3-2016

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Journal of Financial Regulation, 2016, 2, 1–20
doi: 10.1093/jfr/fjw007
Advance Access Publication Date: 13 April 2016
Article

OXFORD

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ABSTRACT

Some prices and indices in domestic or global markets take on particular market-wide importance. This can occur either because (i) they are associated with ubiquitous inputs to production, (ii) they are associated with highly popular asset classes, (iii) by convention they tend to be used as benchmarks in determining other prices, or (iv) some combination of the above. Examples include prevailing wage and salary rates, certain energy and commodity prices, and such indices and borrowing rates as the Standard & Poor's 500, the Federal Funds Rate, and the Libor and Euribor interbank lending rate benchmarks.

We call such prices and indices 'systemically important' prices and indices, or 'SIPIs'. Over the long term, these prices and indices tend towards certain statistical mean values that reflect determinants that can plausibly be treated as 'fundamentals', be these demographic, technological, or global-quantity-rooted in character. At times, however, SIPIs can move out of alignment with mean values and associated fundamentals owing to distortions stemming from missing information, recursive collective action problems (including 'noise' trading and 'herd' behaviour), or even deliberately manipulative behaviour on the part of influential or colluding market actors.

We develop a general account of systemically important prices and indices as well as of the market vulnerabilities to which they can give rise. We then develop a menu of regulatory strategies for addressing these vulnerabilities in manners that protect markets' capacities to translate fundamental values into (more) accurate prices or indices when such prices or indices are systemically important. Key to the effort is recognizing that what we propose is in some cases what regulators are committed to doing already in maintaining market integrity, and in other cases is what central banks do already in determining appropriate money rental ('interest') rates and securing them through open market operations.

INTRODUCTION

Since the crisis of 2007–09, it has become something of a commonplace that financial markets are more than mere sums of their institutional parts.[1] It has thus likewise

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1 See eg Robert Hockett, '*The Macroprudential Turn: From Institutional "Safety and Soundness" to Systemic "Financial Stability" in Financial Supervision*' (2014) 15 U Va L Bus Rev 201 (hereinafter '*Macroprudential Turn*'), and sources cited therein.

become commonplace that updated, macroprudential forms of market regulation must now complement the more traditional, firm-focused microprudential forms of regulation that prevailed before the crisis broke out.[2] The 'systemic stability' of our financial markets, in other words, is now recognized to be irreducible to the mere 'safety and soundness' of banks and other financial institutions, while old forms of financial regulation are thus recognized as being in need of supplementation, even though not simple supplanting, by newer, systemically focused forms.[3]

Our regulatory regime's newfound appreciation of systemic significance is reflected not only much in post-crisis research and scholarship offered by academics, central bank researchers, and others, but also in post-crisis legislation and regulation. The Dodd–Frank Wall Street Reform and Consumer Protection Act in the US, for example, explicitly recognizes that some financial firms and market utilities are possessed of systemic significance, and so establishes a regime of 'enhanced prudential regulation' to which certain 'systemically important' firms and utilities are to be subjected.[4] Much bickering and dickering in New York and Washington accordingly now concerns whether this or that firm or utility really ought to be designated systemically important, and in consequence saddled with the putative burdens of enhanced regulation.[5]

This article takes claims of the need for enhanced prudential regulation of systemically important firms and utilities at face value, but suggests there is at least one other systemically significant variable that is in need of special treatment. These are what we call 'systemically important prices and indices,' or 'SIPIs.' For a number of reasons that we shall elaborate, SIPIs render financial markets vulnerable to many of the same systemic dangers as do 'SIFIs' (systemically important financial institutions)—and then some. They accordingly call out for enhanced regulatory treatment just as do SIFIs and systemically important market utilities. In some cases they might even call out for more—more even than efforts now underway in some jurisdictions to deal with manipulation, perhaps the most salient of the multiple vulnerabilities to which SIPIs give rise.[6]

2 ibid.

3 ibid.

4 See Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010, Pub L 111–203, H.R. 4173, Titles I and VIII (signed into law 21 July 2010).

5 See, e.g., Katherine Chiglinsky et al., Court Hears Metlife's Challenge to 'Too Big To Fail' Designation This Week, Insurance Journal (Feb. 9, 2016), available at <http://www.insurancejournal.com/news/national/2016/02/09/398082.htm> accessed 24 February 2016.

6 These are important efforts along one dimension of the several that we discuss in the comprehensive framework that we develop in this Article. Concern over manipulation pervades recent EU efforts to regulate benchmarks. See document links at European Commission, New Measures to Restore Confidence in Benchmarks Following LIBOR and EURIBOR Scandals, 18 September 2013 <http://europa.eu/rapid/press-release_IP-13-841_en.htm?locale=en> accessed 24 February 2016. It also prompted the British Bankers Association to yield oversight of LIBOR to Britain's Financial Services Authority (FSA), now the Financial Conduct Authority (FCA). See Carla Main, 'Libor Spurned, Credit Scores, German Audit: Compliance' *Bloomberg Business* (26 September 2012) <http://www.bloomberg.com/news/articles/2012-09-26/libor-spurned-credit-score-review-germany-s-audit-compliance> accessed 24 February 2016. It has also prompted the Financial Stability Board (FSB) to recommend far-reaching reforms to the processes pursuant to which certain foreign exchange and interest rate benchmarks are constructed. See eg FSB, *Foreign Exchange Benchmarks: Final Report*, 30 September 2014; FSB, *Reforming Major Interest Rate Benchmarks*, 22 July 2014; and FSB, *Progress in Reforming Major Interest Rate Benchmarks: Interim Report on*

Our plan of attack is as follows. The section 'Designation Criteria' first elaborates what we believe to render some prices and indices systemically significant, hence what we believe make up for appropriate criteria in designating some prices or indices as SIPIs. We emphasize in particular (i) the ubiquity in production of that to which a price or index pertains, (ii) the ubiquity of investment in certain asset classes to which a price or index pertains, and (iii) the ubiquity of use of the price or index in question as a 'benchmark' in other pricing decisions. Each of these criteria and any combination thereof, we suggest, can render some prices or indices more systemically significant—and hence regulatorily salient—than others. Each also is consistent, we believe, with the criteria that Dodd–Frank elaborates as germane to the designation of certain financial institutions and market utilities as SIFIs.

The section 'Systemic Vulnerabilities' turns to elaborating the systemic vulnerabilities to which SIPIs can subject our financial markets. We track these by reference to specific characteristics of the processes pursuant to which the prices or indices in question are generated. In some cases these processes involve (i) informational advantages or, relatedly, (ii) conflicts of interest, disproportionate market power, or manipulative collusion opportunities available to certain 'large' or 'clubby' market participants.[7] In other cases, the price- or index-determination processes in question involve (iii) recursive collective action problems that afflict decentralized market behaviour, depriving the markets in question of stable equilibria. Understanding the specific vulnerabilities to which SIPIs subject markets by reference to the mechanics of specific prices' or indices' determinations is critical, we argue, to the task of framing effective regulatory responses to SIPI-associated market risks.

