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——基于次级抵押贷款及其衍生产品视角

The U.S. subprime mortgage crisis and
its enlightenment to China

—Based on subprime mortgages and related derivatives

付强 著



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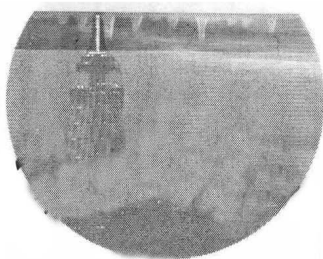
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中文摘要

研究背景

2006 年美国房地产市场受到了寒流侵袭，房价同比增速开始下滑，受此影响，越来越多的借款人无力偿还贷款，根据美国抵押银行家协会的统计，2006 年 3 季度以来，次贷的严重拖欠率（拖欠 90 天以上）和丧失抵押权赎回率（以下简称失赎率）呈逐季上升势头。2006 年 3 季度的次贷违约率为 10.7%，其中严重拖欠率和失赎率分别为 6.8% 和 3.9%。2007 年 3 月 13 日，美国第二大次级抵押贷款机构——新世纪金融公司，因濒临破产被纽约证券交易所停牌，4 月，新世纪金融公司正式申请破产保护，并解雇了大半员工，这一事件标志着次贷危机正式爆发。

2007 年 6 月美国贝尔斯登公司旗下两只对冲基金因投资次级抵押贷款市场而爆出巨额损失。7 月穆迪公司降低对总价值约 52 亿美元的 399 种次级抵押贷款债券信用评级。8 月初，美国最大的按揭公司 Countrywide 表示，次级抵押贷款市场的风暴开始影响高质量的抵押贷款。同时，美国之外的法国、德国、日本等国金融机构开始披露次贷相关损失，次贷危机开始向全球金融体系扩散。2008 年 3 月，美国第五大投资银行贝尔斯登濒临破产，美联储紧急向其注资，并降息 75 个基点。9 月 7 日，美国总统布什宣布：美国政府正式接管美国两大房屋贷款融资机构——房利美和房地美。9 月 14

日，有着 158 年历史的美国第四大投行雷曼兄弟宣布向美国政府申请破产保护。2008 年 9 月底和 10 月初，美国政府出台了总额为 7000 亿美元的金融救助计划。11 月 25 日，美国政府宣布再拨 8000 亿美元，用于解冻消费信贷市场、住房抵押贷款市场以及小企业贷款市场。之后，美联储在 2009 年 3 月 18 日宣布将在未来几个月内收购 3000 亿美元的长期美国国债和最多 1.25 兆美元房利美与房地美发行的抵押贷款支持证券，即所谓“量化宽松”货币政策。在一系列政府政策的推动下，目前看来，美国似乎已走出了金融危机阴影。但美国经济增长的主要动力个人消费依然低迷。美国失业率依然高企，丧失房屋抵押赎回权案例数量再创新高，政府财政赤字居高不下，这些因素均增加了美国经济复苏的不确定性。

本书的主要内容

此次危机肇始于美国次级抵押贷款市场违约率上升，但美国次级抵押贷款市场在美国住房抵押贷款市场的份额并不是很大，而且次贷违约率也不是很高，为什么次贷违约率上升会产生如此严重的后果？次贷危机为何会演变成一场金融危机？这场危机给了我们怎样的启示？本书将结合金融学、经济学、财务学等学科相关理论知识，以定性分析为主，定量分析为辅，对上述问题进行了深入、细致的研究。

除引言外，本书共分为六个部分。第一部分首先简要介绍了美国住房抵押贷款的发放渠道与美国住房抵押贷款的类型，接着探讨了美国次级抵押贷款的发展情况及其原因，最后对美国次级抵押贷款的机制设计进行了分析。一般来说，人们认为次级抵押贷款与优质抵押贷款的区别主要有：借款人不同、贷款发放的类型不同、抵押贷款与房产价值之比不同，即次级抵押贷款的风险较优质抵押贷款的风险要高。但事实上，次级抵押贷款还有一点与优质抵押贷款不同，那就是发放次级抵押贷款的放贷机构对房屋价格看涨，因

