

持股金融机构、融资约束与企业现金储备¹

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摘要

拥有大量资源的金融机构是企业获取外部资金的重要途径之一，与金融机构建立长期稳定的关系通过关联贷款、信号传递等直接与间接途径缓解融资约束，降低企业现金储备。因此，很多企业逐渐开始持有金融机构的股权。本文采用配对样本的方法，对2007年到2011年615家持有非上市金融机构股权的A股上市公司进行的研究发现：持股金融机构的确能够为企业带来好处，可以通过缓解企业的融资约束，从而在一定程度上间接降低对于现金储备的需求，但持股金融机构也直接降低了企业的现金储备需求。而且，持股金融机构更加有利于融资约束较高的企业降低现金储备。而以上影响主要是持股非银行类金融机构产生的，持股银行并没有显著影响企业融资约束和现金持有水平。另外，持股金融机构对企业融资约束以及现金储备的影响对非国有企业更加明显。

关键词：持股金融机构、融资约束、现金储备

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一、引言

2007 年底开始爆发的金融危机使得全球经济一路下滑，许多企业破产倒闭，陷入“寒冬”。一些企业为了度过难关，或者伺机并购和扩张，不得不持有较多的现金储备。而持有现金是有成本的，较高的现金储备会造成企业资金运用效率低下，从而降低企业的收益水平。因此，企业需要进行权衡，持有较为适当的现金储备水平，从而提高现金资产的管理能力（Opler *et al.*, 1999）。有关现金持有的理论和实证研究成果丰厚，但是研究大都限于探讨影响企业现金持有水平的因素。而企业更为关心的是如何降低现金储备的持有成本，从而提高运行效率与绩效。银企关系的研究为这一问题提供了思路。研究发现：与银行等金融机构保持密切的关系可以为企业发展需要的资金（Berger and Udell, 2002），降低企业的现金持有水平（Lu *et al.*, 2012；陈栋和陈运森，2012）。随着国内金融市场的发展，越来越多的企业，特别是民营企业，逐渐开始投资于金融机构，尤其是很多企业投资于未上市的城市商业银行、保险公司以及证券公司等。持股未上市金融机构（包括银行以及非银行类金融机构）是否真的能够为企业的融资和运营带来便利？在《国务院关于鼓励和引导民间投资健康发展的若干意见》（简称“新国 36 条”）的大背景下，鼓励民营资本进入金融领域，是否能够提高民营企业的运营效率呢？持股银行股权与非银行类金融机构在企业运营方面是否发挥了同样的作用？本文希望通过研究上市公司持股金融机构（银行和非银行类金融机构）对其融资约束以及现金持有水平的影响，为企业降低运营成本以及民营资金进入金融领域提供证据支持。

通过对 2007 年到 2011 年 1,230 家（615 对）持有非上市金融机构股权的 A 股上市公司进行的研究，本文发现：首先，持股非上市金融机构的确能够为企业带来好处，最直接的表现就是有利于缓解企业的融资约束，从而有效得降低企业的现金储备水平。而且，对于融资约束较强的企业而言，持股金融机构降低现金储备水平的作用更明显。其次，持股非上市金融机构在缓解企业融资约束和降低运营成本方面的好处主要是由非银行类金融机构提供的，持股银行股权发挥的作用并不明显。再次，由于相对于国有企业而言，非国有企业先天在融资上受到的约束更大，因此持股金融机构对现金储备的影响在非国有企业中更加明显，意味着鼓励民营资本进入金融领域对于民营企业是切实有利的。最后，本文还发现，在样本期间，持股金融机构对于非制造业企业而言发挥了重要作用，能够降低其融资约束以及现金储备水平，但对于制造业企业并没有明显的作用。

区别于现有研究文献，Lu *et al.*（2012）、陈栋和陈运森（2012）从宏观货币政策角度针对持股金融机构与企业现金持有水平进行了研究，而本文则采用量化指标，直接检验了持股金融机构如何影响企业融资约束，从而对企业现金持有量产生作用；本文检验了这一逻辑路径，为现有研究提供了更为直观的证据。另外，不同于 Lu *et al.*（2012）、陈栋和陈运森（2012）利用银行数据的研究，本文进一步分析了企业持股银行与非银行类金融机构的差异。因为伴随着银行、保险等金融行业的相互投资入股，我国金融混业经营的趋势日渐清晰，金融控股集团已经初步形成（如平安、中信），银

行与其他金融机构的界限越来越模糊，其他金融机构为企业提供融资便利的情况在实际操作中更为明显（陈栋等，2012）。“新国 36 条”鼓励民营资本进入金融领域也不仅限于银行业。因此，研究非银行类金融机构对企业融资的影响能够为政策制定以及企业运营提供更多借鉴和支持。此外，本文单独针对非上市金融机构进行研究，降低了由于监管差异可能造成的研究结果的偏误。因为上市金融机构信息披露和关联方交易监管非常严格，企业实际操作起来困难程度很大；而非上市金融机构更加容易规避政策监管，形成关联交易和资金支持。两类机构由于受到的监管存在差异，因此为企业提供资金支持方面也可能会存在不同。在研究方法，本文采用了连续变量而非以往研究采用的虚拟变量来度量企业与金融机构之间的紧密程度，不仅能够比较是否具有“商业联系”（Business Connections），即持股金融机构产生的紧密关系，的企业在融资方面的差异，而且能够比较不同“商业联系”程度的企业的融资差异，更进一步明晰持股金融机构对企业的影响。另外，本文采用了对研究样本以及样本特性要求较为严格的配对样本方法，使得研究结论信服度更高。

文章第二部分对相关文献进行了回顾，第三部分为本文的理论分析与假设。研究设计与实证检验在第四和第五部分，最后第六部分为本文的结论。

二、文献回顾

关于现金持有（或称现金储备）的理论和实证研究国内外已经积累了大量相关文献。现金持有理论包括动机理论（Keynes, 1936; Miller and Orr, 1966; Myers and Majluf, 1984; Han and Qiu, 2007）、⁵ 权衡理论（Opler *et al.*, 1999; Harford, 1999）、优序理论（Myers and Majluf, 1984; Myers and Rajan, 1998），以及代理理论（Opler *et al.*, 1999; Jensen, 1986）。针对动机理论的实证研究从集中在交易性动机逐渐转变到集中于预防性动机，尤其关注现金储备、现金流风险与融资约束之间的关系以及这种关系对投资产生的影响（顾乃康等，2008）。例如，Han and Qiu（2007）研究发现为了抓住现金流风险作用下更有利的未来投资机会，融资约束公司就会在当期减少投资以节省内源资金，增加现金储备。而在我国，金融市场发育还不成熟，且由此而不能更好地为企业分散现金流风险提供充分的套戥（Hedging）机会下，现金的预防性动机具有特别的意义（顾乃康等，2008）。企业通常更愿意采取储存现金来抵御我国不确定性较高的市场风险和普遍存在的资本短缺（韩忠雪和周婷婷，2011）。由于我国上市公司两类代理问题共存，因此，现金持有的代理理论研究相对比较丰富，主要表现在行业竞争与产品市场（杨兴全和吴昊旻，2009；连玉君等，2011）、投资者保护（张人骥和刘春江，2005；罗琦和秦国楼，2008）、大股东控股（张人骥和刘春江，2005；罗琦和许俏晖，2009；沈艺峰等，2006；陈德球等，2011）、治理环境（杨兴全和张照南，2010）、公司治理

⁵ Keynes（1936）认为企业主要出于交易性和预防性需要的动机持有现金，Miller and Orr（1996）则认为现金短缺成本会促使企业持有更多的流动资产，而 Myers and Majluf（1984）指出由于在不对称信息下外部融资成本高于内部融资成本，因此为了满足未来的投资支出之需，企业有必要持有现金以保持财务弹性。

机制（辛宇和徐莉萍，2006）等因素对现金持有的影响。杨兴全和孙杰（2007）研究认为权衡理论、融资优序理论和代理理论对于现金持有的影响都在中国得到了验证，但彭桃英和周伟（2006）则认为与代理理论相比，权衡理论更适合用来解释我国企业的高额现金持有行为。但是，企业更加关注的是如何保持足够的现金储备，降低持有成本。对于这一问题，上述研究无法给出答案。

关于银企关系方面的研究在一定程度上为以上问题的回答提供了思路，因为银行是企业资金来源的重要渠道，与银行保持紧密的联系可以在企业需要资金时及时获得银行资金。Petersen and Rajan（1994）提出了基于逆向选择和道德风险的关系银行模型，该模型认为在对借款者不太了解的初期，银行提供贷款的利率较高；随着对借款者比较了解，银行提供贷款的利率将逐步降低。Berger and Udell（2002）将银行贷款分为四种：财务报表型贷款、抵押担保型贷款、信用评级技术型贷款，以及关系型贷款（陈键，2008）。前三种贷款中，银行主要通过考察企业的财务状况等容易量化的“硬信息”来确定企业的还款能力，并由此判断发放贷款的风险。而关系型贷款主要是通过建立紧密的银企关系，从而依赖企业的“软信息”来判断企业的还款能力。Charumilind *et al.*（2006）研究发现，与银行等金融机构保持“商业联系”能够使企业更加容易从银行和金融机构获得长期贷款，而且抵押也相对较少。这些企业使用较多的长期贷款，就可以降低对于短期贷款的依赖。但是，银企关系到底是降低还是提高了企业获得银行信贷的成本，国内学术界意见不一（杨毅和颜白鹭，2012）。一种观点认为银企关系的密切程度对企业的信贷融资具有“正”向效应（罗正英等，2011），企业与银行采用关系借贷融资所形成的关系深度与企业的成长具有正相关性（何韧和王维诚，2009），企业与较多的银行建立关系以及增加银企关系深度都有助于降低贷款利率成本（何韧，2010）。但是，张杰等（2007）却发现作为利用银企间长期合作关系所产生的“软信息”的“关系型借贷”在中国银行机构中并未得到有效使用。陈键（2008）发现银企关系时间越长，企业的信贷可获得性增强，但是贷款成本反而会上升。杨毅和颜白鹭（2012）调研发现用企业与银行的合作年限、企业在该银行贷款比重等进行衡量的银企关系深度越强，企业银行贷款利率反而越高，而用企业在银行开办的其他业务数量来衡量的银企关系的广度越强，企业贷款的利率则会越低。

虽然银企关系研究结论尚不统一，但是已有研究至少表明：在国内，与银行建立起来的密切关系可以为企业提供企业需要的资金。也就是说，与银行关系越是密切，越是能够获得需要的资金。那么，对于企业而言就可以在在一定程度上降低目前持有的现金储备水平，降低持有成本。Lu *et al.*（2012）采用持股银行的股权比例表征银企关系，发现银企关系越强，企业持有现金就越少。陈栋和陈运森（2012）利用上市和非上市银行数据也发现了同样的现象。当然，资金的获得并不一定只是通过银行。目前中国的金融机构发展迅猛，伴随着银行、保险等金融行业的相互投资入股，我国金融混业经营的趋势日渐清晰，金融控股集团已经初步形成（如平安、中信），银行与其他金融机构的界限越来越模糊。这些保险机构、证券公司以及各种财务公司拥有大量的资金，企业可以通过向其他非银行金融机构的借贷从而降低难以从银行获取资金的问题。陈栋等（2012）发现参股保险公司能够部分抵消货币政策变更对企业现金持有的

不利影响。实际上，很多企业（非金融类企业）也逐渐开始投资一些金融机构，尤其是非银行类金融机构，这种持股金融机构的模式对企业发展会产生什么样的影响呢？持股银行与其他非银行类金融机构在为企业提供资金方面是否存在差异？目前鲜有相关研究。

三、理论分析与研究假设

信贷配给（credit rationing）是信贷市场上存在的一种典型现象（张维迎，2009），由于存在逆向选择和道德风险问题，信贷配给可以作为一种长期均衡存在（Stiglitz and Weiss, 1981）。放款人（银行）的期望收益取决于贷款利率和借款人（企业）的还款概率两个方面。因此，银行不仅关心利率水平，还关心贷款风险。当贷款风险独立于利率水平，资金供不应求时，银行可以通过提高利率增加收益。但问题在于，银行无法观察企业的贷款风险，盲目提高利率将使低风险企业退出市场（即逆向选择），导致银行的平均贷款风险上升，预期收益降低。因此，银行宁愿在相对低的利率水平上拒绝一部分贷款要求。这样，信贷配给问题就出现了。在信贷配给问题存在的情况下，企业可以持股金融机构，并通过两种途径缓解融资约束，减少现金储备需求。

第一种途径是企业持股金融机构后，可以获得该金融机构的资金支持（即关联贷款），即通过这种直接途径缓解其融资约束问题。在紧密型银企关系下，银行与企业存在长期稳定的信贷关系，银行较为充分地掌握了企业信息（马宏，2007）。因此，紧密型银企关系有利于银行充分了解并监督企业经营，降低银行与企业之间的信息不对称，避免信贷交易中的逆向选择和道德风险，保证企业能获得稳定和充足的资金支持，降低企业的借款成本和所受的信贷配给程度（Petersen and Rajan, 1994）。也就是说，密切的银企关系可以作为企业可靠的资金来源，有利于企业缓解融资约束。第二种途径是企业持股金融机构后，可以向被持有的金融机构以及其他金融机构传递自己还贷能力强的信号，从而获得资金（即信号传递），通过间接途径缓解融资约束。投资金融机构能够成为传递借款企业类型的信号，为了获取更多的银行贷款，低风险企业通过投资金融机构，向银行传递自己低风险的类型信息，把自己与高风险企业区分开来，从而解决融资约束问题。⁶当然，资金的获得并不一定只是通过银行。随着中国资本市场的发展，金融机构的类型越来越多（股份制银行、城市商业银行、邮政储蓄银行、信用合作社、保险公司、证券公司、资产管理公司、财务公司等），规模也越来越大。金融机构掌握着越来越多的资金和财富，企业可以通过向其他非银行金融机构的借贷从而降低难以从银行获取资金的问题（陈栋等，2012）。而与金融机构的关系对企业的信贷融资具有“正”向效应（罗正英等，2011），有助于降低贷款利率成本（何韧，2010），促进企业的成长（何韧和王维诚，2009）。因此，与金融机构建立起来的密切关系可以为企业低成本以及企业需要的资金。也就是说，与金融机构关系越是密切，越是能够获得需要的资金，能够帮助企业缓解融资约束。

⁶ 本文对这一信号传递作用采用了模型进行分析，见附录。

第一种途径对于缓解融资约束来说是最为直接和有效的，但由于监管部门对关联贷款的约束条件愈发严格，因此持股金融机构通过第一种途径缓解融资约束的难度较高。但是，现有实证研究依旧发现这种途径能够为企业带来实质性的好处（罗正英等，2011；Lu *et al.*, 2012；陈栋和陈运森，2012）。而第二种途径可能存在逆向选择问题，即有融资约束的企业为了传递信号而持股金融机构，这也可以解释为什么一些原本存在融资约束的公司还要花费大量资金投资金融机构，事实上这类企业投资金融机构的目的并不完全在于投资收益，还看重投资行为给自己带来的良好形象，以此提高金融机构对企业的先验还款概率。综上所述，本文假设：

假设 1：持股金融机构股权有利于缓解企业的融资约束。

公司金融理论研究表明，融资约束是影响公司财务政策和管理的基本前提。对于融资受到约束的公司而言，当面临着外部较高的融资成本和较少的市场融资机会时，公司通常会储备更多的现金来抵御行业竞争风险。因此，融资受约束的公司的现金-现金流敏感度较高（Almeida *et al.*, 2004；Acharya *et al.*, 2007），公司需要从现金流量中储备更多的现金。而且，未来现金流预期较低的公司，其现金持有水平更高。

在我国，改变企业的融资约束条件同样对公司现金持有动机产生重要影响，也就是说融资约束状态影响企业的现金持有（陈德球等，2011）。融资受约束的公司外部融资能力较弱，此类公司为了规避现金流波动带来的风险必然维持较高水平的现金持有。江龙和刘笑松（2011）认为经济周期波动通过影响公司的外部融资环境，改变公司的融资约束状况，进而影响公司的融资路径选择（主要是内部留存、债权融资、股权融资），并最终影响公司现金持有决策。祝继高和陆正飞（2009）发现当货币政策趋于从紧时，外部融资约束增强，企业会提高现金持有水平；当货币政策趋于宽松时，外部融资约束降低，企业会降低现金持有水平。也就是说，融资约束越强的企业往往持有更高的现金储备。

而持股金融机构在一定程度上使得企业与金融机构的关系更加密切，使企业能够在需要资金时较为容易的获得“关系型”融资（Lu *et al.*, 2012；陈栋和陈运森，2012），从而降低企业的融资约束，进一步降低过高的现金储备。因此，本文假设：

假设 2：持股金融机构有利于降低企业的现金储备水平。

融资受约束的公司的现金流对现金持有量的影响程度要明显强于融资不受约束的公司；而且，融资约束越强的公司，其现金持有水平对宏观经济因素的变化越敏感（顾乃康等，2008）。也就是说，融资约束状态不同的公司，外部机制对现金流量的影响存在明显差异。由于持股金融机构能够降低企业的融资约束，从而降低企业的现金储备；而融资约束又与现金储备负相关，即融资约束较大从而需要持有更多的现金储备，因此，对于融资约束较强的公司而言，持股金融机构由于降低了该类公司的融资约束，从而更加有效的降低了对现金储备的需求。也就是说，持股金融机构对于融资约束较大的企业在降低现金储备方面的效果更加明显。因此，本文假设：

假设 3: 对于融资约束较大的企业而言, 持股金融机构更加有利于降低其现金储备。

四、研究设计

(一) 模型与变量

本文首先考察持股金融机构对企业融资约束的直接影响(假设 1), 模型设定如下:

$$\begin{aligned} \text{CONSTRAINT} = & \alpha_0 + \alpha_1 \text{FINHOLD} + \alpha_2 \text{PRECASH} + \alpha_3 \text{CFO} \\ & + \alpha_4 \text{ROE} + \alpha_5 \text{GROW} + \alpha_6 \text{PRESIZE} + \alpha_7 \text{LEV} \\ & + \alpha_8 \text{STATE} + \alpha_9 \text{V} + \alpha_{10} \text{VC} + \alpha_{11} \text{MARKET} \\ & + \alpha_i \sum \text{INDS} + \alpha_j \sum \text{YEARS} + \varepsilon \end{aligned} \quad (1)$$

CONSTRAINT 表示企业受到的融资约束, 本文采用长期负债占总资产比例的相反数 (*InvLLEV*) 表征。长期负债占总资产的比重在一定程度上表明企业从银行获得长期贷款的难易程度 (Charumind *et al.*, 2006; 程建伟, 2007; 王正位等, 2009)。⁷ 长期负债风险较高, 银行相对也不会轻易给企业进行长期贷款, 只有实力较强的企业才能够获得银行的长期贷款。因此, 长期负债占总资产的比重表明企业有能力和实力从银行获得资金, 即融资能力较强。当然, 企业同时也可以获得短期融资。如果能够再更多获得长期负债融资, 那么企业对于资金的需求相对宽松一些, 因此长期负债占总资产的比重在一定程度上意味着企业有较高的融资实力, 融资约束相对宽松, 即相对较小。一些研究发现中国部分企业的长期负债甚至为零, 面临严重的长期资金不足问题 (王正位等, 2009)。因此, 长期负债比重越高意味着企业在长期发展资金方面相对较为宽裕, 在短期借款偿还方面的压力也较小, 即融资约束相对较小。虽然很多企业采用“短期贷款长期化”的方式缓解无法获得长期债务形成的融资约束。相对于通过“短期贷款长期化”融资的企业而言, 能够获得长期贷款的企业其偿债能力指标要更好, 因此在债务融资以及股权融资上更加有优势, 从而体现出更强的融资能力和较低的融资约束问题。为了解释方便, 回归采用长期负债占总资产比例的相反数 (*InvLLEV*)。因此, *InvLLEV* 越高, 意味着企业受到的融资约束越严重。稳健性检验中, 本文也采

⁷ 采用长期负债占总负债的比重表征企业融资约束程度虽然没有在以往的研究中明确提出来, 但是有一些研究采用了长期贷款来说明企业对于稳定资金的需求, 潜在的表明长期负债比重能够衡量企业融资约束程度。比如: Charumind *et al.* (2006) 研究发现, 与银行等金融机构保持“商业联系”能够使企业更加容易从银行和金融机构获得长期贷款, 而且抵押也相对较少。这些企业使用较多的长期贷款, 就可以降低对于短期贷款的依赖。程建伟 (2007)、王正位等 (2009) 都认为中国的现实情况是企业的长期债务数量很少, 很多上市公司长期负债为零。其中很重要的原因是由于银行对长期贷款的审查较短期贷款更加严格, 审查程序更加复杂 (程建伟, 2007; 王正位等, 2009)。尽管上市公司从银行融资可能比较方便, 但是长期贷款和短期贷款的融资难度差异仍然存在, 而对不同的上市公司这种差异可能更为明显, 相对的融资约束仍然存在 (程建伟, 2007)。对于那些规模较小、固定资产比例较低、公司盈利能力较差、行业竞争较为激烈的公司而言, 银行往往不愿提供长期借款。因此, 很多企业不能及时足量地获得银行贷款, 存在较严重的融资约束问题 (陈栋和陈运森, 2012)。

用每股现金股利（DPS）替代。向股东派发较高的现金股利往往被视为较为严重的委托代理问题，因为此时债权人的利益可能会受到损害。较高的现金股利支付会受到债权人对企业在资金使用以及额外债务融资方面产生更多的监督和约束，从而企业在债务融资方面受到的约束就会越大。另一方面，企业需要维持现金股利的连续性，这自然对于已经派发较高现金股利的企业来说增加了未来继续支付较高现金股利的压力，一旦未来现金流量不确定性增加，那必然会导致企业受到的融资压力增大，受到的融资束缚就增大。因此，每股现金股利越高，企业融资约束越大。⁸

