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DIPARTIMENTO DI SCIENZE ECONOMICHE E AZIENDALI
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CORSO DI LAUREA IN ECONOMIA INTERNAZIONALE
L-33 Classe delle lauree in SCIENZE ECONOMICHE

Tesi di laurea

CROLLO DEL MERCATO DELLE CARTE COMMERCIALI
CARTOLARIZZATE
THE COLLAPSE IN ASSET-BACKED COMMERCIAL PAPER
MARKET

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Anno Accademico 2015-2016

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1. Introduction

This review of the literature on the 2007-09 crisis discusses the pre-crisis conditions, the crisis triggers, and the asset-backed commercial paper effects. The pre-crisis conditions contributed to the housing price bubble and the following price decline that led to a risk crisis in which liquidity shrank due to insolvency concerns. Rather than selling the mortgages or mortgage-backed securities directly into financial markets, some large banks moved them to firms out of the banks' balance sheets and financed these firms by issuing commercial paper. The result was an unprecedented increase in the volume of outstanding asset-backed commercial paper (ABCP) from 2005 until the financial crisis hit in mid-2007, where the collapse started.

This paper provides a comprehensive introduction to asset backed commercial paper programs. It focuses on the construction of ABCP structures mentioning risks, backed funds, and typical assets purchased or financed by these structures. Afterwards, it documents the role of asset-backed commercial papers in the financial market and the implications for banks as liquidity providers.

Asset-backed commercial paper rollover risk was an important factor at an early stage of the financial crisis. The asymmetric information about the credibility of the value of assets backed by commercial papers in the summer of 2007, staged anxiety through ABCP purchasers. Due to its short maturity time and high ratings, buyers had viewed asset-backed commercial paper as a very low-risk security, but the consciousness about the real value of these assets caused an immediate decline in the market and trading in ABCP dried up. The plunge in outstanding ABCP volume started in the third quarter of 2007 and continued for a year. The total value of asset-backed commercial paper outstanding fell by 37 percent, from \$1.18 trillion in August 2007 to \$745 billion in August 2008. Concluding, this paper shows that as the crises deepened, the drop in asset-backed commercial paper market and withdrawals in financial institutions are strongly correlated with the risk perception of investors.

2. Financial Crisis

2.1. Definition of a financial crisis

Financial crises are not a new phenomenon. Historically, the world's economy has gone through financial crises and the current one is most probably not the last one that mankind will experience. There is a considerable literature on the subject (e.g. Calomiris and Gorton, 1991; Diamond and Dybvig, 1983; Charles, Calomiris and Mason, 2003; Gorton, 2010; and Thakor, 2015). However, in order to understand the 2007-09 global financial crisis and its implications, it is important to initially define what a financial crisis is.

A financial crisis is a situation in which the value of financial assets drops rapidly and as a result, banks cease to advance funds to others. The latter begin to demand early repayments of loans and other financial instruments, liquidate holdings of financial assets that can be sold and increase collateral requirements to a degree that exceeds the expectations of market participants. This leads to a “freezing” of financial markets, where trading volumes fall considerably and parties cannot be induced to trade financial instruments no matter what prices are offered (Financial Times).

This causes wide-scale fear of wealth loss between private individuals, further contributing to the crisis by selling off investments, securities or withdrawing money from their bank accounts as they believe that the values of those assets will plump if they remain in a financial institution. This means that liquidity evaporates causing banks and other financial institutions to call in their loans and to further liquidate holdings of financial assets. This wide range of financial assets can be subject to such simultaneous “loss of confidence” including stocks, government bonds, bank deposits, asset backed securities and insurance contracts (Financial Times). After this quick overview of what a financial crisis is, this paper will now dive into the causes and consequences of these economic meltdowns.

2.2. Evolution of 2007-09 crisis

The 2007 crisis began when the real estate bubble¹ burst and many high rates mortgages defaulted. The rapid string of sell-offs brought lower asset prices and more savings were

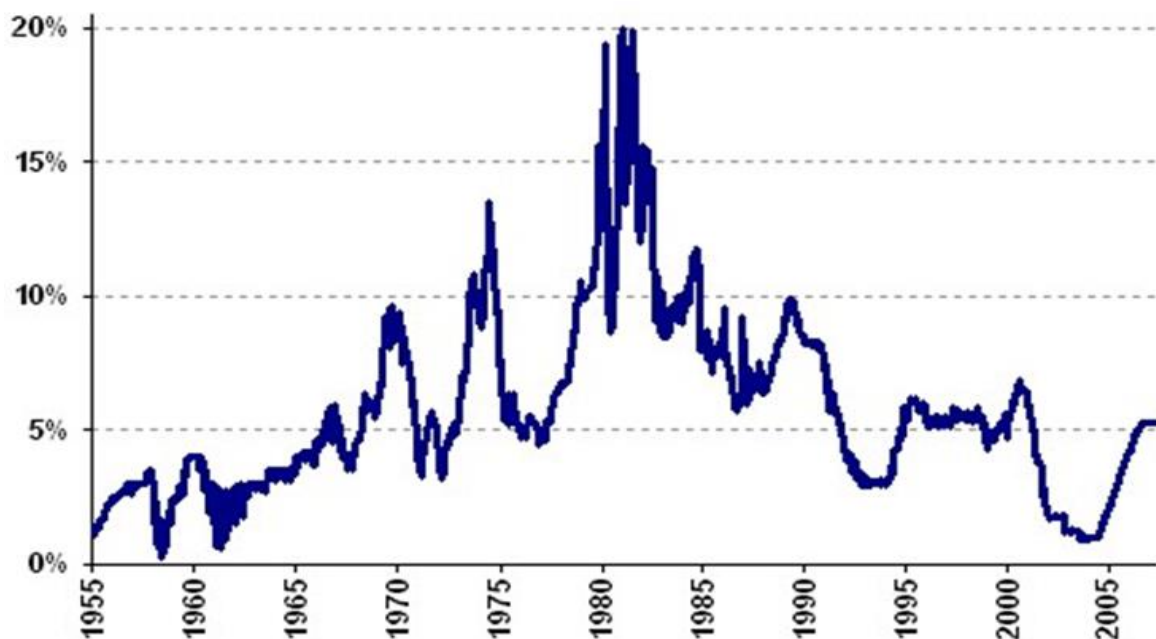
¹ A housing bubble is a run-up in housing prices fueled by demand, speculation and the belief that recent history is an infallible forecast of the future. Housing bubbles usually start with an increase in demand, in the face of limited supply which takes a relatively long period of time to replenish and increase. Speculators enter the market, believing that profits can be made through short-term buying and selling. This further drives demand,

withdrawn. The assets that were overvalued caused wild sell-offs, and this further deteriorated the situation leading to a loss of welfare and recession.

2.2.1. The boom

These last decades were represented by a remarkably high amount of macroeconomic stability. Since the Great Depression to the Crisis of 2007-2009, we can see what economists such as Steven J. Davis and James Kahn (2008); James Stock and Mark Watson (2003) describe as the “great moderation”: -an interval with less recession, with a moderate volatility of growth and with less risk of loss. The great moderation was a prosperous time period that only in retrospect we have linked to the rise of house prices of the aforementioned economic meltdown.

In this phase, one of the factors that contributed to low-inflation was the Federal Reserve that decreased the Federal fund rates from 6,5% in May 2000 to 1,75% in December 2001, creating an overflow of liquidity in the economy. The Fed continued to lower interest rates, and in June 2003, it arrived in 1%, - the lowest rate of the past 45 years (See graph 1).



Graph 1: Federal Funds Rate 1955-2007; Source: St. Louis Federal Reserve.

With the interest rates being at their lowest point, and with moderate growth, individuals became confident that the value of houses would increase. Some borrowers naively trusted mortgage brokers who earned more money placing them in risky loans rather than safer ones.

that at some point decreases, or stagnates at the same time supply increases, resulting in a sharp drop in prices - and the bubble bursts.

They began to borrow large amounts of money relative to their incomes. Lenders also became more confident that they could lend large quantities of money fueled by what they expected to be a rising value of houses as a financial asset. So the house prices rose considerably with prices doubling and even tripling in many countries (see figure I).

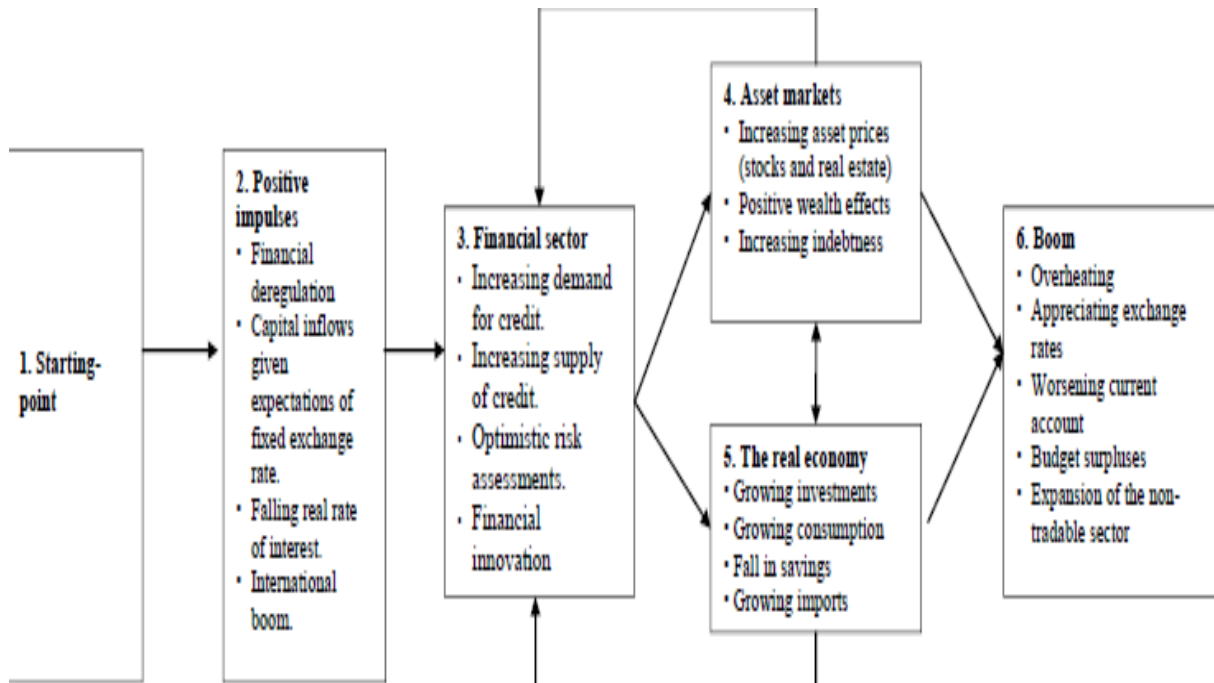


Figure I: The boom phase. A stylized picture; Source: Riksrevisionen (2010): The Causes of the Global Financial Crisis and their Implications for Supreme Audit Institutions. Swedish National Audit Office, Stockholm.