The section 'Enhanced Regulation' turns to regulatory strategy. Here we elaborate five broad, mutually complementary options available to regulators aiming to mitigate or modulate the risks to which SIPIs expose our financial markets. All but one of these options is keyed to a particular dynamic of price- or index-determination. The first and most generally applicable option is enhanced surveillance, pursuant to which regulators pay special attention to the prices or indices in question and their modes of determination in order to ascertain whether and when regulatory interventions are called for. The second option, responsive to asymmetric information, conflicted interest, and associated manipulation or collusion opportunities, is licensure or pre-approval of the index or benchmark in question, with a view to ensuring that the arbitrage and rent-extraction opportunities that it presents do not outweigh the putative benefits that it offers. The third option, likewise responsive to asymmetric information, conflicted interest and collusion, and also to individual firms' market power, is enhanced utility-style regulation—including in some cases participation by regulators in the very 'clubs' or coalitions that aggregate and publish benchmark

Implementation of July 2014 FSB Recommendations, 9 July 2015 <http://www.fsb.org/wp-content/uploads/OSSG-interest-rate-benchmarks-progress-report-July-2015.pdf> accessed 24 February 2016. For a helpful summary of counterpart efforts in Asia, see Australian Securities & Investments Commission, Financial Benchmarks, Report 440, July 2015 <http://download.asic.gov.au/media/3285136/rep440-published-8-july-2015.pdf?_ga=1.46780900.273950129.1454539772.> accessed 24 February 2016.

7 Especially participants who effectively determine and publicize, sometimes with public blessing, the prices or indices in question.

prices or indices. The fourth option, responsive more particularly to market power and potential collusion, is enhanced antitrust and anti-fraud regulation. Finally, the fifth option, responsive to the recursive collective action problems that beset some decentralized markets, is price maintenance—typically within some variably narrow- or broad band—through open market operations (OMO).

In both the 'Systemic Vulnerabilities' and 'Enhanced Regulation' sections, we aim to retain coherence with the SIFI and Title VIII market utility regimes established by Dodd–Frank for prices and indices over which the US has primary jurisdiction, and coherence with the global financial-regulatory architecture for prices and indices over which the US lacks primary jurisdiction. Thus, we take the Financial Stability Oversight Council (FSOC) to be the appropriate 'decider' where domestic SIPI designation is concerned, then take the Federal Reserve Board (Fed) and at least one appropriate 'functional' regulator—eg the Securities and Exchange Commission (SEC) for certain securities prices, the Commodity Futures Trading Commission (CFTC) and Federal Energy Regulatory Commission (FERC) for fuel oils and energy derivatives, etc—to be the appropriate developers of particular enhanced prudential standards for particular SIPIs over which the US has primary jurisdiction. By the same token, we take international bodies such as the FSB, relevant European Union (EU) institutions, or other domestic regulators such as Britain's FCA to be the appropriate designators and standards developers for SIPIs over which the US lacks primary jurisdiction.

After discussing the transnational implications of our observations and tentative recommendations, we conclude. Before proceeding, we emphasize that this exploratory article does not purport to offer a fully elaborated and adoption-ready blueprint for regulatory action. We are well aware of the many challenges that will face any serious effort to institute a comprehensive regime covering all systemically important prices and indices used in contemporary financial markets. As noted above, moreover, there are already significant efforts underway in some jurisdictions, aimed at dealing with at least one SIPI-related vulnerability - manipulation. We do not aim here to critique or fundamentally shape these ongoing efforts. Our goal is both broader in scope and more conceptual in character: it is to identify SIPIs as a distinct subject for academic and regulatory attention, and to develop a general framework for analyzing their unique importance and policy implications.

DESIGNATION CRITERIA

We begin with the fundamental question of what it is that renders a particular price 'special' and accordingly worthy of particular attention. Not all prices or indices need to bear systemic significance from a regulatory or public policy point of view. But some undeniably do. It seems to us there are three primary pathways to systemic significance. Each of them, moreover, is reminiscent of one or another criterion prescribed by Dodd–Frank as having some bearing upon the systemic significance or otherwise of particular financial institutions and utilities. We characterize these pathways by reference to the systemic significance of the underlying value with which any particular price or index is associated.

Ubiquity of the underlying value as a productive input

One obvious pathway to systemic significance is the ubiquity of the item with which a particular price or index of prices is associated in the production of goods or provision of services in the 'real' economy. Prevailing money rental—ie 'interest'—rates are a conspicuous case in point. Where borrowing is an essential mode of financing a business and its productive activities, and where even other modes of finance—eg equity issuance—involve costs to the firm that are determined partly by reference to returns on debt instruments, interest rates represent pervasive economy-wide input costs. They accordingly affect the prices of multiple goods and services additional to financing costs themselves. In fact, they affect so many such additional prices that they critically affect consumer price inflation as measured by the Consumer Price Index (CPI), not to mention housing and other asset prices.[8]

The pervasive price-level significance of borrowing costs is precisely why central banks in developed economies work directly to *determine* interest rates, or at any rate to contain them within narrow bands.[9] In effect, the OMOs of central banks worldwide reflect broad recognition of the systemic significance of money rental prices.[10] There are other productive inputs, however, that are nearly or just as ubiquitous as credit. Hence, there are other prices that are arguably nearly or just as systemically significant as interest rates. Energy—and the fuels used to generate it—is one obvious case in point.[11] Labour is another.[12] Certain foodstuffs, metals, and other natural resources count too, though here the degree of systemic significance will of course vary from resource to resource as a function of inter-substitutabilities in production.

It is in part precisely in virtue of their ubiquity in production that some have proposed variations on OMO to modulate prices in markets for these productive inputs much as is already done to modulate prices in markets for money rental. Thus Keynes, for example, proposed a global commodity store to purchase and sell critical commodities on world markets in order to maintain price stability with respect to the same.[13] And thus others have proposed 'employer of last resort' (ELR) programmes to keep wages and salaries within stable bands, while also of course

8 Home prices are widely observed to be particularly sensitive to interest rates. See eg Plamen Iossifov and others, 'Interest Rate Elasticity of Residential Housing Prices' (2008) IMF Research Paper 08/247 <https://www.imf.org/external/pubs/ft/wp/2008/wp08247.pdf> accessed 24 February 2016. That in turn means that the now widely used Case–Shiller index of housing prices will itself be sensitive to interest rates. See S&P/Case–Shiller Home Price Indices <http://us.spindices.com/index-family/real-estate/sp-case-shiller> accessed 24 February 2016. For more on the CPI and how it is determined, see Bureau of Labour Statistics, Consumer Price Index <http://www.bls.gov/cpi/> accessed 24 February 2016.

9 See eg Eduardo Levy Yeyati and Federico Sturzenegger, '*Monetary and Exchange Rate Policies*' in Kenneth Arrow and Michael Intriligator (eds), *Handbook of Development Economics* (North Holland, 2010).

10 *ibid*. See also Federal Reserve Open Market Committee, Statement on Longer-Run Goals and Monetary Policy Strategy, 24 January 2012 <http://www.federalreserve.gov/monetarypolicy/files/FOMC_LongerRunGoals.pdf> accessed 24 February 2016.