FINHOLD 表示企业与金融机构间的紧密程度，本文采用企业持股金融机构股权占其总资产的比重表征。持有金融机构股权的比例表示的是企业对该金融机构的控制权，虽然可能在利用关联资金上有一定的优势，但是毕竟关联贷款受到的限制非常严格，操作起来很麻烦。而且持有金融机构的股权比例较高的企业往往是将产业与金融结合紧密的企业，这些企业反而是不缺少资金的，金融机构对他们的作用反而不大。相对的，那些持股金融机构股权较少的企业，虽然在单一金融机构中的比例较小，但是这一投资已经占他们自身资产的很大一部分，意味着公司有较高的资产配置在金融机构上，因此企业会与金融机构有更多更加紧密的联系，那么这种联系或者是金融机构股权对企业的影响是更大的。另外，样本中很多企业持有多家金融机构的股权，而持股比例不等。由于各家金融机构规模存在很大差异，股权集中程度也显著不同，如果将持有多家金融机构的不同持股比例直接相加，会出现较大误差，显然不合理。因此，采用金融机构股权占总资产的比重比持股金融机构股权比重总和衡量的信号作用以及关联资金对企业影响的重要性都要更加合适一些。另外，由于上市金融机构信息披露和关联方交易监管非常严格，企业实际操作起来困难程度很大；而非上市金融机构更加容易规避政策监管，形成关联交易和资金支持。两类机构由于受到的监管存在差异，因此在为企业提供资金支持方面也可能存在不同。为了避免监管因素对研究结果产生的影响，本文样本全部为非上市金融机构股权数据。也就是说，本文采用企业持有的非上市金融机构的股权价值除以资产总额表征企业与金融机构之间的紧密程度。持股金融机构⁹ 能够为企业带来更多的金融纽带。当企业需要现金以及发展资金时，可以凭借持有的金融机构股权影响金融机构的决策。另外，即使持有的股权比例没有达到影响决策的程度，持有金融机构股权形成的关联“关系”也能够使企业与金融机构关系更加紧密。而且，伴随着金融机构上市潮的来临，尤其是近些年来国内城市商业银行上市热潮，金融机构持股越多能够为企业带来更高的股权增值，提高企业价值，即使存在资金需求时，金融股权也更是较高价值的担保物，因此能够使企业与金融机

⁸ 目前很多上市公司支付现金股利并非出于融资约束的原因，主要还是取决于控股股东对于股利的偏好以及对投资者回报的关注（陈信元等，2003；刘峰等，2004；原红旗，2004；魏明海和刘建华，2007）。有的上市公司保持了较高的资产负债率却坚持年年派发现金股利，而有的上市公司经常向市场融资（股权融资和债权融资）却依旧不派发任何现金股利。

⁹ 这里的金融机构不仅指银行，还包括信用合作社、财务公司、证券公司、保险公司、期货经纪公司。信用合作社虽然名称上不属于银行，但是信用合作社可以开展发放贷款、办理抵押贷款等金融业务；财务公司、保险公司更加可以向其他企业进行债务贷款；证券公司、期货经纪公司等等都有大量自有资金，可以用于其他短期贷款等，另外可以通过股权质押等方式进行债务发放等。

构有更高的联系。因此，持股非上市金融机构股权比例在一定程度上能够代表企业与银行（其他金融机构）之间的密切关系。为了进一步区分银行类与非银行类金融机构在企业融资方面的差异，本文也区分了持股金融机构的股权，*FINHOLDBANK* 为持股非上市银行的股权价值占总资产的比重，*FINHOLDNONBANK* 为持股非上市非银行类金融机构的股权价值占总资产的比重。

PRECASH 为上期现金储备水平，采用货币资金除以资产总额表征。¹⁰ *CFO* 为经营活动现金流占总资产比例；*ROE* 为盈利能力，采用净资产收益率表征；*PRESIZE* 为期初规模，采用总资产自然对数表征；*LEV* 为当期总资产负债率；*STATE* 为最终控制人属性，1 表示国有，否则为 0；*V* 为最终控制人持股比例；*VC* 为最终控制人持股比例与其现金流收益权的比值。*MARKET* 为地区发展水平，采用市场化排名衡量；¹¹ *INDS* 为行业哑变量，采用证监会二级行业分类标准，剔除金融行业后采用 20 个哑变量表征；*YEARS* 为年度哑变量，4 个哑变量表征 5 个会计年度。

基于现金储备的相关文献，针对持股金融机构股权对企业现金储备的影响（假设 2 和假设 3），本文的实证模型设定如下：

$$\begin{aligned} CASH = & \beta_0 + \beta_1 FINHOLD + \beta_2 CONSTRAINT + \beta_3 FINHOLD \times CONSTRAINT \\ & + \beta_4 PRECASH + \beta_5 CFO + \beta_6 ROE + \beta_7 GROW + \beta_8 PRELEV \\ & + \beta_9 PRESIZE + \beta_{10} STATE + \beta_{11} V + \beta_{12} VC + \beta_{13} MARKET \\ & + \sum INDS + \sum YEARS + \varepsilon \end{aligned} \quad (2)$$

CASH 为当期现金储备水平，采用货币资金除以资产总额表征。¹² 稳健性检验中，也采用（货币资金 + 交易性金融资产）/资产总额衡量。

CONSTRAINT 为企业融资约束，定义同上；*FINHOLD* 为企业与金融机构间的紧密程度（持股金融机构），定义同上；*FINHOLD* × *CONSTRAINT* 为 *FINHOLD* 与 *CONSTRAINT* 的交叉变量。

企业现金储备不仅取决于与金融机构的关系以及企业的融资约束状态，还受到其他一些因素的影响。由于企业财务与会计政策具有一定的连续性，即现金持有政策的连续性造成现金储备取决于上期水平，因此本文采用上年度现金储备控制这种政策的连续性（*PRECASH*）。预防性与交易性动机决定了现金持有水平，比如较高的投资机会和增长率、较高的负债水平、较小的企业规模等，因此本文采用当期销售收入增长率（*GROW*）、期初总资产负债率（*PRELEV*），以及期初总资产自然对数（*PRESIZE*）控制这方面的影响。另外，现金持有水平取决于企业的经营情况，因此本文采用当期经营活动现金流占总资产的比例（*CFO*）以及当期净资产收益率（*ROE*）控制。有研究发现大股东控股对现金储备会产生影响（罗琦和许俏晖，2009；杨兴全和孙杰，2007），因此本文也对最终控制人的影响进行了控制。*STATE* 为最终控制人属性；*V* 为最终控制人持股比例；*VC* 为最终控制人持股比例与其现金流收益权的比值。地区发展水平，

¹⁰ 采用货币资金/（资产总额 - 货币资金）作为现金储备的结果基本一致。

¹¹ 由于最新的市场化排名仅到 2009 年，因此 2009 年之后的市场化排名采用 2009 年的排名替代。

¹² 采用货币资金/（资产总额 - 货币资金）作为现金储备的结果基本一致。

尤其是当地的金融发展水平决定了企业可获取的资金（樊纲等，2011），因此本文采用市场化排名衡量（*MARKET*）。¹³ 本文也采用行业哑变量（*INDS*）控制行业特征造成对现金持有的影响，*INDS* 采用证监会二级行业分类标准，剔除金融行业后采用 20 个哑变量表征；*YEARS* 为年度哑变量，4 个哑变量表征 5 个会计年度。

（二）数据来源与样本

持股金融机构数据（上市公司持有的非上市金融机构股权）来自于中诚信资讯数据库（并与万德 Wind、同花顺 iFind 进行了对比），其他财务数据来自于万德 Wind 数据库，最终控制人数据来自于上市公司年报（手工收集），市场化排名来自于樊纲等（2011）。

本文从数据库获得了 2007 年到 2011 年年报中披露的上市公司持有的非上市金融机构股权投资样本共计 4,108 条，合计 2,375 家上市公司。¹⁴ 考虑到上市公司基本面存在较大差异，规模、行业等因素对其现金储备都有非常明显的影响，采用混合面板数据即使控制行业、规模以及不同年份之间的货币流动性等因素，也存在一定的回归误差。因此，本文采用配对样本的方法，按照“同一年度”、“同一行业”、“资产规模最相近”的原则，对持有金融机构股权的上市公司以及未持有金融股权的上市公司进行配对，剔除数据缺失以及金融行业的样本，最终选择了 2007 年到 2011 年的 615 对上市公司，即 1,230 个样本。表 1 为配对样本的分年度分布情况，不存在样本聚集在某一年度的情况。

表 1 样本分年度分布

年份	2007	2008	2009	2010	2011	Total
样本量	206	206	220	282	316	1,230

五、实证分析

（一）描述性统计

表 2 为回归样本的描述性统计。在持股非上市金融机构的样本中，金融机构的股权价值占企业总资产的比重平均为 2.3%，其中持股银行类的比重平均为 0.7%，非银行类平均为 1.6%。总体而言，持股非上市金融机构股权占总资产比重相对较低。

其他变量区分是否持有金融机构股权（ $FINHOLD > 0$ 和 $FINHOLD = 0$ ）。持股金融机构样本组（目标样本）当期现金储备约占资产总额的 17.9%，显著低于未持有金融机构样本组（配对样本）20.5%的现金储备。这表明持有金融机构股权的上市公司其现金储备更低，支持假设 1。目标样本的上期现金储备（*PRECASH*）也要显著低于配

¹³ 由于最新的市场化排名仅到 2009 年，因此 2009 年之后的市场化排名采用 2009 年的排名替代。

¹⁴ 很多上市公司持有多家非上市金融机构的股权。

表 2 描述性统计

变量	类型	样本量	均值	最小值	中位数	最大值
<i>FINHOLD</i>	<i>FINHOLD</i> > 0	615	0.023	6.54e-08	0.007	0.534
<i>FINHOLDBANK</i>	<i>FINHOLD</i> > 0	615	0.007	0	0.00001	0.284
<i>FINHOLDNONBANK</i>	<i>FINHOLD</i> > 0	615	0.016	0	0.001	0.534
<i>CASH</i>	<i>FINHOLD</i> > 0	615	0.179	0.003	0.140	0.928
	<i>FINHOLD</i> = 0	615	0.205 ^a	0.001	0.150	0.868
<i>PRECASH</i>	<i>FINHOLD</i> > 0	615	0.167	0.001	0.137	0.953
	<i>FINHOLD</i> = 0	615	0.186 ^a	0.001	0.140	1
InvLLEV	<i>FINHOLD</i> > 0	615	-0.109	-2.399	-0.050	0
	<i>FINHOLD</i> = 0	615	-0.098	-0.655	-0.047	0
<i>DPS</i>	<i>FINHOLD</i> > 0	615	0.087	0	0.04	1.00
	<i>FINHOLD</i> = 0	615	0.110 ^a	0	0.05 ^b	1.50
InvFCF	<i>FINHOLD</i> > 0	615	-0.708	-11.295	-0.340	-0.0002
	<i>FINHOLD</i> = 0	615	-1.015 ^a	-18.158	-0.419 ^b	-0.0002
<i>CFO</i>	<i>FINHOLD</i> > 0	615	0.074	0.001	0.057	0.891
	<i>FINHOLD</i> = 0	615	0.071	0.001	0.056	0.377
<i>ROE</i>	<i>FINHOLD</i> > 0	615	0.119	0.004	0.091	1.067
	<i>FINHOLD</i> = 0	615	0.116	0.004	0.085	1.067
<i>GROW</i>	<i>FINHOLD</i> > 0	615	0.267	-0.627	0.147	6.937
	<i>FINHOLD</i> = 0	615	0.280	-0.627	0.164 ^b	6.937
<i>LEV</i>	<i>FINHOLD</i> > 0	615	0.543	0.009	0.503	20.246
	<i>FINHOLD</i> = 0	615	0.493 ^a	0.017	0.506	2.032
<i>PRELEV</i>	<i>FINHOLD</i> > 0	615	0.516	0.056	0.520	1.088
	<i>FINHOLD</i> = 0	615	0.502	0.056	0.518	1.088
<i>PRESIZE</i>	<i>FINHOLD</i> > 0	615	21.883	18.071	21.663	28.003
	<i>FINHOLD</i> = 0	615	21.759 ^a	14.108	21.626	27.487
<i>STATE</i>	<i>FINHOLD</i> > 0	615	0.616	0	1	1
	<i>FINHOLD</i> = 0	615	0.613	0	1	1
<i>V</i>	<i>FINHOLD</i> > 0	615	0.393	0.051	0.387	0.899
	<i>FINHOLD</i> = 0	615	0.423 ^a	0.021	0.407 ^b	0.852
<i>VC</i>	<i>FINHOLD</i> > 0	615	1.438	1	1	11.643
	<i>FINHOLD</i> = 0	615	1.509	1	1 ^b	10.846
<i>MARKET</i>	<i>FINHOLD</i> > 0	615	9.725	1	7	31
	<i>FINHOLD</i> = 0	615	9.765	1	7	31

注：*FINHOLD* 表示企业与金融机构间的紧密程度，采用企业持股金融机构股权占其总资产的比重表征。*FINHOLDBANK* 为持股非上市银行的股权价值占总资产的比重，*FINHOLDNONBANK* 为持股非上市非银行类金融机构的股权价值占总资产的比重。*CASH* 为当期现金储备水平，采用货币资金除以资产总额表征；*PRECASH* 为上期现金储备水平。*InvLLEV* 为长期负债占总资产比例的相反数，表征企业受到的融资约束；*DPS* 为每股现金股利，表征企业受到的融资约束。*CFO* 为经营活动现金流占总资产比例；*ROE* 为盈利能力，采用净资产收益率表征；*GROW* 为当期销售收入增长率；*LEV* 为当期总资产负债率；*PRELEV* 为上期总资产负债率；*PRESIZE* 为期初规模，采用总资产自然对数表征；*STATE* 为最终控制人属性，1 表示国有，否则为 0；*V* 为最终控制人持股比例；*VC* 为最终控制人持股比例与其现金流收益权的比值。*MARKET* 为地区发展水平，采用市场化排名衡量。a 表示均值比较至少在 0.10 水平上显著，b 表示中位数比较至少在 0.10 水平上显著。

对样本。

虽然目标样本的长期负债占总资产比例相反数 (*InvLLEV*) 要高于配对样本, 但统计上差异不明显。目标样本的现金股利支付要显著低于配对样本, 但自由现金流要显著高于配对样本。另外, 目标样本在规模 (*PRESIZE*) 和最终控制人股权比例 (*V*) 方面与配对样本存在显著差异, 其他基本面方面差异不明显。

(二) 相关性矩阵

表 3 列示了各变量之间的 Pearson 相关系数。现金储备 (*CASH*) 与持股金融机构 (*FINHOLD*) 显著负相关, 支持假设 1。现金储备 (*CASH*) 与长期负债占总资产比例相反数 (*InvLLEV*) 以及每股现金股利 (*DPS*) 都显著正相关, 即融资约束越高, 现金储备越高。但每股自由现金流相反数 (*InvFCF*) 与现金储备 (*CASH*) 显著负相关, 与融资约束假设相反。其他解释变量之间相关系数最高不超过 0.4, 因此共线性问题不严重。

(三) 回归分析

表 4 展示了持股金融机构对企业融资约束的影响, 即假设 1。第 2 列为全部样本的回归, 第 3 列剔除了配对样本, 第 4 和第 5 列分别对国有企业和非国有企业进行检验, 第 6 和第 7 列区分了持股非上市银行和非银行类其他金融机构, 第 8 列采用每股现金股利 (*DPS*) 表征融资约束检验假设 1。

持股金融机构变量 (*FINHOLD*) 的系数在全部样本和目标样本的回归中都显著为负, 即持股金融机构与企业融资约束负相关, 即持股金融机构有利于降低企业的融资约束, 假设 1 得到验证。因为与金融机构保持紧密联系, 能够为企业获得较多的长期债务支持, 从而降低企业的融资约束。¹⁵

国有企业的回归中, *FINHOLD* 的系数为正但不显著; 而非国有样本的回归中, *FINHOLD* 的系数显著为负。也就是说, 持股金融机构降低融资约束的作用仅在非国有企业中显著, 对于国有企业而言这种作用不明显。回归结果符合现实情况, 因为国有企业天生与银行存在密切联系, 而且有中央政府以及地方政府的支持, 因此持有金融机构对他们而言作用可能不明显。但是对于融资约束相对比较大的非国有企业而言, 持股金融机构能够显著降低其融资约束。

采用持股银行股权价值占总资产比重表征持股金融机构时 (*FINHOLDBANK*) (简洁起见简称为持股银行), *FINHOLD* 的系数为正但不显著, 表明持股非上市银行股权并没有使得持股企业具有明显的融资优势, 在降低企业融资约束上作用不明显。可能的原因在于银行业受到严格的监管, 在向外提供资金, 尤其是向关联机构提供资金上约束较大。而采用持股非上市非银行类金融机构股权价值占总资产比重时 (*FINHOLDNONBANK*) (简洁起见简称为持股非银行), *FINHOLD* 的系数显著为负,

¹⁵ 很多企业采用“短期贷款长期化”的方式缓解无法获得长期债务形成的融资约束。相对于通过“短期贷款长期化”融资的企业而言, 能够获得长期贷款的企业, 其偿债能力指标要更好, 因此在债务融资以及股权融资上更加有优势, 从而体现出更强的融资能力和较低的融资约束问题。

表 3 Pearson 相关系数

	CASH	FINHOLD	InvLLEV	DPS	PRECASH	CFO	ROE	GROW	PRELEV	PRESIZE	STATE	V	VC
CASH	1.000												
FINHOLD	-0.085***	1.000											
InvLLEV	0.303***	-0.211***	1.000										
DPS	0.409***	-0.088***	0.100***	1.000									
PRECASH	0.682***	-0.056**	0.258***	0.295***	1.000								
CFO	0.024	0.029	0.012	0.190***	-0.010	1.000							
ROE	-0.072**	0.001	-0.099***	0.088***	-0.048*	0.087***	1.000						
GROW	0.007	-0.061**	0.002	0.094***	0.058**	0.134***	0.059**	1.000					
PRELEV	-0.287***	-0.023	-0.368***	-0.226***	-0.389***	0.040	0.216***	0.028	1.000				
PRESIZE	-0.249***	-0.133***	-0.311***	0.056**	-0.161***	0.038	0.006	-0.087***	0.242***	1.000			
STATE	-0.175***	-0.035	-0.164***	-0.034	-0.132***	0.034	0.024	-0.026	0.138***	0.376***	1.000		
V	0.109***	-0.101***	-0.028	0.231***	0.119***	0.032	0.002	0.196***	-0.002	0.234***	0.075***	1.000	
VC	-0.104***	0.003	-0.031	-0.076***	-0.120***	-0.033	0.041	-0.030	0.085***	-0.035	-0.172***	-0.128***	1.000
MARKET	-0.151***	0.038	-0.115***	-0.075***	-0.153***	-0.035	0.065**	0.036	0.096***	-0.026	0.097***	-0.018	0.067**

注：FINHOLD 表示企业与金融机构间的紧密程度，采用企业持股金融机构股权占其总资产的比重表征。CASH 为当期现金储备水平，采用货币资金除以资产总额表征；PRECASH 为上期现金储备水平。InvLLEV 为长期负债占总资产比例的反数，表征企业受到的融资约束；DPS 为每股现金股利，表征企业受到的融资约束。CFO 为经营活动现金流占总资产比例；ROE 为盈利能力，采用净资产收益率表征；GROW 为当期销售收入增长率；PRELEV 为上期总资产负债率；PRESIZE 为期初规模，采用总资产自然对数表征；STATE 为最终控制人属性，1 表示国有，否则为 0；V 为最终控制人持股比例；VC 为最终控制人持股比例与其现金流收益权的比值。MARKET 为地区发展水平，采用市场化排名衡量。***、**、* 分别表示在 0.01、0.05 和 0.10 水平上显著。

表 4 持股金融机构对企业融资约束的影响

	全部样本	持有样本	国有样本	非国有样本	持股银行	持股非银行	现金股利
FINHOLD	-0.609*** (-7.77)	-0.616*** (-6.58)	0.079 (0.63)	-1.012*** (-10.83)	0.073 (0.36)	-0.708*** (-8.50)	-0.471** (-2.42)
PRECASH	0.068*** (2.92)	0.104** (2.58)	0.053 (1.55)	0.018 (0.64)	0.078*** (3.26)	0.068*** (2.92)	0.250*** (5.83)
CFO	0.093* (1.89)	0.104 (1.44)	0.202*** (3.38)	-0.093 (-1.19)	0.078 (1.55)	0.097** (1.98)	0.543*** (6.05)
ROE	0.059** (2.51)	0.075** (2.03)	0.074*** (2.73)	0.106*** (2.61)	0.066*** (2.74)	0.061** (2.60)	0.220*** (4.28)
GROW	-0.009** (-2.20)	-0.012** (-2.02)	0.000 (0.04)	-0.010* (-1.85)	-0.007* (-1.69)	-0.009** (-2.23)	0.012 (1.60)
PRESIZE	-0.022*** (-7.72)	-0.021*** (-4.90)	-0.019*** (-5.61)	-0.015*** (-3.36)	-0.019*** (-6.49)	-0.022*** (-7.76)	0.037*** (6.84)
LEV	-0.106*** (-20.51)	-0.102*** (-17.14)	-0.256*** (-13.55)	-0.091*** (-17.68)	-0.109*** (-20.87)	-0.105*** (-20.47)	-0.358*** (-10.34)
STATE	-0.001 (-0.09)	0.001 (0.11)			0.000 (0.03)	0.001 (0.12)	0.006 (0.45)
V	0.014 (0.71)	0.050 (1.59)	0.032 (1.23)	-0.017 (-0.62)	0.021 (1.06)	0.015 (0.78)	0.214*** (5.96)
VC	-0.004 (-1.47)	-0.000 (-0.03)	0.012*** (2.97)	-0.012*** (-3.74)	-0.003 (-1.27)	-0.004 (-1.56)	-0.003 (-0.56)
MARKET	-0.001* (-1.82)	-0.001* (-1.77)	-0.001 (-1.60)	-0.001 (-1.27)	-0.001* (-1.96)	-0.001* (-1.83)	-0.001 (-1.12)
INDS & YEARS	控制	控制	控制	控制	控制	控制	控制
N	1230	615	756	474	1230	1230	1230
R ²	0.522	0.570	0.535	0.673	0.498	0.527	0.8154

