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The Economics Department and Omicron Delta Epsilon congratulate **Justin Holz**, winner of the *2009 Dwight D. Eisenhower Society / R.M. Hoffman Family Memorial Prize in Economics*. The Eisenhower/Hoffman Prize is awarded to the economics student writing the best quantitative paper or project with public policy implications. Justin's paper, "The Effects of Framing, Risk, and Uncertainty on Contributions to a Public Account: Experimental Evidence," is the lead article in this issue of the Gettysburg Economic Review.

The Economics Department and Omicron Delta Epsilon congratulate **Tammy McBeth**, winner of the 2009 John Edgar Baublitz Pi Lambda Sigma Award.

The Economics Department and Omicron Delta Epsilon congratulate **Jamee Kuznicki**, winner of the 2009 Financial Executives International Award.

The Economics Department and Omicron Delta Epsilon congratulate **Jamee Kuznicki** and **Tammy McBeth** for their induction into Phi Beta Kappa. Phi Beta Kappa celebrates and advocates excellence in the liberal arts and sciences. Its campus chapters invite for induction the most outstanding arts and sciences students at America's leading colleges and universities.

The Economics Department and Omicron Delta Epsilon congratulate the Gettysburg College Fed Challenge Team (**Andy Crobak, Heather Dillman, Steven Ferraro, Nick Finio, Sylvester Gyan, Justin Holz, Denitsa Koleva, David Krisch, Megan Pinter, Svetoslav Semov, Dan Sprague, and Edrick Wittes**) for being named a Federal Reserve Bank of Richmond 2008 Fed Challenge Finalist.

The Economics Department and Omicron Delta Epsilon congratulate the following students for their achievements in the 2008-09 academic year:

Economics Graduation Banner Carrier:

Steven Ferraro

2009 Best Honors Thesis Award:

Justin Holz, David Krisch, Tammy McBeth

2009 Economics Honors Graduates:

*Andrew Crobak, Steven Ferraro,
Jeffrey Greenlaw, Sylvester Gyan,
Justin Holz, Jonathan Koury,
David Krisch, Jamee Kuznicki,
Tammy McBeth, Megan Pinter,
Elizabeth Purcell*

Omicron Delta Epsilon would like to thank this year's officers,
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THE EFFECTS OF FRAMING, RISK, AND UNCERTAINTY ON CONTRIBUTIONS TOWARD A PUBLIC ACCOUNT: EXPERIMENTAL EVIDENCE

Justin E. Holz¹

ABSTRACT

This paper uses laboratory evidence from four strategically equivalent voluntary contribution games to evaluate differences in contributions toward a public account due to framing, risk, and uncertainty. I test four hypotheses. (1) Individuals contribute more to a public account when the dilemma is framed as the mitigation of a public loss than the provision of a public good. (2) Individuals contribute more to a public account when the loss is certain than when faced with the risk of a loss. (3) Individuals contribute more to a public account when the loss is certain than when environmental uncertainty is associated with the public loss. (4) Individuals contribute more to a public account when the probability of loss is known than when the probability of loss is unknown. I find that contributions are greatest when the dilemma is framed as the mitigation of a certain public loss. Contributions diminish when environmental risk and uncertainty are introduced, but remain higher than for public good provision. Preliminary laboratory evidence suggests that government intervention may be more necessary in the provision of a public good than in the mitigation of a public bad. Furthermore, much of the debate surrounding optimal allocations of insurance and infrastructure investment seems to be the result of environmental uncertainty as opposed to strategic uncertainty.

I. INTRODUCTION

Decisions under risk and uncertainty frequently deviate from the risk neutral predictions associated with expected utility theory. Infrastructure and insurance markets provide two examples where policy makers find it difficult to accurately forecast benefits and costs often leading to inefficient decision making. Chichilnisky (2006) estimates that an investment of 18 billion dollars in New Orleans' infrastructure prior to Hurricane Katrina could have averted a 200 billion dollar loss. Conversely, Viscusi (1996) estimates the cost of asbestos removal to be upwards of 104.2 million dollars per life saved². Chichilnisky claims that our decision-making tools under uncertainty have failed. More precisely, she is referring to expected utility theory. Tversky and Kahneman (1986) argue that expected utility theory is fundamentally flawed, as it emerged as a normative model of the ideal decision maker instead of from a psychological analysis of risk and value. They claim that accounting for psychological preferences allows for a

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² Estimate was made in 1996 using 1984 dollars.

better representation of decision making under risk. This paper uses the Voluntary Contributions Mechanism to examine decision making in the presence of definite, risky, and uncertain losses.

The Voluntary Contributions Mechanism (VCM) is a conventional experiment used to analyze decision making in the presence of a public good. In a VCM game, participants are endowed with a set amount of tokens or currency and then given the option to contribute a portion of their endowment toward the provision of a public good. The contribution is multiplied by some efficiency factor greater than one and then distributed evenly to all group members. The payoff to the group is greater than the sum of individual contributions, but the payoff to the individual is less than their contribution. The Pareto efficient outcome occurs when every player chooses to contribute their entire endowment into the group account, as this strategy maximizes the aggregate payoff. However, each player has incentive to defect from Pareto optimum and contribute nothing, causing free riding to become the unique dominant strategy of the game.

Choices in the VCM game emulate public policy decisions such as the provision of public parks, museums, police protection, or schools. The decisions made in the laboratory should reflect decisions made in these instances and results can be used to draw inferences about public choice on a much larger scale. The use of real monetary incentives reduces inaccuracies that occur when using hypothetical bids.

VCM games similar to those used in this paper have been studied extensively in the past (e.g., Fehr and Gächter 1999; Holt and Laury 2002; Isaac and Walker 1988; Sonnemans and Schram 1998). However, the vast majority of existing research focuses on environments where contributions to the public account add to the wealth of subjects in a deterministic manner that is known to participants. In reality, most local public goods are provided to limit potential damages with risky or uncertain outcomes such as fire and police protection, infrastructure development, public defense, or health risk-reducing regulations.

Experimental research incorporating risk and uncertainty is limited with few exceptions (e.g., McClelland et. al 1993; Gangadharan and Nemes 2009). In McClelland's experiments individuals could choose whether or not to purchase insurance that protects from a loss at varying probabilities. While only a portion of the players with the highest bids were able to obtain the insurance, bidding did not benefit other players. Gangadharan and Nemes' public good experiments add elements of environmental risk and uncertainty, but do so maintaining a positive framework.

In order to capture the effects of framing, risk, and uncertainty with respect to voluntary contributions, this paper utilizes four treatments of the VCM game. These treatments include a standard positively framed VCM game, a variation where individuals contribute towards the mitigation of a public loss instead of the provision of a public good, and two treatments where individuals contribute to mitigate a potential public loss with a 50% chance of realization. In

one of these two treatments the probability of loss is known to participants and in the other treatment the probability is unknown. Group size and the marginal per capita return on contributions toward the public account are equivalent across all treatments. I find that there are statistically significant differences in contributions depending upon the framing of the dilemma, and whether or not risk or uncertainty are associated with the public loss. Contributions are greatest when the dilemma is framed as the mitigation of a definite public loss and diminish when environmental risk and uncertainty are introduced, but remain higher than contributions toward the provision of a public good.

In Section II, I provide a review of the literature and experimental methods used to examine similar topics. Section III presents the theoretical model and section IV translates the model into the experimental design. In Section V, I state the hypotheses to be tested. Section VI contains the statistical results of the experiment with respect to those hypotheses. In Section VII, I examine the limitations of the results. In Section VIII, I discuss the results and possibilities for future research. Complete instructions are available in the appendix.

II. LITERATURE REVIEW

Expected utility theory is based on four key assumptions: cancellation, transitivity, dominance, and invariance. While these assumptions are intuitively attractive, they are often violated and do not provide a realistic view of human decision making. Tversky and Kahneman (1986) discuss these assumptions and propose an alternative by modifying the value function to incorporate preferences that are anomalous in expected utility theory.

Cancellation claims that states of the world that yield equivalent outcomes, regardless of one's choice, are eliminated. For example, suppose there are two different gambles, Gamble A and Gamble B. In Gamble A there is a 50% chance that x will be realized with nothing happening otherwise. In Gamble B there is a 50% chance that y will be realized with nothing happening otherwise. If x is preferred to y , then Gamble A will be preferred to Gamble B since the two gambles yield the same outcome if not realized. Under this assumption individuals make decisions based solely on states that yield different outcomes. Allais (1953) provides a counter example that is supported by an experiment by Kahneman and Tversky (1979).

In this experiment subjects faced two paired lottery choice situations. In the first situation, individuals chose between having a 33% chance to gain \$2,500, a 66% chance to gain 2,400, and a 1% chance to gain nothing (option A) or gaining \$2,400 with certainty (option B). In the second situation, individuals chose between a 33% chance to gain \$2,500 and a 67% chance to gain nothing (option C) or a 34% chance to gain \$2,400 and a 66% chance to gain nothing (option D). Out of the 72 subjects, 82% chose option B over option A and 83% chose option C over option D, conflicting with the cancellation axiom.

The transitivity assumption states that A is preferred to B whenever the utility gained by A is greater than the utility gained by B. For example, suppose one has three options: A, B, and C. If A is preferred to B and B is preferred to C, then A will be preferred to C. Loomes, Starmer, and Sugden (1991) found that this axiom does not hold up in the laboratory. In their experiment they constructed two sets of twenty choice problems. Subjects chose between A and B, then between B and C, then between A and C where options A, B, and C were all random lotteries with different expected values, returns, and probabilities of return. One option used was a 30% chance of gaining \$18 and a 70% chance of gaining nothing (option A), a 60% chance of gaining \$8 and a 40% of gaining nothing (option B), and a 100% chance of gaining \$4 (option C). Individuals participating in the experiment consistently violated the transitivity axiom in a way that could not be explained by random error.

Dominance states that if option A provides more utility than option B in one state and at least as much utility as option B in all other states, then option A is dominant over option B. The dominant option should be chosen. Kahneman and Tversky (1979) refuted the Dominance axiom with another experiment. Subjects considered the following two lotteries describing the percentage of marbles of different colors in each box and the amount of money they won or lost depending on the color of the randomly drawn marble. They were then asked to specify which lottery they preferred.

Option A

90% white	6% red	1% green	1% blue	2% yellow
\$0	win \$45	win \$30	lose \$15	lose \$15

Option B

90% white	6% red	1% green	1% blue	2% yellow
\$0	win \$45	win \$45	lose \$10	lose \$15

In this example the dominance of option B over option A is transparent. The payoff of option B is at least as high as the payoff of option A, regardless of the color. All of the 88 participants chose option B over option A. Next, Tversky and Kahneman combined the outcomes for drawing red or green marbles in B and yellow and blue marbles in A and asked 124 subjects which lottery they preferred.

Option C

90% white	6% red	1% green	3% yellow
\$0	win \$45	win \$30	lose \$15

Option D

90% white	7% red	1% green	2% yellow
\$0	win \$45	lose \$10	lose \$15

In this problem, the dominance of option D over option C is not transparent and 58% of the participants chose C. This suggests that the dominance rule is obeyed when its application is transparent, but not when its application is masked.

Finally, invariance states that different representations of payoff equivalent dilemmas will yield the same preferences. Refuting Invariance, McNeil et al. (1982) present a study of preferences between two potential medical treatments, surgery and radiation therapy. They used a survey containing statistical information about the effects of treating lung cancer using two different frames. In the first frame, the statistics were given in terms of survival rates and in the second frame statistics were given in terms of mortality rates. Respondents indicated their preferred treatment.

Radiation therapy had a higher mortality rate (lower survival rate) than the surgery treatment after the end of five years and the expected survival/mortality rates were equal across treatments, but the respondents' preferences were not. Only 18% of the respondents preferred radiation therapy in the survival frame, while 44% of the respondents preferred radiation therapy in the mortality frame. Results were similar for physicians, business students, and the clinic patients, refuting the invariance assumption.

Instead of using a weighted average of potential outcomes and their respective probabilities, Kahneman and Tversky (1979) argued that individuals make decisions by evaluating alternative prospects with respect to a subjective reference point. In this model people are risk averse in the domain of gains and risk seeking in the domain of losses. One criticism of Kahneman and Tversky's work is the use of hypothetical bids as opposed to real monetary incentives. However, decades of experimental research finds that their proposed challenges to expected value theory hold up when using monetary incentives.

Gangadharan and Nemes (2009) define a risk as a situation where all possible future outcomes and the probabilities of those outcomes are known. Examples include the chance that a building will catch on fire, a crime will be committed, or that a person will be involved in a car accident. In these instances the law of large numbers allows for the extrapolation of probabilities of occurrence. Knowledge of these probabilities allow for a risk to be mitigated using infrastructure investment, insurance, and laws or regulations.

Uncertainty refers to the case in which outcomes are known, but the probabilities associated with those outcomes are not known, or impossible to know. A further distinction is made between 'strategic' and 'environmental' uncertainty. Environmental uncertainty refers to cases in which the probability distribution of potential losses is not known. Examples include terrorist attacks, rare natural disasters, and climate change. In these cases, it is not clear what the optimum group action is regardless of how individuals respond. Strategic uncertainty refers to the unknown probability distribution of potential decisions made by others.

Gangadharan and Nemes (2009) investigate differences in the perception of risks and uncertainties when making decisions about private and public goods. In their experiment subjects received an endowment and chose between contributing to a private account and a group account. Their experiment contained seven different treatments: a standard public goods game, 2 treatments where there

is a known probability of obtaining the return for the private and public accounts, 2 treatments were there is an unknown probability of obtaining the return for the private and public accounts, and 2 treatments were the participants have the opportunity to increase the probability of return from the private and group accounts. Each of the seven treatments lasted for 15 periods. Environmental risk and uncertainty varied along treatments, but strategic uncertainty was held constant. At the end of each period, subjects were told the aggregate level of contribution to the public good and their return from the private and public accounts. They find that environmental risk and uncertainty with respect to the provision of private and public goods is a significant factor when making decisions.

McClelland et al. (1993) created an experiment to determine how individuals respond to different levels of environmental risk. Subjects faced risks of various magnitudes and probabilities with a constant group size of eight over eight periods. The magnitudes of the potential losses were \$4 and \$40 and the probabilities ranged from 0.1 to 0.9. The risk was operationalized using a bag containing 100 poker chips. Subjects received an endowment at the beginning of the experiment and each round the experimenters drew a chip from the bag. If a red chip was drawn the loss would be realized and if a white chip was drawn each individual would have a marginal increase in their wealth in order to keep them funded. An auction for insurance was held before each period. Participants entered a bid for insurance against the loss and the fifth highest bid became the reigning insurance price. The four players bidding higher than the reigning bid received insurance at that price.

Mean bids for both the \$4 and the \$40 treatments were close to the expected value at all probabilities except for the lowest (0.1). At this probability, the distribution of bids became bimodal (players chose to either ignore the risk entirely or overestimate its chance of occurrence). The most pronounced difference between the two treatments was a decrease in the amount of zero bids when the loss was increased to \$40. McClelland claimed that results of the study may have been influenced by the gambler's fallacy. That is a series of white chip draws would be accompanied by higher insurance bids and a series of red chip draws would be accompanied by lower insurance bids even though the probability that the loss would be realized was independent across periods.

McClelland claims that while the \$4 and \$40 losses do not approach those found in the high-consequence situations he is trying to model, the losses are high enough to entice players into acting as they would in those situations as individuals would all prefer to avoid the losses. In addition, he cited that players reacted with visible unhappiness when the losses occurred, providing some antidotal evidence that players were concerned with the earnings from the experiment. Furthermore, Smith and Walker (1993) found that real monetary rewards limit deviations from expected utility theory. Providing evidence that using monetary incentives instead of hypothetical bids will cause the decisions made in experiments to approach decisions made in similar real world situations.

Sonnemans and Schram (1998) provide laboratory evidence that the framing of a dilemma as a public good or a public bad has a significant impact on the decision making processes of the subjects involved. Their experiment consisted of several periods with two different frames. The first frame was a provision of a public good that would only occur if investment into the public account exceeded a certain threshold. The second frame was prevention of a public bad in which individuals could withdraw resources from a public pool yielding negative externalities to the other group members. Both of the frames were made strategically equivalent.

They did not find a statistically significant difference in decision making between frames in the initial periods; however, differences developed during the game. Differences in the observed behavior from expected utility theory could not be explained by differences in value orientation. This is largely because they did not have an a priori way of determining the subjective reference point of those participating. The experiment also tests the Pruitt hypothesis that subjects will perceive themselves to be more interdependent in step level public goods games than in the step level public bads games. The Pruitt hypothesis was not refuted; although it was unable to explain why differences in cooperation between the two frames increased over the periods.

Their explanation for the differences in decisions over time was learning. When players were dissatisfied with their choices in previous periods, they modified their decisions in the new periods. Most of this dissatisfaction arose from inequity aversion on the behalf of the contributors as subjects had a greater distaste for contributing to a public good or prevention of a public bad when the contribution was so small that they did not reach the threshold than when their decision was not necessary to reach the threshold.

My design synthesizes the negative frame similar to that in Sonnemans and Schram (1998) and the environmental risk and uncertainty elements found in some treatments of Gangadharan and Nemes (2009). Unlike Sonnemans and Schram (1998), I incorporate elements of environmental risk and uncertainty. Unlike Gangadharan and Nemes (2009), the environmental risk and uncertainty treatments are framed negatively. Each treatment is a single period. Since each treatment is strategically equivalent, differences in contributions towards the public account should be the result of the frame and whether or not environmental risk or uncertainty exists in the treatment.

III. MODEL

The four treatments use the payoff function found in equation 1. Each treatment is strategically equivalent³.

$$(1) \quad \pi_i = m_i - x_i + \left[\frac{L}{n} + \frac{b(\sum [g_i + x_i])}{n} \right]$$

3 In a strict sense the first two treatments are strategically equivalent and the second two treatments are strategically equivalent, but the ex post payoff in the environmental risk and uncertainty treatments are slight modifications designed to keep the payoff reasonable.

where π_i is the payoff to player i . Each participant is endowed with m_i and chooses to contribute x_i into a public account. L represents the loss faced by the group, b represents the efficiency factor of contribution, Σg_i is the sum of the contributions from other group members, and n is the number of participants in a group. In the environmental risk and uncertainty treatments the loss has a probability of occurrence equal to p . If the loss is not realized any contributions made to mitigate the public loss are forfeited.

The public account is given by $\frac{b(\Sigma [g_i + x_i])}{n}$. $\frac{\partial \pi_i}{\partial \Sigma g_i} = \frac{b}{n}$ making the public account non-rival and non-excludable. In addition, $\frac{b}{n} > 0$, so individuals can only benefit from the contributions of others, making the public account a public good. For all treatments, $\frac{\partial \pi_i}{\partial x_i} > \frac{L}{n}$. Therefore, it is impossible for participants to leave the experiment with less money than they entered with. Each individual must choose a value of x_i between 0 and 6. Participants view each treatment as a utility maximization problem represented by the following equation.

$$(2) \quad \max_{0 \leq x_i \leq 6} \left[[U_i(m)_i - x_i + \left[\frac{L}{n} + \frac{b(\Sigma [g_i + x_i])}{n} \right]] \right]$$

Since, $\frac{\partial \pi_i}{\partial x_i} = \left(\frac{b}{n} - 1 \right) < 0$, utility is maximized at $x_i = 0$ regardless of the contribution of the other group members. $x_i = 0$ is the unique dominant strategy of the game. The aggregate payoff function is given below in equation 3. Introducing a probability to the loss and public account terms does not alter the dominant strategy of the game.

$$(3) \quad \pi = \sum_{i=1}^n m_i - L + \left[\frac{b(\Sigma [g_i + x_i])}{n} \right]$$

Since, $\frac{\partial \pi}{\partial \Sigma g_i} = \frac{b}{n} \cdot n = b > 1$, group utility is maximized when each player chooses to invest everything into the public account ($x_i = 6$). Notice that while individuals benefit from cooperation and suffer from defecting, the game provides incentives for individuals to choose the inefficient strategy of defecting.

