SECURITONOMICS II/
CHEAT SHEET
ON
ASSET AND MORTGAGE BACKED LENDING

Thomas F. Kaufman, ***Hunton & Williams LLP, Washington, DC***

Discussion of selected issues relating to asset and mortgage backed securities. Issues include (i) pricing off swap spreads, (ii) ratings -- what role do they play and should they play, and (iii) the impact of credit default swaps

Securitonomics II/ Cheat Sheet on Asset and Mortgage Backed Lending

Introduction.

The process of asset and mortgage backed originations and transfers has changed dramatically since the "5-3-5" days of the late 1970s and early 1980s. The savings and loans and banks lent money at 5%, paid 3% on pass book accounts and the banker went home at 5:00 p.m. The increased use of computing power in investment analysis, the desire to get mortgages off the balance sheets of originators, the deification of "rocket scientists" and valuation of securities through theoretical mathematical modeling led to an incredible increase in complexity in asset and mortgage markets. On the positive side, these changes led to increased liquidity, the expansion of the market for U.S. asset and mortgage-backed securities around the world and lower borrowing rates. All of these came from a powerful increase in lending efficiency. On the other hand, there are now recognized negative consequences. The complexities and recent problems in the asset and mortgage market have led one commentator to say that the rocket scientists have finally launched a missile that landed on themselves.

The topics of pricing and rating of asset and mortgage-backed securities are widely discussed, but in the age of communication by sound bites, not necessarily well understood. This article attempts to illuminate these two topics, in the hope that more knowledge of these components will increase understanding of the overall market. Recent events show the complex nature of these markets itself has created problems, and that solutions are not easy always easy to implement.

Swaps, Swap Spreads and Pricing Asset and Mortgage Backed Securities.

An interest rate swap is an agreement between two parties to exchange cash flows for a period of time. In a plain vanilla interest rate swap, Company Y agrees to pay Company Z an amount equal to a predetermined, fixed rate of interest on a notional principal amount for a period of time. At the same time Company Z agrees to pay Company Y an amount based upon a floating rate of interest on the same notional amount for the same period of time. The market for caps and collars are variations of this basic swap market in which there are limits on the amount which can be collected or paid. An interest rate "cap" is a transaction where a payment is due if the floating rate of interest increases above a pre-determined rate. Then beneficiary of the cap gets a stream of income that covers the increase in interest above the pre-determined rate. A "collar" protects the beneficiary in regard to both an maximum and minimum effective rate of interest.

A swap is arranged by an agreement between two parties and is not an exchange-traded instrument. To the contrary, swap agreements are customized contracts that can be traded in an over-the-counter market between private parties. Because they are exchanged in over-the-counter trades, all swaps carry the risk of the failure of a specific counter party to fulfill its obligation to make timely payments[1].

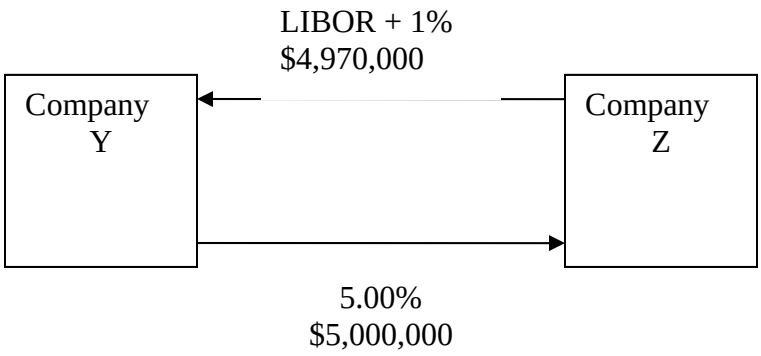
[1] The Chicago Board of Trade ("CBOT") has set up Interest Rate Swap futures, which they claim are an improvement on the individualized contract for swaps. They ague that there are several reasons to use these futures

Most interest rate swaps use as the reference floating rate the London Interbank Offered Rate (LIBOR), although other benchmarks can be used. The fixed rate in the swap agreement is whatever the parties specify. Since swap agreements are customized, swaps can provide for monthly, quarterly or annual payment dates, when the net amount due between the parties is to be paid. The first interest rate swap occurred in 1981 between International Business Machines (IBM) and the World Bank. In 2006, interest rate swaps had a total notional value of $250 trillion according to the Bank for International Settlements, or more 15 times the size of the United States public equity market.

