

Disentangling the Epistemic Failings of the 2008 Financial Crisis

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I. Introduction

If asked what caused the global financial crisis of 2008, the first response of a man or woman on the street might be “Greed on the part of bankers.” The financial crisis is often seen as having been caused by a complex of moral failings and structural problems within the financial services industry. However, investigations into the circumstances and actions that led to the financial crisis reveal significant epistemic failures. These also played a crucial role. While these epistemic failings have been documented individually, a comprehensive analysis of them from a philosophical perspective has been broached by few.¹ I think an account of the epistemic failings implicated in the financial crisis and their means of redress is best developed by identifying those policies and procedures that are likely to facilitate good judgment. I call these policies and procedures “best epistemic practices.” Some of these practices will be general in that they facilitate good judgment in many domains, but others will be specific to particular components of the financial services industry.²

In saying that epistemic failings contributed to the financial crisis, I am not denying that moral failings played a significant role. Nor am I denying that there was a lack of regulative oversight on the part of regulatory agencies and government authorities. These failings – epistemic, moral, and regulatory – are distinct, but there are relations between them. Moral actions have epistemic components: a person must first recognize a given problem as having a moral dimension, and she or he must form a judgment about what ought to be done before taking

action.³ Likewise, deliberate belief formation and the regulation of belief for evidence have ethical dimensions. The extent to which non-epistemic norms legitimately govern belief formation and revision is a subject of philosophical debate; however, at the very least, practitioners in the financial services industry have moral obligations to their clients, employers, and colleagues to form judgments that are based on evidence and which reflect their expertise. Finally, regulation may have ethical or epistemic aims (or both). For example, *The Director's Book*, published by the U.S. Office of the Comptroller of the Currency, advises the boards of large banks to adopt a written code of ethics, and it specifies that bank managers are responsible for establishing a risk management system that identifies, measures, monitors, and controls risk (U.S. OCC 2016: 20-21; 50).

Epistemic failings may have non-epistemic causes. An epistemic failing, broadly understood, is a failure to form a well-founded belief or accurate judgment, or a failure, in a particular instance, to employ appropriate methodologies of belief or judgment formation. An epistemic failing may be the result of insufficient inquiry, inability to recognize the consequences of a proposed action, or lack of imagination with respect to considering alternative explanations. But it may also be the result of willful disregard or prevailing circumstances that interfere with the free exercise of reason. A full causal explanation of the epistemic failings of the 2008 financial crisis in the U.S would require an investigation into the moral, structural, and regulatory features that may have been implicated in the crisis, and the extent to which particular features are implicated will depend on the case in question.

In what follows, I will examine some of the epistemic features that were implicated in the financial crisis and discuss the steps that either have been or could be taken to correct them. In considering how best epistemic practices could foster a strong and healthy risk culture, my

emphasis will be on financial institutions, although I will say something about regulation.

However, a healthy and strong risk culture must originate with the financial institutions. In his 2014 address to the Annual Conference of the Clearing House, U.S. Comptroller of the Currency, Thomas J. Curry, said

... In fact, we [regulators] do have a crucial role to play, assuring that banks have appropriate internal controls, a strong risk management framework, and compensation programs that incent employees to abide by the bank's rules and culture... But for all this, we cannot lose sight of the fact that the full responsibility for building and maintaining a strong risk culture belongs, first and foremost, with the bank and its management and board of directors. They clearly need to set the tone at the top (p. 2).

The best epistemic practices approach that I outline below provides a framework for thinking about corporate self-governance and supervisory regulation. In what follows, I explain how promoting and adhering to best epistemic practices supports good reasoning in the financial services industry, thereby facilitating accurate judgments about relative risk and reward. I explain what best epistemic practices are in a general sense, and I discuss an example by way of illustrating their applicability to financial institutions. I then identify some epistemic failings on the part of financial institutions that were implicated in the financial crisis. These include failings in the securities rating process, institutional investing, and institutional risk management. My focus is on the financial crisis in the United States and financial institutions that were operating in the United States at the time. I discuss some of the ways that best epistemic practices have been implemented in the U.S. to correct faulty methodologies and to prepare for

possible catastrophic economic scenarios in the future. I conclude with some preliminary observations about the merits of the best epistemic practices approach.

II. Best Epistemic Practices

I understand an *epistemic practice* as a policy, method, or procedure that furthers an epistemic aim or realizes an epistemic value, where epistemic aims and values are truth-oriented aims and values.⁴ In accepting truth as the primary epistemic value, one is neither committed to an instrumental analysis of rationality nor a reliabilist account of justified belief. Truth is often said to be the goal of inquiry, but knowledge, understanding, and explanation are amongst its valued ends. In addition to these desiderata, we value properties such as coherence in our systems of beliefs and tractability in our belief-forming methodologies. For present purposes, we need not enter into a philosophical analysis of these concepts and their relations; what matters is that epistemic aims and values can be understood pluralistically and in a way that does not require a reductive analysis of them.

