Market uncertainty and market instability

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1. Introduction

While known factors are already reflected in efficient market prices, the main sources of market instability are unknown factors. These unknown factors shall not be referred to as market risk, but as market uncertainty. Efficient market prices can be considered as correct only in reference to a set of known factors. Therefore, from the perspective of market stability, the most important aspect is not market risk, but the degree of market uncertainty embedded in different assets or business models. The market uncertainty theory presented in this paper interprets market behaviour and market instability in a framework that takes into account both market risks and market uncertainty. The first half of the paper describes the market uncertainty theory comprising the market uncertainty theorem and the notion of heterogeneity of market uncertainty. The second half of the paper focuses on policy recommendations relevant for rating agencies, financial institutions, and public authorities.

2. Market uncertainty theorem

The assertion made by the efficient market hypothesis is that markets incorporate all known information and instantly change to reflect new information. The hypothesis has been challenged in the fallout from nearly all of the recent episodes of financial crisis. Before turning to the alternative, it is important to describe the terminology and the setting used in this paper. Market prices reflect the “known information set”, which comprises all information, all knowledge, and all experience available at the time. In addition to the “known information set”, there is also information, knowledge, and experience that is unavailable at the time and will be further referred to as the “unknown information set”. The core point is that in an efficient market the “unknown information set” is not and cannot be reflected in market prices. The notion that markets are always right in their present discounting of the future state of affairs is only correct with reference to the “known information set”. The use of the term “right” is, thus, different to its usage in common discourse. The rightness or correctness of markets is restricted exclusively to available information, available knowledge, and available experience at the time. Although market prices are based on the “known information set”, both information sets, also the “unknown information set”, are relevant for understanding the sources of market instability.

The two information sets are affected by two antagonistic processes. First, over time new information and new knowledge become available, so the “known information set” expands and the “unknown information set” contracts. Second, as the socio-economic system constantly changes, available information and knowledge become outdated, and thus the “known information set” shrinks and the “unknown information set” expands. Whenever new information becomes available, efficient market prices adjust to it. This process usually occurs in slow adjustments as bits and pieces of new information, knowledge, and experience enter the “known information set”. However, it cannot be excluded that some new

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information, new knowledge, or new experience will be of such significance that it will substantially alter previous beliefs about the socio-economic state of affairs. Thus, whenever the "known information set" is undergoing a substantial change, it is natural to expect substantial revaluations of efficient market prices. Substantial changes in information and knowledge can occur gradually over time, but they can also occur suddenly. When this happens, it is natural to expect market prices to change substantially in line with the changes in the "known information set". As a rule of thumb, the bigger is the "public awe" related to new information, new knowledge, or new experience the more impactful is the rebalancing of the "known information set" and market prices.

In a market economy there is always an element of uncertainty that the "known information set" could change substantially, or to put it differently, that the "unknown information set" may contain some substantial information, knowledge, or experience that could in the future significantly alter the "known information set". Thus, the "unknown information set" conceptually represents the uncertainty of the correctness of efficient market prices. Since there is no ultimate knowledge, prices in efficient markets can never be completely correct or right. The validity of efficient market prices should always be understood as implicitly uncertain. The concept of market uncertainty is deducible from the basic postulates of the prevailing paradigm, but interpreted in this way it allows us to view the markets from a different dimension that is necessary to interpret market behaviour and market instability. It is important to stress that market uncertainty is not related to market risks, since the measured market risks are part of the "known information set". Market risks do not challenge the validity of efficient market pricing, because as part of the existing knowledge set they are incorporated in market prices. The validity of efficient market prices is challenged by the lack of information, the lack of knowledge, and the lack of experience. Under the market uncertainty theorem, market behaviour is interpreted with reference to market prices and market uncertainty. Market price is based on available knowledge and market uncertainty conceptually represents the uncertainty of the validity of that knowledge.

3. Heterogeneity of market uncertainty

It is worth emphasising that market uncertainty embedded in efficient market prices is not (and cannot be) part of known market risks, because managed and regulated risks are part of the "known information set". The main problem with the prevailing economic paradigm is that there is no well-developed process, in either the corporate or the public sector, that recognizes and deals with market uncertainty. An investment strategy based on maximizing profit with respect to market risks naturally omits market uncertainty. So do public authorities that regulate and supervise the markets on the basis of risks. As a consequence, the financial system is liable to the build-up of unrecognized and unmanaged market uncertainty in good times and can suddenly fall apart leaving the stakeholders of the socio-economic system guessing "what went wrong?". The problem of market instability is that market participants and market regulators are following an incomplete economic paradigm. The prevailing paradigm treats uncertainty as a homogeneous mass that spans equally across all assets, companies, sectors, or markets; a mass that is not identifiable and least of all analyzable. The prevailing paradigm's view is that because the "unknown information set" is not identifiable, market uncertainty does not matter, and even if it does matter nothing can be done about it. For these reasons, the focus of the prevailing economic paradigm has been almost exclusively on the spectrum of known theories, known risk, and other known factors.