IV. EXPERIMENTAL DESIGN

The laboratory experiments were conducted in two sessions involving 12 and 16 participants, respectively⁴ for a total of 28 observations; 25 observations were used. In each of these sessions, decision-making scenarios differed in framing, probability of loss, and knowledge of the probability of loss. At the beginning of each treatment subjects were placed randomly in anonymous groups of four. At the end of each period, subjects learned the aggregate level of contribution to the public account; but were not told the individual contribution of each other group member. Subjects were also told their payoff from each treatment.

The baseline treatment was a positively framed VCM game. Equation 4 represents the expected payoff of each group member with the loss that the group

⁴ Participants were undergraduate students taking Game Theory or Advanced Topics in Microeconomics seminar at Gettysburg College. Three of the observations in the second session were excluded from the final data. Two of these observations consisted of the people who ran the experiment and the other subject was omitted due to participation in the previous session. Participation of these individuals was necessary to produce balanced groups.

faces, L , equal to 0. The first variation is the negatively framed treatment where the loss is equal to $-\$24$. Investing $\$1$ into the public account decreases the loss to each group member by $\$0.40$. The endowment in this treatment was increased to $\$16$. The expected payoff for the negatively framed treatment is described in Equation 5.

$$(4) \quad E(\pi_i) = \$10 - x_i + \left[\frac{1.6(\sum [g_i + x_i])}{4} \right]$$

$$(5) \quad E(\pi_i) = \$16 - x_i + \left[\frac{-24}{4} + \frac{1.6(\sum [g_i + x_i])}{4} \right]$$

The third and fourth treatments were also negatively framed with an endowment of $\$16$. The probability of loss in these treatments was equal to 0.5. In order to determine if the loss is realized, a poker chip was drawn from a bag containing 50 red chips and 50 white chips. If a red chip was drawn, the loss would be realized, if a white chip was drawn, the loss would not be realized. If the loss was not realized, all money invested into the public account would be lost. In the environmental uncertainty treatment the probability of loss was unknown to participants. However, they were shown that both a red chip and a white chip existed in the bag making it possible for the loss to occur and the loss to not occur. The expected payoff functions of the environmental risk and uncertainty treatments are described in equations 6 and 7, respectively. Notice that the efficiency factor was increased to 3.2 to preserve the marginal per capita return on contributions.

$$(6) \quad E(\pi_i) = \$16 - x_i + \frac{1}{2} \left[\frac{-24}{4} + \frac{3.2(\sum [g_i + x_i])}{4} \right]$$

$$(7) \quad E(\pi_i) = \$16 - x_i + p \left[\frac{-24}{4} + \frac{3.2(\sum [g_i + x_i])}{4} \right]$$

The order of the treatments was the environmental uncertainty treatment, the environmental risk treatment, the negative frame treatment, and then the positive frame treatment. Subjects were told prior to the experiment that upon completion they would be paid for one of the four treatments to be determined randomly by the flip of two coins in front of the students.

V. HYPOTHESES

In this paper, I tests four hypotheses. (1) Individuals contribute more to a public account when the dilemma is framed as the mitigation of a public loss than the provision of a public good. (2) Individuals contribute more to a public account when the loss is certain than when faced with the risk of a loss. (3) Individuals contribute more to a public account when the loss is certain than when environmental uncertainty is associated with the public loss. (4) Individuals contribute more to a public account when the probability of loss is known than when the probability of loss is unknown.

The results from Sonnemans and Schram (1998) provide some reason to believe that the quantities contributed toward the public account in the positively framed treatment and the negatively framed treatment will be statistically significant in difference from each other. Prospect theory suggests that contributions will be higher in the negative treatment. The payoff from contributing in the public account in the negatively treatment is framed as prevention of a loss. Since individuals weigh losses heavier than gains, contribution in the negative treatment is seen as having greater return than contribution in the positive treatment.

Hypothesis 2 stems from the reflection effect described in Kahneman and Tversky (1979). The reflection effect states that individuals are risk-averse in the domain of gains and risk-seeking in the domain of losses. The risk treatment is framed as mitigation of a probabilistic loss, so participants should also choose to invest less to the public account than when the loss is certain.

Gangadharan and Nemes (2009) find that when the probability distribution of the environmental risk is unknown, individuals tend to be “optimistic” and predict that the desired outcome will be realized. Since individuals should all prefer a higher payoff to a lower payoff, the desired outcome should be the loss not being realized. Therefore, contributions toward the public account should be lower in the environmental uncertainty treatment than in the negatively framed treatment. In the environmental risk treatment, the probability of loss is clearly defined and individuals are therefore able to evaluate the expected value of the loss. The optimism effect should also cause the investment levels to be higher in the environmental risk treatment than in the environmental uncertainty treatment.

Hypotheses will be tested using t-tests, Wilcoxon signed-rank tests, and an OLS regression. Hypothesis 1 would be supported by statistically significant differences in the average contribution in the negative and positive treatments with a greater average contribution in the negative treatment. Also, a positive and statistically significant coefficient on the dummy variable representing the negatively framed treatment would support this hypothesis. Hypothesis 2 would be supported by mean contributions in the environmental risk and negatively framed treatment being statistically significant in difference from each other with the average contribution being greater in the negatively framed treatment. A coefficient on the dummy variable representing the environmental risk treatment that is statistically significant and greater than the coefficient on the negatively framed treatment dummy variable would also support this hypothesis.

Hypothesis 3 would be supported by the mean contribution in the negative treatment being statistically significant in difference from and greater than the mean contribution in the environmental uncertainty treatment. The dummy variable representing the environmental uncertainty treatment having a statistically significant coefficient that is greater than the coefficient on the dummy variable representing the negatively framed treatment would also support this hypothesis. Mean contribution in the environmental risk treatment that is greater and statistically significant in difference from mean contribution in the environmental

uncertainty treatment would support hypothesis 4. A statistically significant coefficient on the environmental risk dummy that is greater than the coefficient of the environmental uncertainty dummy would also support this hypothesis.

VI. RESULTS

A. Overview

Figure 1 reports the amount of strong free riders in each treatment. Following the definition used in Isaac and Walker (1988), strong free riders are participants that chose to contribute less than one third of the Pareto efficient contribution into the public account $(x_i < 2)$. The vast majority of the subjects in the positively framed treatment chose to invest nothing. While free riding did not disappear entirely in any of the treatments, it is much less prevalent. Isaac and Walker (1988) found in their public good experiment that the level of strong free riders tends to increase over periods. In this experiment the trend is not as distinct.

Figure 1
Strong Free Riders

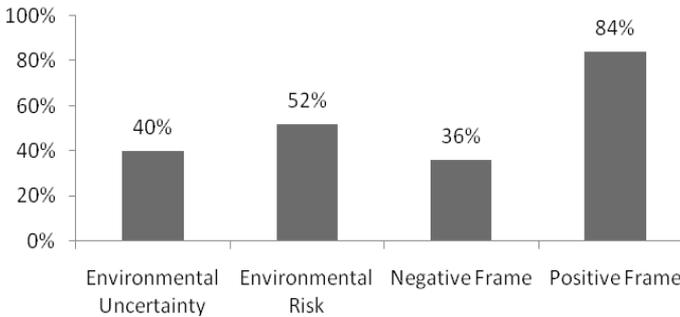


Figure 2 presents the distribution of contribution toward the public account over each treatment. Using the negative frame, more contributions approached the Pareto optimum than in any other treatment. The data suggests that individuals are more likely to cooperate when faced with a public loss than a public gain. As environmental risk is introduced into the loss, the amount of Pareto efficient contributions falls by 85%. Comparatively, Pareto efficient contributions fall by only 57% when the probability of loss is uncertain. The distribution of contributions in the uncertainty treatment does not seem to indicate optimism. If individuals predicted the desired outcome, then one would expect the majority of contributions to approach zero; however, in this treatment many individuals contributed slightly over one-third of the Pareto efficient amount

Figure 2

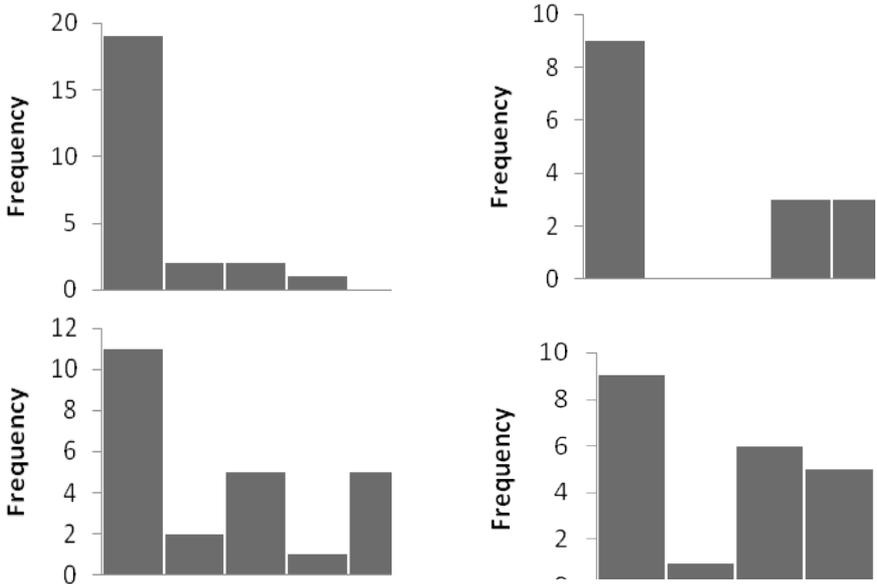


Table 1 presents the average contributions to the public account for individuals and as a group in dollars and as a percentage of maximum possible investment. The average contribution toward the public account is five times greater when the dilemma is framed negatively than when the dilemma is framed positively. When environmental risk or uncertainty is introduced to the negative frame, average contributions fall by approximately 20% of the endowment with the decline being slightly more distinct with environmental risk than environmental uncertainty.

It is clear from these results that the framing of the dilemma and whether environmental risk or uncertainty is associated with potential losses has a significant impact on contribution towards public account. This data supports hypotheses 1, 2, and 3, but refute hypothesis 4. Statistical tests for significance reinforce these results. Table 2 contains pairwise t-tests for significant difference in the means across treatments as well as Wilcoxon signed-rank tests. The results for the Wilcoxon signed-rank tests are presented in parenthesis under the results for the t-tests. These two measures of significance are particularly attractive as require minimal statistical assumptions. Both tests find that all treatments are statistically significant in difference from each other at the 10% level of significance.

	Individual			Group Sum	
	Total	Mean	Std. Dev	Mean	Std. Dev
Positive Frame	15	0.60 (10%)	1.38	2.2 (9.1%)	2.66
Negative Frame	78	3.12 (52%)	2.57	11.56 (48%)	4.44
Environmental Risk	41	1.64 (27%)	1.80	6.36 (26%)	3.69
Environmental Uncertainty	51	2.04 (34%)	2.03	7.84 (32%)	3.68

Pairwise T-Tests and Wilcoxon Signed-Rank Tests			
Treatment	Positive Frame	Negative Frame	Environmental Risk
Negative Frame	-4.178*** (-3.388)***	--	--
Environmental Risk	-2.355** (-2.969)***	3.997*** (3.427)***	--
Environmental Uncertainty	-2.879** (-3.117)***	3.038** (2.757)***	-1.922* (-1.800)*

*Difference is significant at the 10% level, ** difference is significant at the 5% level, and *** difference is significant at the 1% level. Wilcoxon signed-rank test results in parenthesis.

B. Econometric Results

The following multivariate regression model evaluates the contribution of individuals to the public account, κ , as a function of three dummy variables. The first variable, η , is equal to 1 if contribution was made in the negatively framed treatment and 0 otherwise. The second variable, ρ , is equal to 1 if contribution was made during the environmental risk treatment and 0 otherwise. The last variable, ν , is equal to 1 if contribution occurred during the environmental uncertainty treatment and 0 otherwise. The regression uses ordinary least squares with the functional form given below in equation 8. A summary of the results are reported in Table 3.

$$(8) \quad \kappa_{it} = \beta_0 + D_1\eta_{it} + D_2\rho_{it} + D_3\nu_{it} + \mu_{it}$$

The omitted dummy variable is contributions made during the positively framed treatment. The coefficients of all of the variables are statistically significant in difference from zero at the 10% level of significance. At the 5%

level the coefficient on the environmental risk dummy is no longer statistically significant. The R^2 value in this regression is very low, 0.17, but statistically significant in difference from zero. Moreover, low R^2 values are not unusual in VCM experiments because of the innate randomness surrounding the participant's decisions.

The most striking result is that using a negative frame as opposed to a positive frame increases the predicted value of the contribution by \$2.52. This supports the evidence found using t-tests and Wilcoxon signed-rank tests and the hypothesis that individuals will contribute more to mitigate a public bad than they would to provide a public good.

The introduction of environmental risk or uncertainty to the mitigation of a public bad reduces the contribution, while remaining greater than contribution for provision of a public good. It is possible that individuals chose to invest less in the environmental risk and uncertainty treatments because of risk-seeking preferences. Decisions are more cooperative with uncertain losses than when the probability of the loss is well defined. The relative magnitudes of the coefficient estimates support Hypotheses 1, 2, and 3, but refute hypothesis 4.

Table 3

Regressor	Coefficient Estimate
η	2.52*** (0.56)
ρ	1.04* (0.56)
ν	1.44** (0.56)
Constant	0.6 (0.137)
R^2	0.17
F	0.0003
Observations	100
*Coefficient is significant at the 10% level, ** coefficient is significant at the 5% level, and *** coefficient is significant at the 1% level.	

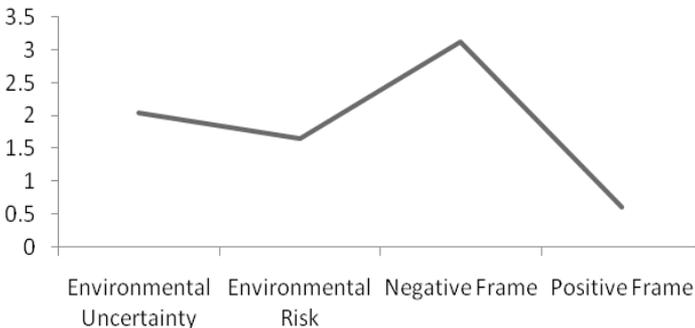
VII. LIMITATIONS

The claim that contributions toward a public account depend on framing, risk, and uncertainty is supported by the laboratory evidence obtained in this study. However, decades of previous VCM research document that learning occurs in experiments similar to mine, which could cause the explanatory power

of framing, risk, and uncertainty to appear greater than it actually is. Running these 4 treatments with the same subjects causes the results to be statistically interdependent. However, this was a deliberate and necessary design choice made to reduce the cost of the experiments and adhere to time constraints. In addition, previous research documents decay in contributions using the same treatment over several periods. Each period in my experiment is a new treatment.

Figure 3 shows the average individual contribution for each treatment. Overall, there is a decay trend similar to that found in Isaac and Walker (1988). The decay appears to be linear; however, average individual contribution in the negatively framed treatment is an outlier. If learning was the only effect causing differences in contributions across treatments, this trend would not be seen. Moreover, the results of the experiment are not indicative of the gambler’s fallacy. The potential loss in the first treatment was not realized in either of the sessions. If the participant’s were falling victim to the gambler’s fallacy, one would expect an increase in the amount invested into the public account from treatments 1 to 2, predicting the loss to be realized in the second treatment. On average this trend was not present, so changes in individual contribution cannot be explained by the gambler’s fallacy.

Figure 3
Average Individual Contribution



Sonneman and Schram (1998) found that subjects altered their behavior when unsatisfied with the results in the previous period. For that experiment, dissatisfaction was seen if the threshold level of the public good was not reached. In this experiment, subjects may be dissatisfied with other group members contributing small portions of their endowment toward the public account. Two OLS regression models, given in equations 9 and 10, are used to test for learning in the experiment.

$$(9) \quad \kappa_{it} = \beta_0 + \beta_1 \kappa_{it-1} + \beta_2 \gamma_{it-1} + \mu_{it}$$

$$(10) \quad \kappa_{it} = \beta_0 + \beta_1 \kappa_{it-1} + \beta_2 \gamma_{it-1} + D_1 \eta_{it} + D_2 \rho_{it} + \mu_{it}$$

where Y_{it-1} is the contribution to the group account made by other group members in the previous period. A summary of the results follow in table 4.

Table 4

Regressor	Coefficient Estimate	Coefficient Estimate
κ_{it-1}	0.28** (0.11)	0.477*** (0.09)
Y_{it-1}	-.014 (0.07)	0.13** (0.06)
η	--	3.66*** (0.54)
ρ	--	1.85*** (0.51)
Constant	1.25** (0.54)	-1.94*** (0.67)
R ²	0.08	0.44
F	0.052	0.000
Observations	75	75
*Coefficient is significant at the 10% level, ** Coefficient is significant at the 5% level, and *** Coefficient is significant at the 1% level.		

Individual contribution in the previous period has statistically significant effect on the predicted value of contributions to the public account in the current period in both of the regression models. In both of these models the coefficient estimate is less than one. This suggests that learning occurs during the experiment and that the learning is in the form of decay found in previous work. The contribution of other group members toward the public account in the previous treatment does not have a statistically significant impact on the contribution of the individual in the current treatment in the first regression model. However, the coefficient is statistically significant in the second model. Overall, the first model is not statistically significant while the second model is jointly significant. Controlling for learning, both the coefficient estimates for the negatively framed treatment and the environmental risk treatment are still statistically significant⁵.

⁵ The residuals of both of the models are not normally distributed and plagued with other violations of the Gauss-Markov assumptions making their results unreliable.

VIII. CONCLUSIONS

The number of strong free riders in each treatment as well as the distribution of individual contributions in each treatment supports the claim that the framing of the dilemma and whether or not environmental risk or uncertainty is associated with the potential loss has a statistically significant impact on contribution toward the public account. Statistical tests as well as an OLS regression find that contributions across all treatments are statistically significant in difference from each other. Individuals contribute more to a public account when the dilemma is framed negatively than positively. Contribution is also greater when the loss to the group is certain than when there is a probability of loss (known or unknown). My hypothesis that individuals would contribute less to a public account when the probability of loss was unknown than when the probability of loss was known was not supported by laboratory evidence. This could be due to 0.5 probability chosen for environmental risk. McClelland et al. (1993) provide reason to believe results may be different at different probabilities.

Two possible concerns regarding the validity of the results are the small sample size and that all of the treatments were done in succession with the same group of participants causing the results to be statistically interdependent. Similar VCM research documents decay in contributions over time in multi-period environments. Decay found in previous research occurs when experiments run the same treatment over a series of periods. In this experiment, each period is a new treatment. In addition, these design choices were deliberate and necessary in order to reduce the cost of the experiments and to adhere to time constraints. Contributions in the negative frame treatment deviate from the overall downward trend in contributions. When controlling for learning, coefficient estimates for the negative frame and environmental risk treatments remained statistically significant in difference from zero.

Another possible area of concern is the necessary trivialization of losses. The losses in this experiment do not approach those from a hurricane, terrorist attacks, or asbestos poisoning; however, it is not possible to replicate high-loss situations in the laboratory. The use of real monetary incentives should be sufficiently high so that each participant makes decisions in a way analogous to much larger losses.