此，次级抵押贷款的表现情况更依赖于房价的走势。

鉴于此次危机的重灾区是与次贷相关之信用衍生品，同时，也正是因为这些信用衍生品的复杂性、不透明以及估值的不确定性才使得次贷危机升级为金融危机。因此，本书的第二部分对这些衍生品进行了系统、深入的研究。通过分析发现次级抵押贷款支持证券的交易结构与优质抵押贷款的交易结构存在着显著差别。大多数优质抵押贷款支持证券采用的信用增强机制是优先级/从属层结构，而大多数次级抵押贷款支持证券采用的是超额利差/超额担保(XS/OC)结构。XS/OC结构意味着次级RMBS的信用增级强度会随抵押资产的变化而变化，如果房价上涨，借款人对抵押贷款进行了再融资，那么次级RMBS就会顺利通过绩效测试，如果绩效测试没有通过，那么中间层RMBS就可能遭到降级。如果RMBS遭到降级，将影响到对CDO所做的绩效测试，甚至可能导致CDO发生违约事件，倘若CDO的投资者购买了信用违约互换合约，那么这一事件还将波及信用违约互换合约的卖方。这些金融衍生品所存在的相互依存的、迭屋架床式的结构使得一旦其中的一个出了问题，全部都会受到影响。而这一庞大的金融系统却是建立在房价会不断上涨这一假设上的。

本书的第三部分对次贷危机的爆发与蔓延过程进行了介绍。房价上涨幅度放缓甚或下跌导致次贷违约率上升，次贷放款机构面临重大损失。次贷违约率上升还使次级RMBS之抵押池资产价值下降，并引发了评级机构对次级RMBS的大面积降级行动，这使持有次贷之关联证券的投资者损失惨重，有些投资者甚至陷入破产境地，市场出现流动性紧缩，次贷危机升级为金融危机。

美国次贷危机爆发的导火索是次级抵押贷款违约率上升，那么次级抵押贷款违约率为何会上升呢？本书的第四部分对此问题做了一些探讨。笔者认为，房价停止上涨甚至掉头向下是导致次级抵押贷款违约率上升的一个原因。除此之外，本部分还谈到了证券化与信贷标准降低之间的关系，最后从明斯基的金融脆弱性假说出发，

进一步探讨了次贷危机爆发的深层次原因。按照明斯基对金融危机的分析方法，次贷危机爆发的原因可以归结为证券化过程隐含了安全边际的下降。由于次级抵押贷款证券化是近年来才兴起的创新业务，借款人的信用分数与偿还概率之间还没有建立起对应的统计关系。此外，相当多的次级抵押贷款是在没有适当的文件以证明借款人的收入、财富和就业状况的情况下发放的。因此在很多时候，对借款人的评分带有很大的虚假成分。评级机构决定了证券化产品的安全边际的大小。但迫于发起人的压力，评级机构必须使优先级证券份额尽可能多，否则发起人可以另找愿意给出合意的安全边际的评级机构，这表明证券化过程隐含着安全边际的下降。因而一旦外部环境发生变化，危机的发生将是不可避免的一件事情。

本书第五部分从房价下跌造成的恶性循环、评级机构的错误评级与大规模降级、估值的不确定性以及不透明、去杠杆化等角度就次贷危机的扩散与蔓延的原因进行了分析。

第六部分分析了次贷危机对我国的启示。由于次贷危机爆发的最直接原因是房价的下跌，因此美国次贷危机对我国的启示之一是必须警惕房地产泡沫。其次，如果将分析的视角放在借款人身上，会发现是收入和财富的不平等导致了各种新奇的金融创新工具的发明，并最终酿成了次贷危机，因此，次贷危机给我国的另一个启示是，如果经济发展只是使少数人更加富裕，而不是惠及大众，特别是社会的底层民众，那么这样的发展是不可持续的，也是不稳定的。

试图的创新之处

美国次贷危机是近些年发生的大事，很多经济学家认为这场危机比 20 世纪 30 年代的经济大萧条还要严重，1929 年美国股市崩盘后是长达十年的经济大萧条，直到第二次世界大战爆发才让美国经济逐步摆脱衰退。因此，现在看来，危机似乎已经过去，但复苏可

能只是表象而已，是政府用“直升机撒钱”的战果，如果一些深层次的问题不能得到解决，那么危机将再次重演。对次贷危机发生原因的讨论中，认为证券化是这场危机爆发的罪魁祸首的观点比较普遍，但国内的文献大多是从证券化引发的信息不对称问题等方面进行的探讨，可是如果仅认为是证券化使放贷机构产生了道德风险与逆向选择问题，进而使信贷标准下降，最终引爆了次贷危机，那么就无法解释为何放款机构自身在此次危机中也遭受了巨大损失。证券化在此次危机中确实扮演了重要的角色，但证券化所存在的问题还不仅是信息不对称问题。2005年，我国也开始了证券化的试点工作，本书对次贷危机的爆发原因进行了深入分析，并着重分析了证券化与此次危机的关系。

