Institutional Corruption and Incentive Compatibility

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Many instances of institutional corruption have at their core incentive systems that are not incentive compatible. Consequently, individuals within the institution behave in ways that are contrary to the core mission and values of the institution, resulting in a failure of the institution to accomplish its mission and a loss of public trust. This paper explores the links between incentive compatibility and institutional corruption, and suggests ways to mitigate institutional corruption by reforming the incentive structures within institutions.

INTRODUCTION

This study argues that many instances of institutional corruption have at their core incentive systems that are not incentive compatible. Consequently, individuals within the institution behave in ways that are contrary to the core mission and values of the institution, resulting in a failure of the institution to accomplish its mission and a loss of public trust. This paper explores the links between incentive compatibility and institutional corruption, and suggests ways to mitigate institutional corruption by reforming the incentive structures within institutions.

Thompson (1995) introduces the concept of institutional corruption as it applies to legislative ethics. In explaining the difference between individual corruption and institutional corruption, he states:

> When a member takes a bribe in return for a political favor, the personal gain is not part of the salary and the service provided is not part of the job description. The exchange serves no legitimate institutional purpose. This is straightforward individual corruption. But when a member accepts a campaign contribution, even while doing a favor for the contributor, the political gain may or may not be corrupt. It is not if the practice promotes political competition or other desirable goals of the institution. But it is corrupt if it undermines institutional purposes or damages the democratic process (Thompson, 1995, p. 7).

Thompson emphasizes two key themes that are central to the characterization of institutional corruption. The first is that the activities in which individuals are engaged are part of the normal duties of their position. The second is that the specific nature of the activities in question undermines the institution (Thompson, 1995, p. 8). This characterization of institutional corruption has clear parallels in the literature on incentive compatibility. Groves (1973, p. 617) describes the incentive problem that any large organization, such as a corporation, faces as, "The elements of an incentive problem are an organization consisting of many members with different information and decision possibilities, and some clear organizational objective that may not be coincident with members' individual objectives." In both Groves' case of the corporation and Thompson's case of Congress, the challenge is to create a system that incentivizes members to make decisions in their own self-interest that are also in the interest of the larger organization. Such a system is incentive compatible. If individual members are incentivized to engage in

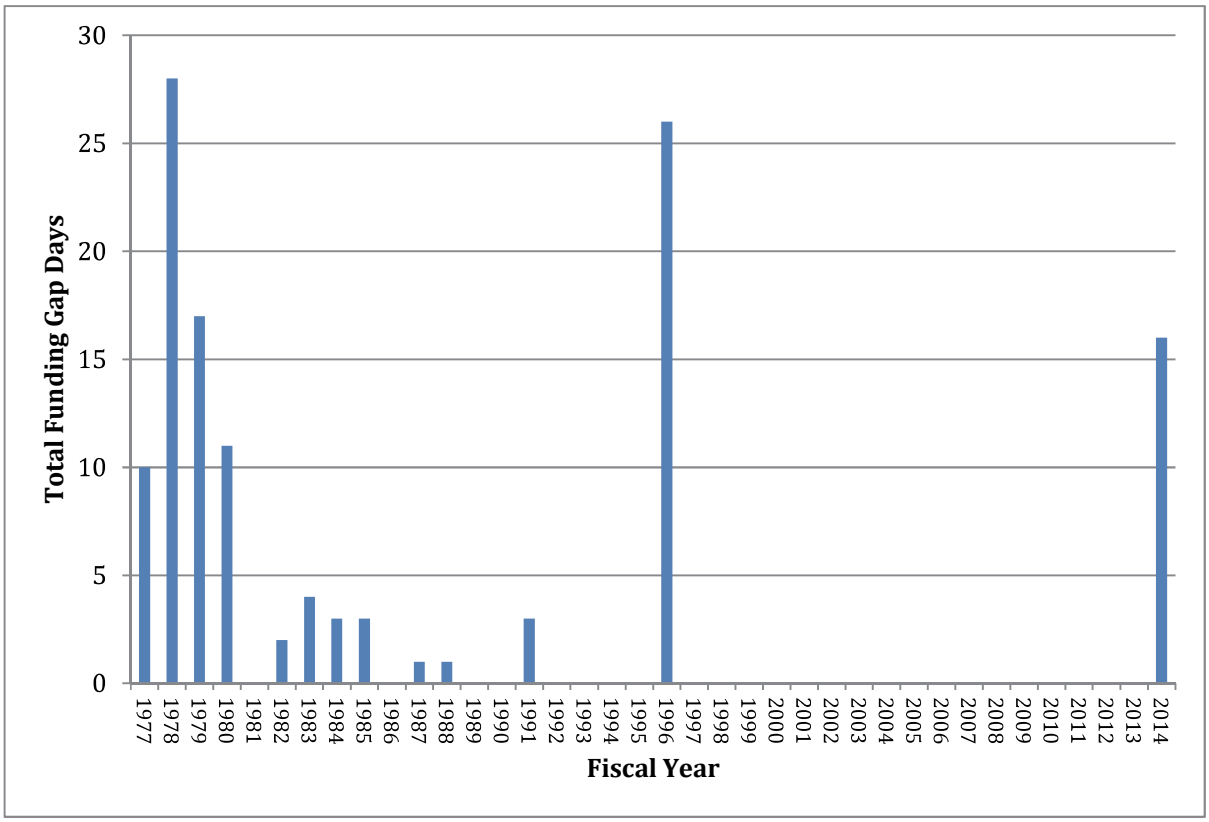
activities that are in their own self-interest, but that have the unfortunate side effect of undermining the larger organization, institutional corruption results. In this way, institutional corruption is the natural outcome of a non-incentive compatible system.

