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Risk and regulation

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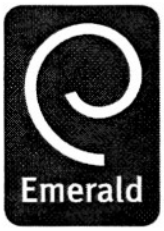

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Abstract

Purpose – A regulatory wave will follow the current financial turmoil. The purpose of this paper is to warn that although new regulation is necessary, there is a danger of strangulation of the financial market which can only be avoided with a paradigm shift in the way data are collected and used.

Design/methodology/approach – The paper is based on more than 20 years of experience in the field of all types of financial analysis within banks. The idea has been laid down in a doctoral thesis which has been applied in more than 200 banks successfully, including the acceptance by regulators.

Findings – Regulators in order to be successful and to regain eye level contact with banks have to use similar techniques as used today within risk management departments or related areas. In addition, however, regulators have to enforce standards especially for the representation of financial contracts, which are called contract types (CT). This would create the long missing international financial language that can be understood by all market participants improving not only the communication between banks and regulators, but also inside the banking sector and the investor community. Within single banks, it would help overcoming the now prevalent silo architecture and mentality.

Practical implications – Such a standard would increase the quality of information drastically and reduce the cost in similar magnitudes not only for the regulator but also for the whole financial community as a whole. The "lemon problem" (Akerlof) responsible for much of the present problems could be drastically reduced.

Originality/value – This paper closes an important gap towards the development of an international financial language via a standardized parametric representation of financial contracts (CT) is closed.

Keywords Financial risk, Regulation, Financial markets, Financial analysis, Banks

Paper type Research paper

The annually conducted Banana Skin Reports[1] named regulation as the number one risk for the financial sector in the 2005 and 2006 reports. To the same conclusion came an Economist Intelligence Report in 2005 where they asked:

> How did regulation, much of which is designed to reduce business risks, become a major source of risk in its own right? Most companies accept the need for rules to govern business, and are used to working within regulatory constraints. But a spate of new regulations in recent years has had major – and some would argue unforeseen – consequences for business.

In the next Banana Skin Report, produced in 2008, regulation dropped – not too surprisingly – to the eighth position dethroned by items like liquidity, credit risk, and so forth. Regulators should not cheer too much though, since regulation appeared in January 2009 as a new risk factor on the Global Risk 2009 Report of the World Economic Forum. This report takes a very wide view on risk, not only financial, with a focus on mega-risks. Concerning regulation as a risk factor, they note:

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> One extreme, but plausible, scenario that should be considered is a regulatory overreaction to the recent crisis which increases transaction and compliance costs while ultimately proving ineffective in the face of the "next" Crisis.

Not only did it put regulation onto the radar of mega risks, it also came with a very high severity within the higher end of the 50-250 billions USD range and within the second highest probability class of 10-20 percent. I do not have a judgment concerning severity but concerning probability of occurrence I would have placed it into the highest 20 percent+class.

There are ample other guardians warning of new regulatory threats. Mr Sorros is one of them. In his speech, before the Congress on the November 13, 2008, he warned: "beware of going overboard with regulation".

Nobody would propose a reduction of regulation in these times, the author being the last to do so. We really need better regulation, especially since it has become painfully clear that governments are the owners of last resort of the financial sector. As such, governments, and taxpayers, should know what they potentially – or even worse – actually own. But there is a question of quality. Will we get better regulation at an affordable cost? Will it be better or will it be just more expensive? There is a severe danger of the second alternative realizing. There could be a chance for the former to realize, however, this depends strongly on the underlying information structure within the financial sector. The right choice here will determine success or failure. Since the financial sector is not interested in transparency, such structures will not emerge on its own but depend on regulatory guidance.

This paper will explain what new regulations have brought, define how regulation should be set up in order to get better results at a bearable cost, discuss the concepts of standardized financial contracts and, finally, conclude with the benefits of a unified financial analysis system to both regulators and the financial sector.

What is new about regulation

The trend of new regulation can be seen by looking at *Principles for Sound Liquidity Risk Management and Supervision* published by the Basel Committee last updated in September 2008 and the "Consultation Paper 08/22" published by the FSA in December 2008. FSA sees itself as an implementation of the Basel framework. We greet the initiatives as pointing to the right direction. What follows is a high level interpretation of the FSA framework especially in regard to innovation.

New regulation must bring improvements in three aspects:

(1) Whereas old regulation focused on value (V_{t0}) new regulation must focus on value change (ΔV_{t0-t1}) and future value development (in short ΔV from here on).