While inquiry and deliberation are appropriately understood as goal-oriented activities, belief formation is often not goal-directed. Beliefs are often formed in response to incoming evidence or inferred from other beliefs regardless of our aims; however, such non-deliberative beliefs are epistemically assessable. We appraise our beliefs as being justified (or not) depending upon whether they are based on appropriate grounds such as evidence or a reliable method, and when we do, we evaluate them from an epistemic standpoint, namely a perspective within which we have adopted epistemic values.

It will sometimes be more natural to talk about epistemic values rather than aims, depending on whether an activity is or is not goal directed. For example, I will be talking about

the value of transparency with respect to methods by which corporate bonds are assigned a credit rating. Transparency allows for the verification of the accuracy of a credit rating by other parties; transparency is an epistemic value, the realization of which may be instrumental to an investment decision. But transparency is not a direct aim of an analyst when she rates a corporate bond. It could, however, be a direct aim of a credit rating agency that discloses its methodology in order to engender public trust or the confidence of its subscribers.⁵ And transparency is certainly a recognized value in financial markets.

A best epistemic practice is one that serves an epistemic aim or realizes an epistemic value at least as well as any available competitor. (We need not make an assumption that there is a unique best practice for a given epistemic aim.) In order to be reason guiding, a best epistemic practice must be one that we can non-accidentally identify as being as good as any available competitor. Although ‘best epistemic practice’ could be given an externalist reading, whereby a best epistemic practice would be one that is best from a God’s-eye point of view,⁶ I will understand best epistemic practices to be practices that reflect our best collective judgment and that are, in principle, subject to further improvements.

In the financial services industry, epistemic inquiry is often made in the service of making practical decisions and, especially, informed judgments about relative risks and rewards. In non-technical terms, a judgment about risk is a judgment about the likelihood of a possible negative outcome.⁷ Particular courses of action, for example, making loans, underwriting and selling a securities, or contracting to make future purchases of the currency of a country that is in political turmoil, are evaluated for the risks that they entail. These risks are of various and possibly overlapping types, for example, credit, market, and sovereign. Whether a particular action is worth taking, given the perceived risks, will depend upon the expected rewards.

III. Best Epistemic Practices in the Financial Services Industry

A practice within a corporation is a policy, procedure, or norm of conduct (loosely speaking, a way of doing things) that typically furthers an aim or set of interests. A corporation typically has multiple aims: to manufacture and sell its products at a profit, target specific markets, attain competitive advantages, attract and build a talented workforce, and so on. The constituent members of the corporation who are in the role of agents with respect to the corporation's various aims must have good information about matters that serve these aims in order to effectively achieve them. Hence, the aims of a corporation – whatever they are – presuppose an interest in truth. The members of a corporation engage in the exchange of information, offering reasons and explanations for their individual judgments. The epistemic interests of a corporation will thus include knowledge, justification, and explanation. Best epistemic practices that are specific to a corporation are practices which serve these epistemic interests in relation to the corporation's aims.

Many judgments that professionals in the financial services industry make are about relative risk and reward, where it is understood that decision-making in this context is decision-making under uncertainty. Judgments made by financial professionals about risk are a form of expert judgment. Making them requires special expertise, not only with respect to technical knowledge of a product or service but also with respect to knowledge of markets, industries, and economic factors that may bear on a decision. Such expertise is acquired through ongoing effort and experience. A good judgment on the part of a professional with the relevant expertise is arrived at through the free exercise of reason, in accordance with his or her background knowledge. Whether a particular judgment or action is warranted may also depend upon the

operative preferences of the corporation; the person making the judgment, presumably, is aware of these preferences and is acting in the best interests of the corporation.

We can understand the notion of best epistemic practices to encompass practices that facilitate good judgments in a corporate setting, especially judgments about relative risk and reward. Best epistemic practices will promote actions that facilitate good judgment, and they will minimize interference with the free exercise of reason. Practices that generally promote good judgment include making thorough investigations of matters that are materially significant to a decision, seeking the advice of experts when appropriate, and engaging in dialogue with peers. Practices that minimize interference with the free exercise of reason include checking one's work for computational errors, eliminating conflicts of interest, and ensuring that one is sufficiently rested to complete the task at hand. In the event that bias, implicit or otherwise, may enter into judgment, best practices would include the implementation of processes designed to counteract bias, such as gathering pertinent data and performing analytics to identify patterns of discrimination.⁸ Many other "best practices" will be specific to a particular activity or industry.