Assuming these concerns are not a significant factor in determining individual contribution, these results suggest that individuals are able to reach more cooperative decisions when faced with public losses than when faced with public good provision. In terms of public policy, this suggests that it may be more necessary for the government to intervene to provide public goods than protection against public bads. Individuals are less likely to make Pareto efficient contributions when environmental risk or uncertainty is involved. Moreover, difficulties in reaching efficient levels of infrastructure and insurance investment are largely due to environmental uncertainty as opposed to strategic uncertainty. Unlike Gangadharan and Nemes (2009), an optimism effect was not seen for losses

with an unknown probability. When environmental risk was defined at 0.5, subjects appear to be more risk-seeking. It may also be necessary for the government to intervene in instances such as natural disasters (where the probability distribution of losses is not well defined) or public health hazards (where aggregate losses are well-defined). Also, in VCM type fundraising may be most effective when phrased as mitigation of a certain public loss.

Two interesting questions arise from these results that I will pursue in future research. First, contributions when the probability of loss was known to be 0.5 were less and statistically significant in difference from contributions in the negative frame. However, it is possible that the probability associated with the loss influenced decision making. Replicating the experiment using probabilities ranging from 0.1 to 0.9 would add some robustness to these results and better examine how decisions are made in low risk high-consequence scenarios as compared to high risk low-consequence scenarios. Second, one of the most interesting features of public dilemmas such as climate change is that the probability of the loss's occurrence is endogenous to the actions of those facing the losses. Private consumption and pollution emission today increases public damages in the future. Further experiments could examine the actions of individuals in situations where private investment in the current period increases the probability of potential losses in later periods.

—REFERENCES—

- Allias, Par M. "Le Comportement De L'Homme Rationnel Devant Le Risque: Critique Des Postulats Et Axiomes de L'Ecole Americaine." *Econometrica*, 1953: 503-546.
- Chichilnisky, Graciela. "Catastrophic Risk." In *Encyclopedia of Environmetrics*, 274-279. Chichester: John Wiley & Sons, 2002.
- Chichilnisky, Graciela. *Catastrophic Risks: The need for new tools, financial instruments and institutions*. June 7, 2006. <http://privatizationofrisk.ssrc.org/Chichilnisky/> (accessed October 31, 2008).
- Collard, David. "The Economics of Being Scared." In *Economics Growth and Sustainable Environments*, by David Collard, David Pearce and David Ulph, 67-83. New York: St. Martin's Press, 1998.
- Fehr, Ernst, and Simon Gächter. "Cooperation and Punishment in Public Goods Experiments." *Institute for Empirical Research in Economics University of Zurich Working Paper Series*. June 1999.

- Gangadharan, Lata, and Nemes Veronika. "Experimental Analysis of Risk and Uncertainty in Provisioning Private and Public Goods." *Economic Inquiry*, 2008: 146-164.
- Holt, Charles A., and Laury K. Susan. "Risk Aversion and Incentive Effects." *The American Economic Review*, Vol 92. No 5, 2002: 1644-1655.
- Isaac, Mark R., and James M. Walker. "Group Size Effects in Public Goods Provision: The Voluntary Contributions Mechanism." *The Quarterly Journal of Economics*, Vol. 103, No. 1, 1988: 179-199.
- Kahneman, Daniel, and Tversky Amos. "Prospect theory: an analysis of decision under risk." *Econometrica*, 1979: 263-291.
- Loomes, Graham, Chris Starmer, and Robert Sugden. "Observing Violations of Transitivity by Experimental Methods." *Econometrica*, 1991: 425-439.
- MacDonald, Don, and Jerry Wall. "An Experimental Study of the Allais Paradox Over Losses: Some Preliminary Evidence." *Quarterly Journal of Business and Economics*, 1989.
- McClelland, Gary H., William D. Schulze, and Don L. Coursey. "Insurance for Low-Probability Hazards: A Bimodal Response to Unlikely Events." *Journal of Risk and Uncertainty*, 1993: 95-116.
- McNeil, BJ, SG Pauker, HC Sox, and A Tversky. "On the Elicitation of Preferences for Alternatives Therapies." *The New England Journal of Medicine*, 1982: 1259-1262.
- Sonnemans, Joep, and Arthur Offerman, Theo Schram. "Public good provision and public bad prevention: the effect of framing." *Journal of Economic Behavior & Organization* Vol 34, 1998: 143-161.
- Tietenberg, T. *Environmental and Natural Resource Economics*. Pearson/Addison-Wesley, 2006.
- Tversky, Amos, and Daniel Kahneman. "Rational Choice and the Framing of Decisions." *The Journal of Business* Vol 59. No. 4 Part 2: *The Behavioral Foundations of Economic Theory*, 1986: S251-S278.
- Viscusi, W. Kip. "Economic Foundations of the Current Regulatory Reform Effects." *Journal of Economic Perspectives*, 1996: 124-125.

The experiment was programmed and conducted with the software z-Tree (Fischbacher 2007).

Reference: Urs Fischbacher (2007): z-Tree: Zurich Toolbox for Ready-made Economic Experiments, *Experimental Economics* 10(2), 171-178.

Instructions (Negatively framed Public Good)⁶:

This is an experiment in decision making. The instructions are designed to inform you of the types of decisions you will be making and the results of those decisions. All earnings you make during the experiment will be totaled and paid to you in cash, privately, at the end of the experiment. If you have any questions concerning the instructions feel free to raise your hand and one of the experiment monitors will assist you.

You will be randomly and anonymously placed in a group with 4 members (you and three other participants). Each member of the group begins the experiment with an endowment of \$16.

Each member of your group will decide how much to allocate to a ‘group account.’ In particular, you must choose how many dollars to allocate to the group account with a minimum of \$0 and a maximum of \$6. Allocations must be made in \$1 increments. In other words, you must choose among the following allocations to the group account: \$0, \$1, \$2, \$3, \$4, \$5, or \$6. The amount you choose to allocate to the group account will be deducted from your endowment. Each member of the group will be informed of the **total** amount allocated to the group account, but will **not receive any information about the specific choices made by any individual**. Since group pairings are anonymous and individual allocations will not be revealed, your decision will be confidential. In other words, no member of your group or any other participant in the experiment will be able to identify your allocation decision.

The return from the group account will be determined as follows. The account begins with a deficit of \$24. Each dollar that is contributed to the group account (by you or any other member of your group) will be multiplied by 1.6. Thus the final amount in the group account will be:

$$-\$24 + 1.6 * (\text{Total Group Contributions}).$$

The return from the group account (which may be either positive or negative) will be split evenly among the group members. This means you will receive $\frac{1}{4}$ th of the final amount in the group account.

To summarize, your payoff from the experiment will be determined as follows:

$$\$16 - \text{your contribution to the group account} + \frac{1}{4} * (-\$24 + 1.6 * (\text{Total Group Contributions}))$$

6 Copies of the instruction for other treatments are available upon request from the author.

Another way to think about this decision is as follows. You are part of a group with 4 people. Initially, your group has to pay a cost of \$24, of which your share is \$6. You can invest in a group account to lower the cost your group must pay. Every dollar you invest lowers the group's cost by \$1.60, meaning that for every \$1 you invest your cost decreases by \$0.40, and so does the cost of each other member of your group.

If you have questions, please raise your hand at this time, and an experiment monitor will assist you. Otherwise, simply follow the instructions on your computer screen. Once you have completed all of your decisions, please wait for the experiment to conclude. The experiment monitors will then call participants out of the room one at a time and pay you your earnings from the experiment.

A COMPREHENSIVE ECONOMIC STIMULUS FOR OUR FAILING ECONOMY

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ABSTRACT

This paper presents a comprehensive plan to fix the ailing American economy, through a five-step approach. First, the Federal Reserve must continue to broaden the scope of monetary policy, by purchasing and selling long-term securities. Manipulating expectations through FOMC statements is another tool at the Federal Reserve's disposal. Secondly, the government must enact fiscal stimulus to stabilize the economy in the short and medium runs, through investment in infrastructure projects, green technology, fusion technology, and science education. Additionally, the new fiscal policy must tackle the mortgage meltdown, which is weighing down the entire economy. Third, the regulatory system must be changed to reduce the likelihood of another financial collapse, starting with the nationalization of the ratings agencies. Ratings should be updated faster, with a numeric grading system rather than the pre-existing letter grades. Fourth, our globalized economy insures that a coordinated globalized response is necessary to recover. Global cooperation to reduce inflation and avoid protectionist policies is vital. Finally, the American bailout policy must be made clear, only giving bailouts to companies that are sound but financially strapped and those that are too big to fail.

I. Introduction

Often heralded as the most dominant economy in modern history, the American economy has reached a critical point. The real economy is faltering at an alarming pace. We have witnessed the bursting of the housing market bubble, rising unemployment, and just last quarter saw output decline substantially. Deflationary pressures have now set in, making real interest rates appear higher, further curtailing investment. To no surprise, the National Bureau of Economic Research has officially declared us in a state of recession since December 2007.

Taking the recession from a downturn to an economic catastrophe has been the financial crisis. The true risk levels of many securities, such as mortgage-backed securities, were not known, causing financial institutions to severely misprice their assets. As foreclosure rates increased and the value of mortgage-backed securities fell, many financial institutions were left grasping for cash. The overleveraging that took place magnified the existing problems. We have witnessed the failure and rescue of financial institutions we thought "too big to fail", such as Bear Stearns, Freddie Mac and Fannie Mae, AIG, Lehman Brothers and Citibank. The interconnectedness of the major financial corporations, and the fear of more bank collapses, froze the credit markets. Although the government

stepped in with a \$700 billion package, the credit markets remain in disarray. Now, with our government having a substantial stake in the economy, the financial crisis has taken on even greater importance. The lack of available credit worsened the situation companies found themselves in with the ongoing recession.

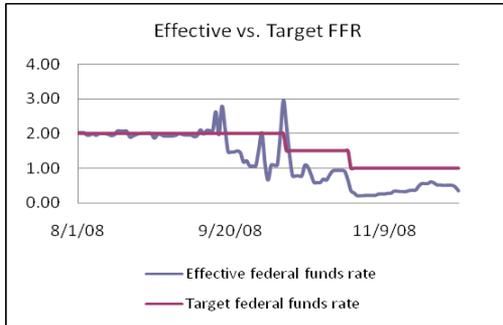
Dramatic and forceful responses are needed by all sectors of the government to combat the economic tribulations we face. The 2008 Macroeconomic Policy Senior Seminar at Gettysburg College compiled a collection of essays on a variety of economic categories that strive to give policy makers a guide to escape the mess we face. Monetary policy has entered a new horizon, as the target federal funds rate is below a quarter. The future will entail nontraditional methods aimed at a more expansionary policy and methods of altering expectations. President-elect Obama is promising a massive fiscal policy response to inject large amounts of money into the economy, looking to stabilize job loss get the economy turning again. Global trade may be a vital solution to these problems, as the world has become increasingly globalized. A unified response from different sectors of the world may be appropriate. Based on the financial mess, regulation and bailout policy must be reanalyzed. Poor regulation has been widely accepted as a cause of this crisis and bailouts give bring forth major questions which need to be answered. Our senior seminar presents these essays to tackle the economic crisis through a comprehensive approach from all angles of the world economy, as inactivity or too narrow a response by the government is not an option.

II. Entering a New Frontier: Monetary Policy

The U.S. economy is currently in a recession, while still experiencing the effects of the greatest financial crisis since the Great Depression. Traditional monetary policy has been ineffective in combating the problems that have arose and stimulating the real economy, forcing the Federal Reserve to take exotic actions. The Federal Reserve has and should continue to conduct monetary policy through a broader lens, no longer deciding on only the target federal funds rate but instead making broad moves toward expansionary or contractionary monetary policy. Important on the Federal Reserve's agenda must be to use its public statements to influence such things as inflationary expectations and the risk premium. Despite the importance of the short term needs of the economy, it is vital for the Federal Reserve to keep in mind long term issues, such as its independence from the Treasury and future inflation.

Traditional uses of monetary policy have proven to be ineffective at the present time, as the Federal Reserve has exhausted its use as a method of manipulating aggregate demand. In January of 2008, the funds rate was as high as 4.25%. In less than a year, the Federal Reserve made historic changes, dropping the target federal funds rate to between a quarter and zero percent. Never before in America has the target federal funds rate been so low. There is effectively no room for the Federal Reserve to lower the target rate, making traditional manipulation of the target federal funds rate nonexistent.

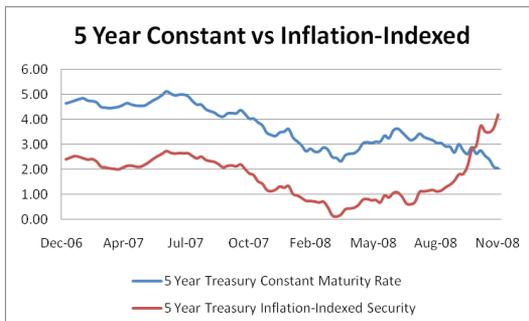
Furthermore, the effective funds rate has begun to deviate from the target rate, because of the large risk premiums and financial uncertainty in the current economy. Even before this latest rate



cut, when the target federal funds rate could be lowered somewhat further, the effective federal funds rate could not have gotten much lower. We can no longer rely on the funds rate to get us out of the recession, which has induced a state of panic.

The most recent rate cut most likely will not instill confidence in financial markets, due to the fact that the effective funds rate is no longer closely tied to the target rate and the fact that the funds rate was already approaching the zero bound. Additionally, the reduction in the funds rate will make little difference in manipulating long term risky interest rates, because it will do nothing to alter expectations on risk. The impression that the Federal Reserve has run out of weapons in which to fight the current crisis, may be given due to the most recent cut.

Decreasing the risk premium must be a top priority for the short term. One way the Federal Reserve can continue to reduce risk is through its FOMC statements. Bernanke's erratic use of exotic monetary policy has called his credibility into question, putting excess importance on those critical statements. For example, the current financial crisis has likely reached its lowest point, as credit markets are slowly beginning to function once again. Thus, the Federal Reserve can publicly say with confidence that it does not foresee any major bank failing in the future, but if one does then it will



guarantee its survival. The Federal Reserve has basically enacted such a policy (Citibank), but it has not stated it clearly. This would have the effect of increasing interbank lending, as lenders will be less concerned about the possibility of bank failure and the loss of their loaned funds. FOMC statements can play an important role in calming fears that are influenced by media outlets and politicians alike.

Another realm in which FOMC statements can affect short term policy is through inflation expectations. The Federal Reserve, through issuing statements showing a strong commitment to keeping interest rates low, can raise inflation expectations which could help in lowering the real interest rate. Currently there are fears concerning deflation in the economy, which has not been seen in America since the Great Depression. The graph below shows that the markets are anticipating deflation over the next five years. Convincing the public that deflation will not occur could be a method of enticing people to spend their money.

Another action the Federal Reserve can take, despite limitations, is to attack the term premium through conducting open market operations to purchase long term securities. Purchasing long term securities will increase the price of these assets, which will drive down interest rates. Lowering interest rates will help relieve pressure on companies looking to invest, which would provide a stimulus to the economy and promote growth. If it becomes necessary, the Federal Reserve could even purchase mortgage-backed securities to prop up mortgage prices and help banks, or they could continue to buy equity in banks to keep them afloat. All of these actions in the short-term strive to reduce the amount of unemployment.

Once these immediate concerns are resolved, monetary policy needs to focus on our long run objectives. The Federal Reserve must closely monitor the state of the economy in the following years to make sure that our current aggressive expansionary policy does not lead to long term inflationary pressures. As businesses begin to recover, the amount of money that has been injected by reducing the Federal Reserve's balance sheet must be contracted. Allowing the money to remain in the economy too long could create a system where businesses are dependent on liquidity injections from the Federal Reserve. Additionally, we do not want to remove the money too quickly, which could render banks unable to make loans and exacerbate the already weakened financial system.

As we move forward another consideration for long term policy is the relationship between the Treasury and the Federal Reserve. Historically there has been a wall of independence between the two entities. For example, the 1951 Accord was put in place to reestablish the independence of the Federal Reserve from the Treasury, after Truman and the Treasury tried to strong arm Chairman Eccles of the Federal Reserve into keeping interest rates low in order to better finance government debt. Currently the Federal Reserve and the Treasury share the same objectives, which will be convenient with Geithner as Treasury Secretary. However, in the future if their objectives no longer coincide their close relations may hinder the Federal Reserve's ability to act independently of political

pressures. Once this crisis has subsided, the Federal Reserve and the Treasury must sever their ties as soon as it is feasible to do so.

The Federal Reserve is in a historic period, as it enters a horizon it has never reached – a zero percent target federal funds rate. Although Bernanke has written extensively on financial crises and what to do at the zero bound, what waits before him is uncharted territory. The actions taken by him and the Federal Reserve over the next few months and years will be revolutionary, essentially writing a new chapter in Monetary Policy textbooks. The Federal Reserve must act aggressively to foster an expansionary monetary policy, though it remains without traditional tools, while keeping in mind the long-run consequences that may result.

III. A New Government Agenda: Fiscal Policy

The current global financial crisis has thrown the United States and much of the world into crisis. While the exact depth of recession is not yet known, it is becoming obvious that the country is facing its worst economic problem in recent history. This paper attempts to present recommendations for the United States government in regards to short term and long term fiscal policy measures that could be adopted to mitigate the effect of this crisis on the United States. We propose creating a massive fiscal policy package that will pump money into the economy in the short and medium run to help stabilize the economy from the shocks that the financial system has caused. We propose investing large amounts of capital into infrastructure projects, green technology, fusion technology, and science education. In addition to these conventional fiscal spending measures, we include suggestions for fixing problems that are more closely associated with the current slowdown. These measures address the foreclosure problem that is threatening American's homes.

The first part of our plan, which all the others are predicated on, is short-term deficit spending. To pull the nation out of recession, output and consumption must rise. To do this, a fiscal stimulus must be introduced which pumps money into the economy in a way that encourages consumption spending. At the current time, we believe the agent best able to spend the money in an efficient way would be the United States government. We do not believe that simply mailing rebate checks to families would be as effective since people will be more likely to pay off bills and debt than consume new goods and services. We have explored many different ideas about requiring the tax payers to spend the money within a short period of time and restricting them from paying off bills but this seems too difficult. We believe that telling the public that they can't pay off debt with the check they are sent would be cruel, considering that many of them need help paying off their debt. While we are aware of the problems associated with a large national deficit, we believe that the country must spend money to pull itself out of the recession. For the time being, therefore, the United States should not concern itself with the federal deficit until GDP growth is positive. Once this happens, the country can

begin to pay off its large debt and must drastically change the tax code in a way that would allow the government to get out of debt.

We recommend making \$400 billion available to be used on infrastructure projects over the next year. This money will be used to cover all forms of infrastructure including roads, bridges and highways as well as electric and hydro infrastructure. In addition to the use of this money at the national level, states can apply for funding for projects that they have on their books. Two independent commissions should be set up to allocate the money to the states. The first commission should be set up under the department of transportation and the second under the department of energy. States can apply for funds for anything that would fall under conventional infrastructure projects. For example New Jersey plans to spend \$2.8 billion on transportation improvements next year which could be covered by this part of our plan. This plan in New Jersey is expected to create 26,000 jobs over the next year. By the federal government paying for these plans the state governments would be better able to balance their budgets.