(2) Whereas old regulation focused on value only, new regulation must focus on value and liquidity. Liquidity demands especially to see finance as a flow as represented by gap analysis or dynamic simulation.

(3) Regulation must become much more versatile and flexible.

The first two items mean a move away from balance sheet fixated regulation which has reigned so far. There was a move away from balance sheet value with the Basel96 accord regarding interest rate risk, now part of Basel II Pillar 2. With Basel II Pillar I

(credit risk), which was the main focus within banks of the last few years, the focus returned to balance sheet which must be seen as a regress from this perspective. It has been said that relying on book values is like driving a car by looking constantly into the rear mirror. This is even true if the use of net-present-value or fair value for certain positions is taken into consideration. Some critics would say that fair value does lock in future discounted cash flow and is thus forward looking. Though this has some truth to it, its flaw is that it does not make it more forward looking than a nominal value which is the non-discounted future sum of principal cash flows.

To be forward looking ΔV and liquidity must be calculated under static and dynamic stresses. Typical static stresses measure the effect of large market shifts and rating shocks on value and liquidity. Dynamic stresses test mid- and long-term market and credit evolutions and their effects on value, income and the liquidity position. Special cases are behavioral changes such as withdrawals from saving accounts under normal and liquidity stress conditions or prepayments of retail mortgages. Figure 1 shows this relationship in a simplified fashion.

Such stress tests exceed traditional regulatory demands by factors by adding the new dimension ΔV. As long as reports depend on value only, it will always be possible to collect these from existing transaction-, trading- or core-systems, add and group them or perform some ratio calculation. If ΔV or the change on liquidity position is the question, this is not possible anymore – value changes are found nowhere in the transaction or core systems. In order to be able to calculate ΔV, the data must be such that it can calculate value first under current condition and then shock the conditions and recalculate value under shocked conditions. The meaning of this will be explained in "Framework of a new regulation section" further down in more detail.

Not only will the calculation be much more demanding under new regulations, it must also be much faster, more flexible and more consistent. Looking at the experience with regulatory demands such as Basel I, Basel II, and Solvency II, it is fair to say, that each new regime demanded several years. It takes years to first formulate the new demands, then years to discuss it under several quantitative impact studies and years to implement. This is bad enough. But even worse is the rigidity of the system. For example, the interest rate risk report of Basel96 (now part of Pillar 2, Basel II) expresses one specific interest rate shift ranging from 1 percent at the short range down to 0.6 percent in the long range). But times change and different shocks will be necessary to be calculated and results should be available before the crisis is over:

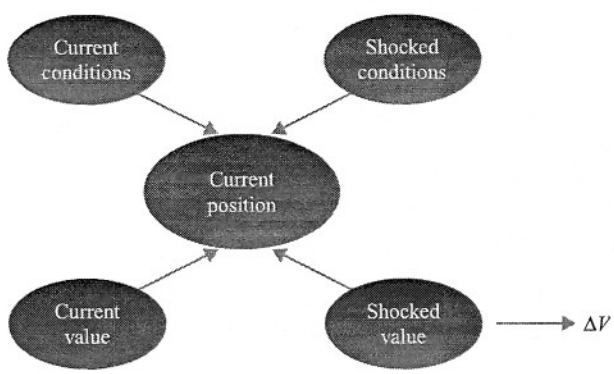

Figure 1.
Stress tests

That high flexibility is the need of the day can be well understood if looking at the new liquidity risk requirements. Following Basel/FSA, banks have to define two shocks (idiosyncratic and market) for liquidity risk management and regulation on about a dozen different assets, liability and off balance sheet classes or groups resulting in roughly two dozen different shocks. On one hand, this is quite a number to handle but on the other hand, it is by far not enough. It is much, because all the shocks have to be defined and periodically reviewed and recalculated which is in today's structure a costly exercise. It is by far not enough, because like generals, we are always fighting the last war and we have no chance to be better. The stresses we define are somehow based on our experience and one single stress per category does not fathom the space. But the next stress will be a result or at least closely linked to the new regulation we devised based on the last experience. We closed the weak spots and strengthened the weakest chain link of the last crisis which leaves another link to be the weakest for the next crisis. Liquidity events are black swans and as such not foreseeable.