11 See eg Ben S Bernanke and others, '*Systematic Monetary Policy and the Effects of Oil Price Shocks*' (1997) 1 Brookings Papers on Economic Activity 1997.

12 See eg JM Keynes, *The General Theory of Employment, Interest, and Money* (The Choice of Units 1936) ch 4.

13 See eg JM Keynes, '*The Policy of Government Storage of Foodstuffs and Raw Materials*' (1938) 48 Econ J 449; JM Keynes, '*The Objective of International Price Stability*' (1943) 53 Econ J 185; JM Keynes, '*The International Control of Raw Materials*' (1974) 7 J Intl Econ 299.

maintaining full employment.[14] And thus has the US in the past made occasional use of the Strategic Petroleum Reserve (SPR) to push down fuel prices during periods of unusually rapid, speculation-induced rises.[15] In all of these cases, prices are effectively recognized as bearing systemic significance, and are accordingly acted upon with a view to protecting certain system values—eg those of price stability and, also in some cases, substantively 'reasonable' prices.

Ubiquity of the underlying value as an investment asset

The popularity of a particular value as an investment vehicle is another factor that can lend prices associated with that value's systemic significance. The reasons are not difficult to appreciate. For one thing, if the asset in question is itself traded on financial markets, its ubiquity as an investment vehicle is virtually by definition significant to the financial markets. For another thing, if the asset is not itself traded on the financial markets, but is so important a part of people's nonfinancial wealth that it tends to affect both their financial behaviour and other behaviours bearing macroeconomic significance, then prices of this asset, too, will bear both financially and macroeconomically systemic significance.

This point is perhaps best illustrated by reference to homes and home prices in the US, which proved during both the 2007–09 crisis and its aftermath to bear both financial market and direct macroeconomic significance. To start with the former, as is now well known, securities backed by home mortgage loans became a highly popular financial asset during the lead-up to 2007.[16] Residential mortgage-backed securities (RMBS) markets came to be second only to the US Treasury market in capitalization by 2006.[17] This seems to have stemmed partly from speculative mania, partly from favourable regulatory treatment, and partly from outright fraud on the part of loan-originators and -securitizers alike.[18] Whatever the causes, however, the sheer ubiquity of RMBS as favoured investment vehicles by the early 2000s meant that home prices, to which RMBS values were of course closely correlated, became systemically significant to the financial markets. The performance of RMBS prices, hence the behaviour of RMBS market participants, rode crucially upon them from 2006 onward.[19]

Housing prices bear not only indirect systemic significance to the financial markets via their effects upon RMBS markets, but also direct systemic significance to the macroeconomy via their effects upon consumer behaviour. Here, we allude to the well-documented 'wealth effect' pursuant to which consumer expenditures generally ride upon consumers' market-valued net worth.[20] Since home prices are by far the

14 See eg L Randall Wray, *Understanding Modern Money* (1998). *Also* Minsky's early articles posthumously collected by Wray in Hyman Minsky, *Ending Poverty: Jobs, Not Welfare* (2013).

15 See eg Ron Scherer, 'US to Tap Strategic Petroleum Reserve to Drive Gas Prices Down' *Christian Science Monitor* (New York, 23 June 2011) <http://www.csmonitor.com/USA/2011/0623/US-to-tap-Strategic-Petroleum-Reserve-to-drive-gas-prices-down> accessed 24 February 2016.

16 See eg Gary Gorton, *Slapped by the Invisible Hand* (2011). *Also* Robert Hockett, '*A Fixer-Upper for Finance*' (2010) 87 Wash U L Rev 1213.

17 ibid.

18 ibid.

19 The specific dynamics, more on which below, inform our recommended regulatory response.

20 See eg Michael Darby, '*The Wealth Effect*' in *The New Palgrave: Dictionary of Economics* (1987) 883.

primary determinant of most Americans' net worth, and since consumer expenditure in turn is by far the primary determinant of macroeconomic growth and consequent wage and employment growth, home prices are primary determinants of the nation's macroeconomic performance and consequent wage and employment rates as well.[21] Here too we find evidence in recent events, the lengthy recession and tepid recovery following the troubles of 2007–09 having been widely observed to be consequences of an ongoing debt-deflation following on housing price drops from mid-2006 onwards.[22]

Just as credit is far from the sole pervasive input to production, so are housing and associated RMBS far from the sole pervasively popular investment vehicles. Other investments to which financial market participants have 'herded' in great numbers in recent years include (i) collateralized debt obligations (CDOs) and the credit default swaps (CDS) that made RMBS appear safer than they were in the early 2000s, (ii) tech stocks and other corporate equities in the later 1990s, and (iii) so-called 'junk bonds' in the 1980s, to name but a few.[23] In most of these cases, as in that of RMBS, combinations of speculative mania, favourable regulatory treatment, and outright fraud appear to have played important roles in drawing investors to the assets in question.[24] Aging populations and associated pension fund growth played their parts too.[25] Also as with RMBS, however, in the cases of these assets as well what matters for present purposes is that there was no herding at all. For where there is herding, there tend to come systemically significant prices.

Ubiquity of use of the price or index as a benchmark

The third and final characteristic we think lends prices or indices systemic significance is their deliberate use as heuristics or 'benchmarks' in other pricing decisions. It is common, for example, for financial actors to set interest rates in credit transactions (including mortgage transactions), as well as the terms of derivative and other financial contracts, by reference to the London Interbank Offered Rate (LIBOR)—ie the rate at which a small coterie of large global banks lend to one another. The latter accordingly functions in many transactions much as the Fed's Federal Funds (Fed Funds) Rate does in other transactions. It is arguably more systemically significant even than that rate, however, inasmuch as there are distinct LIBORs for five currencies, with the number having been even larger until recently.[26] Whoever sets LIBOR as the Fed sets the Fed Funds Rate, then, exercises an influence comparable to that of the world's most influential central bank.[27]

21 ibid. See also Dean Baker, *The End of Loser Liberalism: Making Markets Progressive* (2011).

22 See eg Paul Krugman, *End This Depression Now!* (2013); Daniel Alpert, Robert Hockett and Nouriel Roubini, 'The Way Forward: Moving from the Post-Bubble, Post-Bust Economy to Renewed Growth and Competitiveness, New America Foundation' (2011) <https://static.newamerica.org/attachments/4272-the-way-forward/NAF--The_Way_Forward--Alpert_Hockett_Roubini.61586bd337b64202a9b0c86117bdfc98.pdf> accessed 24 February 2016.

23 Gorton (n 16); Hockett (n 16).

24 ibid.

25 Hockett (n 16).

26 See eg Donald McKenzie, 'What's in a Number?' (2008) 30 *London Rev Books* 11 <http://www.lrb.co.uk/v30/n18/donald-mackenzie/whats-in-a-number> accessed 24 February 2016.

27 ibid.