IV. An Example of Best Epistemic Practices: The Credit Approval Process

It will be helpful to consider an example in order to illustrate the best epistemic practices approach and to provide some background for the discussion to follow.⁹ The approval process for corporate loans at a major money center bank will serve as a suitable example. When functioning properly, the loan approval process is an example of best epistemic practices at work in the social enterprise of corporate lending. The approval process is typically a collaborative effort during which the collective expertise of the participants is brought to bear on the decision. It constitutes a system of checks and balances which is designed to ensure that no information

that is material to the decision is overlooked and that judgments regarding the creditworthiness of the borrower and the appropriateness of the structure of the proposed financing are sound.

The corporate lending unit of major money center bank is typically organized into teams, where the different teams may specialize in different industries. A financing request will be analyzed and presented for approval by a particular team. The initial evaluation is often done by a credit analyst who, in conjunction with an account officer who is responsible for the client relationship, performs a credit analysis. A credit analysis is an evaluation of a potential borrower's creditworthiness in relation to a specific request for financing. The credit analysis encompasses an evaluation of the company's financial statements, and it typically includes the construction of a cash flow statement that shows the company's annual sources and uses of cash over the duration of the loan. The analysis will also include an assessment of the business climate and industry in which the company operates. A key component of the analysis is the "risks and mitigants" section in which the analyst identifies and evaluates the risks of the proposed transaction.

During the course of the evaluation, the analyst and members of the deal team may ask questions of the company's management and consult with persons who have special expertise, for example, attorneys, accountants, or colleagues, in other areas of the bank. After the analysis is complete, the request is reviewed by a credit committee, and if approved, it may be further evaluated by persons with increasing seniority and authority. If the loan is approved, it will be monitored on an ongoing basis by the account officer and embedded risk managers. The decision arrived at via this process will represent the best considered judgment of all of the participants; however, there is still a chance that unforeseen events and their consequences may prevent the borrower from meeting its debt service obligations.

Several features of this process are worth noting:

1. Credit analysis is governed by institutional norms, namely policies and procedures, some of which will have been codified. The policies and procedures for conducting a credit analysis are designed to encourage thorough and informed inquiry. They promote the epistemic virtues of inquisitiveness and critical reflection.

2. An analyst must rely heavily on testimonial sources to arrive at a credit judgment. A company's financial statements, industry reports, and any verbal exchanges with issuers or principals are all forms of testimony. These testimonial sources may sometimes be vetted by experts, for example, accountants or attorneys, or they may otherwise be subjected to scrutiny.

3. The process of arriving at a credit judgment is conducted in a social context, and an analyst arrives at a judgment through dialogue with other experts. Participants to the review process will likely raise questions that the analyst may not have considered and to which the analyst must respond.

4. Both the credit review process and the internal system of risk management are systems of checks and balances. The credit review process guards against oversights of judgment and gaps in information. The monitoring of the loan asset by risks managers is designed to identify and address any problems that might interfere with the borrower's ongoing ability to service the debt.

The norms that govern the credit analysis process are informed by the collective experience of a community of experts, and they are subject to ongoing critical modification in light of new experiences. The picture of knowledge acquisition and practical judgment that emerges is a pragmatic one: knowledge is acquired by empirical investigation and reflection, and judgments about what actions to take are informed by past experiences, projected future

events and their anticipated consequences, and corporate aims.¹⁰ These features of inquiry and judgment are present in various ways and to different degrees throughout the financial services industry.

The credit approval process may be subverted in cases where the interests of a person who is party to the decision are not aligned with those of the bank, and the participant prioritizes his or her own interests at the expense of the bank. If someone stands to gain a raise or large bonus by approving a transaction that is recognizably less than creditworthy, he may allow his personal interests to override his best judgment. If the person in question is fairly senior, it will likely be difficult for other, more junior people who are involved in the decision to oppose him. One possible remedy for this kind of situation, which would be consistent with guidelines proposed by the U.S. Office of the Comptroller of the Currency,¹¹ would be to delay the bonus or raise until the loan has been on the books for an extended period of time, thus tying the banker's to the actual performance of the loan. The problem is more challenging when the conflicts of interest are manifested at very senior levels of management. A solution to this latter problem would require tying executive compensation to the longer-term performance of the corporation, coupled with effective internal and external regulation to ensure that lending decisions are sound.¹²

The best epistemic practices approach acknowledges epistemic virtue, and it encourages the cultivation of responsibilist epistemic virtues. A responsibilist epistemic virtue is an intellectual character trait that can be cultivated and that is thought to contribute to epistemic goods such as knowledge and understanding.¹³ Responsibilist epistemic virtues include inquisitiveness, open-mindedness, conscientiousness, and perseverance. Moreover, the responsibilist understanding of an individual epistemic agent as a member of a community with

certain moral and epistemic obligations to that community is an appropriate characterization of an agent in the domains of business and finance.