However, when the next liquidity crisis appears, we will know the main parameters. Then we must be fast in defining new stresses around the areas which will become visible then. Regulators must define industry wide stresses and want to see consistent results not only for a single bank but for the sector as a whole. FSA demands explicitly firm-specific, sector and market-wide liquidity views.

Figure 2 shows the cycle of question and answer between regulators and actors within the financial sector.

First, the regulators should be able to ask any question such as: what happens if spreads are going to increase by x percent, if the FX-volatility increase over the next six months by y percent, etc. Second, it must be possible to ask this question to any entity. An entity can be a single financial contract, a portfolio, a fund, a whole bank and, in the extreme, the entire financial system. Finally, the answer could be: if the credit spread is going to increase by 7 percent the effect on the entire banking system will be such and such and it will put three banks into severe danger. Depending on the market situation, the regulator should be able to ask new questions as the need arises. Given the question and the entity, the answer should be attainable within a very short time. The answer should be consistent across the industry.

Will we hold the right tools in our hands when the next crisis strikes? We fear that the existing data framework does not support the demanded speed, consistency, and flexibility.

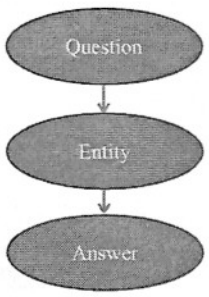

Figure 2.
Information cycle

Framework of a new regulation

In the pre-collapse era, people questioned whether regulators regulated the banks or vice versa. This is best exemplified by the use of internal models, on which Mr Sorros thinks: "Basel II, which delegated authority for calculating risk to the financial institutions themselves, was an aberration and has to be abandoned" and "[...] regulators need to gain a better understanding [...] they ought not to allow practices they do not fully understand"[2]. Banks, of course, were not very eager to provide more information than necessary.

Times have changed and regulators (as representatives of the government) are now quasi owners of significant parts of the system. As owners – and potential owners where it is not yet the case – they are obliged to know and guide. The first step in finding a cure is to know the current condition.

Regulators can and will know if they first speak to risk managers at eye level while following the same principles of modern techniques of financial analysis and second, focus more on input elements than results. The first point is shown in Figure 3 which outlines the elements of state of the art financial analysis and their relationship among them[3].

The upper section shows the financial contract as the center. Financial contracts are the containers that sum the agreements between two parties. The agreements are rules to exchange cash-flows according to certain patterns. The rules are affected by market conditions, for examples in a floating rate instrument, options and the like. Given the rules of the contract and market conditions it is possible to calculate the financial

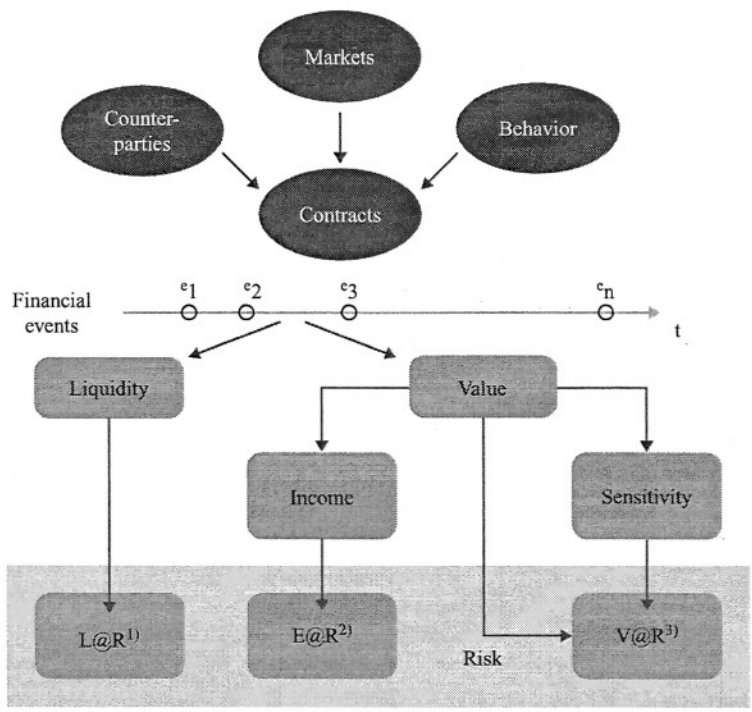

Figure 3.
Input and output elements and the event level

events which are the executions of all the rules given market conditions on the time line. Rules are, for example, when and how much interest has to be paid, how capital is paid back and so on.