We believe that government spending must focus on infrastructure because transportation and communication are incredibly important to growth in all parts of the United States economy. Currently, the nation's roads and bridges suffer from neglect and lack of support from the taxpayer. Rolling brownouts are still a problem in some highly populated parts of the country, and the means through which we power our cities are extremely outdated. We need to immediately begin building new roads and bridges, as well as better water and electric systems. This will create new jobs and improve efficiency in both the short and long-run. Over the next ten years even more money will need to be spent on infrastructure with many estimates ranging from \$800 Billion to \$1.2 trillion.

In order to maintain the proud history of technological innovation the United States has had we propose spending \$100 billion on developing green technology. In regards to energy, we must strive to create energy sources that are green and do not require the consumption of oil or coal. Likewise, we must not focus on energy sources, which create large amounts of waste. Green energy, which includes wind and solar power, must be the top priority.

We propose allotting \$10 billion for developing nuclear fusion as a power source. This builds more specifically off our Green energy plan. We must expand our efforts to harness nuclear fusion, which promises to be an incredible source of energy in the future. It is important that the United States lead the world in the creation of green energy, as we believe that the economic benefits of controlling the green technology market are immense.

A large portion of our fiscal policy focuses on health care. We believe that America's health care system is extremely lacking when compared to the rest of the world. Millions of Americans are not covered in the case of illness or injury. The average American is much less healthy than many citizens of other nations with lower standards of living. The government must provide health care to all citizens. We propose creating a national healthcare agency that will be placed

under the Secretary of Health and Human services. The creation and organization of such a new national health care system may be expensive to implement but we believe it to be necessary. We will spend money ensuring that every American is covered under a national health care policy. For these policies to be implemented we are allocating up to \$100 billion. The true nationalization will take a bit longer, but we believe it will increase efficiency in the industry. Restructuring this system will be extremely expensive in the short run, but investing in this project will create many jobs and stimulate the economy overall. Also in the long run this program may save taxpayers money since they will not need to pay the ever increasing private sector health care costs. Since, health care costs for the United States totaled \$2.16 trillion in 2007, we only allocated less than 5% to reframe the system.

We are also proposing large increases in educational spending over the next year at the federal level. We propose a \$10 billion dollar program to encourage students to study math, science and engineering. While we will offer economic benefits for studying science in the higher levels of education, we recognize that the impetus must come from the bottom. In this sense, we will use money to encourage young children to study science. If we can make science fun and interesting to kids at a young age, we believe that they will continue this passion through high school and into colleges and universities then finally into the work force.

We propose creating a government taskforce aimed at stabilizing the housing market by serving as an arbitrator between lenders and borrowers who are in foreclosure. The arbitration will be binding for the borrower and the lender. The government taskforce will negotiate mortgage replacement loans, which will split the loss from falling home values equally between borrowers and lenders. What this will do is prevent lenders from entering foreclosure because they would lose more money by doing so. Under this program, lenders will only lose half of the difference between what they are owed and what the home is valued at in the market, instead of somewhere between 20 and 50% of the debt, which has been the case with recent foreclosures. It will also create positive equity for borrowers who have found that they owe more than their home is worth. This plan will split the loss from falling home values between lenders and borrowers so that each party accepts 50% of the difference between home value and mortgage debt outstanding. This will be done by requiring banks to write down 50% of this difference. Then, borrowers will take a loan from the government amounting to 20% of the remaining mortgage debt outstanding, up to some yet to be determined dollar amount, at a lower interest rate. Borrowers will use this loan to pay down 20% of their mortgages. This way, their outstanding mortgage debt will be less than their home's value, in most cases, and borrowers will again have positive equity in their homes. This will also benefit lenders as the loans will be used to pay off large portions of the mortgages they hold. This will effectively lower the interest rate being paid by borrowers and ultimately make foreclosure a poorer

option. Such a program would strengthen the financial sector, stabilize the sub-prime debt crisis, slow the rate of foreclosure, and ease the burden of borrowers' mortgage debts. We believe this would go a long way to help the economy recover and the financial sector regain liquidity.

We also propose giving the Commerce department up to \$50 billion to spend on small business investment. This money will be allocated to help owners cover start up expenses which they could not otherwise find funding for. Priority of funding will be given to the best business plans and applications will be thoroughly reviewed so that the money is not just being gambled on unpromising endeavors. The commerce department shall spend the money as quickly as good ideas present themselves.

This package will require a total of \$620 billion to be spent over the next year. Our ten year plan will include \$1 trillion for infrastructure, \$500 billion for green technology, \$200 billion for national health care, \$50 billion for developing nuclear fusion, and \$50 billion to encourage education in the sciences. This ten-year plan requires the spending of \$2.8 trillion over the period. This combination of a large short-term stimulus and a prorated ten-year spending policy will result in the creation of new jobs, the expansion and increased efficiency of the economy through infrastructure building, and a better standard of living for nearly all Americans.

As previously stated, we understand the extreme volume of our fiscal plan, and realize that there are costs in running up a large federal deficit. We maintain that the deficit must increase in the short run in order to help the economy, but also offer some alternative sources of funding for these projects. Our first source of funding would be the implementation of a federal gas tax. This tax will encourage green technology and discourage the use of inefficient SUVs and similar vehicles. The tax will give several billion dollars to the government and allow us to pay off our deficit once we have emerged from recession. Our second proposal for creating revenue is to nationalize health insurance. Doing this will save billions of dollars every year on administrative costs that goes to HMOs and insurers. We recognize that though nationalizing health care does increase government spending, it will cut costs for society. Third, we propose a major change in income taxes after we get out of the recession. Income taxes will have to rise since they make up such a large portion of government revenue. Finally, we will let the Bush tax cuts expire which we believe will raise revenue in the future.

IV. Making Sure the Past Does Not Repeat: Regulatory Policy

In the midst of the current economic crisis, a number of faulty regulations within our financial system have surfaced. We suggest adopting new regulations to address the failures of the rating agencies, mortgage industry, and capital requirements of all financial institutions. In addition, to solve the complexity accompanied with this globalized financial turmoil, there is a need to adopt an International Securities and Banking Regulatory Agency.

In order to eliminate all credit rating bias, the entire industry must be nationalized. Rating agencies, in their current establishment, have an incentive to give ratings that make financial institutions happy. This unnatural ratings inflation has made investing less transparent, contributing to the situation we are currently in. Having a government rating institution, with a uniform credit rating standard, would instill confidence among all investors that know their rating agencies have no ulterior motive. With a clear and objective set of standards for what constitutes a certain rating, the added transparency will allow firms and investors to optimally evaluate their risk portfolios.

Recent massive losses in the collateralized debt obligations market have exposed the need for rating agencies to frequently update their assessed ratings. Credit Suisse, for example, issued \$340.7 million of collateral debt obligations that resulted in losses of approximately \$125 million despite having a AAA rating from Standard & Poor's, Fitch Group, and Moody's. In response, the rating agencies asserted that their ratings constitute only a "point-in-time" analysis and which does not guarantee the validity of their rating at any point in the future. This example shows the need for constant reevaluation and updating of credit ratings on a quarterly basis at a minimum.

It is also important to consider, however, the effects of downgrading a firm's credit rating. In some cases, large loans to companies include clauses that state if the company's rating falls below a certain level than it must immediately repay its loan in full. These clauses were essential in the collapse of many companies, for example Enron. Since the collapse of Enron, the Securities and Exchange Commission (SEC) required every public company to disclose if they have taken out a loan with similar terms. It is essential that credit ratings are reevaluated regularly and if a company has debt that is affected by its rating then it must be taken into account in an initial evaluation. To help reduce the panic that ensues from a drop in ratings, a 1 to 100 rating system should be used in place of the old letter grade rating system.

As a government institution, rating agencies must not charge fees to debt issuers, which would eliminate the conflict of interest that the agencies might have to provide inflated ratings to the debt issuers that are paying them. It is also essential that the methodology used by the rating institution be a matter of public record. Making the rating methodology public will not only allow investors to better understand the risk associated with a certain rating, but it will also cause investors to pay more attention to the underlying fundamentals of the securities that they hold.

The subprime mortgage crisis has exposed the shortcomings of subprime lending. With little to no down payments being made on houses via non-traditional loans, subprime borrowers⁷ secured mortgages for homes they were unable to afford. When the housing market collapsed, mortgage defaults and foreclosures skyrocketed. The mortgage industry now faces questions of how it has contributed

7 Borrowers with a heightened perceived risk of default, usually with a credit score lower than a specific level

to the current mess and what can be done to solve these issues. In our opinion, the following measures must be taken:

Instead of the former subprime mortgage lending practices, a different form of mortgage lending must be encouraged by subsidizing homeownership through the establishment of a down payment matching program similar to those used by many European Nations. This would help those who formally using traditional subprime mortgage lending. The government would match dollar for dollar the down payment on mortgages up to 20% of the house value, depending on income levels. Borrowers with lower income levels below \$50,000 would qualify for a match of the full 20%, while higher income levels would qualify for matches on a decreasing percentage of the home's value. Through this program, homebuyers would have an incentive to obtain a higher down payment, reducing the number of subprime loans made. This strategy promotes homeownership in a way that reduces overall risk.

An additional method to discourage lending to subprime borrowers is to use a broader, more comprehensive set of eligibility factors for potential borrowers. Stringent requirements must be put in place regarding mortgage eligibility for potential homebuyers. We propose establishing a set of minimum qualification which establishes multiple factors that deliver a more complete image of the borrower—rather than simply a credit score which include: education, disciplinary history and work history. Also, lenders should be made to obtain proof of a borrower's income before making a loan. These requirements would force lenders to pay closer attention to a borrower's ability to repay.

The Fair Mortgage Practices Act (FMPA) should be signed into law. This act calls for all mortgage lenders to require a license and would set up a national registration system. It entitles the simplification of disclosures, making loan terms more transparent to borrowers. The FMPA limits prepayment penalties for certain introductory adjustable-rate mortgages (ARMs) and requires a creditor to establish, in connection with a subprime mortgage transaction, an escrow or impound account for payment of taxes and hazard insurance. The passing of the FMPA will help balance the playing field between mortgage originators and borrowers.

For the subprime mortgages that do occur, require that subprime borrowers complete a seminar on homeownership prior to obtaining a loan. These courses would be offered for no charge by state governments (with federal funding) and open to all potential homebuyers. Loan-based incentives would be given to homebuyers (specifically first-time homebuyers) conditional on completion. A strong emphasis must be placed on homebuyer education in order to inform borrowers of the risks of buying a home.

In an effort to arrest the increasing number of mortgage defaults and to stabilize housing prices, the federal government should implement a program of mortgage replacement loans. These loans would offer all homeowners with mortgages the opportunity to replace a fifth of their existing mortgage (up to some

dollar limit) with a government loan. Unlike most mortgages, these government loans would be full-recourse loans that would have to be repaid regardless. They would carry a substantially lower interest rate than the individual's mortgage, thereby making it easier to make payments and prevent default.

These recommendations will lead to a sounder mortgage industry in which subprime mortgages, defaults, and foreclosures are scarce.

The banking industry has long based asset reserve and capital requirement systems on rating agency modeling. The disclosure of risk to potential investors, while providing enormous amounts of opportunity over the short term, has substantially increased the amount of risk taken on by investors in the dark about many of the banks' long-term and unrealized capital held apart from their disclosed core capital reserves (Tier 1 capital). The opaque information available on financial institutions regarding their remaining long-term capital reserves (Tier 2 and 3) is unknown to private market participants and regulators.

The Basel Committee on Banking Supervision (2006) defines Tier 2 and Tier 3 capital as consisting of five types of reserves: undisclosed, revaluation, general loan-loss, hybrid debt capital instruments, and subordinated term debt. Undisclosed reserves are unpublished reserves by institutions similar to published Tier 1 core capital reserves that have passed through the profit loss account, but lack proper transparency. The revaluation reserves are assets that the financial institution recalculates based on estimated current values instead of their historical value.⁸ Financial institutions that own an asset with an unrealized loss or gain constitute the general loan-loss delimited Tier 2 category of reserves. Hybrid debt capital instruments are assets that combine certain characteristics of equity and certain characteristics of debt such as cumulative preference shares.⁹ Tier 3 capital consists only of subordinated term debt instruments issued to outside buyers which pay a fixed maturity and are unable to absorb losses except in liquidation. This instrument is used to raise short-term capital to cover market risks such as losses incurred by mortgage backed security holdings.

The lack of previous regulation to require institutions to disclose Tier 2 and 3 reserves increased the incentive to take riskier positions in hopes of greater potential profits during boom-times. The SEC further exacerbated this risk taking in 2004 by allowing the five largest financial institutions to have debt-to-net capital leverage ratios of 40 to 1 as opposed to the previous limit of 12 to 1. This over-leveraging and subsequent losses formed Special Investment Vehicles which allowed institutions (such as Citibank) to hold risky assets like subprime mortgage backed securities off their books to give the appearance of financial health. The creation of SIVs and over-leveraging by banks were a direct result of the lack of transparency of their long-term Tier 2 and Tier 3 assets. Any reform of banking regulation must include an unconditional disclosure of *all* assets by institutions to investors and regulators.

8 An example of this type of reserve would be a security or other asset which changes value

9 Cumulative preference shares are equity shares which ensure a payment of a missed dividend for a future date

The solution to all of the sub-topics explored is the founding of a new International Securities and Banking Regulatory Agency (ISBRA). The focus of this new ISBRA would include the regulation of international markets and ensuring investment standards across international borders. Such a solution exists for international aid, war, and politics but the globalization of financial markets has yet produced proper oversight of the formation of complicated derivatives across sovereign national economies. Long-term stability in the interconnected globalized market cannot be achieved without the formation of an ISBRA like institution.

V. Solutions for a Global World: International Trade Policy

The increasing amount of economic interdependence since the end of World War II and the subsequent creation of modern financial institutions and trade agreements requires that the recent financial crisis be dealt with on an international scale. Such an approach is necessary in order to promote worldwide stability and prevent the situation from escalating to levels unforeseen since the Great Depression. Regulatory, monetary, and fiscal actions taken by each nation now will have an ultimate effect on the terms of trade and future conditions of the worsening financial situation; therefore, all issues must be addressed with universal cooperation. Below are four policy recommendations directed toward all participants of the international economic system, without regard to developmental status or particular share of the global market.

The implementation of any new or extensive protectionist measures must be avoided by all nations participating in trade at this time of financial crisis. The economies of developing nations must be taken into special consideration to uphold the current world economic order and maintain relative stability within the international system. Any implementation of new or further regulations and barriers to trade would have a negative effect on the growth rate of such economies, consequently escalating the crisis to unprecedented levels. The consequences of additional protectionist measures can be prevented as long as they are addressed now.

The World Trade Organization strongly advises that governments do not attempt to protect their domestic industries that potentially could be affected by the crisis. The latest WTO Agenda for Doha Development rounds calls for “special and differential treatment” to be given to countries that lack key financial institutions, like governmental agencies and central banks free of corruption, which are necessary in order to maintain overall economic stability. It also calls for a dramatic decline in agricultural subsidies and import barriers, as has each Agenda since 2001. The most recent 2008 rounds request developed nations to see to a 50% or higher reduction in import tariffs; while asking developing nations to open up by at least 33% within the next two years. Prior agreements formed after the 1994 round are causing a conflict of interest with these suggestions, due to their allowance of safeguards in response to the decision to replace quotas and

other barriers with strictly tariffs. Lastly, it is recommended that the WTO work to take full precautionary measures to monitor all countries involved in international trade agreements, with particular attention given to those that hold a large share of the world market.

The best example of the problems associated with protectionism during a financial downturn occurred during the Great Depression. From 1929 to 1932, world trade declined tremendously due to a number of factors; the increase in both tariffs and nontariff barriers significantly influenced the decline. For example, the United States' Smoot-Hawley Act of 1930 alone produced serious repercussions for the entire world system. The Act no longer allowed for easy entry by foreign competitors into U.S. agricultural markets and placed tariffs on tens of thousands of previously imported goods. Entry was difficult for some products; for others it was nearly impossible. Smoot-Hawley encouraged other nations to generate additional regulations on imported goods, specifically agriculture, which ultimately led to the considerable decline in the world market and individual economies' balance sheets. Smoot-Hawley also reduced the United States' role as a major world creditor by prohibiting the issuance of new loans and discontinuing previous loans, upon which other economies had become dependent to finance their trade deficits. This reduction in available credit also contributed to the decline in world trade; therefore it is recommended that actions similar to those promoted by Smoot-Hawley be averted.

Independence among the executive board of the IMF from being involved in individual government agendas is important as well as an expansion of its lending capacity. It is important to ensure that Amendments to the Articles of the Agreement on which the Fund was founded will ensure more transparency, independence, and accountability of the Executive Board, and not that the members do not focus on their respective home country's national interests. These amendments should include making the Executive Directors accountable for their decisions. If they are pursuing private government agendas, an Interim Committee should be able to step in and remove the Executive Director from his or her position. If the IMF were more independent from political and sovereign influence, financial institutions would have a better opportunity to understand the true risks facing them, as there would be no political pressure clouding their view of risk.

Currently the IMF has a lending capacity of \$250 billion, which would not be sufficient for an emerging market in financial need. An increase in the IMF lending capacity to at least \$700 billion is necessary to help liquidity-strapped countries that are suffering from the spillover of the financial crisis. Asian governments must be incorporated in the restructuring of the IMF to expand its lending capacity because these countries have the financial backing that is needed. Incorporation of China and other emerging economies to the fund's board will help expand the lending capacity and loosen the stigma associated with borrowing from the IMF.

Latin America has felt the spillover of the U.S. financial crisis. As the recession worsens in the U.S., export revenues and foreign direct investment (FDI) will decline in Latin America. The UNCTAD (U.N. Conference on Trade and Development) reported that for the first six months of 2008 international transactions were down 29% as compared to the same period in 2007. In addition, they reported that FDI decreased by 10% for 2008. The World Bank revised its growth estimates for Latin America in 2009 from 4.2 percent to between 2.5 and 3.5 percent in light of the U.S. recession. This spillover effect is due to the shrinking of global credit and the decline in commodity prices. If the crisis continues, export industries dependent on the U.S. textile, steel and other mineral imports will see a decrease in the U.S. demand, and therefore a decrease in their exports. Increased lending capacity of the IMF is important for struggling nations that will be hurt by the decrease in the U.S. imports and FDI.

The reality of bankruptcy is evident in the financial crisis therefore the establishment of an International Bankruptcy Court to deal with international cooperation and the liquidation their assets is needed. Mexico and Venezuela will be hurt by the decline in U.S. imports because of their dependence on external consumption. Venezuela depends on exporting its crude oil to the U.S. as it is one of the only countries that can refine their oil. The lower prices of petroleum may spark a decline in demand for Venezuelan oil exports. Venezuela was affected by the financial breakup of Lehman Brother's assets—among other countries. Since Lehman Brother's was an international financial institution, when it went bankrupt, regulators in each country froze its assets in the home country branch to protect the small investors within the country causing a global credit crunch and stock market crash. The global credit crunch and stock market increased the fear that no banks were safe and interbank lending seized up. However, international bankruptcy laws differ across countries and therefore the liquidation of asset position and returning assets to the creditors is extremely difficult and timely. Lehman Brothers is an example of how an international system to deal with the bankruptcy of international financial institutions is needed to avoid the moral hazard dilemma and governments being forced to bail them out.

Initially established in response to the 1970s' oil supply crises, the annual Group of 8 (G8) summit meetings have proven useful in theory and practice in the past. However, in the event of the recent financial crisis, the original framework is now outdated and inefficient in its current form. The full potential of the Group is not being met due to the absence of valuable input from all regions of the world, and it highly recommended that new seats be added or prior seats be replaced.

