.89)	-1.415 (-0.66)
<i>CEO_AGE</i>	-0.081 (-0.56)	0.169 (0.85)	-0.667 (-0.79)	-0.011 (-0.09)	0.127 (0.34)	0.093 (0.64)
<i>HOLDING</i>	0.018 (0.97)	0.008 (0.62)	0.045*** (3.16)	0.005 (0.39)	0.003 (0.18)	0.026 (1.40)
<i>TENURE</i>	0.013** (2.14)	0.020* (1.89)	0.060* (1.90)	0.014*** (2.62)		
<i>STDROA</i>	-0.099 (-0.47)	0.000** (1.97)	-0.037 (-0.74)	0.000** (2.27)	-0.023 (-1.02)	0.001*** (3.00)
<i>STDRET</i>	0.000 (0.05)	0.011** (2.50)	0.006 (0.73)	0.003 (1.41)	0.002 (0.60)	0.002 (0.59)
<i>TIME1</i>	0.188*** (3.43)	0.136 (1.16)	0.071 (0.31)	0.149*** (3.02)	0.135* (1.69)	0.168** (2.25)
<i>TIME2</i>	0.223*** (3.56)	0.424*** (3.49)	0.109 (0.46)	0.141*** (4.48)	0.568** (2.48)	0.350*** (4.08)
Year fixed effect	Control	Control	Control	Control	Control	Control
Firm fixed effect	Control	Control	Control	Control	Control	Control
Chow test	0.07		0.94		3.53*	
p-value	0.7892		0.3324		0.060	
Observations	3626	1726	651	4701	2520	2832
Adjusted R^2	0.837	0.822	0.852	0.832	0.860	0.816

Table 8 The Differences of the Effect of the Compensation Committee Establishment on Pay-Performance Sensitivity in the Sub-Sample

<u>Explained Variable =</u> <u>COMP_CH</u>	<u>State-owned</u>	<u>Private</u>	<u>CEO Duality</u>	<u>CEO Separation</u>	<u>Long CEO Tenure</u>	<u>Short CEO Tenure</u>
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-3.884 (-1.16)	-2.116 (-0.39)	-14.723 (-1.29)	-4.163 (-1.42)	-10.794* (-1.94)	1.586 (0.35)
<i>OI_CH</i>	0.003 (0.14)	0.005 (0.16)	0.016 (0.25)	0.011 (0.59)	0.002 (0.06)	0.011 (0.40)
<i>SETUP</i>	0.009 (0.23)	-0.031 (-0.53)	0.214* (1.77)	-0.017 (-0.48)	0.004 (0.06)	-0.022 (-0.42)
<i>SETUP*OI_CH</i>	0.054** (2.20)	0.079* (1.83)	0.107 (1.29)	0.050** (2.21)	0.058 (1.58)	0.063* (1.93)
<i>STATE</i>			0.093 (0.43)	0.027 (0.55)	0.019 (0.20)	0.035 (0.50)
<i>SIZE_CH</i>	0.229** (2.26)	0.158 (1.47)	-0.171 (-0.69)	0.259*** (3.53)	0.303** (2.04)	0.168* (1.76)
<i>LEV_CH</i>	-0.539*** (-2.80)	-0.381* (-1.76)	-0.548 (-1.26)	-0.435*** (-3.11)	-0.698** (-2.53)	-0.324* (-1.88)
<i>RETURN</i>	0.000 (0.78)	-0.000 (-0.35)	0.000 (0.50)	0.000 (0.39)	0.000 (0.60)	0.000 (0.98)
<i>SALES_CH</i>	0.002*** (3.71)	-0.001 (-0.98)	-0.002 (-1.31)	0.001*** (3.19)	0.001* (1.65)	0.001* (1.75)
<i>MB_CH</i>	0.011 (1.58)	0.007 (1.07)	0.013 (0.90)	0.010* (1.95)	0.009 (0.89)	0.008 (1.17)
<i>GDP</i>	1.216 (0.83)	0.740 (0.31)	5.608 (1.22)	1.541 (1.20)	3.771 (1.60)	-0.983 (-0.48)
<i>CEO_AGE</i>	0.370*** (2.68)	0.203 (1.22)	0.568 (0.51)	0.251** (2.25)	0.687** (2.01)	0.220 (1.63)
<i>HOLDING_CH</i>	-0.020 (-0.20)	0.031* (1.85)	0.038 (1.46)	0.024 (1.05)	-0.004 (-0.18)	0.041** (2.16)
<i>STDROA_CH</i>	-0.248 (-0.65)	0.000 (1.04)	0.003 (0.09)	0.000*** (2.66)	0.024 (0.80)	0.000** (2.50)
<i>STDRET_CH</i>	0.002 (0.46)	0.005 (0.87)	-0.010 (-0.78)	0.003 (0.90)	0.004 (0.83)	-0.000 (-0.08)
<i>TIME1</i>	-0.157** (-2.49)	-0.101 (-0.76)	-0.291** (-2.18)	-0.104 (-1.39)	-0.267*** (-2.68)	-0.014 (-0.12)
<i>TIME2</i>	0.208** (2.53)	0.189* (1.67)	-0.081 (-0.27)	0.104** (2.19)	0.136 (1.08)	0.131* (1.93)
Year fixed effect	Control	Control	Control	Control	Control	Control
Firm fixed effect	Control	Control	Control	Control	Control	Control
Chow test	0.32		0.41		0.01	
P-value	0.5704		0.5195		0.9054	
Observations	5137	2584	946	6775	3568	4153
Adjusted R^2	0.044	0.041	0.067	0.038	0.064	0.002