Rules cannot always be kept, wherefore the characteristics of the counterparties play an important role in determining the probability of the rules being kept. Finally, there is an important set of rules that are of a statistical nature and, therefore, cannot be modeled within the contract. Typical examples are the withdrawing behavior of savings account holders or prepayments of mortgages which all play an important role in liquidity risk stress testing and also in other fields. Market, counterparty, and behavior are also called risk factors since they will change the financial events which affect value and liquidity in the next step.

Given the financial events, it is possible to derive in a 100 percent consistent fashion value and liquidity flows which are just two views on the financial events. From value to income and sensitivity it is another small step. Income is the change of value over time and sensitivity the change of value given a change of the risk factors. Taking risk factor volatilities or risk factor shocks (stresses) into account gives risk: liquidity-, earning-, and value at risk. These five information elements – liquidity, value, income, sensitivity, and risk – are at this time the basis of all known financial analyses.

Regulation, to be successful must follow these lines and need the same analytical power as it is available in modern analysis systems. Many risk managers might not like it, but there is no way around the fact that the authorities must protect the public first to save the vitally important role finance is playing for the economy as a whole and second, to fulfill the role as a *de facto* owner of a significant part of the financial sector and a potential owner of the not yet fallen part.

Focusing on input elements is a departure from traditional regulations which focused reports. In Figure 3, this means focusing on the upper section (input elements) rather than the lower (analysis elements). Once the input elements are set up properly, analysis follows suit.

Definition of financial contracts as crucial point

Regulators need to standardize the four input elements contract-, market- and counterparty-data and behavioral assumptions and the algorithms to turn it into financial events. In terms of market data, this standardization has already happened to a large extent *de facto* due to the limited number of market data supplier. Counterparty data, at least the core elements important for the rating, can also be regarded standardized due the Basel II initiatives. In both of these areas, no special difficulties seem to block the way of standardization. Even behavior elements which are fuzzy by nature can be standardized with little resistance given some efforts. The most difficult part seems to be the standardization of contracts. This is serious since the financial contract takes the center stage in the whole architecture.

Banks and insurances have never come up with a set of standardized contracts which is one of the main reasons of the silo architecture found today in the financial sector. Contracts are not understood as objects with well-defined structures but rather a heap of attributes unto which algorithms can be unleashed to extract any desired result. The reasons for this lack of standardization are difficult to grasp, since it can be shown that approximately 98 percent+ of all real life contracts can be mapped into two or maximum three dozen standard contract types (CT). One guess for this lack of

standardization may be that it has corroborated silo architectures which favor fiefdoms, a structure liked by many.

We do not have enough space to fathom the reasons why CTs have not emerged naturally. It is clear, however, that the standardization of financial contracts needs a regulatory push. A regulatory body should define a good two to three dozen CTs which cover the 98 percent+[4] of the real life financial contracts at a high level precision. Not only should the data be defined, but also the algorithms that lead to the financial events.

This might look like a straightjacket stiffening the market forces to the detriment of progress. This fear, however, is ill-founded because the bulk of real life financial contracts can be precisely represented with a few CTs (as already argued above) and new CTs can be developed as markets develop. Beyond this, it is even possible to allow contracts outside the standardized CTs as long as the additional risk results in higher capital charges.

The last point is shown in Figure 4. On the left side we see the standard CTs which represent the vast majority of real life financial contracts.

These contracts are known, well described and can be made available to the regulators immediately. The role of the regulator would be to enforce this standard. A standardization body would publish the exact data requirement for the basic CT and – what is very important – the algorithm which turns the contract parameters into financial events under given market, counterparty, and behavioral assumptions.

Once the basic CT are defined, it will be possible to construct an endless number of combinations, a technique widely used by banks and portfolio managers.

It is, however, always possible to invent new financial contracts which are not a linear combination of the basic CT. In this case, it is possible to either approximate it with a combination of basic CTs or to write an individual code, as represented by the right branch.