Lawrence Lessig extends the definition of institutional corruption beyond the case of Congress. Although he provides several alternative definitions (e.g. Lessig, 2013a, b), perhaps the most succinct is in Lessig (2009). Institutional corruption is, "Influence, within an economy of influence that (1) weakens the effectiveness of an institution, or (2) weakens the public trust of an institution." An economy of influence is the system of incentives within which individuals in an organization operate. This definition is consistent with ideas about incentive compatibility, for if the system of incentives within which individuals in an organization operate is such that it results in behavior that either weakens the effectiveness of the institution, or weakens the public's trust in the institution, then individuals are behaving in a manner that is inconsistent with larger institutional objectives. In other words, the system is not incentive compatible.

Given the premise that instances of institutional corruption have at their core non-incentive compatible incentive systems, one solution to institutional corruption is to reform incentives structures so that the incentives of individuals are aligned with the larger goals of the organization. This paper explores this idea by examining two cases of institutional corruption that appear to have non-incentive compatible systems at their core, and exploring ways to reform these systems to improve their incentive structures. Although it is theoretically possible to design incentive compatible systems to address problems of institutional corruption, in practice, the modified incentive structures may not have the theoretically predicted outcome. Thus, it is important to test any modified incentive system in a laboratory environment prior to implementation to ensure that individual responses to the incentive structure are consistent with the theoretical predictions. This paper reports the results of a laboratory experiment testing an incentive compatible system to examine the extent to which theoretically predicted and empirically observed behavior are aligned.

The remainder of this paper proceeds as follows. The next section discusses two examples of institutional corruption and explores the nature of the non-incentive compatible system associated with each example. Section III presents the design and results of an experiment to test a simple incentive compatible mechanism, to examine the extent to which individuals behave in the theoretically predicted manner. Section IV concludes with a discussion of the benefits and limitations of using incentive compatible mechanisms to address institutional corruption.

FIGURE 1
TOTAL FEDERAL FUNDING GAP DAYS, FY1977 - FY2014



Sources: Tollestrup (2013) and Brass (2014)

INSTITUTIONAL CORRUPTION AND INCENTIVE COMPATIBILITY: TWO CASES

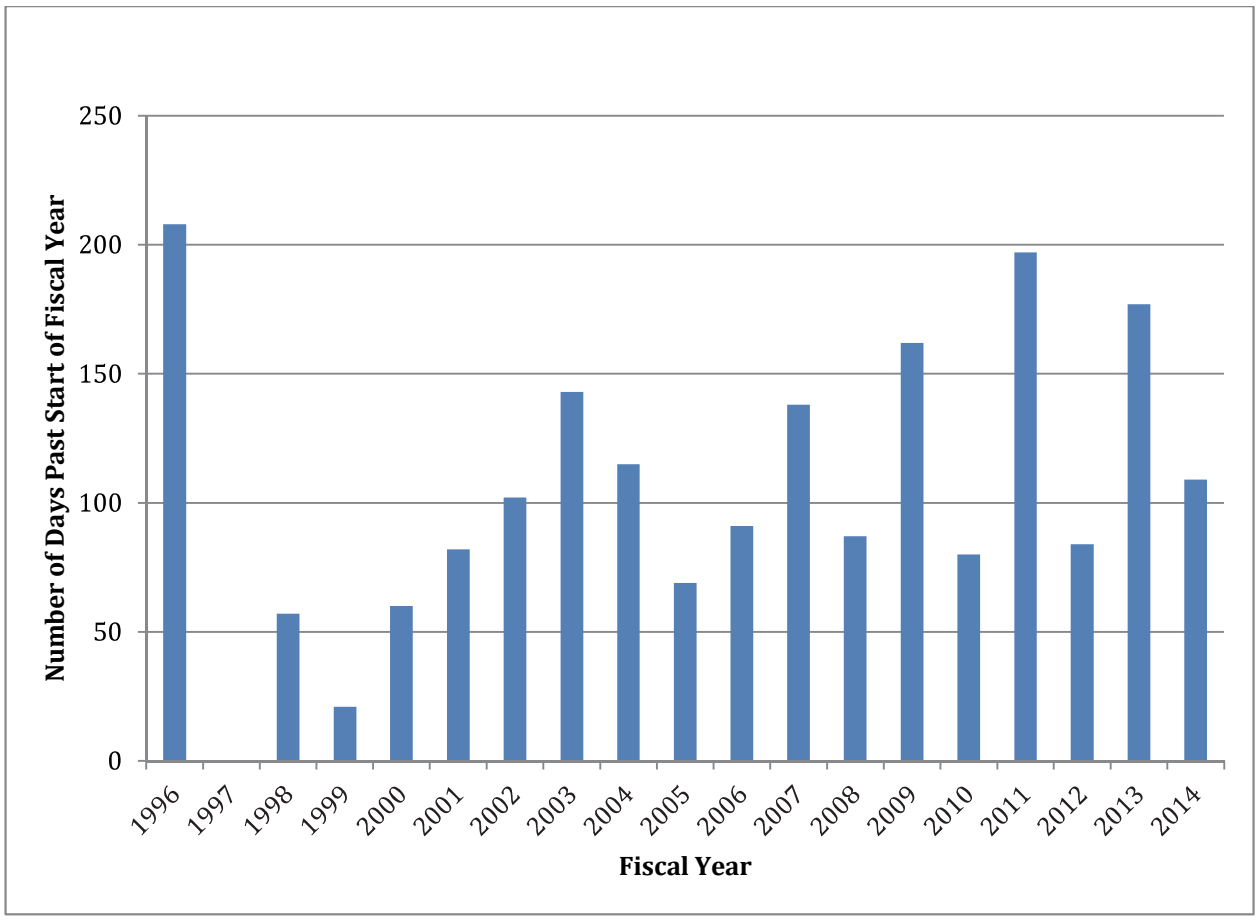
Case #1: Congress

The Symptoms of Institutional Corruption: Ineffectiveness and Lack of Public Trust

