

新上市偏差与IPO长期弱势¹

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摘要

基于成熟资本市场的研究发现IPO公司在未来五年的回报显著低于市场指数(或其他基准),这就是IPO长期弱势;而基于中国资本市场的研究对此却存在较大的争议。我们认为研究设计可能是导致这一现象的一个原因,因为中国资本市场在短时间内迅速扩容,这使得作为基准的市场指数(或其他基准)中包含了大量的IPO公司,从而使得基准的长期回报偏低,进而高估IPO公司的长期超额回报,这就是“新上市偏差”。本文在控制“新上市偏差”后,重新研究了IPO长期弱势现象,研究发现,在股权分置改革之前,我国A股市场存在非常显著的IPO长期弱势现象;而在股权分置改革期间,我国A股市场IPO公司长期股价表现强于市场指数。并且,“新上市偏差”对于IPO公司会计业绩的长期表现也存在类似的影响。在控制“新上市偏差”后,IPO公司会计业绩也出现了较大幅度的下滑,分组及回归分析的结果表明,IPO公司会计业绩下滑可以部分解释股价长期弱势现象。

关键词: 新上市偏差、股权分置改革、首次发行上市、长期股价回报、长期会计业绩

中图分类号: F234.4、F830.91

¹ 作者感谢上海财经大学会计与财务研究院、上海财经大学211项目、国家自然科学基金(70632002)、教育部人文社会科学研究项目(06JA630016)、高等学校博士学科点专项科研基金资助课题(20090071120081)、上海市哲学社会科学规划青年课题(2010EJB001)、上海市会计学会2010年重点课题的资助。感谢“复旦会计论坛”与会者、2009年第十三届两岸会计与管理学术研讨会(台湾淡江大学)与会代表的意见。感谢《中国会计与财务研究》吴东辉教授、匿名审稿人以及上海财经大学会计学院侯青川博士的建议。作者文责自负。

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一、引言

首次公开发行(Initial Public Offerings, 简称IPO)是指公司的普通股第一次向公众公开发行并在证券交易所挂牌交易。Ritter (1991)、Loughran and Ritter (1995)等都发现IPO公司上市后的五年内股价表现要劣于其它公司(简称为, IPO长期弱势)。但是, 也有一些研究认为, IPO长期弱势对于样本选择和统计方法非常敏感, 如果考虑不同样本区间或者使用不同的方法计算长期超额回报的话, 则不存在IPO后的长期弱势。Brav and Gompers (1997)研究了IPO之后五年的超额回报(按规模和BM进行调整后的超额回报), 研究发现, IPO之后并不存在长期弱势问题。Brav (1997)和Mitchell and Stafford (1997)认为, IPO公司上市后的超额回报只存在于小规模的公司中, 如果采用加权平均来计算长期超额回报的话, IPO公司上市的长期弱势会大大减轻。Fama (1998)从方法论的角度回顾了研究IPO长期弱势的文献, 认为IPO长期弱势主要是受到小公司的影响。

在中国资本市场上, 有关IPO后长期回报的研究, 研究窗口、研究方法不一致, 结论上也存在一些相互冲突的地方。表1总结了有关中国资本市场IPO后长期回报的研究文献。

表1 中国资本市场IPO公司上市后长期回报相关研究

BHAR是指购买并持有的超额回报, CAR是累计超额回报。结论中的+/-, 是指对应的超额回报指标大于零/小于零。

文献	计算长期超额回报的方法				控制新上市偏差	结论
	样本期间	样本大小	研究窗口	方法		
陈工孟、高宁 (2000)	1992-1995	273	36个月	市场指数调整的BHAR	无	-
王美今、张松 (2000)	1996-1997	110	500个交易日	市场指数调整的BHAR 市场模型(BETA) 调整的BHAR	无	+ +
刘力、李文德 (2001)	1992-1996	398	756个交易日	市场指数调整的CAR 市场指数调整的BHAR	无	+ +
李蕴玮、宋军和 吴冲锋(2002)	1994-1997	542	36个月	流通市值 加权平均指数 调整的CAR	剔除了上市时 间少于三年 的IPO公司	-
白仲光、张维(2003)	1998-2000	341	150周	指数调整的BHAR FF三因子模型 的Alpha	无	+ +
唐琨(2004)	1997-1999	258	156周	深证成份指数 调整的CAR 上证指数调整的CAR	无	+ +

文献	计算长期超额回报的方法			方法	控制新上市偏差	结论
	样本期间	样本大小	研究窗口			
汪宜霞 (2005)	1998-2003	520	756个交易日	Size/BM匹配的CAR	无	-
				指数调整的CAR		+
				Size/BM匹配的BHAR		-
				指数调整的BHAR		+
俞颖 (2005)	1994-2001	429	36个月	市场指数调整的CAR	无	-
				市场指数调整的BHAR		-
江洪波 (2007)	1994-1999	245	36个月	上证指数调整的CAR	无	+
				上证指数调整的BHAR		+
				FF三因子模型的Alpha		+
	1999-2004	245	36个月	上证指数调整的CAR	无	-
				上证指数调整的BHAR		-
				FF三因子模型的Alpha		-
Chan, Wang and Wei (2004)	1993-1998	570	756个交易日	Size匹配的BHAR	剔除了上市时间少于二年的IPO公司	-
				BM匹配的BHAR		-
				Size/BM匹配的BHAR		-
Chi and Padgett (2005)	1996-1997	340	36个月	市场指数调整的BHAR	无	+
Fan, Wong and Zhang (2007)	1993-2001	790	36个月	等权平均市场指数调整的BHAR	无	-
Kao, Wu and Yang (2009)	1996-1997	366	36个月	Size匹配的CAR	剔除了上市时间少于三年的IPO公司	-

从表1可以看出，中国资本市场IPO后长期超额回报的研究结果存在较多的冲突。在本文回顾的十三篇文献中，³共使用了33个衡量长期超额回报的指标。在这所有的33个指标中，取值为负的指标只有15个，仅占全部指标的45%，也就是说，在本文所回顾的有关IPO公司上市后长期超额回报的文献中，只有45%的情况下发现了长期弱势。从概率的角度来讲，如果IPO公司在上市后随机游走，我们在市场上观察到长期弱势的概率为50%左右。显然，目前有关中国资本市场IPO公司长期弱势的实证证据并不充分。

³ 当然，实际文献数量不止这些，作者尽量收集所有的文献，但也难免会存在一些遗漏。

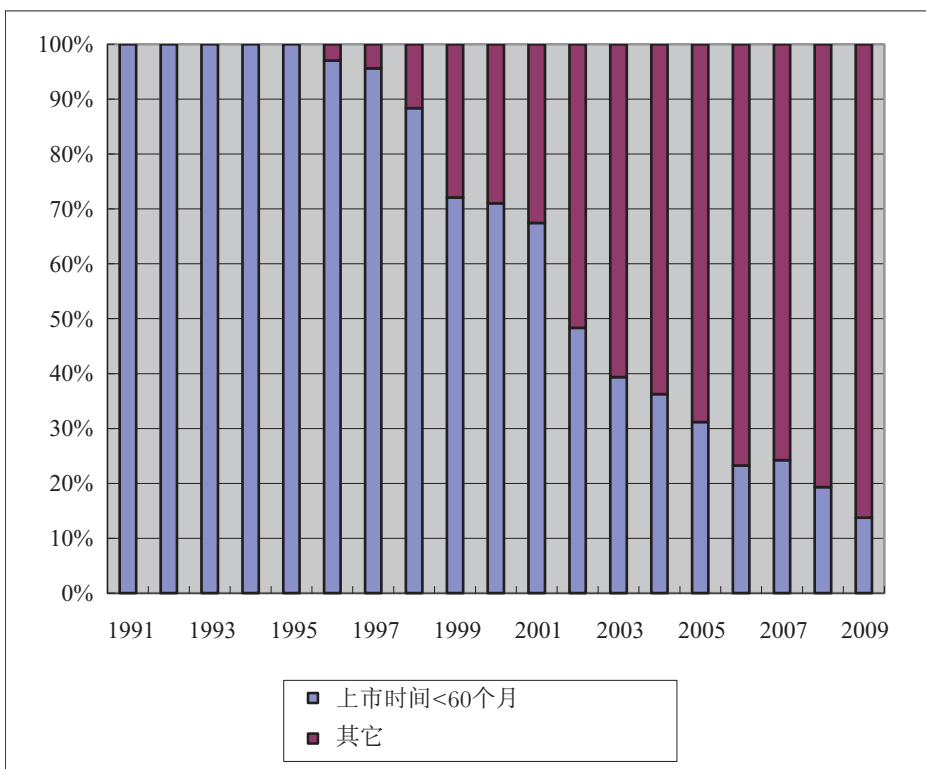
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中国作为新兴市场，IPO公司在上市公司中所占比例非常高，这与美国等成熟资本市场是显著不同的。故在研究中国资本市场IPO公司上市后的长期超额回报时，以配比样本、市场指数等作为正常回报来衡量IPO公司上市后的长期弱势，会造成较大的偏差。本文将这称之为“新上市偏差(New Listing Bias)”，这个名词源自于Barber and Lyon (1997)。Barber and Lyon (1997)认为，在长窗口的事件研究中，作为基准的指数(或参考组合)会包括一些在事件之后上市的公司，如果这些新上市的公司上市之后超额回报为负的话，会使得事件研究中的基准回报偏低，从而使得事件的长期超额回报偏高。

表1的文献中，李蕴玮、宋军和吴冲锋(2002)、Chan, Wang and Wei (2004)，和Kao, Wu and Yang (2009) 这三篇文献考虑到了“新上市偏差”的影响，在计算超额回报时剔除了上市时间短于二年或三年的样本。如果完全控制“新上市偏差”的话，配比样本或市场指数中应该剔除上市时间少于60个月的样本，而这样会导致无法找到足够多的配比样本。图1给出了中国上市公司中上市时间小于60个月的公司占有所有公司的比率，从中可以看出，在1996年之前，不存在上市时间大于60个月的样本。随着时间流逝，上市时间大于60个月的公司在所有上市公司中的比重在逐步上升。

图1 上市时间小于60个月的公司占有所有公司的比率图(分年度)

上市时间<60个月，是指那些在截至某年某月为止，所有样本公司中上市时间小于60个月的公司所占的比重。比如2002年上市时间小于60个月的公司约占50%，则意味着在2002年的12个月之内，每个月计算一个比率，然后再计算出年度平均值为50%。



由图1可知，中国资本市场作为新兴市场，上市时间短于60个月的公司所占的比重非常高。在1995年之前，中国的资本市场刚刚建立，自然所有的上市公司都很

年轻，市场上所有的公司上市时间都短于60个月。随着时间的推移，到了1996年，才出现了上市时间超过60个月的上市公司，直到2003时，60个月内上市的公司市场上所占的比重下降为40%。按照Ritter (1991)的结论，IPO公司在上市之后五年内超额回报显著为负。从表1可以看出，以往的研究多以市场指数为基准来计算超额回报，显然，市场指数中包含了太多受IPO效应影响的公司，这会使得市场指数偏低。如果以这样的市场指数作为基准计算超额回报，会使得超额回报偏高，从而无法发现IPO长期弱势，这也和表1的结果一致。表1中的文献表明，在以往研究中55%的文献不能发现显著的IPO长期弱势。

对于中国这样的新兴市场国家而言，“新上市偏差”是非常严重的。从表1总结的文献来看，大部分研究都使用了市场指数、市场模型、以及规模/账面价值与市值比(Size/BM)调整的方法等来计算超额回报。然而这些不同的方法，都会受“新上市偏差”的影响。本文的目的是在控制“新上市偏差”之后，研究中国IPO公司上市之后的长期弱势问题。

2005年4月29日，中国证监会发布《关于上市公司股权分置改革试点有关问题的通知》，正式启动股权分置改革试点工作。由于股权分置改革中的公司对流通股股东支付了一定的对价(张俊喜、王晓坤和夏乐，2006)，市场将股权分置改革看作是利好，股权分置改革后的公司与市场指数相比呈现出显著正的超额回报(陈蛇、陈朝龙，2005；奉立诚、许伟河，2006等)。Loughran and Ritter (1995)中明确指出，如果配比公司发行股票的话，作者将其在发行日视作退市处理。显然，股权分置改革是将大量的非流通股转为流通股。中国资本市场上的IPO只是向市场公开发行流通股并上市，IPO中发行的流通股占发行后全部股权的1/3左右(Sun and Tong, 2003)，股权分置改革则是将非流通股转变成流通股，故股权分置改革与发行股票有类似之处。中国的IPO是首次发行(Primary offerings)，即伴随着融资事件的IPO；而股权分置改革是二次发行(Secondary offerings)。考虑到股权分置改革中非流通股数量之大，约占全部股份的2/3(Sun and Tong, 2003)。

显然，在研究IPO公司长期弱势时需要控制股权分置改革的影响，结合股权分置改革以及图1可知，在股权分置改革之前，“新上市偏差”的影响较大，故本文将不受股权分置改革影响的样本作为主要研究对象，来研究“新上市偏差”对IPO公司长期弱势研究的影响。本文采用两种方法控制股权分置改革的影响。第一种方法是按样本公司在IPO之后五年内是否进行了股权分置改革分为两组，进行了改革的则令SSR (Shareholder structure reform, SSR)为1，否则为零。这种方法可称之为“样本划分法”；第二种方法则是“时间划分法”，是以2000年5月作为时间临界点，显然，2000年5月之前的IPO公司在研究窗口中不涉及股权分置改革，而2000年5月及之后的IPO公司在研究窗口中会受到股权分置改革的影响。本文研究表明，这两种方法下研究结论非常接近。

本文研究发现，对于不受股权分置改革效应影响的IPO公司，在控制“新上市偏差”前后，IPO公司长期超额回报存在很大的差异。未控制“新上市偏差”时，我们发现IPO公司上市后60个月的规模/BM调整的超额回报不显著；采用时变风险方法⁴选择匹配公司时规模/BM调整的超额回报显著为负，即存在长期弱势；而市场指数调

⁴ 假定样本公司在上市后五年内风险会发生改变，故每年底重新对每个IPO公司进行配比。

整的超额回报显著为正。不同方法衡量长期超额回报的结论相互冲突。在控制“新上市偏差”后，同样采用以上三种方法，大部分指标显示出显著的长期弱势，并且和控制“新上市偏差”相比，IPO公司的长期弱势更明显；但是，加权市场指数调整的超额回报显著为正，这可能是由于IPO后长期弱势主要是由小公司造成的。

另外，本文也研究了IPO公司上市之后的会计业绩表现。如果IPO公司在上市后股价存在长期弱势的话，研究IPO公司上市之后的会计业绩表现是否存在长期弱势就是很有趣的话题。如果会计业绩同样也存在长期弱势，则股价上表现出来的长期弱势就表明在IPO公司发行上市时投资者定价错误(Kao, Wu and Yang, 2009)。Jain and Kini (1994)研究了IPO公司上市后的经营业绩表现，发现IPO公司上市后三年内存在显著的经营业绩弱势，资产收益率ROA在上市后三年内比上市前下滑了约10%，并且经行业中位数调整的ROA也呈现相同的弱势现象。有关中国资产市场上IPO公司上市后会计业绩的文献研究发现，在IPO公司上市后，销售利润率、息税前利润与销售比率等盈利能力指标(Sun and Tong, 2003)，资产收益率(Chan, Wang and Wei, 2004)，销售利润率(Fan, Wong and Zhang, 2007)等都出现了显著的下滑，即存在比较明显的IPO后会计业绩弱势。

显然，“新上市偏差”同样会影响到会计业绩弱势的研究。如果新上市公司存在会计业绩弱势的话，将IPO公司的会计业绩与行业(或市场)中位数比较时，必须考虑行业(或市场)水平的会计业绩是否会受到“新上市偏差”的影响。本文同时提供了控制与不控制“新上市偏差”时IPO公司会计业绩的表现。最后，本文按会计业绩表现分为五组，比较了业绩最差与业绩最好的两个子样本的长期股价超额回报。在控制“新上市偏差”之前，会计业绩最好的组合，其股价表现也最好，并且这两组子样本长期股价超额回报的差异非常显著。控制“新上市偏差”后，会计业绩最好组合的股价表现更好，并且这两组子样本长期股价超额回报的差异比控制“新上市偏差”前更加显著。

本文的贡献在于首次比较明确地指出中国作为新兴市场，存在有大量的新上市公司，在选择比较基准计算长期超额业绩时，如果没有充分考虑“新上市偏差”，会导致不准确的结果。对于不受股权分置改革效应影响的样本公司，作者发现控制“新上市偏差”之后，中国的IPO公司存在长期的股价和经营业绩弱势。同时，作者发现IPO公司上市后的长期经营业绩和长期股价表现是正相关的。

本文内容安排如下。第二部分是样本选择与研究方法。第三部分是IPO公司股价长期弱势，分别提供了在控制“新上市偏差”之前与之后的股价长期表现，然后又提供了分年度的结果。第四部分是IPO公司会计业绩的长期表现研究，并且讨论了会计业绩与股价之间的关系。第五部分是文章的结论。

二、样本选择和研究方法

2.1 样本选择

我们的样本来自CSMAR。本文的样本选择期间为1996年1月1日到2003年12月31日，之所以截止2003年底，是为了保证所有样本可以得到上市之后60个月的市场回报和上市后五年的会计数据。本文剔除了金融类公司和在发行A股之前发行B股的公司，只包括这8年之内发行上市的A股公司(如果在A股发行上市之后发行过B股，

则对应的A股观察值包含在本文的样本中)。当完成上述操作后,1996年到2003共有935家IPO公司,然后,将这些公司与CSMAR数据库中提供的净利润、总资产、月回报、日回报、以及深沪两市的上证指数、深证成份指数进行合并。样本分布见表2。

表2 上市公司年度分布

上市年度	全体样本	剔除：在发行 A股之前发行		本文 的样本
		B股的公司	剔除：金融 类公司	
1996	203	9	0	194
1997	206	5	0	201
1998	106	3	0	103
1999	98	2	1	95
2000	137	4	1	132
2001	79	4	0	75
2002	71	0	1	70
2003	67	0	2	65
合计	967	27	5	935

2005年4月29日开始的股权分置改革,由于涉及股权分置改革的公司对流通股股东支付了一定的对价(张俊喜、王晓坤和夏乐,2006),改革公告后的公司与市场指数相比呈现出显著正的超额回报(陈蛇、陈朝龙,2005;奉立诚、许伟河,2006等)。考虑到股权分置改革中非流通股数量之大,约占全部股份的2/3(Sun and Tong, 2003),本文设置了一个虚变量SSR(Shareholder structure reform, SSR),如果某IPO公司在IPO之后五年内进行了股权分置改革,则令SSR为1,否则为零。显然,以上变量定义是基于未来是否进行股权分置改革这个信息的。为了克服该变量的局限性,本文同时以2000年5月作为时间临界点将样本划分为二个子样本。对于2000年5月的IPO公司,其第60个月正好是2005年6月,即中国正式的股权分置改革开始的时间。本文将2000年5月之前的IPO公司定义为股权分置改革之前的区间,而将之后定义为股权分置改革之后的区间。这两种对样本的划分方法得到的结论非常接近,本文的研究结论是建立在不受股权分置改革影响的子样本(SSR=0)之上的。