However, the growth in demand for mortgages was not coordinated by a growth in bank deposits, thus financial institutions faced the challenge of having to find funds elsewhere. This situation made them progressively more vulnerable on the wholesale of funding markets. Over time, banks became more and more confident and alleviated credit conditions. They also distributed mortgages to subprime borrowers with poor credit histories who could not repay them and, -who were least equipped to handle the payments. This contributed to the financial crisis as lenders originated poor quality loans then sold them on the secondary market, passing risks to investors. Loan lenders used different types of mortgages to allow debtors with a low credit profile to afford these loans. These types of loans were principally nonprime loans, which contain sub-prime and Alt-A loans that typically did not have documentation of borrowers' incomes and have higher loan-to-value or debt-to-income ratios, which grew dramatically (Audit Institution, Stockholm, 2010). The mortgages were collected into exotic financial assets, with different performance levels, that were given high ratings by credit ratings agencies, and were sold to investors looking for high earnings at low risk (investors

included many other banks and financial institutions totally unconnected with housing markets). Now even the worst loans could find a buyer.

Gorton and Metrick (2009) report that about \$2.5 trillion of subprime mortgages were initiated between 2001 and 2006, with half of them given during the time period 2005-06. Low interest rates and simpler lending proceedings assured the expansion in debt borrowings. Demyanyk and Van Hemert (2011) document that the quality of loans deteriorated for six consecutive years prior to the crisis². These mortgages were securitized at an increasing rate. Gorton and Metrick (2009) also reveal that 70% of subprime originations in 2005 and 2006 were securitized into Residential Mortgage Backed Securities. Private sector and investment banks developed new ways of securitizing subprime mortgages. By packing them into “Collateralized Debt Obligations³”, overnight repurchase agreements (repo loans)⁴, and other asset-backed securities (especially asset-backed commercial papers). They detached the cash flows into diverse “tranches” to appeal to different categories of investors with different tolerance levels for risk. Institutions such as Bear Stearns and Lehman Brothers borrowed at very short term and held risky longer-term assets, with low levels of capital or reserves to cover changing market conditions. When short-term liquidity funding’s like ABCPs and repos suddenly dried up, these financial institutions effectively faced a “run” and foundered themselves exposed with very little capital. Mian and Sufi (2008) demonstrated empirically that the capacity to securitize subprime loans was the determinant factor in boosting the housing bubble. Asset price bubbles are represented by a self-strengthening cycle where price increases cause prices to increase even more. However, as the level of asset prices moves out of line, the bubble gets leaner and leaner until it finally bursts.

² The quality is measured as the performance of loans, adjusted for differences in borrower characteristics like the credit score, level of indebtedness, loan amount and ability to provide documentation; differences in loan characteristics like product type, amortization term, loan amount, and mortgage interest rate; and macroeconomic conditions like house price appreciation, level of neighborhood income, and change in unemployment.

³ Collateralized debt obligations (CDOs) are a type of structured credit product in the world of asset-backed securities. The purpose of these products is to create tiered cash flows from mortgages and other debt obligations that ultimately make the entire cost of lending cheaper for the aggregate economy.

⁴Overnight repos are a form of “collateralized borrowing” whereby a bank pledges its assets as collateral in an overnight loan with another bank.

2.2.2. The bust

More home loans led to more homebuyers and consequently more appreciation in home prices. This increase in the demand for houses, made possible by the housing price bubble, had a significant role in the crisis that was to come. As the growth continued, the economy became more and more exposed to negative stimuli. Holt (2009) stresses that the initial drop in the value of houses was a moderate 2% from the beginning of 2006 until the end of the year. This small recession in housing values sparked an immediate reaction for the high risk debtors. Liebowitz (2008) records that the foreclosure rates raised by 43% towards the end of 2006, a shocking 75% increase compared to the previous year. The defaults on the mortgages started to increase in considerable numbers and led to unexpected losses on the product values, leaving investors holding huge amounts of 'risky' assets that in the worst case would become worthless. The decline in house prices meant that the homeowners (especially the ones with flexible rate loans) had negative impartiality in their houses (since most of them did not put capital in the beginning). When the rates increased they found themselves paying even higher monthly loans fees.

As these debtors defaulted, credit rating agencies began to undervalue mortgage-backed securities; the initial negative impulse that turned the boom into bust (Marshall, 2009). The value of asset backed commercial papers declined by almost 300 billion dollars during the second half of 2007 and banks that provided support financing for those asset-backed issues started facing liquidity pressures. This constricted credit markets, increased lending rates and, decreased asset prices (e.g. home value), speeding up the decline of this spiral prices. The repayment capacity of prime borrowers was further threatened. As asset values fell, individuals and companies become over-indebted. The anticipated increase in negative risk was reflected in a decrease in the supply of credit. Banks created off-balanced sheet affiliated entities such as Structured Investment Vehicles (SIVs) to purchase mortgage-related assets that were not subject to regulatory capital requirements (Baily, Johnson and Litan, 2008). While securitization was made to spread out risks precisely the opposite occurred.

These innovative securities led to higher risks in the industry and eventually these risks led to higher-than-expected defaults, causing the securities to fall out of favor with investors, precipitating the crisis (Thakor, 2015). Investors started to sell assets to meet liabilities, causing a dangerous circle of mortgage-collapse pressuring asset values even lower. This situation was explained also by Gennaioli, Shleifer and Vishny's (2012) model, where new securities with high risks, that investors ignore, are swamped to meet high initial demand, and then dropped by investors when a perception of the risks causes a shuttle to safety, letting the financial institutions to carry the risky securities. The real economy slows down as savings

increase. Hundreds of billions of dollars in losses in mortgages and mortgage-related securities disrupted markets and financial institutions that had significant exposures to those mortgages and had borrowed heavily against them. The boom turned into a bust characterized by, financial crisis, bank failures and a period of economic depression (See figure 2).

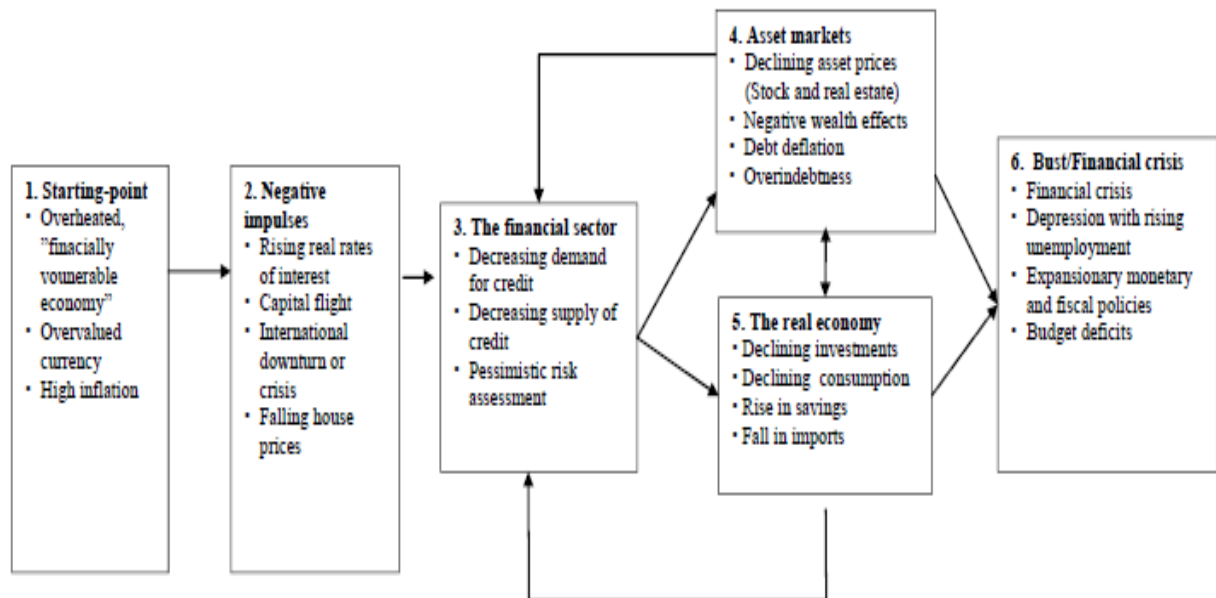


Figure 2: The bust phase. A stylized picture; Source: Riksrevisionen (2010): The Causes of the Global Financial Crisis and their Implications for Supreme Audit Institutions. Swedish National Audit Office, Stockholm.

3. Asset-backed commercial paper (ABCP)

Asset-backed commercial papers emerged for the first time in the middle of 1980. They have been an important category in the short-term markets for decades. Asset-backed commercial paper programs grew rapidly in the 1990s and then again in the crucial global saving glut period⁵ from 2003 to 2007. ABCP played a central role during the financial crisis of 2007-2009. Before analyzing the impact of asset-backed commercial papers in the crisis we need to understand the function that they have in the economy.