Within the current system, emerging market economies such as nations in Asia and Latin America are not represented, and neither is Africa. The European Union, on the other hand, offers a single representative when the summit is held outside of their jurisdiction; two when its member-nations act as host. The immense size and power of the EU market requires more than one contributing voice to accurately present its position to the forum. Global representation, in

terms of a more regionally balanced set of participating delegates, will help the IMF better understand world crises from a more well-rounded perspective, helping them create a more effective agenda for addressing its relevant issues in the future.

The increasing significance of these relatively new markets has a direct effect on global conditions. The prospect of a worsening recession or worldwide state of economic depression calls for full participation. The 1999 introduction of the Group of 20 (G20) summit meetings allows for industrial and developing nations to come together to discuss international finance and economic concerns, but the size of the forum generates some concern over the effectiveness of their efforts. Therefore, adjustments to G8 will be presumably more beneficial and productive in structural nature.

The existence of a wide range of political and economic systems within countries engaged in trade requires that international objectives be met by a heterogeneous plan of action, in which all G8/G20 members regulate accordingly with respect to their individual system. It is not recommended that a single monetary or fiscal approach be agreed upon amongst all nations, but rather a spectrum of adjustments be pursued in order to reach the common goal.

An international commitment to fighting inflation will help ensure that excessive bubbles do not occur in the future. As the U.S. consumption is decreasing, imports decrease as well. Foreign governments will be tempted to inflate their currency and build up U.S. reserves. This may have worked for China in the short-run, as now they are in a position to protect themselves from the global credit crunch and the foreign capital flight, although it is monetary practices like that which help create bubbles and the eventual demise of the current financial system. Current account surpluses or deficits are a good monetary tool to cope with shocks in the finance and investment; however, the massive trade imbalances only would worsen the crisis.

To ensure that these excessive booms and busts do not occur in the future the IMF should regulate the exchange rates of countries to represent their true market value. Countries that peg their currencies must commit to adjusting their interest rates to target keeping inflation low. Countries such as China would need to float their exchange rate in order to be able to increase interest rates if there was a threat of high inflation. This would not work unless there was international commitment to coordination, especially among trading partners. Along with targeting inflation, each country should look at its financial situation to help balance the international financial system. Countries such as China and Germany should coordinate fiscal stimulus, however countries such as the U.S. and the U.K. should refrain from large fiscal stimulus packages that could offset and possible worsen the international financial imbalance.

The U.S. must lead the global economic response out of the financial turmoil that ensued from the financial and housing bubbles. It must make push for reforms to the IMF to create independence, accountability and transparency that

will increase the lending capacity of the IMF. The G8 should expand to include Asian and Latin American markets. Reforms to the World Bank are encouraged to set a standard for international bankruptcy laws. The U.S. should avoid protectionism measures at all costs to ensure that there is no greater spillover effect to other countries. The WTO should monitor countries to ensure that no new protectionist measures are implemented. Countries should be committed to low inflation and a flexible exchange rate.

VI. What is Worth Saving?: Bailout Policy

Government money should go to companies with sound business models that have proven to be profitable and efficient in the past but are in desperate need of money for survival. This is the case with the banking industry. Many of the banks have been very profitable in the past (if not too profitable from the excessive risk taken on) but their assets have dramatically decreased in value while their liabilities remain very high. An injection of cash can bring their assets and liabilities back to equilibrium, allowing them to function properly. Breaking up a big conglomerate company such as Citigroup is a dangerous proposal and one that should be generally avoided as the sections a company often rely on each other for support and provide diversification. Taking a sector of the business away will cause problems even in the previously healthy segments.

Despite our support for bailouts of certain industries, we believe that using taxpayer money for private companies should be avoided whenever possible, as it will create a moral hazard problem by allowing companies to take on excessive risk knowing that they will not be allowed to fail by the government. Bailouts must come with stipulations to avoid these problems. Our solution to this problem is both simple and complex.

First, we suggest that one of the requirements of bailout money is the immediate firing of the CFO or CEO. The reason for this perceivably harsh decision has its basis in simple business class teachings. Hypothetically speaking, let's say one day the CEO or CFO of a regular publicly owned company was to walk into the board room and explain to its members that they needed to give him a blank check or the company would fail. I would suggest that nearly every company's board would demand the immediate firing of the CFO and in many cases they would go after the CEO as well. Furthermore, the idea that the board would then sit down and listen to the proposed idea of the CFO is clearly absurd. Yet, the United States government has done exactly that thus far. They have allowed these companies' CEOs to walk into Congress and ask for large sums of money without showing any signs of structural change within their companies. Yet, if one of the requirements of bailing a company out involved the dismissal of one of the company's chief officers it would begin to solve the problem of "moral hazard." Practically speaking, if the chief officers of these large public companies know that their jobs are on the line if the companies are forced into this type of bailout situation then we believe these individuals will act more responsibly

and take fewer risks. The firing of the CFO or CEO of a company also signals an enormous commitment to change that the general taxpayer can see. This helps to reestablish the government and the general public's trust in a company's commitment to change and eventual ability to become profitable in the future. Cases will arise where companies in crisis have replaced their management, leaving new executives to save the failing company. The new officer or officers seeking the bailout may be able to keep their jobs if it is determined by the task force that they were not responsible for the current position of the company and are in fact the right people for the job post bailout money and requirements.

Our second requirement of companies who are seeking a government sponsored bailout is their submittal to a third party review board. This review board or task force would be temporary and compiled only in necessary situations, like the current crisis. More specifically, the review board would consist of a group of individuals outside of Congress who would go over and review the finances and the application of the business model of any companies who are seeking bailout money. This board would be appointed by members of congress and would work with congress to determine which companies are appropriate candidates for a bailout. When you are dealing with large amounts of taxpayers' money, the elected officials should have the final say. We are suggesting, however, that this board consist of members outside of Congress who are much more knowledgeable in the workings of various businesses in specific industries. The Treasury department is filled with highly capable men and women who are extremely familiar with the financial markets and private firms. For example, as secretary, Hank Paulson has previously worked for Goldman Sachs. When it comes to other industries, however, such as car manufacturing, lawmakers are not the best suited to evaluate and allocate money to best support the industry. In this scenario, there would need to be a specialized review board for each bailout case. This would ensure that every company would have people on their review board who are extremely familiar with their industry and business model. This second stipulation would make the entire process seem more credible to the general public and also point out the obvious flaws in each company's business, making the use of the bailout money as efficient as possible.

Unfortunately, not just companies that do not have enough money in the short term are in need of a government bailout. Ailing businesses turn to the government with varying degrees of necessity. One situation in which bailouts are a necessary evil is when a company is too big to fail. In other words, if the company is allowed to fail it will have ramifications for the entire industry, which has the potential effect of causing major long term damage to the macroeconomy. The big three auto-manufacturers are an example of this. If one of these auto giants is allowed to fail it has the potential to start a chain reaction that will bring down the entire auto industry. One estimate is that there will be three million lost jobs in 2009 if there is a 50% decline in the U.S. auto production.¹⁰ This

10 Hight, 2008

number includes not only the workers for the big three auto-manufacturers, but also workers at companies that supply the big auto companies. Additionally, if these auto companies go under there is a chance that their retirees will not receive the full pension that they rely on, making the stress on the macroeconomy, and in particular aggregate demand, even greater. In our current economic state, on the verge of one of the biggest recessions in recent history with unemployment already at 6.5%, this collapse could be catastrophic, deepening and prolonging the recession.

In a similar circumstance in 1980, Chrysler was given a bailout through the Chrysler Loan Guarantee Act. This loan was paid back in three years, seven years before the scheduled deadline. This shows that bailouts of this type have been successful in the short and medium run in the past. The overall goal, however, should be to ensure that these companies never have to be bailed out again. For this to happen there needs to be some significant changes in these companies and perhaps U.S. policy. First, the third party review board and new management must work with the United Auto Workers union to make concessions in its members pay and benefits. This restructuring of benefits should focus on the overly generous pension plans that these companies offer. It is extremely unproductive for these companies to be paying such large amounts to workers that they no longer employ. While we recognize that these workers are entitled to those benefits, some compromise must be worked out to restructure the benefits to ensure that the companies can compete and do not fail. Additionally, one policy that the U.S. Government may need to consider is a socialized medical plan. The big three auto companies, as well as many other U.S. companies that employ unionized workers, have very comprehensive health plans that represent huge costs. These substantial costs make it hard for U.S. companies to compete internationally with companies that do not have such comprehensive health coverage plans. Another policy that the U.S. Government may want to consider is leveling gas prices by utilizing a floating gasoline tax. This would stabilize the demand for fuel efficient autos, eliminating the large swings in demand that can occur when oil prices are allowed to fluctuate wildly. (Hight, 2008) This policy of a gasoline tax, however, would be best if implemented after the economy has recovered from its current recession.

On Friday December 12th, both General Motors and Chrysler failed to secure a government bail-out. Although we had suggested that it was in our economy's best interest to bail-out these firms that are "too large to fail," congressional Republicans obviously disagreed. Ideally, the plan to bail-out these firms would have used a completely different source of funds to provide the \$14 billion bailout that GM and Chrysler were seeking. Ironically, the plan had the support of the Democrats and the White House yet President Bush's own party would not side with him on the matter, and the result could be disastrous.

GM and Chrysler came to Congress this month pleading that the government bail them out. The two giants of the auto industry claimed that if the government did not temporarily bail them out they were within weeks of running

out of funds that they needed to continue to operate. Here we are a few weeks later and both of these companies have been refused the requested bailout money and are on the steps of bankruptcy. This leaves President Bush with two options: let the automakers fail or bail them out with TARP money. Unfortunately, neither option seems very pretty. Allowing these large companies to fail would leave a significant portion of the work force unemployed. In addition, the ripple effect of these two companies' collapse could hurt the economy in ways we haven't imagined. On the other hand, bailout money from TARP would have a terrible effect in the long run. Under the guidelines of TARP, these companies would not be forced to adhere to any of the guidelines we had set out for them earlier in our proposal. In addition, these companies would not be forced to restructure or remove any of their chief officers. Essentially, by using TARP money, we would literally be "throwing taxpayers' money at the problem."

The fallout from Congress' decision was almost immediate. After Congress refused to bail-out GM and Chrysler on Friday, rumor had it that President Bush has already put in motion the decision to tap into the \$700 billion bailout money congress had set aside for the failing financial industry. TARP or the Troubled Asset Relief Program is controlled by the Treasury Department who also voiced a strong opinion in favor of tapping into the remaining money was a stopgap help for the automakers. In a statement released Friday by the Treasury stated, "because Congress failed to act, we will stand ready to prevent an imminent failure until Congress reconvenes and acts to address the long-term viability of the industry."¹¹

Ultimately, it seems that there is little anyone can do to prevent President Bush or the Treasury from tapping into the remaining funds left in TARP. However, it is essential for our future economic well being that when Congress reconvenes on January 6, 2009 that they immediately address the issue of using TARP money to bailout GM and Chrysler. Hopefully, the conditions under which these two companies are allowed to access these funds will have a limited lifespan which will expire at some time in January. This would allow Congress to re-examine, under a new administration, how it plans to handle bailouts for automakers in the long run. Hopefully, at this January meeting Congress will come to its senses and agree that using separate funds to bailout these companies under stricter conditions (as we have proposed) is a necessity.

11 Isidore, Chris. "Treasury bailout targeted for big 3." CNNMoney.com. December 14, 2008.

LONG-TERM CONTRACTS AND THE PRINCIPAL AGENT PROBLEM

Elizabeth Purcell

ABSTRACT

This paper examines the principal-agent problem within professional sports. Imperfect information between managers and players, as well as the guaranteed income a long-term contract provides, are predicted to provide players with the incentive to alter effort over the length of a contract – especially during the first year of a long-term contract. Regression analysis indicates that players' performance levels decline during the first year of a long-term contract, suggesting that the effects of the principal-agent problem may outweigh competing effects. The study does not, however, suggest that players increase performance in the final year of a contract.

1. Introduction

The benefits of long-term contracts to firms have been under debate for some time. On the one hand, employees may focus better on their work if they are not concerned about losing their jobs. On the other hand, a long-term contract guarantees income for a certain time period, regardless of the effort put forth. As employers are not able to monitor every action employees make, employees are able to reduce effort once a long-term contract is signed. This opportunistic behavior is most likely to occur when employers are unable to distinguish between shirking, or not trying, and poor performance due to the stochastic nature of the environment.

Behavior patterns arising from long-term contracts exemplify the principal-agent problem. The principal-agent relationship exists when a principal (the employer) needs to hire an agent (the employee) with specialized skills to perform a task. The principal must motivate the agent to perform like the principal would prefer, while facing difficulties in monitoring the agent's every action (Sappington 1991). The principal-agent problem occurs when principals and agents have conflicting goals.

The principal-agent relationship can be seen in various situations in the real world. In academia, for example, professors are expected to teach classes and conduct research that will eventually be published. However, once professors have tenure, they may care less about teaching or may start publishing fewer papers. With internships, there is an incentive to work hard and perform well because there is the opportunity for a full-time offer at the end of the internship. However, once a full-time job has been obtained, there is less urgency for the former-interns to impress their superiors, as there is no immediate room for advancement.

The motivation behind this study is to examine the principal-agent problem in the realm of professional sports. Sports is used as a venue for this study because it is an industry in which labor productivity is easily quantifiable and the data is openly reported. The existence of imperfect information between

managers and players, along with the guaranteed income a multi-year contract provides, may lead players to alter effort over the term of their contracts. In the contract year, the last year of players' contracts, players may exert more effort, hoping to receive long-term contracts with higher salaries the next year. Once they have signed long-term contracts, however, players may reduce effort, as they have guaranteed income for the remainder of their contracts, regardless of performance.

Whereas previous studies have examined long-term contracts in a specific sport, this paper looks to examine the impact of long-term contracts across Major League Baseball (MLB), the National Football League (NFL), the National Hockey League (NHL), and the National Basketball Association (NBA). The paper proceeds as follows: the next section analyzes the principal-agent problem and the incentive to shirk given the structure of contracts in the various sports, the third section provides a literature review, the fourth section describes the data, the fifth section provides the methodology behind the study, the sixth section presents and analyzes the results, and the final section draws conclusions and implications from the study.

2. The Principal-Agent Problem and Collective Bargaining Agreements

Employers are willing to offer secured income contracts because they can act as incentive mechanisms that motivate employees to put forth as much effort as they can so they can obtain the contract. Long-term contracts can be beneficial for both employers and employees. Employers benefit from being able to secure productive employees and prevent them from moving to the competition (Maxcy 1997), while employees, once they obtain a long-term contract, are promised a salary for a specific period of time.

Principal-agent theory suggests that when parties of a contract have different objectives, shirking can occur. When compensation or job security is dependent on performance, workers are likely to exert as much effort as they can. However, when compensation is no longer dependent on performance, workers have less incentive to put forth the same amount of effort. Once agents have secured income through a contract, effort put into work lowers utility.

Shirking will not necessarily occur, however, because workers may gain utility from contributing to the success of the firm. For example, professional athletes derive utility in helping their team win a championship (Maxcy 1997). Athletes are unlikely to see shirking as beneficial from this standpoint because if they are not performing at their best, they will contribute to the team losing. On the other hand, there is less need for workers to be concerned about employer perceptions of them and their productivity once a long-term contract is signed (Stiroh 2007). Therefore, there may be less incentive to exert effort once a contract is signed.

Monitoring shirking is sometimes difficult because individual contribution is not always easily identified. The free-rider problem can exist, as the team can

still perform well if one player is not exerting all his effort (Prendergast 1999). If players can enjoy wins without putting forth all their effort, there is incentive for them to shirk.

Shirking can occur during games and in other ways as well. Once a long-term contract is obtained, athletes may not train as diligently during the off-season. Players that are at the end of their contracts want to show that they are willing work hard to improve their skills and do their best for the team. If players know they have another five years left on the contract, however, they may spend the off-season relaxing rather than training every day. In addition, whereas athletes who are at the end of a contract may be more likely to play with an injury in an attempt to show they are still valuable to the team, athletes who still have time left on their contracts may avoid playing while injured to avoid the risk of further injury and shortening their careers.

In order to examine the impact long-term contracts have on performance, performance needs to be considered at various stages over the length of a contract. Ideally, effort would be used as the measure of whether players shirk once they have secured a long-term contract; however, changes in effort are difficult to observe. Therefore, performance will be used as the dependent variable, assuming that if players put forth more effort they will perform better.

The year directly preceding contract negotiation is when players are likely to put forth the most effort. While there is more information in players' performance history as a whole, salaries are based more on the most recent year of performance rather than past performance. Healy finds that teams put about twice as much weight on performance from the past season than on performance from two or three years ago (Healy 2008). This suggests that shirking is more likely to occur early in the contract and diminish as players get closer to the contract year.

While principal-agent theory suggests that players have the incentive to shirk, there are other factors that may impact players' behavior. Players are paid not only by salary, but also by endorsements. Players receive endorsements because they are large contributors to their teams' success and are popular with fans. Therefore, endorsements are a disincentive for players to shirk because if their performance starts declining, they risk losing their endorsements as well as popularity. As some endorsements rival players' salaries, the cost of losing the additional income may be greater than the benefit received from lowering effort. In addition, if players enjoy having fame, the disutility they may face from losing fans due to a drop in performance may outweigh the utility players get from shirking. Many athletes want to leave behind a legacy and be remembered for being great. Shirking has the potential to taint this legacy, which may prevent some athletes from shirking. Therefore, endorsement incentive effects, as well as utility derived from popularity, may offset the shirking that is predicted by the principal-agent problem.

The principal-agent problem predicts that long-term contracts can create inefficient pay and performance, unless mechanisms exist within the contract to

prevent these (Maxcy et al. 2002). When implementing mechanisms in contracts, incentives should be used carefully. Certain mechanisms, such as tying rewards to performance, can lead to dysfunctional responses, where agents focus solely on the specific performance measures listed in the contract (Prendergast 1999). This can end up damaging firm performance overall, as agents begin to ignore other aspects of their jobs that do not bring rewards. For example, Ken O'Brian, a quarterback, was given a contract in which he was penalized any time he threw the ball to the opposing team. While he threw fewer interceptions, his solution was to hold the ball rather than throw, instead of working to improve his accuracy (Prendergast 1999). This in the long run hurt the team because its quarterback would not throw the ball, even in cases when he should have. When used improperly, contract incentives may be more detrimental than beneficial.

Contracts and other labor issues in professional sports are governed by collective bargaining agreements (CBA). The CBA, which determines many parameters that teams and players face when negotiating contracts, is agreed upon between the league and the league's respective player's union. As this study focuses on the impact of long-term contracts, only the key factors relating to the contracting framework of each sport will be discussed. The information is summarized in Table 1. This study focuses on the regular season; therefore, post-season incentives and regulations are not addressed.

Minimum salary levels are a commonality across the four CBAs examined, however the minimum salary implemented varies between sports. The existence of a minimum salary predicts that players will be more likely to reduce effort in the first year of a long-term contract because they know they will at least get a certain level of income even if they shirk.