2.2 变量定义及研究方法

在市场效率研究的文献中,衡量长期超额回报的变量主要有累计超额回报(Cumulative Abnormal Return,下文中简称为CAR)和购买并持有的超额回报(Buy-and-Hold Abnormal Return,下文中简称为BHAR)。Barber and Lyon (1997)认为在衡量长期超额回报中,BHAR优于CAR;而Fama (1998)则认为CAR优于BHAR。这两个指标在本文回顾的文献中均得到了广泛使用,本文同时提供BHAR与CAR的结果。

按照学术界的习惯,大部分文献中都使用月回报或日回报来计算BHAR。如果直接使用数据库提供的月回报,则第1个月是IPO公司上市当月的下一个月,采用月

新上市偏差与IPO长期弱势

回报的文献有陈工孟、高宁(2000)、李蕴玮、宋军和吴冲锋(2002)、Fan, Wong and Zhang (2007)、Kao, Wu and Yang (2009)。同时,也有很多研究使用日回报数据,将上市当天定义为0日,将上市后第1个交易日直到第21个交易日定义为第一个交易月,故一年即为252个交易日,自然三年是756个交易日(Ritter, 1991)。王美今、张松(2000)、刘力、李文德(2001)、汪宜霞(2006)以及Chan, Wang and Wei (2004)都采用了类似的定义。本文回顾的文献中,白仲光、张维(2003)使用了周回报的数据。本文以月回报来计算超额回报,同时在稳健性测试中使用日回报数据。

按照研究中的习惯,本文有如下定义。 R_{it} 是某一样本公司在 t 月的原始回报率, $E(R_{it})$ 是该公司在 t 月的预期回报, $AR_{it} = R_{it} - E(R_{it})$ 则是该公司在 t 月的超额回报。则,从第1个月到第 τ 个月的累计超额回报(Cumulative Abnormal Return, CAR)定义如下:

$$CAR_{it} = \sum_{t=1}^{\tau} AR_{it}$$

相应地,购买并持有的超额回报,不需要投资者每期重新调整投资组合的比例,是投资者购买并持有策略能够得到的超额回报,公式如下:

$$BHAR_{it} = \prod_{t=1}^{\tau} [1 + R_{it}] - \prod_{t=1}^{\tau} [1 + E(R_{it})]$$

“新上市偏差”会使得IPO之后长期超额回报偏高,甚至为正。本文首先提供传统方法计算出来的CAR和BHAR,然后剔除60个月之内上市的IPO公司,再计算新的CAR和BHAR,这样可以有效控制“新上市偏差”对IPO长期弱势现象研究的影响。

本文使用资产回报率的变化($DROA$)和销售利润率的变化($DROS$)来衡量IPO公司上市后的会计业绩。资产回报率(ROA)即为净利润除以期末总资产,之所以要除以期末总资产,是出于数据可比性的要求。为了保证IPO之后第1年 $DROA$ 的可靠性,必须使用第1年的ROA减去IPO当年的ROA;如果使用期初总资产的话,则IPO当年ROA与IPO之后第1年ROA会由于IPO的原因发生较大的变化,这会使得 $DROA$ 数据不可靠。销售利润率(ROS)定义为当年净利润除以销售额,这可以克服因为发股改变总资产导致前后期间的不可比问题。第1年的 $DROA$ ($DROS$)是指IPO后第1年的ROA(ROS)减去IPO当年的ROA (ROS);第2年的 $DROA$ ($DROS$)是指IPO后第2年的ROA (ROS)减去IPO后第1年ROA (ROS),依此类推。则, $DROA_{it}$ ($DROS_{it}$)定义如下:

$$DROA_{it} = \frac{NI_{it}}{Asset_{it}} - \frac{NI_{it-1}}{Asset_{it-1}}, DROS_{it} = \frac{NI_{it}}{Sales_{it}} - \frac{NI_{it-1}}{Sales_{it-1}},$$

其中: NI_{it} 是某一样本公司在 t 年的净利润, $Asset_{it}$ 是该公司在 t 年期末总资产, $Sales_{it}$ 是该公司在 t 年的销售收入。

行业或市场中位数调整后的 $Adj_DROA(DROS)$ 则为:

$$Adj_DROA_{it} = DROA_{it} - Median(DROA_{pt})$$

$$Adj_DROS_{it} = DROS_{it} - Median(DROS_{pt})$$

其中: $Median(DROA_{pt})$ 是某公司所属行业(或市场) t 年 $DROA$ 的中位数, $Median(DROS_{pt})$ 是某公司所属行业(或市场) t 年 $DROS$ 的中位数。

三、IPO后股价长期弱势

3.1 IPO后股价长期弱势

表3给出了1996年到2003年共8年间没有进行股权分置改革的IPO公司上市后60个月的CAR和BHAR。Panel A是采用匹配方法计算CAR和BHAR，也就是说，在计算超额回报时采用规模匹配、账面价值与市值比匹配、以及规模/账面价值与市值比匹配三种方法来计算。当我们按规模进行匹配时，首先取得IPO公司上市当月最后一个交易日的规模(流通市值)，选择与IPO公司规模最接近但高于IPO公司规模的公司作为规模匹配公司。账面价值与市值比匹配的流程类似。在采用规模/账面价值与市值比匹配时，我们首先找出与IPO公司规模相当的非IPO公司，即所有介于IPO公司规模70%到130%的非IPO公司，然后再从中选择账面价值与市值比与IPO公司账面价值与市值比最接近且大于IPO公司账面价值与市值比的公司。

Brav and Gompers (1997)中考虑到了IPO公司和匹配公司的风险特征可能出现变化，故采用了时变风险的方法(time-varying firm risk characteristics)。本文也采用了类似的做法，对于每个IPO公司，每年将选择一个对应的匹配公司，即按每年最后一个交易日的规模(流通市值)进行排序，选择与IPO公司规模最接近但高于IPO公司规模的公司作为规模匹配公司。同样地，对于账面价值与市值比匹配，以及规模/账面价值与市值比匹配，也采用时变风险的方法进行匹配，结果见表3的Panel B。

Panel C提供了市场指数调整的超额回报，所采用的市场指数分别为等权市场指数、流通市值加权市场指数和总市值加权市场指数。本文将样本公司在IPO之后60个月内按是否进行了股权分置改革(虚变量SSR)分为两组，为了使研究结果不受股权分置改革的影响，表3只提供了在上市后五年内未进行股权分置改革(SSR=0)的IPO公司的BHAR与CAR。

表3 中国IPO公司上市后60个月的股价表现(SSR=0，不受股权分置改革影响的样本)

Panel A 规模/BM匹配的超额回报

新上市 偏差	窗口	规模匹配		账面价值与市值比匹配		规模/账面价值 与市值比匹配	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
未控制	前6个月	-0.006	-0.001	0.028*	0.017	0.042***	0.031**
	第一年	0.001	-0.006	0.024	0.001	0.066***	0.037**
	第二年	0.024	-0.005	0.079**	0.020	0.078***	0.012
	第三年	0.041	-0.017	0.137***	0.039	0.119***	0.002
	第四年	0.026	-0.026	0.130**	0.016	0.091*	-0.015
控制	前6个月	0.055***	0.023	0.068***	0.057***	0.056***	0.038***
	第一年	0.058**	0.019	0.066***	0.051***	0.053**	0.018
	第二年	0.106***	-0.010	0.049	-0.001	0.049	-0.032
	第三年	0.162***	-0.057**	-0.056	-0.095***	0.002	-0.114***
	第四年	-0.246***	-0.217***	-0.040	-0.114***	-0.039	-0.139***
	第五年	-0.196***	-0.189***	0.000	-0.095***	0.001	-0.112***

Panel B 规模/BM匹配的超额回报(时变风险)

新上市 偏差	窗口	规模匹配		账面价值与市值比匹配		规模/账面价值 与市值比匹配	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
未控制	前6个月	0.004	-0.004	0.000	-0.007	-0.017	-0.012
	第一年	0.016	-0.014	-0.032	-0.045***	-0.063***	-0.049***
	第二年	0.004	-0.023	-0.129***	-0.092***	-0.165***	-0.111***
	第三年	-0.042	-0.026	-0.427***	-0.169***	-0.420***	-0.183***
	第四年	-0.145**	-0.037	-0.843***	-0.239***	-0.751***	-0.236***
	第五年	-0.218**	-0.030	-1.113***	-0.260***	-0.748***	-0.229***
控制	前6个月	0.040**	0.012	-0.060***	-0.059***	-0.016	-0.026*
	第一年	0.049**	0.008	-0.106***	-0.090***	-0.027	-0.049***
	第二年	0.077**	-0.011	-0.233***	-0.159***	-0.076*	-0.096***
	第三年	0.005	-0.080***	-0.448***	-0.238***	-0.275***	-0.178***
	第四年	-0.047	-0.091***	-0.715***	-0.260***	-0.351***	-0.167***
	第五年	-0.007	-0.067**	-0.617***	-0.248***	-0.243***	-0.135***

Panel C 市场指数调整的超额回报

新上市 偏差	窗口	等权市场指数调整		流通市值加权市场指数调整		总市值加权 市场指数调整	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
未控制	前6个月	0.006	0.035***	0.021***	0.060***	0.042***	0.079***
	第一年	0.009	0.083***	0.055***	0.143***	0.090***	0.172***
	第二年	0.008	0.141***	0.149***	0.259***	0.195***	0.299***
	第三年	-0.037*	0.124***	0.190***	0.253***	0.259***	0.305***
	第四年	-0.134***	0.121***	0.211***	0.274***	0.308***	0.336***
	第五年	-0.172***	0.131***	0.204***	0.309***	0.300***	0.368***
控制	前6个月	0.001	-0.027***	0.013**	-0.020*	0.033***	-0.005
	第一年	0.000	-0.040***	0.043***	-0.002	0.077***	0.019
	第二年	-0.008	-0.059***	0.143***	0.052***	0.183***	0.070***
	第三年	-0.063***	-0.124***	0.182***	-0.001	0.243***	0.029*
	第四年	-0.171***	-0.162***	0.203***	-0.007	0.287***	0.024
	第五年	-0.204***	-0.161***	0.194***	0.026	0.275***	0.053***

超额回报计算过程如下： R_{it} 是某一样本公司在 t 月的原始回报率， $E(R_{it})$ 是该公司在 t 月的预期回报， $AR_{it} = R_{it} - E(R_{it})$ 则是该公司在 t 月的超额回报。则，从第1个月到第 τ 个月的累计超额回报(Cumulative Abnormal Return, CAR)定义为 $CAR_{it} = \sum_{t=1}^{\tau} AR_{it}$ 。相应地，购买并持有的超额回报，不需要投资者每期重新调整投资组合的构成，是投资者购买并持有策略能够得到的超额回报，公式为 $BHAR_{it} = \prod_{t=1}^{\tau} [1 + R_{it}] - \prod_{t=1}^{\tau} [1 + E(R_{it})]$ 。在计算超额回报时采用规模匹配，

账面价值与市值比匹配,以及规模/账面价值与市值比匹配三种方法来计算。当我们按规模进行匹配时,首先取得IPO公司上市当月最后一个交易日的规模(流通市值),选择与IPO公司规模最接近但高于IPO公司规模的公司作为规模匹配公司。账面价值与市值比匹配的流程类似。在采用规模/账面价值与市值比匹配时,我们首先找出与IPO公司规模相当的非IPO公司,即所有介于IPO公司规模70%到130%的非IPO公司,然后再从中选择账面价值与市值比与IPO公司账面价值与市值比最接近且大于IPO公司账面价值与市值比的公司。

变风险的方法(time-varying firm risk characteristics)是指,对于每个IPO公司,每年将选择一个对应的匹配公司,即按每年最后一个交易日的规模(流通市值)进行排序,选择与IPO公司规模最接近但高于IPO公司规模的公司作为规模匹配公司。市场指数调整的超额回报,所采用的市场指数分别为等权市场指数、流通市值加权市场指数和总市值加权市场指数。

股权分置改革虚变量SSR(Shareholder structure reform),是指IPO公司在上市之后60个月内是否进行股权分置改革,如果是则为1,否则为0。

*10%水平显著,**5%水平显著,***1%水平显著。

从表3的Panel A可以看出,未控制“新上市偏差”时,IPO公司上市之后60个月时规模匹配的BHAR为0.5%(不显著),而BM调整的BHAR为9.4%(10%水平下显著),规模/BM调整BHAR为5.1%(不显著)。Panel B提供了时变风险方法(Brav and Gompers, 1997)下规模/BM匹配的超额回报。在Panel B中,未控制“新上市偏差”时,IPO公司上市之后60个月时规模匹配的BHAR为-21.8%(5%水平下显著),而BM调整后的BHAR为-111.3%(1%水平下显著),规模/BM调整的BHAR为-74.8%(1%水平下显著)。但是Panel C中,未控制“新上市偏差”时,等权市场指数调整的BHAR在第60个月为-17.2%(1%水平下显著),而流通市值加权市场和总市值加权指数调整的BHAR均在1%水平下显著为正。显然,综合Panel A、B和C的结果,未控制“新上市偏差”时,我们很难得出IPO后股价是否存在长期弱势的结论,这三张表中的内容在某些指标上是冲突的。

与BHAR的结果相类似,Panel A、B和C中CAR的结果也存在冲突之处,不能得出一致的结论。未控制“新上市偏差”时,Panel B的结果表明存在IPO长期弱势,而Panel A和C中的CAR表明并不存在IPO长期弱势。结合表1的内容可知,表3的发现本身就存在一些令人疑惑的矛盾之处。如果IPO长期弱势只存在某些指标当中,而不存在于另外一些指标当中的话,我们很难推断出是否真的存在IPO长期弱势。正如表1所示,如果在许多研究中,发现存在IPO长期弱势的文献与不能发现IPO长期弱势的文献一样多的话,我们也很难推断出是否真的存在IPO长期弱势。

Barber and Lyon (1997)认为“新上市偏差”会严重影响到长期超额回报的计算,故在研究IPO公司的长期市场表现时,必须控制“新上市偏差”。为了有效地控制“新上市偏差”的影响,在寻找匹配公司以及计算市场指数时都剔除在前60个月内上市的公司。李蕴玮、宋军和吴冲锋(2002), Chan, Wang and Wei (2004), 和Kao, Wu and Yang (2009)这三篇文献考虑到了“新上市偏差”的影响,在计算超额回报时剔除了上市时间短于二年(或三年)的样本。这样的话,可以部分控制“新上市偏差”,但是在观察IPO公司上市后第25个月(或第37个月)到第60个月的超额回报时,同样还会受到“新上市偏差”问题的影响。

表3同时提供了控制“新上市偏差”后的结果。对于上市之后60个月内没有进行股权分置改革的IPO子样本而言(SSR=0),在控制“新上市偏差”之前,从表3的Panel

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A可以看出，IPO公司上市之后60个月时规模匹配的BHAR为0.5%（不显著）；而在控制“新上市偏差”之后，从表3的Panel A可以看出，规模匹配的BHAR为-19.6%（1%水平下显著）。

将表3中所有衡量超额回报的18个指标进行比较的话，在控制“新上市偏差”前，18个指标中显著为负的指标只有6个，其中有5个显著为负的指标为时变风险方法下得出的超额回报；而在控制“新上市偏差”之后，18个指标中显著为负的指标有11个。为了方便比较本文的研究发现，将表3的Panel A中的结果在图2中呈现出来。

图2 控制“新上市偏差”之前与之后超额回报的比较

$BHAR$ 是指控制“新上市偏差”之前的BHAR， $BHAR_NLB$ 是指控制“新上市偏差”之后的BHAR； CAR 是指控制“新上市偏差”之前的BHAR， CAR_NLB 是指控制“新上市偏差”之后的BHAR。

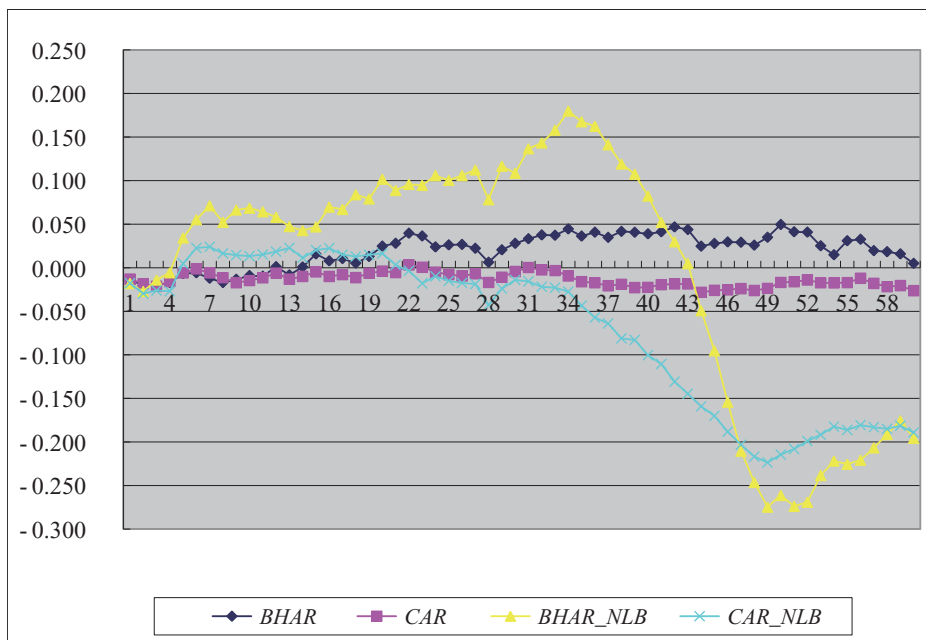


图2-1 规模匹配

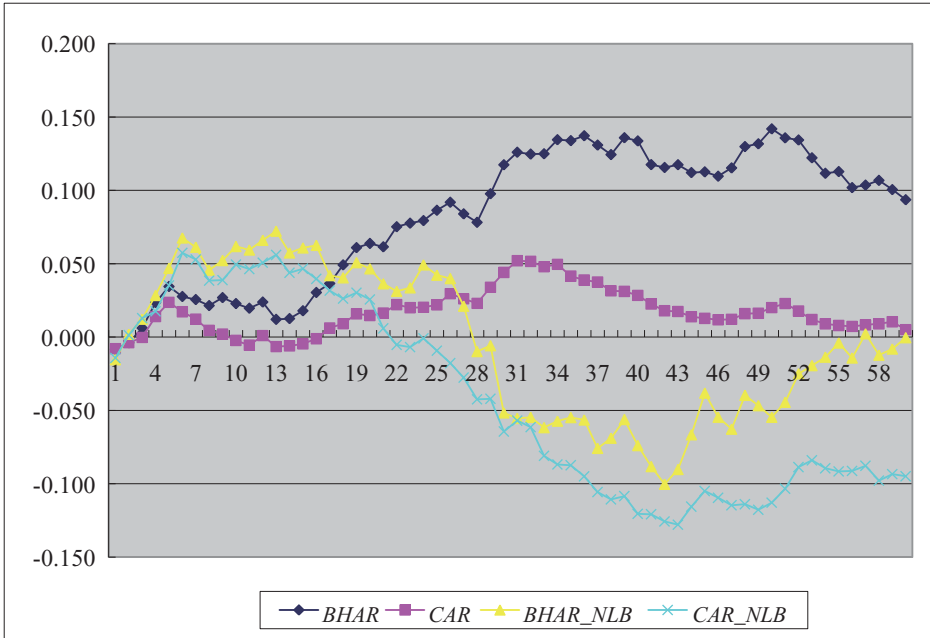


图 2-2 账面价值与市值比匹配

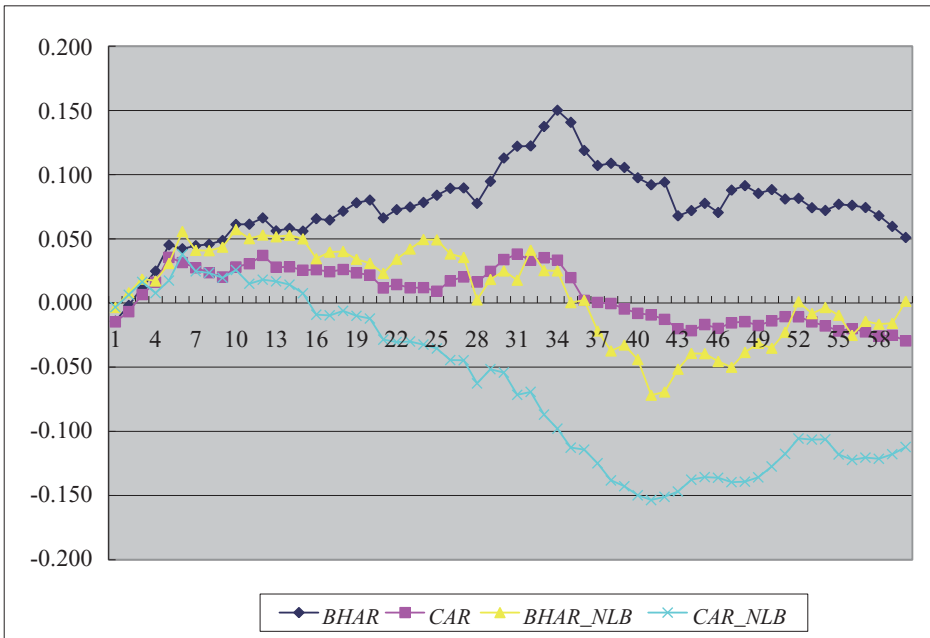


图 2-3 规模/账面价值与市值比匹配

从图2可以看出，“新上市偏差”对于IPO公司长期弱势研究影响非常大，如果不对其加以控制，可能无法发现真正的IPO后股价长期弱势。这也解释了表1中众多研究结论之间的冲突之处。