Turning from borrowing rates to other prices, it is also common, for example, for petroleum prices to be priced relative to the so-called 'Brent Crude', 'West Texas Intermediate', or 'Dubai Crude' petroleum price benchmarks.[28] These for their part are in most cases determined by small numbers of oil-producing firms or states much as LIBOR is determined by a small number of large-banking institutions.[29] They then determine in turn the prices asked for other fuel oils by other actors.[30] Other prices—eg those for index fund shares and financial derivatives on the financial markets—are deliberately framed by reference to various indices commonly watched by financial market participants. Familiar examples in this case include the aforementioned Consumer Price Index, the Dow Jones Industrial Averages, the Standard & Poor's 500 Index, and the Case–Shiller Housing Price Index, to name but a few.[31] Finally, yet other important benchmark-like prices are those of widely used currencies in relation to one another. The forex markets too, in other words, ride crucially on relative prices that function as benchmarks.

The sense in which benchmark prices and indices like these can become systemically significant when used as described should be clear. These prices are in effect inputs to other prices, many such prices, and in this sense are much like inputs to production itself in their reach. They are pervasively influential.[32] The stakes involved in their fluctuations can accordingly be high. Moreover, and as we elaborate below, the modes by which these prices are determined are particularly vulnerable to manipulation by, or conflicts of interest among, privileged cliques who can be tempted by the gains offered by manipulating or trading on such pervasively influential determinants of prices across many markets. This is surely one reason that some of these benchmarks—the Fed Funds Rate, for example—are *publicly* determined. But it is also a reason to subject them to enhanced regulatory scrutiny when they are not. Recent scandals involving LIBOR, EURIBOR, and foreign exchange markets—the latter itself also 'made' by a small number of institutions—in particular demonstrate the consequences of not doing so.[33]

28 See eg 'Oil Markets Explained' *BBC News* (18 October 2007) <http://news.bbc.co.uk/2/hi/business/904748.stm> accessed 24 February 2016.

29 ibid.

30 ibid.

31 See n 8, for reminder on Case–Shiller and CPI. For more on the Dow Jones and S&P 500, See eg N Amenc and others, *Assessing the Quality of Stock Market Indices* (2006).

32 For a thoughtful discussion of the economics of benchmarks, see Darrell Duffie & Jeremy C. Stein, Reforming LIBOR and Other Financial Market Benchmarks, 29 J. Econ. Persp. 191, 193–196 (2015). Duffie and Stein highlight important information-related benefits that benchmarking offers. These include lower search costs, better matching, and greater participation in markets even by less well informed agents. Once a benchmark is established, it can become a powerful 'basin of attraction' for related trades, thereby increasing trading volume and improving liquidity. Id. at 195–96.

33 See eg Hayley Richardson, 'HSBC Embroiled in New Price-Fixing Scandal' *Newsweek* (24 February 2015) <http://europe.newsweek.com/hsbc-embroiled-new-price-fixing-scandal-309156?rx=us> accessed 24 February 2016; Terrence McCoy, 'Yesssssss: The Brazen Messages Among Bankers that Produced a $4.3 Million Fine' *Washington Post* (13 November 2014) <https://www.washingtonpost.com/news/morning-mix/wp/2014/11/13/the-gleeful-messages-exchanged-by-bankers-that-produced-a-4-3-billion-fine/> accessed 24 February 2016; Jonathan Berr, 'Banks Pay Fines, but Show Little Sign of Reform' *CBS MoneyWatch* (12 November 2014) <http://www.cbsnews.com/news/banks-pay-fines-but-show-little-sign-of-reform/> accessed 24 February 2016.

SYSTEMIC VULNERABILITIES

The criteria elaborated above for determining whether particular prices or indices are systemically important amount to reasons for caring, as a polity, about these prices or indices. They are characteristics that lend these prices or indices policy salience. When it comes to determining how to react to that salience, however, one must first understand the particular vulnerabilities to which the prices or indices in question, and hence the markets to which they are systemically important, are subject. In other words, the criteria elaborated above in the section 'Designation Criteria' tell us the sense in which prices or indices can be systemically *important*, while what remains to be elaborated is precisely how these prices or indices can render our markets systemically *vulnerable*.[34]

A useful way to address this second question is to concentrate on the mechanisms through which systemically significant prices and indices are generated or determined. For it is from these mechanisms that the particular vulnerabilities, which these prices and indices can transmit to broader markets, originate. We will address these mechanisms and the vulnerabilities to which they give rise by reference to particular (i) information differentials and associated conflicts of interest, (ii) market power differentials and associated manipulation dangers, and (iii) recursive collective action problems that characterize some such mechanisms. The first two characteristics make it possible for prevailing prices to differ from 'natural' long-term equilibrium prices. The third makes it possible for there to be no stable equilibrium price at all.

Information differentials and conflicts of interest

As noted above, many SIPIs are determined by comparatively small numbers of persons or firms that are themselves actors in markets in which the SIPIs are systemically influential. An obvious case in point is the aforementioned LIBOR, the US Dollar rendition of which is determined by 18 large, globally active banking concerns.[35] An institution that plays a significant role in setting LIBOR on the one hand, while taking positions in multiple markets in which other prices are determined by LIBOR on the other hand, clearly is on more than an equal footing with other actors in those other markets. Its informational advantage is profound and pervasive, and likely over time to produce prices in multiple products that vary from 'natural', long-term equilibrium prices of the kind that we usually depend upon multiple arms-length transactions to produce.

Consider, for example, a derivative transaction through which a financial institution seeks to hedge against future changes in prevailing interest rates within a particular economy. Assume that this institution is not a member of the 'club' that sets LIBOR, while most institutions willing to enter into the contemplated derivative transaction *are* members of that club. Since the parties to a derivative contract are in

34 It should be noted that we say 'vulnerable' rather than 'risky' here. The reason is that we believe vulnerability to be a more capacious category than risk, with the latter constituting one, but only one, form of the former. We believe that we should care as a polity about all forms of vulnerability to which systemically important prices subject our markets. We worry, however, that occurrence of the word 'systemically' in our phrase 'systemically important prices' might mislead some into thinking our only concern is 'systemic risk'. As will be clear in what follows, it is not.

35 McKenzie (n 26).

most cases effectively taking opposed sides of a 'bet'—in this case, a bet on the future course of interest rates—the non-LIBOR-setting institution in the contemplated transaction is effectively betting against 'the house' on a prospect about which the house has much more information. Moreover, the same would be true were 'the house' to help set currency exchange rates on the one hand, while 'betting' on values derived from those rates on the other.[36]

This asymmetry can yield any combination of three possible consequences. One is that non-club-member institutions, aware of their disadvantages relative to club-members, engage in fewer transactions of the contemplated type. Another is that such institutions do enter into such transactions, but on terms that do not produce fair equilibrium prices of the kind that arms-length transactions among equals are expected to produce.[37] Finally, another is that such institutions, aware of the 'rigged game' nature of the markets, react in destabilizingly dramatic fashion when suspicions rooted in that awareness appear to be confirmed by particular transactions in which 'club' institutions engage.[38]

In any of these three cases, the relevant market falls prey to a systemic harm. It is incomplete, unfairly functioning, prone to volatility, or some combination of these.[39] One consequence is that the price system as operative within the relevant market is not reflecting underlying value or, therefore, facilitating our markets' allocative efficiency.[40] Another is that the price system as operative in the relevant market is operating as an instrument of injustice.[41] And finally another is that the price system as operative in the relevant market can operate as a mediator of volatility and consequent macroeconomic instability.