3.1. What is an asset-backed commercial paper?

Asset-backed commercial paper is primarily a method of maturity transformation, a way to fund a group of long-term assets with short term liabilities. ABCP is an unsecured corporate debt, meaning that it is backed not by a guarantee of collateral but only by the corporation's promise to pay. As Bate, Bushweller and Rutan (2003) highlight, - "asset-backed commercial paper are a form of senior secured, short-term borrowing, that offer low-cost financing to companies that could not otherwise directly borrow in the commercial paper market". ABCP is designed to meet specific needs of investors, which often are money market mutual funds. It will include different improvement for credit and liquidity, so it can meet those specific goals. By 2000, commercial paper had risen to \$1.6 trillion from less than \$125 billion in 1980 (National Commission of US, February 2011).

For issuers, asset-backed commercial paper is a way of raising capital economically at a short-term interest rate. For investors, asset-backed commercial paper offers return slightly higher than Treasury bill in exchange for taking on minimal credit risk (Andrew Metrick, 2015). In this way ABCP allows financial institutions to offer a new funding option for their clients by merging their assets to back the paper⁶. With asset-backed commercial papers the mutual funds could earn solid returns, stable companies could borrow at a reduced price and Wall Street firms could earn for putting the deals together. This type of commercial paper is considered a very safe investment because only financially stable corporations are considered able to issue ABCP.

⁵ Global saving glut describes a situation in which desired saving exceeds desired investment. Bernanke, chairman of the Federal Reserve was the first one correlating the significant increase in the global supply of saving with the 2007-2009 financial crisis.

⁶ These assets may consist of trade receivables, auto loans, student loans, corporate loans, or other types of financial assets.

The maturity of ABCP can reach a maximum of 270 days, after this period the asset must be repaid. The borrowers usually “roll them over”⁷ when the loan came due, and then again and again. The purpose of this “short maturity time” is to avoid having to register the securities at the Securities and Exchange Commission (SEC)⁸, so reducing the costs of reporting and agreements.

Nearly all ABCP programs are rated by nationally recognized statistical rating organizations. Ratings reflect the ability of the program to pay in full and on time. Short-term prime ratings, assigned by Moody’s Investors Service, are P-1 (the highest), P-2, and P-3 (the lowest). The majority of asset-backed commercial paper programs have a P-1 rating by Moody’s because they are secured by receivables and over collateralized, they are secured by highly rated and various groups of securities, or they have contractual support characteristics (Moody’s, 2007). Ratings generally determine the qualification of paper for purchase by money market funds.

3.2. How is it issued?

The emanation of ABCP begins with the seller of the security’s prime assets (e.g. a bank that wants to sell its credit card balances or a corporate that wants to sell its corporate loan dues). The seller sells its assets to a Special Purpose Vehicle (SPV), which is set up by a “backer” (a bank or other financial institutions) to emit ABCP. The SPV also is known as the “conduit” or “program” because it is responsible for collecting and distributing funds produced by the amount of asset-backed commercial paper owned by investors. During the life of the investment, the sponsor is responsible for monitoring developments that could affect the performance and credit quality of the assets in the SPV, e.g. increased loan delinquencies (Frank Gianatasio, 2013). The typical investors in commercial paper, are sensitive not just about eventual repayment but also about the timing of repayment because these funds are exposed to withdrawals from their own short-term investors. So the sponsor’s role is to guarantee that ABCP investors will receive their interest fees and their original amount of capital when the credit matures.

⁷ To roll means repaying commercial paper with the proceeds from a new issuance of commercial paper.

⁸ The Securities and Exchange Commission (SEC) is a US government commission created by Congress to regulate the securities markets and protect investors

3.3. Conduits

A conduit is a bankruptcy remote special purpose vehicle or entity, which means that it is a separate business entity and is not rolled up into the sponsoring company's balance sheet. The assets and debts of ABCP programs are not registered in the sponsoring company's financial accounts⁹. They are ongoing entities that have a revolving structure, with assets going in and out of the pool of collateral that backs the ABCP. There are three categories of conduits: multi-seller, single-seller and Structured Investment Vehicles (SIVs). The incomes, from the ABCP issuance in multi and single-seller conduits, might be used to fund new mortgages loans in the case of mortgage finance company. Each transaction funded by the conduit is structured similarly to a term securitization: an originator or Seller of the assets sells them to a special purpose vehicle in a true sale (Bate, Bushweller, Rutan, 2003). In some cases, conduits fund the purchase of rated securities rather than receivables. The buying SPV is financed by a mortgage from the ABCP conduit. The supply of funding depends on the value and credibility that the asset has. The conduit agreement will have certain performance triggers to cause early payments or limit investors' exposure to degenerating assets.

3.3.1. Types of asset-backed commercial paper conduits

Fitch Ratings Company published on November 2001 a summary explaining in detail all the types of asset-backed commercial paper conduits. They were differentiated by the sponsor's role in referring the assets to be financed through the program as well as the purpose of the financing. The first program structure that is introduced is:

- Single seller – with a sole originator of the conduit's assets. Often the sponsor of the vehicle is the originator of the assets (commonly mortgages) and uses the conduit as an alternative source of funding for its own business activities. Most single-seller conduits are extendible, so they can extend past the original maturity date if they are unable to roll the ABCP at maturity¹⁰.

- The second one under consideration is: Multi seller program– The conduit buys assets (often loans) from a number of different originators (bank and/or other financial institutions). The conduit is used to provide off-balance sheet capital market financing for the sponsor's clients, but can also be used by the sponsor. The asset-backed securities that are purchased to

⁹ This is done to free up the sponsor company's balance sheet and improve its financial ratios (see "Off-Balance-Sheet Entities: The good, the Bad and the Ugly").

¹⁰ To roll means repaying commercial paper with the proceeds from a new issuance of commercial paper. However, the extension is not indefinite; they have to auction assets if they cannot roll on the extended deadline.

be used in the program are bought from more than one originator. For this reason, a multi-seller conduit provides more originator diversification and is potentially less risky. Multi-seller programs also often apply some type of credit improvement that helps to diminish credit and liquidity risks. This credit enhancement can be a cash reserve or guarantees from sponsor or third-party banks.

- Structured investment vehicles (SIVs)— is another form of ABCP conduits/programs. Many SIV's are administered by large commercial banks or other asset managers (investment banks or hedge funds). They issue ABCP as a way to fund purchases of investment securities. They usually invest the majority of their portfolios in highly-rated securities like, "AAA" and "AA" assets, which include an allocation to residential mortgage-backed securities. A partial liquidity facility supports timely repayment, and is sized based on an analysis of cash inflows and outflows over a one-year time horizon. SIVs operate on a market-value basis. They are monitored on a daily basis, and must meet strict liquidity, capitalization, leverage and concentration guidelines.

3.3.2. How does a conduit work?

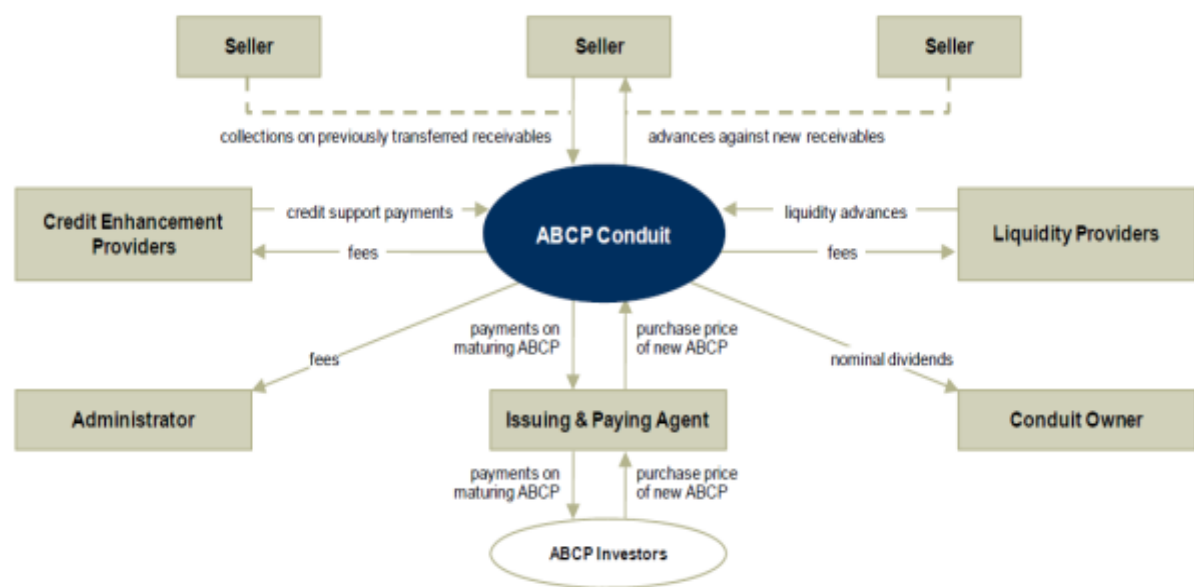
As mentioned by Bate, Bushweller, Rutan (2003), typically, the conduit applies the proceeds of new ABCP issuance to repay maturing ABCP, a process called "rolling" ABCP. This allows the conduit to fund even long-term assets continuously. Moody's explain that to ensure repayment in the event new asset-backed commercial paper cannot be issued, so to guarantee funding to the Seller, each transaction usually has a backup liquidity facility sufficient to cover the Face Amount—principal plus interest to maturity—of ABCP issued to fund the transaction. This liquidity convenience may absorb different type of risks connected with the failure of the seller, but not the ones connected with the defaulters on the individual receivables. This means that the liquidity is generally available in an amount equal to that of non-defaulted assets (see graph 2).