3.2 股权分置改革对IPO后股价长期弱势的影响

在控制“新上市偏差”之后，对于上市之后60个月内没有进行股权分置改革的子样本而言($SSR=0$)，IPO的长期弱势现象非常明显。而对于上市之后60个月内进行股权分置改革的IPO子样本而言($SSR=1$)，由于这部分子样本与 $SSR=0$ 子样本存在两方面的区别，其一是在股权分置改革期间，新上市公司占全部上市公司的比重在下降(图1)，故“新上市偏差”已经变得相对不重要；其二是涉及股权分置改革的公司与市场指数相比呈现出显著正的超额回报(陈蛇、陈朝龙，2005；奉立诚、许伟河，2006等)，这会使得IPO后长期弱势的研究受到干扰。故，本文单独研究了上市之后60个月内进行股权分置改革的IPO子样本($SSR=1$)的长期弱势问题，结果见表4。

表4 中国IPO公司上市后60个月的股价表现($SSR=1$ ，股权分置改革影响的样本)
Panel A 规模/BM匹配的超额回报

新上市偏差	窗口	规模匹配		账面价值与市值比匹配		规模/账面价值与市值比匹配	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
未控制	前6个月	0.015	0.005	0.009	-0.002	0.016	0.015
	第一年	0.018	0.013	-0.016	-0.024	0.003	0.009
	第二年	0.061**	0.100*	0.043	0.057	0.071***	0.108***
	第三年	0.096**	0.126**	0.079	0.105**	0.103**	0.149***
	第四年	0.401**	0.074	0.336	0.140**	0.477***	0.158**
控制	前6个月	0.029**	0.024	0.005	-0.010	0.016	0.009
	第一年	0.034*	0.034	-0.013	-0.026	0.001	-0.008
	第二年	0.058*	0.112***	0.052**	0.056	0.076***	0.090**
	第三年	0.086*	0.154***	0.078	0.101*	0.164***	0.179***
	第四年	0.405**	0.156**	0.299	0.116*	0.549***	0.117*
	第五年	0.428**	0.208***	0.476**	0.156**	0.556***	0.145*

Panel B 规模/BM匹配的超额回报(时变风险)

新上市偏差	窗口	规模匹配		账面价值与市值比匹配		规模/账面价值与市值比匹配	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
未控制	前6个月	0.025*	0.034**	0.035**	0.024	0.031**	0.039**
	第一年	0.029*	0.042**	0.017	0.014	0.045***	0.058***
	第二年	0.097***	0.167***	0.057**	0.073**	0.109***	0.193***
	第三年	0.164***	0.229***	0.101**	0.088*	0.133***	0.199***
	第四年	0.510***	0.265***	0.159	0.026	0.161	0.095*
控制	前6个月	0.035**	0.033**	0.013	0.004	0.027*	0.024
	第一年	0.035*	0.043*	-0.010	-0.028	0.037**	0.023
	第二年	0.121***	0.181***	0.058**	0.044	0.115***	0.143***
	第三年	0.201***	0.248***	0.106**	0.054	0.133***	0.148***
	第四年	0.636***	0.260***	0.225	0.012	0.095	0.073
	第五年	0.703***	0.350***	0.170	0.004	-0.122	0.070

Panel C 市场指数调整的超额回报

新上市 偏差	窗口	等权市场指数调整		流通市值加权市场指数调整		总市值加权 市场指数调整	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
未控制	前6个月	0.015*	0.010	0.003	-0.002	-0.012*	-0.022*
	第一年	0.007	0.004	-0.022***	-0.028*	-0.050***	-0.066***
	第二年	0.068***	0.071***	0.012	-0.005	-0.034***	-0.080***
	第三年	0.122***	0.092***	0.060***	0.005	-0.002	-0.095**
	第四年	0.403***	0.110**	0.346***	0.056	0.312***	-0.007
	第五年	0.272***	0.142**	0.234***	0.166***	0.213***	0.161***
控制	前6个月	0.015**	0.009	0.003	0.000	-0.010*	-0.006
	第一年	0.006	0.001	-0.022***	-0.024	-0.045***	-0.037*
	第二年	0.070***	0.080*	0.015	0.020	-0.024**	-0.004
	第三年	0.126***	0.120***	0.068***	0.054	0.013	0.015
	第四年	0.416***	0.144***	0.365***	0.112*	0.321***	0.070
	第五年	0.288***	0.175***	0.256***	0.217***	0.215***	0.170***

超额回报计算过程如下： R_{it} 是某一样本公司在 t 月的原始回报率， $E(R_{it})$ 是该公司在 t 月的预期回报， $AR_{it} = R_{it} - E(R_{it})$ 则是该公司在 t 月的超额回报。则，从第1个月到第 τ 个月的累计超额回报(Cumulative Abnormal Return, CAR)定义为 $CAR_{it} = \sum_{t=1}^{\tau} AR_{it}$ 。相应地，购买并持有的超额回报，不需要投资者每期重新调整投资组合的构成，是投资者购买并持有策略能够得到的超额回报，公式为 $BHAR_{it} = \prod_{t=1}^{\tau} [1 + R_{it}] - \prod_{t=1}^{\tau} [1 + E(R_{it})]$ 。在计算超额回报时采用规模匹配，账面价值与市值比匹配，以及规模/账面价值与市值比匹配三种方法来计算。当我们按规模进行匹配时，首先取得IPO公司上市当月最后一个交易日的规模(流通市值)，选择与IPO公司规模最接近但高于IPO公司规模的公司作为规模匹配公司。账面价值与市值比匹配的流程类似。在采用规模/账面价值与市值比匹配时，我们首先找出与IPO公司规模相当的非IPO公司，即所有介于IPO公司规模70%到130%的非IPO公司，然后再从中选择账面价值与市值比与IPO公司账面价值与市值比最接近且大于IPO公司账面价值与市值比的公司。

变风险的方法(time-varying firm risk characteristics)是指，对于每个IPO公司，每年将选择一个对应的匹配公司，即按每年最后一个交易日的规模(流通市值)进行排序，选择与IPO公司规模最接近但高于IPO公司规模的公司作为规模匹配公司。市场指数调整的超额回报，所采用的市场指数分别为等权市场指数、流通市值加权市场指数和总市值加权市场指数。

股权分置改革虚变量SSR(Shareholder structure reform)，是指IPO公司在上市之后60个月内是否进行股权分置改革，如果是则为1，否则为0。

*10%水平显著，**5%水平显著，***1%水平显著。

从表4可以看出，对于上市之后60个月内进行股权分置改革的IPO子样本(SSR=1)而言，存在显著为正的超额回报，这与表3的结论形成了鲜明的对比。在表4中的Panel A、B和C中，除个别指标以外，IPO公司上市之后60个月时超额回报均大于零，且部分指标非常显著。显然，对于SSR=1的子样本，由于股权分置改革中非流通股股东向流通股股东支付了一定的对价，形成了实质的利好，故这部分子样本在IPO之后60个月超额回报显著为正。对比是否控制“新上市偏差”的结果可知，是否控制“新上市偏差”对IPO长期弱势研究影响有限。

3.3 不同年度IPO公司长期股价业绩

中国资本市场作为新兴市场，市场上的上市公司都过于年轻，且IPO公司首发上市的相关政策处于不断变化中，故有必要观察不同年度IPO公司其长期业绩的变化，结果见表5。表5中提供了不同年度IPO公司在上市之后36个月、60个月的BHAR与CAR，并且以2000年5月为临界点分为两个子样本，即1996年到2000年4月的子样本、以及2000年5月到2003年的子样本，分别提供了两个子样本的BHAR与CAR，以及全部样本的混合结果。2000年5月的IPO公司，其第60个月正好是2005年6月，即中国正式的股权分置改革开始的时间。本文将2000年4月及之前的IPO公司定义为不受股权分置改革影响的区间，而将之后定义为受股权分置改革影响的区间。

从表5可以看出，从1996年到2001年，IPO公司在上市之后36个月或60个月时，大多呈现出长期弱势现象；而在2002年和2003年，则呈现出显著为正的长期超额回报。分组结果表现，处于1996年到2000年4月之间的IPO公司，长期股价表现总体上显著为负；而处于2000年5月到2003年的IPO公司，长期股价表现总体上显著为正。而全部IPO公司的混合结果，其长期股价表现在不同指标上相互冲突。

分年度的结果表明，不同年度IPO公司长期弱势表现的形态与程度存在一定的差异。这可能与不同年度的监管政策有较大的关系(Kao, Wu and Yang, 2009)。由于本文主要着重于研究“新上市偏差”对IPO长期弱势的影响，对于监管政策变化如何影响IPO公司行为不进行更详细的讨论。为了深入观察以上发现的稳健性，本文同时使用了日回报的数据进行研究。按照Ritter (1991)的研究方法，从IPO公司上市之后第2个交易日开始观察其之后的超额回报，并且将一个交易月定义为21个交易日，自然，IPO之后60个月是指1260个交易日。使用日数据也得到了类似的结果。

四、IPO后会计业绩的长期表现

Ritter and Welch (2003)认为，IPO弱势是否存在还有争议。而本文第三部分的研究结果表明，对于不受股权分置改革影响的IPO公司，在控制“新上市偏差”后，上市后60个月股价存在显著的长期弱势，这可能与中国资本市场的监管有密切关系。Fan, Wong and Zhang (2007)研究发现，与不存在政治联系的IPO公司相比，存在政治联系的IPO公司上市后三年内股价表现要低18%。Chan, Wang and Wei (2004)研究认为，中国A股和B股IPO公司的长期弱势部分是由于经营业绩造成的。Kao, Wu and Yang (2009)则进一步研究了经营业绩背后的监管政策，研究发现，中国股市的监管政策确实造成了IPO公司的机会主义盈余管理行为，并且盈余管理越严重的公司期限上市后三年内的股价表现也越差。

显然，探讨IPO公司股价长期弱势与经营业绩之间的关系就变得非常有必要。中国资本市场作为新兴市场，其独特的监管政策、公司治理结构等制度因素是IPO公司上市后经营业绩与股价表现的決定力量(Fan, Wong and Zhang, 2007; Kao, Wu and Yang, 2009)。对这些因素的深入讨论超出了本文的主旨，本文第四部分则只是探讨会计业绩指标与股价表现之间的关系。

表5 中国IPO公司上市后60个月的股价表现(剔除IPO之前60个月内上市公司)

IPO年度	规模/BM匹配的超额回报											
	上市后三年						上市后五年					
	规模匹配		账面价值与 市值比匹配		规模/账面价值 与市值比匹配		规模匹配		账面价值与 市值比匹配		规模/账面价值 与市值比匹配	
BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	
1996	0.371***	-0.057	0.561**	0.143	1.914*	0.446	-0.933***	-0.582***	0.217	-0.103	-0.191	-0.590*
1997	0.230**	-0.051	-0.294*	-0.151**	0.053	-0.118*	0.094	-0.136***	-0.105	-0.159**	-0.005	-0.187***
1998	-0.009	-0.104**	0.004	-0.082	-0.088	-0.156***	0.058	-0.075	0.052	-0.040	0.019	-0.129**
1999	0.051	-0.047	-0.040	-0.093	-0.078	-0.115**	0.059	0.009	0.020	-0.065	0.067	-0.008
2000	-0.002	-0.040	-0.044	-0.108**	-0.057	-0.117***	0.040	0.073	0.019	-0.005	-0.006	-0.021
2001	0.034	-0.007	-0.058*	-0.126**	-0.049	-0.128**	0.209**	0.127	0.083	-0.019	-0.040	-0.109
2002	0.011	0.249***	0.100**	0.260**	0.127***	0.268***	0.523*	0.176	0.548	0.213*	0.496	0.151
2003	0.215*	0.213**	0.159	0.123	0.414***	0.387***	0.491	0.233	0.726	0.079	1.193**	0.267**
1996-2000.4	0.193***	-0.066**	-0.055	-0.083**	0.026	-0.108***	-0.246***	-0.245***	0.000	-0.100***	0.017	-0.122***
2000.5-2003	0.060*	0.078**	0.022	-0.003	0.073**	0.040	0.253**	0.147***	0.263**	0.052	0.289***	0.040
1996-2003	0.147***	-0.020	-0.022	-0.051**	0.049	-0.038	-0.085	-0.118***	0.107*	-0.038	0.146***	-0.045

Panel B 规模/BM匹配的超额回报(时变风险)

IPO年度	上市后三年						上市后五年					
	规模匹配			账面价值与 市值比匹配			规模/账面价值 与市值比匹配			规模/账面价值 与市值比匹配		
	BHAR	CAR		BHAR	CAR		BHAR	CAR		BHAR	CAR	
1996	0.128	-0.070	-1.746***	-0.717***	-1.548***	-0.642***	0.149	-0.103	-2.649***	-0.806***	-2.627***	-0.976***
1997	-0.066	-0.140**	-0.443***	-0.257***	-0.358***	-0.277***	-0.175*	-0.122**	-0.514***	-0.259***	-0.405***	-0.279***
1998	-0.111	-0.112*	-0.270**	-0.164**	-0.621***	-0.300***	-0.060	-0.095	-0.193	-0.155*	-0.304**	-0.237***
1999	0.086	-0.020	-0.005	-0.088	0.018	-0.089	0.147*	0.044	-0.042	-0.131	0.104	0.000
2000	0.006	-0.018	-0.030	-0.074	0.008	-0.009	0.031	0.033	0.017	-0.017	0.062**	0.098*
2001	0.047	0.059	-0.037	-0.122*	0.046	0.023	0.222**	0.211**	0.095	-0.032	0.122	0.165**
2002	0.129***	0.280***	0.118***	0.218***	0.157***	0.357***	0.621**	0.235*	0.509*	0.154	-0.084	0.017
2003	0.433***	0.393***	0.238*	0.109	0.198*	0.071	1.220**	0.514***	-0.138	-0.133	-0.440	0.003
1996-2000.4	0.001	-0.097***	-0.566***	-0.291***	-0.376***	-0.243***	-0.016	-0.090***	-0.791***	-0.320***	-0.347***	-0.221***
2000.5-2003	0.128***	0.136***	0.063**	0.014	0.086***	0.085***	0.401***	0.209***	0.114	0.013	-0.034	0.092*
1996-2003	0.043	-0.024	-0.320***	-0.179***	-0.168***	-0.106***	0.116*	0.004	-0.455***	-0.197***	-0.216**	-0.090***

Panel C 市场指数调整的超额回报

IPO年度	上市后三年						上市后五年					
	流通市值加权			总市值加权市场			流通市值加权市场			总市值加权市场		
	等权市场指数调整	市场指数调整	指数调整	BHAR	CAR	CAR	等权市场指数调整	BHAR	CAR	指数调整	BHAR	CAR
1996	-0.285***	-0.165***	0.042	-0.037	0.178*	0.049	-0.776***	-0.186***	0.284**	0.132***	0.433***	0.208***
1997	-0.088	-0.061	0.411***	0.214***	0.424***	0.230***	-0.258***	-0.110***	0.313***	0.267***	0.305***	0.268***
1998	-0.248***	-0.099**	0.205***	0.152***	0.218***	0.173***	-0.227***	-0.137***	0.031	0.072	0.029	0.081*
1999	-0.086	-0.085**	0.150**	0.115***	0.130**	0.100**	-0.020	-0.063	0.064	0.042	0.023	-0.001
2000	-0.045*	-0.096***	-0.032	-0.073**	-0.046*	-0.096***	0.027	0.003	-0.008	-0.050	-0.032	-0.104**
2001	-0.032	-0.097**	-0.072**	-0.151***	-0.098***	-0.190***	0.148	0.065	0.096	0.015	0.054	-0.045
2002	0.095***	0.162***	0.021	0.043	0.003	0.013	0.141	0.072	0.003	0.090	-0.139	0.055
2003	0.338***	0.248***	0.312***	0.237***	0.259**	0.190**	0.723*	0.314**	0.894*	0.486***	0.780	0.440***
1996-2000.4	-0.188***	-0.127***	0.194***	0.015	0.240***	0.053***	-0.398***	-0.182***	0.191***	0.042***	0.229***	0.080***
2000.5-2003	0.066***	0.027	0.034	-0.013	0.009	-0.046*	0.199**	0.088**	0.174**	0.084**	0.107	0.034
1996-2003	-0.102***	-0.120***	0.140***	-0.008	0.162***	0.019	-0.208***	-0.145***	0.186***	0.030*	0.190***	0.052***

*10%水平显著, **5%水平显著, ***1%水平显著。BHAR与CAR的定义与表3,表4相同。

4.1 IPO后会计业绩表现

表6的Panel A和Panel B给出了1996年到2003年共8年IPO公司上市后*DROA* (*DROS*), 以及行业(市场)中位数调整后的*Adj_DROA* (*Adj_DROS*)。 *DROA*, 即为ROA的差分, ROA的计算公式为当年净利润除以期末总资产。行业调整是指使用原始*DROA*值减去行业中位数; 而市场调整是指使用原始*DROA*值减去市场中位数。