次贷以及次贷之关联证券的绩效表现对房价非常敏感，次贷危机爆发的直接原因就是房价的下跌，次贷危机对我们的一个启示是必须警惕房地产泡沫。由于我国各地区经济发展存在较大差异，东部地区发展水平较高，中部与西部地区相对落后。不同地区的土地价格与劳动力成本并不相同，因而不同地区的房屋建造成本并不相同，因此，笔者分地区考察了中国房价的泡沫化程度并对高房价的原因进行了分析，笔者认为，我国房价较高的原因可能是因为需求过于旺盛，也可能是房地产开发企业囤地、囤房导致的。对于不同地区，高房价的形成原因并不相同。除此之外，收入过低也是房价高的原因。目前对于我国房价过高问题，大多是指责土地价格高、开发商囤地、囤房以及房地产企业利润过高，而忽视了居民的收入水平过低也会导致房价相对而言过高，因此，切实提高居民的收入水平可以化解我国房地产业存在的潜在风险。

次贷危机爆发的导火索是次贷违约率上升，而借款人违约的原因除了房价因素外，最可能的因素就是无力支付月供。因此，可以说，收入不平等是次贷危机爆发的另一个根本性的原因。美国通货膨胀的信贷供应、发达的金融市场暂时解决了收入不平等引起的居民的有限的消费能力与过剩的生产供应之间的矛盾，但膨胀的信贷

并没有从根源上解决这一矛盾。我国也存在着生产过剩与居民有限的消费能力之间的矛盾，我国是通过大量的出口来暂时弥补了国内有效消费需求的不足。与美国相似，出口也没有从根本上解决这一矛盾，要彻底解决这一矛盾，需要缩小城镇居民家庭间、农村居民家庭间以及城镇家庭与农村家庭间的收入差距，大幅度提高中低收入阶层的可支配收入。因此，我国可实行最后雇主（ELR）计划以缩小居民收入差别，提高底层民众收入，从而解决制约我国经济发展的消费需求不足的问题。

ABSTRACT

The subprime crisis originated from the rise of the default rate in the U. S. subprime mortgage market, but the market share of subprime mortgage market is not very big, and the subprime defaults are not very high, why the rise of subprime defaults produces serious consequences? Why the subprime mortgage crisis becomes a financial crisis? What enlightenment will be to us? This thesis analyzes these above issues deeply, combines finance with economics, and applies the qualitative analysis and quantitative analysis.

The thesis is composed of six parts except for introduction. In part one this thesis presents the mortgage distribution channel and the U. S. housing mortgage types, and then discusses the development of U. S. Subprime mortgages and its reasons, finally analyzes the mechanism design of the U. S. subprime mortgages. Generally speaking, the main differences between the subprime mortgages and the prime mortgages are: the borrower, the types of loans, and the ratio of mortgages value to the property value. That's to say, the risk of subprime mortgage loans is higher than prime mortgage loans. But in fact, one more difference between subprime mortgages and prime mortgage is that the lending institutions of subprime mortgage is essentially to expect the rise of housing price, therefore, subprime mortgages are more dependent on the trend of the housing price.

Since the credit derivatives of subprime mortgages are the epicenter

of the crisis, and at the same time, it is because of the complexity, opaque and the uncertain valuation of these credit derivatives that makes the subprime crisis upgrade to financial crisis. Therefore, in part two, the thesis analyses these derivatives systematically and deeply. Based on systemic analysis, this thesis points out the significant differences of the deal structure between subprime mortgage backed securities and prime mortgage backed securities. Most prime mortgage-backed securities utilize the six-pack structure; while most subprime mortgage backed securities utilize excess spread/overcollateralization (XS/OC) structure. XS/OC structure means the strength of the credit enhancement will changes with the collateral, if housing price rises, the borrower can refinance, and subprime RMBS will go smoothly through the performance tests, if the performance test fails, then mezzanine tranches of RMBS will be degraded. If credit downgrade happen, which will affect the performance of CDO, and may even cause CDO default events. If the CDO investors buy the contract of credit default swap, then this incident will also impact the sellers of the credit default swap contract. This is a huge financial system which based on the hypothesis of the rising house prices.

In part three, the outbreak and spread of the subprime crisis were introduced. The rise of housing price slowed or fell led subprime defaults rising, and the subprime lending institutions were facing a great loss. The rise of subprime defaults still made the value of the collateral decline and sparked the subprime RMBS downgraded, which made large losses to investors of the subprime related securities, some investors even went into bankruptcy, the market liquidity squeezed, the subprime crisis upgraded to financial crisis.