The asset-backed commercial paper conduit has certain facilities like credit improvement, prevention of agreements, and sub-limit loans for surprising expenses. These facilities are needed to confirm if ABCP is repaid on time and entirely, without taking into account if any transaction may be causing a problem. As already mentioned asset-backed commercial paper programs are structured to prevent registration requirements because they are really expensive and time absorbing, and limit the flexibility of the program.

ABCP conduits are virtual subgroups of the "central" bank. Moody's says that if the bank provides full liquidity support to the conduit, for regulatory purposes, the liquidity support

given may be treated as a direct credit substitute. In this case the assets held by the conduit are aggregated with those of the bank. Being a low risk and a low return deal asset-backed commercial paper conduits are not only arranged by banks, but also by some large issuers that launch their own conduits. Given the short maturity, the secured status and credit improvements, these securities rarely fail. Furthermore, a company would have to be in a really good rank in order to convince a sponsor to guarantee its asset-backed commercial papers.

Generic ABCP Conduit Structure



Graph 2: Generic ABCP Conduit Structure; Source: Asset-backed commercial paper: a primer. February 2011 BofA Global Capital Management.

3.3.3. Fully and partially supported asset-backed commercial paper programs

At the end of July 2007, about 87% of programs had explicit liquidity support from at least one financial institution in the form of a bank back-up line (see Table I). As an alternative, or in some cases a complement to liquidity support from a financial institution, 24% of programs at that time issued paper with options that allowed them to extend the maturity of the paper past its due date for a fixed period of time at a pre-set penalty rate (Covitz, Liang and Suarez, 2012).

ABCP programs can be either fully-supported or partially-supported. A fully supported ABCP program is one in which credit support equal to 100 percent of the program's outstanding commercial paper (CP) is in place, while partially supported means that only a fraction of the

outstanding CP is covered by a credit enhancement facility (Charles Austin Stone and Anne Zissu, 1994). In fully-supported programs the support facility absorbs any losses on the assets and provides cash to cover any timing differences with respect to repayment. It typically consists in a letter of credit issued by a highly-rated bank (Support Provider), which directly guarantees the ABCP. Holders of asset-backed commercial paper, issued under such an arrangement, have the right to seek payment directly from the Support Provider if the Issuer fails to fully retire ABCP at its maturity. In these programs the Support Provider bears the liquidity and the credit risk¹¹.

Moody's analysis of a fully-supported program is based on the Holders of asset-backed commercial paper issued under such an arrangement have the right to seek payment directly from the Support Provider if the Issuer fails to fully retire ABCP at its maturity. In these programs the Support Provider bears the liquidity and the credit risk. Moody's analysis of a fully-supported program is based on the financial strength of the support provider, rather than on the quality of the assets. If the rating of the support provider is lowered, the rating of the ABCP program will most likely be lowered. The fundamental asset is mainly structured with some form of first loss credit improvement usually posting more collateral than is needed to obtain or secure financing.

Partially-supported ABCP programs, are qualified for more advantageous treatment under the risk-based capital standards, and could continue to offer funding at attractive rates to Sellers. In the partially supported programs the investor bares a portion of the credit risk. In this type of programs, the support facilities are not intended to fully protect investors from the credit risk associated with

the receivables. Investors must rely, to some degree, on the performance of the receivables in which the conduit has acquired an interest. However, if a partially-supported Asset-backed commercial paper program has been assigned a rating of Prime-1, the magnitude of the credit risk carried by investors must be extremely small to be consistent with that rating. This means that the rating of partially-supported programs depends on a joint analysis of the quality of the assets and the credit strength of the support facilities.

¹¹ The Support Provider in a fully supported program bears the risk that collections on the receivables in which the Issuer has acquired an interest will ultimately be insufficient to fully reimburse the Support Provider for payments made to holders of the ABCP. That risk is referred to as the credit risk of the receivables. The Support Provider also bears the risk that collections on the receivables, although ultimately received, will not be received quickly enough to provide funds to retire maturing ABCP on its scheduled maturity date. That risk is referred to as liquidity risk

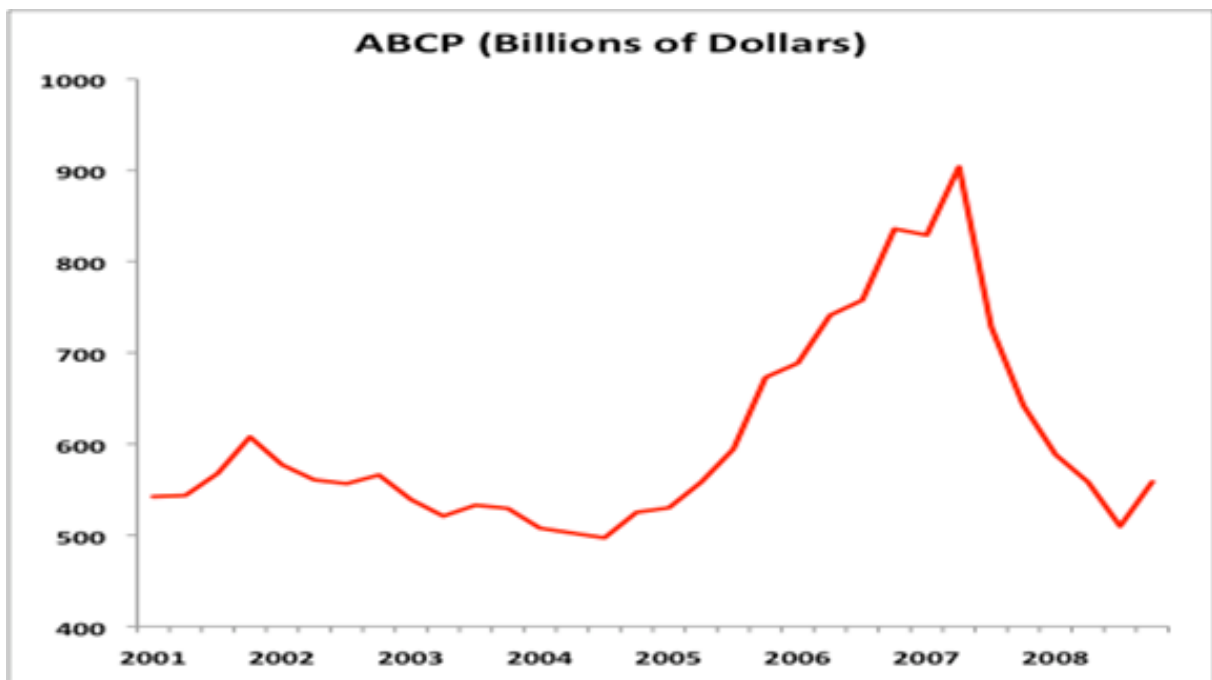
4. Asset-backed commercial paper and the financial crisis of 2007-09

In January 2007, the total value of commercial paper accounted for \$1.97 trillion, of which 56.8% was asset-backed commercial paper, 34.4% was financial commercial paper, and 5.7% was corporate commercial paper (see Kacperczyk, 2013). Making commercial paper the largest asset held by money market.

Acharya, Schnabl, and Suarez (2009) illustrate that, in January 2007, 296 conduits were authorized to emanate asset-backed commercial paper. The conduits were sustained by 126 sponsoring financial institutions. The majority of sponsoring financial institutions were large commercial banks, many of which sustained more than one conduit. In total, commercial banks accounted for \$903 billion of asset-backed commercial paper outstanding¹². Full credit guarantees are designed to prevent capital requirements necessary for assets held by commercial banks. An additional number of outstanding commercial paper was issued by conduits with extendible notes agreements, which can extend the commercial paper's maturity for a limited period of time. The remaining was issued by structured investment vehicles with credit guarantees that typically cover ABCP, but not the longer-maturity debt. At an early stage asset-backed commercial paper rollover risk was a one of the causes of the financial crisis. When the value of subprime loans became highly unpredictable in the third quarter of 2007, purchasers of ABCP grew anxious that the assets backing their commercial paper could fall in value. They had improperly viewed asset-backed commercial paper as a very low-risk security. The unexpected alertness of risk caused an essential freeze in ABCP purchases and trading in ABCP dried up. The crunch is visible in (graph 3), which shows the quick drop in outstanding ABCP volume beginning in the third quarter of 2007 that continued for a year.

Firms that had borrowed by emitting asset-backed commercial paper faced an instantaneous risk to their survival. The concern about the value of subprime loans made their assets hard to sell, and concerns about their safety made it impossible to borrow in open markets. As their asset-backed commercial paper matured and could not be rolled over, some of the firms break down. In other cases, banks chose to rescue the shadow banks that they had created, in order to limit legal risks and reputational damage (Cecchetti, 2008). Subsequently banks faced elevated liquidity demands and pressures to sell assets when the cost of liquidity had raised and asset prices were falling.

¹² Besides commercial banks, large sponsors of conduits also included structured investment groups (\$182 billion), mortgage lenders (\$72 billion), and other financial institutions (\$79 billion).



Graph 3: Asset-Backed Commercial Paper (Billions of Dollars), 2001-08; Source: Federal Reserve Board.