Let's consider an example.

- Assume that the notional amount is $100 million, payments are made annually, everything is denominated in dollars and the term is for 3 years.
- Company Y agrees to pay Company Z an amount equal to 5.00% on a notional amount of $100 million.
- Company Z agrees to pay Company Y an amount equal to LIBOR + 1% per annum on the same notational amount based upon the LIBOR Rate on January 1 of each year.

If the LIBOR rate on January 1, 2008 is 3.97%, then Company Y will owe Company Z the net amount of $30,000 ((.0500 - (.0397+.01))* 100,000,000).



At no point did the notional principal amount change hands, or the full amount of the deemed interest payments. Only the net of the swap, $30,000, is actually transferred.

Prior to 1998, asset and commercial mortgage backed securities ("AMBS") were priced off the rates for comparable average life United States Treasury securities of a comparable average life[2].

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in place of swaps: (i) there is no bid/ask spread and there is transparency in that you can see the price of previous sales, unlike the swap market where it is hard to get concrete data on previous swaps, (ii) there is no administrative cost, just the cost to buy and sell, (iii) there is no counterparty risk because of the guaranty of the CBOT clearing services provider, and (iv) parties who do not have the net worth of a highly capitalized dealer can purchase a swap future.

[2] The best pricing is to use "on the run" securities, which are the most widely traded United States Treasury securities. Even though there may be many United States Treasury securities of a similar maturity or average life,

For example AMBS might be quoted using a stated interest rate of 125 basis points (1.25%) above comparable United States Treasury securities.. In 1998 the lending markets worldwide imploded because of the Russia's default on its sovereign debt and the liquidity crisis linked to the failure of Long Term Capital. Because of these market problems, better liquidity in swap rates, and other problems in the market at the time, AMBS began pricing off "swap spreads."

A "swap spread" is the difference between the "swap rate" and the yield on the United States Treasury security of equal maturity. The "swap rate" is the fixed rate that must be paid to get the floating rate. In our example above, the swap agreement used LIBOR plus 1% as the floating rate. In calculating the swap spread, the swap rate would be the rate need to get someone to pay LIBOR. Thus, if took 5.00% to get someone to pay LIBOR plus 1%, it should take a fixed rate of 4.00% (5.00% - 1.00%) to get someone to pay LIBOR only. If the 3-year Treasury security had a yield of 2.89%, then the swap spread would be 111 basis points (1.11%), calculated as (4.00% - 2.89%).

Swap spreads are calculated using the fixed rates of United States Treasury securities so that there is no risk of default to be factored into the calculation. Like the interest rates that underlie swap spreads, these swaps spreads usually differ for longer and shorter maturities. Thus there is a swap spread "yield curve" of varying costs over time just like there is a yield curve for standard United States Treasury securities. Recently the yield curve for swaps has been steepening, just as the yield curve for United States Treasury securities has steepened. Both reflect a perception of greater uncertainty over time.

Why should borrowers and lenders in the real estate lending arena care about swap spreads? They should care because swap spreads can save money for borrowers while reducing risk for lenders. Buyers of AMBS usually refer to swap spreads to set rates instead of using rates derived from US Treasury securities. Hedges against interest risk are more efficient when based on swap spreads[3]. Therefore if a lender bases a quote on rates for US Treasury securities, the lender is likely to make the spread over the reference rate larger to allow for fluctuation in the swap spread curve that will not be not reflected in changes in US Treasuries. If the lender quotes instead on the basis of the swap spread, the lender can charge the borrower a smaller spread over the reference rate because there is, at least in the current market, less risk. A smaller spread should result in a lower cost to the borrower and yet less risk for the lender.[4]
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there may be a difference of one to several basis points (one hundredth of a percent) between the widely traded and widely quoted "on the run" Treasuries and those less frequently traded.

[3] There are several other well known ways to generate spreads - the "E Curve" generated from Euro Dollar rates and the "ZV Spread" using the implied spot curve. Sometimes AMBS is priced off these spreads as well. See, "Investing in AAA CMBS" by the Commercial Mortgage Securities Association.