从表6的Panel A可以看出, IPO公司上市之后第3年原始的*DROA* (第1, 2和3年*DROA*相加)是-3.1% (在1%水平下显著), 即意味着IPO公司上市第3年平均的ROA比上市当年的ROA绝对值下降了-3.1%, 第3年的*DROS*是-9.4% (在1%水平下显著); 第5年原始的*DROA*是-5% (在1%水平下显著), 而原始的*DROS*是-15.7% (在1%水平下显著)。Panel A中还提供了行业/市场中位数调整的会计业绩指标, 行业中位数调整的*Adj_DROA*在第5年为-2.3% (1%水平下显著), 而市场中位数调整的*Adj_DROA*在第5年为-2.2% (1%水平下显著)。行业/市场中位数调整后*Adj_DROS*的结果也类似, 分别为-9.5% (1%水平下显著)与-9.9% (1%水平下显著)。可见, IPO公司上市后ROA(ROS)都存在显著的下滑(与IPO当年相比), 在控制行业(市场)总体业绩下滑的趋势后, IPO公司会计业绩下滑仍很显著。

4.2 控制“新上市偏差”(剔除60个月内上市的IPO公司)

“新上市偏差”对于中国这样新兴市场的IPO后股价长期弱势研究影响非常大, 如果不对其加以控制, 可能无法发现真正的IPO后股价长期弱势。显然, 同样的思路也适用于IPO后会计业绩下滑的研究, 为了有效地控制“新上市偏差”对IPO后会计业绩的影响, 在计算行业中位数或市场中位数时, 要剔除在前60个月内上市的公司。表6的Panel B是控制“新上市偏差”后的结果。

表6 中国IPO公司上市后60个月的会计业绩

Panel A 会计业绩

年	原始值		行业中位数调整		市场中位数调整	
	<i>DROA</i>	<i>DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>
1	-0.006***	-0.019***	0.001	-0.007**	0.001	-0.007**
2	-0.021***	-0.059***	-0.008***	-0.033***	-0.008***	-0.034***
3	-0.031***	-0.094***	-0.013***	-0.055***	-0.012***	-0.058***
4	-0.040***	-0.123***	-0.017***	-0.073***	-0.017***	-0.076***
5	-0.050***	-0.157***	-0.023***	-0.095***	-0.022***	-0.099***

Panel B 会计业绩(控制“新上市偏差”)

年	原始值		行业中位数调整		市场中位数调整	
	<i>DROA</i>	<i>DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>
1	-0.006***	-0.019***	-0.006***	-0.022***	-0.002**	-0.018***
2	-0.021***	-0.059***	-0.015***	-0.051***	-0.012***	-0.043***
3	-0.031***	-0.094***	-0.023***	-0.078***	-0.020***	-0.069***
4	-0.040***	-0.123***	-0.029***	-0.097***	-0.025***	-0.089***
5	-0.050***	-0.157***	-0.036***	-0.121***	-0.032***	-0.114***

$DROA$ ，即为 ROA 的差分， ROA 的计算公式为当年净利润除以期末总资产。之所以要除以期末总资产，是出于数据可比性的要求。为了保证 IPO 之后第 1 年 $DROA$ 的可靠性，必须使用第 1 年的 ROA 减去 IPO 当年的 ROA ；如果使用期初总资产的话，则 IPO 当年 ROA 与 IPO 之后第 1 年 ROA 会由于 IPO 的原因发生较大的变化，这会使得 $DROA$ 数据不可靠。

$DROS$ ，即为 ROS 的差分， ROS 的计算公式为当年净利润除以销售额。第 1 年的 $DROS$ 即当上市后第 1 年 ROS 减去上市当年 ROS 。

行业/市场中位数调整 Adj_DROA ($DROS$) 是指将样本公司在 t 年的 $DROA$ ($DROS$) 减去样本公司所属行业/市场第当年 $DROA$ ($DROS$) 中位数。

表中第一列未经调整 $DROA$ ($DROS$) 的数据，第二和第三列的给出的是累积行业/市场调整的 $DROA$ ($DROS$) 的数据，比如第 5 年的第一列 $DROA$ 是指 IPO 上市后五年 $DROA$ 累计相加的结果，即表明从 IPO 当年 (0 年) 第 IPO 后第五年累计 ROA 的变化额。

*** 是指 1% 水平下显著，** 是指 5% 水平下显著，* 是指 10% 水平下显著。

将表 6 的 Panel B 与表 6 的 Panel A 进行比较可以看出，在控制“新上市偏差”之后，IPO 后会计业绩的长期弱势现象更加明显。为了方便比较本文的研究发现，将表 6 的 Panel A 和 Panel B 的结果在图 3 中呈现出来。结合表 6 及图 3 可知，IPO 公司上市后的会计业绩存在显著的下滑，在控制“新上市偏差”后，IPO 公司上市后会计业绩下降的程度更强。

图 3 控制“新上市偏差”之前与之后会计业绩的比较

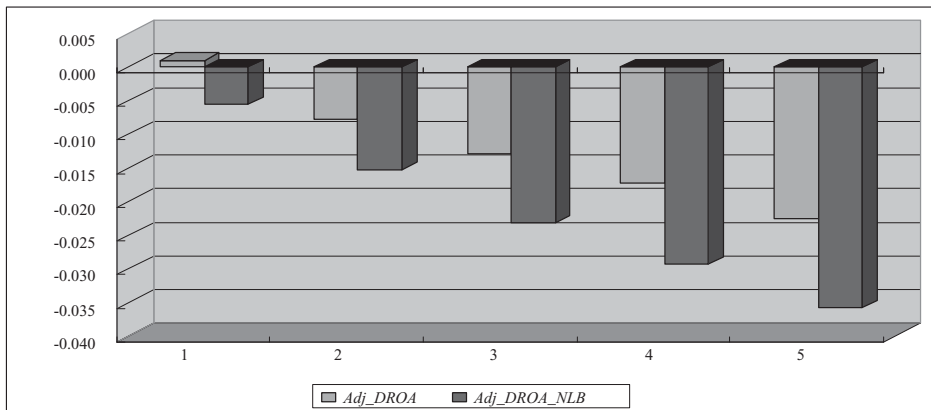


图 3-1 行业中位数调整的 $DROA$

Adj_DROA 是行业中位数调整的 $DROA$ 从上市后第 1 年到第 5 年的累计值；而 Adj_DROA_NLB 则是控制“新上市偏差”后行业中位数调整的 $DROA$ 从上市后第 1 年到第 5 年的累计值。

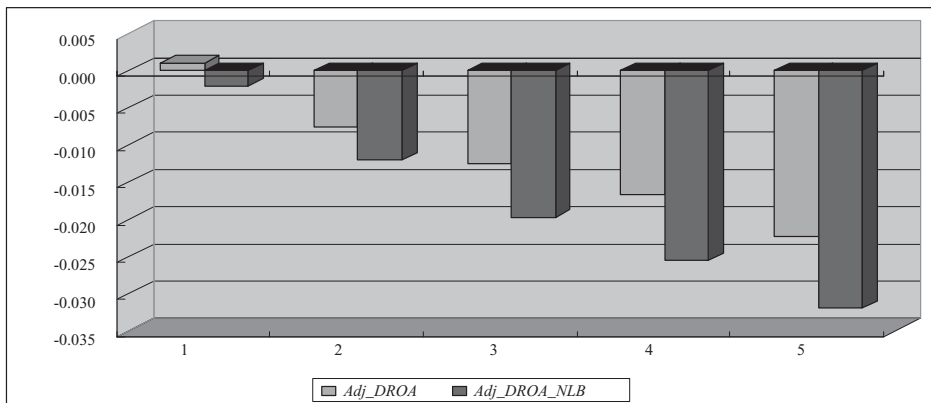


图3-2 市场中位数调整的DROA

Adj_DROA 是市场中位数调整的DROA从上市后第1年到第5年的累计值；而 Adj_DROA_NLB 则是控制“新上市偏差”后市场中位数调整的DROA从上市后第1年到第5年的累计值。

4.3 股价长期弱势与会计业绩长期弱势的关系

这部分内容只基于不受股权分置改革影响($SSR=0$)的子样本研究股价长期弱势与会计业绩长期弱势之间的关系，本文按行业中位数调整后的 Adj_DROA 的中位数分为五组，观察这五组公司的股价长期弱势现象的区别，研究结果见表7。分组的过程如下：首先计算样本公司上市后五年行业中位数调整后的 Adj_DROA 的平均值，然后按从小到大的顺序分为1，2，3，4，5共五组。

表7 股价长期弱势与会计业绩长期弱势的关系

Panel A 股价与会计业绩

分组	窗口	规模匹配		账面价值与 市值比匹配		规模/账面价值与 市值比匹配	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
1	前6个月	-0.008	-0.026	-0.035	-0.032	0.034	0.016
	第一年	0.033	-0.030	0.000	-0.024	0.103**	0.052
	第二年	0.071	-0.020	0.058	0.003	0.072	-0.008
	第三年	-0.056	-0.119**	0.044	-0.047	-0.009	-0.119**
	第四年	-0.131	-0.144***	-0.059	-0.062	-0.035	-0.114**
3	前6个月	-0.014	-0.013	0.006	-0.010	-0.001	-0.006
	第一年	-0.008	-0.019	0.030	-0.009	0.023	0.005
	第二年	0.014	-0.027	0.078	0.006	0.046	0.001
	第三年	0.004	-0.060	0.040	-0.044	0.047	-0.037
	第四年	0.086	-0.029	0.099	-0.068	0.101	-0.041
5	前6个月	-0.016	-0.007	0.035	0.016	0.037	0.023
	第一年	-0.035	-0.012	0.031	0.020	0.041	0.027
	第二年	0.026	0.030	0.127**	0.081*	0.103**	0.072**
	第三年	0.101	0.083*	0.201**	0.142***	0.185***	0.158***
	第四年	0.430**	0.146**	0.563***	0.225***	0.500***	0.207***
5-1	前6个月	-0.008	0.019	0.070	0.049	0.003	0.007
	第一年	-0.068	0.018	0.031	0.044	-0.062	-0.025
	第二年	-0.044	0.050	0.070	0.078	0.030	0.081
	第三年	0.156	0.202***	0.157	0.189**	0.193*	0.278***
	第四年	0.561**	0.290***	0.622**	0.287***	0.535***	0.321***
	第五年	0.570***	0.481***	0.767***	0.492***	0.812***	0.613***

Panel B 股价与会计业绩(控制“新上市偏差”)

分组	窗口	规模匹配		账面价值与 市值比匹配		规模/账面价值与 市值比匹配	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
1	前6个月	0.057	0.002	0.022	0.022	0.029	0.011
	第一年	0.070	-0.007	0.020	0.014	-0.001	-0.045
	第二年	0.123	-0.040	-0.035	-0.058	-0.014	-0.107**
	第三年	0.135	-0.135***	-0.232	-0.236***	-0.044	-0.244***
	第四年	-0.561***	-0.417***	-0.378**	-0.258***	-0.238*	-0.333***
	第五年	-0.655***	-0.462***	-0.307***	-0.355***	-0.295***	-0.457***
3	前6个月	0.020	-0.005	0.024	0.014	0.009	-0.005
	第一年	0.034	0.008	0.020	-0.006	-0.005	-0.018
	第二年	0.045	-0.012	0.028	-0.028	-0.029	-0.067
	第三年	0.117	-0.051	-0.015	-0.080	-0.014	-0.101*
	第四年	-0.120	-0.165***	-0.029	-0.107**	0.019	-0.125**
	第五年	0.064	-0.114**	-0.026	-0.102*	0.104	-0.121*
5	前6个月	0.068***	0.045*	0.094***	0.077***	0.061***	0.040*
	第一年	0.049	0.038	0.091***	0.074**	0.060**	0.035
	第二年	0.133***	0.103***	0.137***	0.107**	0.110**	0.081**
	第三年	0.331***	0.202***	0.129	0.129**	0.224***	0.177***
	第四年	0.391**	0.186***	0.464**	0.187***	0.595***	0.205***
	第五年	0.469***	0.319***	0.634***	0.345***	0.649***	0.382***
5-1	前6个月	0.010	0.043	0.072*	0.055	0.032	0.029
	第一年	-0.021	0.045	0.071	0.059	0.061	0.080
	第二年	0.010	0.142**	0.172	0.165**	0.124	0.189***
	第三年	0.196	0.337***	0.361*	0.365***	0.269*	0.420***
	第四年	0.952***	0.603***	0.842***	0.445***	0.834***	0.537***
	第五年	1.124***	0.781***	0.941***	0.700***	0.944***	0.839***

按 Adj_DROA 的中位数分为五组, 分组过程如下: 首先计算样本公司上市后五年行业中位数调整后的 Adj_DROA 的平均值, 然后按从小到大的顺序分为 1, 2, 3, 4, 5 共五组。1 代表最低组, 也就是行业中位数调整后的 Adj_DROA 的平均值最低的组; 5 代表最高组, 是行业中位数调整后的 Adj_DROA 的平均值最高的组; 5-1 是最高组与最低组的差。

BHAR 与 CAR 是控制“新上市偏差”的结果, 表 7 中仅仅使用了 $SSR=0$ 的公司, 即在上市后五年内没有进行股权分置改革的子样本。

*** 是指 1% 水平下显著, ** 是指 5% 水平下显著, * 是指 10% 水平下显著。

表 7 的 Panel A 中提供了未控制“新上市偏差”的结果, 行业中位数调整后的 Adj_DROA 最小的组合(第 1 组), 其股价长期弱势现象非常明显, 在 IPO 后第五年规模匹配的 CAR 为 -22.8% (1% 水平下显著); 而行业中位数调整后的 Adj_DROA 最大的组合(第 5 组) IPO 公司的股价存在显著的长期强势, 在 IPO 后第五年规模匹配的 CAR 为 25.3% (1% 水平下显著), 其它超额回报的结果也类似。这二组公司股价长期弱势的

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差异 (Panel A中最后一部分, 即5-1组) 是非常显著的。这可以部分说明IPO公司上市后股价的长期弱势表现受到基本面的影响, 基本面越来越差的公司, 其股价的表现也越来越差。

Panel B中提供了控制“新上市偏差”后的结果, 行业中位数调整后的 Adj_DROA 最小的组合 (第1组), 其股价长期弱势现象比控制“新上市偏差”之前 (Panel A) 更加显著, 在IPO后第五年规模匹配的CAR为-46.2% (1%水平下显著); 而行业中位数调整的 $DROA$ 最大的组合 (第5组) IPO公司的股价存在显著的长期强势, 在IPO后第五年规模匹配的CAR为31.9% (1%水平下显著), 其它超额回报的结果也类似。这二组公司股价长期弱势的差异 (Panel B中最后一部分, 即5-1组) 是也更加显著。综合表7的结果可知, 由于IPO公司的会计业绩与股票业绩均受“新上市偏差”的影响, 虽然, 在未控制“新上市偏差”之前, IPO公司的会计业绩与股票业绩呈现出正相关的关系; 但是, 控制“新上市偏差”之后, IPO公司的会计业绩与股票业绩之间的正相关的关系更加显著。

为了进一步深入研究IPO后长期弱势与会计业绩长期弱势的关系, 本文进行了以下多元回归, 方程如下:

$$AR = \alpha_0 + \alpha_1 Performance + \alpha_2 Size + \alpha_3 PCTNT + \alpha_4 Leverage + \alpha_5 Market + \varepsilon$$

其中: AR 是IPO公司上市后第60个月规模 (账面价值与市值比匹配, 规模/账面价值与市值比匹配) 匹配的购买并持有的超额回报 ($BHAR$) 或累计超额回报 (CAR), $Performance$ 是IPO公司上市后五年行业中位数调整后的 Adj_DROA (Adj_DROS) 的累计值, $Size$ 是IPO公司总资产的自然对数, $PCTNT$ 是IPO公司上市后非流通股占总股本的比例, $Leverage$ 是IPO公司上市当年期初负债与总资产的比率, $Market$ 是IPO公司所在市场上市当天市场指数收盘价的自然对数。

表8 回归分析

Panel A 股价与会计业绩 (Adj_DROA) 回归

因变量	规模匹配		账面价值与市值比匹配		规模/账面价值与 市值比匹配	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
自变量						
Intercept	-6.884***	-3.242***	1.528	0.835	-3.535***	-2.195***
行业中位数调整的 Adj_DROA	0.522	1.357***	2.072**	1.583***	0.757	1.225***
$SIZE$	0.331***	0.160***	-0.037	-0.023	0.181***	0.112***
$PCTNT$	0.298	0.061	-0.959*	-0.517*	-0.143	-0.109
$LEVERAGE$	-0.436	-0.309*	-0.555	-0.277	-0.314	-0.271
Adj_R^2	0.039	0.079	0.008	0.021	0.017	0.049
N	664	664	664	664	664	664

Panel B 股价与会计业绩 (*Adj_DROS*) 回归

因变量	规模匹配		账面价值与市值比匹配		规模/账面价值与 市值比匹配	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
自变量						
Intercept	-6.512***	-3.640***	1.014	0.342	-3.724***	-2.383***
行业中位数调整的 <i>Adj_DROS</i>	0.351	0.187*	0.335	0.202*	0.122	0.259***
<i>SIZE</i>	0.317***	0.178***	-0.013	-0.001	0.190***	0.121***
<i>PCTNT</i>	0.293	0.087	-0.923*	-0.485*	-0.129	-0.090
<i>LEVERAGE</i>	-0.510	-0.318*	-0.580	-0.283	-0.323	-0.302*
<i>Adj_R</i> ²	0.042	0.067	0.004	0.006	0.016	0.044
N	664	664	664	664	664	664

Panel C 股价与会计业绩 (*Adj_DROA*) 回归 (控制“新上市偏差”)

因变量	规模匹配		账面价值与市值比匹配		规模/账面价值与 市值比匹配	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
自变量						
Intercept	-2.497**	-3.036***	0.281	-1.175	-3.345***	-3.546***
行业中位数调整的 <i>Adj_DROA</i>	1.678**	2.461***	2.454***	2.572***	1.523***	2.312***
<i>SIZE</i>	0.132***	0.147***	0.005	0.063	0.166***	0.170***
<i>PCTNT</i>	0.196	0.111	-0.786*	-0.469	0.172	0.116
<i>LEVERAGE</i>	-0.473	-0.145	-0.058	0.007	-0.399	-0.291
<i>Adj_R</i> ²	0.039	0.112	0.032	0.072	0.066	0.125
N	413	413	413	413	413	413

Panel D 股价与会计业绩 (*Adj_DROS*) 回归 (控制“新上市偏差”)

因变量	规模匹配		账面价值与市值比匹配		规模/账面价值与 市值比匹配	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
自变量						
Intercept	-2.706**	-3.688***	-0.289	-1.760**	-3.632***	-4.086***
行业中位数调整的 <i>Adj_DROS</i>	0.355**	0.304**	0.353*	0.378***	0.261*	0.331***
<i>SIZE</i>	0.144***	0.177***	0.033	0.091**	0.181***	0.196***
<i>PCTNT</i>	0.210	0.152	-0.750*	-0.432	0.191	0.151
<i>LEVERAGE</i>	-0.590*	-0.260	-0.186	-0.128	-0.489*	-0.410*
<i>Adj_R</i> ²	0.034	0.071	0.011	0.035	0.057	0.092
N	413	413	413	413	413	413