Is Congress ineffective? Article I, Section 9 of the Constitution allocates the power to Congress to establish laws to appropriate money from the Treasury, "No Money shall be drawn from the Treasury, but in Consequence of Appropriations made by Law; and a regular Statement and Account of the Receipts and Expenditures of all public Money shall be published from time to time (National Archives)." One measure of Congress' effectiveness as an institution is the extent to which it has satisfied its Constitutional mandate to appropriate funds. By this measure, it has been increasingly ineffective in recent years. The Congressional Research Service defines a funding gap as, "The interval during the fiscal year when appropriations for a particular project or activity are not enacted into law either in the form of a regular appropriations act or a continuing resolution (CR) (Tollestrup, 2013, Summary)." Figure 1 reports the lengths of funding gaps, in days, that the United States has experienced from fiscal years 1977 through 2014. Note that in some years (1978, 1983, 1985, and 1996), the United States experienced multiple funding gaps due to failures to pass continuing resolutions in a timely manner (Tollestrup, 2013, p. 3). In Figure 1, multiple funding gaps within a single fiscal year are aggregated into a total number of funding gap days for that year. By this measure, until recently, Congress appears to have been relatively effective, as there were 18 years between the 26-day government shutdown that resulted from the funding gap in fiscal year 1996, and the 16-day shutdown that occurred at the beginning

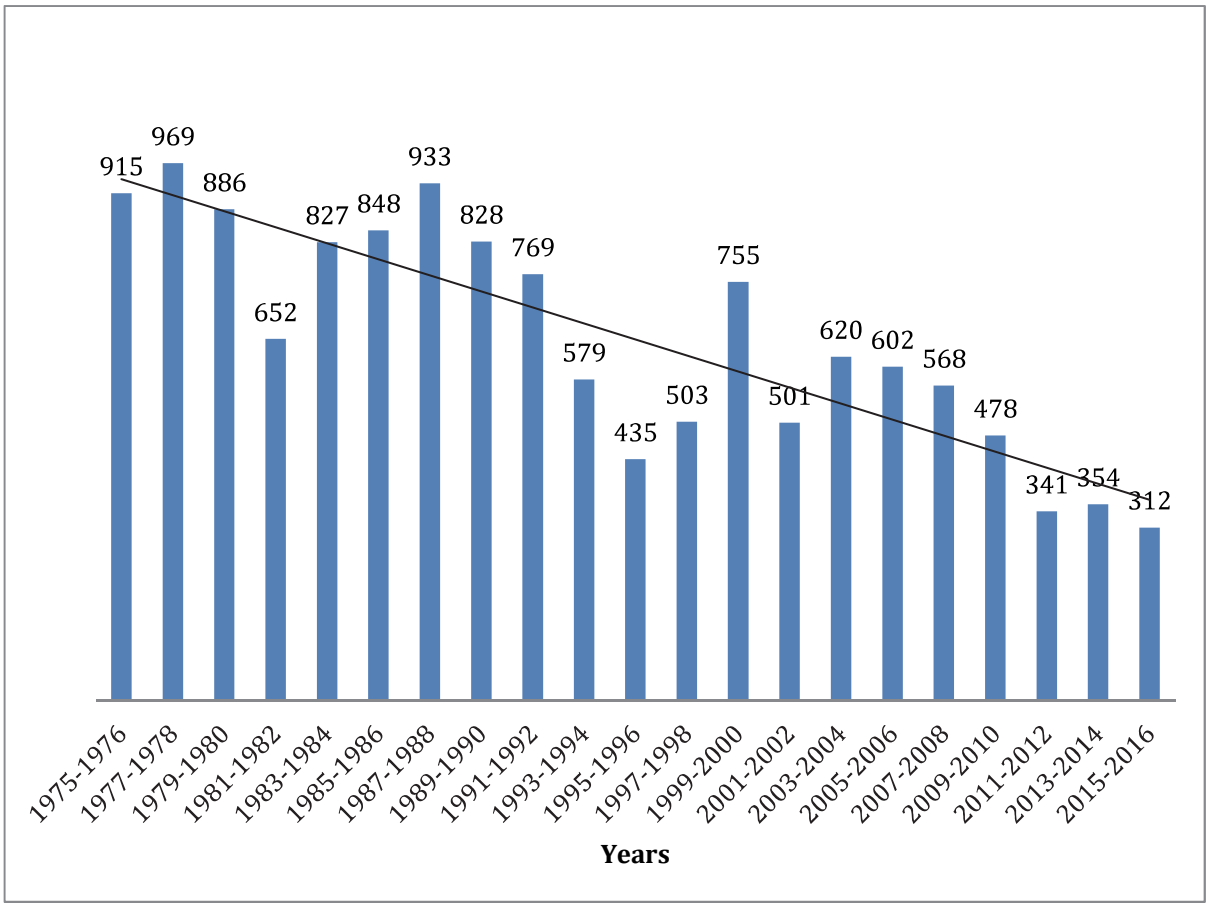
of the 2014 fiscal year. This figure provides an overly rosy picture of Congress' effectiveness. In many years, Congress merely passed a continuing resolution to avoid a funding gap, and waited until well into the fiscal year to pass a full set of appropriations bills to fund government activity. Figure 2 reports the number days past the start of the fiscal year that the last appropriations bill for that year was passed by Congress for fiscal years 1996 through 2014. In an effectively functioning Congress, all appropriations bills should be passed before the start of a fiscal year. By this measure, Congress has been highly ineffective; as it is frequently well into the first quarter or later of a fiscal year before Congress completes the appropriations process.

FIGURE 2
NUMBER OF DAYS PAST THE START OF THE FISCAL YEAR THAT THE LAST APPROPRIATIONS BILL FOR THAT YEAR WAS PASSED, FY 1996 – FY 2014



Source: Tollestrup (2015)

FIGURE 3
TOTAL NUMBER OF BILLS PASSED BY BOTH HOUSES OF CONGRESS, 1975 – 2016 (94TH – 114TH CONGRESSES)



Source: United States Congress (2016)

Another measure of Congress' effectiveness is the total amount of legislation that it processes. Figure 3 reports the total number of bills passed by both houses for the past 40 years (94th through 114th Congresses). The trend is clearly declining. Although some may view Congress passing fewer laws and regulations in recent years as a positive development, this is only the case if there are no pressing issues for Congress to address. However, given that Congress has repeatedly failed to address issues of significant concern to the public, such as U.S. immigration policy, the paucity of Congressional action represents important pieces of the people's business that remain unaddressed. By this measure, Congress' failure to enact legislation on multiple fronts is another indicator of its ineffectiveness.