[4] On the other hand, because it is based upon a different index, it could in a few cases lead to higher rates, but in general it will yield lower rates because there is no artificial increase in spreads to compensate for the disconnect between the United States Treasury securities and the swap rates.

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Ratings - What Do They Really Mean

The market has responded with great consternation to questions about the role of ratings in the latest liquidity driven lending crisis,. The reactions has been especially strongly to the marking down of ratings of securities based on pools comprising Collateralized Debt Obligations (CDOs) and pools containing subprime loans, mezzanine debt and other exotic forms of debt. Many investors have looked at ratings as the key element in determining the risk associated with a security they purchase. There is no doubt that AMBS gained wide acceptance and its liquidity was enhanced for years by the ratings given to the senior interests in various tranches of AMBS. Contrast that level with liquidity with individual real estate loans, especially those that have limited or no recourse, which are cumbersome to assess and expensive to review, making them highly illiquid.

But what does a rating signify? Ratings are given for a variety of different purposes. Ratings of companies are generally focused on the risk of default by that company on its debt or preferred stock. Ratings of a given security focus on the risk of default relative to that specific security, considering its order of preference, the collateral backing it and other items relevant to that specific security. A listing of the standard ratings for debt and equity are set forth in Exhibit A. In structured finance like AMBS, there is a separate rating for each tranche of a pool to determine the risk of default of that particular tranche given the level of subordination of it to more senior interests and the other risks of default, including the seasoning of the collateral and the relative mix of collateral.

Even taking into account that ratings differ as to types of collateral, there still is at least some disconnect between how the public perceives a rating and how the rating agencies themselves describe what they want a rating to be. Many AMBS buyers look at the rating of a given security as a indicator as to how likely they are to be paid what they project from the investment. For a sophisticated investor, that expectation may be different than the expectation of a less well informed investor. Ratings may dictate for regulated investors who hold AMBS what reserves are required against the likelihood of default, when and in what amount write downs or additional reserves must be taken. The consequences of rating reductions are particularly severe if a rating is reduced more than one step down. Less sophisticated and unregulated buyers look to ratings as a substitute for serious diligence by them on a security, simply relying on the rating as the equivalent of the conclusion of a diligence review.

But there are many things that a rating cannot evaluate. A rating cannot predict the fair market value of the security in future and changed markets. Fair market value is affected by many factors other than the likelihood of timely payment. If a security pays a fixed rate of interest the movement of interest rates up or down will have a significant impact on the fair market value. Value of fixed rate securities are also greatly impacted by the remaining term to maturity, since prices of longer term obligations fluctuate much more rapidly when market rates change than do prices on short term securities.. Another factor that a rating cannot predict is the ability to buy or sell that security at a future date - in other words future “liquidity”. Depending on market demand, at various times even strong, performing securities or loans may not be very liquid. In late 2007 and early 2008 many companies held on their balance sheets unusually large amounts of AMBS and/or loans waiting to be placed into AMBS. Companies with large holdings of such

loans or securities are not interested in generating more loans or acquiring more securities, causing a loss of liquidity. Other factors that influence markets but as to which ratings do not offer insights are (i) the amount and timing of amortization and the possibility of prepayment or delay, (ii) currency exchange issues, (iii) how often an originator may comes to market with new product, (iv) the depth of a market for in terms of the volume of demand for buying and selling and the risk that new issuances swamp a market, (v) pricing volatility, especially for holders who need to mark-to-market based solely on rating or holders who will hold the security for a shorter period than the maturity date.

Drilling down more into the meaning of a rating discloses some level of dissonance even between the rating agencies. Reacting to recent complaints about the performance of ratings in the subprime loan market distortions, each rating agency has tried to articulate what it believes their ratings do and do not mean. Fitch Ratings Ltd, ("Fitch") claims that their ratings provide:

> An opinion on the relative ability of an entity to meet financial commitments, such as interest, preferred dividends, repayment of principal, insurance claims or counterparty obligations. Credit rating are used by investors as indications of the likelihood of receiving their money back in accordance with the terms on which they invested…. Depending on their application, credit ratings address benchmark measures of probability of default as well as relative expectations of loss given default…. As a result, for entities such as corporations security ratings may be rated higher. lower or the same as the issuer to reflect expectations f the security's relative recovery prospects, as well as differences in ability and willingness to pay. While recovery analysis plays an important role throughout the ratings scale, it becomes more critical consideration for below investment-grade securities and obligations, particularly at the lower end of the non-investment grade ratings scale where Fitch often publishes actual Recovery Ratings, that are complementary to the credit ratings.
>
> Structured finance rating typically are assigned to each individual security or tranche in a transaction, and not to an issue. Each structured finance tranche is rated on the basis of various stress scenarios in combination with its relatives seniority, prioritization of cash flows and other structural mechanisms.