回归方程为

$$AR = \alpha_0 + \alpha_1 Performance + \alpha_2 Size + \alpha_3 PCTNT + \alpha_4 Leverage + \alpha_5 Market + \varepsilon$$

其中：*AR*是IPO公司上市后第60个月规模(账面价值与市值比匹配，规模/账面价值与市值比匹配)匹配的购买并持有的超额回报(*BHAR*)或累计超额回报(*CAR*)，*Performance*是IPO公司上市后五年行业中位数调整后的*Adj_DROA*(*Adj_DROS*)的累计值，*Size*是IPO公司总资产的自然对数，*PCTNT*是IPO公司上市后非流通股占总股本的比例，*Leverage*是IPO公司上市当年期初负债与总资产的比率，*Market*是IPO公司所在市场上市当天市场指数收盘价的自然对数。

***是指1%水平下显著，**是指5%水平下显著，*是指10%水平下显著。

从表8的Panel A可知,股价长期弱势与行业中位数调整的 Adj_DROA 之间是正相关的,但是调整后的确定系数 Adj_R^2 只有1%到8%;Panel C是控制“新上市偏差”后的结果,不但行业中位数调整的 Adj_DROA 的回归系数及显著性得到较大程度的提高,并且调整后的确定系数 Adj_R^2 也明显提高。Panel B和Panel D分别是控制“新上市偏差”之前与之后,股价长期表现与行业中位数调整的 Adj_DROS 之间的回归,回归结果与Panel A和Panel C类似。

总之,表8的结果也印证了表7中单变量分析,综合表7和表8可知,“新上市偏差”不但影响了IPO后长期弱势的研究,在一定程度上也削弱了股价长期弱势与会计业绩长期弱势之间的相关关系。

五、研究结论

本文研究了中国资本市场上1996年到2003年间935家IPO公司上市后60个月的长期弱势现象。我国A股市场作为新兴市场,与成熟资本市场存在很大的区别,其中一个很重要的区别就是新发行上市公司占市场总体的比率远远大于成熟的资本市场。在长期超额回报的事项研究中,如果作为基准的指数(组合、匹配公司)包含了在近60个月内新上市公司的话,则会高估样本公司的长期超额回报,这称之为“新上市偏差”。

我国有关IPO公司未来长期超额回报的研究结果争议较大,不同的研究设计、不同的样本选择会得出迥然不同的结果。本文认为,“新上市偏差”对研究股票长期超额回报的研究至关重要,如果不加以控制,可能会得出有偏的结论。对于股权分置改革之前的样本,本文在控制“新上市偏差”之后发现中国IPO公司存在非常显著的长期弱势现象。此外,本文研究还发现我国IPO公司在上市后同样也存在显著的会计业绩弱势现象,并且IPO后会计业绩长期弱势可以部分解释IPO股价长期弱势。

本文的贡献在于明确指出中国资本市场作为新兴市场,与成熟资本市场相比,存在大量的新上市公司,在选择比较基准计算IPO公司上市后的长期超额回报时受“新上市偏差”的影响太大,如果不加以控制,研究结论不可靠。显然,随时间流逝,“新上市偏差”的影响会逐渐减弱。而在长期超额回报的计算中,其他偏差如重新调整余额偏差、有偏分布偏差等的影响会更加突出。这些偏差的影响在本文中并没有提及,是未来研究的话题。

股权分置改革作为与IPO相关联的一种发行制度在中国已经基本结束。显然,中国的IPO是首次发行(Primary offerings),即伴随着融资事件的IPO;而股权分置改革是二次发行(Secondary offerings)。这两者的关系在本文只是简单地按IPO公司是否在上市后60个月内进行了股权分置改革分为二个子样本,并没有进行更深入的探讨。本文主旨在于IPO公司长期弱势的方法论研究,对于长期弱势背后的制度根源并没有特别深入的研究。这两点是本文的主要的局限性,留待以后分析。

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New-Listing Bias and Long-Term Underperformance of IPOs¹

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Abstract

Prior research shows that IPO firms in developed markets have significantly negative long-term abnormal returns in the three-to-five years following their listing. The results of the long-term price performance of IPOs in China, however, are debatable. In the Chinese stock markets, the proportion of stocks within 60 months of the listing date to total stocks is bigger than that in the developed market. Thus, a new-listing bias arises in event studies of long-term abnormal returns, because sampled firms generally have a long post-event history of returns, whereas firms that constitute the index (or the reference portfolio) typically include new firms that begin trading subsequent to the event month. We study post-IPO price performance after controlling for the new-listing bias, and find that IPO firms had significantly negative long-term abnormal returns before the split-share structure reform, but significantly positive returns of this type during the reform. Further study finds that IPO firms have significantly negative long-term accounting performance, which is correlated with long-term negative abnormal returns.

Keywords: New-listing Bias, Split-share Structure Reform, IPO, Long-term Price Performance, Long-term Accounting Performance

CLC codes: F234.4, F830.91

¹ This paper is sponsored by the Institute of Accounting and Finance at Shanghai University of Finance and Economics (SHUFE), Project 211 of SHUFE, the National Natural Science Foundation of China (70632002), the Humanities and Social Science Foundation of the Ministry of Education (06JA630016), the Shanghai Fund of Philosophy and Social Science (2010EJB001), the PhD Program Foundation for Higher Education (20090071120081), and is a key project of the Shanghai Accounting Society. We are grateful to the anonymous reviewer, Dr Donghui Wu, Executive Editor of CAFR, the participants in the Fudan Accounting Forum and the 2009 13th Cross-Strait Accounting and Management Conference (Tamkang University), and Dr Qingchuan Hou from SHUFE for their comments and suggestions. We are responsible for all errors in this paper.

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I. Introduction

Many firms have gone public in stock exchanges through initial public offerings (IPOs) in China. Ritter (1991) and Loughran and Ritter (1995) document that IPOs generally perform worse during the five years after an IPO (long-term underperformance of IPOs). Some studies, however, argue that long-term underperformance is sensitive to sample selection and methodology, and that it does not exist when using other samples or a different method for calculating the long-term abnormal returns. Brav and Gompers (1997) study the long-term performance of IPOs but do not find they underperform over time. Brav (1997) and Mitchell and Stafford (1997) show that IPOs are typically small-growth stocks, and find that when they are value weighted, the five-year abnormal buy-and-hold return shrinks greatly, whatever the benchmark is. Fama (1998) shows that long-term IPO underperformance is related mainly to small firms.

As for studies of the Chinese IPO market, the results are not comparable because the research window and methodology differ. Table 1 surveys existing studies on the long-term underperformance of IPOs in China.

Table 1 Studies on Long-Term Performance of IPOs in China's Stock Markets

Authors	Methodology			Measures	Control for	Results
	Sample period	Observations	Window		new-listing	
Chen and Gao (2000)	1992–1995	273	36 months	Market index-adjusted BHAR	No	–
Wang and Zhang (2000)	1996–1997	110	500 trading days	Market index-adjusted BHAR	No	+
				Market model-adjusted BHAR		+
Liu and Li (2001)	1992–1996	398	756 trading days	Market index-adjusted CAR	No	+
				Market index-adjusted BHAR		+
Li, Song, and Wu (2002)	1994–1997	542	36 months	Tradable equity-weighted and index-adjusted CAR	Excluding firms within 3 years of listing date	–
Bai and Zhang (2003)	1998–2000	341	150 weeks	Market index-adjusted BHAR	No	+
				Three-factor model's alpha		+

Authors	Methodology			Measures	Control for new-listing bias	Results
	Sample period	Observations	Window			
Tang (2004)	1997–1999	258	156 weeks	Shenzhen Constituent Index-adjusted CAR	No	+
				Shanghai Stock Index-adjusted CAR		+
Wang (2005)	1998–2003	520	756 trading days	Size-BM-matched CAR	No	–
				Index-adjusted CAR		+
				Size-BM-matched BHAR		–
				Index-adjusted BHAR		+
Yu (2005)	1994–2001	429	36 months	Market index-adjusted CAR	No	–
				Market index-adjusted BHAR		–
Jiang (2007)	1994–1999	245	36 months	Shanghai Stock Index-adjusted CAR	No	+
				Shanghai Stock Index-adjusted BHAR		+
				Three-factor model's alpha		+
	1999–2004	245	36 months	Shanghai Stock Index-adjusted CAR	–	
				Shanghai Stock Index-adjusted BHAR	–	
				Three-factor model's alpha	–	
Chan, Wang, and Wei (2004)	1993–1998	570	756 trading days	Size-matched BHAR BM-matched BHAR	Excluding firms within 2 years of listing date	–
				Size-BM-matched BHAR		–
Chi and Padgett (2005)	1996–1997	340	36 months	Market index-adjusted BHAR	No	+
Fan, Wong, and Zhang (2007)	1993–2001	790	36 months	Equally weighted, market index-adjusted BHAR	No	–
Kao, Wu, and Yang (2009)	1996–1997	366	36 months	Size-matched CAR	Excluding firms within 3 years of listing date	–

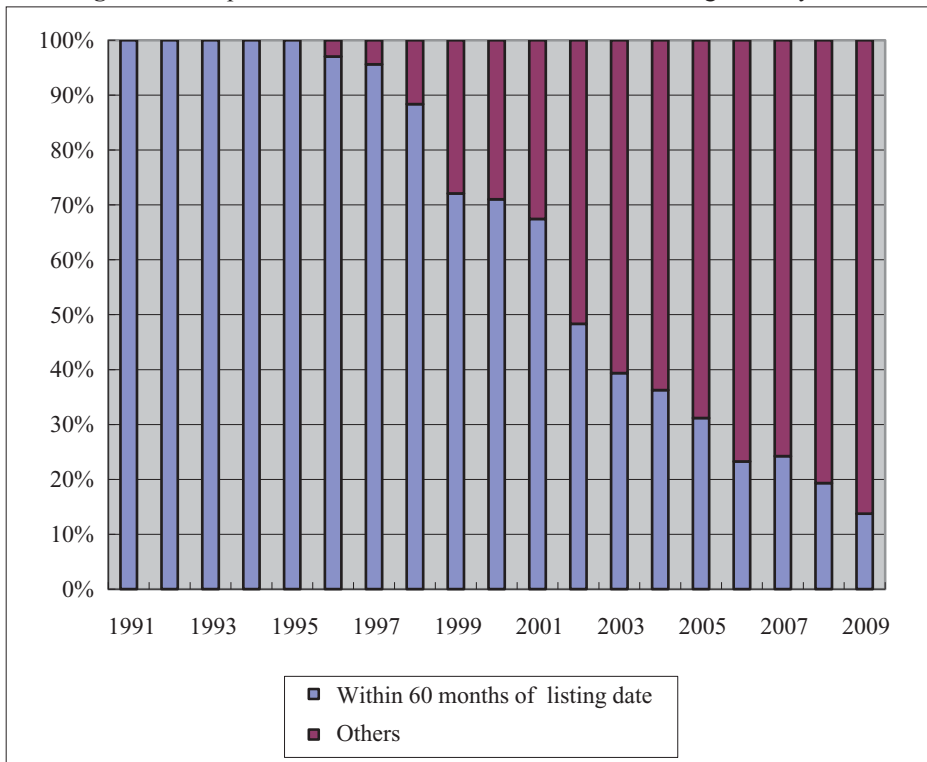
Note: BHAR is the buy-and-hold abnormal return, CAR is the cumulative abnormal return, BM is the book-to-market ratio. The +/- in the “Results” column indicate that the abnormal return is positive/negative.

Table 1 indicates that existing studies of the long-term underperformance of IPOs are not consistent. Among the 33 measures used in the 13 papers, 15 are negative measures – about 45 per cent of all measures – meaning that the probability of the long-term underperformance of IPOs is just 45 per cent. If this performance is a random walk, we should observe a probability of about 50 per cent. In sum, there is no strong evidence for the long-term underperformance of IPOs.

Unlike developed stock markets, in the Chinese emerging stock market there are too many IPOs. This characteristic of the Chinese market will cause a bias in the long-term underperformance of IPOs when using either a matched sample or the market-index approach. This problem is called the new-listing bias (Barber and Lyon, 1997). As Barber and Lyon (1997) point out, the new-listing bias arises because in event studies of long-run abnormal returns, sampled firms generally have a long post-event history of returns, whereas firms that constitute the index (or the reference portfolio) typically include new firms that begin trading subsequent to the event month.

Lee, Song, and Wu (2002), Chan, Wang, and Wei (2004), and Kao, Wu, and Yang (2009) study the long-term performance of IPOs after eliminating the new-listing bias by excluding firms listed for less than two or three years. But if we want to eliminate completely the new-listing bias, we must delete the control firms and constituent shares of the index that have been listed less than 60 months. Thus, a limited number of control firms are available to us. Figure 1 presents the proportion of stocks that are within 60 months of the listing date in total stocks. We find that all firms are within the 60 months before 1996, and the proportion increases over time.

Figure 1 Proportions of IPOs within 60 Months of Listing Date by Year



“Within 60 months of listing date” means the proportion of IPOs that are listed for less than 60 months. For example, the proportion at 2002 is about 50 per cent, which is obtained by calculating the proportion for each month during the 12 months in 2002, and then finding the mean of these 12 proportions.

Figure 1 shows that the proportion of stocks within 60 months of the listing date to total stocks is too high in the Chinese stock market. From 1991 to 1995, all stocks were within 60 months because the listed firms in the stock market were very young before 1995. But by 2003, the proportion had decreased to 40 per cent. According to Ritter (1991), IPO firms perform worse after an IPO. As Table 1 indicates, prior research uses mainly the market index as the benchmark. But because the market index is biased downwards because of IPO firms, the abnormal return is biased upwards when using the market index as the benchmark. So the long-term underperformance of IPOs cannot be determined. This implication is consistent with the results of Table 1, which shows that about 55 per cent of prior literature finds no significant long-term underperformance of IPOs.

For an emerging market like China, the new-listing bias is severe. Most of the papers summarised in Table 1 calculate the abnormal return using a reference portfolio, such as a market index, a market model, or a size-book-to-market (BM) matched firm. But these different methods are all affected by the new-listing bias. This paper thus aims to study the long-term underperformance of IPOs after controlling for this bias.

On 29 April 2005, the China Securities Regulatory Commission (CSRC) released the *Notice on Split-Share Structure Reform of Listed Companies*, which announced the kick-off of the split-share structure reform. Firms under the reform will usually give some type of consideration to existing shareholders of tradable A shares (Zhang, Wang, and Xia, 2006), and so investors think of the reform as good news, and the reformed firms have significantly positive abnormal returns (Chen and Chen, 2005; Feng and Xu, 2006). Loughran and Ritter (1995) treat the matching firm that subsequently issues stocks as if it is delisted on its offering date. Obviously, the split-share structure reform is intended to convert non-tradable shares to tradable shares, whereas IPO firms offer tradable shares to the public, which account for about one-third of their total shares (Sun and Tong, 2003). These two types of shares are similar. In China, IPOs are usually primary offerings, where new shares are to be sold to raise additional cash for the company. But the split-share structure reform is considered a secondary offering, and the proportion of non-tradable shares to total shares during the reform has been as high as about two-thirds (Sun and Tong, 2003).

Obviously, we should control for the effect of the reform when studying the long-term underperformance of IPOs. As Figure 1 shows, the new-listing bias is serious before the reform. This paper thus investigates the relationship between the new-listing bias and the long-term underperformance of IPOs based on those IPO firms that went public in the period during which the market was not affected by the reform. We use two methods to control for the effect of the reform. The first is to divide the sample into two sub-samples according to whether the firm undergoes the reform during the five years after its IPO. In particular, the dummy variable *SSR* representing the reform takes the value of 1 if the IPO firm carries out the reform within 60 months of the listing date, and

otherwise 0. This method is called sample division. The second method is time division, in which we divide the sample into two sub-samples based on time; those IPO firms that went public before May 2000 were not affected by the reform. The results are robust using either method.

This paper finds that the long-term performance of IPOs without the effect of the split-share structure reform changes drastically when we control for the new-listing bias. First, without controlling for the bias, we find that (1) the size-BM matched abnormal return is not significant statistically, (2) the size-BM matched abnormal return using the time-varying firm-risk characteristics method³ is significantly negative, and (3) the market index-adjusted abnormal return is significantly positive. But when we replicate the procedures above after controlling for the new-listing bias, the results change drastically, and almost all measures indicate the significant long-term underperformance of IPOs. Also, the value-weighted index-adjusted abnormal return is significantly positive, which means that the long-term underperformance of IPOs is driven primarily by small issuers.

In addition, this paper investigates the long-term accounting performance of IPOs, which is important for interpreting the long-term stock performance of IPOs. If both performance types have the same trend, we conjecture that investors have mispriced the IPOs (Kao, Wu, and Yang, 2009). Jain and Kini (1994) investigate the change in operating performance of IPOs and find that IPO firms exhibit a significant decline in post-issue operating performance, as measured by the operating return on assets, relative to their pre-IPO levels, both before and after industry adjustment. Furthermore, the Chinese studies show that accounting performance deteriorates after listing, such as the return on sales (ROS), earnings before interest and tax (EBIT) to sales (Sun and Tong, 2003; Fan, Wong, and Zhang, 2007), and return on assets (ROA) (Chan, Wang, and Wei, 2004).

Because the new-listing bias evidently affects the long-term accounting performance of IPOs, we must consider the effect of the bias on the benchmark used to compute abnormal accounting performance. We provide the long-term accounting performance of IPOs both before and after controlling for the bias. We then divide the sample into quintiles based on accounting performance and compare the difference in long-term stock performance between the top and the lowest quintile IPOs. Without controlling for the bias, the relationship between accounting performance and stock performance is positive, and the difference in long-term stock performance is significant. After controlling for the bias, the relationship becomes more significant, and the difference widens.

The contribution of this paper is that it is the first study to consider the effect of new-listing bias on the long-term underperformance of IPOs in China, since the Chinese stock market is an emerging market featuring a high proportion of new issues. Our findings suggest that after the effects of the split-share structure reform and the new-

³ The method implies that the firm's risk will change after the listing date, so each year the matching is repeated, creating a separate benchmark for each issue.

listing bias are controlled, IPOs in China show significant long-term underperformance, and the relationship between stock performance and accounting performance is positive.

The rest of the paper is organised as follows. Section II describes the sample selection and methodology. Section III presents the results on long-term underperformance both before and after controlling for the new-listing bias and on a year-to-year basis. Section IV studies the long-term accounting performance of IPOs and discusses the relationship between accounting performance and stock performance. Section V concludes the paper.

II. Sample and Methodology

2.1 Sample

Our data are taken from the China Stock Market and Accounting Research (CSMAR) database. The initial sample consists of all issues from 1 January 1996 to 31 December 2003, since we must study the five-year stock performance after an IPO. We exclude the finance issuers and 27 firms issuing B shares to foreign investors before issuing A shares, since they are not true IPO firms. Our final sample thus consists of 935 firms from 1996 to 2003. Finally, we obtain financial data based on the sample and the corresponding market index. Table 2 presents the sample distribution.