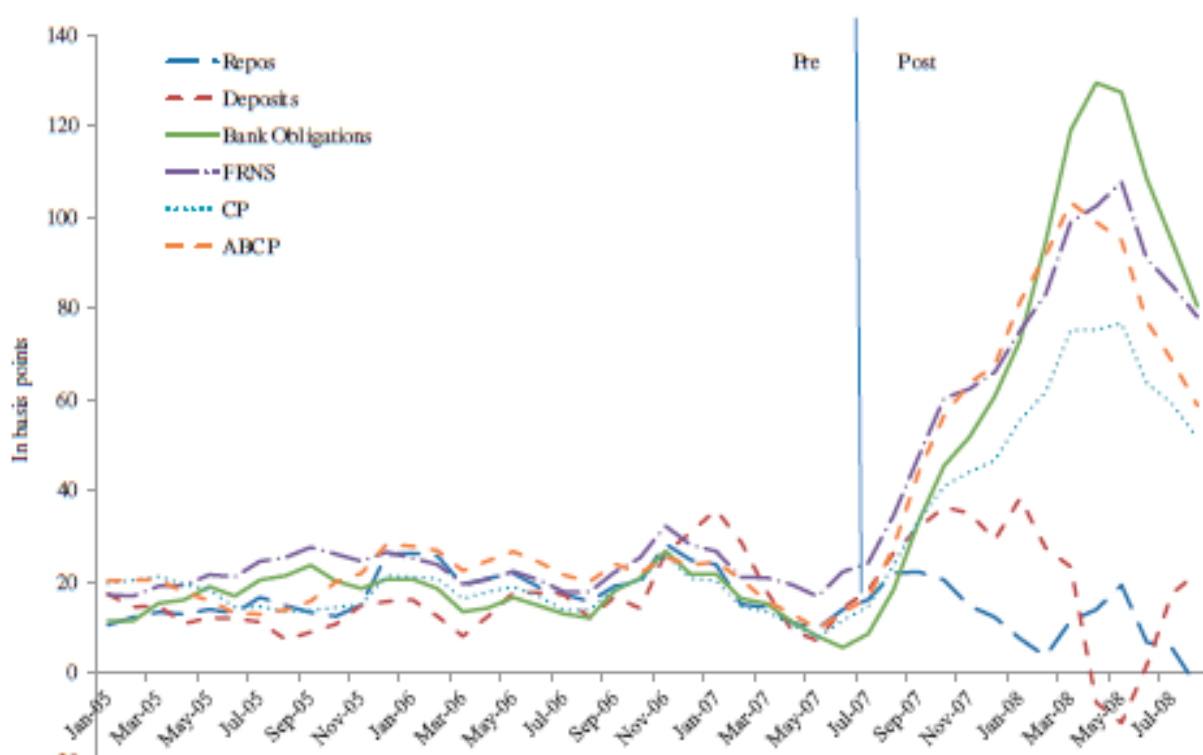
4.1. Collapse of asset-backed commercial paper

The recession in the asset-backed commercial paper was provoked by the crisis in the subprime mortgage market. Even though delinquencies on subprime loans had been soaring through most of 2006, the crisis revealed its first clear signs only in the second quarter of 2007. On July 31, 2007, two Bear Stearns's hedge funds¹³ that had invested in subprime mortgages filed for bankruptcy. In the consecutive week, more revelation about delinquencies in subprime mortgages hit the market.

On August 7, 2007, the French bank BNP Paribas halted withdrawals from three of its mortgage-backed securities funds and suspended calculation of their net asset values (Kacperczyk and Shnabl, 2013). This suspension of withdrawals had a deeply negative impact on money market instruments. Investors in asset-backed commercial paper became concerned about the value of collateral backing of these instruments. Consequently, many investors

¹³ Hedge funds are alternative investments using pooled funds that may use a number of different strategies in order to earn active return, or alpha, for their investors. Hedge funds may be aggressively managed or make use of derivatives and leverage in both domestic and international markets with the goal of generating high returns.

stopped refinancing maturing commercial paper, and within two days the spread on overnight ABCP over the federal funds interest rate increased exponentially ¹⁴(see graph 4).



Graph 4: Spread by Money Market Instrument: Source: Oxford Journals, New York University School of Law, July 2013.

Outstanding ABCP shrank by \$190 billion (almost 20%) in August, while yields soared and maturities shortened for new issues (Campbell, Covitz, Nelson and Pence, 2011). Outstanding ABCP fell by an additional \$160 billion by the end of the year (see Table I). The contraction in outstanding asset-backed commercial paper, combined with the growth in its spread, implies that the failure was caused by a drop in demand for, instead than supply of, asset-backed commercial paper. In line with this interpretation, several money market funds reported that they had reduced their holdings of asset-backed commercial paper to mitigate the risk of negative publicity, which could cause withdrawals by investors (Moody's Investor

¹⁴ The spread between overnight asset-backed commercial paper and the federal funds interest rate spiked up shortly after the crisis started. While in the year before the crisis the average spread equaled 3 basis points, in the year after the crisis the average spread rose to 46 basis points.

Service, 2007). Covitz et al. (2013) discuss the trading failure in repo, interbank lending, and asset-backed commercial paper markets

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Money market funds experienced no direct losses from the decrease in asset-backed commercial paper. These instruments were insured by commercial banks through liquidity guarantees that paid off maturing asset-backed commercial paper in case of a run. Because of the credit guarantees, sponsoring financial institutions had to provide liquidity to pay off maturing asset-backed commercial paper. This obligation raised concerns about counterparty risk among banks and caused interbank lending rates to shoot upwards. The crisis in asset-backed commercial paper quickly spread across the financial sector and affected banks worldwide (Acharya and Schnabl, 2009).

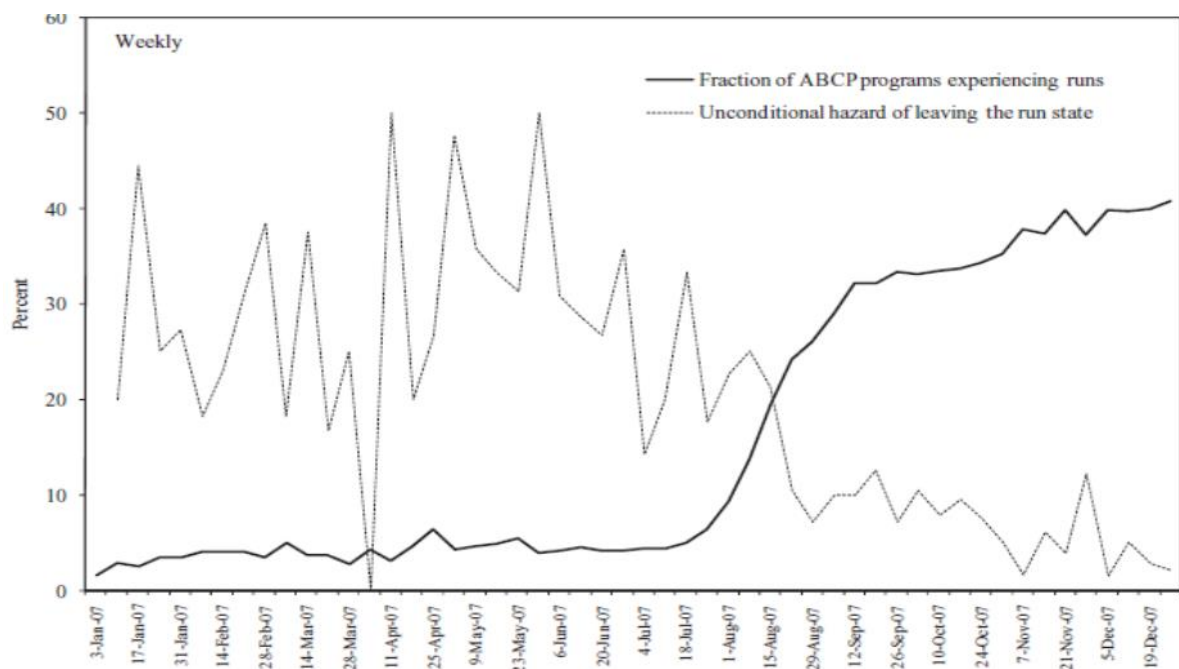
Program Type	Assets	Number of Programs	Market Share of Outstandings (%)	Programs with Extendible Paper (%)	Programs with Credit Support (%)	Programs with Large US Bank Sponsors (%)	Programs with Small US Bank Sponsors (%)	Programs with Foreign Bank Sponsors (%)	Programs with Nonbank Sponsors (%)
Multi-seller	Diversified receivables and loans	98	45	19	30	19	4	57	20
Nonmortgage single seller	Credit-card receivables and auto loans	40	11	62	28	8	10	8	74
Mortgage single seller	Mortgages and mortgage-backed securities (MBS)	11	2	67	0	9	9	0	82
Securities arbitrage	Highly rated long-term securities, including MBS	35	13	9	17	14	11	66	9
Structured investment vehicle	Highly rated long-term securities, including MBS	35	7	0	0	11	0	23	66
CDO	Highly rated long-term securities, including MBS	36	4	25	0	0	3	3	94
Hybrid and other	N.A.	84	18	20	10	5	2	12	81
Total		339	100	24	16	10	5	30	55

Table I: ABCP Program Types; Source: Covitz, Liang and Suarez (2013)

4.2. The failure of Lehman Brothers

On September 15, 2008 Lehman brothers filed for bankruptcy with \$639 billion in assets and \$619 billion in debt. This failure was the second major negative shock in the commercial paper market. The default of Lehman Brothers was followed by larger withdrawals from money-market mutual funds after the Reserve Primary Funds “broke the buck”¹⁵, and the revelation of the Reserve Fund’s exposure to Lehman’s bankruptcy caused an immediate run on the fund. On September 16, 2008, the Reserve Primary Fund was forced to pay out \$10.8 billion in redemptions and faced about \$28 billion of further withdrawal requests (Acharya, Cooley and Richardson, 2010). The run quickly spread to other money market funds with commercial paper holdings.

The stress felt by money market funds were a prominent feature of the crisis. The run experienced by the Reserve Primary Fund spread quickly to other funds, and led to investors redeeming over \$300 billion within just a few days after the failure of Lehman Brothers. This was a surprise at the time it occurred because money-market funds have been traditionally regarded as relatively safe. The assumption was that, given the impression of safety, these large-scale withdrawals represented some type of market-wide liquidity crisis. The ABCP market also experienced considerable stress. Issuers of commercial paper were unable in many cases to renew funding when a portion of the commercial paper matured, and some have referred to this as a “run” (Covitz, Liang, Suarez, 2013). As the graph 5 shows, things deteriorated quite dramatically in this market beginning from August 2007.