However, a virtues approach to understanding the epistemology of banking and finance does not go far enough. We need an account of what facilitates good judgments in these domains, and that will require the identification of domain-specific epistemic practices and procedures. For one thing, an individual develops domain-specific virtues, in part, by following domain-specific best epistemic practices. (On the other hand, best epistemic practices may not be sufficient: one must also have the requisite talents.) Secondly, best epistemic practices are needed to guide inquiry and guard against computational errors, even for those persons who exemplify epistemic virtues. And finally, the implementation of best epistemic practices enables less-than-virtuous epistemic agents to serve the epistemic aims of a corporation: a person who lacks the social epistemic virtue of sharing information with his community will come to share that information if he is required to fill out a form that asks for it, and a person who sometimes makes hasty decisions will be corrected if there are procedures in place whereby her decisions are reviewed by others.

V. An Overview of the Financial Crisis of 2008

Although the global financial crises of 2008 was triggered by the onset in 2007 of the subprime mortgage meltdown in the U.S., its full causal explanation is the subject of ongoing debate.¹⁴ A complex of factors, some global and some local, are thought to have contributed to the financial and economic crisis in the U.S., and there is disagreement about which factors played essential causal roles and whether there was a single precipitating cause.¹⁵ Inadequate risk management, poor documentation, and faulty systems of internal control – all on the part of

financial institutions – are amongst the factors that have been cited as contributing to the crisis. These constitute violations of best epistemic practices, even if some of their causes were non-epistemic.

In claiming that system-wide violations of best epistemic practices contributed to the crisis, again, I do not mean to suggest that the only failings were epistemic ones. Ill-conceived mortgage origination practices and global imbalances of capital were arguably root causes without which the course of events would have been different. Further, acknowledging that there were violations of epistemic practices does necessarily demonstrate incompetence on the part of those persons who transgressed (although some violations would be indicators of incompetence): a given individual who is an agent in a corporation may not be in a position to rectify the suboptimal practices of the corporation.

In what follows, I will focus on the subprime mortgage crisis in the U.S., and in particular, the roles of the credit rating agencies and banks. Three financial instruments figure prominently in the events that ensued: residential mortgage-backed securities, collateralized debt obligations (“CDOs”), and synthetic CDOs.

An asset-backed mortgage security is a security that is collateralized by a pool of receivables of some kind, for example, leases, credit-card receivables, car loans, or mortgage loans. A residential mortgage-backed security is a particular kind of asset-backed security, namely one that is collateralized by a pool of residential mortgage loans. To create a mortgage-backed security, an *arranger* packages a large group (usually thousands) of mortgage loans into a pool and transfers them to a trust that will issue securities which are collateralized by the pool. Investors in the mortgage-backed security receive monthly interest and principal payments that come from the mortgage loans in the pool. A residential mortgage-backed security is divided

into different classes called “tranches.” A tranche is a division of a security that has a particular structure and a coupon rate which reflects its structure. (I explain these structural differences below.)¹⁶

A CDO is created in a similar fashion to a residential mortgage-backed security. A CDO is made up of debt securities that *may* include residential mortgage-backed securities. CDOs thus may be a securitization of securitizations. The purported function of a CDO is to diversify risk for institutional investors and create liquidity in the residential mortgage markets.

Finally, a synthetic CDO is a CDO that has entered into a credit default swap that references subprime residential mortgage-backed securities or CDOs. A swap is a contract through which two parties agree to exchange future streams of cash flow payments. In a credit default swap, the buyer of the swap makes periodic payments to the seller through the maturity date of the underlying fixed-income security. The seller of the swap will pay the buyer in the event of a default by the debt issuer. If no default occurs, the seller of the swap will continue to collect a premium from the buyer. Credit default swaps are designed to shift credit risk from one party to another, and they function as insurance for a buyer of the swap. Credit default swaps can also be used by an institution to hedge components of its portfolio position or make speculative bets in the financial markets.

So what went wrong? In broad outline, the now oft-told story is as follows: There was a housing bubble in the U.S. that began in the late 1990s and accelerated in the 2000s, fueled by low interest rates. During this time, there was a proliferation of non-traditional mortgage products, coupled with a deterioration in mortgage underwriting standards, which led to the origination of a large number of subprime loans. Securitizers of mortgage loans such as Fannie Mae, Freddie Mac, and Countrywide, lowered the credit quality standards of the mortgage loans

that they securitized. Credit rating agencies inaccurately rated the residential mortgage-backed securities and CDOs that were collateralized by these lower-quality mortgages, effectively giving investment-grade ratings to junk bonds. Banks, insurance companies, and other large financial institutions invested heavily in these purportedly investment-grade securities, and when the housing bubble burst, the value of the securities collapsed.¹⁷

In the course of events leading to the financial crisis, failures to observe best epistemic practices were implicated in (at least) the following three areas: (1) the assignment of radically inaccurate risk ratings to real estate mortgage-backed securities and CDOs on the part of the credit rating agencies, (2) lack of due diligence on the part of institutional investors, and (3) poor risk management on the part of some of the large financial institutions. I discuss these in turn.