What of the public's trust? A 2013 survey by the Pew Research Center for the People and the Press (2013, p. 2) found that 68% of Americans have an unfavorable view of Congress. In the same survey, only 26% percent of Americans said that the government in Washington could be trusted to do the right thing always or most of the time (The Pew Research Center for the People and the Press, 2013, p. 5). Although this lack of trust in government extends beyond Congress, the survey evidence indicates that Congress is clearly part of the problem.

The Cause of Institutional Corruption: A Non-Incentive Compatible System

Both Dennis Thompson (1995) and Lawrence Lessig (2011) identify the campaign finance system as the economy of influence that is the source of institutional corruption in Congress. They argue that the

campaign finance system corrupts Congress by diverting lawmakers' attention away from the needs of the people whom they represent towards the needs of the funders, who may or may not be a part of a lawmaker's constituency. The result is an overweighting of the interests of the funders relative to the interests of the people in Congressional decision-making. Both Thompson and Lessig argue that this overweighting of the interests of the funders undermines the democratic process and corrupts the institution.

The campaign finance system is not incentive compatible. It incentivizes legislators to engage in activities which are contrary to the organizational objectives of Congress. The reason for this is that members' of Congress political futures are tied to their ability to raise funds for the next election. Senator Barry Goldwater describes the effect of this incentive structure on the way in which members of Congress carry out their day-to-day activities:

> Senators and representatives, faced incessantly with the need to raise ever more funds…can scarcely avoid weighing every decision against the question, "How will this affect my fundraising?" rather than "How will this affect the national interest?" (quoted in Lessig, 2011, p. 249)

The organizational objective of Congress, as described by Thompson and Lessig, is to maintain the integrity of the democratic process by focusing on the extent to which legislation is, in Senator Goldwater's words, in the national interest. In a system in which members' political fortunes are tied to the interests of a relative few, there is little incentive for legislators to focus on the larger interests of the nation as a whole.

The solution to this incentive compatibility problem is to reform the campaign finance system to align the interests of legislators with the interests of the people. Lessig (2011, p. 264) describes such a reform in his proposal to "make 'the funders' 'the People'." The simplest way to make the funders the people is through a system of campaign finance vouchers. Voters in the city of Seattle, Washington, approved such a system in 2015 (Berman, 2015). Under a voucher system, voters receive a number of vouchers totaling a pre-determined dollar amount (e.g. $100), which they can redeem only in the form of contributions to political candidates. The vouchers have zero cash value for other purposes. In Seattle, the voucher system will be funded by an increase in property taxes. In Lessig's (2011, p. 266) proposed system, the voucher would essentially be the first $X that a citizen pays in taxes, which is then rebated to the citizen in the form of a voucher.

Such a system incentivizes candidates to focus on the concerns of the people in order to garner contributions from them in the form of vouchers. To see why, consider the math. If we focus only on Congress, it is estimated that just over $4 billion was spent on House and Senate races during the 2016 campaign (Berr, 2016). Following the Seattle model, suppose that each registered voter receives a $100 voucher which they can use to donate to House and Senate campaigns. According to *Politco*, there were 200 million registered voters in the United States in October of 2016 (Goldmacher, 2016). One hundred dollars multiplied by two hundred million voters is $20 billion. The potential pot of money available to politicians dwarfs the amount that they are currently raising from funders. Just as not all registered voters vote, it is likely that not all voters will redeem their vouchers. However, only about 20-25% of voters would have to redeem their vouchers in order for the pot of money available to be equivalent to current funding levels. A voucher system would affect Congressional incentives in other ways. According to a recent report by *60 Minutes*, members of Congress are expected to spend 30 hours per week making fund-raising calls (CBS News, 2016). This leaves little time to do the people's business. Under a voucher system, instead of raising money by calling donors, many of whom don't live in a representative's district; legislators would be incentivized to earn donations by doing what the people elected them to do.

Some argue that under this system, legislators would still be incentivized to pursue large dollar donations from big funders and political action committees to supplement their voucher donations. In order to get the incentives right, a voucher system should be accompanied by a requirement that if a candidate takes voucher funds, they must forego other types of funding. Such limits are not really limiting, given the total pot of voucher money that is potentially available. The willingness to forgo large-dollar donations in favor of voucher funds also serves as an incentive compatible signaling mechanism to

voters. If a candidate opts out of the voucher system, s/he is signaling to voters whom s/he truly represents.

Case #2: The London Interbank Offered Rate (Libor)

The Symptoms of Institutional Corruption: Ineffectiveness and Lack of Public Trust

The London Interbank Offered Rate, or Libor, is a measure of the interest rate that large commercial banks charge each other for unsecured funds (Duffie & Stein, 2015, p. 191). Libor serves as the benchmark interest rate on trillions of dollars in consumer loans such as credit cards, auto loans, and variable rate mortgages (Duffie & Stein, 2015, p. 191). In addition, numerous derivatives contracts, such as interest rate swaps, are benchmarked to the Libor. As of 2013, the notional value of assets tied to the Libor was estimated to be approximately $300 trillion (Brousseau, Chailloux, & Durre, 2013, p. 4).