The ways in which salary maxima are handled in the different sports show more variation than salary minima. In MLB, for example, there is no maximum mandated by the CBA. However, there are limits on how much players' salaries can be reduced (MLB CBA 2007), which provides players with the incentive to shirk after signing a long-term contract because even if performance declines, their salary can only be reduced by a certain amount. In a sense this is a security blanket because players are guaranteed a certain salary level in a new contract, which in many cases is probably higher than the minimum salary requirement. As such, it is less likely that MLB players will increase effort in the final year of a contract compared to other

Table 1: CBA Summary (Source: CBAs)

Organization	Performance Incentives	Maximum Salary	Minimum Salary	Free Agency
MLB	Only post-season incentives	None. Can't reduce player's salary by more than 20% previous year's salary or more than 30% of 2 years previous salary	\$380,000 (2007) to \$400,000 + cost of living adjustment (2011)	Players with 6 or more years of service and have not signed a contract for the next season are eligible. As a free agent, can sign with any team. Must file within 15 days of end of World Series; former club retains exclusive negotiating rights during those 15 days.
NFL	Performance-based pool Pro Bowl	None. Salary cap goes into effect if player costs are more than 56.074% of total revenue (salary cap is \$102 million in 2006 to 58% of total revenue/number of teams in 2011)	0 credited seasons: \$275,000 (2006) to \$355,000 (2012) 10+ credited seasons: \$810,000 (2006) to \$890,000 (2012)	Players with four or more years of service whose contract has expired are qualified for unrestricted free agency and are free to sign with any team. Players with three seasons of service whose contract has expired are eligible for restricted free agency. The former team has the right to match any offer made by another team until April 21 and retain the player. Players with 0-2 years of service whose contracts have expired are considered exclusive-rights free agents. If tendered, they must sign with former team.
NBA	Structured to provide incentive for positive achievement, pre-agreed benchmarks	< 7 yrs. Experience: > 25% salary cap, 105% salary of final season of prior contract, or \$9 million ≥ 7 and < 10 yrs. Experience: > 30% salary cap, 105% salary of final season of prior contract, or \$11 million > 10 yrs. Experience: > 35% salary cap, 105% salary of final season of prior contract, or \$14 million	\$301,875 (1 st year player)-\$1,000,000 (more than 9 years experience)	Players become restricted free agent after 3 years of service if fourth year option not carried out or after 4 years if team offers fourth year option. Unrestricted free agents can sign with any team, restricted free agents can sign with any team but former team is able to match contract and keep the player.
NHL	Only for entry level players, 35+ players with 1 year contracts, "400+ game players" and in last year spent 100+ days on injured reserve and have 1 year contract in upcoming year (incentives vary between positions)	Can't be in excess of 20% of upper limit for any league year Entry level compensation: \$850,000 (2005) to \$925,000 (2011)	\$450,000 (2008) - \$525,000 (2011)	Players who have at least 7 years of service or are 27 years old can declare himself an unrestricted free agent if his contract has expired. Players who are not entry level but do not qualify for unrestricted free agency can declare themselves a restricted free agent. Current team must extend qualifying offer to retain negotiating rights to player, if qualifying offer not made player becomes unrestricted free agent. Unrestricted free agent can sign with any team

leagues. Similarly, the NFL places no limit on maximum salary unless the salary cap goes into effect (NFL CBA 2006).

Salary maxima in the NHL and NBA depend on player experience (NHL CBA 2005 and NBA CBA 2005). The differences in maximum salary levels that exist between players of varying experience levels in the NBA and NHL may provide incentive for players not to shirk as they approach the next experience bracket. In the NHL for example, if players are nearing the end of their entry level status, they may avoid shirking in hopes of boosting their salary in the next contract, which has the potential to increase more than it was able to as an entry level contract. However, overall, the existence of a salary maximum in the NHL and NBA diminishes the likelihood of players increasing effort during the contract year compared with MLB or the NFL because once players reach the maximum salary, there is no incentive to continue putting in increasing effort because they will not be rewarded with a higher salary if performance improves.

The four leagues vary in how they handle performance incentives. While individual contracts may have performance incentives, these contracts are not made public, and therefore it is not possible to analyze these differences. However, the CBAs of the different sports have varying league-wide performance incentive mechanisms that can be examined. The MLB CBA mentions post-season incentives for players, but these are not relevant to this study. However, as the reward for MLB players depends on the performance of the team as a whole and whether the team makes it into the post-season, the lack of performance incentives in the regular season potentially provides the incentive to shirk, as there are no individual performance benefits. Because of the lack of individual performance benefits, it is more likely MLB players will decrease effort in the first year of a long-term contract. In the NFL, players are part of a performance-based pool (PBP). The pool starts off at \$3 million per club in 2006 and increases each subsequent capped year by 5%. Players are allocated their share of the fund by dividing their PBP index¹² by the sum of the PBP indices for each player on the team and multiplying that percentage by the club's total PBP allocation (NFL CBA 2006). As players' allocation of the PBP depends on their playing time, players are provided with an incentive not to shirk because they will have more playing time and more opportunities to make plays if they are performing at full potential. The presence of the PBP reduces the likelihood that players will shirk after signing a long-term contract because if performance declines, players' shares of the PBP drop. In the NBA, performance incentives are required to be structured so that they provide incentive for positive achievement by players (NBA CBA 2005). While there are opportunities for players to get performance-based incentives worked into their contracts, these incentives may lead players to focus on improving certain skills that are in the contract, and ignore other skills. While developing the other skills may help the team as a whole, if there is no monetary incentive attached to them,

12 **PBP index** = play time percentage/PBP compensation , **Play time percentage** = player's total plays on offense or defense / team's total plays on offense or defense, **PBP compensation** = full regular season salary + prorated signing bonus for current league year + earned incentives + other compensation for current league year

the opportunity cost of improving those skills over those that are in the contract rises. However, the existence of performance incentives diminishes the likelihood that NBA players will show a decline in effort after signing a long-term contract. Finally, the NHL only allows for performance incentives for certain players (NHL CBA 2005). As such, there is the potential for players to shirk because there is no reward for them to make additional effort.

Similarly to how the MLB limits the amount salaries can be reduced, the NBA CBA mandates that contracts only be extended upward (NBA CBA 2005). Because the length of a contract cannot be reduced during renegotiation, there may be more incentive for players to shirk early in their contracts because current contracts cannot be shortened. This increases the likelihood that players lower effort in the first year of a long-term contract. As players reach the end of a contract, they can boost performance and still receive a new long-term contract, based on the idea that teams focus on recent performance more than historical performance (Healy 2008). In this regard, players' performance is expected to increase during the contract year.

Free agency is present in all of the sports included in this study, but there are differences between leagues. Players are only eligible for free agency if they have not signed a contract for the next season. The NFL, NBA, and NHL differentiate between restricted and unrestricted free agents. Unrestricted free agents are able to sign with any team they choose. Restricted free agents, however, are eligible to negotiate with any team, but their former team has the ability to make an offer in order to retain the players. MLB free agency operates differently, as there is no distinction between free agents. The existence of free agency increases the likelihood that players will put forth more effort in the contract year because players will want to be desirable to team owners in hopes of getting a higher salary.

The presence of guaranteed contracts in sports increases the likelihood that players will lower effort in the early portion of a long-term contract. If players sign a long-term contract for five years and the contract is guaranteed, they are more likely to shirk, as they know that they have a guaranteed salary, regardless of their performance. MLB, the NBA, and NHL guarantee player contracts, while the NFL does not make this a league-wide policy (MLB CBA 2007, NFL CBA 2006, NHL CBA 2005, NBA CBA 2005). Because of this, it is less likely that NFL players will lower effort after signing a long-term contract. There are however, some contracts in the NFL that are guaranteed. Depending on how many contracts are guaranteed, the impact of the presence of guaranteed contracts in the NFL compared with other sports may be ambiguous.

3. Literature Review

There is contradictory evidence regarding how player performance changes as a result of contract length and where players are in their contracts. Maxcy examines how long-term contracts influence performance in MLB. If

effort changes with contract status, performance is assumed to be highest during the last year of a contract. The author uses first differences to examine the change in performance as contract status changed. As expected, the author finds that age and experience are significant factors in performance variation. However, he finds no evidence that long-term contracts influence performance on average (Maxcy 1997). Maxcy concludes that players and firms have similar goals, and therefore shirking does not occur.

Another study completed by Maxcy, Fort, and Krautmann examines *ex ante* strategic behavior and *ex post* shirking in terms of the principal-agent problem. *Ex ante* strategic behavior is defined as increasing performance just before contract negotiations. *Ex post* shirking is defined as reducing effort after a contract is signed. The authors believe that in order to properly test for shirking, a comparison between players who are expected to behave strategically and players who are not at a point in their contracts where they would behave this way is needed. The way in which performance of a player is affected by proximity to contract negotiations is tested in this model to examine strategic behavior. To control for players' expected performance, the authors use average performance over the three prior years. Skill is measured by SA for hitters and strikeout-to-walk ratio for pitchers. Playing time and time spent on the disabled list are also variables included in the model. The authors find that time spent on the disabled list declines in the period immediately preceding contract negotiations. Playing time in this period is also higher. The authors find no evidence, however, that performance declines after a long-term contract is signed (Maxcy et al. 2002). This study indicates that players may avoid the disabled list more as contract renegotiations approach because they want to appear strong in hopes of getting a longer contract; however, long-term contracts do not promote shirking.

Krautmann uses a model of stochastic productivity to test if long-term contracts diminish work effort in MLB. Rather than simply seeing a drop in performance as a sign of shirking, Krautmann believes that the model should test whether a drop in performance lies outside a forecast interval. Performance varies over a players' careers, so a drop in performance does not necessarily signal shirking. Performance is partially dependent on chance, and therefore low productivity could be due to the stochastic nature of productivity in sports. However, if performance lies significantly above or below players' forecast intervals, which takes performance variations into consideration, players may be behaving strategically. The author concludes that there is no evidence of shirking, and that decreased performance is due to the stochastic nature of productivity rather than asymmetric information (Krautmann 1990).

Sommers studies the influence of salary arbitration on player performance using MLB. Evidence suggests that lower performance after arbitration may be due more to aging than shirking (Sommers 1993). Therefore, this could suggest that arbitration may be an effective mechanism in MLB collective bargaining.

In contrast to the previous studies mentioned, Woolway finds statistically significant evidence that multi-year contracts have worker disincentives. Using a Cobb-Douglas production function, the author examines the marginal products of players who signed multi-year contracts to test for performance disincentives associated with long-term contracts. From the production function, Woolway derives players' marginal products. A one-tailed significance test is then run to test the null hypothesis that shirking does not exist. Woolway finds that the null hypothesis can be rejected. While individual reductions in productivity obtained by Woolway are not large, if several players have long-term contracts and shirk, the individual reductions are aggregated and team productivity can significantly be affected (Woolway 1997).

A study conducted by Stiroh on pay and performance in the NBA finds that performance improves significantly in the year before a multi-year contract is signed, and declines after the contract is signed. Stiroh excludes players with one-year contracts from his analysis to avoid competing incentive effects because players with one-year contracts are typically marginal players or players near the end of the career. Using weighted-least squares, the study finds that players with better performance receive longer contracts with higher salaries. When examining individual performance and contract status, Stiroh finds that there is improvement in the contract year, however there is no evidence of a post-contract decline in performance. Age is negatively related to performance, implying that skills erode as players get older (Stiroh 2007).

Asch conducts a study of the impact of contract incentives on worker productivity using Navy recruiters. Recruiters are rewarded for good performance as a part of an incentive program and also face quotas each month. Higher-quality recruits provide more points to recruiters, and points are accumulated over a 12-month period. Asch finds that recruiters vary effort in an attempt to win rewards. Output is greatest when recruiters are getting close to being eligible to winning a prize. Also, once recruiters are in a good position to win a reward, they seem to reduce effort (Asch 1990). This is similar to the idea that players put forth more effort as they are getting close to contract negotiation, in an attempt to receive a "prize" of a longer contract and higher pay. Once they have obtained the contract, however, they relax and reduce effort.

A study similar to Asch's conducted by Oyer examines the effect of nonlinear contracts on employee performance. Nonlinear contracts refer to the nonlinear relationship between compensation and sales or compensation and profits. In an attempt to reach the annual quota, salespeople may alter effort level or manipulate the timing of sales. Oyer finds that the nonlinear contracts may provide incentives for sales employees to bunch sales at the end of the fiscal year and vary effort throughout the year. There is more incentive for salespeople to work harder at the end of the fiscal year than during any other time. As the incentive payment gets closer, employees are willing to exert more effort (Oyer 1998). Put into the context of sports, as players get closer to the possibility of

higher pay in a new contract, they may be more willing to put forth more effort to improve performance.

Healy conducts a study on whether firms place too much importance on most recent performance rather than focusing on past performance. He analyzes this using MLB. To estimate his equations, a Prais-Winsten regression is used because there is significant first-order serial correlation in the salary data. The data shows that teams do not generally use players' past performance to determine salary offers. More successful teams, as measured by achieving more wins than predicted by their payrolls, base salary offers on historical performance. Unsuccessful teams, however, tend to focus too much on most recent performance alone (Healy 2008).

4. Data

The data used in this paper include historical performance statistics from players in MLB, the NFL, the NHL, and the NBA from the years 1992 until 2008. The data include 2,656 player/year observations, with 149 players from baseball, 103 players from football, 48 players from hockey, and 74 players from basketball. Summary statistics, divided by sport, are available upon request. The data on baseball players include pitchers, shortstops (SS), third basemen (3B), and right fielders (RF). Wide receivers (WR), running backs (RB), and quarterbacks (QB) are used in the NFL sample. Data for hockey players include only goalies. Basketball player data include centers, forwards, guards, center-forwards (CF), and guard-forwards (GF). Players are randomly selected from a list of the current players holding the previously mentioned positions. Some players are excluded from the study because historical contract data could not be found.

Because players are randomly selected from players currently in the leagues, the sample suffers from truncation bias. The study uses point in time contract information and follows players' careers backwards. Therefore, the database does not include players who left the league prior to 2008, excluding players who only lasted in the league for a couple years. This may affect the study's results because these players may behave differently from those who are able to have long-term careers. Marginal players are less likely to increase effort in the final year of a contract if they are not expecting to receive a long-term contract the following year. Therefore, performance in the last year of a contract would be lower, thus making the coefficient of the variable measuring effort in the final year of a contract smaller if these players with subpar performance were included. To avoid this selection bias, future studies could pick a year as a base-point and follow players' careers forward, thus encompassing players who only play for a couple years as well as those with long-term careers.

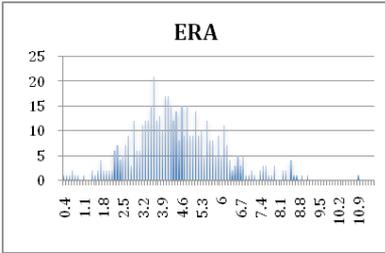
There are many statistics used to measure player performance, but they vary in relevance by position. For MLB pitchers, earned run average (ERA), as used by Maxcy, is used as the performance measure. ERA measures the average number of runs a pitcher would have given up if he were to pitch a full nine

innings. Performance of shortstops, third basemen, and right fielders is measured by slugging average (SA), as used by Maxcy. SA, used to measure batting power, is calculated by dividing a player's total number of bases reached on hits divided by the number of times at bat. For NFL wide receivers, yards per reception (YPR) is used. YPR is calculated by dividing the number of receiving yards by the number of receptions. Leeds and Kowalewski use receptions in their study, however yards per reception is deemed to be a better measure, as it measures whether players are able to do something with the ball once a reception is made. Similarly, based on the performance measures used by Leeds and Kowalewski, running backs' performance is measured by receiving yards per reception (YPRRB). This is calculated in the same manner as YPR. Quarterback performance is measured by yards per attempt (YPA), as used by Einolf. YPA is calculated by dividing passing yards by passing attempts. For NBA players, free throw percentage (FTP), as used by Bodvarsson and Brastow, measures player performance. FTP calculates the number of free throws made out of the number of free throws attempted. Finally, for NHL players, save percentage (saveper), as used by Richardson, is used to measure performance. This statistic measures the percentage of goals a goalie saves.

For sports that span across two years, namely the NFL and NBA, year is classified by the year in which the season started. For each player used in the study, performance, contract information, team, position, and age for every year the player has been in the league is included. Age is normalized, by subtracting the mean age for that sport from the player's age. This is done to control for age related variation between sports and in contracts due to seniority. For example, once players in the NFL reach thirty they are seen as old, whereas in the MLB, thirty year olds are likely to still be able to play for another ten years.

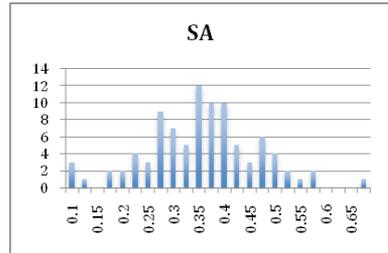
As each sport has different rules and measures of performance, directly comparing performance statistics across sports is not possible. For example, one cannot look at ERA and YPR and determine which is the better player. However, by assigning z-scores to each performance statistic, comparisons between sports can be made, as the performance statistics are translated into relative performance in comparison to one's peers. The frequencies of performance statistics for each sport are plotted to determine whether they are normally distributed. The distributions can be seen in Figures 1-7 below. These graphs indicate that the performance statistics chosen are approximately normally distributed. For MLB pitchers, a lower ERA is better than a higher one. A better ERA would have a negative z-score, while in other sports, better performance measures have positive z-scores; therefore, the signs of the z-scores for pitchers are reversed.

Figure 1: ERA Normal Distribution



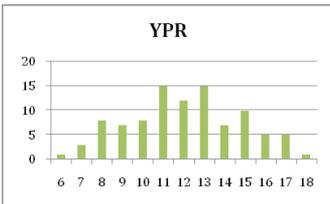
n = 492

Figure 2: SA Normal Distribution



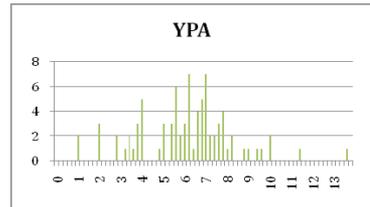
n = 93

Figure 3: YPR Normal Distribution



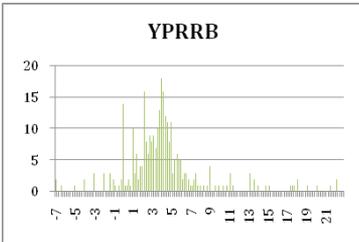
n = 100

Figure 4: YPA Distribution



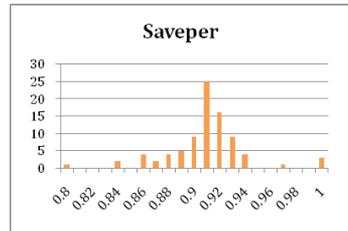
n = 103

Figure 5: YPRRB Normal Distribution



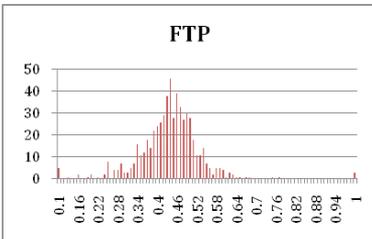
n = 308

Figure 6: Saveper Normal Distribution



n = 85

Figure 7: FTP Normal Distribution



n = 593

5. Methodology

The hypothesis of this study is that the principal-agent problem is a large enough effect to overcome competing effects, such as the utility players receive from winning, the endorsement effect, and fame. While effort cannot be easily measured, performance is assumed to depend on the amount of effort athletes put forth. Assuming that players change effort based on contract status, the following regression is estimated:

$$P_{i,t} = \beta_{PRE} PRE_{i,t} + \beta_{POST} POST_{i,t} + \beta_{AGE} AGE_{i,t} + \beta_{AGE^2} AGE_{i,t}^2 + \alpha_s + \alpha_t + \varepsilon_{i,t},$$

where $P_{i,t}$ is the performance measure, $PRE_{i,t}$ is equal to 1 in the final year of a contract and 0 otherwise, $POST_{i,t}$ is equal to 1 in the year after the contract year and 0 otherwise, and AGE is a player's normalized age¹³. Controls for sport (α_s) and year (α_t) are also used. PRE and $POST$ are thought to matter differently from one sport to another. As such, the sport variables are interacted with the PRE and $POST$ variables and the following regression is estimated:

$$P_{i,t} = \beta_{PRE} PRE_{i,t} + \beta_{POST} POST_{i,t} + \beta_{AGE} AGE_{i,t} + \beta_{AGE^2} AGE_{i,t}^2 + \alpha_s + \alpha_t + PRE_{i,t} * \alpha_s + POST_{i,t} * \alpha_s + \varepsilon_{i,t}.$$

Whereas plain dummy variables shift the intercept of a regression line for various groups, the interacted dummy variables shift the slope of a regression line (Greene 1993).