注：被解释变量为企业融资约束水平 (InvLLEV)，为长期负债占总资产比例的相反数。FINHOLD 表示企业与金融机构间的紧密程度，采用企业持股金融机构股权占其总资产的比重表示。PRECASH 为上期现金储备水平，采用货币资金除以资产总额表示；CFO 为经营活动现金流占总资产比例；ROE 为盈利能力，采用净资产收益率表示；GROW 为当期销售收入增长率；LEV 为当期总资产负债率；PRESIZE 为期初规模，采用总资产自然对数表示；STATE 为最终控制人属性，1 表示国有，否则为 0；V 为最终控制人持股比例；VC 为最终控制人持股比例与其现金流收益权的比值。MARKET 为地区发展水平，采用市场化排名衡量。INDS 为行业哑变量，采用证监会二级行业分类标准，剔除金融行业后采用 20 个哑变量表示；YEARS 为年度哑变量，4 个哑变量表示 5 个会计年度。***、**和*分别表示在 0.01、0.05 和 0.10 水平上显著。

意味着持股非上市非银行类金融机构的股权能够有效降低企业的融资约束，支持假设 1。对比第 6 列和第 7 列，*FINHOLD* 的系数显著性表明在持股非上市金融机构中，持股银行并没有为企业融资约束带来显著影响，反而是持股非银行类金融机构在缓解企业融资约束中发挥了重要作用。¹⁶

采用每股现金股利表征融资约束的回归中，持股金融机构变量 *FINHOLD* 的系数依旧显著为负，与之前结果一致，即持股金融机构股权有利于降低企业融资约束，进一步验证假设 1。

期初现金储备 (*PRECASH*) 的系数显著为正，说明持有现金较多的企业其融资约束更大，原因在于融资约束较大的企业更愿意持有更多的现金储备。盈利能力越好 (*ROE*)、成长能力越高 (*GROW*)、规模越大 (*PRESIZE*)、负债率越高 (*LEV*)，以及地处市场发展水平相对较高 (*MARKET*) 的公司面临的融资约束相对较小。股权结构 (*STATE*、*V*、*VC*) 的影响不是很明显。总之，表 4 的结果表明：持股金融机构与企业的融资约束程度负相关，即持股金融机构有利于企业改善其融资约束状态，假设 1 得到验证。但是，这种影响主要是持股非银行类金融机构股权所产生的。持股金融机构股权对企业融资的有利作用仅在民营企业中具有显著影响。

表 4 的回归结果表明持股金融机构有利于降低企业的融资约束，也就是说持股金融机构能够为企业提供需要的资金，因此能够降低企业的现金储备水平，从而提高资金运营效率，降低运营成本。表 5 对此进行了实证检验。

第 2 列检验了融资约束对企业现金储备的影响，采用全部 1,230 个样本进行回归。融资约束变量 (*CONSTRAINT*) 的系数为正，而且在 0.01 水平上显著，即融资约束与企业现金储备正相关，融资约束越严重的企业，越倾向持有较高的现金储备，这与以往研究结论一致。

第 3 列考察了持股金融机构对现金储备的影响 (假设 2)，同样采用全部 1,230 个样本进行回归。融资约束变量 (*CONSTRAINT*) 的系数依旧在 0.01 水平上显著为负，与之前一致。持股金融机构变量 *FINHOLD* 的系数在 0.05 水平上显著为负，即持股金融机构与企业的现金储备负相关，即持股金融机构能够降低现金储备，有利于降低持有成本，假设 2 得到验证。由于持股金融机构能够缓解企业的融资约束 (表 4 的回归结果)，而融资约束越强的企业其现金储备越高 (表 5 第 2 列)，加入持股金融机构以

¹⁶ 这一结论与现实也比较符合，很多企业通过持股投资公司、证券公司等方式从外部获得资金，从而在很大程度上避免了监管机构对于银行的严格监管。实际上，企业持股金融机构后获得贷款的方式，主要是持股企业直接从所持股的金融机构获得贷款，其次是持股企业通过影响所持股的金融机构而为控股公司或参股公司提供贷款 (此种情况通常由持股企业委托金融机构或提供担保)，或者二者兼而有之。即使监管部门对于“关联贷款”具有严格的约束条件，导致持股企业由此获得贷款的难度提高，但持股企业仍可在规定条件内以及通过“创造条件”或“规避条件”而获得贷款。而且，资金的获得并非只是通过银行，企业还可以向信托投资公司、企业集团财务公司及金融租赁公司等非银行金融机构融资。非银行金融机构不能办理结算业务，因而其放贷过程只会改变现有存款的结构，不会扩大货币供应量，与从紧的货币政策不相违背，相反会起到搞活微观金融的作用 (吴晓灵，2008)。陈栋等 (2012) 也发现参股保险公司的上市公司日常现金持有水平和调整水平较未参股公司低，且在面对从紧货币政策时，这种流动性风险管理的提升效果更加突出。

及融资约束后（表 5 第 3 列），持股金融机构（*FINHOLD*）系数显著，融资约束指标（*CONSTRAINT*）系数也依旧显著，但系数从 0.099 下降到 0.088，根据 Baron and Kenny（1986）的中介效应模型原理，融资约束在持股金融机构和现金储备之间起到部分中介效应关系，即持股金融机构在一定程度上（部分得）通过影响企业的融资约束程度对企业现金储备水平产生影响。

表 5 第 4 列在第 3 列的基础上增加了交叉变量，考察持股金融机构对融资约束较强企业现金储备的影响。*FINHOLD* 的回归系数显著为负，假设 2 得到验证。*CONSTRAINT* 的系数显著为正，即融资约束较高的企业出于预防性动机（资金融通不便利）需要持有较高的现金储备。而持股金融机构有利于融资约束较高的企业降低现金储备，表现交叉变量 $FINHOLD \times CONSTRAINT$ 的系数显著为负，假设 3 得到验证。

考虑到配对样本没有持股金融机构，可能造成 *FINHOLD* 对现金储备较大的影响。因此，表 5 第 5 列剔除配对样本，仅采用目标样本进行回归。*FINHOLD* 的系数依旧显著为负，即金融机构持股能够降低企业的现金储备，假设 2 得到验证。*CONSTRAINT* 的系数也依旧显著为正，支持了融资约束与现金储备的要求。 $FINHOLD \times CONSTRAINT$ 的系数也显著为负，与之前一致，进一步支持假设 3，即持股金融机构能够降低融资约束企业的现金储备，降低持有成本。另外，比较第 5 列目标样本与第 4 列全部样本中融资约束变量 *CONSTRAINT* 的系数，前者系数绝对值明显高于后者系数绝对值，也就是说持股金融机构使得融资约束与现金储备之间的敏感程度下降，进一步支持了假设 3。

在中国，国有银行与民营企业呈现出“行政性+市场性的割裂关系”。我国国有银行主要是为国有企业融资服务的，具有一定的行政职能，因此产权属性的不同使得非国有企业基本上很难从国有银行得到贷款；从民营企业本身来看，大多规模较小、信息不透明，具有较大的信贷风险，因此国有银行从自身风险和收益角度考虑，也不愿意对民营企业发放贷款。这就导致国有银行与民营企业的关系长期处于割裂状态，一方面国有银行有大量的资金不愿意贷出，另一方面民营企业处于严重的资金饥渴状态而得不到贷款。也就是说，国有企业与非国有企业天生与银行等金融机构的关系就不同。因此，第 6 列和第 7 列分别对国有样本和非国有样本进行检验。在国有样本的回归中，*FINHOLD* 的系数依旧为负，但不显著，*CONSTRAINT* 的系数显著为正， $FINHOLD \times CONSTRAINT$ 的系数也为负，但不显著，即持股金融机构对国有企业的现金持有影响不明显。而非国有企业的回归中，*FINHOLD* 和 $FINHOLD \times CONSTRAINT$ 的系数都显著为负，即假设 2 和假设 3 都得到验证。也就是说，持股金融机构对企业现金持有的影响主要体现在非国有企业，因为非国有企业天生在银行融资方面就存在劣势，因此具有较高持有成本的现金储备对潜在的债务融资渠道更加敏感。

表 4 的回归表明持股银行与非银行类金融机构在缓解企业融资约束上的作用存在差异，因此表 5 最后 2 列也进一步区分了持股非上市银行和持股非上市非银行类金融机构。在持股非上市银行的回归中，持股金融机构 *FINHOLD* 的系数显著为负，即持股非上市银行能够降低企业的现金持有水平，符合假设 2。融资约束变量 *CONSTRAINT* 的系数也为正，与预期一致。而交叉变量 $FINHOLD \times CONSTRAINT$ 的系数虽然为负，

表 5 持股金融机构、融资约束与现金储备

	符号	全部样本	全部样本	全部样本	全部样本	持股样本	国有样本	非国有样本	持股银行	持股非银行
<i>FINHOLD</i>	—	-0.209**	-0.338***	-0.320***	-0.101	-0.500***	-0.418*	-0.299***		
<i>CONSTRAINT</i>	+	(-2.52)	(-3.38)	(-3.43)	(-0.79)	(-2.81)	(-1.81)	(-2.69)		
		0.077***	0.110***	0.074**	0.085***	0.128**	0.095***	0.109***		
		(3.64)	(3.64)	(2.17)	(2.94)	(1.98)	(3.59)	(3.61)		
<i>FINHOLD</i> × <i>CONSTRAINT</i>	—		-0.197**	-0.151*	0.564	-0.278**	-0.346	-0.179**		
			(-2.30)	(-1.84)	(0.52)	(-2.05)	(-0.16)	(-2.03)		
<i>PRECASH</i>	+	0.646***	0.642***	0.677***	0.758***	0.532***	0.645***	0.641***		
		(25.38)	(25.23)	(20.07)	(27.37)	(12.04)	(25.32)	(25.15)		
<i>CFO</i>	+	0.124**	0.130**	0.103*	0.193***	0.016	0.123**	0.117**		
		(2.44)	(2.58)	(1.78)	(4.00)	(0.14)	(2.43)	(2.29)		
<i>ROE</i>	?	-0.033	-0.034	0.001	-0.012	-0.096*	-0.035	-0.029		
		(-1.39)	(-1.41)	(0.03)	(-0.58)	(-1.71)	(-1.44)	(-1.20)		
<i>GROW</i>	?	-0.012***	-0.013***	-0.000	0.003	-0.035***	-0.012***	-0.012***		
		(-2.88)	(-3.05)	(-0.04)	(0.82)	(-4.49)	(-2.91)	(-3.01)		
<i>PRELEV</i>	+	0.042**	0.037*	0.014	0.052***	-0.002	0.040**	0.039**		
		(2.19)	(1.94)	(0.59)	(2.71)	(-0.04)	(2.11)	(2.06)		
<i>PRESIZE</i>	—	-0.017***	-0.018***	-0.016***	-0.004	-0.040***	-0.017***	-0.017***		
		(-5.70)	(-6.06)	(-4.41)	(-1.55)	(-6.14)	(-5.78)	(-5.72)		
<i>STATE</i>	—	-0.012	-0.012*	-0.003			-0.013*	-0.011		
		(-1.64)	(-1.66)	(-0.38)			(-1.75)	(-1.50)		
<i>V</i>	?	0.076***	0.074***	0.048*	-0.028	0.149***	0.075***	0.074***		
		(3.74)	(3.64)	(1.93)	(-1.35)	(3.88)	(3.68)	(3.63)		
<i>VC</i>	?	-0.003	-0.003	0.001	-0.002	0.001	-0.003	-0.003		
		(-1.12)	(-1.18)	(0.39)	(-0.71)	(0.18)	(-1.08)	(-1.13)		
<i>MARKET</i>	?	-0.001	-0.001	0.001	-0.001**	0.001	-0.001	-0.001		
		(-1.52)	(-1.50)	(0.22)	(-2.02)	(0.07)	(-1.51)	(-1.40)		
<i>INDS</i> & <i>YEARS</i>		控制	控制	控制	控制	控制	控制	控制		
<i>N</i>		1230	1230	615	756	474	1230	1230		
<i>R</i> ²		0.537	0.539	0.574	0.639	0.516	0.539	0.540		

注：被解释变量为企业现金持有水平 (*CASH*)，采用货币资金除以资产总额表征；*FINHOLD* 表示企业与金融机构同的紧密程度，采用企业持股金融机构股权占其总资产的比重表征。*CONSTRAINT* 为融资约束水平，采用长期负债占总资产比例的反函数 (*InvLILEV*) 表征；*PRECASH* 为上期现金持有水平；*CFO* 为经营活动现金流占总资产比例；*ROE* 为盈利能力，采用净资产收益率表征；*GROW* 为当期销售收入增长率；*PRELEV* 为上期总资产负债率；*PRESIZE* 为期初规模，采用总资产自然对数表征；*STATE* 为最终控制人属性，1 表示国有，否则为 0；*V* 为最终控制人持股比例；*VC* 为最终控制人持股比例与其现金流收益权的比值。*MARKET* 为地区发展水平，采用市场化排名衡量。*INDS* 为行业哑变量，采用证监会二级行业分类标准，剔除金融行业后采用 20 个哑变量表征；*YEARS* 为年度哑变量，4 个哑变量表征 5 个会计年度。***、**和*分别表示在 0.01、0.05 和 0.10 水平上显著。

但不显著。原因在于持股非上市银行并没有显著降低企业的融资约束（表 4 第 6 列），因此对于融资约束较高的企业而言，持股金融机构在降低现金持有水平上的作用也不显著。在持股非上市非银行类金融机构的回归中，持股金融机构 *FINHOLD* 的系数显著为负，即持股非上市非金融机构股权能够降低企业的现金持有水平，符合假设 2。融资约束变量 *CONSTRAINT* 的系数也为正，与预期一致。交叉变量 *FINHOLD*×*CONSTRAINT* 的系数也显著为负，即持股非上市非银行类金融机构能够进一步有效降低融资约束较高的企业的现金持股水平。原因在于持股非上市非银行类金融机构能够显著降低企业的融资约束（表 4 第 7 列），因此对于融资约束较高的企业而言，持股非银行类金融机构在降低企业现金持有水平上也发挥了显著作用。

PRECASH 的系数显著为正，说明了企业的会计和财务政策具有连续性。*CFO* 系数显著为正，因为较高的经营活动现金流才能为企业带来更多的现金储备。而 *ROE* 的系数显著为负，即盈利能力越差的公司倾向于持有较多的现金储备，从而降低现金短缺成本。*PRELEV* 系数显著为正，表明较高的负债水平会产生较多的现金需求，因此企业倾向于持有较高的现金储备。*PRESIZE* 系数显著为负，即规模较小的企业倾向于持有较高的现金储备，因为小规模企业在获取外部资金方面存在一定的劣势，因此出于预防性和交易性动机持有较高的现金储备。较高的持股结构会造成控股股东倾向于增加现金持有，表现在 *V* 的系数显著为正。

总之，表 5 的结果支持了本文的假设，即持股非上市金融机构（包括持股非上市银行和非银行类金融机构）有利于降低企业的融资约束，从而在一定程度上降低了企业的现金储备。对于融资约束较高的企业而言，持股非银行类金融机构能够进一步降低其现金储备，但持股非上市银行在这方面的作用不明显。另外，持股金融机构对企业现金储备的影响在非国有企业中明显，在国有企业中不显著。

（四）稳健性检验

1. 样本自选择问题

企业持有金融机构股份的动机可能在于降低其融资约束，从金融机构得到更多的资金支持。持有更多现金的原因可能是企业存在较为严重的融资约束，因此通过持有较多的现金，降低现金的短缺成本。也就是说，融资约束较大的企业会选择持有金融机构的股份，从而降低其现金持有以及融资约束，即持股金融机构存在一定的样本自选择问题。为了解决自选择问题，本文采用 Heckman 两步法对以上结果进行重新检验，具体模型设定如下：

$$\begin{aligned}
 DUMFINHOLD = & \gamma_0 + \gamma_1 PRECASH + \gamma_2 PREFCF + \gamma_3 PRELEV \\
 & + \gamma_4 PRESIZE + \gamma_5 ROE + \gamma_6 GROW + \gamma_7 STATE \\
 & + \gamma_8 V + \gamma_9 VC + \gamma_{10} MARKET + \gamma_i \sum INDS \\
 & + \gamma_j \sum YEARS + \varepsilon
 \end{aligned} \tag{3}$$

$$\begin{aligned}
CONSTRAINT = & \lambda_0 + \lambda_1 IMR + \lambda_2 FINHOLD + \lambda_3 PRECASH \\
& + \lambda_4 CFO + \lambda_5 ROE + \lambda_6 GROW + \lambda_7 PRESIZE \\
& + \lambda_8 LEV + \lambda_9 STATE + \lambda_{10} V + \lambda_{11} VC + \lambda_{12} MARKET \\
& + \lambda_i \sum INDS + \lambda_j \sum YEARS + \varepsilon
\end{aligned} \tag{4}$$

$$\begin{aligned}
CASH = & \theta_0 + \theta_1 IMR + \theta_2 FINHOLD + \theta_3 CONSTRAINT \\
& + \theta_4 FINHOLD \times CONSTRAINT + \theta_5 CFO + \theta_6 ROE \\
& + \theta_7 GROW + \theta_8 STATE + \theta_9 V + \theta_{10} VC + \theta_{11} MARKET \\
& + \theta_i \sum INDS + \theta_j \sum YEARS + \varepsilon
\end{aligned} \tag{5}$$

模型（3）考察了持股金融机构（*FINHOLD*）的内生性，即企业的资金状态与融资约束情况是否决定其持股金融机构。期初现金储备（*PRECASH*）、期初自由现金流情况（*PREFCF*）¹⁷以及上期的盈利能力（*PREROE*）、期初负债水平（*PRELEV*）、期初规模（*PRESIZE*），以及企业所在地区的市场化水平都在一定程度上影响企业的金融机构持股水平。模型（4）控制了自选择问题，考察持股金融机构（*FINHOLD*）对企业融资约束的影响；模型（5）控制了自选择问题，考察持股金融机构（*FINHOLD*）与企业融资约束状态对其现金储备的影响。各变量定义与之前相同。

表6展示了Heckman两步法的回归结果。*IMR*在模型（4）和模型（5）中都不显著，即以上回归结果不存在样本自选择问题。在模型（4）的回归中，持股金融机构（*FINHOLD*）的系数依旧显著为负，即持股金融机构能够有效降低企业融资约束，假设1进一步得到验证。在模型（5）的回归中，持股金融机构（*FINHOLD*）的系数依旧显著为负，支持了假设2。*CONSTRAINT*的系数显著为正，说明融资约束越强的企业越倾向于持有更多的现金，从而降低短缺成本。*FINHOLD* × *CONSTRAINT*的系数显著为负，也进一步支持了假设3，即持股金融机构有利于融资约束较大的企业降低现金储备，降低现金的持有成本。

总之，表6的结果表明：即使考虑持股金融机构的样本自选择问题，持股金融机构的确能够降低企业的融资约束，从而降低企业的现金储备和持有成本。而且持股金融机构对于融资约束较强的企业而言，降低现金储备的作用更加明显。

2. 融资约束替代变量

本文进一步采用每股现金股利（*DPS*）表征融资约束重新进行回归，见表7的第2列。回归中，*FINHOLD*、*CONSTRAINT*、*FINHOLD* × *CONSTRAINT*的系数都显著，符号也与表6和表7一致，即持股金融机构能够降低企业的现金储备。虽然融资约束较大的企业会持有较高的现金储备，但持股金融机构能够降低融资约束企业的现金储备，降低持有成本。假设2和假设3进一步得到验证。其他融资约束变量的回归结果基本与表5一致，支持了本文的假设。¹⁸

¹⁷ *PREFCF*表示上期每股自由现金流。

¹⁸ 本文也采用了自由现金流{（经营现金流 - 现金股利 - 投资活动现金流）/ 资产总值}，表征融资约束。但结果不显著。

表 6 样本自选择检验

	<i>DUMFINHOLD</i>	<i>CONSTRAINT</i>	<i>DUMFINHOLD</i>	<i>CASH</i>
<i>IMR</i>		0.092 (1.36)		-0.015 (-0.51)
<i>FINHOLD</i>		-0.617*** (-7.86)		-0.341*** (-3.42)
<i>CONSTRAINT</i>				0.116*** (3.81)
<i>FINHOLD</i> × <i>CONSTRAINT</i>				-0.204** (-2.38)
<i>PRECASH</i>	-0.726*** (-2.71)	0.008 (0.16)	-0.217 (-0.67)	0.653*** (23.04)
<i>PREFCF</i>	-0.007 (-0.54)		-0.084*** (-2.94)	
<i>PRELEV</i>	0.384** (2.50)		0.005 (0.02)	0.042** (2.24)
<i>PRESIZE</i>	0.093*** (8.08)	-0.015*** (-2.96)	0.093*** (2.68)	-0.018*** (-5.49)
<i>LEV</i>		-0.103*** (-19.50)		
<i>CFO</i>		0.094* (1.93)		0.093* (1.86)
<i>ROE</i>	-0.023 (-0.09)	0.061** (2.58)	0.052 (0.19)	-0.031 (-1.29)
<i>GROW</i>	0.050 (1.01)	-0.005 (-1.22)	0.026 (0.55)	-0.013*** (-3.02)
<i>STATE</i>	-0.077 (-1.05)	-0.004 (-0.59)	-0.106 (-1.23)	-0.010 (-1.37)
<i>V</i>	-0.838*** (-3.61)	-0.038 (-0.89)	-0.896*** (-3.74)	0.079*** (3.02)
<i>VC</i>	-0.048* (-1.67)	-0.006** (-2.00)	-0.053* (-1.73)	-0.003 (-1.00)
<i>MARKET</i>	0.002 (0.41)	-0.001 (-1.51)	-0.001 (-0.13)	-0.001 (-1.35)
<i>INDS & YEARS</i>	控制	控制	控制	控制
N	1230	1230	1230	1230
R ²		0.523		0.538