The Libor is a measure of the rate at which a contributing bank could borrow unsecured funds on the London interbank loan market (Intercontinental Exchange). It is calculated for a variety of currencies and terms, ranging from overnight to 12 months. Each business day, participating banks (anywhere from 11 to 17 banks, depending on the currency), submit a response to the following question, "At what rate could you borrow funds, were you to do so by asking for and accepting interbank offers in a reasonable market size just prior to 11 am London time?" Banks' submissions are then sorted from largest to smallest, and the top 25% and bottom 25% of submissions are deleted from the sample. The remaining submissions are then averaged to determine the Libor for a given currency and loan term for that day (Intercontinental Exchange). In May of 2008, the *Wall Street Journal* reported that several banks appeared to be reporting lower borrowing costs to the Libor panel than what other market measures indicated were their true costs of borrowing (Mollenkamp & Whitehouse, 2008). Given the turmoil in financial markets at the time, the incentive for a bank to misreport a rate that was lower than its true cost of borrowing was driven by the need to appear healthier. In addition, Gyntelberg and Wooldridge (2008) argue that banks with large derivatives positions tied to the Libor have an incentive to misstate borrowing costs in their Libor submission in an effort to move the rate higher or lower to benefit their derivatives position. In fact, it has been claimed that manipulation of Libor rates by participating banks in order to affect earnings on derivatives positions has been going on since the early 1990s (Keenan, 2012).

An inaccurate benchmark isn't much of a benchmark. It creates very real losses for both consumers and investors. Abrantes-Metz, Villas-Boas, and Judge (2011, p. 897-899) explain some of the costs of an inaccurate benchmark:

> From a distributive standpoint, if the level of Libor deviates from its market level, it will effect an artificial and inefficient redistribution of wealth from one group of people to another. If, for example the level is too low, borrowers, such as homeowners, gain at the expense of lenders. A more subtle consequence is to distort other prices in the economy. A lower Libor induces a lower mortgage rate, makes it easier to buy homes, substituting homes away for other goods. This artificially inflates the prices of homes and related goods such as furniture, for example, while deflating the prices of other goods. The immediate implications of a nonmarket determined Libor, over a prolonged period of time, have the potential to lead to bubbles and meltdowns of the type we are currently experiencing.

Effectively functioning financial markets are based on a foundation of trust. The scandals that were revealed during the 2007-2008 financial crisis (including the Libor scandal) resulted in a widespread loss of trust in the financial system. This loss of trust is reflected in the ongoing search for alternative benchmarks to the Libor, a process that began immediately after the scandal was revealed (Mollenkamp, 2008; Mollenkamp & Whitehouse, 2008; Bloomberg View, 2016). Consumers' loss of trust in the financial system is reflected in a recent Gallup poll, which found that only 27% of Americans have "a great deal" or "quite a lot" of confidence in banks. This number is down from 49% a decade ago (Norman, 2016).

The Cause of Institutional Corruption: A Non-Incentive Compatible System

The system used to set the London Interbank Offered Rate is not incentive compatible. Abrantes-Metz and Evans (2012) provide several examples of how a single bank could move the daily rate by one basis point (0.01 of a percent) or more, and argue that based on testimony presented in the Wheatley Review of LIBOR (Wheatley, 2012), a one-basis point movement in the rate is sufficient to create a significant effect on a bank's earnings on its derivatives contracts. If several banks collude on their Libor submissions, the rate-setting mechanism is even easier to manipulate. As evidenced in the U.S. Department of Justice's indictment of Anthony Allen, Paul Thompson, Tetsuya Motomura, and Anthony Conti, such collusion did frequently occur (United States v. Anthony Allen, Paul Thompson, Tetsuya Motomura, and Anthony Conti, 2014).

The Libor mechanism is not incentive compatible because of one characteristic – submitters can affect their earnings via the submissions that they make. In any incentive compatible mechanism, a submitter's earnings must not be affected by the message (in the case, the rate submission) that they send. If a mechanism satisfies this condition, then it is said to be *decoupled* (Green, Jacowitz, Kahneman, & McFadden, 1998). Chen (2014) describes an alternative Libor-setting mechanism that is decoupled, and hence, incentive compatible. The mechanism is essentially a price-setting version of the Clarke (1971) pivot mechanism, for which a test is reported below.

The simplest way to make any financial benchmark incentive compatible is to base it upon actual market transactions, rather than on hypothetical statements about what a bank thinks its costs of borrowing are. Both the Federal Reserve and the Bank of England are investigating alternative interest rate benchmarks based on actual market transactions (Federal Reserve Bank of New York, 2016; Bank of England, 2016). Transitioning to a market-based rate presents multiple problems, including (but not necessarily limited to) the thinness of the markets for interbank loans for some currencies and loan lengths; the difficulty of managing monetary policy and open market operations under some alternative interest rate benchmarks; and problems associated with transitioning to a new benchmark given the volume of assets currently tied to the Libor. Coulter and Shapiro (2015) have proposed an alternative, submission-based benchmark that they argue is incentive compatible. Under their proposed system, potentially dishonest submissions would be flagged by other submitting banks, who act as whistleblowers. The whistleblower banks' claims would be confirmed or denied by the willingness of other banks to lend to the allegedly offending bank at the claimed rate. Although the idea has merit, experimental literature on the willingness of individuals to blow the whistle on others (Reuben & Stephenson 2013; Carson 2015) provides mixed evidence regarding whether the level of whistleblowing will be sufficient to keep submissions honest. In any event, there are multiple incentive compatible alternatives to the current system for setting interest rate benchmarks that have the potential to improve both the functioning of financial markets and trust in the system. Given the complexity of some of the proposed alternatives, it would be wise to test them in the experimental laboratory to empirically verify their theoretical properties. The sections below demonstrate how such a test might proceed with a test of the most simple incentive compatible mechanism, the Clarke (1971) pivot mechanism.