Table 2 Distribution of Sample by Year

IPO year	Observations	Delete: Firms issuing B		Sample
		shares before issuing A shares	Delete: Financial firms	
1996	203	9	0	194
1997	206	5	0	201
1998	106	3	0	103
1999	98	2	1	95
2000	137	4	1	132
2001	79	4	0	75
2002	71	0	1	70
2003	67	0	2	65
Total	967	27	5	935

The firms under the split-share structure reform will usually give consideration to existing shareholders of tradable A shares (Zhang, Wang, and Xia, 2006); investors will thus think of the reform as good news, and these firms have statistically positive abnormal returns after the reform announcement (Chen and Chen, 2005; Feng and Xu, 2006). The proportion of non-tradable shares to total shares during the reform is about two-thirds (Sun and Tong, 2003). We use a dummy variable *SSR* to represent the split-

share structure reform, and define it as 1 if the IPO firms carry out the reform in the five years following the IPO, and otherwise 0. But obviously the definition is based on foreknowledge of the future reform. To overcome this shortcoming, we also split the total sample into two sub-samples according to the IPO firms' listing dates; for those firms that went public in May 2000, the post-IPO 60th month is exactly June 2005, when the split-share structure reform began. We define the period from January 1996 to May 2000 as the period without the effect of the reform, and the period from June 2000 to 2003 as the period with the effect. The results are robust to these two definitions, so our main result is based on the sub-sample without the effect of the reform.

2.2 Definition of variables and research methodology

Much of the literature on market efficiency uses the cumulative abnormal return (CAR) and buy-and-hold abnormal return (BHAR) to measure the long-term abnormal return. Barber and Lyon (1997) argue that BHAR is preferable to CAR, whereas Fama (1998) considers CAR preferable to BHAR. Since both measures are widely used in the literature, we use them here together.

The BHAR is computed in most studies based on the monthly or daily return. For the monthly return, the first month is the month after the IPO month; Cheng and Gao (2000), Li, Song, and Wu (2002), Fan, Wong, and Zhang (2007), and Kao, Wu, and Yang (2009) use this type of return. For those studies using the daily return, the listing day is defined as day 0, and the first trading day to the 21st trading day after day 0 as the first trading month; the first year thus comprises 252 trading days after day 0, and a period of three years is equivalent to 756 trading days after day 0 (Ritter, 1991). Wang and Zhang (2000), Liu and Li (2001), Wang (2006), and Chan, Wang, and Wei (2004) use the daily return, whereas Bai and Zhang (2003) use the weekly return. We compute the abnormal return based on the monthly raw return, while using the daily return in the robustness check.

Following the convention in research, we define R_{it} as the simple return in month t on a sample firm, $E(R_{it})$ as the expected return in month t for the sample firm, and $AR_{it} = R_{it} - E(R_{it})$ as the abnormal return in month t . Cumulating across τ periods yields the CAR:

$$CAR_{it} = \sum_{t=1}^{\tau} AR_{it}$$

In contrast, the BHAR is compounded without rebalancing the portfolio, and is the abnormal return that investors can really achieve:

$$BHAR_{it} = \prod_{t=1}^{\tau} [1 + R_{it}] - \prod_{t=1}^{\tau} [1 + E(R_{it})]$$

The long-term abnormal return is positively biased because of the new-listing bias, or sometimes even becomes positive. We compute the traditional CAR and BHAR, then compute CAR and BHAR after deleting the IPO firms within 60 months of the listing date, to control for the effect of new-listing bias on the long-term underperformance of IPOs.

We employ two variables to measure post-IPO operating performance. The first measure is the change in operating return on assets ($DROA$), in which the denominator is total assets at the end of the fiscal year for comparability. If we use total assets at the beginning of the fiscal year as the denominator, the $DROA$ will decrease drastically because of the problem of a mechanical increase in total assets through issuing shares, which makes the measure unreliable. Our second operating performance measure is the change in return on sales ($DROS$). This ratio avoids the problem of a mechanical increase in equity through issuing shares. The $DROA$ ($DROS$) at the post-IPO first year means the ROA (ROS) at the post-IPO first year minus the ROA (ROS) at the IPO year. The $DROA$ ($DROS$) at the post-IPO second year means the ROA (ROS) at the post-IPO second year minus the ROA (ROS) at the post-IPO first year, and so on. The definition of $DROA_{it}$ ($DROS_{it}$) is then as follows:

$$DROA_{it} = \frac{NI_{it}}{Asset_{it}} + \frac{NI_{it-1}}{Asset_{it-1}}, \quad DROS_{it} = \frac{NI_{it}}{Sales_{it}} + \frac{NI_{it-1}}{Sales_{it-1}},$$

where NI_{it} is the net income in year t on a sample firm, $Asset_{it}$ is total assets at the end of fiscal year t , and $Sales_{it}$ is the revenue in year t on the sample firm.

The industry or market median-adjusted change in operating performance is

$$Adj_DROA_{it} = DROA_{it} - Median(DROA_{pt}),$$

$$Adj_DROS_{it} = DROS_{it} - Median(DROS_{pt}),$$

where $Median(DROA_{pt})$ is the median $DROA$ of the firms in the industry to which the IPO firm belongs, and $Median(DROS_{pt})$ is the median $DROS$ of the same.

III. Long-Term Underperformance of IPOs

3.1 Long-term underperformance

Table 3 presents the post-IPO long-term stock performance of IPOs before launch of the split-share structure reform from 1996 to 2003. In Panel A of Table 3, we construct three benchmarks to measure CAR and BHAR: the size-matched, the BM-matched, and the size-and BM-matched non-IPO matched firms. For the size-matched abnormal return, the firm with a market capitalisation closest to but higher than that of the issuing firm at the end of the issuing calendar month is chosen as its matching firm. The procedure

for matching by BM is similar. When we match by both the size and BM ratio, we first identify all firms with a market value of equity between 70 and 130 per cent of the market value of equity of the sample firms; then from this set of firms, we choose the firm with the BM closest to but higher than that of the sample firm.

Brav and Gompers (1997) allow for the time-varying firm-risk characteristics of each IPO and each matching firm. We follow their method and choose as the matching firm the firm with a market capitalisation closest to but higher than that of the issuing firm at the end of the fiscal year. The matching process is conducted for each year. The procedures for matching by BM and by size and BM are similar. Panel B of Table 3 presents the results.

Panel C of Table 3 shows the market index-adjusted abnormal return. The benchmark includes the equally weighted market index, tradable market value-weighted market index, and total market value-weighted market index. We split the total sample into two sub-samples according to whether the sample firms carry out the split-share structure reform within 60 months of the listing date. Table 3 presents just the long-term CAR and BHAR of IPOs for the sub-sample of $SSR = 0$, which means that these firms did not launch the reform within the 60 months.

Table 3 Post-IPO 60-month Stock Performance of IPOs in China ($SSR = 0$, Sub-sample without the Effect of the Split-share Structure Reform)

Panel A Size-BM-matched Abnormal Return

Control for							
new-listing bias	Window (months)	Size matched		BM matched		Size-BM matched	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
No	+6	-0.006	-0.001	0.028*	0.017	0.042***	0.031**
	+12	0.001	-0.006	0.024	0.001	0.066***	0.037**
	+24	0.024	-0.005	0.079**	0.020	0.078***	0.012
	+36	0.041	-0.017	0.137***	0.039	0.119***	0.002
	+48	0.026	-0.026	0.130**	0.016	0.091*	-0.015
	+60	0.005	-0.026	0.094*	0.005	0.051	-0.029
Yes	+6	0.055***	0.023	0.068***	0.057***	0.056***	0.038***
	+12	0.058**	0.019	0.066***	0.051***	0.053**	0.018
	+24	0.106***	-0.010	0.049	-0.001	0.049	-0.032
	+36	0.162***	-0.057**	-0.056	-0.095***	0.002	-0.114***
	+48	-0.246***	-0.217***	-0.040	-0.114***	-0.039	-0.139***
	+60	-0.196***	-0.189***	0.000	-0.095***	0.001	-0.112***

Panel B Size-BM-matched Abnormal Return (Time-varying Firm-risk Characteristics)

Control for		Size matched		BM matched		Size-BM matched	
new-listing bias	Window (months)	BHAR	CAR	BHAR	CAR	BHAR	CAR
No	+6	0.004	-0.004	0.000	-0.007	-0.017	-0.012
	+12	0.016	-0.014	-0.032	-0.045***	-0.063***	-0.049***
	+24	0.004	-0.023	-0.129***	-0.092***	-0.165***	-0.111***
	+36	-0.042	-0.026	-0.427***	-0.169***	-0.420***	-0.183***
	+48	-0.145**	-0.037	-0.843***	-0.239***	-0.751***	-0.236***
	+60	-0.218**	-0.030	-1.113***	-0.260***	-0.748***	-0.229***
Yes	+6	0.040**	0.012	-0.060***	-0.059***	-0.016	-0.026*
	+12	0.049**	0.008	-0.106***	-0.090***	-0.027	-0.049***
	+24	0.077**	-0.011	-0.233***	-0.159***	-0.076*	-0.096***
	+36	0.005	-0.080***	-0.448***	-0.238***	-0.275***	-0.178***
	+48	-0.047	-0.091***	-0.715***	-0.260***	-0.351***	-0.167***
	+60	-0.007	-0.067**	-0.617***	-0.248***	-0.243***	-0.135***

Panel C Market Index-Adjusted Abnormal Return

Control for		Equally weighted market index		Tradable market value-weighted index		Total market value-weighted index	
new-listing bias	Window (months)	BHAR	CAR	BHAR	CAR	BHAR	CAR
No	+6	0.006	0.035***	0.021***	0.060***	0.042***	0.079***
	+12	0.009	0.083***	0.055***	0.143***	0.090***	0.172***
	+24	0.008	0.141***	0.149***	0.259***	0.195***	0.299***
	+36	-0.037*	0.124***	0.190***	0.253***	0.259***	0.305***
	+48	-0.134***	0.121***	0.211***	0.274***	0.308***	0.336***
	+60	-0.172***	0.131***	0.204***	0.309***	0.300***	0.368***
Yes	+6	0.001	-0.027***	0.013**	-0.020*	0.033***	-0.005
	+12	0.000	-0.040***	0.043***	-0.002	0.077***	0.019
	+24	-0.008	-0.059***	0.143***	0.052***	0.183***	0.070***
	+36	-0.063***	-0.124***	0.182***	-0.001	0.243***	0.029*
	+48	-0.171***	-0.162***	0.203***	-0.007	0.287***	0.024
	+60	-0.204***	-0.161***	0.194***	0.026	0.275***	0.053***

Note: The procedures for calculating the abnormal return are as follows: We define R_{it} as the simple return in month t on a sample firm, $E(R_{it})$ as the expected return in month t for the sample firm, and $AR_{it} = R_{it} - E(R_{it})$ as the abnormal return in month t . Cumulating across τ periods yields a cumulative abnormal return (CAR), and $CAR_{it} = \sum_{t=1}^{\tau} AR_{it}$. In contrast, the buy-and-

hold abnormal return (BHAR) is compounded without rebalancing the portfolio, and is the abnormal return that investors can really achieve. The equation is

$$BHAR_{it} = \prod_{t=1}^T [1 + R_{it}] - \prod_{t=1}^T [1 + E(R_{it})]$$

We construct three benchmarks to measure CAR and BHAR: the size-matched, the BM-matched, and the size-BM-matched non-IPO matched firms. For the size-matched abnormal return, we choose the firm with a market capitalisation closest to but higher than that of the issuing firm at the end of the issuing calendar month as the matching firm. The procedure for matching by BM is similar. When matching by both size and the book-to-market ratio, we first identify all firms with a market value of equity between 70% and 130% of that of the sample firms, and from this set of firms, we choose the firm with the BM closest to but higher than that of the sample firm.

The size-matched abnormal return using time-varying firm-risk characteristics means that the firm with a market capitalisation closest to but higher than that of the issuing firm at the end of the fiscal year is chosen as the matching firm. This matching process is repeated for each year.

For the market index-adjusted abnormal return, the benchmarks are the equally weighted market index, the tradable market value-weighted market index, and the total market value-weighted market index.

The dummy variable *SSR* takes the value of 1 if the IPO firms have carried out the split-share structure reform within 60 months of the listing date, and otherwise 0.

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

Panel of Table 3 shows that when we do not control for the new-listing bias, the 60-month post-IPO size-matched BHAR is 0.5 per cent (insignificant), the BM-matched BHAR is 9.4 per cent (significant at the 10 per cent level), and the size-and-BM-matched BHAR is 5.1 per cent (insignificant). Panel B presents the size-BM-matched abnormal return using the time-varying risk method (Brav and Gompers, 1997); the results show that when we do not control for the new-listing bias, the 60-month post-IPO size-matched BHAR is -21.8 per cent (significant at the 5 per cent level), the BM-matched BHAR is -111.3 per cent (significant at the 1 per cent level), and the size-BM-matched BHAR is -74.8 per cent (significant at the 1 per cent level). But in Panel C, the results show that the BHAR adjusted by the equally weighted market index is -17.2 per cent (significant at the 1 per cent level), while those adjusted by the tradable market value-weighted index and the total market value-weighted index are both significant at the 1 per cent level. In summary, we do not find a long-term underperformance of IPOs before controlling for the new-listing bias, and the results in Panels A, B, and C are inconsistent.

Panels A, B, and C further indicate that the results of CAR are also inconsistent as are those of BHAR. Panel B indicates the long-term underperformance of IPOs before the new-listing bias is controlled for, but Panels A and C do not indicate such phenomena. Compared with Table 1, the findings in Table 3 are inconsistent. As Table 1 shows, if the probability of a long-term underperformance of IPOs is as frequent as their long-term over-performance, we cannot conclude that the former really exists.

Barber and Lyon (1997) show that the long-term abnormal return is severely subject to the new-listing bias, so we must control for this bias while computing the long-term performance of IPOs. To eliminate its effects, we must exclude stocks that are within 60 months of the listing date from the matched firms or constituent stocks of the market index. Although Li, Song, and Wu (2002), Chan, Wang, and Wei (2004), and Kao, Wu, and Yang (2009) compute abnormal returns by eliminating matched firms within two or three years of the listing date, abnormal returns for three to five years after the IPO are also affected by the new-listing bias.

Table 3 provides the results after controlling for the new-listing bias. For the subsample within 60 months of the listing date without the effect of the split-share structure reform ($SSR = 0$), Panel A shows that the post-IPO 60-month size-matched BHAR is 0.5 per cent (insignificant), while the post-IPO 60-month size-matched BHAR is -19.6 per cent (significant at the 1 per cent level).

All measures of abnormal returns in Table 3 show that if we do not control for the new-listing bias, six measures out of the 18 total are negative, five of which are computed using the time-varying risk method; if we control for the bias, the number of negative measures increases to 11. For comparability, we provide Figure 2, which portrays the results of Panel A of Table 3.

Figure 2 Effect of the New-listing Bias on Long-term Abnormal Returns.

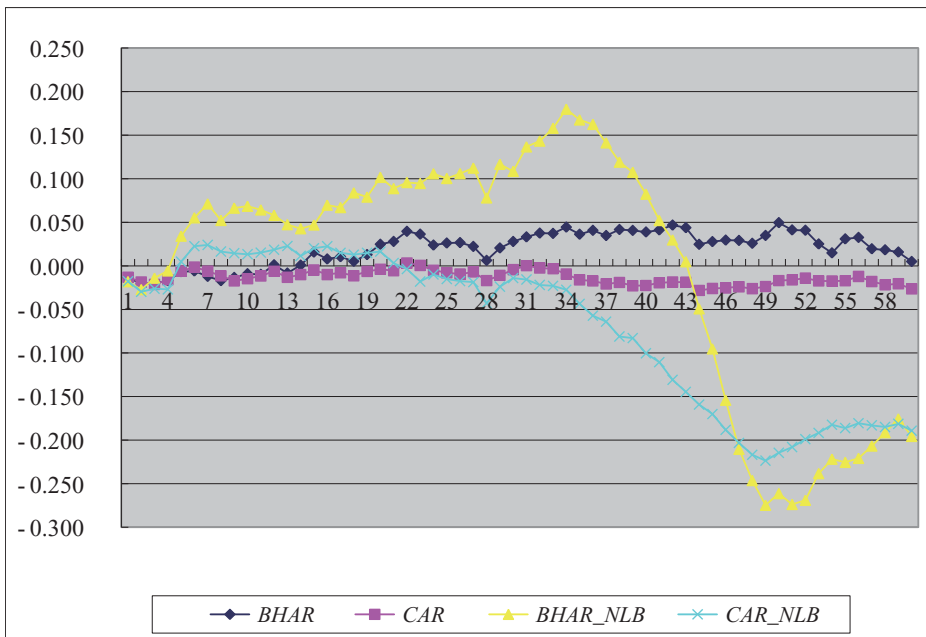


Figure 2(a) Size matched

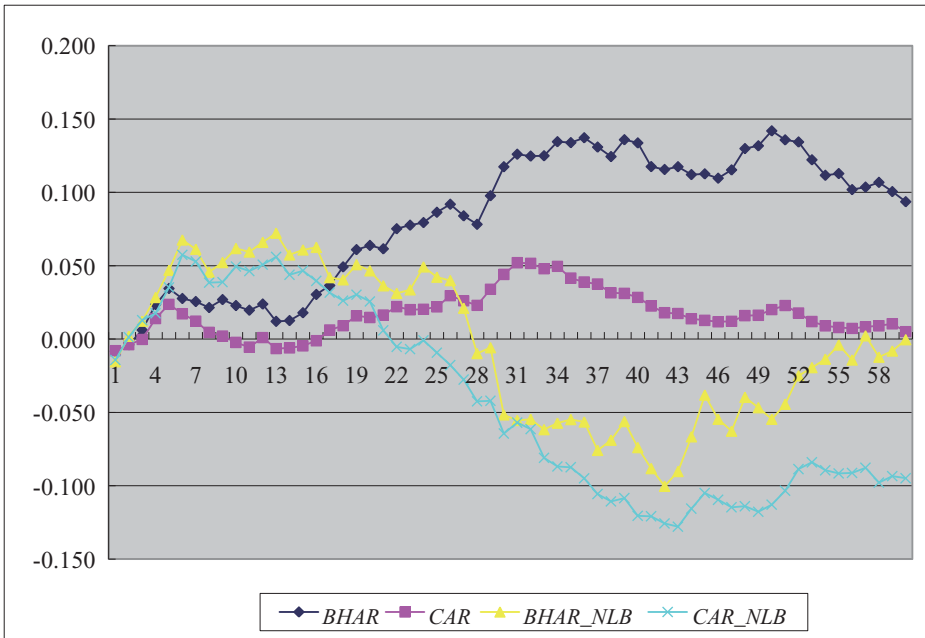


Figure 2(b) BM matched

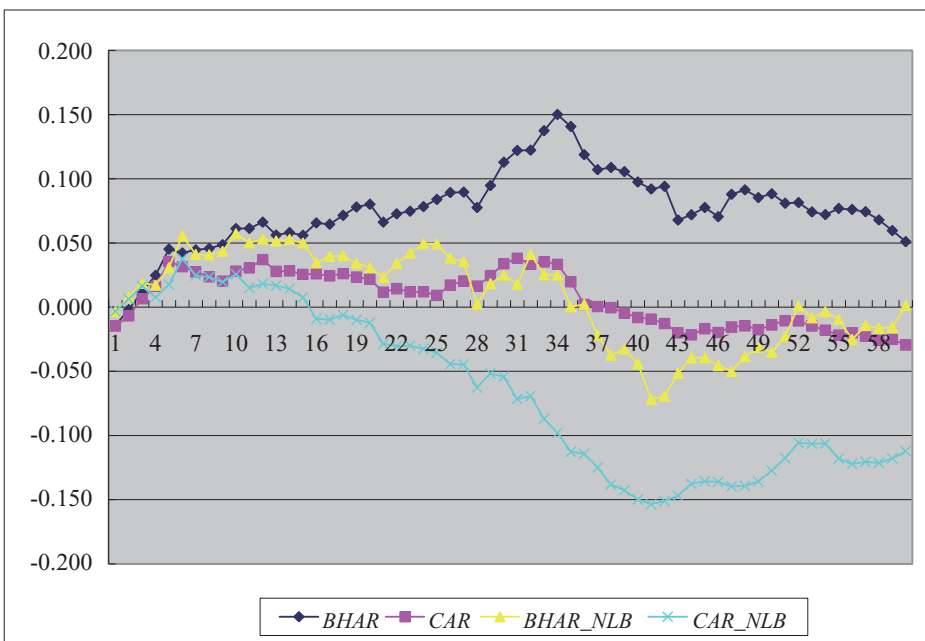


Figure 2(c) Size-BM matched

BHAR is the BHAR without controlling for the new-listing bias; *BHAR_NLB* is the BHAR after controlling for the bias; CAR is the CAR without controlling for the bias; *CAR_NLB* is the CAR after controlling for the bias.