The market uncertainty theory presents a different perspective. It argues that efficient market prices are not created equal. The uncertainty of the validity of the efficient market prices is heterogeneous and particularly high if available information, available knowledge, and available experience are limited. While the markets attempt to provide the best possible present value of the future state of affairs, the validity of that value differs across different

assets. Therefore, from the perspective of market instability, the most important factor is the degree of market uncertainty. The dot.com boom as well as the recent financial crisis serve as good examples of market mispricing due to limited or diminishing knowledge. During the dot.com boom the knowledge about the potential impact of the internet on society was limited. Although efficient markets aim to utilize all available information to produce the best possible asset pricing, whenever what is known is relatively limited, the uncertainty of the validity of the market prices will be on the high side. In the run-up to the dot.com crisis the market uncertainty of market prices was high, which was subsequently made apparent in the fact that most of the dot.com boom prices totally missed the target. In the run-up to the recent financial crisis the financial system changed due to rapid proliferation of financial innovations to such an extent that the applicability of the available information, knowledge, and experience had significantly diminished. Although the diffusion of the innovation was more complex than in the dot.com crisis, the effects were similar. The markets attempted to provide the best estimate of the various market prices, but the validity of these prices had to be understood as largely uncertain.

What are the options for market participants and market regulators when facing market uncertainty? The options are plentiful and some of them will be outlined in the next sections, which focus on policy recommendations. However, suffice it to say at this point that assets with a higher degree of market uncertainty are more liable to sudden and unexpected shocks. Investors and regulators have to treat exposures to these assets with a higher degree of caution and request adequate uncertainty premiums on top of risk premiums. Higher uncertainty premiums will limit the growth of these assets as compared with the practice to date. Financial institutions with higher exposures to market uncertainty should face higher costs of credit to limit their ability to become overexposed to these assets. There tends to be a tremendous bias in both the corporate and public sectors to communicate and promote knowledge and to conceal lack of knowledge. The prevailing economic paradigm thus has the effect of focusing societies' efforts on the "known information set". However, from the perspective of systemic stability, understanding and promoting "what is not known" is at least as important as analyzing and promoting "what is known". An analysis of the lack of relevant information, knowledge, and experience (related to assets, business practices, and the socio-economic environment) should become an integral part of any investment strategy or financial stability review. With many resources allocated to risk management and economic science, their marginal value added is likely to be low. By reallocating at least part of these resources to market uncertainty analysis, the marginal value added to the preservation of systemic stability would be substantial.

4. Risk, uncertainty, and rating agencies

Prior to the financial crisis, rating agencies had embarked on a great success story on the global stage. The consensus view had been that independent third-party ratings provided the best available method to assess the riskiness of banks' assets for commercial as well as regulatory purposes. The rating agencies provided their ratings based on their analyses of past market knowledge and past risk management experiences. The financial industry and the industry's supervisors became increasingly reliant on knowledge communicated by the rating agencies. However, ratings of illiquid, unconventional, and relatively new financial assets were based on far less knowledge than ratings of traditional assets such as government bonds. The more limited knowledge base was known to the rating agencies at least on a qualitative level but not communicated to the industry. The level of qualitative lack of knowledge embedded in ratings needs to be efficiently communicated to the markets at least in a form of written disclosures. The distinction between risk and uncertainty is necessary to allow markets to allocate capital optimally.

In the ideal case, the lack of knowledge embedded in certain ratings should be openly communicated by rating agencies in the form of a qualitative level of uncertainty, unknown factors, or unconventionality of the rated financial assets, for instance, on a scale from U1 to U5. The risk-uncertainty rating system would thus consist of a rating of measured risk and a rating of market uncertainty embedded in that measure. For example, a traditional financial asset would be rated for instance AAA/U1, BBB/U1 or CCC/U1, while a very unconventional, difficult-to-rate asset with the same known risks would be rated AAA/U5, BBB/U5, CCC/U5. The risk rating is based on all information that rating agencies currently know, while the uncertainty rating is based upon openly communicating lack of relevant information, knowledge, and experience relative to more traditional financial assets.

To streamline the implementation, if the rating agency is unable or unwilling to provide the "lack of knowledge" rating, it could be allowed to mark it as "not available" (e.g. AAA/na). Competitive market forces would certainly reward the more open, more willing, and more flexible rating agencies. The uncertainty ratings would not only provide a warning signal to more conservative investors (such as pension funds), to wary investors such as creditors and shareholders of banks, and to financial system regulators, but would also offer a certain face-saving premium for the rating agencies that are pushed by market competition to rate difficult-to-rate assets. Under the risk-uncertainty rating method, as is currently the case, difficult-to-rate assets with minimum available information would still receive a rating, but in contrast to practices to date, the difficulty and short-cuts made in the calculation of such risk ratings would be openly communicated by adding the qualified uncertainty rating.