VI. The Role of the “Big Three” Credit Rating Agencies

Concerns about the accuracy of credit ratings and the recognition of the importance of the credit ratings to the financial markets prompted the Credit Rating Agency Reform Act of 2006. The Reform Act amends the Securities Exchange Act of 1934, and it aimed to “improve ratings quality for the protection of investors and in the public interest by fostering accountability, transparency, and competition in the credit rating agency industry” (120 Stat. 1327). The Reform Act provided for the registration of Nationally Recognized Statistical Rating Organizations (“NRSROs”) and their subsequent examination by the SEC with respect to their ratings activities. At present, there are ten NRSROs: the “big three” rating agencies, namely S&P, Moody’s, and Fitch, and seven smaller rating agencies.

The Reform Act expressly prohibits the SEC from regulating the *substance* of either the credit ratings themselves or the methodologies by which any NRSRO determines credit ratings.

The Reform Act thus endeavors to preserve the autonomy of the rating agencies with respect to their judgments about credit ratings.

For ease of exposition, in what follows, I will simply refer to the agencies that are registered as NRSROs and subject to examination by the SEC as the “credit rating agencies” or just the “rating agencies.” But these terms should be understood to refer to the NRSROs, or in discussion of the agencies that were implicated in the financial crisis, the big three credit rating agencies.

An account of the general credit rating process for residential mortgage-backed securities and CDOs is given in the SEC Staff’s 2008 summary report of its investigations of the big three credit rating agencies that was initiated in August of 2007.¹⁸ My description of the general ratings process and the particular methodologies of the agencies is drawn from this report, which I will refer to as the “2008 SEC Staff Report.”

The ratings process for a residential mortgage-backed security is initiated by the arranger, who sends the credit rating agency data on each of the subprime loans that are to be held in the trust, along with the proposed capital structure for the trust and the proposed levels of credit enhancement for each tranche. The data on the subprime loans includes information such as the type of mortgage loan, principal amount, geographic location of the property, credit history and FICO score of the borrower, and ratio of the loan amount to the value of the property.¹⁹ The loan pool in each tranche is evaluated for projected losses and recoveries, under various scenarios, on a quantitative expected loss model. A rating is assigned based on both the projected future performance of the loan portfolio and qualitative factors (pp. 7 – 9). The process for a CDO is similar; however, the loss models that were used by the rating agencies for CDOs during the period before the subprime crisis required only five inputs: current credit rating of individual

residential mortgage-backed securities included in the pool, maturity, asset type, country, and industry (p. 36).

When a credit rating agency rates a residential mortgage-backed security or CDO, it issues a rating for each tranche, with the exception of the junior-most “equity” tranche. The rating represents the agency’s opinion with respect to the creditworthiness of the tranche as a measure of the likelihood that the issuer would default on its obligations to make interest and principal payments on the debt instrument.

A securitization of subprime mortgages can, in theory, be a low-risk investment if it is structured in a way that lowers or enhances the credit risk. The primary source of credit enhancement for residential mortgage-backed securities is the creation of the hierarchy of tranches, whereby tranches are successively subordinated. Any losses of principal or interest are first allocated to the lowest-ranking tranche in the pool and then applied successively up the ladder. The senior-most tranche will not suffer any losses until the lower-ranking tranches have lost all of their principal amounts.

From 2001 to mid-year 2006, there was a steady deterioration in the performance of subprime mortgages, and the rating agencies relied on historical performance data in order to predict future performance. During this period, there was an increase in mortgages with zero down payments, delayed amortization, second liens, and a lowering by mortgage originators of credit quality standards.²⁰ It has been widely observed the rating agencies were slow to downgrade the mortgage-backed securities in accordance with the changed profiles of the underlying mortgages.

The findings of the Commission Staff reveal a number of practices that were suboptimal from an epistemic point of view. These included the following:

1. Lack of Due Diligence.

The rating agencies did not seek to verify the integrity or accuracy of the loan data in the mortgage pools. They relied on the information provided to them by the sponsors of the residential mortgage-backed securities. The agencies did not perform this due diligence, nor did they seek representation from the sponsors of the securities that due diligence had been performed (SEC 2008 Staff Report, p. 18). At the time, the rating agencies were under no obligation either to perform the due diligence or to require that due diligence be performed.²¹ However, it is common practice to require verification of key features of an underlying asset if it is critical to a credit assessment or investment decision, and the agencies' failure to do so was a failure to adhere to an industry-wide best epistemic practice.