Table 9 The Differences of the Effect of Compensation Committee Independence on Pay-Performance Sensitivity in the Sub-Sample

	Explained Variable = <i>COMP_CH</i>					
	<u>State-owned</u>	<u>Private</u>	<u>CEO Duality</u>	<u>CEO Separation</u>	<u>Long CEO Tenure</u>	<u>Short CEO Tenure</u>
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-6.544 (-1.20)	-0.939 (-0.10)	-19.668 (-1.15)	-5.549 (-1.16)	2.580 (0.41)	-0.376 (-0.07)
<i>OI_CH</i>	-0.054 (-1.24)	0.211* (1.70)	0.301 (1.32)	-0.015 (-0.36)	0.008 (0.17)	-0.029 (-0.65)
<i>INDE</i>	0.035 (0.27)	0.115 (0.55)	0.526 (1.15)	0.059 (0.52)	0.044 (0.34)	0.135 (1.30)
<i>INDE*OI_CH</i>	0.164** (2.49)	-0.189 (-0.97)	-0.299 (-0.79)	0.119* (1.88)	0.082 (1.21)	0.161** (2.31)
<i>SIZE_CH</i>			0.258 (0.84)	-0.042 (-0.62)	0.080 (0.76)	0.039 (0.56)
<i>LEV_CH</i>	0.318** (2.19)	0.159 (0.95)	-0.159 (-0.45)	0.263** (2.34)	0.229* (1.77)	0.078 (0.96)
<i>RETURN</i>	-0.722*** (-2.62)	-0.384 (-1.22)	-0.713 (-1.18)	-0.425* (-1.93)	-0.101 (-0.38)	-0.177 (-1.13)
<i>SALES_CH</i>	0.000 (0.87)	-0.000 (-0.79)	0.000 (0.12)	-0.000 (-0.07)	0.000 (0.76)	0.001** (2.07)
<i>MB_CH</i>	0.002** (2.56)	-0.000 (-0.04)	-0.002 (-1.16)	0.001*** (2.67)	0.001* (1.89)	0.000 (0.51)
<i>GDP</i>	0.014 (1.46)	0.016 (1.57)	0.023 (1.06)	0.013* (1.74)	0.007 (0.77)	0.010* (1.93)
<i>CEO_AGE</i>	2.451 (1.02)	-0.421 (-0.10)	8.156 (1.18)	1.937 (0.92)	-1.070 (-0.39)	-0.246 (-0.11)
<i>HOLDING_CH</i>	0.353 (1.55)	0.585** (2.08)	0.420 (0.22)	0.396** (2.10)	0.025 (0.06)	0.263** (1.98)
<i>STDROA_CH</i>	-0.040 (-0.33)	0.031 (1.48)	0.047* (1.71)	0.023 (0.73)	0.002 (0.11)	0.078*** (3.38)
<i>STDRET_CH</i>	-0.271 (-0.90)	0.000 (0.93)	0.019 (0.47)	0.000** (2.11)	0.032* (1.76)	0.000* (1.65)
<i>TIME1</i>	0.001 (0.10)	0.001 (0.11)	-0.013 (-0.58)	0.001 (0.29)	0.002 (0.44)	0.001 (0.16)
<i>TIME2</i>	-0.227 (-1.61)	0.1064 (0.54)	-0.723 (-1.29)	-0.197 (-1.57)	0.0306 (0.23)	-0.054 (-0.58)
Year fixed effect	Control	Control	Control	Control	Control	Control
Firm fixed effect	Control	Control	Control	Control	Control	Control
Chow test	0.06		0.01		1.24	
P-value	0.8088		0.9201		0.2662	
Observations	3434	1646	621	4459	2444	2636
Adjusted R^2	0.032	0.031	0.090	0.027	0.199	0.315