注：*FINHOLD* 表示企业与金融机构间的紧密程度，采用企业持股金融机构股权占其总资产的比重表征。*DUMFINHOLD* 为哑变量，1 表示持股金融机构股份大于 0，否则为 0。*CONSTRAINT* 为融资约束水平，采用长期负债占总资产比例的相反数 (InvLLEV) 表征；*CASH* 为当期现金储备水平，采用货币资金除以资产总额表征。*IMR* 为逆米尔森系数，为 Heckman 两步法第一步计算得出；*PRECASH* 为上期现金储备水平。*PREFCF* 为期初自由现金流情况，采用上期每股自由现金流表征；*PRELEV* 为上期总资产负债率；*PRESIZE* 为期初规模，采用总资产自然对数表征；*CFO* 为经营活动现金流占总资产比例；*ROE* 为盈利能力，采用净资产收益率表征；*GROW* 为当期销售收入增长率；*LEV* 为当期总资产负债率；*STATE* 为最终控制人属性，1 表示国有，否则为 0；*V* 为最终控制人持股比例；*VC* 为最终控制人持股比例与其现金流收益权的比值。*MARKET* 为地区发展水平，采用市场化排名衡量。*INDS* 为行业哑变量，采用证监会二级行业分类标准，剔除金融行业后采用 20 个哑变量表征；*YEARS* 为年度哑变量，4 个哑变量表征 5 个会计年度。***、**和*分别表示在 0.01、0.05 和 0.10 水平上显著。

Almeida *et al.* (2004) 提出对于融资约束较为严重的企业, 其现金 - 现金流敏感度更高。但是, 由于 Almeida *et al.* (2004) 的现金 - 现金流敏感度并不是一个单一指标, 因此无法用于假设 3 的检验。不过本文依旧采用 Almeida *et al.* (2004) 的现金 - 现金流敏感度对假设 1 进行检验, 回归结果见表 8。现金流 *CFO* 的系数在所有回归中都显著为正, 依照 Almeida *et al.* (2004) 的理论, 这一结果意味着中国上市公司大都存在融资约束问题。持股金融机构与现金流的交叉变量 $FINHOLD \times CFO$ 的系数在全部样本和持股金融机构的样本中都显著为负, 也就是说对于持股金融机构的企业而言, 现金 - 现金流敏感度得到降低, 意味着持股金融机构有利于降低企业的融资约束。这一结果与采用长期负债占总负债的比重衡量的融资约束的回归结果一致, 符合本文的假设 1。进一步区分持股银行与非银行后的回归显示: 持股银行对于降低企业融资约束作用不明显, 而持股非银行金融机构能够显著降低企业的融资约束程度。同样, 这一结果与采用长期负债占总负债的比重衡量的融资约束的回归结果一致。

3. 现金储备替代变量

本文也采用了货币资金加交易性金融资产除以资产总额作为现金储备的替代变量 (罗琦和许俏晖, 2009), 重新进行回归, 见表 7 第 3 列。同样的, $FINHOLD$ 、 $CONSTRAINT$ 、 $FINHOLD \times CONSTRAINT$ 的系数都显著, 符号也与表 5 一致, 即持股金融机构能够降低企业的现金储备; 而且, 能够有效降低融资约束较高企业作为预防性储备的现金储备。也就是说, 不同的现金储备计算不影响本文的回归结果, 假设 2 和假设 3 又都得到验证。

4. 剔除 2007 年样本

由于 2007 年底开始爆发的金融危机, 使得全球经济从 2008 年开始直至 2011 年一直不断下行, 许多企业破产倒闭, 陷入“寒冬”。金融危机使得一些企业为了度过难关, 伺机并购和扩张, 从而持有更多的现金储备。也就是说, 2007 年与之后的 4 年在宏观经济环境形势方面有较大的差异, 因此本文剔除了 2007 年样本重新回归, 见表 7 的第 4 列。 $FINHOLD$ 和 $FINHOLD \times CONSTRAINT$ 的系数都依旧显著为负, 与之前一致, 支持了本文的假设 2 和假设 3。¹⁹

5. 持股金融机构的股权比例超过 5% 的配对分析²⁰

由于上市公司持有非上市金融机构股权比重相对较小, 而且有很多投资占被投资企业的股权比例很低, 可能很难达到较高的关联关系, 使得企业无法从关联金融机构获得资金。因此, 本文也仅采用持有非上市金融机构股权比例超过 5% 的投资数据重新进行汇总²¹, 同样按照“同一年度”、“同一行业”、“资产规模最相近”的原则进行匹

¹⁹ 剔除 2007 年样本, 对模型 (3) 的回归结果也与表 5 基本一致, 假设 1 得到验证。

²⁰ 本文也采用了企业持有的金融机构的股权比率的总和作为该企业持股金融机构的股权进行了回归检验。但是, 假设 2 和假设 3 的回归中 $FINHOLD$ 以及 $FINHOLD \times CONSTRAINT$ 的系数并不显著。

²¹ 即每家上市公司的金融机构持股金额占总资产的计算中只考虑投资比例在 5% 以上的股权投资, 将股权比例在 5% 以上进行汇总得到该公司的金融机构持股金额。

表 7 稳健性检验

	现金股利	现金与证券	剔除 2007 年	持股超过 5%
<i>FINHOLD</i>	-0.149*	-0.332***	-0.367***	-0.019**
	(-1.83)	(-3.30)	(-3.32)	(2.21)
<i>CONSTRAINT</i>	0.276***	0.118***	0.134***	0.218***
	(12.15)	(3.85)	(3.86)	(7.67)
<i>FINHOLD</i> × <i>CONSTRAINT</i>	-3.601***	-0.203**	-0.235**	-4.036***
	(-2.61)	(-2.36)	(-2.52)	(-3.15)
<i>PRECASH</i>	0.588***	0.642***	0.630***	0.716***
	(23.96)	(25.08)	(22.72)	(20.48)
<i>CFO</i>	0.021	0.106**	0.150**	0.010
	(0.43)	(2.07)	(2.43)	(0.13)
<i>ROE</i>	-0.075***	-0.026	-0.044	-0.074**
	(-3.29)	(-1.10)	(-1.59)	(-2.16)
<i>GROW</i>	-0.014***	-0.013***	-0.014***	0.003
	(-3.56)	(-3.13)	(-3.03)	(0.32)
<i>PRELEV</i>	0.049***	0.038**	0.046**	0.052**
	(2.77)	(1.97)	(2.11)	(2.23)
<i>PRESIZE</i>	-0.022***	-0.018***	-0.020***	-0.018***
	(-8.04)	(-5.93)	(-5.79)	(-4.96)
<i>STATE</i>	-0.008	-0.011	-0.016*	-0.005
	(-1.17)	(-1.47)	(-1.96)	(-0.55)
<i>V</i>	0.037*	0.070***	0.079***	0.024
	(1.92)	(3.43)	(3.47)	(0.98)
<i>VC</i>	-0.003	-0.002	-0.004	-0.003
	(-1.18)	(-0.64)	(-1.26)	(-0.98)
<i>MARKET</i>	-0.001	-0.001	-0.001	-0.001
	(-1.41)	(-1.47)	(-1.25)	(-0.99)
<i>INDS & YEARS</i>	控制	控制	控制	控制
N	1230	1230	1024	458
R ²	0.587	0.541	0.545	0.736

注：被解释变量为企业现金持有水平（*CASH*）；*FINHOLD* 表示企业与金融机构间的紧密程度；*CONSTRAINT* 为融资约束水平；*PRECASH* 为上期现金持有水平；*CFO* 为经营活动现金流占总资产比例；*ROE* 为盈利能力，采用净资产收益率表征；*GROW* 为当期销售收入增长率；*PRELEV* 为上期总资产负债率；*PRESIZE* 为期初规模，采用总资产自然对数表征；*STATE* 为最终控制人属性，1 表示国有，否则为 0；*V* 为最终控制人持股比例；*VC* 为最终控制人持股比例与其现金流收益权的比值。*MARKET* 为地区发展水平，采用市场化排名衡量。*INDS* 为行业哑变量，采用证监会二级行业分类标准，剔除金融行业后采用 20 个哑变量表征；*YEARS* 为年度哑变量，4 个哑变量表征 5 个会计年度。***、**和*分别表示在 0.01、0.05 和 0.10 水平上显著。

表 8 持股金融机构与企业融资约束（以现金 - 现金流敏感度衡量）

	全部样本	持有样本	持股银行	持股非银行
<i>CFO</i>	0.117**	0.136**	0.109**	0.114**
	(2.21)	(2.29)	(2.08)	(2.17)
<i>FINHOLD</i> × <i>CFO</i>	-0.737*	-0.679*	-2.100	-0.671*
	(-1.73)	(-1.72)	(-1.06)	(-1.73)
<i>GROW</i>	-0.009	0.005	-0.009	-0.009
	(-0.84)	(0.51)	(-0.83)	(-0.84)
<i>SIZE</i>	-0.006***	-0.007***	-0.006**	-0.006***
	(-2.69)	(-2.67)	(-2.55)	(-2.65)
N	1230	615	1230	1230
R ²	0.012	0.018	0.011	0.012

注：被解释变量 *CASHC* 为现金变化，即（当期现金 - 上期现金）/ 当期期末总资产；*CFO* 为当期现金流，即经营活动现金流 / 当期期末总资产；*GROW* 为成长能力，（当期销售收入 - 上期销售收入）/ 上期销售收入；*SIZE* 为当期期末总资产自然对数。***、**和*分别表示在 0.01、0.05 和 0.10 水平上显著。

配，最终样本为 229 对，即 458 个样本。按照模型（1）回归，结果显示：在采用每股现金股利（*DPS*）表征的融资约束下，*FINHOLD* 和 *FINHOLD*×*CONSTRAINT* 的系数显著为负，支持假设 2 和假设 3，见表 7 的最后一列。²² 而在长期负债占总资产比例的相反数（*InvLLEV*）的回归中，*FINHOLD* 和 *FINHOLD*×*CONSTRAINT* 的系数都不显著。可能的原因在于：如果企业持股金融机构股权比例较高，那么关联交易导致的信息披露有可能使得企业在融资方面就会有所顾虑，反而不像持股较低时那么方便。而且，一些持股非常高（如 50% 以上）的非上市金融机构是企业的关联单位，有些是企业的子公司，这些金融机构往往需要合并到企业的报表中，即使产生“商业联系”，作用也在合并报表中抵消了。这些金融机构发挥的作用并不像其他金融那样为企业提供资金保障，因此可能会导致结果并不显著。

6. 制造业与非制造业的差异

近些年来，央行发行了大量货币，但是实体经济并没有获得实际的好处，大量资金并没有进入到实体经济的运行中，尤其是制造业，使得国内经济基本面至今没有明显的起色。持股金融机构是否为实体经济（以制造业为代表）带来了明显的好处呢？为此，表 9 区分了制造业以及非制造业，就持股金融机构对企业的融资约束以及现金储备水平分别进行检验。另外，由于本文的样本多数集中在制造业（664 个占总样本的 54%），因此，区分制造业和非制造业也有一定的必要性。

在融资约束的回归中，持股金融机构变量 *FINHOLD* 的系数在制造业的回归中不显著，在非制造业中显著为负，即持股金融机构并没有能够明显降低制造业企业的融

²² 采用新样本对模型（3）的回归结果也与表 5 基本一致，假设 1 得到验证。

表 9 持股金融机构对制造业与非制造业的影响差异

	<i>CONSTRAINT</i>		<i>CASH</i>	
	制造业	非制造业	制造业	非制造业
<i>FINHOLD</i>	0.126 (1.15)	-0.868*** (-7.63)	-0.167 (-0.71)	-0.257** (-2.19)
<i>CONSTRAINT</i>			0.177*** (2.79)	0.083** (2.42)
<i>FINHOLD</i> × <i>CONSTRAINT</i>			5.354 (1.37)	-0.143* (-1.67)
<i>PRECASH</i>	0.036 (1.56)	0.084* (1.89)	0.673*** (17.82)	0.624*** (17.88)
<i>CFO</i>	0.067 (1.47)	0.125 (1.37)	0.118 (1.64)	0.163** (2.30)
<i>ROE</i>	0.043* (1.91)	0.082* (1.93)	-0.020 (-0.58)	-0.032 (-0.97)
<i>GROW</i>	0.001 (0.23)	-0.013** (-2.14)	-0.004 (-0.50)	-0.010** (-2.13)
<i>PRESIZE</i>	-0.017*** (-5.89)	-0.025*** (-4.95)	-0.027*** (-6.05)	-0.007 (-1.63)
<i>LEV</i>	-0.126*** (-8.07)	-0.102*** (-14.94)		
<i>STATE</i>	-0.007 (-1.04)	0.001 (0.06)	-0.021** (-2.05)	0.009 (0.86)
<i>V</i>	-0.017 (-0.94)	0.044 (1.22)	0.127*** (4.37)	-0.005 (-0.17)
<i>VC</i>	0.000 (0.15)	-0.006 (-1.37)	-0.004 (-1.04)	-0.002 (-0.63)
<i>MARKET</i>	-0.001** (-2.38)	-0.001 (-1.62)	-0.000 (-0.39)	-0.001 (-0.52)
<i>PRELEV</i>			0.075** (2.52)	0.024 (0.98)
<i>INDS & YEARS</i>	控制	控制	控制	控制
N	664	566	664	566
R ²	0.382	0.551	0.536	0.589

注：*FINHOLD* 表示企业与金融机构间的紧密程度，采用企业持股金融机构股权占其总资产的比重表征。*CONSTRAINT* 为融资约束水平，采用长期负债占总资产比例的反数（InvLLEV）表征；*CASH* 为当期现金储备水平，采用货币资金除以资产总额表征。*PRECASH* 为上期现金储备水平；*LEV* 为当期总资产负债率；*PRELEV* 为上期总资产负债率；*PRESIZE* 为期初规模，采用总资产自然对数表征；*CFO* 为经营活动现金流占总资产比例；*ROE* 为盈利能力，采用净资产收益率表征；*GROW* 为当期销售收入增长率；*STATE* 为最终控制人属性，1 表示国有，否则为 0；*V* 为最终控制人持股比例；*VC* 为最终控制人持股比例与其现金流收益权的比值。*MARKET* 为地区发展水平，采用市场化排名衡量。*INDS* 为行业哑变量，采用证监会二级行业分类标准，剔除金融行业和制造行业后采用 19 个哑变量表征；*YEARS* 为年度哑变量，4 个哑变量表征 5 个会计年度。***、**和*分别表示在 0.01、0.05 和 0.10 水平上显著。

资约束水平，而在非制造业起到了明显的作用。可能的原因在于本文的研究样本为 2007 到 2011 年，这一期间正是全球金融危机时期，制造业面临了非常大的冲击和困境，很多资金不愿意进入制造业，因此即使与金融机构保持了较为密切的关系，也没有明显的为企业获得更多的资金，从而降低融资约束。

由于持股金融机构并没有显著降低制造业企业的融资约束，因此，在降低其现金储备水平方面也没有发挥明显的作用，表现在现金储备的回归中，持股金融机构变量 *FINHOLD* 的系数在制造业中不显著，*FINHOLD* × *CONSTRAINT* 的系数也在制造业中不显著。而非制造业由于能够较多的获得金融机构的资金支持，有效缓解其融资约束水平，因此在降低运营成本（降低现金储备水平）方面也得到了金融机构明显的支持，即持股金融机构变量 *FINHOLD* 与融资约束水平以及现金储备水平都显著负相关，而融资约束越是明显的非制造业，持股金融机构在降低现金储备水平方面的作用越明显。

总之，表 9 的结果表明：持股金融机构在降低企业融资约束以及现金储备水平方面发挥的积极作用对于非制造业企业而言十分明显，但是对于制造业企业而言并没有发挥作用，至少在研究期间并没有体现出来。

六、结论

持股金融机构的确能够为企业带来很多好处，最直接的表现就是有利于企业减少现金储备，降低持有成本。而融资约束较高的企业出于预防性动机（资金融通不便利）需要持有较高的现金储备，但持股金融机构有利于融资约束较高的企业降低现金储备，因为密切的关系可以在有需要时为企业提供便利的资金。由于银行业受到严格的监管，在向外提供资金，尤其是向关联机构提供资金上约束较大。因此，持股非上市银行在缓解企业融资约束上影响不明显，对于改善融资约束较大的企业的现金持有影响也不显著。而持股非上市非银行类金融机构在缓解企业融资约束中发挥了重要作用，而且对于企业，尤其是融资约束较大的企业，持股非上市银行类金融机构在改善现金持有水平上的作用更加明显。另外，由于相对于国有企业而言，非国有企业先天在融资上存在缺陷，因此持股金融机构对现金储备的影响在非国有企业中更加明显。

由于本文只考察了上市公司持有的非上市金融机构股权，没有完全涉及企业的金融机构投资。而且，研究只是从侧面证明了提供持股金融机构表征的银企关系在降低企业现金储备方面的作用，由于缺乏企业从金融机构获得的详细的资金往来，无法直接提供银企关系为企业发展提供资金的证据，后续研究需要更加直接的证据证明。

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附录：持股金融机构的信号传递作用理论分析

借鉴劳动力市场信号传递模型 (Spence, 1974), 构造资本市场的信号传递模型。考虑一个银行和一个借款企业, 企业的还贷风险 (θ) 有两个可能值, 分别为 $\theta=1$ (高风险) 和 $\theta=2$ (低风险)。借款企业知道自己的真实还贷风险, 银行却不清楚企业的类型, 只知道 $\theta=1$ 和 $\theta=2$ 的概率均为 50%。借款企业在与银行签订借款协议之前可以通过各种方式将自己的类型信号传递给银行, 以获取更多的贷款。其中, 较有效方式就是投资金融机构 (包括银行), 因为投资金融机构往往被视为资金雄厚的反映, 更是还款能力高的表现。近年来, 一些非金融企业纷纷投资金融机构无疑表明这种信号传递的有效性。当然, 投资金融机构同时也会带来一定的投资收益。

基于种种原因, 借款企业在与银行借款前会选择金融机构投资水平 $s \in \{0, 1\}$, 其中 $s=0$ 代表不投资金融机构, $s=1$ 代表投资金融机构, 投资成本为 $c(s, \theta) = s/\theta$, 贷款风险越高, 投资成本越低, 贷款风险越低, 投资成本越高。银行在观察到借款企业的金融机构投资水平后, 决定贷款规模 $l(s)$, $l(0)=1$ 代表高风险企业获得的贷款金额为 1, $l(1)=2$ 代表低风险企业获得的贷款金额为 2。借款企业的效用函数为 $U(s, \theta) = l(s) - s/\theta$, 则 $U(0, 1) = 1$, $U(0, 2) = 1$, $U(1, 1) = 1$, $U(1, 2) = 1.5$ 。

在信息对称情况下, 不论借款企业的贷款风险高低, 借款企业将选择不投资金融机构 ($s=0$)。此时, 低风险企业获得贷款, 高风险企业不能获得贷款, 但这种帕累托最优均衡在信息不对称的情况下是做不到的。因为给定银行不知道借款企业的类型 (θ), 则其预期贷款规模为 $l = 0.5 \times l(0) + 0.5 \times l(1) = 1.5$ 。在信息不对称的情况下, 银行只能观察到 s , 而不能看到 θ 。因而, 贷款规模 (l) 只能依据 s 而定。令 $\mu(\theta=1|s)$ 表示当银行观察到借款企业选择投资金融机构水平 (s) 时, 银行认为企业是高风险的后验概率。精炼贝叶斯均衡意味着: 第一, 借款企业选择投资水平 $s(\theta)$; 第二, 银行根据观察到的 s 得出后验概率和贷款规模, 使得 $s(\theta)$ 成为借款企业的最优选择, $l(s)$ 成为银行的最优选择。下面分别讨论信息不对称情况下的混同均衡和分离均衡。

(1) 混同均衡

在混同均衡下, 两类企业都选择不投资金融机构, 银行认为投资金融机构不传递任何信号, 因而银行的贷款规模等于期望贷款规模, 与借款企业是否投资金融机构并无关系。

$$(PE) \text{ 混同均衡: } \begin{cases} s(\theta=1) = s(\theta=2) = 0 \\ l(\theta=0) = l(\theta=1) = 1.5 \\ \mu(\theta=1|s=0) = 0.5, \mu(\theta=1|s=1) = 0.5 \end{cases} \quad (1)$$

(2) 分离均衡

如果银行认为投资金融机构的借款企业一定是低风险的, 则上述混同均衡不成立。因为给定 $\mu(\theta=1|s=1) = 0$, 即投资金融机构的借款企业一定不是高风险的。则当借

款企业选择 $s = 1$ 时, 银行将选择贷款规模 $l(1) = 2$, 此时借款企业的效用为 $U(1, 2) = 1.5$, 而不是选择不投资得到 $U(0, 2) = 1$, 由此得到分离均衡。

$$(SE) \text{ 分离均衡: } \begin{cases} s(\theta = 1) = 0, s(\theta = 2) = 1 \\ l(\theta = 0) = 1, l(\theta = 1) = 2 \\ \mu(\theta = 1 | s = 0) = 1, \mu(\theta = 1 | s = 1) = 0 \end{cases} \quad (2)$$

可见, 高风险企业选择不投资金融机构, 低风险企业选择投资金融机构。银行认为不投资金融机构的企业一定是高风险的, 因而确定给高风险企业的贷款规模 $l(0) = 1$; 认为投资金融机构的企业一定是低风险的, 因而确定低风险企业的贷款规模 $l(1) = 2$ 。分离均衡是一个精炼贝叶斯均衡: 给定银行的后验概率和贷款决策, 低风险企业的最优选择是投资金融机构, 因为 $U(s = 1, \theta = 2) = 1.5 > U(s = 0, \theta = 2) = 1$; 高风险企业的最优选择是不投资金融机构, 因为 $U(s = 0, \theta = 1) = 1 \geq U(s = 1, \theta = 1) = 1$ 。另一方面, 给定借款企业的选择, 银行的后验概率是根据贝叶斯法则得到的, 不存在其他分离均衡。在分离均衡中, 投资金融机构就成为传递借款企业类型的信号, 为了获取更多的银行贷款, 低风险企业通过投资金融机构, 向银行传递自己低风险的类型信息, 把自己与高风险企业区分开来, 从而解决融资约束问题。

Shareholdings in Financial Institutions, Financing Constraints, and Cash Reserves¹

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Abstract

A closer bank-firm relationship is beneficial to corporate development since firms are able to mitigate their financing constraints through direct or indirect means, such as related-party loans or signalling. This results in more firms tending to invest in financial institutions. This paper matches 615 firms investing in nonlisted financial institutions over the period 2007 to 2011 with 615 firms of the closest asset size in the same industry and year but without such investment. We find that investing in financial institutions can be beneficial for firms. It can lower the financing constraints and demand for cash reserves, not only directly (due to the close relationship between holding firms and financial institutions), but also indirectly (due to the influence on financing constraints, which require a higher level of cash holdings). Higher financing constraints will stimulate firms to hold more cash, while investing in financial institutions can enable such firms to reduce their reserves. When we divide the shareholdings further into nonlisted banks and nonlisted, nonbanking institutions, we find that the former does not significantly affect financing constraints and cash holdings, but the latter effectively alleviates firms' financing constraints and reduces the level of cash. Furthermore, we find that the influence of investing in financial institutions is more evident for NSOEs than SOEs in China.