2. Lack of Transparency. The examiners noted that certain significant aspects of the ratings process and methodologies were not disclosed. Specifically, the rating agencies did not always disclose relevant ratings criteria, and two of the rating agencies regularly made "out of model" adjustments to loss expectations, the rationale for which was not documented or disclosed (p. 13). Prior to the Credit Rating Agency Reform Act of 2006, rating agencies were not required to disclose their methodologies, but rating agencies who are registered as NRSROs are now required by the Reform Act of 2006 and the Dodd Frank Act to disclose information that could be beneficial to investors and others.²²

Transparency of the ratings methodologies enables investors and other parties to evaluate the adequacy of the methods and the reliability of the ratings that have been arrived at through their deployment. Transparency is an epistemic good in two ways: it conveys information that is important to decisions that investors and regulators need to make, and it enables the methods

to be scrutinized and potentially improved through the collaborative efforts of an epistemic community.

3. The “Issuer Pays” Conflict

At the big three rating agencies, the investment bank (or other arranger) who creates the trust that issues a security also pays for the rating. This business model creates an inherent conflict of interest because (1) the banks want to obtain the highest possible rating for a given security and (2) the rating agencies have an interest in generating business with the banks. If a rating agency does not give a rating that a bank finds satisfactory, the bank can seek a better rating from another rating agency. The conflicts of interest inherent in this business model potentially undermine autonomy of judgment in the ratings process.

Direct conflicts of interest are a pernicious form of interference with the free exercise of reason, and the “issuer pays” model has been roundly criticized as a threat to the integrity of credit ratings. The Reform Act of 2006 requires NRSROs to establish, maintain, and enforce written policies and procedures that are reasonably designed to address and manage conflicts of interest, and additional rules to address conflicts of interest were implemented by Dodd Frank.²³ The latter includes a rule that prohibits an agency from issuing a rating for which persons who determine or monitor the rating also participate in sales or marketing activities, or are influenced by sales or marketing considerations.²⁴

Although many of the agencies have put the required policies and procedures in place, there is a serious question as to whether *any* internal policies could satisfactorily block a conflict of interest that is inherent in the business model, and the debate continues about how to address conflicts of interest generated by those who pay for the ratings.

The above findings by the SEC Staff are instances of epistemic failings, and the subsequent reforms are implementations of best epistemic practices. With the exception of the solution to conflicts of interest problem, which would appear to require more dramatic measures, the recommended solutions address the particular problems. These components of the regulation are examples of proactive and forward-looking regulation, although the regulation was implemented retroactively in response to perceived failures of the rating agencies.

VII. The Role of Large Financial Institutions

The U.S. Financial Crisis Inquiry Commission was formed to examine the causes of the current financial and economic crisis in the United States, and in 2011, the Commission reported its findings in a comprehensive report (hereafter, the “FCIC Report”). Six of the ten Commissioners voted to adopt the report. Three dissenting Commissioners co-authored a dissenting statement, and a fourth Commissioner single-authored a dissenting statement. The votes were split along party lines, and the opinions expressed in the report reveal the complexities of the events of the crisis and the range of disagreements with respect to its essential causes.

Of the many topics covered in the report, I will mention just two that illustrate epistemic failures on the part of large U.S. financial institutions.

1. Lack of Due Diligence on the Part of Investors

The buyers of mortgage-backed securities and CDOs were institutional investors, staffed by sophisticated financial professionals. The novelty and complexity of the securities should have prompted the purchasers of the securities to do their own due diligence, despite the fact that they were rated by the major credit rating agencies. At the very least, purchasers of the securities

should have made an effort to understand the methodology behind the ratings and considered whether the projected performance of the mortgage loans based on historical data was reasonable. The failure to exercise prudence and perform due diligence is cited by Commissioners Hennessey, Holtz-Eakins, and Thomas as one of the essential causes of the crisis (FCIC 2011: 426).

From an epistemological standpoint, to have accepted a rating without performing due diligence in this context was a form of unwarranted acceptance of testimony. Due diligence would be required for an understanding of a rating in cases where a security is novel and presents special challenges for evaluating its probability of default. One reason that investors, regulators, and other participants in the market rely on ratings for ordinary corporate bonds is that their rating methodology is fairly standardized and well understood. However, mortgage-backed CDOs were new and complex securities, and their evaluation required security-specific modeling techniques. Institutional investors should have taken steps to ensure, to their satisfaction, that they understood the modeling techniques in virtue of which the agencies arrived at ratings for mortgage-backed CDOs and that both the methodology and assumptions of the models were sound. Best epistemic practices for institutional investors thus require that due diligence be performed on securities whose ratings employ unfamiliar or novel methodologies.