in which the CEO does not also chair the board and/or has below-median tenure), there is no significant change in compensation level, and the pay-performance sensitivity greatly increases with the establishment of a compensation committee.

As indicated in columns (3) and (5) of Tables 7 and 9, respectively, the independence of the compensation committee has no effect on the CEO compensation contract when the management is relatively strong, which is consistent with expectations. In contrast, for the subsample with weaker management (as indicated in columns (4) and (6) of Tables 7 and 9, respectively), the degree of the correlation between compensation and performance is significantly increased for enterprises with more independent committees; this result supports the optimal contracting theory. These findings suggest that the effects of the establishment and independence of compensation committees are subject to certain preconditions; namely, management power must be properly controlled for them to be effective.

Overall, the subsample results demonstrate that the optimal contracting theory has a stronger effect in SOEs and companies with weaker management. In comparison, the management power theory is more applicable to firms with stronger management. These results suggest that when the general manager is overly powerful, a compensation committee not only cannot have the intended effect but may even become a tool for management to increase their compensation.

4.4 Sensitivity Analysis

a) Change in the Definition of Independence of Compensation Committees

In accordance with the previous analyses, the proportion of independent directors on a compensation committee is used directly to measure its independence. Because the number of members is typically small, the proportion of independent directors cannot be continuously changed. A few companies have a high proportion of independent directors, but this may simply be a means of meeting the CSRC requirement to have a minimum of 50 percent. For example, if there are three members on a company's compensation committee, at least two must be independent in order to fulfil this requirement, making the proportion of independent directors two-thirds. In this case, the proportion of independent directors is indeed greater than it is for a committee composed of four directors, of whom at least two must be independent. Accordingly, the independent directors may play a stronger role in a three-member committee. However, there is also the possibility that such a high proportion has been designed merely to comply with the CSRC requirements rather than to ensure genuine independence. To address this possibility, we redefine the independence of the compensation committee and confirm whether the results are still valid. We do so by defining the variable *INDEI*, which takes

Table 10 Results of Changing the Independence Definition of the Compensation Committee

	Explained Variable = <i>COMP</i>	Explained Variable = <i>COMP_CH</i>
	(1)	(2)
Constant	6.446** (2.10)	-4.704 (-1.10)
<i>OI_CH</i>	0.012*** (5.74)	0.035 (1.30)
<i>INDE1</i>	0.062* (1.96)	0.054 (1.06)
<i>INDE1*OI_CH</i>		0.035 (1.14)
<i>STATE</i>	-0.018 (-0.35)	-0.010 (-0.16)
<i>SIZE_CH</i>	0.207*** (7.13)	0.240** (2.32)
<i>RETURN</i>	-0.000 (-1.62)	0.000 (0.25)
<i>SALES_CH</i>	0.000 (0.10)	0.001** (2.01)
<i>LEV_CH</i>	-0.003** (-2.56)	-0.509** (-2.58)
<i>MB_CH</i>	0.011** (2.08)	0.012* (1.85)
<i>GDP</i>	0.887 (0.65)	1.474 (0.79)
<i>CEO_AGE</i>	0.047 (0.40)	0.434** (2.57)
<i>HOLDING_CH</i>	0.014 (1.15)	0.033* (1.70)
<i>STDROA_CH</i>	0.000*** (3.13)	0.000** (2.35)
<i>STDRET_CH</i>	0.003 (1.30)	0.001 (0.21)
<i>TIME1</i>	0.168*** (3.64)	-0.139* (-1.75)
<i>TIME2</i>	0.315*** (5.27)	-0.012 (-0.10)
Year fixed effect	Control	Control
Firm fixed effect	Control	Control
Observations	5352	5080
Adjusted R^2	0.831	0.028

the value of 1 when the proportion of independent directors is greater than half, and 0 otherwise. We rerun the regressions presented in Tables 4 and 5 by replacing *INDE* with *INDEI*. The results are reported in Table 10.