Each bank or financial actor has to map the entirety of the financial contracts into one of these four groups of CTs and the regulator has to check the accuracy of the mapping. The regulators should make a special charge (besides the other charges for risk, etc.) reflecting the level at which a financial contract can be understood by the rest of the community. If a contract can be mapped successfully into either the class of "basic" or

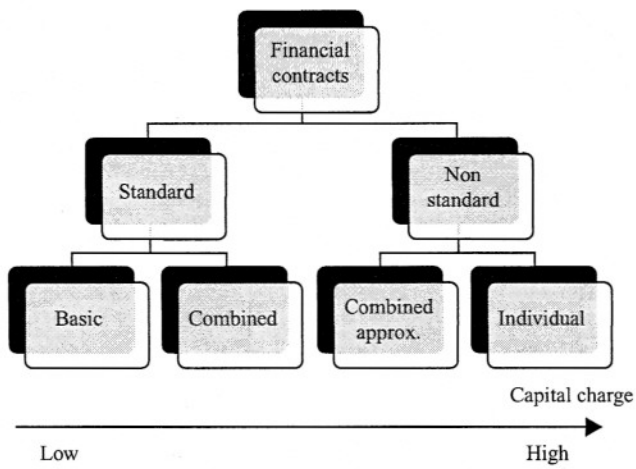

Figure 4.
CTs and capital charge

"combined" contracts, then no or only little additional capital charge is necessary. If the contract falls however into the approximation or the individual class, additional charges should be made. A mechanism for appropriate additional charges must be devised by the regulators reflecting the quality of the modeling. Market participants not happy with the capital surcharge are always welcomed to define the data and the event generating algorithms and have them approved by the standardization body thus generating a new standard CT which can be traded on minimal capital charges.

Alternatively, a market participant not happy with the additional capital charges would consider the need of a financial contract that nobody else can understand. Is it worthwhile to do the deal? Maybe by slightly changing the contract it is possible to fall into the standard class which avoids the additional capital charge.

It should be noted that this would not enforce standardization on the level of the transaction or trading systems. It would only enforce having a parallel representation of each contract in a format that the whole world can understand. The regulator, of course, would have to make sure that the mapping into the standard CTs is correctly done.

Benefits

The benefits of such a system are numerous not only to the regulators but also for the industry and every market participant.

Regulators would benefit from the insight. Understanding the data exactly and having the algorithms to generate any result gives the maximum flexibility that one can dream of. The exposure of any bank, portfolio or firm creating financial assets could be known. New scenarios could be calculated in a short time. It would even be conceivable that the regulators could run these scenarios without bothering the banks. Alternatively, the regulators could define a shock scenario and let the banks calculate it since the data foundation would be homogenous. Consistency across the board would be guaranteed and new regulatory requests could be formed within days or even faster. The cost of regulation would drop drastically.

The financial sector itself would benefit greatly since it would help break down the silo architectures and their resultant endless reinventions of the wheel. Once the contract type problem is solved it is very likely that banks themselves would adopt the definition. Getting non-contradicting numbers at the top management level would be much easier and the numbers could be obtained much faster. The cost of internal analysis would drop too.

Following this track would doubtlessly lead to a simplification and thus demystification of finance to the benefit of all. The distance between regulators and bankers would shrink drastically. Many participants within the financial sector would not like this since profits tend to shrink under demystification. However, the game must be considered of being over. Moreover, the proposed system does not forbid the industry to develop complex products, but it would demand the proper risk capital for holding them.

Not only individual banks would profit from such a standard but also the industry as a whole. The quality of communication between banks and banks or investors would also rise drastically. One of the huge problems within the financial market is the inherent information asymmetry existing today. This has been described as the "lemon problem" by Akerlof.

The main problem of the crisis was not the bursting of the sub-prime mortgage bubble but the infectious transmission effect it had on all types of financial vehicles in

the most diverse markets. Suddenly everybody understood that nobody understood what is really in the vehicles which hurt good instruments in terms of liquidity almost as much as the worst – a typical lemon problem. Markets very far away from the original sub-prime market got affected almost as fiercely as the primordial cause. This underpins the lack of information as an important factor in this crisis.

Figure 5 shows the typical securitization process. At the origination of the sub-prime loans on the left side, all necessary information is available (or at least "should be available"). The loans get repackaged into retail mortgage backed securities where already much of the original information gets degraded into a few aggregation terms such as profession, age, a few terms of the contracts, etc. When further repackaged into ABS CDO's very little is left of the original information and finally, at the level of a CDO^2 or even CDO^3, we are left with two information pieces: value and rating (which was normally AAA). The teachers union in Norway owning this CDO^3 has no clue how this value and rating has come about and on what it is based.