A fixed effects model is used because it controls for the average differences across year and sport in any observable or unobservable predictors. When using ordinary least squares (OLS), the error terms are assumed to be normally distributed with constant variance. However, this is not typically true for panel data. In addition, OLS does not account for unobservable factors that may be correlated with the variables included in the regression. By using fixed effects, omitted variable bias is eliminated. When using a fixed effects model, the differences between units are viewed as parametric shifts of the regression function (Greene 1993).

The variables of most interest are PRE and $POST$, as they measure the impact of contract status on players' performance. It is expected that β_{PRE} will be greater than 0, as players increase effort in the contract year, and β_{POST} will be less than zero, as players shirk once they obtain a long-term contract. AGE and AGE^2 control for the possibility that performance declines as players mature and act as a proxy for athletic ability, as this changes with over players' lifetimes.

Regressions for individual sports are also estimated. While performance measures vary from sport to sport, the basic regression estimated is:

$$P_{i,t} = \beta_{PRE} PRE_{i,t} + \beta_{POST} POST_{i,t} + \beta_{AGE} AGE_{i,t} + \beta_{AGE^2} AGE_{i,t}^2 + \alpha_t + \alpha_p + \varepsilon_{i,t},$$

where α_p is a variable controlling for position. For each sport, several measures of performance are estimated. Including all players in the sample, regressions are

13 To normalize age, the mean age for the sport was subtracted from a player's age.

estimated using players' performance z-score as well as absolute performance statistics. As with the regression including all sports, these regressions are estimated using fixed effects.

6. Results and Discussion

The results of the regression analysis are mixed. These results are presented in Table 2. Analysis is primarily focused on PRE, POST, AGE, and AGE², however year is controlled for in all of the regressions. In the regressions including all sports, the only years that are statistically significant are 2007 and 2008. In the regressions of the individual sports, none of the year variables are significant.

When interaction terms are not included in the regression of all sports, PRE and POST are both negative and significant, indicating that players decrease effort in both the final year of a contract as well as in the first year of a long-term contract. While the result of POST is expected, the finding that PRE is negative is contrary to predictions. Theoretical findings do not provide an explanation of why players would decrease effort in the final year of a contract. As the sport variables are also significant, indicating that MLB, the NFL, and the NHL are statistically significantly different from the NBA, PRE and POST are interacted with the sport variables. This is intended to capture differences of PRE and POST in the varying sports.

The only interaction term that is significant is *mlbpre*, which is negative. The negative sign indicates that baseball players do not perform as well in the final year of a contract compared to the NBA. This implies that baseball players may not be able to change effort to improve performance as much as athletes in the NBA can during the final year of a contract. After including the interaction terms, POST remains significantly negative, while PRE becomes positive and insignificant. While it is not significant, having a positive PRE is in agreement with the hypothesis. As including the interaction terms changes the sign of PRE, it appears as though some sports have more incentive to increase effort in the final year of a contract than others and that the moral hazard problem is worse in some sport than others.

In all of the leagues, there is incentive for players to shirk early in their contracts and increase effort in the final year of a contract. Teams tend to focus mostly on most recent performance, rather than historical performance (Healy 2008). As such, if players sign ten-year contracts and do poorly in the first year, but do well in the final year, they are still in good position to receive a long-term contract when they are up for renegotiation. The results of regression analysis are mixed in this hypothesis. While POST is negative in the instances where it is significant, indicating that players do take advantage of their ability to shirk, there is no evidence that players increase effort in the final year of a contract.

Table 2: Summary of Regression Results

- +/- indicates sign
- shaded boxes are significant

	All Sports		MLB		NFL			NHL		NBA			
	No interaction	Interaction	z-score	ERA	SA	z-score	YPR	YPA	YPRRB	z-score	Save %	z-score	FTP
pre	-	+	-	+	-	-	-	-	+	+	-	+	+
post	-	-	-	+	-	-	-	-	+	+	-	-	-
age	+	+	+	-	+	-	-	+	-	-	+	+	+
age ²	-	-	+	-	-	-	-	-	+	-	+	-	-
MLB	-	-											
NFL	-	-											
NHL	-	-											
NBA													
mlbpre		-											
mlbpost		-											
nflpre		-											
nflpost		+											
nhlpre		+											
nhlpost		+											
R-squared	0.6010	0.6039	0.2248	0.0927	0.2743	0.0921	0.0383	0.2469	0.0692	0.2786	0.0571	0.236	0.236

Players are expected to reduce effort during the first year of a long-term contract with the existence of minimum salary because if players shirk, they are still guaranteed the league-wide minimum salary. POST is negative in most of the regressions, indicating that performance does decline in the first year of a long-term contract. POST is significantly positive in the regression using ERA as the dependent variable, however as a lower ERA is better than a higher one, the signs for this regression need to be reversed to account for this. Therefore, the regression indicates that MLB pitchers reduce effort following the signing of a long-term contract.

In MLB, players' salary can only be reduced by a limited amount, providing players with the incentive to shirk. It appears that MLB players are

more likely to decrease effort in the first year of a long-term contract than NHL and NBA players. POST is not significant for the NHL or NBA, indicating that it is not significant in explaining changes in performance level. This supports the hypothesis that MLB players are more likely to shirk than NHL and NBA players.

In MLB and the NFL, there is no salary maximum, which is expected to increase the likelihood that players will increase effort in the final year of a contract. In the NHL and NBA, players face salary maximums so once a player reaches the maximum salary, there is little incentive to continue putting forth more effort, as there is no reward of a higher salary if performance improves. Regression analysis, however, does not seem to support this prediction. In the cases where PRE is significant, the regressions suggest that players decrease effort in the final year of a contract. This does not agree with theory, as reducing effort and therefore lowering performance is not beneficial for players trying to obtain as big a contract as possible.

As MLB does not offer performance incentives for players during the regular season, it is predicted that MLB players are more likely to reduce effort after signing a long-term contract because post-season incentives are dependent on how the team as a whole performs and not individual performance. Regression analysis suggests that MLB players do in fact reduce effort after signing a long-term contract. In all three MLB regressions, POST is significant, indicating that performance declines in the first year following the signing of a long-term contract.

The performance incentives offered by the NFL and NBA are expected to reduce the likelihood of POST being negative and significant. Regression analysis shows mixed results. In the NFL regressions, POST is negative and significant in the regressions using z-score and YPR as the dependent variable. However, the regressions using YPA and YPRRB are insignificant. This suggests that certain positions in the NFL may lend themselves to shirking more than others, or the PBP may provide different incentives for different positions. The NBA regressions indicate that POST is negative, however this is not significant. Players may be apt to reduce effort in the first year of a long-term contract, but the desire to shirk appears to be overcome by other factors since POST is not significant.

The NBA CBA mandates that players' contracts can only be renegotiated upward. This provides incentive for players to shirk early in their contracts because they know their current contracts will not be reduced. While it is expected that POST will be negative and significant, regression analysis shows that POST is negative and insignificant. While players may indeed reduce effort after signing a long-term contract, it does not appear to be significant, suggesting that other factors may outweigh the incentive to shirk.

Free agency is expected to increase the likelihood that players will increase effort in the final year of a contract. Players want to obtain the most lucrative contract they can, and therefore want to appear to be valuable members

of a team. As such, they will not want to reduce effort in the final year of a contract because team owners prefer top performers to mediocre players. Regression analysis does not support this prediction, however, as PRE tends to be negative.

The presence of guaranteed contracts is expected to increase the likelihood that players will lower effort in the first year of a long-term contract. A guaranteed contract ensures that players will receive their salary, regardless of whether they have poor performance. The only CBA in this study that does not provide guaranteed contracts is that of the NFL. As such, the likelihood of POST being negative and significant is expected to be lower compared to other leagues. Regression analysis does not support this hypothesis, however, as there are instances where POST is negative and significant in the NFL, while it is not in the NHL or NBA. As some NFL players are given guaranteed contracts while others are not, this result does not hold strong significance. Information regarding whether a contract is guaranteed is not generally made public, so the number of players in the NFL sample with guaranteed contracts is unknown. If this data were available, it would be possible to examine whether NFL players with guaranteed contracts behave differently from those without.

While the signs of AGE and AGE² vary between the regressions, there appears to be a common trend. Where AGE and AGE² are significant, AGE is positive and AGE² is negative. AGE captures the experience players gain as they get older, which will tend to improve performance, and AGE² captures the deteriorating effects of age on performance. As players age, even if they are putting forth the same amount of effort, their performance will eventually start to decline. Skills begin to deteriorate with age, which leads to lower performance levels.

Looking at the individual sport regressions, it is apparent that both significance and sign change as the equations are estimated using the z-score version of performance statistics and various performance statistics, depending on sport and position. This indicates that certain positions or performance measures may be more sensitive to changing effort than others.

The models analyzed in this study use both z-scores, which measure relative performance, as the dependent variable and raw performance statistics, which measure absolute performance. Relative performance examines the change in performance over a contract in comparison with other players in the league. Therefore, if other players are performing poorly, a decrease in effort resulting in a decline in performance may not be seen as readily. However, absolute performance solely examines a player's performance relative to his past performance.

A common pattern across all the regressions is that POST is mostly negative, especially when it is significant. While there are some deviations from this, the results generally imply that players reduce effort after signing a long-term contract. While none of the coefficients are particularly large, this result is still significant. One player reducing effort after signing a long-term contract may not have a sizeable impact on team performance overall, however if many players are lowering effort, team performance as a whole may begin to fall.

An issue that the model may be facing is a small sample size. When all the sports are included, the model has a fairly large sample size, however when broken up by sport and position, the number of observations is significantly decreased. Also, using only one position for hockey may not allow the model to capture all the effects of a change in contract status.

A potential reason for the lack of consistency in the sign and significance of PRE is that the variable may not be measured correctly. In this study, players are assumed to increase performance in the final year of a contract. However, players may operate in a different time frame and may increase performance before this point in hopes of securing a long-term contract.

As the models in this study are slightly different from Stiroh’s model, Stiroh’s model is replicated as closely as possible to determine if his results are repeatable. The model used is:

$$P_{i,t} = \beta_{PRE}PRE_{i,t} + \beta_{POST}POST_{i,t} + \beta_{AGE}Age_{i,t} + \alpha_a + \alpha_p + \alpha_l + \alpha_t + \epsilon_{i,t},$$

where α_a controls for player and α_l is controls for team. Weighted least squares is used to estimate the regression, using the percentage of games played for the season as weights. The results of this regression are shown in Table 3. The significance of the control variables is mixed; some are significant while others are not. While Stiroh finds PRE to be positive and significant, POST to be positive and insignificant, and age to be negative and significant, this study finds PRE to be positive and insignificant, POST to be negative and insignificant, and Age to be positive and significant.

Table 3: Replication of Stiroh’s Study (FTP is dependent variable, t-stats in parentheses)

	FTP
PRE	0.0079 (1.04)
POST	-0.0033 (-0.45)
Age	0.0055 (2.12)
R-squared	0.7590 (9.58)
Observations	486

Whereas Stiroh concludes that there is improvement in performance in the contract year, this study cannot do so. A smaller sample size may be part of the reason for

variations in the results, as Stiroh has a sample size of 2,646 while this study only has 486 observations. In addition, the weights used in the study may differ from Stiroh's weights, as he does not clearly define how he calculates his weights.

7. Conclusion

The mixed results that are obtained in this study align with the contradictory evidence regarding player performance over the course of a contract seen in past studies. Various reasons for the contradictory evidence exist. Certain positions or performance measures may allow players to alter effort more than others. Therefore, using different performance statistics from the ones used in this study may change the significance of PRE and POST. In addition, players may reduce effort in the off-season rather than during games, which may not be reflected directly in the performance statistics chosen. If, for example, a basketball player does not practice his free throw during the off-season, his FTP may not be affected significantly in the subsequent season, as it is a skill that he has perfected over time and may be able to pick up again without much practice. Increasing the sample size may also improve significance.

This study's key finding is that players' performance levels decline during the first year after signing a long-term contract, suggesting that the effects of the principal-agent problem may outweigh competing effects. This is of importance because if managers expect that players will shirk after signing long-term contracts, they can implement incentive mechanisms in the contracts in order to prevent shirking. The study also has conclusive evidence that as players gain experience, performance increases, however as players age, skills begin to erode and performance eventually declines.

The finding that players reduce effort after signing a long-term contract should be of interest to other types of firms as well. In sports, it is relatively easy to measure individual performance through performance statistics. However, in other professions, such as teaching, it is much harder to measure individual performance. Employers are not able to monitor effort as effectively, and therefore face a moral hazard problem. Employees are paid to do a certain job, but since employers are not always able to monitor effort, they are often able to shirk. While this may not be able to be measured empirically, this study suggests that this is what occurs.

—REFERENCES—

- “2002-03 NHL salaries: Southeast Division.” 20 May 2005. USA TODAY. 17 February 2009 <<http://www.usatoday.com/sports/hockey/nhl/2003-salaries-southeast.htm>>.
- Asch, Beth J. 1990. “Do Incentives Matter? The Case of Navy Recruiters.” *Industrial and Labor Relations Review* 43(3): 89S-106S.
- Bodvarsson, Orn B. and Raymond T. Brastow. 1990. “Do Employers Pay for Consistent Performance? Evidence from the NBA.” *Economic Inquiry* 36: 145-160.
- Cimini, Rich. “WEST SIDE STORY Stadium deal could sack Jets.” 30 May 2004. Daily News. 17 February 2009<https://www.nydailynews.com/archives/sports/2004/05/30/2004-05-30_west_side_story_stadium_deal.html>.
- “Collective Bargaining Agreement.” 2005. NHL Players Association.
- “Complete Baseball Team and Baseball Team Encyclopedias.” 2009. Sports Reference LLC. 17 February 2009 <<http://www.baseball-reference.com/teams/>>.
- “Cot’s Baseball Contracts.” 17 February 2009 <<http://mlbcontracts.blogspot.com/>>.
- “Franchise Encyclopedias.” 2009. Sports Reference LLC. 17 February 2009 <<http://www.pro-football-reference.com/teams/>>.
- Garafolo, Mike. “Toomer tenure ending?” 2008. FOX Sports. 17 February 2009 <<http://msn.foxsports.com/nfl/story/8841440/Toomer-tenure-ending>>.
- Gibbons, Robert and Kevin J. Murphy. 1992. “Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence.” *The Journal of Political Economy* 100(3): 468-505.
- “Giants extend Toomer’s contract.” 2005. USA TODAY. 17 February 2009 <http://www.usatoday.com/sports/football/nfl/giants/2004-03-31-toomer_x.htm>.
- Greene, William H. 1993. *Econometric Analysis, Second Edition*. MacMillan Publishing Company: New York, NY.
- Healy, Andrew. 2008. “Do Firms Have Short Memories?: Evidence From Major League Baseball.” *Journal of Sports Economics* 9(4): 407-424.
- Krautmann, Anthony C. 1990. “Shirking or Stochastic Productivity in Major League Baseball?” *Southern Economic Journal* 56(4): 961-968.
- La Canfora, Jason. “Cooley Signs 6-Year Deal; Wynn is Among Final Cuts.” 2 September 2007. The Washington Post. 17 February 2009 <http://www.washingtonpost.com/wpdyn/content/article/2007/09/01/AR2007090101314.html>>
- Massey, Cade and Richard H. Thaler. 2005. “The Loser’s Curse: Overconfidence vs. Market Efficiency In the National Football League Draft.” Working Paper.
- Maxcy, Joel G. 1997. “Do Long-Term Contracts Influence Performance in Major League Baseball?” *Advances in the Economics of Sport*. Greenwich, CT: Jai Press, Ltd: 157-176.

- Maxcy, Joel G., Rodney D. Fort, and Anthony C. Krautmann. "The Effectiveness of Incentive Mechanisms in Major League Baseball." *Journal of Sports Economics* 3. 3(2002): 246-255.
- "MLB Collective Bargaining Agreement." 2007. MLB Players Association.
- "NBA Home." 2008. NBC Sports. 17 February 2009
<http://www.rotoworld.com/content/Home_NBA.aspx>.
- "NBPA Collective Bargaining Agreement." 2005. NB Players Association.
- "NBA Players." 2009. Rogers Sportsnet. 17 February 2009
<<http://www.sportsnet.ca/basketball/nba/players/>>.
- Newman, Mark. 2004. "Behind the numbers: OPS." MLB.com. 2 April 2009
<http://mlb.mlb.com/news/article.jsp?ymd=20040316&content_id=651261&vkey=spt2004news&fext=.jsp&c_id=null>
- "NFL Collective Bargaining Agreement." 2006. NFL Players Association.
- "NFL Home." 2008. NBC Sports. 17 February 2009
<http://www.rotoworld.com/content/home_NFL.aspx>.
- "NFL Players." 2009. Rogers Sportsnet. 17 February 2009
<<http://www.sportsnet.ca/football/nfl/players/>>.
- "NHL Home." 2008. NBC Sports. 17 February 2009
<http://www.rotoworld.com/content/Home_NHL.aspx>.
- "NHL Players." 2009. Rogers Sportsnet. 17 February 2009
<<http://www.sportsnet.ca/hockey/nhl/players/>>.
- Oyer, Paul. 1998. "Fiscal Year Ends and Nonlinear Incentive Contracts: The Effect on Business Seasonality." *The Quarterly Journal of Economics*: 149-185.
- Pinkerton, Brad. "Campbell among QBs entering contract year." 21 January 2009. SportingNews.com. 17 February 2009 <http://www.sportingnews.com/blog/FantasySourceBlitz/entry/view/16676/campbell_among_qbs_entering_contract_year>.
- "Players Baseball Encyclopedia." 2009. Sports Reference LLC. 17 February 2009
<<http://www.baseball-reference.com/players.shtml>>.
- "Player Football Encyclopedia." 2009. Sports Reference LLC. 17 February 2009
<<http://www.pro-football-reference.com/players/>>.
- "Player Index." 2009. Sports Reference LLC. 17 February 2009
<<http://www.basketball-reference.com/players/>>.
- "Player Index." 2009. Sports Reference LLC. 17 February 2009
<<http://www.hockey-reference.com/players/>>.
- Prendergast, Canice. 1999. "The Provision of Incentives in Firms." *Journal of Economic Literature* 37: 7-63.
- Sappington, David E. M. 1991. "Incentives in Principal-Agent Relationships." *Journal of Economic Perspectives* 5(2): 45-66.
- Stiroh, Kevin J. 2007. "Playing for Keeps: Pay and Performance in the NBA." *Economic Inquiry* (45)1: 145-161.
- Sommers, Paul M. 1993. "The Influence of Salary Arbitration on Player Performance." *Social Science Quarterly* 74(2): 339-443.

“T.J. Houshmandzadeh.” 2009. USA TODAY. 17 February 2009
 <<http://fantasyfootball.usatoday.com/content/player.asp?sport=Nfl&id=2552>>.

“Team Index.” 2009. Sports Reference LLC. 17 February 2009
 <<http://www.basketball-reference.com/players/>>.

“Team Index.” 2009. Sports Reference LLC. 17 February 2009
 <<http://www.hockey-reference.com/players/>>.