Standard & Poor's, a Division of The McGraw-Hill Companies, Inc ("S&P"), has a different view. S&P believes that

> [O]ur ratings are an opinion of the default risk associated with either an issuer or an issue, as of today, based upon all information we have in our possession. Our ratings speak to the likelihood of default, but not the amount that may be recovered in a post-default scenario….The definitions of each rating category also make clear that we do not attach any quantified estimate of default probability to any rating category. In other words, even though our default and transition studies may indicate that the annual average default rate of 'BBB' structured finance securities between 1987 and 2007 was .18%, this does not mean that a 'BB' rating is a mathematical prediction of a .18% default probability….To attach precise expected default rates to any rating category is to imbue the rating process with a degree of scientific accuracy that it could not possibly bear….
>
> So why should anyone pay any attention to a Standard & Poor's rating? The reason is that history has shown our opinions to be very good predictors of default risk, and that so

> far, no other service has been provided outside the rating agencies that is both independent and has such a strong track record.
>
> …[T]he measure of any rating agency's success is whether, in the aggregate and over the long run, its ratings are correlated with actual default experience. The success and usefulness of any rating agency must therefore be judged on a portfolio basis and over a long timeframe. To judge it on a security by security basis leads to failed logic….

While the two versions above may appear to contain only mild differences, they can also be viewed as substantively different in the distinction between default and loss. The actual positions of the two agencies may have as much to do with their current attempts to limit liability or at least lower expectations, as they do with real differences in approach. In any event, determining the likelihood of default is far less complex than carrying the analysis further to determine the amount of a probable loss or probable recovery over the life of the security If you are determining the likelihood of default, then the ability to pay under conditions of stress is the primary factor you need to review. Determining the quantum of loss requires far more complex analysis.

Losses may be linked to the method and timing of a disposition, or the method and timing of a disposition may indicate the prospects for recovery. In a Fitch study on Commercial Mortgage Backed Securities ("CMBS") shown on Exhibit B, the largest losses were associated with properties which were simply written off as essentially valueless. This resulted in a 95% loss and took on average 54 months. Note sales and discounted payoffs were associated with the largest recoveries, followed by sale at foreclosure. Taking a property into real estate owned (REO) was associated with an average 40.2 % writeoff and took on average 24 months.

Losses also differ dramatically by the property type of the collateral securing the loans in the pool. In Exhibit C, the same Fitch study shows that losses in defaulted loans associated with healthcare have exceeded 50% of loan balances, while hotel and industrial-related loan defaults led to losses that averaged about 38%. Loss analysis also require consideration of geographic dispersion and competition at the time of the default. Obviously, any comprehensive evaluation of a security taking into account a projection of loss if the loan goes into default is fairly complex. Other studies indicate that aging of a loan is also important in determining losses and defaults. Most defaults and most losses in CMBS loans occur between the fifth and seventh year of a loan.[6]

Now let's turn to the lesser standard put forth by S&P. How effectively do ratings work when they are used as predictors of default? One way to judge default risk is by looking at the aggregate risk of default over the entire period that the security is to be outstanding. This should be the gold standard in evaluating a rating. Set forth in Exhibit D is the ten (10) year cumulative default standard for a selected set of ratings. Please note that the ten year cumulative risk of default for an AAA rated security has historically been extremely low. While statistics are not yet available for the ten (10) year performance of issues based on pools of subprime, Alt A and CDO securities originated in 2005 and 2006, experience to date seems to indicate empirically

[6] Default and Losses of U.S. Commercial Mortgage Loans: Year-End 2005 Update, Standard and Poor's June 8, 2006. In many cases however, these losses could be affected more by overall macro-economic trends that influence real estate performance, possibly overwhelming the impact of the number of years since the loan was made.

that such pools may generate far more defaults than would be expected from their ratings. It will be interesting to view these statistics as they come available in the future.