Keywords: Bank-Firm Relationship, Financing Constraints, Cash Reserves

CLC Codes: F275, F272, F832

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I. Introduction

The financial crisis that broke out at the end of 2007 has depressed the world economy, with many firms going bankrupt or finding themselves in distress. In order to survive while waiting for opportunities to arise for mergers and acquisitions, some firms have had to maintain higher cash reserves. However, holding cash is costly. It reduces the efficiency of capital usage and return on assets. Therefore, firms have to strike a balance between low cash holdings and cash management improvements (Opler *et al.*, 1999). Most of the existing theoretical and empirical research on cash holdings focuses on the factors determining firms' cash reserve levels. However, firms are more concerned about how to reduce the cost of holding cash reserves so as to improve operational efficiency and performance. Research on the relationships between banks and firms shows that maintaining a close relationship with financial institutions such as banks can provide firms with the necessary capital for development (Berger and Udell, 2002), and reduce their cash reserves (Lu *et al.*, 2012; Chen and Chen, 2012). As the Chinese financial market develops, more and more firms, especially nonstate-owned enterprises (NSOEs), are starting to invest in financial institutions, particularly local municipal banks, insurance firms, and securities firms. Can investing in those nonlisted financial institutions (including both banks and nonbanking institutions) really be beneficial for firms' financing and operations? After the promulgation of *Opinions of the State Council on Encouraging and Guiding the Healthy Development of Non-Governmental Investment*, can encouraging nongovernmental investment in the financial industry improve the operating efficiency of NSEOs? Do shareholdings in banks differ from those in nonbanking institutions in respect of firm operations? This paper aims to investigate the influence of holding shares in financial institutions by listed firms on their financing constraints and cash reserves, in order to provide evidence for the reduction in operating costs and the beneficial effect of nongovernmental investment in the financial industry by nonstate-owned firms in China.

By studying 1,230 (615 pairs) listed firms holding stocks in nonlisted financial institutions from 2007 to 2011 in China, we identify the following findings. Firstly, holding the shares of nonlisted financial institutions can be beneficial for firms, as directly shown by the alleviation of financing constraints and a reduction in cash reserves. Moreover, the benefit of such shareholdings is more evident for firms with stronger financing constraints. Secondly, the benefit of owning shares in nonlisted financial institutions is realised mostly through ownership of nonbanking institutions; there is no significant evidence that holding bank shares has a positive effect. Thirdly, compared to state-owned enterprises (SOEs), NSOEs are more restricted in their financing, so the influence of shareholdings in financial institutions is more evident for the latter. This shows that encouraging and guiding nongovernmental investment in the financial industry is beneficial for NSOEs. Finally, we

also find that during the sample period, shareholdings in the financial industry worked for firms in nonmanufacturing industries, in terms of reducing their financing constraints and levels of cash reserves, but the same was not true for manufacturing companies.

Existing research such as that of Lu *et al.* (2012) and Chen and Chen (2012) focuses on the influence of shareholdings in the financial industry on firms' cash reserves from the perspective of monetary policy. Unlike this work, this paper directly tests how shareholdings in the financial industry affect firms' financing constraints, and hence their cash reserves, using quantitative measures. To be more specific, we directly examine the logic path, providing more direct evidence to add to the current body of research. Moreover, this paper also investigates the difference between holding shares in banks and nonbanking institutions, unlike previous research focusing solely on banks. Due to the inter-investments between banks and insurance firms, the mixed mode of operations in the financial industry is becoming more evident in China, and financial holding groups are coming into existence (such as China Ping An Insurance and CITIC). This means that the boundary between banks and other financial institutions has become vaguer, and other financial institutions can also provide capital to finance firm activities (Chen *et al.*, 2012). Thus, research on the influence of holding shares in nonbanking financial institutions on firms' financing can provide evidence and a reference point for policymakers and managers. In addition, this paper focuses on the nonlisted financial industry, reducing the possible bias in the conclusions arising from the different regulations that apply to listed and nonlisted institutions. Since information disclosure and related-party transactions by listed financial institutions are stringently regulated, firms find it very difficult to use their relationships with such institutions to obtain capital. Conversely, nonlisted institutions can easily avoid some of the rules and regulations to initiate related-party transactions and provide capital. In other words, listed and nonlisted financial institutions face different regulatory regimes, so their ability to provide capital also differs.

In terms of research method, we use consecutive measures rather than dummy variables (as is the case in previous research) as a proxy for the connection between firms and their related financial institutions. This measure enables us to compare differences in financing not only between firms with and without business connections (namely, the close relationships resulting from holding shares in financial institutions) but also between firms with different levels of such closeness. Accordingly, we provide further evidence for the influence of shareholdings in financial institutions on firms' financing. Finally, this paper uses matched samples in order to improve the credibility of our conclusions.

The remaining parts of the paper are organised as follows. Section II reviews the literature and Section III presents our theoretical analyses and hypotheses. The research design and empirical tests are described in Sections IV and V, respectively, while Section VI sets out our conclusions.

II. Literature Review

Many researchers have investigated the cash holding (or cash reserve) issue from both theoretical and empirical perspectives. Theories include the incentive theory (Keynes, 1936; Miller and Orr, 1966; Myers and Majluf, 1984; Han and Qiu, 2007,⁵ the balance theory (Opler *et al.*, 1999; Harford, 1999), the pecking order theory (Myers and Majluf, 1984; Myers and Rajan, 1998), and the agency theory (Opler *et al.*, 1999; Jensen, 1986). Empirical research on the incentive theory focuses on moves from trading to defensive incentives, particularly in terms of the relationships between cash reserves, cash flow risk, and financing constraints, and their influence on investment (Gu *et al.*, 2008). For example, Han and Qiu (2007) find that in order to capture potential good investment opportunities, firms with financing constraints will reduce investment in the current period to save capital and increase cash reserves. In China, however, defensive incentives for cash reserves are more important (Gu *et al.*, 2008) due to the underdeveloped financial capital market and fewer hedging opportunities for firms to diversify their cash flow risk. Firms tend to maintain higher cash reserves to avoid capital shortage and higher market risk (Han and Zhou, 2011). Owing to the existence of the two types of agency problem in China, considerable research has looked at the agency theory of cash holdings and particularly the factors affecting this, such as industry competition and product market (Yang and Wu, 2009; Lian *et al.*, 2011), investor protection (Zhang and Liu, 2005; Luo and Qin, 2008), controlling shareholder (Zhang and Liu, 2005; Luo and Xu, 2009; Shen *et al.*, 2006; Chen *et al.*, 2011), governance environment (Yang and Zhang, 2010), and governance mechanism (Xin and Xu, 2006). Yang and Sun (2007) suggest that the balancing theory, pecking order theory, and agency theory on cash holdings have been verified in China, while Peng and Zhou (2006) propose that the balancing theory is more suitable for explaining the higher level of cash holdings in Chinese firms than the agency theory. However, firms are generally more concerned about how to keep enough cash reserves while reducing the holding costs. Unfortunately, research cannot yet give them an answer.

Research on bank-firm relationships offers a way into this issue, since banks are an important channel for corporate financing and maintaining close relationships can provide a firm with necessary and timely capital. Petersen and Rajan (1994) propose the related bank model on the basis of adverse selection and moral hazard, suggesting that the lending rate is higher at an early stage, when the bank is not familiar with the borrower, and will reduce as the bank's knowledge of the borrower increases. Berger and Udell (2002) divide bank loans

⁵ Keynes (1936) suggests that firms mostly hold cash due to trading incentives and prevention requirements. Miller and Orr (1996) propose that firms tend to hold more liquid assets due to the cost of shortages, while Myers and Majluf (1984) point out that external financing is more costly than internal due to information asymmetry, and so firms have to keep cash on hand to maintain financial flexibility due to their need for capital for investment.

into four categories, namely those based on financial statements, collaterals, credit ratings, and related loans (Chen, 2008). For the first three, banks will evaluate a firm's ability to repay based on "hard information" that is easier to quantify, such as its financial position, and then calculate the risk of providing the loan. Related loans, in contrast, are provided on the basis of the relationships between firms and banks, and the lending risk is evaluated according to "soft information". Charumind *et al.* (2006) show that keeping close business connections with financial institutions like banks can enable firms to obtain easier long-term debt with less need for collateral. This can reduce reliance on short-term loans. However, there is no unanimous conclusion yet as to whether bank-firm relationships reduce or increase the financing cost for firms in China (Yang and Yan, 2012). One view is that bank-firm relationships can be beneficial for firms' credit borrowings (Luo *et al.*, 2011), and the relationship with a bank can be positively related to a firm's growth (He and Wang, 2009). Moreover, establishing relationships with more banks can help reduce a firm's financing costs (He, 2010). However, Zhang *et al.* (2007) find that loans obtained via relationships are not used effectively in China, as they are provided on the basis of "soft information" generated from long-term cooperation between banks and firms. Chen (2008) also finds that the longer the period of cooperation between banks and firms, the higher the availability of credit lending; however, the lending rate also increases. Yang and Yan (2012) use a survey to demonstrate that the closer the relationship between a bank and a firm, the higher the lending rate (if closeness is measured by the duration of cooperation or the proportion of firm borrowings to total bank lending), but the rate is lower if closeness is measured by the number of other services provided by the bank to the firm.

Although current research on bank-firm relationships draws no unanimous conclusion, it nevertheless still indicates that in China, close relationships with banks can provide firms with the necessary capital. Thus, firms can reduce their cash reserves and lower their holding costs. Lu *et al.* (2012) find that the more closely a firm is connected to a bank (using its bank shareholding as a proxy for this relationship), the less cash reserves it needs to hold. Chen and Chen (2012) reach the same result using data on listed and nonlisted banks. However, capital is not only obtained from banks. Nowadays in China, financial institutions are growing rapidly. Banks, insurance companies, and other financial institutions invest in each other, leading to a mixed mode of operation. Some financial holding groups have come into existence (like China Ping An Insurance and CITIC), making the boundary between banks and other financial institutions more and more vague. Such insurance companies, security firms, and other financial firms hold a huge amount of cash, and firms can source capital from them rather than banks, from which loans are hard to obtain. Chen *et al.* (2012) also find that firms which hold shares in issuance companies can reduce the negative influence of monetary policy on their cash reserves. In fact, many firms have now started to invest in financial institutions, particularly those that are not banks. How does this kind of

investment influence firms' operation? Do shareholdings in banks and nonbanking institutions differ in respect of capital provision to firms? So far, little research has investigated this issue.

III. Hypotheses

Credit rationing is a typical phenomenon in the credit market (Zhang, 2009). Due to inverse choice and moral hazard, credit rationing can be a long-term equilibrium (Stiglitz and Weiss, 1981). The lender's (bank)'s expected return is determined by the lending rate and probability of repayment from the borrower (firm). Therefore, banks care not only about the lending rate but also the lending risk. When risk is independent of interest rate and the demand for capital is higher than the supply, banks can increase interest rates. However, banks cannot observe lending risk, and indiscriminately increasing the interest rate will drive away firms with lower risks (adverse selection), leading to higher lending risk for average and lower expected returns. Thus, banks tend to reject some borrowing at a lower interest rate, leading to the credit rationing problem. Under the situation of credit rationing, firms can reduce their cash reserves to alleviate financing constraints by investing in financial institutions via two methods.

The first channel involves obtaining related lending by holding shares in financial institutions; that is, to directly alleviate financing constraints. Firms and banks will build long-term borrowing-lending relationships under this situation, and banks will comprehensively learn about the firms (Ma, 2007). Thus, related lending relationships enable banks to know about and monitor firms' operations to reduce information asymmetry, avoid adverse selection and moral hazard, and guarantee stable and sufficient capital for firms. This reduces the financing cost and credit rationing problem for firms (Peterson and Rajan, 1994). In other words, related lending relationships enable firms to obtain reliable capital and alleviate financing constraints.

The second method is to invest in financial institutions. Such shareholdings can enforce the signals of firms' high liquidity and recovery to other financial institutions. They can also indicate the type of borrowing of the firm. In order to obtain more bank loans and alleviate financing constraints, firms with lower risk can distinguish themselves from others by holding shares in financial institutions.⁶ Indeed, banks are not the only source of capital. As the Chinese capital market develops, the number and diversity of financial institutions has increased. Since financial institutions have access to large quantities of capital and wealth, and it is generally hard to obtain capital from banks, firms can get capital from these institutions instead to mitigate their financing problem. (Chen *et al.*, 2012). In addition,

⁶ The modeling analysis of the signaling effect is presented in the Appendix.

relationships with financial institutions have a positive effect on credit financing of firms (Luo *et al.*, 2011), because this can help reduce the cost of loan interest (He, 2010) and stimulate firms' growth (He and Wang, 2009). Therefore, close relationships with financial institutions can provide firms with capital at lower cost. In other words, the closer the relationship, the higher the probability that firms can obtain capital to help reduce their financing constraints.

The first method is a more direct and efficient way for firms to alleviate financing constraints. However, as restrictions on related lending have been tightened by the regulatory authorities, it has become harder for firms to use this approach, although there is empirical evidence that it can indeed substantially benefit them (Luo *et al.*, 2011; Lu *et al.*, 2012; Chen and Chen, 2012). The second method may involve adverse selection, whereby firms with financing constraints tend to hold shares in financial institutions to send signals to investors. This is the reason why many firms with financing constraints still invest a lot of money in some financial institutions. As a matter of fact, the purpose of investing in financial institutions is not only to make investment profit, but also to create a positive image for the firm and enhance its repayment ability in the eyes of other financial institutions. All in all, we hypothesise that:

Hypothesis 1: Holding shares in financial institutions helps firms to alleviate financing constraints.

Research on corporate finance suggests that financing constraints are the fundamental factor affecting corporate finance policy and operation. Firms with higher constraints tend to keep more cash reserves to reduce competition risk when facing higher external financing costs and fewer opportunities. Thus, the cash-cash flow sensitivity of those firms is higher (Almeida *et al.*, 2004; Acharya *et al.*, 2007); in other words, they need to keep more cash reserves out of their cash flow. Moreover, cash reserves are also higher for firms with lower expected future cash flow. In China, changing firms' financing constraints also significantly affects their intention to hold cash reserves; that is, the conditions of financing constraints will also influence the level of cash reserves (Chen *et al.*, 2011). If the external financing ability of firms with higher financing constraints is low, they will tend to keep higher levels of cash reserves to avoid the risk of cash flow volatility. Jiang and Liu (2011) suggest that the economic cycle will change firms' financing constraint conditions as their external financing environment is affected; therefore, firms' financing choices will be affected (primarily in terms of internal cash reserves, debt financing, and equity financing), and their policies on cash reserves will also be affected. Zhu and Lu (2009) find that as monetary policy is tightened, constraints on external financing become stronger, and firms hold higher levels of cash reserves; on the contrary, when monetary policy is loosened, constraints for

external financing weaken, and firms reduce their reserves. In other words, firms with higher financing constraints maintain higher cash reserves. Shareholdings in financial institutions enable firms to maintain close relationships with financial institutions and easily obtain related borrowing when they need capital (Lu *et al.*, 2012; Chen and Chen, 2012), thereby reducing their financing constraints and lowering their levels of cash reserves. Thus, we hypothesise that:

Hypothesis 2: Holding shares of financial institutions will help firms to lower their levels of cash reserves.

The influence of cash flow on cash reserves is stronger for firms with higher financing constraints than for others. The sensitivity of cash reserves to changes in the macroeconomy is also higher for firms with higher financing constraints (Gu *et al.*, 2008). In other words, the external environment has a different influence on cash flow depending on the firm's financing constraints. Since shareholdings in financial institutions can alleviate such constraints, firms can lower their cash reserve requirements. Moreover, financing constraints are negatively related to levels of cash reserves. Higher financial constraints requires a higher level of cash reserves, so firms in this position can lower their reserves more effectively by holding shares in financial institutions, since this reduces their financing constraints. In other words, the positive influence of holding shares in financial institutions is more evident for firms with higher financing constraints. Therefore, we hypothesise that:

Hypothesis 3: Holding shares of financial institutions helps firms with higher financing constraints to reduce their cash reserves.

IV. Research Design

4.1 Models and Variables

We firstly test the influence of shareholdings in financial institutions on firms' financing constraints (Hypothesis 1). The model is as follows:

$$\begin{aligned}
 CONSTRAINT = & \alpha_0 + \alpha_1 FINHOLD + \alpha_2 PRECASH + \alpha_3 CFO \\
 & + \alpha_4 ROE + \alpha_5 GROW + \alpha_6 PRESIZE + \alpha_7 LEV \\
 & + \alpha_8 STATE + \alpha_9 V + \alpha_{10} VC + \alpha_{11} MARKET \\
 & + \alpha_i \sum INDS + \alpha_j \sum YEARS + \varepsilon
 \end{aligned} \tag{1}$$

CONSTRAINT denotes financing constraints, for which we use as a proxy the inverse

of the ratio of long-term debt to total assets (InvLLEV). This ratio indicates the difficulty firms face in obtaining long-term debt from banks (Charumlin *et al.*, 2006; Cheng, 2007; Wang *et al.*, 2009).⁷ The risk of long-term debt is higher and banks are reluctant to lend to firms for a long period, unless they have strong operational power. Thus, the ratio of long-term debt to total assets can signal a firm's ability to obtain capital from banks (that is, its higher financing ability). Of course, firms can also obtain capital through short-term debt, but it is better and more comfortable to obtain more long-term loans at the same time. Thus, the ratio of long-term debt to total assets indicates the financing ability and constraints of a firm. Some research finds that many Chinese firms have no long-term debt, but face severe financing constraints in terms of long-term capital (Wang *et al.*, 2009). Therefore, a higher ratio of long-term debt to total assets suggests that firms are comfortable with their level of capital for long-term development, and pressure on short-term repayment is lower (fewer financing constraints).

Although some firms use repeated short-term debt as a form of long-term debt to alleviate financing constraints, firms with long-term debt are much better off in terms of liquidity and also have advantages in debt and equity financing. In other words, they have better financing ability and lower financing constraints. We use the inverse of the ratio of long-term debt to total assets (InvLLEV) in the regression. The higher the InvLEV, the stronger financing constraints on the firm.

In the robustness test, we use cash dividends per share (*DPS*) as a proxy for financing constraints. Higher cash dividends can be regarded as a severe agency problem between creditors and shareholders due to the potential damage to the former. Higher cash dividend payments will lead to more monitoring and constraints from creditors on capital usage and future additional debt financing, resulting in more pressure on future debt financing. On the other hand, firms need more cash to pay persistent dividends. This puts more pressure on firms that have paid higher dividends in the past since they have to keep doing so in future. Once the cash flow uncertainty increases, firms face higher pressure and constraints in

⁷ Although previous work does not use the ratio of long-term debt to total assets as a proxy for financing constraints, some researchers do use long-term debt to indicate firms' demand for stable capital, implying that the long-term debt ratio can be used to measure the level of financing constraints. For instance, Charumlin *et al.* (2006) find that keeping close business connections with financial institutions such as banks can enable firms to obtain easier long-term debt from banks and other such institutions, with less need for collateral. More long-term debt can reduce reliance on short-term loans. In practical terms, there is little long-term debt among Chinese firms. Many have none at all. One important factor is that banks' approval process is stricter and more complex for long- than short-term debt (Cheng, 2007; Wang *et al.*, 2009). Although it may be convenient for listed firms to finance through banks, the increased difficulty of securing financing through long- rather than short-term debt still exists, and is even clearer when we compare different listed firms. This leads to relative financing constraints (Cheng, 2007). Banks are usually reluctant to provide long-term debt to firms that are smaller, have a lower fixed asset ratio, are less profitable, and face stronger industry competition. Many firms cannot therefore obtain sufficient bank loans at the time they require them, resulting in serious financing constraints (Chen and Chen, 2012).

respect of external financing. Therefore, the higher the cash dividends per share, the stronger the financing constraints.⁸

FINHOLD denotes the closeness between firms and financial institutions. We use the ratio of the value of shares firms hold in financial institutions to total assets as a proxy. This represents the level of control the firm has over the financial institution in which it has invested. Although firms can take advantage of this kind of control by using related capital, related lending is under very strict regulation and tends to be inconvenient to operate. Moreover, firms with a higher ownership stake in financial institutions are usually those that run businesses that are close to the financial industry. Those firms are less likely to have a capital shortage, and the role of financial institutions is less important to them. On the other hand, for those firms holding only a few shares in financial institutions, even though this may represent only a small proportion of the total number of institutional shares, it is still quite a large investment compared to the firm's own scale and total assets. In other words, such firms have allocated a lot of their capital to the financial institution. Thus, they will care more about closeness and connections to the institution, which may lead to the latter having more influence on firms' operations. Moreover, many firms hold shares in different financial institutions at different percentages. Since financial institutions differ widely in scale and ownership structure, it is inappropriate to simply add those shareholding percentages together as this may lead to measurement errors. Thus, using the ratio of value of shareholdings in financial institutions to firms' total assets as a proxy for closeness is better than using the total sum of the different percentages of shareholdings. In addition, due to the very strict regulation on information disclosure and related-party transactions for listed financial institutions, it is harder for firms to carry out these transactions. However, it is easier for nonlisted financial institutions to avoid certain regulations on related-party transactions and capital transfer. The regulations governing these two types of institutions are different, so they may have distinctive influences on firms' operations. In order to avoid the influence of such differences, this paper uses only nonlisted financial institutions. To be specific, we use the value of shareholdings in nonlisted financial institutions divided by firms' total assets as a proxy for the closeness of relationships.