Market power differentials and manipulation dangers

The same harms just described can result not only from advantaged parties' having better knowledge of future changes in particular market values, but also from their having greater capacity to *determine* such changes—the capacity conventionally referred to as 'market power.'[42] Consider the LIBOR hypothetical just contemplated, for example. In this transaction the non-LIBOR-setting institution might effectively

36 Scandal emerged along precisely such lines in the spring of 2015. See n 33. See also Kate Gibson, 'In Rare Admission of Guilt, Wall Street Banks Say They Rigged Markets' *CBS MoneyWatch* (20 May 2015) <http://www.cbsnews.com/news/in-rare-admission-of-guilt-wall-st-banks-admit-they-rigged-markets/> accessed 24 February 2016; Jane Onyanga-Omara and Kevin McCoy, 'Banks Fined $4.3 Billion in Foreign Exchange Probe' *USA Today* (12 November 2014) <http://www.usatoday.com/story/money/business/2014/11/12/forex-investigation-settlements-announced/18885767/> accessed 24 February 2016.

37 See Robert Hockett and Saule Omarova, '"*Private" Means to "Public" Ends: Governments as Market Actors*' (2014) 15 Theor Inq L 53.

38 The 'crony capitalism' diagnosis of the Asian Financial Crisis of the late 1990s appeals to this dynamic. See eg Helen Hughes, 'Crony Capitalism and the East Asian Currency Financial "Crises,"' (Spring 1999) *Policy*, 1. See also Michael Pettis, *The Volatility Machine: Emerging Economies and the Threat of Financial Collapse* (2001).

39 Hockett and Omarova (n 37). Note also, in the spirit of n 34, that the list of such systemic harms includes more than simply 'systemic risk'.

40 ibid.

41 ibid.

42 ibid.

be betting against the LIBOR-setting 'house' on a prospect not only about which the house simply has more information, but also which the house is able, in collusion with others, actually to *set*.[43]

The degree of such market power enjoyed by 'the house' in any given case will of course ride on the number of 'club' members and the cohesiveness of their collusion.[44] But the potential is nevertheless ever-present where systemically significant prices are set by small coalitions of private actors—or, *a fortiori*, by individual parties acting alone.[45] Insofar as this danger is present, the market in question is subject to the same forms of systemic vulnerability as those beset by the differential information problem discussed just above.

In short, then, once again we face the prospect of any combination of three possible upshots. One is that non-club-member institutions, aware of their disadvantages relative to market-power-wielding club-members, engage in fewer transactions of the contemplated type. Another is that such institutions do enter into such transactions, but on terms that do not produce fair equilibrium prices of the kind that arms-length transactions among equals are expected to produce. And a third is that non-club-member institutions, aware of the 'rigged game' nature of the markets, react in destabilizingly dramatic fashion when suspicions rooted in that awareness appear to be confirmed by particular transactions in which the 'club' institutions engage.

In any of these three cases, again the relevant market is falling prey to a systemic harm. It is incomplete, unfairly functioning, prone to volatility, or some combination of these.[46] One consequence again is accordingly that the price system as operative within the relevant market is not reflecting underlying value or, therefore, facilitating our markets' allocative efficiency. Another is that the price system as operative in the relevant market is operating as an instrument of injustice—now not merely incidental injustice, but intentional injustice done by colluders or manipulators.[47] And,

43 As Duffie and Stein persuasively argue, for example, the fact that the individual LIBOR-setting banks were also major derivatives dealers underwrote a particularly pernicious *structural* incentive for LIBOR manipulation. Given the sheer size of derivatives trades indexed to the LIBOR, even a small movement in the benchmark rate could translate into enormous derivatives gains for the club-member banks able to effect such movements. In effect, large dealer-banks were able to 'lever' their ability to influence LIBOR (i.e., their 'club membership') to gain significant illicit advantage in related derivatives markets. See, Duffie & Stein, *supra* note 32, at 200.

44 See, generally, William J Baumol and others, *Contestable Markets and the Theory of Industry Structure* (1982).

45 This form of abuse was at work in the LIBOR scandal, more on which *below*, as well as in other 'BOR' scandals, notably EURIBOR. See n 33. See also Hayley Richardson, 'UK's Serious Fraud Office Grills Traders Over Europe-Wide Rate Fixing Scandal' *Newsweek* (9 March 2015) <http://europe.newsweek.com/uks-serious-fraud-office-grills-traders-over-europe-wide-rate-fixing-scandal-312369> accessed 24 February 2016. The same is true of recent precious metal price-fixing scandals. See eg Jean Eaglesham and Christopher Matthews, 'Big Banks Face Scrutiny over Pricing of Metals' *Wall Street Journal* (23 February 2015) <http://europe.newsweek.com/uks-serious-fraud-office-grills-traders-over-europe-wide-rate-fixing-scandal-312369> accessed 24 February 2016.

46 See n 34, 37, 38.

47 ibid. For thorough consideration of the dangers posed by benchmark manipulation in particular, see Duffie and Stein, supra, note 32; *also* Andrew Verstein, '*Benchmark Manipulation*' (2015) 56 Bos Col L Rev 215.

finally, another is that the price system as operative in the relevant market can operate as a mediator of volatility and consequent macroeconomic instability.

Recursive collective action problems

Ironically, just as the concentrated market power or informational advantage enjoyed by some private setters of SIPIs can produce systemic vulnerabilities, so can the *lack* of any such institution or coalition of such institutions in some cases. Here we allude to the recursive collective action challenges to which many decentralized markets, especially financial and money markets, seem to be vulnerable.[48]

The hallmark of a collective action problem, of course, is its aggregating multiple individually rational decisions into collectively irrational or calamitous outcomes.[49] Recursive problems are those in which the problematic outcome in question prompts a new round of decisions of the same type as produced the collectively problematic outcome at the outset, thereby producing a yet worse outcome, with more iterations following to the point of comprehensive catastrophe.[50] Consumer price hyperinflations, debt deflations, bums' rushes and arms races are classic cases. So are asset price bubbles, bank runs, and asset 'fire sales.'[51]

The case of the asset fire sale is particularly salient where SIPI-mediated systemic market fragilities are concerned. Consider the earlier-mentioned RMBS market, for example. As noted before, RMBS prices fall squarely within the definition of 'SIPI' as we have elaborated it. Yet, RMBS also were subject—dramatically subject—to a particularly poignant recursive collective action problem ('ReCAP') in months culminating in 2009.[52]

When it became clear in 2007–08 that some RMBS were backed in significant measure by troubled 'subprime' mortgage loans and accordingly 'toxic', holders of these securities were faced with a quandary: while there was reasonably reliable knowledge in the markets that a specific percentage of all RMBS outstanding were 'toxic', nobody knew precisely which RMBS were the toxic ones.[53] Under such circumstances it was rational for prudent investors to 'bet cautiously' and assume that they held disproportionate shares of the toxic RMBS. Everyone thinking this way, however, of course meant that investors in aggregate were undervaluing the market portfolio; they were effectively acting 'as if' the aggregate portion of toxic RMBS was much larger than they all knew it to be.[54] When they acted accordingly and sold simultaneously, they of course drove down the prices of RMBS further, which of course triggered more rounds of mass selling, further price drops, and so on—a classic 'run' on the asset in question.[55]