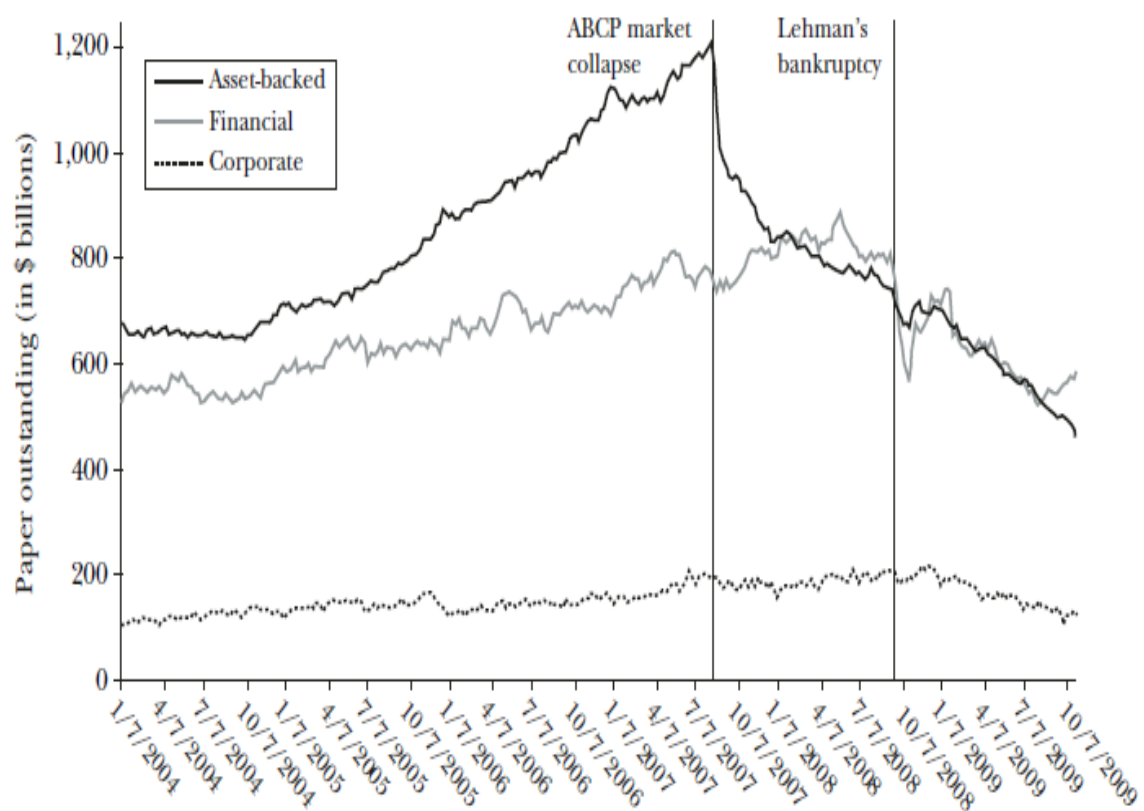
Graph 5: Runs on ABCP Programs; Source: Covitz, Liang and Suarez (2013)

¹⁵ When a money market mutual fund's net asset value (NAV) drops below \$1 per share.

4.3. Evolution of ABCP in the financial crisis

For investors the Lehman's bankruptcy was the indication that asset-backed commercial paper, issued and funded by financial institutions, was riskier than investors had believed. As graph 6 indicates asset-backed commercial paper outstanding dropped by 9.8 percent, from \$741 billion to \$668 billion (Kacperczyk 2013). Commercial paper outstanding decreased because the average maturity of commercial paper dropped after Lehman's bankruptcy.

Commercial Paper Outstanding, January 2004–October 2009



Graph 6: Commercial Paper Outstanding, January 2004–October 2009; Source: Kacperczyk and Schnabl analysis based on Federal Reserve Board data.

Covitz, Liang and Suarez demonstrate that: - “As total outstanding ABCP plunged by nearly 30% from August to December 2007 different program types were not hit equally hard. Outstanding at multi-seller programs fell only about 10% from July to December, while outstanding at SIVs fell about 80% and mortgage single-seller programs virtually disappeared.”

Bank guarantees played an important role in enabling conduits to issue asset-backed commercial paper. Covitz, Liang, and Suarez (2009) show also that conduits with the weakest credit guarantees (“extendible notes” and “SIVs”) had the largest difficulties in rolling over their maturing asset-backed commercial paper than the ones with stronger guarantees (“credit guarantees” and “liquidity guarantees”)¹⁶. Acharya, Schnabl, and Suarez (2009) in addition demonstrate that financial guarantees provided almost all of the maturing ABCP and 97% of asset-backed commercial paper was reimbursed at shorter-term maturity. Issuers defaulted only on 3% of asset-backed commercial paper outstanding. Hence, most of the investment losses due to the fall in asset prices effectively remained contained with the sponsoring financial institutions, not the investors in asset-backed commercial paper. Finally, Covitz, Liang, and Suarez (2009) document the “run” in the shadow banking sector and link it to the deterioration of asset quality in conduits. Table II furnishes an analysis of all conduits authorized to issue asset-backed commercial paper on January 1, 2007. It specifies that there are 296 conduits with total ABCP outstanding of \$1.235 trillion. The average conduit size is \$4.2 billion with a standard deviation of \$5.2 billion. The largest conduit type is multi-seller conduits with \$548 billion in ABCP. The second-largest type is credit arbitrage conduits with \$213 billion in ABCP. The third-largest type is single seller conduits with \$173 billion in ABCP.

As Panel A shows, outstanding at multi-seller programs fell only about 10% from July to December, while outstanding at SIVs fell about 80% and mortgage single-seller programs virtually disappeared. These dramatic declines in outstanding are consistent with the possibility that investors were intolerant to risk and that paper issued by certain program types may have had some risk. The risk of paper issued by certain program types may have reflected relatively weak program characteristics.

¹⁶ For example, from July to December 2007, total asset-backed commercial paper issued by structured investment vehicles fell from \$84 billion to \$15 billion.

Panel A reports the amount of paper outstanding at the end of each month in 2007 for all program types in the U.S. ABCP market. Panel B reports the spread of rates on overnight ABCP issues, by program type, over the target federal funds rate. Spreads are weighted averages of spreads on individual transactions using face value of transactions as weights. Panel C reports the average number of days to maturity of newly issued paper. Data are from DTCC and program type classification is from Moody's.

Panel A: Outstandings									
Billions of Dollars, End of the Month		Total	Multi- Seller	Non- mortgage Single Seller	Mortgage Single Seller	Securities Arbitrage	Structured Investment Vehicle	CDO	Hybrid and Other
2007	January	1,061	455	121	32	159	63	41	190
	February	1,067	459	129	33	154	60	41	190
	March	1,070	480	122	25	148	56	46	193
	April	1,092	492	125	32	142	63	46	193
	May	1,125	503	126	35	149	65	46	202
	June	1,151	518	123	23	150	79	48	211
	July	1,163	525	126	23	148	84	47	210
	August	976	503	79	4	120	70	39	160
	September	927	484	74	2	133	49	33	153
	October	896	465	68	2	140	29	32	160
	November	838	461	55	1	117	22	31	152
	December	816	469	51	2	102	15	27	151
Panel B: Overnight Risk Spreads									
Percentage Points Month Average		Total	Multi- Seller	Non- mortgage Single Seller	Mortgage Single Seller	Securities Arbitrage	Structured Investment Vehicle	CDO	Hybrid and Other
2007	January	0.02	0.02	0.00	0.05	0.02	0.01	0.02	0.02
	February	0.02	0.02	0.01	0.04	0.03	0.01	0.03	0.03
	March	0.05	0.05	0.06	0.07	0.04	0.04	0.10	0.04
	April	0.05	0.05	0.05	0.06	0.04	0.04	0.09	0.04
	May	0.03	0.03	0.03	0.06	0.03	0.02	0.04	0.03
	June	0.06	0.06	0.07	0.09	0.06	0.05	0.07	0.05
	July	0.06	0.06	0.05	0.08	0.05	0.05	0.07	0.05
	August	0.47	0.44	0.42	0.76	0.47	0.44	0.51	0.55
	September	0.49	0.41	0.71	1.22	0.53	0.55	0.41	0.65
	October	0.34	0.24	0.83	1.51	0.42	0.55	0.50	0.47
	November	0.44	0.35	1.01	1.75	0.57	0.76	0.54	0.50
	December	0.53	0.41	0.91	1.92	0.69	1.11	0.75	0.53
Panel C: Average Maturity of New Issues									
Days to Maturity, Month Average		Total	Multi- Seller	Non- mortgage Single Seller	Mortgage Single Seller	Securities Arbitrage	Structured Investment Vehicle	CDO	Hybrid and Other
2007	January	33	25	36	16	37	47	45	35
	February	34	26	38	17	44	55	41	32
	March	32	24	35	17	35	43	42	34
	April	35	26	37	18	45	57	42	32
	May	35	26	40	16	49	56	40	32
	June	32	23	35	14	37	41	45	34
	July	30	23	36	16	36	42	34	30
	August	22	18	25	7	24	45	24	19
	September	19	16	21	7	18	25	27	18
	October	24	17	29	3	35	47	29	24
	November	22	20	22	2	25	22	28	22
	December	18	16	15	2	18	25	31	18

Table II: ABCP: Outstandings, Overnight Risk Spreads, and Average Maturity of New Issues, by Program Type; Source: Covitz, Liang and Suarez (2013)

4.4. Asymmetric information

As discussed in Gorton (2008) and Brunnermeier (2009), another factor explaining the collapse of certain segments of the ABCP market during the 2007-2009 financial crisis is the asymmetric information that arises between the buy-side and the sell-side of structured financial products.