Shareholdings in financial institutions⁹ also enable firms to establish more financial

⁸ Currently many listed firms pay cash dividends not because of financing constraints, but because controlling shareholders prefer them and they are focused on investor returns (Chen *et al.*, 2003; Liu *et al.*, 2004; Yuan, 2004; Wei and Liu, 2007). Some firms keep paying cash dividends year after year while maintaining a high leverage ratio, while others often seek external financing (including equity and debt) but do not pay any cash dividends.

⁹ The term "financial institutions" in this paper is used to include banks, credit unions, finance companies, security companies, insurance companies, and futures brokers. Although credit unions are not considered to be banks, they can provide loans and can operate a mortgage business. Finance and insurance companies can offer loans to other organisations. Security companies and futures brokers have a large amount of self-owned capital, which can be used for short-term lending purposes or loaned to firms under a pledge of their stock rights.

connections. When firms need cash or capital, such relationships, mediated by their shareholdings, can affect the decisions made by financial institutions. Even if the proportion of the shareholding is not high enough to influence decision making, it can still help firms to maintain closer relationships. Moreover, as local city commercial banks are increasingly keen to go public, holding more shareholdings in institutions can increase firms' value as the shares appreciate. Such shareholdings can also be high-value collateral when firms need capital, again resulting in a closer connection between firms and institutions. Therefore, these shareholdings can be a proxy for the closeness between firms and banks (and other financial institutions). In order to compare the difference in the extent of the influence on firms' financing of holding shares in banks and nonbanking institutions, we distinguish ownership type further. *FINHOLDBANK* is the ratio of total value of shareholdings in nonlisted banks to firms' total assets, and *FINHOLDNONBANK* the ratio of total value of shareholdings in nonlisted, nonbanking financial institutions to firms' total assets.

PRECASH denotes the level of cash reserves for the previous year, with cash divided by total assets as a proxy.¹⁰ *CFO* is cash flow from operations divided by total assets. *ROE* is profitability, using return on equity as a proxy. *PRESIZE* is firm size, denoted by the use of logarithm of total assets at year beginning as a proxy. *LEV* is the total debt ratio. *STATE* is a dummy variable, which takes the value of 1 if the firm is ultimately controlled by the government, and 0 otherwise. *V* is control rights (voting rights) of the ultimate shareholder. *VC* is the ratio of control rights (*V*) to cash flow rights. *MARKET* is the level of local development, measured by the marketisation index.¹¹ We also use industry dummy variables to control for the influence of industry on cash reserves. *INDS* is the industry dummy variable, classified according to the industry categories issued by the China Securities Regulatory Commission. After excluding the financial industry, there are 20 dummy variables. *YEARS* is the year dummy variable, with four such variables as proxies for the five-year study period.

Following previous work on cash reserves, our empirical model for testing the effect of shareholdings in financial institutions on firms' cash reserves (Hypotheses 2 and 3) is as follows:

$$\begin{aligned}
 CASH = & \beta_0 + \beta_1 FINHOLD + \beta_2 CONSTRAINT + \beta_3 FINHOLD \times CONSTRAINT \\
 & + \beta_4 PRECASH + \beta_5 CFO + \beta_6 ROE + \beta_7 GROW + \beta_8 PRELEV \\
 & + \beta_9 PRESIZE + \beta_{10} STATE + \beta_{11} V + \beta_{12} VC + \beta_{13} MARKET \\
 & + \sum INDS + \sum YEARS + \varepsilon
 \end{aligned} \tag{2}$$

¹⁰ The result using cash / (total assets – cash) to indicate the level of cash reserves is basically the same.

¹¹ The marketisation indices after 2009 are not available, so we use the marketisation index in 2009 to substitute for the subsequent years.

CASH denotes the level of cash reserves (total cash divided by total assets).¹² In the robustness test, we also use (cash + tradable financial assets) / total assets as a proxy for the level of cash reserves.

CONSTRAINT denotes financing constraints, defined as above. *FINHOLD* is the closeness between firms and financial institutions, again defined as above. *FINHOLD* × *CONSTRAINT* is the cross-term of *FINHOLD* and *CONSTRAINT*.

A firm's level of cash reserves is dependent not only on its connections to financial institutions and its financing constraints, but also on other factors. Owing to the persistence of accounting policy, the level of cash reserves for the current period is determined by the level for the previous one. Thus, we use the level of cash reserves in the previous year to control for the persistence of accounting policy. The level of cash reserves is also determined by prevention and trading incentives, such as better investment opportunities, higher growth, higher leverage, and smaller firm size. We therefore use growth of revenue (*GROW*), total debt ratio at year beginning (*PRELEV*), and the logarithm of beginning total assets (*PRESIZE*) to control for the influence of these incentives. Moreover, the level of cash reserves is dependent on a firm's operational conditions, so the ratio of cash flow from operations to total assets (*CFO*) and the current return on equity (*ROE*) are also used in the regression. Some researchers find that concentrated ownership also affects the level of cash reserves (Luo and Xu, 2009; Yang and Sun, 2007), so we also control for ultimate ownership. *STATE* is a dummy variable which takes the value of 1 to indicate that the firm is ultimately controlled by the government, and 0 otherwise. *V* denotes the control rights (voting rights) of ultimate shareholders. *VC* is the ratio of control rights (*V*) to cash flow rights. The level of local development, especially the development of the finance sector, also affects the level of cash reserves held by firms, so we use the marketisation index to control for this influence.¹³ We also use industry dummy variables to control for the influence of industry on cash reserves. *INDS* and *YEARS* are the dummy variables as described above.

4.2 Samples

Data of shareholdings in financial institutions (listed firms holding shares in nonlisted financial institutions) are taken from the China Cheng Xin International (CCXI) database (we compare the data with the Wind and iFind databases), and other financial data from the Wind database. Information about ultimate shareholders is manually collected from the annual financial reports of listed firms, and the marketisation indices from Fan *et al.* (2011).

From the databases and annual financial reports from 2007 to 2011, we obtain 4,108 samples of shareholdings in nonlisted financial institutions, a total of 2,375 listed firms.¹⁴

¹² The result using cash / (total assets – cash) to indicate the level of cash reserves is basically the same.

¹³ The marketisation indices after 2009 are not available, so we use the marketisation index in 2009 to substitute for the subsequent years.

¹⁴ Many listed firms hold shares in several nonlisted financial institutions.

Considering the wide differences, in terms of scale and industry, and their significant effect on the level of cash reserves, we use the matching method to select our sample; that is, sample firms should be in the same year and industry, and of similar scale (in terms of total assets). We take firms with shareholdings in financial institutions as the target group and select a matched group according to these selection criteria. After eliminating firms with missing data and those in the financial industry, our final sample consists of 615 pairs of listed firms from 2007 to 2011; that is, 1,230 firms in total. Table 1 shows the sample distribution, which indicates that our sample is not concentrated in any single year in particular.

Table 1 Sample Distribution

Year	2007	2008	2009	2010	2011	Total
N	206	206	220	282	316	1,230

V. Empirical Analysis

5.1 Descriptive Statistics

Table 2 shows the descriptive statistics. For the sample firms with shareholdings in nonlisted financial institutions, the ratio of equity value in financial institutions to total assets of firms is 2.3% on average, with the average ratio for banks 0.7% and nonbanks 1.6%. Generally speaking, in China the ratio of shareholdings in nonlisted financial institutions to firms' total assets is low.

We also present the descriptive statistics for firms with shareholdings in financial institutions ($FINHOLD > 0$) and firms without them ($FINHOLD = 0$). For the sample firms with shareholdings in financial institutions (the target group), the level of cash reserves accounts for about 17.9% of their total assets, significantly lower than firms without such shareholdings (the matched group) at about 20.5%. This indicates that the level of cash reserves is much lower than that for firms with shareholdings in financial institutions, so Hypothesis 1 is supported. The level of cash reserves for the previous period ($PRECASH$) for the target group is also lower than that for the matched group.

The inverse of the ratio of long-term debt to total assets for the target group is higher than for the matched group, but the difference is not significant. The cash dividend payment for the target firms is significantly lower than for the matched firms, but free cash flow is significantly higher. Moreover, there is a significant difference in firm scale ($PRESIZE$) and shareholdings of ultimate shareholders (V) between the target and matched firms. There are no other significant differences.

Table 2 Descriptive Statistics

Variable	Type	N	Mean	Min	Median	Max
<i>FINHOLD</i>	<i>FINHOLD</i> > 0	615	0.023	6.54e-08	0.007	0.534
<i>FINHOLDBANK</i>	<i>FINHOLD</i> > 0	615	0.007	0	0.00001	0.284
<i>FINHOLDNONBANK</i>	<i>FINHOLD</i> > 0	615	0.016	0	0.001	0.534
<i>CASH</i>	<i>FINHOLD</i> > 0	615	0.179	0.003	0.140	0.928
	<i>FINHOLD</i> = 0	615	0.205 ^a	0.001	0.150	0.868
<i>PRECASH</i>	<i>FINHOLD</i> > 0	615	0.167	0.001	0.137	0.953
	<i>FINHOLD</i> = 0	615	0.186 ^a	0.001	0.140	1
InvLLEV	<i>FINHOLD</i> > 0	615	-0.109	-2.399	-0.050	0
	<i>FINHOLD</i> = 0	615	-0.098	-0.655	-0.047	0
<i>DPS</i>	<i>FINHOLD</i> > 0	615	0.087	0	0.04	1.00
	<i>FINHOLD</i> = 0	615	0.110 ^a	0	0.05 ^b	1.50
InvFCF	<i>FINHOLD</i> > 0	615	-0.708	-11.295	-0.340	-0.0002
	<i>FINHOLD</i> = 0	615	-1.015 ^a	-18.158	-0.419 ^b	-0.0002
<i>CFO</i>	<i>FINHOLD</i> > 0	615	0.074	0.001	0.057	0.891
	<i>FINHOLD</i> = 0	615	0.071	0.001	0.056	0.377
<i>ROE</i>	<i>FINHOLD</i> > 0	615	0.119	0.004	0.091	1.067
	<i>FINHOLD</i> = 0	615	0.116	0.004	0.085	1.067
<i>GROW</i>	<i>FINHOLD</i> > 0	615	0.267	-0.627	0.147	6.937
	<i>FINHOLD</i> = 0	615	0.280	-0.627	0.164 ^b	6.937
<i>LEV</i>	<i>FINHOLD</i> > 0	615	0.543	0.009	0.503	20.246
	<i>FINHOLD</i> = 0	615	0.493 ^a	0.017	0.506	2.032
<i>PRELEV</i>	<i>FINHOLD</i> > 0	615	0.516	0.056	0.520	1.088
	<i>FINHOLD</i> = 0	615	0.502	0.056	0.518	1.088
<i>PRESIZE</i>	<i>FINHOLD</i> > 0	615	21.883	18.071	21.663	28.003
	<i>FINHOLD</i> = 0	615	21.759 ^a	14.108	21.626	27.487
<i>STATE</i>	<i>FINHOLD</i> > 0	615	0.616	0	1	1
	<i>FINHOLD</i> = 0	615	0.613	0	1	1
<i>V</i>	<i>FINHOLD</i> > 0	615	0.393	0.051	0.387	0.899
	<i>FINHOLD</i> = 0	615	0.423 ^a	0.021	0.407 ^b	0.852
<i>VC</i>	<i>FINHOLD</i> > 0	615	1.438	1	1	11.643
	<i>FINHOLD</i> = 0	615	1.509	1	1 ^b	10.846
<i>MARKET</i>	<i>FINHOLD</i> > 0	615	9.725	1	7	31
	<i>FINHOLD</i> = 0	615	9.765	1	7	31

Note: *FINHOLD* is the relationship between firms and financial institutions, proxy by the ratio of shareholdings in those financial institutions to firms' total assets. *FINHOLDBANK* is the ratio of shareholding value in non-listed banks to firms' total assets. *FINHOLDNONBANK* is the ratio of shareholding value in non-listed non-banking financial institutions to firms' total assets. *CASH* is the level of cash reserves, proxy by the ratio of cash to total assets at year end. *PRECASH* is previous year's cash reserves. InvLLEV is the inverse of the ratio of long-term debt to total assets, proxy for financing constraints. *DPS* is cash dividends per share, proxy for financing constraints. *CFO* is the ratio of cash flow from operations to total assets. *ROE* is profitability, proxy by the return on equity. *GROW* is the growth of sales revenue. *LEV* is the total debt ratio. *PRELEV* is the total debt ratio for previous year. *PRESIZE* is firm size at year beginning, proxy by the logarithm of total assets. *STATE* is the type of ultimate shareholders, which takes the value of 1 to indicate that the firm is controlled by the government, and 0 otherwise. *V* is the ownership for ultimate shareholders. *VC* is control rights (*V*) divided by cash flow rights. *MARKET* is the level of development of each province, proxy by the marketisation index. a and b indicate the significance at 0.10 and 0.05 levels, respectively.

5.2 Correlation Coefficients

Table 3 shows the Pearson correlation coefficients. The level of cash reserves (*CASH*) is significantly and negatively related to shareholdings in financial institutions (*FINHOLD*), which further supports Hypothesis 1. The level of cash reserves (*CASH*) is significantly and positively related to the inverse of the ratio of long term debt to total assets (*InvLLEV*) and cash dividends per share (*DPS*), meaning that the higher the financing constraints, the more cash reserves held by the firm. However, the inverse of free cash flow per share (*InvFCF*) is significantly and negatively related to the level of cash reserves (*CASH*), which is contrary to our hypothesis on financing constraints. The correlation coefficients between the other explanatory variables are no more than 0.4, so the problem of multi-collinearity is not serious.

5.3 Regressions

Table 4 shows the influence of shareholdings in financial institutions on firms' financing constraints (Hypothesis 1). The second column shows the regression for all samples, and the third presents the results for the matched group. Columns 4 and 5 show the regressions for SOEs and NSOEs, and columns 6 and 7 those for firms holding shares in banks and those not doing so. Column 8 shows the regressions using cash dividends per share (*DPS*) as the proxy for financing constraints.

The coefficients for *FINHOLD* are both significantly negative in the whole-sample and target firm regression, indicating that shareholdings in financial institutions are negatively related to financing constraints. In other words, having such shareholdings helps firm reduce constraints. Thus, Hypothesis 1 is supported, because the closer the connection with financial institutions, the higher the likelihood of accessing long-term debt to reduce financing constraints.¹⁵

In the regression for SOEs, the coefficient of *FINHOLD* is positive but not significant, while for the NSOEs it is significantly negative. In other words, the influence of shareholdings in financial institutions on reducing financing constraints is only significant for NSOEs and not SOEs. This is consistent with observations, since SOEs are inherently close to banks and have support from local and central government, so holding shares in financial institutions is not significantly helpful for them. In contrast, such shareholdings are highly useful for NSOEs due to their greater financing constraints.

The coefficient of *FINHOLD* is positive but not significant when using *FINHOLDBANK* as a proxy for shareholdings in financial institutions, showing that holding

¹⁵ Some firms use repeated short-term debt as a form of long-term debt to alleviate their financing constraints when they are unable to obtain actual long-term debt. Compared to such firms, those with genuine long-term debt perform better in terms of liquidity indicators and also have advantages in debt and equity financing, leading to stronger financing ability and lower financing constraints.

Table 3 Pearson Correlation Coefficients

	CASH	FINHOLD	InvLLEV	DPS	PRECASH	CFO	ROE	GROW	PRELEV	PRESIZE	STATE	V	VC
CASH	1.000												
FINHOLD	-0.085***	1.000											
InvLLEV	0.303***	-0.211***	1.000										
DPS	0.409***	-0.088***	0.100***	1.000									
PRECASH	0.682***	-0.056**	0.258***	0.295***	1.000								
CFO	0.024	0.029	0.012	0.190***	-0.010	1.000							
ROE	-0.072**	0.001	-0.099***	0.088***	-0.048*	0.087***	1.000						
GROW	0.007	-0.061**	0.002	0.094***	0.058**	0.134***	0.059**	1.000					
PRELEV	-0.287***	-0.023	-0.368***	-0.226***	-0.389***	0.040	0.216***	0.028	1.000				
PRESIZE	-0.249***	-0.133***	-0.311***	0.056**	-0.161***	0.038	0.006	-0.087***	0.242***	1.000			
STATE	-0.175***	-0.035	-0.164***	-0.034	-0.132***	0.034	0.024	-0.026	0.138***	0.376***	1.000		
V	0.109***	-0.101***	-0.028	0.231***	0.119***	0.032	0.002	0.196***	-0.002	0.234***	0.075***	1.000	
VC	-0.104***	0.003	-0.031	-0.076***	-0.120***	-0.033	0.041	-0.030	0.085***	-0.035	-0.172***	-0.128***	1.000
MARKET	-0.151***	0.038	-0.115***	-0.075***	-0.153***	-0.035	0.065**	0.036	0.096***	-0.026	0.097***	-0.018	0.067**

Note: *FINHOLD* is the relationship between firms and financial institutions, proxy by shareholdings in those financial institutions to firms' total assets. *CASH* is the level of cash reserves, proxy by the ratio of cash to total assets at year end. *PRECASH* is previous year's cash reserves. *InvLLEV* is the inverse of the ratio of long-term debt to total assets, proxy for financing constraints. *DPS* is cash dividends per share, proxy for financing constraints. *CFO* is the ratio of cash flow from operations to total assets. *ROE* is profitability, proxy by the return on equity. *GROW* is the growth of sales revenue. *LEV* is the total debt ratio. *PRELEV* is the total debt ratio for previous year. *PRESIZE* is firm size at year beginning, proxy by the logarithm of total assets. *STATE* is the type of ultimate shareholders, which takes the value of 1 to indicate that the firm is controlled by government, and 0 otherwise. *V* is the ownership for ultimate shareholders. *VC* is control rights (*V*) divided by cash flow rights. *MARKET* is the level of development of each province, proxy by the marketisation index. ***, **, and * indicate the significance at 0.01, 0.05, and 0.10 levels, respectively.

shares in nonlisted banks does not significantly assist firms' financing. A possible reason for this is that the banking industry is highly regulated and there are tight constraints on lending to related parties. The coefficient of *FINHOLD* is significantly negative if *FINHOLDNONBANK* is used as a proxy for shareholdings in financial institutions, suggesting that shareholdings in nonbanking institutions are effective in reducing firms' financing constraints. Hypothesis 1 is supported.

Comparing the coefficients for *FINHOLD* in columns 6 and 7, it can be seen that for shareholdings in nonlisted financial institutions, shareholdings in banks are not significantly useful while shareholdings in nonbanking institutions are significantly important in helping firms reduce their financing constraints.¹⁶

In the regression using cash dividends per share as a proxy for financing constraints, the coefficient of shareholdings in financial institutions (*FINHOLD*) is negative, which is consistent with the previous result, and Hypothesis 1 is again supported.

The coefficient of cash reserves at year beginning (*PRECASH*) is positive, showing that firms with more cash reserves are more financially constrained. This makes sense since firms with higher constraints tend to hold more cash reserves. Firms with better performance (*ROE*), higher growth (*GROW*), a larger scale (*PRESIZE*), and higher leverage (*LEV*), operating in areas that are better developed, are less financially constrained. The influence of ownership structure is not obvious (*STATE*, *V*, *VC*). All in all, the results presented in Table 4 show that holding shares in financial institutions is negatively related to firms' financing constraints but also helpful in mitigating these constraints, and Hypothesis 1 is supported. However, this effect is due to shareholdings in nonbanking institutions. Moreover, the positive impact is only significant for NSOEs.

The results presented in Table 4 indicate that holding shares in financial institutions helps firms reduce financing constraints. It can provide capital and reduce their cash reserve requirements, thus improving the operational efficiency of capital. Table 5 empirically tests this.

¹⁶ This conclusion is also consistent with the observed situation. Many firms obtain capital by investing in investment and securities companies, which allows them to avoid stricter regulation. In fact, firms mainly obtain direct loans by taking shareholdings in financial institutions. Firms with such shareholdings will try to persuade the institutions to provide loans for their holding or subsidiary companies. Even if regulators place strict constraints on related lending, which makes it harder to obtain loans, firms with shareholdings in financial institutions can still do so by creating conditions or avoiding constraints. Moreover, firms can also obtain capital from nonbanking financial institutions such as trust investment companies, finance conglomerates, and finance leasing companies. Nonbanking institutions cannot run a settlement business, so this lending process will only change the current deposit structure, but not expand the money supply, which does not contravene the tight monetary policy. However, this does play an important role in invigorating microfinance (Wu, 2008). Chen *et al.* (2012) also find that listed firms with shareholdings in insurance companies have lower daily and adjusted levels of cash holdings than firms without such shareholdings, and the effect of liquidity risk management improves more significantly when facing tight monetary policy.