AN EXPERIMENTAL TEST OF AN INCENTIVE COMPATIBLE MECHANISM

The incentive compatibility problem in the Libor mechanism boils down to a problem of truthful revelation of type. In order for the benchmark to be accurate, banks must truthfully reveal through their Libor submission how much of a credit risk they currently are. Banks have multiple incentives to misrepresent this information related to their desire to appear healthier to other market participants and their derivatives positions. The problem of type revelation has been addressed by economists in multiple settings – first by Vickrey (1961) in the context of getting participants in an auction to truthfully reveal their willingness to pay for a good on the auction block, and then by Clarke (1971) and Groves (1973) in the context of getting individuals to truthfully reveal their willingness to pay for a public good. All of the mechanisms used to solve the truthful revelation problem have the property that truthful revelation of type is incentivized by a payment system that decouples the amount that a bidder pays from their statement of

type. In these mechanisms, agents submit their type (e.g. willingness to pay), but their payment is determined by the submissions of the other participants in the mechanism. As a result, an agent cannot affect his or her earnings by misrepresenting their type. In these mechanisms, agents have a weakly dominant strategy to truthfully reveal their type. Because truthful revelation is only a weakly dominant strategy, there are other statements of type that may generate the same earnings as truthful revelation. Thus, in practice, the mechanism is not 100% successful at solving the incentive compatibility problem, because submitters may not receive the necessary feedback from the mechanism that helps them learn the non-optimality of non-truthful submissions. For this reason, it is important to test the empirical properties of these mechanisms in the laboratory to ensure that they can generate the desired outcomes.

This experiment tests the simplest incentive compatible mechanism, the pivot mechanism (Clarke, 1971), to examine whether subjects truthfully reveal their preferences for a public good. The basic structure of the mechanism is similar to that proposed by Chen (2014) to solve the type revelation problem in the Libor mechanism. Both the pivot mechanism and Chen's mechanism are designed to determine the optimal level of a public good. The difference is, the pivot mechanism is used to determine a *quantity* of public good, whereas the Libor rate is a *price*. Despite this difference, the incentive structures of the pivot and Chen mechanisms are similar, and behavior in the pivot mechanism should provide a useful indicator of the extent to which an incentive compatible mechanism will be a useful tool in setting statement-based financial benchmarks.

Experimental Design

The experiment consists of ten rounds in which subjects in groups of ten play the following game:

1. Each subject has an endowment of ten tokens.
2. Subjects decide how much to bid for the purchase of a good that will be enjoyed by the entire group. Each subject knows his or her personal benefit and cost share for the good if it is provided.
3. The good is provided if the sum of bids exceeds the sum of the costs shares.
4. If the good is provided, a subject's profits equal their endowment plus their personal benefit from the good, minus their cost share, minus their pivot tax:

$$\text{Profit} = 10 + \text{Personal Benefit} - \text{Cost Share} - \text{Tax} \quad (1)$$

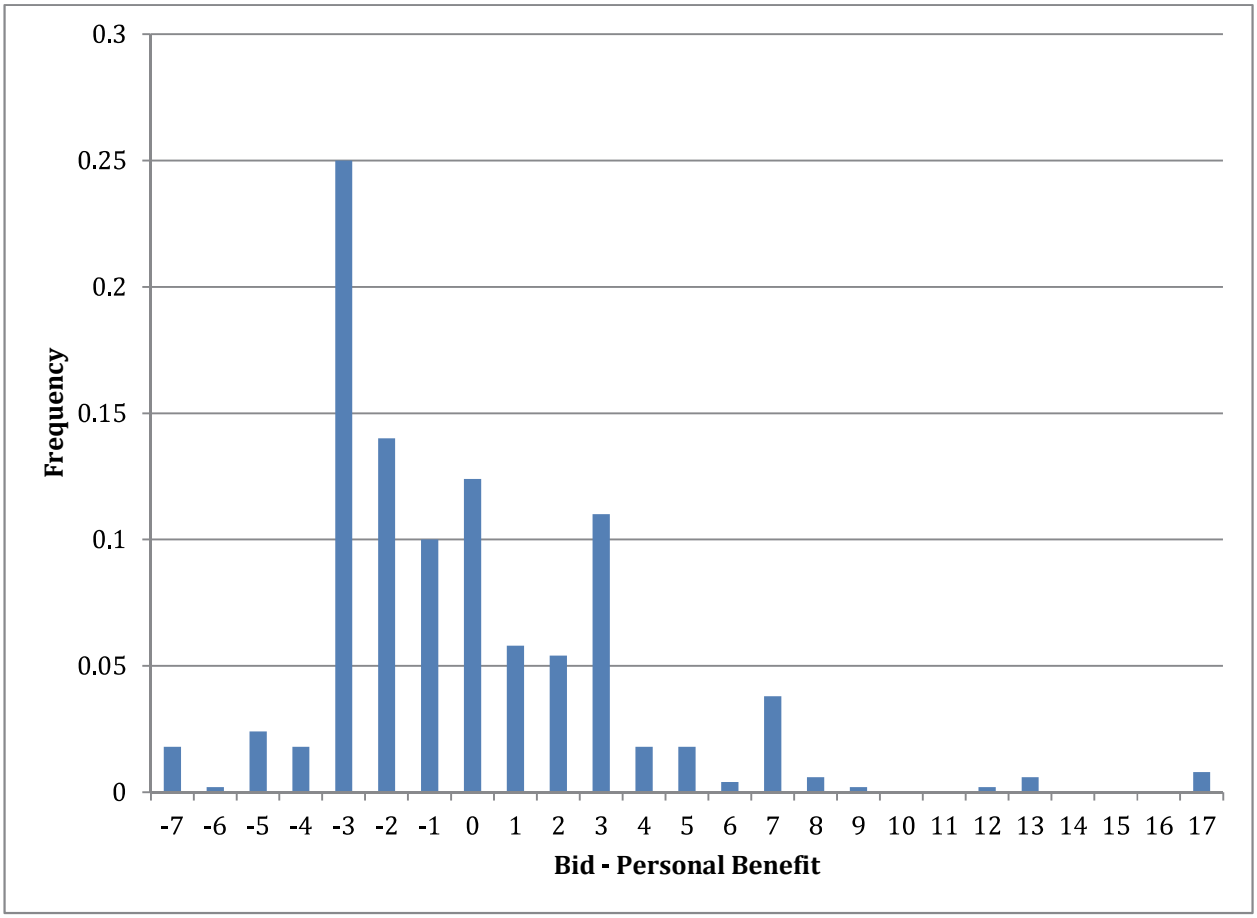
The pivot tax is what makes it optimal for each subject to truthfully reveal their value from the public good. The tax is the amount by which subject X's bid changes the group decision. It is determined by examining what the group decision would be if subject X were removed from the decision. For example, if the sum of all bids exceeds the sum of all cost shares, and the sum of all bids except subject X's exceeds the sum of all cost shares except subject X's, then in both cases the good is provided. Because the decision is the same with or without subject X, subject X's tax is zero. However, if the sum of bids except subject X's is less than the sum of all cost shares except subject X's, then adding subject X to the decision changes the decision. The tax is equal to the amount that subject X changes the group's decision, which equals:

$$\text{Pivot Tax} = \Sigma(\text{Cost shares except subject X's}) - \Sigma(\text{Bids except subject X's}) \quad (2)$$