The asymmetric information theory of bank runs focuses on the dissemination of several types of information during banking crises. Since banks are involved in the creation of nonmarketable assets, they may be difficult to value, and bank managements difficult to monitor. So, the use of aggregate knowledge in the absence of bank-specific information might result in spill-overs and panics across banks. This exemplifies the “lemons problem”¹⁷ in financial markets, a term coined by Akerlof (1970). Panics are most likely when bad news immediately follows a period of high loan demand and sanguine expectations. Panics are preceded by prosperity periods, where the leverage of banks and their borrowers is in the peak. This explains why in panic periods, adverse news was translated into unusually large declines in securities' prices and high borrower-default rates.

There is, thus, asymmetric information between banks and depositors concerned the performance of bank managements and portfolios. In this environment with asymmetric information, the panic occurred as follows. Bank depositors received information leading them to revise their assessment of the risk of banks, but they didn't know which individual banks were most likely to be affected. Since depositors were unable to distinguish individual bank risks, they withdrawn a large volume of deposits from all banks in response to the signal. Banks then suspended convertibility and in the period of time that followed banks themselves sort out which banks among them were insolvent.

4.5. Runs on asset-backed commercial paper

As documented by Covitz, Liang and Suarez (2013), asset-backed commercial paper programs faced several bank-run episodes during the summer of 2007, implying a lower demand for AAA-rated tranches of mortgage-backed securities. Subsequently, it was the turn of repo markets, which heavily employed securitized mortgages as collateral, to experience runs (Gorton, 2010). As a result of these events the amount of ABCP outstanding in

¹⁷ The lemons problem is the issue of information asymmetry between the buyer and seller of an investment or product. Lemons problem was popularized by a 1970 research paper by economist George Akerlof. The term is derived from Akerlof's demonstration of the concept of asymmetric information through the example of defective used cars, which are known as lemons in marketplace. In the investment field, the lemons problem is apparent in areas such as insurance and corporate finance

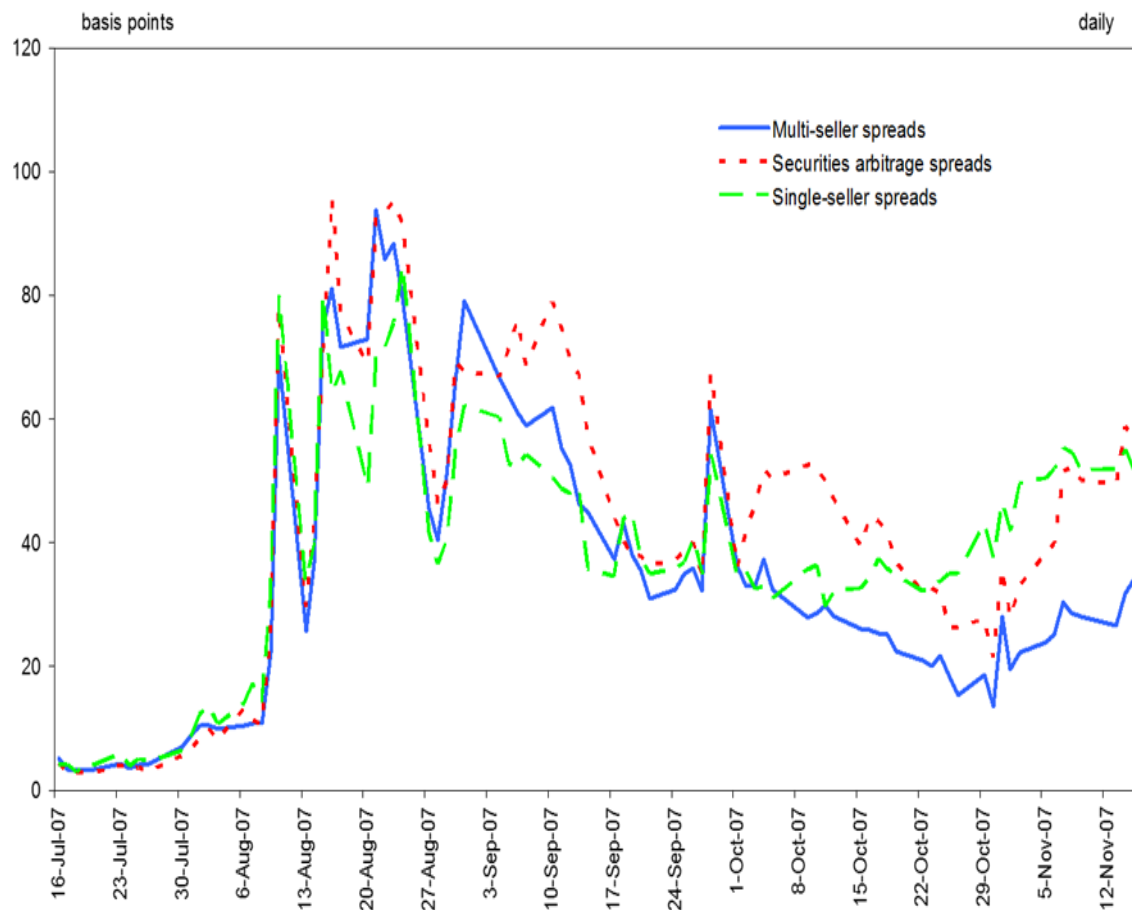
contracted by approximately \$400 billion between July and December of 2007. Several authors have interpreted this event as a run on debt. In a debt run, creditors refuse to roll over their debt if they suspect that other creditors will not roll over, in some cases even if the borrower is financially stable.

By July 2007, there was \$1.2 trillion of ABCP outstanding, with the majority of the paper held by money market mutual funds. Issuers of commercial paper were unable in many cases to renew funding when a portion of the commercial paper matured. Debt runs played a central role in the financial crisis of 2007-2008. Investors ran on asset-backed commercial paper starting in July 2007, on repo starting in September 2007, and on money market mutual funds in September 2008 (Covitz, Liang, and Suarez, 2009)¹⁸. It appears that the runs suffered by money market mutual funds were mainly appears that the runs suffered by money market mutual funds were mainly due to asset risk and solvency concerns, rather than a liquidity crisis per se.

The main empirical results taken from Covitz, Liang and Suarez are as follows. First, a substantial number of ABCP programs experienced a run in the last 5 months of 2007. About 30% of programs were in a run within weeks of the onset of the ABCP crisis and more than 120 programs were in a run at the end of 2007, and the odds of exiting a run were very low. Second, runs in the crisis were not random but instead were significantly more likely at riskier programs, based on observable program characteristics, program type, sponsor type, and macro-financial variables. Third, for the programs that could issue, yield spreads and maturities of new issues had explainable variation during the crisis, and the determinants were similar to those that help to explain runs.

The analysis of runs on asset-backed commercial paper programs during the crisis, as well as of risk spreads and maturities of programs that were not in a run, reveal substantial determinants. Coefficients on program risk characteristics demonstrate that the determinants that make a program more likely to experience a run are comparable to the determinants that would increase spreads and decrease maturities of issues by programs not in a run (e.g. extendibility, number of liquidity providers, and program rating). In terms of program type, the coefficients illustrate that runs are less likely and spreads are lower for multi-seller programs, while spreads are higher and maturities are shorter for mortgage single-seller programs (see graph 7).

¹⁸ Investors in ABCP likely knew little about the actual exposures of individual programs to subprime or other risky mortgages, in part because some sponsors viewed their portfolios as proprietary investment strategies.



Graph 7: Spreads for Different Program Types; Source: Federal Reserve Board and program classification from Moody's

5. Conclusion

This paper has reviewed a very large body of research on the causes and effect of the most devastating financial crisis since the Great Depression, with the model of Covitz, Liang and Suarez being the key ingredient. The increase in the demand for houses and subsequently the demand for subprime mortgage was one of the first causes of this financial crisis. It became obvious to many investors that liquidation values were lower and that financial institutions issuing money market instruments were riskier than previously thought. As a result, money market fund instruments that were backed by financial institutions, bank obligations and commercial papers, were perceived as risky and had to offer higher yields. With the house pricing growing and new “risky” ways of securitizing subprime loans the market became a perfect habitat for a crisis.

The burst of real estate bubble triggered severe liquidity shortages in many financial institutions exposed to real estate and mortgage backed securities. Thus, it is not surprising that housing price declines led to a run on the banking system, drying up the asset-backed commercial paper market. The financial crisis of 2007-2009 was by far the largest decline in the commercial paper market, it mostly affected commercial paper issued by financial institutions¹⁹.

By the end of 2007, roughly 40% of ABCP conduits had stopped rolling over maturing debt. The value of asset-backed commercial papers declined by almost 300 billion dollars during the 2007 and the mortgage single-seller program almost disappeared, but different program types were not hit equally hard. The amount of asset-backed commercial paper outstanding in the U.S. contracted by approximately one third between July and December.

A possible explanation for these dramatic declines in outstanding asset-backed commercial papers is the probability that investors were sensitive to risk and that paper issued by certain program types may have had some risk. The proximate cause of runs was mounting concerns about exposures of asset-backed commercial paper programs to subprime mortgages. The evidences show that runs are sensitive to conduit leverage and expected asset liquidation costs. Runs are much less sensitive to the degree of maturity mismatch, the perceived strength of old guarantees, and the assets volatility.

Moreover, it is clear that runs were not random during this crisis period, but were instead more likely among programs with relatively weak characteristics, such as weaker liquidity support and lower ratings, and they also appeared to increase with macro-financial risks. Supporting this argument Acharya, Schnabl and Suarez (2009) illustrate the important role

¹⁹ Analysis based on iMoneyNet data shows that, within a week, institutional investors reduced their investments in money market funds by more than \$172 billion

played by bank guarantees in enabling conduits to issue ABCP, by showing that rollovers of ABCP that had weaker guarantees were more difficult during the crisis than that of ABCP with stronger guarantees. It appears that the crisis resulted from the interaction of many factors: low interest rates, facilities for mortgage lenders, misjudgments from rating companies, risky backed securities and asymmetric information. As a result, asset-backed commercial paper provides a useful laboratory to study financial fragility.