Because the assets in question were RMBS, however, and because RMBS prices, as noted above, had become systemically significant by the early 2000s, the behaviour

48 See, generally, Robert Hockett, '*Recursive Collective Action Problems*' (2016) 3 J Fin Persp 1.
49 ibid.
50 ibid.
51 ibid.
52 Hockett and Omarova (n 37).
53 ibid.
54 ibid.
55 ibid. See also Hockett (n 48).

just recounted was no ordinary fire sale. It was a *systemically catastrophic* fire sale. It massively destroyed value in countless portfolios, including retirement portfolios, on which millions were reliant.[56] It also drove housing prices—which we noted above also to be systemically significant—yet lower by raising the cost of mortgage and refinance credit and thereby constricting housing demand and raising foreclosure rates.[57] And finally, of course, it caused massive losses among those who had effectively 'bet' on RMBS performance, housing prices, or both via CDOs, CDS, and other derivative instruments.[58]

None of this would have had to happen, at least not with the magnitude that it did, had some collective agent been able to act to ensure that the aggregate value of RMBS outstanding more closely reflected the 'toxicity' of the market portfolio of RMBS.[59] This is in part what the Treasury's Troubled Asset Relief Programme (TARP) and the Fed's Maiden Lane Funds were meant to assist with, though clarity about the mission and hence effectiveness in the execution at first left much to be desired.[60] Happily, Maiden Lane in particular and, later, QE3 have done much better than TARP at first did, in the comparative tranquility of the post-crisis years.

In any event, the message for present purposes is clear enough: the absence of concentrated informational advantage or market power can be as problematic as the presence of either where the transmission of systemic vulnerability to financial and broader markets via SIPIs is concerned. What, then, to do? The answer, we think, is to opt in favour of concentrated informational advantage and market power, but to ensure that the advantage and power in question are held or controlled by public, as distinguished from private, actors. This of course takes us to policy responses to SIPI-mediated systemic vulnerability.

ENHANCED REGULATION

As noted earlier, the Dodd–Frank regime put in place in the US following the 2007–09 troubles treats so-called SIFIs and systemically important market utilities as 'special' in view of their systemic importance, and accordingly subjects them to enhance prudential regulatory standards. We believe that an analogous strategy would make for an intuitively tractable, politically feasible, and regulatorily practicable first step in addressing the vulnerabilities to which SIPIs give rise.

Like the Dodd–Frank regime, then, we would recommend first vesting authority in a regulatory body or small group of such bodies to designate particular prices and indices as SIPIs, then vesting authority in one or more regulatory bodies to develop enhanced prudential regulatory standards to which the derivation and maintenance of designated SIPIs will be subject. We discuss our proposed regime in that order, in each case discussing both prospective SIPIs over which the US has primary jurisdiction, and prospective SIPIs over which other nations or transnational regulatory bodies have primary or concurrent jurisdiction.

56 ibid.
57 ibid.
58 Gorton (n 16).
59 Hockett and Omarova (n 37).
60 ibid.

SIPI designation

The first task in developing a regime able to handle SIPI-associated market vulnerabilities is to determine who decides whether a particular price or index warrants SIPI status, and pursuant to what criteria. We have in effect already addressed the latter, 'what' question in the section 'Designation Criteria', so will concentrate here on the 'who' question.

Beginning with the domestic case, where the price or index in question is subject to primary US jurisdiction, the FSOC would seem the natural body to discharge this task. It is, after all, the body in which Dodd–Frank vests SIFI-designation authority, precisely because it is the body that has responsibility for overseeing the US financial system as a whole—ie as a comprehensive and integrated *system*.[61] As for the standards to be employed by the FSOC in making these determinations, again, we think those elaborated above in the section 'Designation Criteria' are well suited to the task. This is both for the reasons stated there and because, as noted before, these standards resonate closely with those laid out in Title I of Dodd–Frank itself in affording guidance to the FSOC on the subject.

Where prospective SIPIs are *not* subject to primary US jurisdiction, we recommend that counterparts to FSOC make counterpart designation decisions, again on the basis of criteria reminiscent of those elaborated above in the section 'Designation Criteria'. For a price or index over which the UK has primary jurisdiction, for example, probably the FCA, acting in consultation with the Bank of England (BoE) would be the appropriate designator. In the EU, the appropriate body is the European Commission, responsible for the EU's new benchmark-regulatory reform developed in response to 2012's LIBOR-related scandal.[62] For a price or index over which multiple nations' authorities have jurisdiction, on the other hand, it would seem to make sense for the FSB to do the designating; it is, after all, the closest global analog there is to the US FSOC.[63]

In these transnational cases the process of SIPI designation should resemble the process of transnational capital-regulatory convergence as pursued via the Basel Committee on Banking Supervision (BCBS): the world's primary systemic financial regulators would first agree on particular SIPI designations, then implement these decisions through rulemakings or counterpart regulatory actions back home.[64] We are uncertain whether there are too many procedural or substantive disagreements across jurisdictions for such a process to be practicable; but we doubt it, and in any event there is no way to find out with reasonable certainty whether such challenges confront us until we commence with the effort.

In the worst case scenario of non-agreement, moreover, there seems no reason to suppose that any particular jurisdiction—certainly the US—could not at least address domestically those risks that any prospective SIPI might raise in its own

61 Dodd–Frank Act (n 4), Title I.

62 See n 32.

63 See Financial Stability Board, 'About the FSB' <http://www.financialstabilityboard.org/about/> accessed 24 February 2016.

64 See Bank for International Settlements, 'About BIS' <https://www.bis.org/about/index.htm> accessed 24 February 2016.

markets. All it would need to do is make its own SIPI determinations, then subject designated SIPIs to substantive standards like those to which we now turn.

Substantive SIPI-regulatory standards

The second task in developing a regime able to handle SIPI-associated market vulnerabilities is to develop substantive regulatory standards to which SIPIs, once designated as such, will be held subject. This task, like the designation task, likewise implicates both 'who' and 'what' questions, neither of which we have yet addressed. We, accordingly, address both here in that order.

Who

Where the 'who'-related question is concerned, we must once again confront variation rooted in jurisdictional differences with respect to various prospective SIPIs. If the price or index in question is subject to primary US jurisdiction, the Fed, acting in collaboration with appropriate 'functional' regulators in some cases, would seem the natural 'who' to discharge the substantive regulatory task. The Fed is, after all, the body in which Title I of Dodd–Frank vests SIFI-regulatory authority, even while directing the Fed to act in consultation with functional regulators where non-banks receive SIFI designations.[65] There seems no reason not to follow the same pattern with respect to SIPI regulation.

Were the Case–Shiller Housing Price Index to be designated a SIPI, for example, it would seem to make sense to charge the Fed, the Federal Housing Agency (FHA), and the Federal Housing Finance Agency (FHFA) with the task of developing enhanced regulatory standards to which this index's construction and use would be subject. Were the West Texas Intermediate Crude oil benchmark to be designated a SIPI, on the other hand, or were the price of a widely traded petroleum price derivative to be likewise designated, it would seem sensible to charge the Fed, the CFTC, and the FERC with the task.