5. Risk, uncertainty, and financial institutions

The success of financial innovation and unconventional business practices is dependent upon its contribution to the profitability of financial institutions. The prevailing economic paradigm commonly accepts that profits should be maximized with respect to risks. The riskiness of operations of financial institutions is further supervised and regulated by public authorities to make sure that depositors' funds as well as systemic stability are not endangered. Hence, a financial corporation will expand its exposures to innovative assets or unconventional practices as long as it contributes to the risk-weighted profits. Both measured risks and realized or expected profits are part of market knowledge. However, the specific particularity of innovative assets and unconventional practices is that in most of the cases "what we know" is limited, and "what we don't know" could be a lot. Thus, the rise in exposures of financial institutions to financial innovation based on maximizing risk-weighted profits is accompanied by accumulation of exposures to market uncertainty.

When the rise in exposures to a financial innovation or unconventional business practice becomes widespread across many financial institutions, the financial system as a whole could be accumulating market uncertainty to levels that endanger systemic stability. In cases in which it becomes apparent that "what we did not know" has had a substantial relevance, the accumulated market uncertainty could be transformed into a market meltdown or a systemic meltdown. A higher degree of market uncertainty does not necessarily imply that our lack of knowledge will in all cases have a substantial impact, but the probability that it could have a substantial impact is higher. Ex-post, after the meltdown, it will naturally become apparent that our knowledge has not been sufficient and needs to be substantially revised. However, since knowledge can never be ultimate, in a constantly changing and evolving socio-economic system, the omnipresent lack of knowledge could lead to another proliferation of market uncertainty hiding under the shadow of good times. Therefore, knowledge alone does not guarantee systemic stability and needs to be accompanied by an allocation of efforts into the analysis of market uncertainty.

Investors and regulators did not resolutely demand this information to be analytically separated, because under the prevailing paradigm there was no process or real reason to assign costs to banks' exposures to market uncertainty. Once a bank made higher risk-weighted profits, it is not unlikely that creditors and investors rewarded it via a lower cost of credit and capital. On the contrary, traditional banks that were not able to achieve similar profitability for the same levels of risks have often come under pressure from unhappy shareholders, takeover attempts, and worrying creditors demanding higher returns to continue financing the banks' operations. It is not difficult to imagine that some of the more traditional or cautious banks were left with little choice but to join the innovative or unconventional methods to increase their risk-weighted returns. For these reasons, it is necessary that exposures to innovative assets and unconventional business practices become an integral, compulsory, and analytically separate part of financial statements. It is not sufficient if this information is partially released to regulators. What is most important is that the information is shared with investors, creditors, and other stakeholders (e.g. media, academics, analysts) that assign costs to the banks' credit, capital, and publicly traded stocks and channel the information to the general public.

6. Risk, uncertainty, and public authorities

Signalling to markets not only what is understood but also what is not understood is necessary for markets to produce an optimal outcome. Bias towards promoting knowledge and not communicating lack of knowledge fools markets and leads to market excesses, in particular in the least understood markets, which are eventually prone to a sudden break-up. Advances in economic theory, mathematical modelling, and the increase in social resources in economics and the financial sector have led to an increased sense of confidence in the field's ability to conquer the uncertainty of the future and, paradoxically, to the accumulation of market uncertainty at systemically dangerous levels. Whenever an innovative asset class, unconventional market practice, or other systemic change develops in the financial markets, market supervisors and regulators often react promptly and correctly in terms of management of knowledge. Relevant discussions are initiated at internal meetings and external committees, resources are allocated to research, decisions are taken to collect new statistical data, new regulatory rules are drafted and implemented, new standards for supervisory conduct are initiated, and in some cases laws are drafted or amended via the legislative process.

Although this reaction is certainly correct and necessary, on the down-side, it will objectively take prudential supervisors or market regulators several years to establish and implement an optimal analytical, supervisory, and regulatory grip on the market. In the meantime, market participants and individual investors must under no circumstances be allowed to believe that asset classes or business models that are not well understood bear similar or the same uncertainty as the more traditional ones. As this study argues, market uncertainty is heterogeneous and efforts should be made towards its proper understanding and classification. For this reason, if the "lack of knowledge" is an objective reality its immediate and effective communication to investors is the only viable tool to give markets the sense of balance necessary for assigning costs to both market risk and market uncertainty.

One possible argument against communicating the "lack of knowledge" by rating agencies, banks and public authorities to markets is that it will limit the extent and pace of financial innovation and increase the cost of capital required by investors. This is an unfounded fear, because investors with a sufficient and balanced understanding of "what is known" and "what is not known" will be able to allocate resources in a more optimal way, which should result in a higher quality of financial innovation, long-term systemic stability, and more sustainable economic growth. Public institutions should take the effort of identifying, understanding, and communicating market uncertainty as seriously as they do for market risks due to the

importance of both for long-term systemic stability. While in recent decades the analysis, management, and communication of market risks has developed remarkably, going forward it needs to be complemented by identification, management, and communication of market uncertainty at all levels of the financial industry and economic policy making.