Under this incentive structure, subject X can do no better than to bid his or her personal benefit from the public good. For subjects whose personal benefit from the good exceeds their cost share (and who would profit from the good being provided), underbidding creates the risk that the good will not be provided, resulting in a lower profit for the subject. Overbidding results in profits that are equal to that from a bid that equals his or her personal benefit. Because the profits from submitting a truthful bid are greater than or equal to the profits from submitting an untruthful bid, subject X has a weakly dominant strategy to bid their personal benefit. A similar argument can be made for subjects whose personal benefits are less than their cost shares.

All subjects have induced cost shares of 5 tokens. Half the subjects have induced personal benefits from the public good of 7 tokens, and half have induced personal benefits of 3 tokens. Subjects play ten rounds of the game described above.

FIGURE 4
DISTRIBUTION OF DEVIATIONS BETWEEN SUBJECTS' BID AND PERSONAL BENEFIT IN INCENTIVE COMPATIBLE MECHANISM EXPERIMENT



At the conclusion of play, token balances from all rounds are summed and converted to cash at the rate of 15 cents per token. Thus, average experimental earnings range from $10-$20 for a 45-50 minute experimental session. Fifty undergraduates (five groups of 10) participated in the experiment. The experiment was conducted in a computer lab on campus using Z-Tree ® (Fischbacher, 2007) experimental software.

The experimental design incorporates a series of learning periods prior to the payment rounds to help subjects gain familiarity with the mechanism. Subjects were free to place any bids that they wished in these practice rounds, but their earnings from these rounds did not count towards their earnings in the experiment.

Experimental Results

Figure 4 depicts the distribution of differences between bids and personal benefits. If all subjects were submitting truthful bids in all rounds, then the histogram would have a single spike at zero. The median deviation of a bid from underlying benefit is -1, and the mean deviation is -0.208 with a standard error of 0.161. Although on average, it is not possible to reject the hypothesis that subjects are submitting truthful bids, this central tendency obscures a lot of variation in the data. In general, underbidding is the norm. These results point to one deficiency in the use of incentive compatible mechanisms to solve the type revelation problem. Because agents' strategy to truthfully reveal their type is only weakly dominant, the tax mechanism does not always provide the feedback necessary for market participants to adjust their bids

in an optimal way. In the scenario tested in this experiment, small deviations of bids from values might not affect the efficient functioning of the market. However, small deviations of bid from underlying types could potentially have a large effect in markets such as the Libor mechanism. These results demonstrate the importance of designing, testing, and then refining incentive compatible solutions to institutional corruption to ensure that the solutions generate the desired outcome.

DISCUSSION AND CONCLUSIONS

This paper argues that at the core of many instances of institutional corruption is an incentive compatibility problem. The incentive compatibility problem arises, at least in part, from the fact that the effective functioning of an institution and the level of trust from the public enjoyed by the institution are both public goods. In public goods environments, there is often a conflict between the interests of an individual and the interests of the larger organization. Although these conflicts can be ameliorated by realigning the incentive structures within organizations, it may not be possible to entirely eliminate them. For one, as demonstrated above, the incentive structure may provide only weak incentives for individuals to behave in the interests of the organization. In addition, incentive compatible mechanisms that solve the type revelation problem are vulnerable to manipulation by coalitions (Green & Laffont, 1979).

Why should we focus on incentives when addressing institutional corruption? In short, it is because incentives matter. When incentives are properly aligned, good outcomes result with little thought or effort on the part of individuals. When they are misaligned, as illustrated with the case of Libor, bad outcomes result. Thus, a first step to preventing institutional corruption is to design a system that creates incentives for individuals to behave in the organizational interest. The second step is to rigorously test the system in the experimental lab before implementing it, and to determine what other factors, besides the incentives, contribute to individuals' behavior. Given the imperfect nature of incentive compatible solutions, the temptation might be to focus on other behavioral factors to mitigate institutional corruption. Although these factors should not be ignored, it is important to get the incentives right first. The first letter in NUDGE stands for iNcentives (Thaler & Sunstein, 2008, p. 100) for a reason.

ENDNOTES

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REFERENCES

Abrantes-Metz, R.M., & Evans, D.S. (2012). Replacing the LIBOR with a transparent and reliable index of interbank borrowing: Comments on the Wheatley Review of LIBOR initial discussion paper. Chicago Institute for Law and Economics Working Paper No. 620.

Abrantes-Metz, R.M., Villas-Boas, S.B., & Judge, G. (2011) Tracking the Libor rate. *Applied Economics Letters 18*, 893-899.