Table 4 Influence of Shareholdings in Financial Institutions on Firms' Financing Constraints

	All	With shareholdings in financial institutions	SOEs	NSOEs	With shareholdings in banks	With shareholdings in non-banking institutions	Cash dividends
<i>FINHOLD</i>	-0.609*** (-7.77)	-0.616*** (-6.58)	0.079 (0.63)	-1.012*** (-10.83)	0.073 (0.36)	-0.708*** (-8.50)	-0.471** (-2.42)
<i>PRECA\$H</i>	0.068*** (2.92)	0.104** (2.58)	0.053 (1.55)	0.018 (0.64)	0.078*** (3.26)	0.068*** (2.92)	0.250*** (5.83)
<i>CFO</i>	0.093* (1.89)	0.104 (1.44)	0.202*** (3.38)	-0.093 (-1.19)	0.078 (1.55)	0.097** (1.98)	0.543*** (6.05)
<i>ROE</i>	0.059** (2.51)	0.075** (2.03)	0.074*** (2.73)	0.106*** (2.61)	0.066*** (2.74)	0.061** (2.60)	0.220*** (4.28)
<i>GROW</i>	-0.009** (-2.20)	-0.012** (-2.02)	0.000 (0.04)	-0.010* (-1.85)	-0.007* (-1.69)	-0.009** (-2.23)	0.012 (1.60)
<i>PRESIZE</i>	-0.022*** (-7.72)	-0.021*** (-4.90)	-0.019*** (-5.61)	-0.015*** (-3.36)	-0.019*** (-6.49)	-0.022*** (-7.76)	0.037*** (6.84)
<i>LEV</i>	-0.106*** (-20.51)	-0.102*** (-17.14)	-0.256*** (-13.55)	-0.091*** (-17.68)	-0.109*** (-20.87)	-0.105*** (-20.47)	-0.358*** (-10.34)
<i>STATE</i>	-0.001 (-0.09)	0.001 (0.11)			0.000 (0.03)	0.001 (0.12)	0.006 (0.45)
<i>V</i>	0.014 (0.71)	0.050 (1.59)	0.032 (1.23)	-0.017 (-0.62)	0.021 (1.06)	0.015 (0.78)	0.214*** (5.96)
<i>IC</i>	-0.004 (-1.47)	-0.000 (-0.03)	0.012*** (2.97)	-0.012*** (-3.74)	-0.003 (-1.27)	-0.004 (-1.56)	-0.003 (-0.56)
<i>MARKET</i>	-0.001* (-1.82)	-0.001* (-1.77)	-0.001 (-1.60)	-0.001 (-1.27)	-0.001* (-1.96)	-0.001* (-1.83)	-0.001 (-1.12)
<i>INDS & YEARS</i>	Control	Control	Control	Control	Control	Control	Control
N	1230	615	756	474	1230	1230	1230
R ²	0.522	0.570	0.535	0.673	0.498	0.527	0.8154

Note: The dependent variable is financing constraints (InvLLEV), proxy by the inverse of the ratio of long-term debt to total assets. *FINHOLD* is the relationship between firms and financial institutions, proxy by the ratio of shareholdings in those financial institutions to firms' total assets. *PRECA\$H* is previous year's cash reserves. *CFO* is the ratio of cash flow from operations to total assets. *ROE* is profitability, proxy by the return on equity. *GROW* is the growth of sales revenue. *LEV* is the total debt ratio. *PRESIZE* is firm size at year beginning, proxy by the logarithm of total assets. *STATE* is the type of ultimate shareholders, which takes the value of 1 to indicate that the firm is controlled by the government, and 0 otherwise. *V* is ownership for ultimate shareholders. *IC* is control rights (*V*) divided by cash flow rights. *MARKET* is the level of development of each province, proxy by the marketisation index. *INDS* is the industry, dummy variable classified according to the industry categories issued by the China Securities Regulatory Commission. After excluding the financial industry, there are 20 dummy variables. *YEARS* is the year dummy variable, and there are 4 dummy variables to proxy for 5 years. ***, **, * and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

The second column of Table 4 tests the influence of financing constraints on firms' cash reserves using the total sample of 1,230. The coefficient of financing constraints (*CONSTRAINT*) is positive and significant at the 0.01 level, showing that financing constraints are positively related to the level of cash reserves. In other words, the more constrained the firm's financing options, the higher level of cash reserves it will keep. This is consistent with the findings of previous research.

The third column investigates the influence of shareholdings in financial institutions on cash reserves (Hypothesis 2) using the total sample of 1,230. The coefficient of *CONSTRAINT* is also significantly negative, again consistent with previous research. The coefficient of *FINHOLD* is negative and significant at the 0.05 level, which means that having shares in financial institutions can reduce the level of cash reserves and holding cost. This provides support for Hypothesis 2. Since holding shares in financial institutions can alleviate firms' financing constraints (as shown by the results in Table 4), firms with higher financing constraints tend to keep a higher level of cash reserves (see column 2 of Table 5). When adding the two variables (column 3 of Table 5), the coefficient of *FINHOLD* is significant, as is the coefficient of *CONSTRAINT*, with the absolute value decreasing from 0.099 to 0.088. According to the mediation effect proposed by Baron and Kenny (1986), financing constraints partly mediate between shareholdings in financial institutions and cash reserves; in other words, such holdings affect the level of cash reserves in part due to their influence on financing constraints.

Column 4 of Table 5 adds the interaction item based on column 3 to investigate the influence of shareholdings in financial institutions on firms with higher financing constraints. The coefficient of *FINHOLD* is significantly negative, consistent with Hypothesis 2. The coefficient of *CONSTRAINT* is significantly positive. This suggests that firms with higher financing constraints tend to hold more cash reserves as a result of the prevention incentive. However, shareholdings in financial institutions help to reduce the level of cash reserves, as shown by the significant negative coefficient of *FINHOLD* × *CONSTRAINT*. Hypothesis 3 is therefore supported.

Matched samples without shareholdings in financial institutions may distort the results, so we exclude them in the fifth column in Table 5. The coefficient of *FINHOLD* is significantly negative, again consistent with Hypothesis 2. The coefficient of *CONSTRAINT* is also significantly positive, supporting the notion that the demand for cash reserves can be attributed to financing constraints. The coefficient of *FINHOLD* × *CONSTRAINT* is significantly negative, consistent with previous research and supporting Hypothesis 3. In other words, having shares in financial institutions can reduce the level of cash reserves and holding costs. Moreover, when we compare the coefficients of *CONSTRAINT* in the target sample regression in column 5 and the whole sample regression in column 4, the absolute value is different, meaning that shareholdings in financial institutions reduce the sensitivity

Table 5 Shareholdings in Financial Institutions, Financing Constraints, and Cash Reserves

	Sign	All	All	All	All	With shareholdings in financial institutions	SOEs	NSOEs	With shareholdings in banks	With shareholdings in non-banking institutions
<i>FINHOLD</i>	-		-0.209** (-2.52)	-0.338*** (-3.38)	-0.320*** (-3.43)	-0.101 (-0.79)	-0.500*** (-2.81)		-0.418* (-1.81)	-0.299*** (-2.69)
<i>CONSTRAINT</i>	+	0.095*** (3.64)	0.077*** (2.88)	0.110*** (3.64)	0.074** (2.17)	0.085*** (2.94)	0.128** (1.98)		0.095*** (3.59)	0.109*** (3.61)
<i>FINHOLD</i> × <i>CONSTRAINT</i>	-			-0.197** (-2.30)	-0.151* (-1.84)	0.564 (0.52)	-0.278** (-2.05)		-0.346 (-0.16)	-0.179** (-2.03)
<i>PRECASH</i>	+	0.646*** (25.38)	0.642*** (25.23)	0.639*** (25.11)	0.677*** (20.07)	0.758*** (27.37)	0.532*** (12.04)		0.645*** (25.32)	0.641*** (25.15)
<i>CFO</i>	+	0.124** (2.44)	0.130** (2.58)	0.116** (2.28)	0.103* (1.78)	0.193*** (4.00)	0.016 (0.14)		0.123** (2.43)	0.117** (2.29)
<i>ROE</i>	?	-0.033 (-1.39)	-0.034 (-1.41)	-0.029 (-1.23)	0.001 (0.03)	-0.012 (-0.58)	-0.096* (-1.71)		-0.035 (-1.44)	-0.029 (-1.20)
<i>GROW</i>	?	-0.012*** (-2.88)	-0.013*** (-3.05)	-0.013*** (-3.05)	-0.000 (-0.04)	0.003 (0.82)	-0.035*** (-4.49)		-0.012*** (-2.91)	-0.012*** (-3.01)
<i>PRELEV</i>	+	0.042** (2.19)	0.037* (1.94)	0.037** (1.97)	0.014 (0.59)	0.052*** (2.71)	-0.002 (-0.04)		0.040** (2.11)	0.039** (2.06)
<i>PRESIZE</i>	-	-0.017*** (-5.70)	-0.018*** (-6.06)	-0.017*** (-5.82)	-0.016*** (-4.41)	-0.004 (-1.55)	-0.040*** (-6.14)		-0.017*** (-5.78)	-0.017*** (-5.72)
<i>STATE</i>	-	-0.012 (-1.64)	-0.012* (-1.66)	-0.012 (-1.58)	-0.003 (-0.38)				-0.013* (-1.75)	-0.011 (-1.50)
<i>I'</i>	?	0.076*** (3.74)	0.074*** (3.64)	0.072*** (3.57)	0.048* (1.93)	-0.028 (-1.35)	0.149*** (3.88)		0.075*** (3.68)	0.074*** (3.63)
<i>IC</i>	?	-0.003 (-1.12)	-0.003 (-1.18)	-0.003 (-1.11)	0.001 (0.39)	-0.002 (-0.71)	0.001 (0.18)		-0.003 (-1.08)	-0.003 (-1.13)
<i>MARKET</i>	?	-0.001 (-1.52)	-0.001 (-1.50)	-0.001 (-1.37)	0.001 (0.22)	-0.001** (-2.02)	0.001 (0.07)		-0.001 (-1.51)	-0.001 (-1.40)
<i>INDS & YEARS</i>		Control 1230	Control 1230	Control 1230	Control 615	Control	Control	Control	Control	Control
<i>R²</i>		0.537	0.539	0.542	0.574	0.639	0.516		0.539	0.540

Note: The dependent variable is cash reserves, proxy by total cash reserves divided by total assets. *FINHOLD* is the relationship between firms and financial institutions, proxy by the ratio of shareholdings in those financial institutions to firms' total assets. Financing constraints (InvLLEV) are proxy by the inverse of the ratio of long-term debt to total assets. *PRECASH* is previous year's cash reserves. *CFO* is the ratio of cash flow from operations to total assets. *ROE* is profitability, proxy by the return on equity. *GROW* is the growth of sales revenue. *LEV* is the total debt ratio. *PRESIZE* is firm size at year beginning, proxy by the logarithm of total assets. *STATE* is the type of ultimate shareholders, which takes the value of 1 to indicate that the firm is controlled by the government, and 0 otherwise. *I'* is the ownership for ultimate shareholders. *IC* is control rights (*I'*) divided by cash flow rights. *MARKET* is the level of development of each province, proxy by the marketisation index. *INDS* is the industry dummy variable classified according to the industry categories issued by the China Securities Regulatory Commission. After excluding the financial industry, there are 20 dummy variables. *YEARS* is the year dummy variable, and there are 4 dummy variables to proxy for 5 years. ***, **, * and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

of cash reserves and financing constraints. Hypothesis 3 is therefore further supported.

In China, state-owned banks and NSOEs demonstrate the phenomenon of “separation of administrative and market functions”. State-owned banks aim to provide capital for SOEs. Since state-owned banks have certain public administration functions, the result is that NSOEs in fact rarely obtain capital from them. Many NSOEs are small and their information environment is not transparent, leading to higher credit risk. Considering the risk and expected returns, state-owned banks are reluctant to provide them with capital. This results in a loose relationship between state-owned banks and NSOEs over the longer term, as such banks are not willing to provide credit lending even when they have large amounts of available capital, while the demand for capital among NSOEs is significant. Putting it another way, SOEs and NSOEs have intrinsically different relationships with the state-owned banks. Therefore, columns 6 and 7 present the regression results for the SOEs and NSOEs, respectively. In the regression for SOEs, the coefficient of *FINHOLD* is negative but not significant, the coefficient of *CONSTRAINT* is significantly positive and that of *FINHOLD* × *CONSTRAINT* is negative but not significant. This suggests that holding shares in financial institutions does not have a significant effect on the level of cash reserves of SOEs. In the regression for NSOEs, however, the coefficients of *FINHOLD* and *FINHOLD* × *CONSTRAINT* are significantly negative, consistent with Hypotheses 2 and 3 and indicating that holding shares in financial institutions does influence NSOEs’ cash reserves due to the disadvantages they face in borrowing from banks.

The regressions in Table 4 indicate that the alleviation of financing constraints produced by holding shares in financial institutions differs depending on whether the institutions are banks or not. Thus, we further separate the sample in the last two columns in Table 5. In the regression for holding shares in nonlisted banks, the coefficient of *FINHOLD* is significantly negative, suggesting that such shareholdings can effectively lower the level of cash reserves, consistent with Hypothesis 2. The coefficient of *CONSTRAINT* is significantly positive, consistent with expectations. The coefficient of the interaction item, *FINHOLD* × *CONSTRAINT*, is negative but not significant. A possible reason for this is that holding shares in nonlisted banks cannot effectively alleviate firms’ financing constraints (see the results in column 6 of Table 4), so it has no significant influence on cash reserves. However, in the regression for holding shares in nonlisted, nonbanking financial institutions, the coefficient of *FINHOLD* is significantly negative, suggesting that this type of shareholding *can* enable firms to lower their cash reserves, consistent with Hypothesis 2. The coefficient of *CONSTRAINT* is also positive, again as expected. The coefficient of *FINHOLD* × *CONSTRAINT* is significantly negative, indicating that holding shares in nonbanking institutions can enable firms with higher financing constraints to lower their cash reserves still further, due to the alleviation of financing constraints (see the results in column 7 of Table 4).

The coefficient of *PRECASH* is significantly positive, indicating the persistence of firms' accounting policy. The coefficient of *CFO* is also significantly positive, which occurs because higher cash flow from operations will result in more cash reserves. *ROE* is negatively related to the level of cash reserves since less profitable firms tend to keep more cash on hand in order to reduce the cost of shortage. *PRELEV* is significantly positive, suggesting that higher leverage leads to higher demand for cash so firms must keep higher reserves. The coefficient of *PRESIZE* is significantly negative, meaning that smaller firms tend to keep a higher level of cash reserves due to their disadvantages when it comes to obtaining external capital. Higher ownership concentration leads to a higher level of cash reserves, as shown by the significantly positive coefficient of *V*.

In summary, the results reported in Table 5 support our hypotheses. Holding shares in nonlisted financial institutions (banks and nonbanks) helps reduce firms' financing constraints and their cash reserves. For firms with higher financing constraints, shareholdings in nonbanking financial institutions can further lower their cash reserves. However, holding shares of nonlisted banks has no significant impact. Moreover, this effect is only significant for NSOEs and not SOEs.

5.4 Robustness Tests

5.4.1 Sample Selection Problem

The incentive for firms to hold shares in financial institutions is to reduce financing constraints and obtain more capital. Keeping more cash reserves may be due to greater constraints, so as to decrease the cost of a cash shortage. In other words, firms with higher financing constraints will tend to hold shares in financial institutions in order to reduce their cash reserves and financing constraints, suggesting that there may be a self-selection problem in the sample. In order to avoid this, we use the Heckman two-step method to run the previous regressions. Our models are specified as follows:

$$\begin{aligned}
 DUMFINHOLD = & \gamma_0 + \gamma_1 PRECASH + \gamma_2 PREFCF + \gamma_3 PRELEV \\
 & + \gamma_4 PRESIZE + \gamma_5 ROE + \gamma_6 GROW + \gamma_7 STATE \\
 & + \gamma_8 V + \gamma_9 VC + \gamma_{10} MARKET + \gamma_i \sum INDS \\
 & + \gamma_j \sum YEARS + \varepsilon
 \end{aligned} \tag{3}$$

$$\begin{aligned}
 CONSTRAINT = & \lambda_0 + \lambda_1 IMR + \lambda_2 FINHOLD + \lambda_3 PRECASH \\
 & + \lambda_4 CFO + \lambda_5 ROE + \lambda_6 GROW + \lambda_7 PRESIZE \\
 & + \lambda_8 LEV + \lambda_9 STATE + \lambda_{10} V + \lambda_{11} VC + \lambda_{12} MARKET \\
 & + \lambda_i \sum INDS + \lambda_j \sum YEARS + \varepsilon
 \end{aligned} \tag{4}$$

$$\begin{aligned}
CASH = & \theta_0 + \theta_1 IMR + \theta_2 FINHOLD + \theta_3 CONSTRAINT \\
& + \theta_4 FINHOLD \times CONSTRAINT + \theta_5 CFO + \theta_6 ROE \\
& + \theta_7 GROW + \theta_8 STATE + \theta_9 V + \theta_{10} VC + \theta_{11} MARKET \\
& + \theta_i \sum INDS + \theta_j \sum YEARS + \varepsilon
\end{aligned} \tag{5}$$

Model (3) tests the endogeneity of shareholdings in financial institutions, namely whether firms' cash holdings and financing constraints determine their shareholdings in financial institutions. Cash reserves at year beginning (*PRECASH*), free cash flow at year beginning (*PREFCF*),¹⁷ profitability at year beginning (*PREROE*), leverage at year beginning (*PRELEV*), firm size at year beginning (*PRESIZE*), and firms' location (*MARKET*) all influence firms' investments in financial institutions. Model (4) investigates the influence of shareholdings in financial institutions on financing constraints, and Model 5 examines the influence of such shareholdings and financing constraints on cash reserves, after controlling for self-selection. All variables are the same as specified earlier.

Table 6 shows the results of the Heckman two-step regression. *IMR* is not significant in Models (4) and (5), suggesting that there is no self-selection problem for those two regressions. For the regression of Model (4), the coefficient of *FINHOLD* is significantly negative, meaning that shareholdings in financial institutions can effectively reduce firms' financing constraints, and Hypothesis 1 is supported. For the regression of Model (5), the coefficient of *FINHOLD* is significantly negative, supporting Hypothesis 2. The coefficient of *CONSTRAINT* is significantly positive, indicating that firms with higher constraints tend to hold more cash reserves to reduce the cost of a shortage. The coefficient of *FINHOLD* × *CONSTRAINT* is significantly negative, supporting Hypothesis 3. In other words, holding shares in financial institutions is helpful to firms facing higher financing constraints, enabling them to reduce cash reserves and holding costs.

In brief, Table 6 shows that even after considering the sample self-selection problem, shareholdings in financial institutions can indeed alleviate firms' financing constraints so as to lower the level of cash reserves and holding costs. Moreover, the influence of such shareholdings on cash reserves is stronger for firms with greater financing constraints.

5.4.2 Alternative Variable for Financing Constraints

We also use cash dividends per share as a proxy for financing constraints, as shown in the second column of Table 7. The coefficients of *FINHOLD*, *CONSTRAINT*, and *FINHOLD* × *CONSTRAINT* are all significant, consistent with the results presented in Tables 6 and 7. Even though firms with higher financing constraints tend to hold more cash reserves, holding shares in financial institutions can reduce these reserves and also the

¹⁷ PreFCF denotes the free cash flow for the previous year.