Where prospective SIPIs are *not* subject to primary US jurisdiction, counterparts to the Fed and the US functional regulators should probably develop the enhanced regulatory standards. For a price or index over which the UK has primary jurisdiction, for example, presumably the BoE and FCA would be the appropriate standards developers. For a price or index over which multiple nations' authorities have jurisdiction, on the other hand, it would seem to make sense for the BCBS (including as it does the world's central bank chairs and finance ministers) and the appropriate transnational functional regulatory forum (eg the International Organization of Securities Commissions (IOSCO)) to do the standard developing. It is worth once again noting in this connection that the European Commission has developed a comprehensive new EU-wide benchmark regulatory framework, while other jurisdictions are working quickly to follow suit.[66]

65 Dodd–Frank Act (n 4), Title I.

66 See n 32, and accompanying text. Verstein (n 47) thinks the EU approach to regulating against benchmark fraud wrongheaded, particularly in its approaches to mandatory disclosure and governance. Because our purpose in this article is to develop a general framework for understanding and regulating all forms of systemically important prices or indices, we take no position here on the detailed substance of the EU's new approach to regulating against benchmark fraud.

Generally, in cases requiring transnational cooperation, again we think the process would best start by emulating that pursuant to which the BCBS itself facilitates transnational capital-regulatory convergence. National regulators would first seek agreement upon substantive regulatory standards, then implement those standards back home through rulemakings or counterpart regulatory actions.

What

Turning from who will develop enhanced SIPI-regulatory standards to what the content of such standards should be, as noted above we believe that one or more of five regulatory strategies will prove helpful for most purposes. We elaborate these strategies, also as noted above, by reference to the particular vulnerabilities to which the processes of particular SIPIs' generation or determination are subject.

Enhanced oversight. The first regulatory option, which we think well advised for *all* SIPIs, is enhanced oversight. The idea here is for the appropriate regulator or regulators, as determined according to criteria elaborated immediately above in the subsection 'Ubiquity of the Underlying Value as a Productive Input', simply to supervise the construction and/or administration of the SIPI in question. They would attend in particular both to how the SIPI is being generated or determined, and to how it is being used. In so doing, they would be on the lookout for evidence either that private parties who jointly or severally generate or determine the SIPI in question are systematically using informational advantages or market power in transactions with others, or that rapid movements in the SIPI in question are attributable to recursive collective action challenges—ie are bubble- or bust-related. The regulators must also, of course, have all information-gathering authority, including subpoena power that might be necessary in adequately discharging the enhanced oversight function. The UK has responded to the LIBOR scandals of 2012 with a strategy of this general kind.[67]

Licensure/pre-approval. The second regulatory option, responsive to informational advantage, conflicted interest, and associated manipulation or collusion opportunities, is to require licensure or pre-approval of private institutions that establish or maintain widely used benchmarks which receive SIPI designation.[68] The basic idea here is to ensure that those who develop, provide, or maintain benchmark indices not employ their roles vis-à-vis these indices to extract rents from others who lack such roles.[69]

Requiring licensure can be helpful in realizing this desideratum in several ways. First, it puts parties on notice that the privileged role that they play with respect to their indices both carries special responsibilities and is contingent on their fulfilling these responsibilities. The situation here is reminiscent of that faced by

67 Main (n 32).

68 The EU benchmark-regulation initiative employs a strategy of this kind. See n 32.

69 For an early proposal of such a regime for the preapproval of complex financial products, see Saule T Omarova, '*License to Deal: Mandatory Approval of Complex Financial Products*' (2012) 90 Wash U L Rev 63.

'market-making' US broker-dealers ('B-Ds') on the securities markets, who in their market-making capacities are held to higher standards of disclosure and fair dealing than broker-dealers acting in their more ordinary capacities.

Secondly, requiring licensure offers a means of screening likely malefactors out of SIPI-determining roles before they take them on. A person or institution with a poor track record of regulatory compliance in one or more markets, for example, can be disqualified in advance, under a licensing regime, from taking part in the determination of prices or indices that are designated as SIPIs.

Finally and relatedly, a licensing regime offers the opportunity of regularly re-examining those who determine designated SIPIs, with a view to their ongoing habits of compliance—at least if the license has to be regularly renewed. A useful model here might be the B-D registration regime, pursuant to which B-Ds must take regular examinations, at gradually lengthening intervals, for a period of years before finally being rebuttably presumed to be above-board. Operating in this way, the appropriate SIPI regulator will be regularly overseeing those who determine SIPIs even as it continually oversees movements in the particular SIPI itself.

Utility-style regulation. The third regulatory option, again responsive to informational advantage, conflicted interest, and associated manipulation or collusion opportunities, as well as to market power, is to develop a regime of enhanced utility-style regulation—including in some cases participation by regulators in the very 'clubs' or coalitions that aggregate and publish 'benchmark' prices or indices. Here the idea is to recognize forthrightly that the development and maintenance of some SIPIs might be in the nature of a 'natural monopoly' function, at least if (i) scale economies or network effects render concentration in some industries structurally likely, while (ii) consequently large firms in those industries then come naturally to wield disproportionate influence on prices simply by acting, as 'big' actors, in markets that generate those prices.[70]

There is reason to think, for example, that certain kinds of insurance might give rise to natural monopolies or, at any rate, oligopolies within associated insurance markets.[71] If that is so, and were insurance companies in such markets to develop and maintain some price index or benchmark that came to function as a SIPI, then it would stand to reason that the maintenance of that index or benchmark itself was effectively a monopoly or oligopoly function. Were that to be the case, in turn, then one time-honoured regulatory response would be in effect partly to 'socialize' the firm or firms in question, rather as we do with natural monopolies in many markets now suggestively labelled 'public utilities' markets.[72]

Utility regulation of this kind takes several forms, most involving some form of direct rate regulation.[73] In some cases, public officials sit on the boards of otherwise privately owned utilities firms.[74] In other cases, the firms' boards are private, but must seek permission to raise rates from plenary 'public utilities boards' that review

70 See Hockett and Omarova (n 37) for more on this prospect.

71 See eg Robert Hockett, '*Making (Some) Sense of the Health Care Reform Debate*' (2010) 53 Challenge 28.

72 ibid.

73 See eg Richard Musgrave, *The Theory of Public Finance* (1960).

74 ibid.

all such requests made by all designated utilities firms.[75] We suggest that options analogous to these would likewise be possible where SIPI determination is concerned.

One model would be for a 'SIPI Rates Board' to be authorized to oversee all SIPIs determined by naturally monopolistic or oligopolistic firms and require, any time that a movement in a SIPI did not appear readily explicable by reference to competitive market behaviour, that the firm or 'club' responsible for the SIPI in question explain the movement. Lack of an explanation might then be treated as grounds for a more intrusive inquest or regulatory sanction of one kind or another. Another possible model would be for an appropriate regulator to participate in the very coalition or 'club' of persons who set benchmarks or derive indices that come to be designated as SIPIs in the first place. Such a regime would bear obvious similarities to 'golden share' mechanisms pursuant to which public officials sit on the boards of certain systemically significant or otherwise politically salient business firms, forthrightly representing the public interest thereon.[76]

There are, again, many possibilities here—too many to vet comprehensively in this article. We think the process of thinking-up and thinking-through such possibilities, however, worth commencing at once.