As Figure 2 indicates, the long-term underperformance of IPOs is affected severely by the new-listing bias, and we are unable to find real long-term underperformance without controlling for this bias. This is consistent with Table 1.

3.2 Effect of the split-share structure reform on the long-term underperformance of IPOs

For the sub-sample that does not carry out the split-share structure reform within 60 months of the listing date ($SSR = 0$), we find a significant long-term underperformance of IPOs after controlling for the new-listing bias. In contrast to the $SSR = 0$ sub-sample, the $SSR = 1$ sub-sample has two different characteristics. The first is that the proportion of new issuers decreases during the period of the reform (Figure 1), meaning that the effect of the bias is decreasing. The second is that firms carrying out the reform have significantly positive abnormal returns (Chen and Chen, 2005; Feng and Xu, 2006), which biases the long-term underperformance of IPOs. We thus investigate the post-IPO 60-month long-term underperformance of IPOs that carry out the reform within 60 months of the listing date ($SSR = 1$); Table 4 presents the results.

Table 4 Post-IPO 60-month Stock Performance of IPOs in China ($SSR = 1$, Sub-sample with the Effect of the Split-share Structure Reform)

Panel A Size-BM-matched Abnormal Return

Control for		Size matched		BM matched		Size-BM matched	
new-listing bias	Window (months)	BHAR	CAR	BHAR	CAR	BHAR	CAR
No	+6	0.015	0.005	0.009	-0.002	0.016	0.015
	+12	0.018	0.013	-0.016	-0.024	0.003	0.009
	+24	0.061**	0.100*	0.043	0.057	0.071***	0.108***
	+36	0.096**	0.126**	0.079	0.105**	0.103**	0.149***
	+48	0.401**	0.074	0.336	0.140**	0.477***	0.158**
	+60	0.216	0.071	0.316	0.108	0.554***	0.147*
Yes	+6	0.029**	0.024	0.005	-0.010	0.016	0.009
	+12	0.034*	0.034	-0.013	-0.026	0.001	-0.008
	+24	0.058*	0.112***	0.052**	0.056	0.076***	0.090**
	+36	0.086*	0.154***	0.078	0.101*	0.164***	0.179***
	+48	0.405**	0.156**	0.299	0.116*	0.549***	0.117*
	+60	0.428**	0.208***	0.476**	0.156**	0.556***	0.145*

Panel B Size-BM-matched Abnormal Return (Time-varying Firm-risk Characteristics)

Control for		Size matched		BM matched		Size-BM matched	
new-listing bias	Window (months)	BHAR	CAR	BHAR	CAR	BHAR	CAR
No	+6	0.025*	0.034**	0.035**	0.024	0.031**	0.039**
	+12	0.029*	0.042**	0.017	0.014	0.045***	0.058***
	+24	0.097***	0.167***	0.057**	0.073**	0.109***	0.193***
	+36	0.164***	0.229***	0.101**	0.088*	0.133***	0.199***
	+48	0.510***	0.265***	0.159	0.026	0.161	0.095*
	+60	0.670***	0.353***	0.188	0.016	0.024	0.090
Yes	+6	0.035**	0.033**	0.013	0.004	0.027*	0.024
	+12	0.035*	0.043*	-0.010	-0.028	0.037**	0.023
	+24	0.121***	0.181***	0.058**	0.044	0.115***	0.143***
	+36	0.201***	0.248***	0.106**	0.054	0.133***	0.148***
	+48	0.636***	0.260***	0.225	0.012	0.095	0.073
	+60	0.703***	0.350***	0.170	0.004	-0.122	0.070

Panel C Market Index-Adjusted Abnormal Return

Control for		Equally weighted market index		Tradable market value-weighted index		Total market value-weighted index	
new-listing bias	Window (months)	BHAR	CAR	BHAR	CAR	BHAR	CAR
No	+6	0.015*	0.010	0.003	-0.002	-0.012*	-0.022*
	+12	0.007	0.004	-0.022***	-0.028*	-0.050***	-0.066***
	+24	0.068***	0.071***	0.012	-0.005	-0.034***	-0.080***
	+36	0.122***	0.092***	0.060***	0.005	-0.002	-0.095**
	+48	0.403***	0.110**	0.346***	0.056	0.312***	-0.007
	+60	0.272***	0.142**	0.234***	0.166***	0.213***	0.161***
Yes	+6	0.015**	0.009	0.003	0.000	-0.010*	-0.006
	+12	0.006	0.001	-0.022***	-0.024	-0.045***	-0.037*
	+24	0.070***	0.080*	0.015	0.020	-0.024**	-0.004
	+36	0.126***	0.120***	0.068***	0.054	0.013	0.015
	+48	0.416***	0.144***	0.365***	0.112*	0.321***	0.070
	+60	0.288***	0.175***	0.256***	0.217***	0.215***	0.170***

Note: The procedures for calculating the abnormal return are as follows: We define R_{it} as the simple return in month t on a sample firm, $E(R_{it})$ as the expected return in month t for the sample firm, and $AR_{it} = R_{it} - E(R_{it})$ as the abnormal return in month t . Cumulating across τ periods yields a cumulative abnormal return (CAR), and $CAR_{it} = \sum_{t=1}^{\tau} AR_{it}$. In contrast, the buy-and-

hold abnormal return (BHAR) is compounded without rebalancing the portfolio, and is the abnormal return that investors can really achieve. The equation is

$$BHAR_{it} = \prod_{t=1}^T [1 + R_{it}] - \prod_{t=1}^T [1 + E(R_{it})].$$

We construct three benchmarks to measure CAR

and BHAR: the size-matched, the BM-matched, and the size-BM-matched non-IPO matched firms. For the size-matched abnormal return, we choose the firm with a market capitalisation closest to but higher than that of the issuing firm at the end of the issuing calendar month as the matching firm. The procedure for matching by BM is similar. When matching by both size and book-to-market ratio, we first identify all firms with a market value of equity between 70% and 130% of the market value of equity of the sample firms, and from this set of firms, we choose the firm with the BM closest to but higher than that of the sample firm.

The size-matched abnormal return using time-varying firm-risk characteristics means that the firm with a market capitalisation closest to but higher than that of the issuing firm at the end of the fiscal year is chosen as the matching firm. This matching process is repeated for each year.

For the market index-adjusted abnormal return, the benchmarks are the equally weighted market index, the tradable market value-weighted market index, and the total market value-weighted market index.

The dummy variable *SSR* takes the value of 1 if the IPO firms have carried out the split-share structure reform within 60 months of the listing date, and otherwise 0.

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

In contrast to Table 3, Table 4 documents the significant positive long-term performance of IPOs that carry out the split-share structure reform within 60 months of the listing date (*SSR* = 1). Panels A, B, and C show that almost all measures indicate significant positive long-term performance within 60 months. Obviously, for the *SSR* = 1 sub-sample, shareholders receive consideration in the split-share structure reform, and investors think of it as good news and buy the shares; the sub-sample thus has a positive abnormal return within the 60 months. The effect of the new-listing bias on the long-term underperformance of IPOs is thus weakened.

3.3 Long-term performance of IPOs by year

Since the listed companies are very young in the emerging Chinese market, and IPO regulation is changing, Table 5 presents the variation in the long-term performance of IPOs over years, that is, the post-IPO 36- and 60-month abnormal returns including BHAR and CAR. The sample is divided into two sub-samples. The first contains the firms that went public from January 1996 to April 2000, while the second contains other firms that went public from May 2000 to December 2003. For those that went public in May 2000, the post-IPO 60th month is June 2005, when the CSRC announced the kick-off of the split-share structure reform. We define the first one as the sub-sample without the effect of the reform, and the second as the sub-sample with the effect.

Table 5 shows that the IPOs that went public from 1996 to 2001 have negative long-term abnormal returns after the listing date, whereas those that went public from 2002 to 2003 have significantly positive long-term abnormal returns. The two results show that the first sub-sample has long-term underperformance, but the second has long-term over-performance. The pool sample thus indicates a discrepancy in different measures.

Table 5 Long-term Stock Performance of IPOs in China (After Controlling for New-listing Bias)**Panel A** Matched Firms-Adjusted Abnormal Return

IPO Year	Three years after IPO						Five years after IPO					
	Size matched		BM matched		Size-BM matched		Size matched		BM matched		Size-BM matched	
	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR
1996	0.371***	-0.057	0.561**	0.143	1.914*	0.446	-0.933***	-0.582***	0.217	-0.103	-0.191	-0.590*
1997	0.230**	-0.051	-0.294*	-0.151**	0.053	-0.118*	0.094	-0.136***	-0.105	-0.159**	-0.005	-0.187***
1998	-0.009	-0.104**	0.004	-0.082	-0.088	-0.156***	0.058	-0.075	0.052	-0.040	0.019	-0.129**
1999	0.051	-0.047	-0.040	-0.093	-0.078	-0.115**	0.059	0.009	0.020	-0.065	0.067	-0.008
2000	-0.002	-0.040	-0.044	-0.108**	-0.057	-0.117***	0.040	0.073	0.019	-0.005	-0.006	-0.021
2001	0.034	-0.007	-0.058*	-0.126**	-0.049	-0.128**	0.209**	0.127	0.083	-0.019	-0.040	-0.109
2002	0.011	0.249***	0.100**	0.260**	0.127***	0.268***	0.523*	0.176	0.548	0.213*	0.496	0.151
2003	0.215*	0.213**	0.159	0.123	0.414***	0.387***	0.491	0.233	0.726	0.079	1.193**	0.267*
1996-2000.4	0.193***	-0.066**	-0.055	-0.083**	0.026	-0.108***	-0.246***	-0.245***	0.000	-0.100***	0.017	-0.122***
2000.5-2003	0.060*	0.078**	0.022	-0.003	0.073**	0.040	0.253**	0.147***	0.263**	0.052	0.289***	0.040
1996-2003	0.147***	-0.020	-0.022	-0.051**	0.049	-0.038	-0.085	-0.118***	0.107*	-0.038	0.146***	-0.045

Panel B Matched Firms-Adjusted Abnormal Return (Time-Varying Firm-Risk Characteristics)

IPO Year	Three years after IPO						Five years after IPO					
	Size matched		BM matched		Size-BM matched		Size matched		BM matched		Size-BM matched	
	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR
1996	0.128	-0.070	-1.746***	-0.717***	-1.548***	-0.642***	0.149	-0.103	-2.649***	-0.806***	-2.627***	-0.976***
1997	-0.066	-0.140**	-0.443***	-0.257***	-0.358***	-0.277***	-0.175*	-0.122**	-0.514***	-0.259***	-0.405***	-0.279***
1998	-0.111	-0.112*	-0.270**	-0.164**	-0.621***	-0.300***	-0.060	-0.095	-0.193	-0.155*	-0.304**	-0.237***
1999	0.086	-0.020	-0.005	-0.088	0.018	-0.089	0.147*	0.044	-0.042	-0.131	0.104	0.000
2000	0.006	-0.018	-0.030	-0.074	0.008	-0.009	0.031	0.033	0.017	-0.017	0.062**	0.098*
2001	0.047	0.059	-0.037	-0.122*	0.046	0.023	0.222**	0.211**	0.095	-0.032	0.122	0.165**
2002	0.129***	0.280***	0.118***	0.218***	0.157***	0.357***	0.621**	0.235*	0.509*	0.154	-0.084	0.017
2003	0.433***	0.393***	0.238*	0.109	0.198*	0.071	1.220**	0.514***	-0.138	-0.133	-0.440	0.003
1996-2000.4	0.001	-0.097***	-0.566***	-0.291***	-0.376***	-0.243***	-0.016	-0.090***	-0.791***	-0.320***	-0.347***	-0.221***
2000.5-2003	0.128***	0.136***	0.063**	0.014	0.086***	0.085***	0.401***	0.209***	0.114	0.013	-0.034	0.092*
1996-2003	0.043	-0.024	-0.320***	-0.179***	-0.168***	-0.106***	0.116*	0.004	-0.455***	-0.197***	-0.216**	-0.090***

Panel C Market Index-Adjusted Abnormal Return

IPO Year	Three years after IPO						Five years after IPO					
	Equally weighted market index		Tradable market value-weighted index		Total market value-weighted index		Equally weighted market index		Tradable market value-weighted index		Total market value-weighted index	
	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR	BHAR	CAR
1996	-0.285***	-0.165***	0.042	-0.037	0.178*	0.049	-0.776***	-0.186***	0.284**	0.132***	0.433***	0.208***
1997	-0.088	-0.061	0.411***	0.214***	0.424***	0.230***	-0.258***	-0.110***	0.313***	0.267***	0.303***	0.268***
1998	-0.248***	-0.099**	0.205***	0.152***	0.218***	0.173***	-0.227***	-0.137***	0.031	0.072	0.029	0.081*
1999	-0.086	-0.085**	0.150**	0.115***	0.130**	0.100**	-0.020	-0.063	0.064	0.042	0.023	-0.001
2000	-0.045*	-0.096***	-0.032	-0.073**	-0.046*	-0.096***	0.027	0.003	-0.008	-0.050	-0.032	-0.104**
2001	-0.032	-0.097**	-0.072**	-0.151***	-0.098***	-0.190***	0.148	0.065	0.096	0.015	0.054	-0.045
2002	0.095***	0.162***	0.021	0.043	0.003	0.013	0.141	0.072	0.003	0.090	-0.139	0.055
2003	0.338***	0.248***	0.312***	0.237***	0.259**	0.190**	0.723*	0.314**	0.894*	0.486***	0.780	0.440***
1996-2000.4	-0.188***	-0.127***	0.194***	0.015	0.240***	0.053***	-0.398***	-0.182***	0.191***	0.042***	0.229***	0.080***
2000.5-2003	0.066***	0.027	0.034	-0.013	0.009	-0.046*	0.199**	0.088**	0.174**	0.084**	0.107	0.034
1996-2003	-0.102***	-0.120***	0.140***	-0.008	0.162***	0.019	-0.208***	-0.145***	0.186***	0.030*	0.190***	0.052***

Note: The definitions of BHAR and CAR are similar to those in Tables 3 and 4.

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

The results by year show that the long-term underperformance of IPOs changes over the years, which may result from different regulatory policies in different years (Kao, Wu, and Yang, 2009). Because our study's main aim is to study the effect of new-listing bias on the long-term underperformance of IPOs, we do not discuss in detail the effect of changes in regulatory policies on the behaviour of IPO firms. We do conduct a robustness check using daily returns. Following Ritter's (1991) research methodology, we begin the aftermarket period from the second trading day after listing, and define one month of trading as consisting of 21 trading days, that is, from event day 2 to 22; the post-IPO 60 months then means 1260 trading days from event day 2 to 1262.

IV. Long-term Accounting Performance of IPOs

Ritter and Welch (2003) demonstrate that the existence of long-term IPO underperformance may be most controversial. Since the results in Section III show that IPOs without the effect of the split-share structure reform have significant long-term underperformance after controlling for the new-listing bias, this conclusion is perhaps correlated with the regulation of the Chinese stock markets. Fan, Wong, and Zhang (2007) find that firms with political connections underperform those without by almost 18 per cent in terms of three-year post-IPO stock returns. Chan, Wang, and Wei (2004) find that the long-term underperformance of Chinese A-share and B-share IPO firms is due partly to their operating performance. Kao, Wu, and Yang (2009) examine whether the government's regulatory initiatives in China may have contributed to the opportunistic behaviour of the issuer, and find that IPOs that report better accounting performance during the pricing period have worse long-term post-IPO stock performance.

Obviously, the relationship between long-term stock performance and operating performance is interesting and worth exploring. Regulation and corporate governance in the Chinese emerging market are determinants of the long-term performance of IPOs (Fan, Wong, and Zhang, 2007; Kao, Wu, and Yang, 2009). But the research of these determinants is beyond this paper, and we will study only the relationship between accounting performance and stock performance.

4.1 Long-term accounting performance of IPOs

Panels A and B of Table 6 present the *DROA* (*DROS*) and *Adj_DROA* (*Adj_DROS*) after the IPO. *DROA* is the change in ROA, which is the ratio of net income to total assets at the end of the fiscal year. *Adj_DROA* is raw *DROA* minus the median *DROA* of the firms in the industry to which the IPO firms belong, whereas *Adj_DROS* is raw *DROS* minus the median *DROS* of the same.

Table 6 Long-term Accounting Performance of IPOs in China**Panel A** Accounting Performance

Year	Raw		Median industry adjusted		Median market adjusted	
	<i>DROA</i>	<i>DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>
1	-0.006***	-0.019***	0.001	-0.007**	0.001	-0.007**
2	-0.021***	-0.059***	-0.008***	-0.033***	-0.008***	-0.034***
3	-0.031***	-0.094***	-0.013***	-0.055***	-0.012***	-0.058***
4	-0.040***	-0.123***	-0.017***	-0.073***	-0.017***	-0.076***
5	-0.050***	-0.157***	-0.023***	-0.095***	-0.022***	-0.099***

Panel B Accounting Performance (After Controlling for New-listing Bias)

Year	Raw		Median industry adjusted		Median market adjusted	
	<i>DROA</i>	<i>DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>	<i>Adj_DROA</i>	<i>Adj_DROS</i>
1	-0.006***	-0.019***	-0.006***	-0.022***	-0.002**	-0.018***
2	-0.021***	-0.059***	-0.015***	-0.051***	-0.012***	-0.043***
3	-0.031***	-0.094***	-0.023***	-0.078***	-0.020***	-0.069***
4	-0.040***	-0.123***	-0.029***	-0.097***	-0.025***	-0.089***
5	-0.050***	-0.157***	-0.036***	-0.121***	-0.032***	-0.114***

Note: *DROA* is the change in ROA, which is defined as the operating return on total assets. The denominator is the total assets at the end of the fiscal year for comparability. If we use total assets at the beginning of the fiscal year as the denominator, the *DROA* will decrease drastically because of the problem of a mechanical increase in total assets through issuing shares, which makes the measure unreliable.