The U. S. subprime mortgage crisis provoked by the rise of subprime mortgages default rate, the why the subprime mortgage defaults rate would rise? In part four, this thesis discussed about the problem. This

thesis argues the rise of the housing price stopped is the reason of subprime mortgage defaults rate rising. In addition, in this part the thesis also discussed the relationship between the securitization and the lower credit standard. Finally, the thesis analyzed the underlying reason of the subprime crisis from the Minsky's financial fragility hypothesis. According to the Minsky' financial fragility hypothesis, the subprime crisis can be attributed to the decline of the margin of safety. Due to the subprime mortgage securitization is a new business in recent years, there hasn't established the statistical relationship between the borrower's credit score and the probability of repayment. What's more, a large part of the subprime mortgages are without appropriate documents certifying the borrower's income and wealth and the employment situation. Therefore, in many cases, the score is false. Rating agencies decides the margin safety of the securitized product.

But under the pressure of originators, rating agencies must make priority securities as much as possible; otherwise originators can find other rating agency which will afford desirable margin safety. This shows the securitization process implied declined safety margin. So when the external environment changes, the crisis will occur inevitably.

In part five, the thesis analyzed reasons of the spread and diffusion of the subprime crisis from the angles of the vicious circle caused by falling house prices, the error ratings and large-scale downgrade made by rating agencies, the uncertainty of valuations and opaque and the deleveraged.

In part six, the thesis analyzed the enlightenment of the subprime crisis to us. Because of the direct reason of subprime crisis is the house price falling, so the first enlightenment of the U. S. subprime mortgage crisis to us is that we must be vigilant on the real estate bubble. Secondly, this thesis summarized the practice of the asset securitization in Chi-

na and put forward some views on its future development. If turn the horizon to the borrower, we can find it is the inequity of income and wealth that leads the various new financial innovation, and finally incurs the subprime crisis, therefore, another enlightenment of the subprime crisis to us is that the economic development is unsustainable and unstable, if the economic development can only benefit few people instead of the public, especially the first floor populace.

The U. S. subprime mortgage crisis is a recent event, and it is believed that the crisis is more serious than the Great Depression. After the stock market crash in 1929, America had suffered great economic depression for ten years, and the economy came out of recession until the Second World War broke out. Therefore, it seems that the crisis is over, but the recovery may be a smoke signal. It is the gain of government dropping money from helicopters. If some deep problems cannot be solved, the crisis will happen again. In the discussion of Causes of the subprime crisis, the common view is that securitization is the culprit, but most of the literatures in China were from the aspects of the asymmetry information. However, the moral hazard and adverse selection problems produced by securitization could not explain why the lenders in this crisis, suffered huge losses. The thesis concludes that securitization really played an important role in crisis, but the problem of securitization is not only the information asymmetry problem. In 2005, we formally decided to commence the trial work of MBS, the thesis analysed causes of subprime crisis, and emphasized the relation between the crisis and securitization. This thesis contributes to more comprehensive knowledge of securitization, the new financial innovation tools. Therefore, this topic has certain theoretical and practical significance.

The performance of subprime mortgage and related subprime securities is very sensitive to housing price, and the direct cause of the sub-

prime crisis is the falling housing price, so we must be alert to the real estate bubble. The economic development is uneven in China. In eastern region the level of the economic development is higher, while in central and western regions the economic development is relatively backward. The land price and labor cost in different region are not the same, so the housing building cost in different regions is not the same. This thesis analyzes the level of housing bubble and the reason of high housing price in China from perspective of regions. The thesis concludes that reasons of high housing price may be the strong demand, or the real estate development enterprises storing up land. For different region, the reason of high housing prices is not the same. In addition, the low income is the reason of high housing price. At present in China, it is viewed that the overpriced land price, real estate development enterprises storing up land and houses, and the high profit in real estate industry, are the reasons of high housing price. Most people ignore the low income level of resident can also lead to higher housing price relatively. So the author views that to increase the income of resident can dissolve the potential risk behind in Chinese real estate industry.

The subprime crisis mainly stems from the rise of subprime default rate, and the reasons of subprime default rate are housing price, and subprime mortgage borrower being unable to pay for month. Therefore, it can be said that income inequality is another fundamental reason of subprime crisis. Through the expansion of credit supply and developed financial markets, the problem of the contradiction between the residents' limited consuming capacity and surplus production capacity caused by income inequality is solved, but the supply of credit expansion can not be solved thoroughly. There exists the same conflict between overproduction and residents' limited consuming capacity in China, by large amount of exportation the insufficient effective demand is temporarily solved. Similar

to United States, export can not solve the problem fundamentally. In order to solve this problem thoroughly, we need to narrow the income gap between urban households, rural households, urban households and rural households, greatly improve the disposable income of low-income class. The thesis thinks that China can implement the last employer plans to narrow income differences, and improve the income of bottom people, these measures can solve the problem of the insufficient effective consumption demand which restricts our economic development.

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