Bank of England (2016). Interim Report: The Working Group on Sterling Risk-Free Reference Rates. May 2016. Retrieved from http://www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/2016/rfrwgintrep16.pdf

Berman, R. (2015) Seattle's experiment with campaign funding. *The Atlantic*. 10 November 2015. Retrieved from http://www.theatlantic.com/politics/archive/2015/11/seattle-experiments-with-campaign-funding/415026/

Berr, J. (2016) "Election's 2016 price tag: $6.8 billion." *CBS News.com*. November 8 2016. Retrived from http://www.cbsnews.com/news/election-2016s-price-tag-6-8-billion/
Bloomberg View (2016) "Give Libor some competition." *Bloomberg*. 19 September 2016. Retrieved from https://www.bloomberg.com/view/articles/2016-09-19/time-to-give-libor-some-competition
Brass, C. (2014) "Shutdown of the federal government: causes, processes, and effects." Congressional Research Service, Report no. RL34680.
Brousseau, V., Chailloux, A. & Durre, A. (2013). Fixing the fixings: What road to a more representative money market benchmark? International Monetary Fund Working Paper no. 13/131.
Carson, K.S. (2015). Rank, group identity, and toleration of unethical behavior. Paper presented at the Morality, Incentives, and Unethical Behavior Conference, University of California, San Diego, March 13-14, 2015.
CBS News (2016) "Are members of Congress becoming telemarketers?" April 24, 2016. Retrieved from http://www.cbsnews.com/news/60-minutes-are-members-of-congress-becoming-telemarketers/
Chen, J. (2014). Libor's poker: interbank borrowing costs and strategic reporting. Working paper, University of California at Berkeley Haas School of Business. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2136871
Clarke, E.H. (1971). Multipart pricing of public goods. *Public Choice 11*, 17-33.
Coulter, B. & Shapiro, J. (2015). A mechanism for LIBOR. Paper presented at the 2015 Allied Social Science Association Annual Meeting, January 3-5, Boston, MA.
Duffie, D. & Stein, J.C. (2015). Reforming LIBOR and Other Financial Market Benchmarks. *Journal of Economic Perspectives 29*(2), 191-212.
Federal Reserve Bank of New York (2016) "Interim Report and Consultation: The Alternative Reference Rates Committee." May 2016. Retrieved from https://www.newyorkfed.org/medialibrary/microsites/arrc/files/2016/arrc-interim-report-and-consultation.pdf?la=en
Fischbacher, U. (2007) z-Tree: Zurich Toolbox for Readymade Economic Experiments. *Experimental Economics 10*(2), 171-178.
Goldmacher, S. (2016) "America hits new landmark: 200 million registered voters." *Politco*, October 19, 2016. Retrieved from http://www.politico.com/story/2016/10/how-many-registered-voters-are-in-america-2016-229993
Green, D., Jacowitz, K.E., Kahneman, D., & McFadden, D. (1998). Referendum contingent valuation, anchoring, and willingness to pay for public goods. *Resource and Energy Economics 20*, 85-116.
Green, J. & Laffont, J.J. (1979). On coalition incentive compatibility. *The Review of Economic Studies 46*(2), 243-254.
Groves, T. (1973). Incentives in teams. *Econometrica 41*(4), 617-631.
Gyntelberg, J. Wooldridge, P. (2008). Interbank rate fixings during the recent turmoil. *BIS Quarterly Review* (March), 59-72.
Intercontinental Exchange. (2016). ICE Benchmark Administration. Retrieved from https://www.theice.com/iba/libor.
Keenan, D. (2012) My thwarted attempts to tell of Libor shenanigans. *Financial Times*, 27 July 2012. Retrieved from https://www.ft.com/content/dc5f49c2-d67b-11e1-ba60-00144feabdc0
Lessig, L. (2009) Institutional corruption – opening lecture (uploaded 12 October 2009) [Video file]. Retrieved from https://www.youtube.com/watch?v=0-lEDiUFXUk.
Lessig, L. (2011). *Republic, Lost*. New York: Hachette Book Group.
Lessig, L. (2013a) Institutional corruptions. Edmond J. Safra Center for Ethics, Working Paper no. 1. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2233582
Lessig, L. (2013b). 'Institutional corruption' defined. *Journal of Law, Medicine, and Ethics 41*(3), 553-555.
Mollenkamp, C. (2008) Bankers cast doubt on key rate amid crisis. *Wall Street Journal*. 16 April 2007. Retrieved from http://www.wsj.com/articles/SB120831164167818299.

Mollenkamp, C., & Whitehouse, M. (2008). Study casts doubt on key rate. *Wall Street Journal*. 29 May 2008. Retrieved from http://www.wsj.com/articles/SB121200703762027135.
National Archives. The Constitution of the United States: A Transcription. Retrieved from https://www.archives.gov/founding-docs/constitution-transcript.
Norman, J. (2016) American's confidence in institutions stays low. *Gallup*. 13 June 2016. Retrieved from http://www.gallup.com/poll/192581/americans-confidence-institutions-stays-low.aspx.
The Pew Research Center for People and the Press (2013). Views of Congress: Problem Lies with Members, Not the System. Majority Says the Federal Government Threatens Their Personal Rights. Retrieved from http://www.people-press.org/files/legacy-pdf/01-31-13%20Views%20of%20Government.pdf
Reuben, E. & Stephenson, M. (2013). Nobody likes a rat: On the willingness to report lies and the consequences thereof. *Journal of Economic Behavior and Organization 93*, 384-391.
Thaler, R.H. & Sunstein, C.R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New York: Penguin Books.
Thompson, D. (1995). *Ethics in Congress*. Washington, D.C.: The Brookings Institution.
Tollestrup, J. (2013) Federal funding gaps: a brief overview. Congressional Research Service, Report No. RS20348.
Tollestrup, J. (2015) Biennial budgeting: options, issues, and previous congressional action. Congressional Research Service, Report No. R41764.
United States Congress (2016). Retrieved from https://www.congress.gov/search?q=%7B%22source%22%3A%22legislation%22%2C%22congress%22%3A%22114%22%2C%22bill-status%22%3A%22passed-both%22%7D
United States of America v. Anthony Allen, Paul Thompson, Tetsuya Motomura, and Anthony Conti, Case 1:14-cr-00272-JSR, filed 16 October 2014.
Vickrey, W. (1961) Counterspeculation, auctions, and competitive sealed bid tenders. *Journal of Finance 16*, 18-37.
Wheatley, M. (2012) The Wheatley Review of LIBOR: Final Report. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191762/wheatley_review_libor_finalreport_280912.pdf