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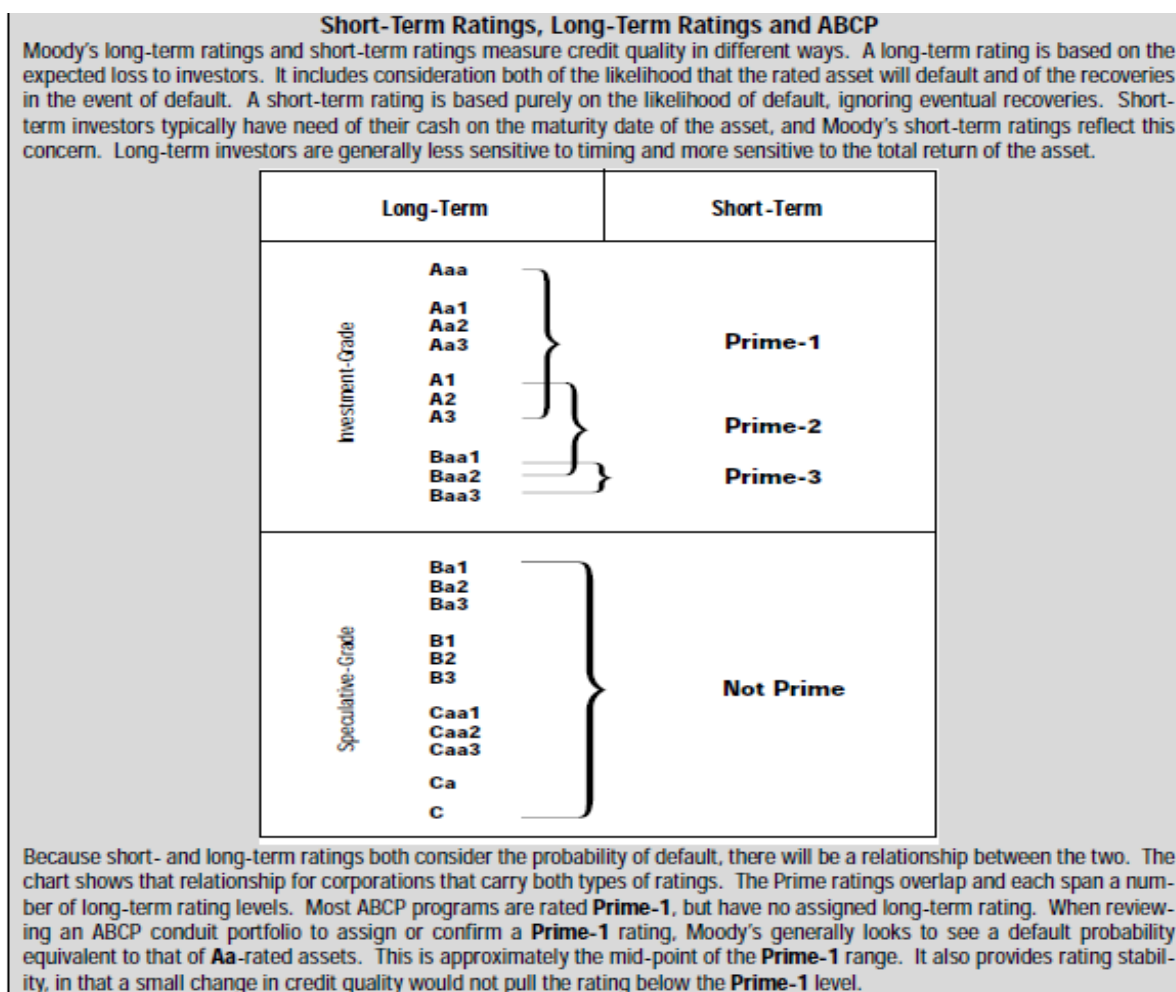
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7. Appendix

The fundamentals of asset-backed commercial papers:



Type of program	Assets in conduit	Percent of ABCP outstanding (Jan 2007)
1. Multi-seller	Receivables and term loans provided by multiple sellers	44
2. Single-seller	Sponsor's own assets (credit-card and mortgage loans)	14
3. Securities arbitrage, SIVs, and CDOs	Long-term highly rated securities	25
4. Other	Hybrids of first three types; programs not classified by Moody's	18

Source: DTTC and Moody's Investor Services

Riassunto in italiano

Questa tesi fa una revisione della letteratura sulla crisi 2007-09 e tratta lo stato del mondo prima crisi, le cause, gli eventi verificatisi durante la stessa e gli effetti dell'uso delle carte commerciali cartolarizzate (dall'inglese Asset Backed Commercial Paper, d'ora in avanti ABCP).

Le condizioni pre-crisi hanno contribuito alla bolla dei prezzi delle abitazioni, e il successivo calo dei prezzi ha portato ad una crisi nella quale la liquidità si è ridotta generando problemi di insolvenza. Piuttosto che vendere i mutui o i titoli cartolarizzati direttamente nei mercati finanziari, alcune grandi banche li hanno spostati in piccole imprese, fuori dai loro bilanci, e hanno finanziato tali imprese mediante l'emissione di carte cartolarizzate (commercial paper). Il risultato è stato un aumento senza precedenti del volume degli ABCP dal 2005 fino a metà 2007, momento in cui il crollo finanziario ha avuto inizio.

Questo documento fornisce una completa introduzione ai programmi delle carte commerciali cartolarizzate, concentrandosi sulla loro struttura di base, sui rischi ed i fondi cartolarizzati al loro interno, nonché le attività tipiche acquistate o finanziate per mezzo di queste. Analizzando il ruolo degli ABCP nel mercato finanziario è possibile comprendere le implicazioni a cui sono state soggette le banche come fornitori di liquidità per i conduits (veicoli di investimento che emettono commercial paper a breve termine per finanziare gli impieghi a lungo termine fuori bilancio delle banche).

Il rischio del mancato rinnovamento degli ABCP è stato un fattore rilevante nella fase iniziale della crisi finanziaria. In particolare, si è generata una certa agitazione quando, nell'estate del 2007, gli investitori/acquirenti di ABCP hanno realizzato la presenza di asimmetrie informative sul valore reale di tali strumenti finanziari.

Rendimenti sostanziosi, maturità a breve termine e un ottimo rating fecero apparire gli ABCP agli occhi degli acquirenti come un'ottima opportunità di investimento. La presa di coscienza del valore reale delle carte commerciali cartolarizzate ha causato un calo immediato del mercato e il commercio di tali prodotti si è prosciugato.

Il picco discendente dei volumi degli ABCP è iniziato nel terzo trimestre del 2007 ed è proseguito per un anno. Da agosto 2007 ad agosto 2008, il valore totale delle carte commerciali cartolarizzate è sceso del 37%, da 1.18 trilioni a 745 miliardi di dollari. Questo studio dimostra che, mentre la crisi si espandeva, il calo del mercato della carta commerciale cartolarizzata e la corsa agli sportelli, sono fortemente correlati con la percezione del rischio da parte degli investitori.

Questo documento ha esaminato un ampio corpo di ricerche sulle cause e gli effetti della crisi finanziaria più devastante dopo la Grande Depressione, dove il modello di Covitz, Liang e Suarez rappresenta il nucleo principale dell'analisi. L'aumento di acquisti di abitazioni e della successiva domanda di mutui subprime è stata una delle prime cause di questa crisi finanziaria.

Il prezzo delle abitazioni in costante crescita, i nuovi rischiosi metodi di cartolarizzazione dei mutui subprime uniti alla presa di coscienza del reale valore degli ABCP, da parte degli investitori, che ha costretto le istituzioni finanziarie emittenti ad alzarne i rendimenti, hanno creato l'habitat perfetto per il proliferare della crisi.

Lo scoppio della bolla immobiliare ha innescato gravi carenze di liquidità a molte istituzioni finanziarie esposte nel settore immobiliare e nei prestiti garantiti dai titoli. Così, non è sorprendente che le riduzioni dei prezzi delle abitazioni abbiano portato ad una corsa agli sportelli, prosciugando il mercato degli ABCP. La crisi finanziaria del 2007-2009 è di gran lunga il più considerevole declino del mercato dei commercial paper, in particolar modo quelli emessi da istituzioni finanziarie.

Nel caso di ABCP, circa il 40% dei conduits hanno smesso di rinnovare debiti a scadenza entro la fine del 2007. Tutto il settore dei conduits è stato colpito più o meno duramente, in particolare, i conduits a venditore singolo sono quasi scomparsi.

La quantità di ABCP negli Stati Uniti si è contratta di circa 400 miliardi di \$ (un terzo) tra luglio e dicembre del 2007. Una possibile spiegazione di questi cali drammatici può essere legata alla sensibilità degli investitori rispetto al rischio di controparte, insito nella natura dei conduits, o alla paura che tali prodotti potessero essere collegati ai mutui subprime.

Le dismissioni di ABCP si sono verificate più frequentemente per prodotti emessi da conduits con caratteristiche relativamente deboli, quali scarsa disponibilità liquida, basso rating e/o possibile collegamento a rischi finanziari sistemici. A supporto di questa tesi Acharya, Schnabl e Suarez (2009) illustrano il ruolo importante svolto dalle garanzie bancarie per consentire ai conduits di emettere ABCP, mostrando che, durante la crisi, per ABCP con garanzie deboli i rollover erano più difficili rispetto agli ABCP con maggiori garanzie. Sembra che la crisi sia stata provocata dall'interazione di molti fattori: i tassi di interesse bassi, facilitazioni nell'erogazione dei mutui ipotecari, errori di valutazione dalle società di rating, titoli garantiti rischiosi e informazioni asimmetriche. Di conseguenza, la carta commerciale cartolarizzata fornisce un laboratorio utile per studiare la fragilità finanziaria.