This loss of information can be fully avoided if the information is standardized as proposed here. Every publicly traded contract would have a representation as defined by the regulation. This information would have to be stored in a dedicated database with a unique key such as a CUSIP code attached to it. Any entity trading this contract

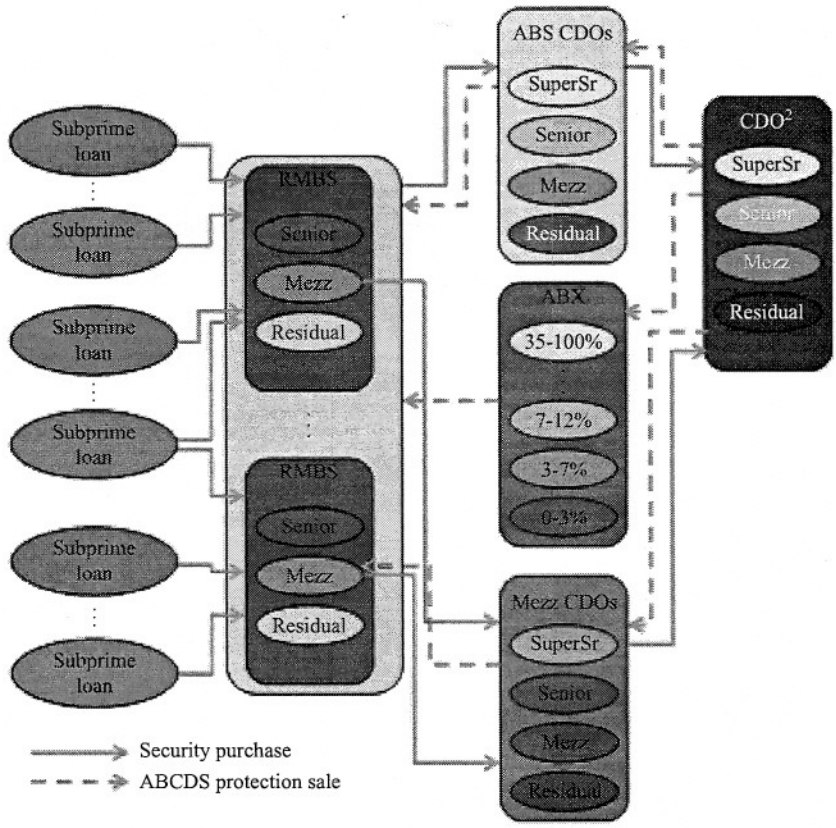

Figure 5.
Securitization and information

in whole or part would refer to it via the unique key from where all information attached to the contract would be available. Independent of how many nesting levels due to repackaging or how high the pyramid gets, the original information available could be maintained throughout the chain. Concentrations could be found out much earlier. Owing to the fact that the event generating algorithms are known to all participants, it is possible for every participant including the regulator to generate events from where liquidity, value, income, sensitivity, and risk can be calculated – everything that is to be known.

A universal financial language would be created.

Conclusions

We have shown that it is possible to increase the information content for regulators and market participants alike if the four input elements – contract, market, counterparty, and behavior – are standardized. Of the four elements, only contract poses some difficulties which, however, can be overcome if regulators act as a standardization body. The standardization body would have to define the set of CTs and the algorithms turning contract data into financial events. The same body would also control the creation of new CTs making it possible for the financial market to evolve and make sound and controllable progress. Capital charges would incentivize this evolution further. As a result we would not only have more but also timelier and much cheaper information reducing the now prevalent lemon problem, a current obstacle in regaining the much needed trust in the financial sector. Regulators and governments would get the information they need and would reduce the likelihood of becoming owners of the financial sector in future.

Notes

1. Conducted regularly by the Center for Study of Financial Innovation in cooperation with Price Waterhouse Coopers.
2. Testimony to Congress November 13, 2008.
3. The figure represents only static analysis without taking future business into account. Taking dynamic simulation and analysis into account would go beyond the scope of this paper. In order to understand the principles, the static view is sufficient. A full argumentation can be found in *Unified Financial Analysis: The Missing Links of Finance* (Brammertz *et al.*, 2009).
4. It is difficult here to come with an exact number because different measures are possible (like the number of contracts, the risk weighted volume, etc.). But it is interesting to see that three dozen CTs cover even many exotic options and insurance CTs.

Reference

Brammertz, W., Akkizidis, I., Breymann, W., Entin, R. and Rustmann, M. (2009), *Unified Financial Analysis: The Missing Links of Finance*, Wiley, Hoboken, NJ.

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