Another way to review the accuracy of ratings is to look at what are called "transitions" - the movement of a rating up or down into another category during the term of the security. For example, a downgrade from a rating of AAA to AA, would not be routinely expected. The transitions shown in Exhibit E show such rate transitions in a more normal historic business environment. It will be interesting with the recent increase in rating down grades to see how the transitions for 2007 and 2008 finally resolve themselves.

This all begs the issue of what the average purchaser of a security perceives that a rating conveys. S&P takes a narrow view -- that it is only the likelihood of default. While that is important, most users of rating would probably disagree. The common perception looks for more utility to a rating. Even professional investors are hard pressed to get access to or analyze the reams of data needed to evaluate a security. Certainly investors like individual investors in their retirement accounts and small institutional investors, like school boards and local charities, depend heavily on a rating. If you asked most investors what they expect, it would be that a rating helps them evaluate their chances of being paid. Getting paid entails to most people an analysis not only of the likelihood of default, but also some evaluation of the estimated loss if there is a default. No one should expect a rating agency to have a crystal ball or be totally accurate. The idea is not to hold the rating agency liable, risk avoidance seems to be a prime motivator for S&P. Rather, any investor would really want to know -- if there is a default -- how bad is it likely to be. Losses are never easy to absorb but expected losses of 70% are, as with some CDOs, far more disastrous than a 10% loss. Triple A should not be given if a possible default could turn into a 90% loss as with some subprime securities.

Again, the issue is not whether the rating agencies are liable for any losses, especially those caused by highly unlikely events where there is a substantial loss. The fundamental issue is what does a rating signify and at present there may not be agreement on that point. Until all market participants are on the same page as to what a rating signifies, market participants may be reluctant to purchase relying on a rating and that can only exacerbate any liquidity crisis and make it harder to market AMBS.

Credit Default Swaps

Another issue roiling the asset and mortgage-backed credit markets is the phenomenal and unregulated growth of credit default swaps. According to the New York Times the market for credit default swaps has increased to $62 trillion in notational amount, larger than the entire world's annual economy[7]. What is a credit default swap? It is much like an insurance policy to cover one party's inability to pay its debt. For example, if Bank A makes a loan for $10 million to Borrower B, Bank A has the risk if Borrower B defaults and doesn't pay its loan as required. Bank A could go into the private market and purchase a $10 million credit default swap that

[7] A Window in a Smoky Market by Gretchen Morgenson, New York Times, July 6, 2008. The estimated fair value, a more realistic estimate of their worth, is $2 trillion, an increase from $133 billion three years earlier.

would pay Bank A if Borrower B defaults, thereby reducing or eliminating its risk[8]. This credit default swap is a private contract, that acts much like a guarantee, but is unregulated and made between private parties. There is at present no centralized registration or tracking of these credit default swaps. The vast majority of these credit default swaps are done on standardized forms prepared and popularized by the International Swaps and Derivates Association, Inc. ("ISDA") , although there is no requirement that any particular form be used. While the ISDA form requires that any assignment of an interest in the credit default swap be approved by the other party, in fact, a majority of the contracts are traded without notice to the other party (counterparty). What is the significance of this activity? First, any credit default swap is only as good as the credit of the party that issues the swap - this is a standard risk often known as counterparty risk. Banks and others dealing with credit default swaps and other derivatives need to pay careful attention to the continuing creditworthiness of all counterparties. The problems come from the fact that if a counterparty trades or assigns its position, it is not released from its liability on the credit default swap, but many counterparties will net out their position as if the have assigned all of their interest. In other words, if Party C has assigned its liability to Party D, Party C remains liable to pay Bank A if Party D fails to pay on the credit default swap as required. On the other hand, internally Party C may net out is obligation to Bank A on the credit default swap since Party D has now assumed that obligation and therefore Party C may not track its continuing residual liability to Bank A. Assume now that the positions in the credit default swaps are actively traded with no central registry. The ability to unravel the maze of crossing credits gets tremendously complicated. The fact that Bear Stearns had a role as a counterparty in over $13 trillion of derivates, many of them credit default swaps, was one of the principal reasons that the Federal Reserve Board decided that a financially solvent party had to acquire Bear Stearns or the financial markets could have ended in a melt down that would have taken weeks to unravel and could have caused other firms to fail as well. Pushed by the Federal Reserve Board the financial services industry is now trying hard to start a registration system for credit default swaps and other derivatives to prevent a disaster in the event a major counterparty default in the future.