Table 10 indicates that the effect of *INDEI* on compensation level is consistent with that of *INDE*. *INDEI* has a weaker effect on pay-performance sensitivity (the coefficient of *INDEI*OI_CH* is positive, but not significantly greater than 0). However, this coefficient is still significantly greater than 0 for SOEs and firms with weaker management. This result supports our findings, indicating that the observation that the independence of compensation committees increases CEO compensation and pay-performance sensitivity does not depend on the specific definition of independence.

b) DID Method

In models (1) and (2), the firm-fixed effect is incorporated to control simultaneously for the effects of unobserved firm characteristics on CEO compensation and compensation committees. In the sensitivity analysis, the DID method is also used to control for the effects of unobserved factors. Specifically, we compare the difference in compensation contracts (change in level of compensation or pay-performance sensitivity) between firms that have and have not set up compensation committees. Accordingly, we select our sample as firms that establish compensation committees in year t , and the control sample includes firms that have not done so between year t and year $t+1$. Using year $t-2$ and year $t-1$ as the presetup period, we compare the compensation change from two years presetup to two years postsetup between the two subgroups of firms. Because the compensation level (change) is available from 2001 (2002) to 2009, and the DID method requires two years before and after the establishment of the committee, the sample used in the DID regression includes the period from 2004 to 2008.

By comparing the effects of setting up a compensation committee in the two subgroups of companies, we can rule out the combined effect of other factors on the compensation committee and CEO compensation. Accordingly, we set *AFTER* as equal to 1 in the first two postsetup years, and 0 otherwise. Additionally, we create the *CHANGE* variable, which equals 1 for firms that have established compensation committees, and 0 for the others. For the compensation-level model (1), in addition to adding the *AFTER* and *CHANGE* variables to the regression, we also incorporate the cross-term of those two items. If the cross-term is positive, the result indicates that the establishment of compensation committees can effectively increase the level of CEO compensation. For the pay-performance sensitivity model (2), the cross-term of the two variables and of the three variables *AFTER*, *CHANGE*, and *OI_CH* are included in the regression. A significantly positive cross-term of those three variables indicates that after controlling for the effect of other factors on the CEO pay-performance sensitivity of the subsequent

Table 11 Results by the Difference-in-Difference Method

	Explained Variable = <i>COMP</i>	Explained Variable = <i>COMP_CH</i>
Constant	-0.962*** (-2.83)	-2.924* (-1.77)
<i>OI_CH</i>	0.024*** (17.76)	0.000 (0.00)
<i>CHANGE</i>	0.033*** (3.39)	-0.044** (-2.22)
<i>AFTER</i>	0.047*** (2.90)	-0.006 (-0.21)
<i>STATE</i>	-0.105*** (-6.32)	-0.060 (-0.71)
<i>CHANGE*AFTER</i>	0.051*** (2.62)	0.084** (2.08)
<i>CHANGE*OI_CH</i>		-0.008 (-0.39)
<i>AFTER*OI_CH</i>		-0.023 (-0.77)
<i>CHANGE*AFTER*OI_CH</i>		0.077* (1.75)
<i>SIZE_CH</i>	0.320*** (37.39)	0.253*** (2.96)
<i>LEV_CH</i>	-0.001 (-1.45)	-0.410** (-2.57)
<i>RETURN</i>	-0.000*** (-2.97)	0.001* (1.77)
<i>SALES_CH</i>	-0.000 (-0.61)	0.001 (1.16)
<i>MB_CH</i>	0.027*** (6.39)	0.006 (1.04)
<i>GDP</i>	2.558*** (19.72)	1.024 (1.38)
<i>CEO_AGE</i>	0.227*** (4.36)	0.231 (1.63)
<i>HOLDING_CH</i>	-0.027*** (-4.16)	0.051*** (3.88)
<i>STDROA_CH</i>	-0.000*** (-37.66)	0.000*** (6.80)
<i>STDRET_CH</i>	0.011*** (10.08)	0.002 (0.65)
Year fixed effect	Control	Control
Firm fixed effect	Control	Control
Observations	7731	7566
Adjusted R^2	0.834	0.144