Enhanced antitrust and anti-fraud regulation. The fourth option we envisage, now responsive more particularly to market power and potential collusion, is enhanced antitrust and anti-fraud regulation. The idea in this case is simple and familiar. If a particular price or index that has been designated a SIPI is employed or manipulated in a rent-seeking manner by any institution or institutions with market power in relation to that SIPI, this would presumptively constitute a straightforward violation of the norms that our antitrust and anti-fraud regimes are meant to vindicate. It would also seem to constitute a straightforward violation of the anti-fraud norms that find expression in various parts of the bank-, securities-, and other finance-regulatory laws. In all such cases, moreover, the stakes and likely consequences of such violations are particularly dramatic, in virtue of the very features that render the prices or indices in question 'systemically important'.

It would seem to make sense, then, either or both (i) to establish an office within the Antitrust Division of the US Department of Justice (DOJ)—and any counterpart non-US regulator—tasked specifically with monitoring possible anticompetitive behaviour with respect to SIPIs, and (ii) to develop enhanced penalties for fraudulent or manipulative practices with respect to SIPIs.[77] This strategy would not only bring regulatory and criminal law enforcement regimes into sync with the special vulnerabilities and high stakes associated with SIPIs, but also offers the advantage of

75 ibid.

76 See eg Robert Hockett and Saule Omarova, '*Public Actors in Private Markets: Toward a Developmental Finance State*' (2015, forthcoming) 93 Wash U L Rev.

77 Verstein (n 47) helpfully suggests that narrow pleading standards of the kind generally associated with conventional fraud are unreasonable where benchmark fraud is concerned, and that a somewhat more relaxed standard, particularly in respect of the misrepresentation and reliance elements of the offense, might be in order in view of the ways benchmarks operate. A change of this sort would be consistent with what we are calling 'enhanced' anti-fraud protection.

incrementalism: it is a straightforward 'tweaking' of regimes that have long been in place.

A related strategy, operating from the front-end, would be to mandate the use of larger sample sets in constructing an index or benchmark.[78] In effect, this would amount to broadening the size of the anticompetitive 'club' whose oligopolistic market power occasions the dangers we face in the first place. This strategy would also, in virtue of its *ex ante* character, be cross-cutting inasmuch as it could be made part of a licensure or utility-style regime, as discussed just above, as readily as part of an antitrust-style regime.

Extended OMOs. The fifth and final regulatory option we think worth considering is this one responsive to the recursive collective action problems that beset some decentralized markets in which SIPIs are operative, is price maintenance—typically within some band—through OMOs. The idea here is to take seriously one of the many lessons thrown up by the experience of 2007–09. This is the lesson that in some cases, market decentralization itself can work systematically disastrous effects via the medium of some systemically significant price like that of RMBS. As noted above, RMBS were systematically undervalued by markets during the panic, such that only a 'large' actor capable of in effect 'buying the market' or a significant portion thereof would have been able to keep prices in line with less panic-wrought, longer term mean values. Any *private* actor that large, however, would have possessed 'market power' with which few would be comfortable, at least were that private actor to be pursuing a private *agenda*.[79]

The obvious solution in such case is to empower a large *public* actor pursuing a *public* agenda. This is effectively the form of response to which the US groped via the TARP and Maiden Lane programmes mentioned above, as well as via QE3 as announced by the Fed in the autumn of 2012.[80] It is also, more permanently, the way in which the US handles systemically important interest rates in Fed OMOs, and in some circumstances the way in which it handles price spikes in petroleum markets via the SPR.[81]

A final regulatory option we might wish to consider with respect to at least some SIPIs, then, is OMOs in markets additional to money rental, RMBS, and petroleum. This is an option we have countenanced elsewhere under the rubrics of 'Open Labor Market Operations', 'Open Commodity Market Operations', and, more generally 'OMO Plus'.[82] The idea here would be for the Fed or its counterparts in other jurisdictions, perhaps in conjunction with other, functional regulators depending on the particular SIPI in question, to buy and sell in markets additional to sovereign debt with a view to keeping particular SIPIs within particular bands thought necessary for the purposes of maintaining systemic stability.[83]

78 This approach is recommended, eg by Duffie and Stein (n 47), as well as by the FSB (n 6).
79 Hockett and Omarova (n 37).
80 ibid.
81 ibid.
82 Hockett and Omarova (n 76).
83 ibid.

Various candidate SIPIs here come to mind. The S&P 500 or Wilshire 5000 market indices constitute one class of candidates, in view of their relation to the performance of the securities markets (and consequent 'wealth effects' economy-wide) as a whole. Certain sensitive commodity prices—those for widely used fuels, foodstuffs, and some other raw materials, for example—constitute another class of candidates. Finally, wage or salary indices constitute yet another class of candidates. In all of these cases, there is at least some reason—most such reasons sounding in (i) the same factors as render the indices here SIPIs in the first place, and (ii) the associated markets' vulnerability to recursive collective action problems—for the public *qua* public to play a role in price stability maintenance. As we have written elsewhere, in some cases—eg commodities—it is relatively easy to design OMO-analogues for the markets in question.[84] In other cases—eg wages or salaries—it is more complicated.[85] We leave these matters to our earlier work for present purposes.

Either way, it seems to us that the time has come to recognize that there are more SIPIs than interest rates alone, and that there are more possible renditions of OMO than that now conducted by the Fed in relation to those rates alone. The only real question is where we should do best to consider extending current OMO practice, and the circumstances under which we might wish to do so.

CONCLUSION

We have had to cover a fair bit of territory in this article, hence have done so in a necessarily preliminary way in view of space constraints. We think the inquiry well-defined and contained, however, and well worth more fully developed pursuit. The reasons for deeming some financial institutions and market utilities 'systemically important', we think, are both compelling and now widely recognized. The Dodd–Frank Act in the US accordingly did well to recognize this new category of institution and market utility in the wake of the crisis of 2007–09, and also did reasonably well in developing a specific regime able both to identify and designate, and then specially to regulate, such institutions and utilities in current markets.

The same considerations as warrant identification and enhanced regulation of so-called 'SIFIs', however, seem to us also to warrant identification and enhanced regulation of what we here have dubbed 'SIPIs'. Such prices and indices are at least as pervasively influential on financial market performance and macroeconomic consequence as are SIFIs, and can be readily identified by reference to similar criteria. They also lend themselves, we have argued, to similar—or at any rate already familiar—forms of enhanced regulation, as recent EU and other jurisdictions' efforts at least with respect to benchmarks post-LIBOR suggest others appreciate. Given all of this, it seems well worth the effort to commence a serious scholarly and regulatory dialogue on what now to do about SIPIs more comprehensively. This article is simply an opening gambit in what we anticipate will be a lengthy and lively discussion.

84 ibid.
85 ibid.