Further complicating the outlook is that while credit default swaps may have originated to cover losses on debt, they have become active tools of traders to hedge and gamble on the future fortunes of companies and parts of the economy. For example, if you think that Company Z will get into major financial trouble on its own merits or that it is a part of a troubled economic sector, then buying a credit default swap on Company Z and later selling it at a gain allows you to financially profit from the economic woes of Company Z without selling short the stock of Company Z. The massive amount of credit default insurance and other derivatives is just one more factor clogging the balance sheet of banks and other financial institutions preventing them from making new loans until the old are sold. This loan by loan, asset by asset liquidation will take even more time to complete than originally anticipated and will slow the economy,

[8] Typically, Bank A would pay an upfront price, say $300,000 and a yearly premium of say $100,000 per year for the standard 5 year duration of the credit default swap it purchases. The other party to the credit default swap is another private party, say Party C. If the loan goes into default, then Party C, who issues the credit default swap, would either buy the $10 million loan from Bank A or pay Bank A the damages Bank A suffered because of the default.

particularly asset and mortgage backed securities until the banks and financial institutions have restored the liquidity in their balance sheets.

EXHIBIT A

Ratings for Debt and Equity

Rating	S&P	Moody's
Highest quality	AAA	Aaa
High quality	AA	Aa
Upper medium quality	A	A
Medium grade	BBB	Baa
Somewhat speculative	BB	Ba
Low grade, speculative	B	B
Low grade default possible	CCC	Caa
Low grade partial recovery possible	CC	Ca
Default, recovery unlikely	C	C

EXHIBIT B

Loss Severity by Disposition Type

Disposition Type	Loss Severity (%)*	Resolution time (Mos.)*	% of Total Balance
REO Liquidation	40.2	24	54.8
Note Sale	22.6	10	18.7
Discounted Payoff	19.3	15	13.9
Loan Paid in Full	1.1	15	10.9
Sold at Foreclosure	25.9	14	1.5
Trust Writeoff	95.1	54	0.1
Average*/Total	**29.6**	**19**	**100.0**

* Weighted average by original securitized balance. REO -- Real estate owned. Note: Numbers may not add due to rounding.

EXHIBIT C

Historical Loss Severity by Property Type and Resolution Year*
(%)

Property Type	2005	2004	2003	2002	Cumulative (2002-2005)
Multifamily	22.5	20.0	37.2	31.3	24.0
Hotel	44.1	33.9	35.2	44.9	38.9
Retail	22.6	32.4	40.1	54.7	34.7
Office	30.3	28.6	28.2	22.0	29.1
Industrial	40.7	37.1	38.1	73.8	38.8
Health Care	17.6	54.4	86.4	28.5	54.4
Other	22.2	31.5	73.3	2.9	29.0
Average*	**29.6**	**32.5**	**40.1**	**44.1**	**33.8**

* Weighted average by original securitized balance.

EXHIBIT D

Average Cumulative Default Rates (%)

			Year	
Rating	1	2	5	10
AAA	0.00	0.00	0.13	0.74
AA	0.03	0.05	0.40	1.13
A	0.01	0.07	0.57	1.73
BBB	0.12	0.39	1.71	4.61
BB	1.36	3.77	11.57	20.94

EXHIBIT E

S&P One-Year Transition Matrix

Initial		Rating	At	Year	End			
Rating	AAA	AA	A	BBB	BB	B	CCC	Default
AAA	86.46	8.05	0.72	0.06	0.11	0.00	0.00	0.00
AA	0.76	88.27	7.47	0.56	0.05	0.13	0.02	0.00
A	0.08	2.32	87.46	5.02	0.65	0.22	0.01	0.05
BBB	0.03	0.29	5.54	82.49	4.68	1.02	0.11	0.17
BB	0.02	0.11	0.58	7.01	73.83	7.64	0.89	0.98
B	0.00	0.09	0.21	0.39	5.98	72.76	3.42	4.92
CCC	0.17	0.00	0.34	1.02	2.20	9.64	53.13	19.21