Table 6 Sample Self-Selection Problem

	<i>DUMFINHOLD</i>	<i>CONSTRAINT</i>	<i>DUMFINHOLD</i>	<i>CASH</i>
<i>IMR</i>		0.092 (1.36)		-0.015 (-0.51)
<i>FINHOLD</i>		-0.617*** (-7.86)		-0.341*** (-3.42)
<i>CONSTRAINT</i>				0.116*** (3.81)
<i>FINHOLD</i> × <i>CONSTRAINT</i>				-0.204** (-2.38)
<i>PRECASH</i>	-0.726*** (-2.71)	0.008 (0.16)	-0.217 (-0.67)	0.653*** (23.04)
<i>PREFCF</i>	-0.007 (-0.54)		-0.084*** (-2.94)	
<i>PRELEV</i>	0.384** (2.50)		0.005 (0.02)	0.042** (2.24)
<i>PRESIZE</i>	0.093*** (8.08)	-0.015*** (-2.96)	0.093*** (2.68)	-0.018*** (-5.49)
<i>LEV</i>		-0.103*** (-19.50)		
<i>CFO</i>		0.094* (1.93)		0.093* (1.86)
<i>ROE</i>	-0.023 (-0.09)	0.061** (2.58)	0.052 (0.19)	-0.031 (-1.29)
<i>GROW</i>	0.050 (1.01)	-0.005 (-1.22)	0.026 (0.55)	-0.013*** (-3.02)
<i>STATE</i>	-0.077 (-1.05)	-0.004 (-0.59)	-0.106 (-1.23)	-0.010 (-1.37)
<i>V</i>	-0.838*** (-3.61)	-0.038 (-0.89)	-0.896*** (-3.74)	0.079*** (3.02)
<i>VC</i>	-0.048* (-1.67)	-0.006** (-2.00)	-0.053* (-1.73)	-0.003 (-1.00)
<i>MARKET</i>	0.002 (0.41)	-0.001 (-1.51)	-0.001 (-0.13)	-0.001 (-1.35)
<i>INDS & YEARS</i>	Control	Control	Control	Control
N	1230	1230	1230	1230
R ²		0.523		0.538

Note: *FINHOLD* is the relationship between firms and financial institutions, proxy by shareholdings in those financial institutions to firms' total assets. *DUMFINHOLD* is the dummy variable, which takes the value of 1 to indicate that the shareholding in financial institutions is positive, and 0 otherwise. *CONSTRAINT* is the level of financing constraints, proxy by the inverse of the ratio of long-term debt to total assets (InvLLEV). *CASH* is the level of cash reserves, proxy by total cash divided by total assets. *IMR* is the inverse Mills ratio, calculated from the first step of Heckman two-step regression. *PRECASH* is previous year's cash reserves. *PREFCF* is the free cash flow at year beginning, proxy by the free cash flow per share at year beginning. *PRELEV* is the total debt ratio at year beginning. *PRESIZE* is the logarithm of total assets at year beginning. *CFO* is the ratio of cash flow from operations to total assets. *ROE* is profitability, proxy by the return on equity. *GROW* is the growth of sales revenue. *LEV* is the total debt ratio. *STATE* is the type of ultimate shareholders, which takes the value of 1 to indicate that the firm is controlled by the government, and 0 otherwise. *V* is the ownership for ultimate shareholders. *VC* is control rights (*V*) divided by cash flow rights. *MARKET* is the level of development of each province, proxy by the marketisation index. *INDS* is the industry dummy variable classified according to the industry categories issued by the China Securities Regulatory Commission. After excluding the financial industry, there are 20 dummy variables. *YEARS* is the year dummy variable, and there are 4 dummy variables to proxy for 5 years. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

holding costs. Hypotheses 2 and 3 are accordingly supported. The regression results on the other variables denoting financing constraints are basically the same as those presented in Table 5, further supporting our hypotheses.¹⁸

Almeida *et al.* (2004) suggest that the cash-cash flow sensitivity is higher for firms with severe financing constraints. However, since this is not a single measure, it is impossible for us to use it to test Hypothesis 3. We use the cash-cash flow sensitivity method to test Hypothesis 1, as shown in Table 8. The coefficients for cash flow (*CFO*) are all significantly positive, showing that most listed firms in China have financing constraints according to the theory presented by Almeida *et al.* (2004). The coefficients of $FINHOLD \times CFO$ are all significantly negative, suggesting that for firms with shareholdings in financial institutions, the cash-cash flow sensitivity decreases. In other words, having such shareholdings can effectively reduce firms' financing constraints. This is consistent with the results computed using the inverse of the ratio of long-term debt to total assets and therefore with Hypothesis 1. Moreover, shareholdings in banks are not significantly helpful, but those in nonbanks can effectively reduce firms' financing constraints, which is also consistent with our results obtained using the inverse of the ratio of long-term debt to total assets.

5.4.3 Alternative Variable for Cash Reserves

We also use cash plus trading financial assets divided by total assets as a proxy for cash reserves (Luo and Xu, 2009) for the robustness test, as shown in the third column in Table 7. Again, the coefficients of *FINHOLD*, *CONSTRAINT*, and $FINHOLD \times CONSTRAINT$ are all significant and consistent with those in Table 5; that is, shareholdings in financial institutions can reduce the levels of cash reserves for firms with higher financing constraints. In other words, using different proxies for cash reserves does not affect our regression results. Hypotheses 2 and 3 are supported.

5.4.4 Excluding Samples in 2007

The most recent financial crisis began in 2007, with the global economy heading into decline from 2008 to 2011 and many firms going bankrupt. Some firms held on to more cash reserves to survive the crisis and waited for opportunities for mergers and acquisitions. In other words, the economy in 2007 is different from that in other years. Thus, we eliminate the samples in 2007 and rerun our regressions, as shown in the fourth column of Table 7. The coefficients for *FINHOLD* and $FINHOLD \times CONSTRAINT$ are both significantly negative, consistent with the previous results and supporting Hypotheses 2 and 3.¹⁹

¹⁸ We also use free cash flow {(cash flow from operations – cash dividends – cash flow from investing) / total assets} as a proxy for financing constraints, but the results are not significant.

¹⁹ The regression results on Model (3) after excluding samples in 2007 are basically the same as those in Table 5, supporting Hypothesis 1.

5.4.5 Matching Analysis²⁰

Since firms hold a much lower proportion of shares in nonlisted organisations, compared to their total shares in such institutions, it is hard for them to obtain capital from them. Thus, we select only sample firms with more than five percent shareholdings in nonlisted financial institutions and recalculate the total sum.²¹ Again, we reselect our matched sample according to the “same year”, “same industry”, and “similar assets” principles. Our final sample is 229 pairs or 458 sample firms. The regression based on Model (1) shows that the coefficients (seen in the last column of Table 7) of *FINHOLD* and *FINHOLD* × *CONSTRAINT* are significantly negative when using cash dividends per share as a proxy for financing constraints, supporting Hypotheses 2 and 3. In the regression of the inverse of the ratio of long-term debt to total assets (*InvLLEV*), the coefficients of *FINHOLD* and *FINHOLD* × *CONSTRAINT* are not significant. This may be because holding larger shareholdings in financial institutions may lead to some inconvenience, due to the need for information disclosure about related transactions, so firms need to strike a balance between cost and benefit. Moreover, some nonlisted financial institutions are related parties and/or subsidiaries, whose financial statements have to be consolidated into the firm’s financial reports (business connections); if so, the effect of the shareholding disappears once consolidation is complete. The influence of those financial institutions, as far as providing guaranteed capital is concerned, is different from other institutions, so the result is not significant.

5.4.6 Manufacturing Industry vs. Other Industries

Recently, the central bank in China issued a lot of money; however, most entities, especially those in the manufacturing industry, did not benefit as the increased amount did not flow to them. Is it helpful for manufacturing firms to hold shares in financial institutions? Table 9 separates the sample firms into manufacturing and nonmanufacturing industries and tests the influence of such shareholdings on their financing constraints and cash reserves.

In the regression for financing constraints, the coefficient of *FINHOLD* is not significant in the regression for manufacturing firms but is significant for nonmanufacturing firms. In other words, holding shares in financial institutions does not significantly assist the former, in terms of lowering their financing constraints. A possible reason for this is that our sample period runs from 2007 to 2011, during which time the global financial crisis has led to manufacturing firms suffering considerable losses and a continued threat of business

²⁰ We also use the sum of the different percentages of shareholdings in financial institutions as a proxy for a firm’s shareholdings in financial institutions in the robustness testing. However, the coefficients for *FINHOLD* and *FINHOLD* × *CONSTRAINT* are not significant in the regressions for Hypotheses 2 and 3.

²¹ Only shareholdings in financial institutions accounting for at least five percent of total assets are considered. The percentages of these shareholdings are summed to obtain a firm’s total shareholdings in financial institutions.

Table 7 Robustness Test

	Cash Dividends	Cash Equivalent	Excluding 2007 samples	Holding more than 5%
<i>FINHOLD</i>	-0.149*	-0.332***	-0.367***	-0.019**
	(-1.83)	(-3.30)	(-3.32)	(2.21)
<i>CONSTRAINT</i>	0.276***	0.118***	0.134***	0.218***
	(12.15)	(3.85)	(3.86)	(7.67)
<i>FINHOLD</i> × <i>CONSTRAINT</i>	-3.601***	-0.203**	-0.235**	-4.036***
	(-2.61)	(-2.36)	(-2.52)	(-3.15)
<i>PRECASH</i>	0.588***	0.642***	0.630***	0.716***
	(23.96)	(25.08)	(22.72)	(20.48)
<i>CFO</i>	0.021	0.106**	0.150**	0.010
	(0.43)	(2.07)	(2.43)	(0.13)
<i>ROE</i>	-0.075***	-0.026	-0.044	-0.074**
	(-3.29)	(-1.10)	(-1.59)	(-2.16)
<i>GROW</i>	-0.014***	-0.013***	-0.014***	0.003
	(-3.56)	(-3.13)	(-3.03)	(0.32)
<i>PRELEV</i>	0.049***	0.038**	0.046**	0.052**
	(2.77)	(1.97)	(2.11)	(2.23)
<i>PRESIZE</i>	-0.022***	-0.018***	-0.020***	-0.018***
	(-8.04)	(-5.93)	(-5.79)	(-4.96)
<i>STATE</i>	-0.008	-0.011	-0.016*	-0.005
	(-1.17)	(-1.47)	(-1.96)	(-0.55)
<i>V</i>	0.037*	0.070***	0.079***	0.024
	(1.92)	(3.43)	(3.47)	(0.98)
<i>VC</i>	-0.003	-0.002	-0.004	-0.003
	(-1.18)	(-0.64)	(-1.26)	(-0.98)
<i>MARKET</i>	-0.001	-0.001	-0.001	-0.001
	(-1.41)	(-1.47)	(-1.25)	(-0.99)
<i>INDS & YEARS</i>	Control	Control	Control	Control
N	1230	1230	1024	458
R ²	0.587	0.541	0.545	0.736

Note: The dependent variable is cash reserves (*CASH*). *FINHOLD* is the relationship between firms and financial institutions, proxy by shareholdings in those financial institutions to firms' total assets. *CONSTRAINT* is financing constraints, proxy by the inverse of the ratio of long-term debt to total assets (*InvLLEV*). *PRECASH* is previous year's cash reserves. *CFO* is the ratio of cash flow from operations to total assets. *ROE* is profitability, proxy by the return on equity. *GROW* is the growth of sales revenue. *PRELEV* is the total debt ratio at year beginning. *PRESIZE* is the logarithm of total assets at year beginning. *STATE* is the type of ultimate shareholders, which takes the value of 1 to indicate that the firm is controlled by the government, and 0 otherwise. *V* is the ownership for ultimate shareholders. *VC* is control rights (*V*) divided by cash flow rights. *MARKET* is the level of development of each province, proxy by the marketisation index. *INDS* is the industry dummy variable classified according to the industry categories issued by the China Securities Regulatory Commission. After excluding the financial industry, there are 20 dummy variables. *YEARS* is the year dummy variable, and there are 4 dummy variables to proxy for 5 years. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Table 8 Shareholdings in Financial Institutions and Firms' Financing Constraints (Cash-Cash Flow Sensitivity Analysis)

	All	With shareholdings in financial institutions	With shareholdings in banks	With shareholdings in nonbanking institutions
<i>CFO</i>	0.117**	0.136**	0.109**	0.114**
	(2.21)	(2.29)	(2.08)	(2.17)
<i>FINHOLD</i> × <i>CFO</i>	-0.737*	-0.679*	-2.100	-0.671*
	(-1.73)	(-1.72)	(-1.06)	(-1.73)
<i>GROW</i>	-0.009	0.005	-0.009	-0.009
	(-0.84)	(0.51)	(-0.83)	(-0.84)
<i>SIZE</i>	-0.006***	-0.007***	-0.006**	-0.006***
	(-2.69)	(-2.67)	(-2.55)	(-2.65)
N	1230	615	1230	1230
R ²	0.012	0.018	0.011	0.012

Note: The dependent variable is the change in cash, equal to current total cash minus total cash at previous year and then divided by total assets at year end. *GROW* is the growth of sales revenue, equal to current sales minus previous sales and then divided by previous sales. *SIZE* is the logarithm of total assets at year end. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

downturn. Capital has not flowed into the manufacturing industry, and even if manufacturing firms have maintained close relationships with financial institutions, this has not had a significantly helpful effect.

Since holding shares in financial institutions does not significantly reduce manufacturing firms' financing constraints, it follows that it is not helpful in reducing the level of cash reserves either, as shown by the insignificant coefficients of *FINHOLD* and *FINHOLD* × *CONSTRAINT* for this subgroup. Nonmanufacturing firms have received huge amounts of capital and their financing constraints have therefore reduced significantly. Thus, their operations are also supported by financial institutions, or putting it another way, holding shares in financial institutions is significantly and negatively related to such firms' financing constraints and cash reserves. The more financing constraints they face, the stronger the effect of their shareholdings on cash reserves.

In summary, the results presented in Table 9 show that holding shares in financial institutions is helpful in reducing financing constraints and cash reserves for nonmanufacturing firms. For manufacturing firms, it is not significantly helpful, at least over the research period.

Table 9 Comparing the Influence of Shareholdings in Financial Institutions for Manufacturing and Nonmanufacturing Firms

	<i>CONSTRAINT</i>		<i>CASH</i>	
	Manufacturing	Non-manufacturing	Manufacturing	Non-manufacturing
<i>FINHOLD</i>	0.126 (1.15)	-0.868*** (-7.63)	-0.167 (-0.71)	-0.257** (-2.19)
<i>CONSTRAINT</i>			0.177*** (2.79)	0.083** (2.42)
<i>FINHOLD</i> × <i>CONSTRAINT</i>			5.354 (1.37)	-0.143* (-1.67)
<i>PRECASH</i>	0.036 (1.56)	0.084* (1.89)	0.673*** (17.82)	0.624*** (17.88)
<i>CFO</i>	0.067 (1.47)	0.125 (1.37)	0.118 (1.64)	0.163** (2.30)
<i>ROE</i>	0.043* (1.91)	0.082* (1.93)	-0.020 (-0.58)	-0.032 (-0.97)
<i>GROW</i>	0.001 (0.23)	-0.013** (-2.14)	-0.004 (-0.50)	-0.010** (-2.13)
<i>PRESIZE</i>	-0.017*** (-5.89)	-0.025*** (-4.95)	-0.027*** (-6.05)	-0.007 (-1.63)
<i>LEV</i>	-0.126*** (-8.07)	-0.102*** (-14.94)		
<i>STATE</i>	-0.007 (-1.04)	0.001 (0.06)	-0.021** (-2.05)	0.009 (0.86)
<i>V</i>	-0.017 (-0.94)	0.044 (1.22)	0.127*** (4.37)	-0.005 (-0.17)
<i>VC</i>	0.000 (0.15)	-0.006 (-1.37)	-0.004 (-1.04)	-0.002 (-0.63)
<i>MARKET</i>	-0.001** (-2.38)	-0.001 (-1.62)	-0.000 (-0.39)	-0.001 (-0.52)
<i>PRELEV</i>			0.075** (2.52)	0.024 (0.98)
<i>INDS & YEARS</i>	Control	Control	Control	Control
N	664	566	664	566
R ²	0.382	0.551	0.536	0.589

Note: The dependent variable is cash reserves (*CASH*). *FINHOLD* is the relationship between firms and financial institutions, proxy by shareholdings in those financial institutions to firms' total assets. *CONSTRAINT* is financing constraints, proxy by the inverse of the ratio of long-term debt to total assets (InvLLEV). *PRECASH* is previous year's cash reserves. *CFO* is the ratio of cash flow from operations to total assets. *ROE* is profitability, proxy by the return on equity. *GROW* is the growth of sales revenue. *PRELEV* is the total debt ratio at year beginning. *PRESIZE* is the logarithm of total assets at year beginning. *STATE* is the type of ultimate shareholders, which takes the value of 1 to indicate that the firm is controlled by the government, and 0 otherwise. *V* is the ownership for ultimate shareholders. *VC* is control rights (*V*) divided by cash flow rights. *MARKET* is the level of development of each province, proxy by the marketisation index. *INDS* is the industry dummy variable classified according to the industry categories issued by the China Securities Regulatory Commission. After excluding the financial industry, there are 20 dummy variables. *YEARS* is the year dummy variable, and there are 4 dummy variables to proxy for 5 years. ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 levels, respectively.

VI. Conclusions

Investing in financial institutions can bring many benefits to firms. One direct influence is the ability to reduce their cash reserves and cash holding costs. Firms with higher financing constraints will maintain a higher level of cash reserves for preventive purposes; however, shareholdings in financial institutions will benefit such firms and enable them to reduce their cash reserves, due to the close relationship with sources of timely capital. Since the banking industry is strictly monitored, the constraints on external lending, particularly to related parties, are high. Therefore, shareholdings in nonlisted banks cannot significantly reduce firms' financing constraints, nor significantly benefit their cash reserves. However, shareholdings in nonlisted and nonbanking institutions *can* significantly reduce financing constraints, and are hence more beneficial for firms, especially those with higher such constraints, seeking to improve their cash reserves. Moreover, NSOEs are inherently at a disadvantage in terms of accessing external financing compared to SOEs, so holding shares in financial institutions is more beneficial for them in terms of its effect on cash reserves.

This paper has focused on listed firms' shareholdings in nonlisted financial institutions. We have not considered holdings in listed financial institutions. Moreover, although our research verifies the role of such shareholdings in reducing firms' cash reserves, due to the lack of detailed capital transfers between those firms and the related financial institutions, we cannot find direct evidence for this effect. Further research could look more closely at this issue to provide this direct evidence and show how such capital transfers affect the operation of firms.

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Appendix: Signalling Model for Shareholdings in Financial Institutions

Following the labour market signalling model developed by Spence (1974), we define the signalling model in capital markets. Suppose there is a bank and a borrower, and the repayment risk (θ) has two possible values, where $\theta = 1$ (high risk) and $\theta = 2$ (low risk). The borrower understands the true risk of repayment, but the bank does not know this. The bank considers the probability of $\theta = 1$ (high risk) to be 50%, and the probability of $\theta = 2$ (low risk) to be 50%. In order to obtain more loans, the borrower must persuade the bank to believe that it presents a low risk before a loan agreement is signed. The most effective signal for this is shareholdings in financial institutions, since these are often seen as a performance indicator of having sufficient funds and a high probability of repayment. In recent years, more and more nonfinancial firms have invested in financial institutions, which demonstrates the effectiveness of this signal. Certainly, shareholdings in financial institutions will bring some kind of return.

Before borrowing, the borrower must decide whether to invest in financial institutions. Suppose that s represents such an investment, with $s = 0$ if there is no investment in financial institutions and $s = 1$ if there is. We define the investment cost as $c(s, \theta) = s/\theta$, and the relationship between the risk of repayment and investment cost is negative. After observing the level of investment in financial institutions, the bank determines the size of the loan. Suppose that $l(s)$ is the size of the loan, $l(0) = 1$ represents the loan obtained by the borrower when the bank considers the borrower to be high risk, and $l(1) = 2$ represents the loan obtained by the borrower when the bank considers the borrower to be low risk. The utility of the borrower is $U(s, \theta) = l(s) - s/\theta$, so we get $U(0, 1) = 1$, $U(0, 2) = 1$, $U(1, 1) = 1$, and $U(1, 2) = 1.5$.

In the case of information symmetry, regardless of the credit risk level of the borrower, the borrower will not invest in financial institutions. Hence, low-risk borrowers will obtain loans, and high-risk borrowers will not. But in the case of information asymmetry, the bank does not know the borrower's type, and given that the probability of both high and low risk is 50%, the expected loan is $l = 0.5 \times l(0) + 0.5 \times l(1) = 1.5$. In this case, the bank cannot observe the type of borrower (θ). It can only know whether the borrower has invested in financial institutions (s). Thus the bank should decide on the size of loan according to whether or not the borrower has invested in financial institutions (s). Suppose that $\mu(\theta = 1|s)$ is the posterior probability of high risk after the bank has identified the borrower's shareholdings in financial institutions. A perfect bias equilibrium means that first of all, the borrower determines the level of investment in financial institutions, represented by $s(\theta)$; and secondly, the bank determines the size of the loan (l) according to the level of investment in financial institutions (s). So $l(s)$ is the best choice of the bank, and $s(\theta)$ is the best choice of the borrower. The following discusses the pooling equilibrium and

separating equilibrium under the asymmetric information situation.

(1) Pooling equilibrium (PE)

Under the pooling equilibrium, all borrowers will not invest in financial institutions, and the banks will determine the size of the loan according to the expected loan. There will be no relationship between loans and shareholdings in financial institutions.

$$\text{PE: } \begin{cases} s(\theta = 1) = s(\theta = 2) = 0 \\ l(\theta = 0) = l(\theta = 1) = 1.5 \\ \mu(\theta = 1|s = 0) = 0.5, \mu(\theta = 1|s = 1) = 0.5 \end{cases} \quad (1)$$

(2) Separating equilibrium (SE)

If the bank considers that a borrower with shareholdings in financial institutions is of low risk, pooling equilibrium will not be correct because the borrower may be high risk when $\mu(\theta = 1|s = 1) = 0$ is given. When the borrower invests in financial institutions ($s=1$), the bank will choose $l(1) = 2$ as the size of the loan. In this case, the utility of the borrower will be $U(1,2) = 1.5$, and will not be $U(0,2) = 1$. So we find the separating equilibrium:

$$\text{SE: } \begin{cases} s(\theta = 1) = 0, s(\theta = 2) = 1 \\ l(\theta = 0) = 1, l(\theta = 1) = 2 \\ \mu(\theta = 1|s = 0) = 1, \mu(\theta = 1|s = 1) = 0 \end{cases} \quad (2)$$

As shown above, high-risk borrowers choose not to invest in financial institutions, and low-risk borrowers choose to do so. The bank thus believes that borrowers which do not invest in financial institutions must be of high risk, and determines the size of the loan for high-risk borrowers to be $l(0) = 1$. Also, the bank believes that borrowers which invest in financial institutions must be of low risk, and thus determines the size of the loan for low-risk borrowers to be $l(1) = 2$. The separating equilibrium is a perfect bias equilibrium. Given the posterior probability and loan determination of banks, the best choice for low-risk borrowers is to invest in financial institutions, since $U(s = 1, \theta = 2) = 1.5 > U(s = 0, \theta = 2) = 1$. The best choice for high-risk borrowers is not to do so, since $U(s = 0, \theta = 1) = 1 \geq U(s = 1, \theta = 1) = 1$. On the other hand, given the choice of the borrower, the posterior probability of the bank is calculated according to the Bayes Rule. Furthermore, there will be no other separating equilibrium. In the case of the separating equilibrium, shareholdings in financial institutions become a signal for borrowers. In order to obtain more loans from banks, low-risk borrowers will invest in financial institutions to enable the bank to consider them low-risk, and finally solve the problem of financing constraints.