Table 12 Regression Results by Taking ROA Change as Pay-Performance Sensitivity of Changes in Performance

	Explained Variable = <i>COMP_CH</i>	
	<i>COMT = SETUP</i>	<i>COMT = INDE</i>
	(1)	(2)
Constant	-2.209*	-4.972
	(-1.68)	(-1.15)
<i>ROA_CH</i>	0.058	-0.541
	(0.48)	(-0.39)
<i>COMT</i>	0.028*	0.097
	(1.82)	(0.94)
<i>STATE</i>	0.033	0.013
	(1.53)	(0.20)
<i>COMT*ROA_CH</i>	1.111***	4.233*
	(6.90)	(1.87)
<i>SIZE_CH</i>	0.329***	0.321***
	(10.13)	(3.13)
<i>LEV_CH</i>	-0.276***	-0.519**
	(-4.38)	(-2.52)
<i>RET_CH</i>	0.000***	0.000
	(3.47)	(0.31)
<i>SALE_CH</i>	0.001***	0.001*
	(5.75)	(1.90)
<i>MB_CH</i>	0.007***	0.011*
	(3.76)	(1.71)
<i>GDP</i>	0.772	1.556
	(1.32)	(0.82)
<i>CEO_AGE</i>	0.161***	0.450***
	(3.21)	(2.66)
<i>HOLDING_CH</i>	0.029***	0.034*
	(3.40)	(1.72)
<i>STDROA_CH</i>	0.000***	0.000***
	(4.74)	(4.30)
<i>STDRET_CH</i>	0.003**	0.001
	(2.28)	(0.19)
<i>TIME1</i>	-0.066**	-0.140*
	(-2.01)	(-1.76)
<i>TIME2</i>	0.099***	-0.004
	(4.46)	(-0.04)
Year fixed effect	Control	Control
Firm fixed effect	Control	Control
Observations	7720	5079
Adjusted R2	0.441	0.033

and previous two years ($AFTER*OI_CH$), the effect on this of the establishment of compensation committees remains significantly positive. The test results obtained by the DID method are presented in Table 11. The results are consistent with those set out previously, further supporting our analysis of the effects of the compensation committee system.

c) Regression of Pay-Performance Sensitivity Using Other Performance Change Indexes

In model (2), the change in the performance of listed companies is measured by the change in operating profit (OI_CH). To avoid the effect of the compensation committee system on pay-performance sensitivity being subject to a specific definition of the change in performance, as recommended by the reviewers we use ROA_CH as the variable to measure changes in performance; that is, OI_CH in model (2).¹⁰ The results are summarised in Table 12. The coefficient of the cross-term between $COMT$ and ROA_CH is significantly positive, indicating that the establishment of compensation committees ($SETUP$) and their independence ($INDE$) are correlated with greater pay-performance sensitivity.

V. Conclusions

In this paper, we have analysed the effects of compensation committees on the CEO compensation of listed companies in China. The findings show that CEO compensation and pay-performance sensitivity significantly increased after the introduction of the compensation committee mechanism. Furthermore, we have also demonstrated that the resulting increase in compensation level and pay-performance sensitivity is primarily found in SOEs, which supports the premise of the optimal contracting theory. For companies with strong management, however, the establishment of compensation committees does not improve pay-performance sensitivity, but does increase CEO compensation, in line with the management power theory.

In general, the results in this paper demonstrate that the introduction of the compensation committee system has played a significant role in encouraging listed companies, especially SOEs, in China to establish more effective CEO compensation contracts. Nevertheless, in firms with very powerful managers, these committees may not have the intended effect and instead become a tool used by executives to improve their remuneration. Our findings imply that strengthening corporate governance mechanisms

¹⁰ In addition, when the abnormal return (AB_RET) is used as the surrogate index of performance change in order to perform the sensitivity test, the results remain consistent.

and reducing management power are fundamental measures required to ensure the effective implementation of the compensation committee system.

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