DROS is the change in ROS, which is defined as the operating return on sales. For example, the post-IPO first year *DROS* is the ROS at the post-IPO first year minus the ROS at the IPO year.

Adj_DROA (*Adj_DROS*) is raw *DROA* (*DROS*) minus the median *DROA* (*DROS*) of the firms in the industry to which the IPO firms belong.

Column 1 presents the raw *DROA* (*DROS*), Column 2 cumulative *Adj_DROA* or *Adj_DROS* (median industry adjusted), and Column 3 cumulative *Adj_DROA* or *Adj_DROS* (median market adjusted). For example, the *DROA* at year 5 is the cumulative *DROA* from the first year to the fifth after the IPO, and is equal to the ROA at the fifth year minus the DOA at the first year.

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

Panel A of Table 6 shows that the *DROA* of the IPOs is -3.1 per cent (significant at the 1 per cent level) at the third year subsequent to listing (meaning that the ROA decreased by 3.1 per cent), whereas the *DROS* of the IPOs is -9.4 per cent (significant at the 1 per cent level) at the third year subsequent to listing. The *DROA/DROS* of the IPOs is then -5 per cent/-15.7 per cent (significant at the 1 per cent level) at the fifth year subsequent to listing. Panel A also presents the industry/market median-adjusted accounting performance. The *Adj_DROA* (median industry adjusted) is -2.3 per cent (significant at the 1 per cent level), while *Adj_DROA* (median market adjusted) is -2.2

per cent (significant at the 1 per cent level). The results of *Adj_DROS* are similar to those of *Adj_DROA*; the former is -9.5 per cent (significant at the 1 per cent level), and the latter -9.9 per cent (significant at the 1 per cent level). In summary, the ROA (ROS) of IPOs declines compared with the IPO year, while IPO accounting performance also declines significantly after controlling for the industry (market) trend.

4.2 Controlling for the new-listing bias

Because the new-listing bias plays an important role in the emerging Chinese market, we must study the long-term underperformance of IPOs after controlling for its effects. This idea is also useful in studying the long-term accounting performance of IPOs. To control for the effect of the bias, we compute the industry or market median excluding firms within 60 months of the listing date. Panel B of Table 6 reports the results.

Figure 3 Effect of New Listing Bias on Long-term Accounting Performance

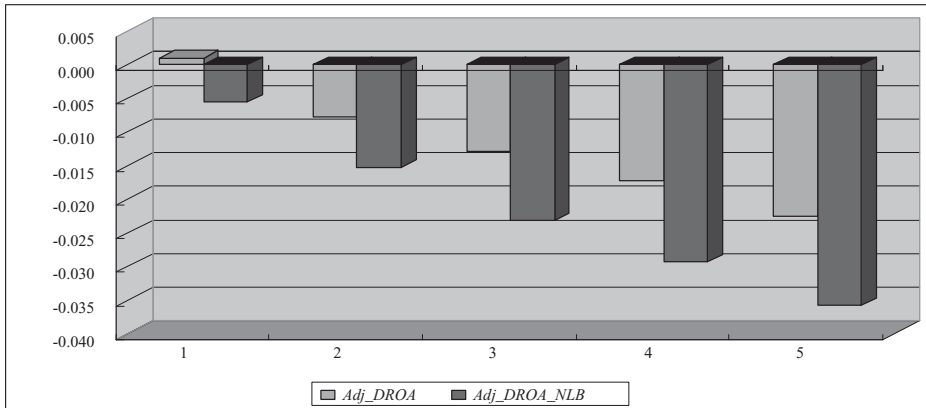


Figure3(a) *Adj_DROA* (Median industry adjusted)

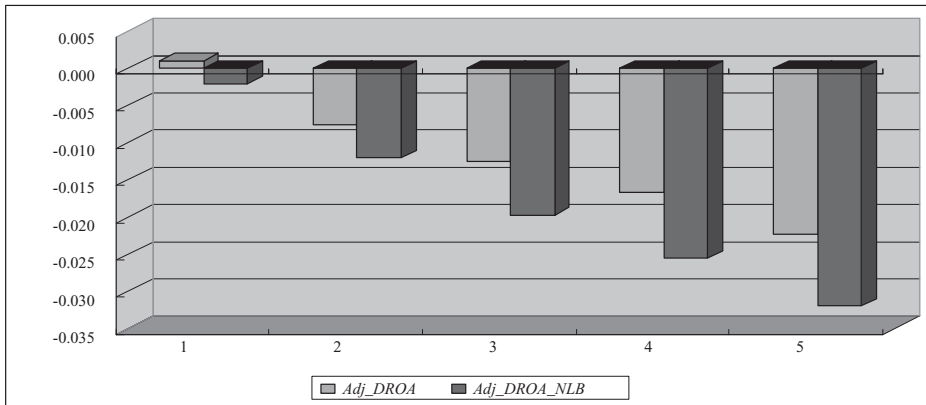


Figure 3(b) *Adj_DROA* (Median market adjusted)

Adj_DROA is the cumulative median industry-adjusted *DROA* over five years after the IPO; *Adj_DROA_NLB* is the cumulative median industry adjusted *DROA* over five years after the IPO after controlling for the new-listing bias.

Comparing Panels B and A of Table 6, we conclude that the long-term accounting performance of IPOs becomes more evident after controlling for the new-listing bias. We portray the results in Panels A and B of Table 6 in Figure 3 to compare the results conveniently. Table 6 and Figure 3 both show that the long-term accounting performance of IPOs declines after listing, and the trend becomes more serious after controlling for the bias.

4.3 Relationship between long-term stock performance and accounting performance

This section investigates the relationship between long-term stock performance and accounting performance based on those firms that do not carry out the split-share structure reform ($SSR = 0$). Table 7 presents the long-term underperformance of IPOs based on the five groups sorted by the mean of Adj_DROA (industry median adjusted). The procedures are as follows: first compute the mean of Adj_DROA (industry median adjusted) within five years of the listing date, and then sort the mean values and divide the firms into five groups.

Panel A of Table 7 presents the results without controlling for the new-listing bias; they indicate that Adj_DROA (industry median adjusted) of group 1 is significantly negative, and that the CAR at the post-IPO year 5 is -22.8 per cent (significant at the 1 per cent level). The Adj_DROA (industry median adjusted) of group 5, however, is significantly positive, and the CAR at post-IPO year 5 is 25.3 per cent (significant at the 1 per cent level). Other measures are similar. The difference in long-term performance between groups 1 and 5 is thus significant (the last row of Panel A that is labelled “5-1”). The results indicate that the long-term underperformance of IPOs is affected by the fundamentals of listed companies, and the correlation is positive.

Panel B of Table 7 presents the results after controlling for the new-listing bias. The results indicate that Adj_DROA (industry median adjusted) of group 1 is more negative than that without controlling for the bias, and the CAR at post-IPO year 5 is -46.2 per cent (significant at the 1 per cent level). The Adj_DROA (industry median adjusted) of group 5, however, is significantly positive, and the CAR at post-IPO year 5 is 31.9 per cent (significant at the 1 per cent level). Other measures are similar. The differences in long-term performance between groups 1 and 5 thus become more significant than the differences shown in Panel A. In summary, the results of Table 7 show that the accounting performance and stock performance of IPOs are affected by the new-listing bias, although the relationship between them is positive without controlling for the bias, and becomes more significant after controlling for the bias.

To study the correlation between long-term stock performance and accounting performance, we next conduct a multivariate analysis using the following regression model:

$$AR = \alpha_0 + \alpha_1 Performance + \alpha_2 Size + \alpha_3 PCTNT + \alpha_4 Leverage + \alpha_5 Market + \varepsilon, \quad (1)$$

where AR is the size- (BM-, Size-BM-) matched BHAR or CAR of IPOs in the 60th month after the IPO; $Performance$ is the cumulative value of Adj_DROA (industry median adjusted) over five years after the IPO; $Size$ is the natural logarithm of total assets; $PCTNT$ is the proportion of non-tradable shares to total shares right after the IPO; $Leverage$ is the ratio of debt to total assets at the beginning of the IPO year; and $Market$ is the natural logarithm of the market index on the first trading day.

Table 7 Relationship between Long-term Stock Performance and Accounting Performance

Panel A Long-term Stock Performance and Accounting Performance

Group	Window (months)	Size matched		BM matched		Size-BM matched	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
1	+6	-0.008	-0.026	-0.035	-0.032	0.034	0.016
	+12	0.033	-0.030	0.000	-0.024	0.103**	0.052
	+24	0.071	-0.020	0.058	0.003	0.072	-0.008
	+36	-0.056	-0.119**	0.044	-0.047	-0.009	-0.119**
	+48	-0.131	-0.144***	-0.059	-0.062	-0.035	-0.114**
	+60	-0.196	-0.228***	-0.120	-0.148***	-0.150	-0.239***
3	+6	-0.014	-0.013	0.006	-0.010	-0.001	-0.006
	+12	-0.008	-0.019	0.030	-0.009	0.023	0.005
	+24	0.014	-0.027	0.078	0.006	0.046	0.001
	+36	0.004	-0.060	0.040	-0.044	0.047	-0.037
	+48	0.086	-0.029	0.099	-0.068	0.101	-0.041
	+60	0.032	-0.049	0.083	-0.114*	0.113	-0.063
5	+6	-0.016	-0.007	0.035	0.016	0.037	0.023
	+12	-0.035	-0.012	0.031	0.020	0.041	0.027
	+24	0.026	0.030	0.127**	0.081*	0.103**	0.072**
	+36	0.101	0.083*	0.201**	0.142***	0.185***	0.158***
	+48	0.430**	0.146**	0.563***	0.225***	0.500***	0.207***
	+60	0.375**	0.253***	0.647***	0.344***	0.662***	0.374***
5-1	+6	-0.008	0.019	0.070	0.049	0.003	0.007
	+12	-0.068	0.018	0.031	0.044	-0.062	-0.025
	+24	-0.044	0.050	0.070	0.078	0.030	0.081
	+36	0.156	0.202***	0.157	0.189**	0.193*	0.278***
	+48	0.561**	0.290***	0.622**	0.287***	0.535***	0.321***
	+60	0.570***	0.481***	0.767***	0.492***	0.812***	0.613***

Panel B Long-term Stock Performance and Accounting Performance (After Controlling for New-listing Bias)

Group	Window (months)	Size matched		BM matched		Size-BM matched	
		BHAR	CAR	BHAR	CAR	BHAR	CAR
1	+6	0.057	0.002	0.022	0.022	0.029	0.011
	+12	0.070	-0.007	0.020	0.014	-0.001	-0.045
	+24	0.123	-0.040	-0.035	-0.058	-0.014	-0.107**
	+36	0.135	-0.135***	-0.232	-0.236***	-0.044	-0.244***
	+48	-0.561***	-0.417***	-0.378**	-0.258***	-0.238*	-0.333***
	+60	-0.655***	-0.462***	-0.307***	-0.355***	-0.295***	-0.457***
3	+6	0.020	-0.005	0.024	0.014	0.009	-0.005
	+12	0.034	0.008	0.020	-0.006	-0.005	-0.018
	+24	0.045	-0.012	0.028	-0.028	-0.029	-0.067
	+36	0.117	-0.051	-0.015	-0.080	-0.014	-0.101*
	+48	-0.120	-0.165***	-0.029	-0.107**	0.019	-0.125**
	+60	0.064	-0.114**	-0.026	-0.102*	0.104	-0.121*
5	+6	0.068***	0.045*	0.094***	0.077***	0.061***	0.040*
	+12	0.049	0.038	0.091***	0.074**	0.060**	0.035
	+24	0.133***	0.103***	0.137***	0.107**	0.110**	0.081**
	+36	0.331***	0.202***	0.129	0.129**	0.224***	0.177***
	+48	0.391**	0.186***	0.464**	0.187***	0.595***	0.205***
	+60	0.469***	0.319***	0.634***	0.345***	0.649***	0.382***
5-1	+6	0.010	0.043	0.072*	0.055	0.032	0.029
	+12	-0.021	0.045	0.071	0.059	0.061	0.080
	+24	0.010	0.142**	0.172	0.165**	0.124	0.189***
	+36	0.196	0.337***	0.361*	0.365***	0.269*	0.420***
	+48	0.952***	0.603***	0.842***	0.445***	0.834***	0.537***
	+60	1.124***	0.781***	0.941***	0.700***	0.944***	0.839***

Note: The five groups are divided based on the median of *Adj_DROA* (industry median adjusted). The procedures are as follows: first compute the mean of *Adj_DROA* (industry median adjusted) within five years of the listing date, and then sort the mean values and divide the IPOs into five groups. Group 1 is the lowest group, and group 5 the highest. Row 5-1 presents the difference between the two groups.

BHAR and CAR are the abnormal return after controlling for the new-listing bias, and the results are based on those firms that do not carry out the split-share structure reform (*SSR* = 0) within five years of the listing date.

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

Table 8 Multivariate Regressions**Panel A** Regression Analysis of Stock Performance and *Adj_DROA*

Dependent variable	Size matched		BM matched		Size-BM matched	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
Independent variables						
Intercept	-6.884***	-3.242***	1.528	0.835	-3.535***	-2.195***
<i>Adj_DROA</i>	0.522	1.357***	2.072**	1.583***	0.757	1.225***
(Industry median adjusted)						
<i>SIZE</i>	0.331***	0.160***	-0.037	-0.023	0.181***	0.112***
<i>PCTNT</i>	0.298	0.061	-0.959*	-0.517*	-0.143	-0.109
<i>LEVERAGE</i>	-0.436	-0.309*	-0.555	-0.277	-0.314	-0.271
<i>Adj_R²</i>	0.039	0.079	0.008	0.021	0.017	0.049
N	664	664	664	664	664	664

Panel B Regression Analysis of Stock Performance and *Adj_DROS*

Dependent variable	Size matched		BM matched		Size-BM matched	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
Independent variables						
Intercept	-6.512***	-3.640***	1.014	0.342	-3.724***	-2.383***
<i>Adj_DROS</i>	0.351	0.187*	0.335	0.202*	0.122	0.259***
(Industry median adjusted)						
<i>SIZE</i>	0.317***	0.178***	-0.013	-0.001	0.190***	0.121***
<i>PCTNT</i>	0.293	0.087	-0.923*	-0.485*	-0.129	-0.090
<i>LEVERAGE</i>	-0.510	-0.318*	-0.580	-0.283	-0.323	-0.302*
<i>Adj_R²</i>	0.042	0.067	0.004	0.006	0.016	0.044
N	664	664	664	664	664	664

Panel C Regression Analysis of Stock Performance and *Adj_DROA* (After Controlling for New-listing Bias)

Dependent variable	Size matched		BM matched		Size-BM matched	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
Independent variables						
Intercept	-2.497**	-3.036***	0.281	-1.175	-3.345***	-3.546***
<i>Adj_DROA</i>	1.678**	2.461***	2.454***	2.572***	1.523***	2.312***
(Industry median adjusted)						
<i>SIZE</i>	0.132***	0.147***	0.005	0.063	0.166***	0.170***
<i>PCTNT</i>	0.196	0.111	-0.786*	-0.469	0.172	0.116
<i>LEVERAGE</i>	-0.473	-0.145	-0.058	0.007	-0.399	-0.291
<i>Adj_R²</i>	0.039	0.112	0.032	0.072	0.066	0.125
N	413	413	413	413	413	413

Panel D Regression Analysis of Stock Performance and *Adj_DROS* (After Controlling for New-listing Bias)

Dependent variable	Size matched		BM matched		Size-BM matched	
	BHAR	CAR	BHAR	CAR	BHAR	CAR
Independent variables						
Intercept	-2.706**	-3.688***	-0.289	-1.760**	-3.632***	-4.086***
<i>Adj_DROS</i>	0.355**	0.304**	0.353*	0.378***	0.261*	0.331***
(Industry median adjusted)						
<i>SIZE</i>	0.144***	0.177***	0.033	0.091**	0.181***	0.196***
<i>PCTNT</i>	0.210	0.152	-0.750*	-0.432	0.191	0.151
<i>LEVERAGE</i>	-0.590*	-0.260	-0.186	-0.128	-0.489*	-0.410*
<i>Adj_R</i> ²	0.034	0.071	0.011	0.035	0.057	0.092
N	413	413	413	413	413	413

The regression model is

$AR = \alpha_0 + \alpha_1 Performance + \alpha_2 Size + \alpha_3 PCTNT + \alpha_4 Leverage + \alpha_5 Market + \varepsilon$, where *AR* is the size- (BM-, Size-BM-) matched BHAR or CAR of IPOs in the 60th month after the IPO; *Performance* is the cumulative value of *Adj_DROA* (industry median adjusted) over five years after the IPO; *Size* is the natural logarithm of total assets; *PCTNT* is the proportion of non-tradable shares to total shares right after the IPO; *Leverage* is the ratio of debt to total assets at the beginning of the IPO year; and *Market* is the natural logarithm of the market index on the first trading day.

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

Panel A of Table 8 shows that the long-term underperformance is positively correlated with *Adj_DROA* (industry median adjusted), but the adjusted R^2 varies from 1 per cent to 8 per cent. Panel C shows that the coefficient of *Adj_DROA* (industry median adjusted) improves after controlling for the new-listing bias, as does the adjusted R^2 . Panels B and D present the regressions between stock performance and *Adj_DROS* (industry median adjusted) with and without the effect of the bias, and the results also support the results in Panels A and C.

In summary, the results of Table 8 are consistent with the univariate analyses in Table 7, and both tables show that the new-listing bias not only affects the long-term underperformance of IPOs, but also weakens the relationship between long-term stock performance and accounting performance.

V. Conclusions

This paper investigates the long-term underperformance of 935 Chinese IPO firms from 1996 to 2003. The proportion of IPOs in all listed companies is high in the emerging Chinese market. The new-listing bias thus arises in event studies of long-term abnormal returns, because sampled firms generally have a long post-event history of returns, whereas firms that constitute the index (or reference portfolio) typically include new firms that begin trading subsequent to the event month.

The long-term abnormal returns of IPOs in the Chinese stock markets have been a matter of debate. Research design and sample selection both have serious effects on the results. This paper concludes that the new-listing bias plays an important role in the long-term abnormal returns of IPOs, and so we must control for its effects. For the sample without the effect of the split-share structure reform, we find significant long-term underperformance of IPOs after controlling for the bias. In addition, we find a significant negative long-term accounting performance of IPOs, while long-term stock performance is positively correlated with accounting performance.

The contributions of this paper are that, in contrast with developed stock markets, the proportion of IPOs in the emerging Chinese market is high, but their long-term underperformance is unreliable if the new-listing bias is not controlled for. Obviously, the effects of this bias will weaken with the passage of time, while other biases, such as the rebalancing bias and bias distribution, will become increasingly important. We think that these biases are worth studying in the future.

The split-share structure reform is almost finished. IPOs in China are primary offerings, where new shares are issued to raise additional cash for the company, while the split-share structure reform is considered a secondary offering. We divide the sample into two sub-samples based on whether the IPOs carried out the reform within 60 months of the listing date. Since the focus of our research is on the methodology of the long-term underperformance of IPOs, we have not studied the institutional background behind the phenomenon. These two questions are the shortcomings of this paper.

References

Please refer to pp. 26-27.