2. Poor Risk Management on the Part of Financial Institutions

As part of their investigation, the Financial Crisis Inquiry Commission conducted case studies of some of the large financial firms that failed during the 2008 financial crisis. Commissioners Hennessey, Holtz-Eakin, and Thomas identified and summarized some of these findings in their dissenting statement. The Commissioners note that the large financial institutions which failed or nearly failed in the crisis had substantial and highly concentrated

exposure to the housing market through mortgage-backed securities and CDOs. To the extent this was done knowingly, it was an ill-placed bet. But, according to the FCIC report, some firms were unable to aggregate their housing risks across various lines of business, with the result that they were not fully aware of their total residential real estate exposure. Those firms who understood their total position were able to move to sell or hedge their risk before the market collapsed, but those who did not were stuck with toxic assets (FCIC 2011: 428-29).

Lack of awareness of one's total exposure to a given segment of a market can lead to asset allocations that violate a coherency norm which requires total asset allocation to represent one's preferences for risk vis-à-vis the totality. A perspicuous characterization of coherency and its normative role in a system of beliefs is not a simple task; philosophers have offered different accounts of the concept of coherence and the reasons for which we ought to rely on coherence as a reason-guiding principle.²⁵ However, consistency is arguably an essential component of the notion of coherency (Ewing 1934; Bonjour 1985), and if our beliefs are manifestly inconsistent, we have good epistemic reason to revise them (except, perhaps, with respect to special paradoxical cases). In the realm of practical reasoning, if our actions are manifestly inconsistent with our preferences, we have reason to modify our actions so that they align with our preferences.

If components of a financial institution's assets are overweighted or its liability exposure to a particular segment of the market otherwise exceeds desired levels, then there is a mismatch between actual and preferred risk allocation. Best epistemic practices require that risk be looked at in the aggregate, as well as more locally in relation to specific commitments, and that there be procedures in place to collect and aggregate the relevant data.

VIII. Regulatory Changes in the Aftermath of the Crisis

Some of the regulatory changes that have been implemented in response to the financial crisis are, in effect, codified rules of best epistemic practices. Although the Credit Agency Reform Act of 2006 was in place at the onset of the crisis, the Dodd Frank Act implemented further regulation that was, in effect, designed to (1) promote good judgment by requiring due diligence and the elimination of conflicts of interest and (2) improve methodologies by making them transparent to the investing public. In 2012, the Office of Credit Ratings was established to oversee the practices of registered NRSROs and to ensure compliance with the new regulations in accordance with Dodd Frank. These rules and the procedures for enforcing them are examples of regulation for best epistemic practices.

In addition to regulations governing credit rating agencies, the Dodd Frank Act provides for annual reviews of selected banks by the Federal Reserve for capital adequacy. The Federal Reserve's annual Comprehensive Capital Analysis and Review program for banks includes a stress test whereby a bank is tested to see how well it could withstand an economic downturn of a severity similar to the financial crisis of 2008. Stress testing aims to ensure that the U.S. banking system can withstand extreme adverse economic scenarios, should they occur in the future. This regulatory tool helps the Fed determine whether any given bank needs to strengthen its capital reserves.

The general concept of stress testing is not new. Banks regularly model projected aggregate losses under different scenarios as a standard component of aggregate risk management.²⁶ What is new is the annual testing by the Fed for a set of factors that constitutes a worst-case scenario that is more apocalyptic than what had previously been entertained. From a modeling standpoint, a scenario that once might have been regarded as a bare logical possibility

has come to be viewed as having a non-zero chance of occurring. Stress testing is thus a precautionary response to a newly recognized risk. Stress testing asks and aims to answer the question, Could the banking system in the U.S. and each of its significant individual components withstand a severe global economic downturn?

IX. Conclusion

Suboptimal epistemic practices in the financial services industry arguably played a significant role in the 2008 financial crisis. The rating agencies failed to follow procedures that would promote accurate assessments of risk. Large financial institutions failed to act in ways that would have enabled them to understand and manage the risks of residential mortgage-back securities and related derivatives. Had better policies and procedures been in place, the collapse of the housing market in the U. S. would have had less of an impact.

The fact that epistemic failings were implicated in the financial crisis suggests that thinking about best epistemic practices might be a fruitful way to approach corporate management and regulation. Such an approach would involve identifying both general and industry-specific epistemic practices that promote good judgment. Ideally, regulators would be able to identify components of the financial services industry that are critical to its functioning and ensure that best epistemic practices are being followed before potential problems develop. The employment of methodologies that are epistemically praiseworthy is no guarantee that we will make good judgments or be able to foresee the consequences of our actions and policies, but in the absence of foreknowledge, it is arguably our best strategy.

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¹ A notable exception is Boudewijn de Bruin (2015), who offers an analysis of corporate epistemic virtue.

² The best-epistemic-practices approach is aligned with a metaepistemological conception of a justified belief as one that is licensed or mandated by good epistemic norms, where the goodness of the norms is not understood to be reducible to natural properties or processes. This basic metaepistemological approach has been developed in a variety of ways (e.g., Pollock 1986, Field 2000, 2009 and 2018, Skorupski 2000, Chrisman 2007 and Warenski (in progress)). The best-epistemic-practices approaches also overlaps with the philosophical tradition of classical pragmatism (Charles Sanders Peirce, William James, and John Dewey). Classical pragmatism is understood to encompass a focus on learning through problem solving and a conception of inquiry as a cooperative and social endeavor.

³ These components of ethical decision-making are the first two of four stages of ethical decision-making (and action) distinguished by James Rest (1986). (The subsequent two are forming a moral intention to behave in a certain way and then engaging in that behavior.) Rest’s stages are discussed in the introductory chapter of de Bruin (2015), who notes that (epistemic) competence is related to the first two stages.

⁴ My use of ‘practice’ here is strictly pragmatic. It is distinct from MacIntyre’s notion of a practice as a complex, socially established and cooperative human activity that is governed by standards of excellence (MacIntyre 1984). Some components of the financial services industry are practices in MacIntyre’s sense, and it may be appropriate to foster practices, as MacIntyre understood them, by way of improving both the ethical and epistemic culture of certain components of the financial services industry.

⁵ Both the Credit Rating Agency Reform Act of 2006 and the Dodd Frank Act impose disclosure requirements on NRSROs that are designed to increase transparency with respect to the methods used in assigning credit ratings.

⁶ This is how Alvin Goldman (1980 and 1993) draws the distinction.

⁷ More technical notions of risk that differentiate it from decision making under uncertainty or define it in terms of expectation value are utilized in theoretical discourse. These more technical notions need not concern us here.

⁸ The extent to which implicit bias factors into judgments will likely vary according to the financial product and the customer base. The more abstract the corporate person, the less likely decisions about how to treat the corporate person will be influenced by implicit bias. On the other hand, retail banking, residential mortgage lending, and small business lending will be more vulnerable to implicit bias.

⁹ My description of the lending process is based on my personal experience as a corporate credit analyst and loan officer in major money center banks.

¹⁰ In these respects, the best epistemic approach is similar to what has been characterized as a classical pragmatic approach to management. See Kelemen, M. and Rumens, N. (2013).

¹¹ See the OCC Bulletin 2010-24, which is summarized in the *The Director's Book* (U.S. OCC 2016), pp. 25-28.

¹² In his remarks before the Annual Conference of The Clearing House Association (November 2014), Thomas J. Curry, U.S. Comptroller of the Currency noted that the European Union, as part of a package of rules implementing Basel III in the EU, adopted strict limits on bonuses for executive officers and material risk takers at covered firms. Curry went on to suggest that international regulations may influence incentive-based compensation practices at some U.S.-regulated entities (Curry 2014).

¹³ Responsibilist accounts of virtue have been put forth by Code (1987), Montmarquet (1987), and Zagzebski (1996), among others. De Bruin (2013; 2015) utilizes a responsibilist notion of epistemic virtue in his virtue account of business ethics.

¹⁴ See Davies (2010) for a comprehensive and accessible discussion.

¹⁵ The U.S. Financial Crisis Inquiry Commission's 2011 report on the causes of the financial and economic crisis in the U.S. (hereafter, the "FCIC report") discusses a range of contributing factors and their putative causal roles in the crisis.

¹⁶ Details concerning the composition of residential mortgage-backed securities are drawn from the description given in the 2008 U.S. SEC Commission Staff Summary Report, p. 6.

¹⁷ The impact of the housing bubble on the mortgage market and the subsequent implosion of residential mortgage-backed securities and CDO is chronicled in the FCIC report. See, especially, pp. 413-430 of the dissenting statement authored by Commissioners Hennessey, Holtz-Eakin, and Thomas.

¹⁸ See pp. 6-10 of the 2008 SEC Staff Report.

¹⁹ The 2008 SEC Staff Report (2008: 7) does not list a loan delinquency report as amongst the information that was sent, but this information would be essential to an assessment of the creditworthiness of a tranche.

²⁰ 2008 SEC Staff Report (2008: 33-35). The Commission Staff cite a study in Demyanyk and Van Hemert (2008/2011).

²¹ New rules implemented by the Dodd Frank Act require the rating agencies to disclose information on the reliability, accuracy and quality of the data relied on in determining the credit rating. See also The Securities and Exchange Act of 1934, 15E(s)(3)(A)(iv-vii).

²² See The Securities and Exchange Act of 1934, 15E(q).

²³ See, respectively, section 15E of The Securities and Exchange Act and the Code of Federal Regulations. Conflicts of Interest. Section 240.17g - 5.

²⁴ See the Code of Federal Regulations. Conflicts of Interest. Rule 17g-5(c)(8).

²⁵ One central contemporary debate concerns whether coherence is or is not truth conducive. See Erik Olsen 2014, especially Section 7, for an overview of this debate.

²⁶ For an overview of risk management models and techniques in banking, see Saunders and Allen (2010).