“Transactions.” 12 July 1997. The New York Times. 17 February 2009
 <<http://query.nytimes.com/gst/fullpage.html?res=9B02E6D91E39F931A25754C0A961958260&sec=&spon=>>>.

“USA TODAY Salaries Databases: Basketball.” 2009. USA TODAY. 17 February 2009.
 <<http://content.usatoday.com/sports/basketball/nba/salaries/default.aspx>>.

“USA TODAY Salaries Databases: Football.” 2009. USA TODAY. 17 February 2009.
 <<http://content.usatoday.com/sports/football/nfl/salaries/default.aspx>>.

“USA TODAY Salaries Databases: Hockey.” 2009. USA TODAY. 17 February 2009.
 <<http://content.usatoday.com/sports/hockey/nhl/salaries/default.aspx>>.

“Warrick Dunn – Tampa Bay Buccaneers.” 2009. Roto Sports, Inc. 17 February 2009
 <<http://www.rotowire.com/football/player.htm?id=738>>.

Woolway, Mark D. “Using an Empirically Estimated Production Function for Major League Baseball to Examine Worker Disincentives Associated with Multi-year Contracts.” *The American Economist* 41. 2 (1997): 77-83.

“Worldwide Entertainment & Sports Negotiates \$5.8Million Contract for Chicago Bears’ Bobby Engram.” 25 April 2000. Business Wire. 17 February 2009 <<http://www.allbusiness.com/company-activities-management/company-structures-ownership/6470432-1.html>>.

A LOOK AT WOMEN AND ABORTION IN THE UNITED STATES

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Abstract:

The issue of abortion is defined by ethical questions and, often, controversial views. This paper argues the importance of a coherent and enhanced effort to study the quantitative relationship between women's characteristics and the average number of abortions in the United States. It specifically looks at the average number of *previous* abortions and socioeconomic and demographic characteristics, as this relationship has not been explored before in the existing literature. We expect to establish a correlation between the average number of previous abortions and characteristics such as age, marital status, income and highest degree of education completed. An empirical model is developed, and then studied using regression analysis. Even though this study has limitations stemming from the nature of the data and the methodology employed, it illustrates that variables such as age, marital status, religion and education, employment status, income, and metropolitan status do influence the number of previous abortions a woman has had. The broader implications of this study suggest that the issue of abortion should be addressed with a clear focus on the most interested party, namely, women.

I. Introduction

This study examines the relationship between socioeconomic and demographic characteristics in women who seek an abortion and the number of legal induced abortions¹⁴ in the United States. Furthermore, it attempts to quantify and estimate this relationship with the objective of identifying which characteristics exhibit the most significant influence on the number of abortions. The moral, ethical, and political aspects of abortion have polarized American society since the landmark 1973 decision in *Roe v. Wade*, which established that most laws against abortion violate a woman's constitutional right of privacy under the Fourteenth Amendment. Advances of various magnitudes, such as The Partial Birth Abortion Ban Act signed by President George W. Bush in 2003, have been made against a woman's right to choose and to receive adequate abortion services. Thus, current public policy on abortion arguably strongly reflects partisan subjectivity on this issue.

This study reflects the authors' concern about the lack of objectivity and sufficient scientific evidence in the public discourse on abortion relating the average number of previous abortions to the profiles of women who seek one. The specific question of interest - which demographic and socioeconomic characteristics influence the average number of previous abortions in the United

14 A legal induced abortion is defined as "a procedure, performed by a licensed physician or someone acting under the supervision of a licensed physician, that was intended to terminate a suspected or known intrauterine pregnancy and to produce a nonviable fetus at any gestational age" (Strauss, 2004)

States, represents the authors' conviction that a better understanding of the women who choose to terminate a pregnancy will promote less bias in the attitudes on this issue in American society. The approach of this paper differs from the models in the existing literature because it aims at estimating the relationship between socioeconomic characteristics and the average number of *previous* abortions as opposed to the average number of total abortion for a woman in the US. Furthermore, this question is particularly interesting in the context of the recent change in the political landscape with the election of President Barack Obama who has already expressed his readiness to alter the direction of public policy on the issue by signing an executive order that allows international health organizations who promote or perform abortions to resume receiving funding from the US (Baker, 01/24/2009)¹⁵. It is important to study the relationship between the characteristics of women who seek an abortion and the average number of abortions as the results are used by policymakers to provide adequate and timely programs that best address the needs of the most affected party - women. In addition, relevant scientific evidence on this question will allow the general public to objectively assess the issue of abortion in its entirety, rather than regard it only with moral judgment.

This article provides a quantitative examination of the relationship between specific demographic and socioeconomic characteristics and the average number of previous abortions of a sample of women in the United States during the second half of 2000 and the first half of 2001. The study strives to promote a better understanding of the women who seek an abortion. It also aims at providing valuable information to policymakers and family planning agencies with the objective of improving the access to contraceptive and support services of groups where a recurrent pattern of demographic and socioeconomic characteristics is observed. The existing literature on the subject (economic, sociological, anthropological, psychological) is scant, with more in-depth research studies on the political/legal aspects of abortion, public attitudes towards it, and the effect of provider availability and legislature on demand, instead of focusing on who actually obtains an abortion.

The most contemporary and thorough analysis of the various characteristics of women who seek abortion is presented in *Patterns in the Socioeconomic Characteristics of Women Obtaining Abortions in 2000-2001* by Rachel K. Jones, Jacqueline E. Darroch and Stanley K Henshaw. However, further analysis on the topic should be made focusing on how external factors influence the average number of previous abortions in the US. Thus, this project provides a coherent and enhanced overview of the characteristics of women who seek an abortion and is justified as a response to the existing scarcity of recent and relevant scientific attention to the issue. In addition, there is an overarching bias in the contemporary discourse on abortion identified as the expression of subjective perceptions rather than the advancement of quantitative results derived

¹⁵ This effectively repeals the Global Gag Rule on abortion, which was one of the first acts of the Bush Administration in 2001.

with scientific methods. An underlying explanation for this is the nature of the questions surrounding abortion which are often distinctly ethical, moral and very personal. Nevertheless, this article expresses our determination to deepen the existing economic, sociological, and psychological understanding of the women who seek an abortion by presenting quantitative findings rather than promoting subjective and, often, extreme opinions.

Furthermore, there is a clear lack of continuous efforts on the state and national levels to compile extensive demographic and socioeconomic profiles of the women who obtain abortions. Such information is being collected on an individual basis by each state without an overarching regulatory body. In order to devise policy which is well-suited to the needs of those women, there should be extensive information on the characteristics that define them. The importance of such information can be demonstrated by establishing a relationship between the demographic and socioeconomic characteristics and the number of abortions. The clear existence of such a relationship will persuade state and national governmental organizations to gather data on the characteristics of interest and devise more efficient policy to address the needs of women who seek abortions. Furthermore, since this study examines the relationship between socioeconomic characteristics and the average number of previous abortions, we would like to establish if there are significant inconsistencies between our results and the existing literature on the subject.

In Section II, the objective and justification for research are discussed. Section III reviews the existing literature on the subject. Section IV describes and summarizes our data. Section V outlines the methodology employed. Section VI presents our results. Finally, Section VII provides some concluding remarks and suggestions for further research on the topic.

III. Literature Review

The scope of our literature review is limited. The literature on the interactions between the characteristics of women who seek a legal abortion and the actual number of abortion incidences in the United States generally studies demographic indicators such as age, race, education, income, and marital status. Other variables of interest include the number of previous births and the number of previous abortions. This is clearly observed in Strauss, 2004, Henshaw, 1983, Henshaw, 1985, Henshaw, 1991, Henshaw 2001¹⁶. Those studies provide detailed summary statistics for the variables corresponding to all of the discussed characteristics with a varying degree of accuracy. A common trait of these studies, and a possible limitation, is the methodology employed – the authors obtain their

¹⁶ The three articles published by Stanley K. Henshaw and a number of other researchers for The Alan Guttmacher Institute in 1983, 1985 and 1991, are very similar in structure, methodology and findings. However, it is important to discuss them as they represent the continuous efforts of the Guttmacher Institute to observe any general trends in the patterns of the socioeconomic and demographic characteristics of women who obtain an induced abortion. Furthermore, organizational differences exist between those articles and the most recent study produced by the AGI. In addition, Henshaw, 2001 presents a more in-depth and timely analysis of the subject. Thus, Henshaw, 2001 is studied separately, while the three previous studies of the AGI are grouped together.

findings by studying frequency distributions or by cross tabulation. Recently, those studies have confirmed that white, unmarried, young (<25yrs.) women are most likely to obtain an induced abortion, but the actual interaction between those particular characteristics and the number of average number of previous abortions is not discussed. The articles also do not identify the characteristics which are the most influential on the number of abortions obtained. The findings are descriptive in nature. No relationship between the variables and the average number of abortions is established as none of these studies employ more complex methodology such as linear or multivariate regression analyses.

A relevant response to this is found in Trent and Powel-Griner, 1991. The data employed are not released by the traditional sources – Center For Disease Control and Prevention (CDC) or The Alan Guttmacher Institute (AGI), which study only aggregate data on abortion. Thus, the Trent study can be classified as independent from the mainstream literature on the subject (AGI or CDC), because its data is obtained from the National Center for Health Statistics (NCHS). The individual-level data allowed for an increased analytical depth, as the authors were able to make detailed cross-classification, reclassify individual variables, and combine vital statistics on pregnancy outcomes. It presents a complex model that uses log-linear techniques with several interactions that focused on detailed characterization of variables and multivariate analysis. Each of the models constructed within the Trent study tested for fit-specified saturated relationship among the independent variables. The final model gives a complex seven-way or saturated relationships among the independent variables and, also, with seven three-way terms and two two-way terms.

This approach proved successful because Trent and Powel-Griner, 1991 had access to individual-level data as opposed to aggregate data¹⁷. The individual-level data obtained from the NCHS permitted for detailed reclassification and cross-classification of the variables of interest. The findings of this study are important because they establish: (1) the relationship between race and abortion varies by marital status, parity¹⁸ and state of residence; (2) the relationship between marital status and abortion varies by education, parity and state residence; (3) the relationship between education and abortion varies by marital status and parity (Trent and Powel-Griner, 1991). Thus, Trent and Powel-Griner, 1991 mathematically evaluate the net effects of selected variables on abortion. Despite the statistical significance of those findings, it is important to discuss two specific aspects of the article. First, it differs from those published by CDC and AGI as the authors assume pregnancy outcomes as the units of the study. The sample combines data on live births, fetal deaths, and induced abortions; this is a different approach within which the main goal is to facilitate the multivariate analysis. This differentiates Trent and Powel-Griner from the Strauss and Henshaw studies, as those do not provide significant manipulation of data on live births or fetal deaths.

17 Aggregate data is presented in and discussed by Strauss, 2004; Henshaw, 1983; Henshaw, 1985; Henshaw, 1991; Henshaw 2002;

18 For a woman, the number of live births over the total number of pregnancies

A significant limitation is observed in Trent and Powel-Griner, 1991 as the NCHS sample they study provides only a basic list of demographic characteristics with important variables such as income, religion, and participation in the labor force not being included. In addition, two separate samples are used for adult and teenage women in order for the selected methodology to be employed. Such limitations render the significant findings by Trent and Powel-Griner, 1991 not nationally representative. A similar problem is observed in the CDC's annual Abortion Surveillance report from 2004 (See Strauss, 2004). In addition to the lack of complex mathematical methodology employed, the conclusions advanced by this report may not be representative of the population because the data obtained by CDC is released by the individual state health departments that gather some (but usually not comprehensive) information on the demographic and socioeconomic characteristics of women who seek abortion with a varying degree of completeness. Our study offers an improvement over the discussed papers as we believe that it is nationally representative given the nature of our data.

A further distinction can be drawn between Strauss, 2004 and Henshaw, 2001. Even though both studies compare its data and findings, it can be observed that the results presented by Henshaw, 2001 are more relevant and meaningful than those of Strauss, 2004 as the sampling procedure is more accurate. The studies performed by the AGI (see Henshaw, 1983, Henshaw, 1985, Henshaw, 1991, Henshaw 2002) rely on data gathered by directly contacting the abortion provider facilities and administering surveys to women prior to their having the medical procedure. Thus, the studies produced for the AGI are better suited to select a representative and thorough sample than the sample used by CDC.

In general, the quantitative research on the issue of abortion focuses on the demand for abortion and a woman's choice to have an abortion, the impact of state/federal legislation and provider availability on the average number of abortions, or on attitudes towards abortion. The study of how demographic and socioeconomic characteristics affect the average number of previous abortions is not in the focus of the academic literature. More comprehensive research on the subject of the relationship between characteristics such as age, race, education, income, marital status, number of previous abortions and the number of abortions would pose questions as to the possibility of quantifying such a relationship. There is also a need for further and more in-depth analysis of the factors that influence this relationship.

IV. Data Description and Summary Statistics

The study uses demographic, economic, and vital data that summarize the results obtained from 10,683 usable¹⁹ questionnaires administered at participating facilities in the United States by The Alan Guttmacher Institute (AIG) with the purpose of providing an overview of the characteristics of women who seek a legal abortion. The data is cross-sectional – 71% of the women in the sample

¹⁹ A total of 13,071 abortions were performed at the participating facilities for a usable-response rate of 82%. Such a response rate indicates that results of the survey are representative of the population.

obtained abortions during the second half of 2000. The remaining 29% of the procedures were performed during the first half of 2001. In order to gain better understanding of the demographic and socioeconomic characteristics present in the sample, summary statistics of several variables of interest including, age, race, religion, household income, and marital status, employment and metropolitan status, are studied. It is important to discuss the limitations of the data used in this paper as the dataset does not contain any information on birth outcomes (ex. live births) except for abortion. This limits the scope of our study, as the data permits only for an analysis of the relationship between socioeconomic characteristics and the average number of previous abortions.

Table 1: Average Number of Previous Abortions by Age

<u>Age by Midpoints</u>	<u>Num. Obs.</u>	<u>Mean</u>	<u>Std. Dev.</u>
14	6	0.19	0.43
16	128	0.75	0.79
18.5	587	0.69	0.74
22	2531	0.94	0.99
27	1996	1.21	1.29
32	1217	1.23	1.29
37	777	1.28	1.45
40	279	1.23	1.48
Total:	10,683		

Proper sample weights used

The dataset also has a number of limitations resulting from the sampling procedure. Cluster sampling, stratified by provider, was performed. A thorough sampling frame of all hospitals, clinics and physicians’ offices where a legal abortion can be obtained was used. However, due to a low response rate at the initial randomly chosen facilities, second- and third-choice facilities had to be designated. The low response rate can be attributed to refusal to participate, failure to properly distribute the questionnaires or not enough time for the patients to complete them. To account for this a three-stage weighting process is designed, with individual-, facility-, and stratum-level weights assigned respectively. This is represented by the weight variable in the dataset. In our analysis, proper sample weights were applied where relevant, in order to attain nationally representative results.

The average age of the women surveyed is 25.4 years; however, it is more applicable to use the median age of 22 years as the distribution has a significant positive skew. On average, a woman between the ages of 20 and 24 is expected to have had almost 1 previous abortion. Women between the ages of 20 and 24 constitute the category with the highest frequency.

Furthermore, White women constituted 40.8% of the sample, followed by women who identified themselves as Black (31.4%) and Hispanic (20.7%). Though White women represented the largest proportion of the sample studied, on average they had .94 previous abortions, which is less than the mean number of previous abortions for all other categories, though with a small deviation from the mean. On average, a Black woman has had the largest mean number of previous abortions – 1.26 with a substantial degree of variation as compared to the other ethnic groups within the sample.

A substantial proportion of the women (39%) described themselves as Protestant, while as much as 27% indicated Roman Catholicism as their religious affiliation. On average, women who identified themselves as Jewish had the largest mean number of previous abortions - 1.52, though the effect of several outliers is observed, as this group also had the highest standard deviation from the mean. This raises questions as to how the issue of abortion is viewed within the context of different religions and what their true influence over the public discourse on abortion is.

Also, women residing in what is identified as the Southern part of the United States, notably represent the largest portion of all women in the sample with a frequency of more than 38%, while women who reside in the Northeast had, on average, the highest number of previous abortions – 1.27. In addition, the number of women employed in the month when they became pregnant was significantly larger than that of the unemployed. Also, if a woman was employed she had an expected number of 1.11 previous abortions as opposed to a mean of 1 for the unemployed women.

Table 2: Average Number of Previous Abortions by Race

Race	Num. Obs.	Mean	Std. Dev.
White	2,900	0.94	1.06
Black	2,594	1.26	1.31
Asian	392	1.13	1.24
Indian	78	1.17	1.48
Hispanic	1,557	1.03	1.18
Total:	7,521		

Proper sample weights used

The women studied, on average, had a previous birth and a previous abortion. This is interesting in the context of 67.2% of the women identifying their marital status in the survey as “never have been married”. Married women had on average almost one previous abortion, however, with a high degree of variation than women who have never been married. Furthermore, 97.5% have had four previous births or less, while the proportion of women who have had four induced abortions or less is slightly larger – 98.2%. When asked if they would like to have any children in the future, 51.4% of the women gave an affirmative answer. The mean income in the sample was \$29,931; however, the median of \$22,500 represents a better measure of the central tendency because the distribution has a significant positive skew. Last, nearly 89% of the women in the sample resided in a metropolitan area.

Table 3: Average Number of Previous Abortions by Marital Status

Marital Status	Num. Obs.	Mean	Std. Dev.
Married	1,486	0.96	1.24
Separated	586	1.01	1.29
Divorced	698	0.99	1.12
Widowed	33	0.9	0.82
Never Married	4,050	1.15	1.17
Total:	6,853		

Proper sample weights used

The dependent variable in this study is the average number of previous abortions. The independent variables are age, employment status, highest degree

of completed education, income, marital status, metropolitan status, race, region and religion. This set of independent variables represents a synthesis of the socioeconomic and demographic characteristics of women who obtain abortions in the United States based on our general knowledge of the existing literature. Those were specifically chosen since age, marital status, race and religion are considered core demographic variables, while education, employment status and income reveal information regarding the human capital of the subjects. In addition, the information on region and metropolitan status provides a spatial dimension to our study. Dummy variables were generated for the original categorical variables for marital status, metropolitan status, race, region, religion in order to examine individual bivariate interactions between the dependent and independent variables. We expect to establish a relationship between each of those variables and the outcome variable, average number of previous abortions.

Our *a priori* expectations are that age, education and employment status are positively related to the number of previous abortions since a highly-educated woman in the labor force faces a higher opportunity cost to carrying a pregnancy to term. Based on the existing literature, we also expect that black women, regardless of marital status, on average have more abortions than white women. In addition, the literature indicates that religiously unaffiliated women and women who reside in a metropolitan area are expected to have the highest number of abortions. Thus, we expect to establish a positive relationship between metropolitan status, as well as between no religious affiliation indicated, and the average number of previous abortions.

V. Methodology

If the dependent variable in this study was a continuous interval variable, the appropriate methodology would be regression analysis. This assumes that the regression coefficients are constant across observations, the selected socioeconomic characteristics are truly independent, and the error terms are independent across observations, normally distributed with a mean of 0 and a constant variance.

However, a better methodology for this study is logistic regression because the dependent variable (average number of previous abortions) is categorical. The similarities between OLS regression and logistic regression are that they are both employed to determine which of the independent predictor variables are statistically significant; a test-statistic is calculated to indicate whether the overall fit of the model is good, and a coefficient and standard error for each of the independent variables are calculated. However, the results they produce are different and should be interpreted separately. The difference between the two is that logistic regression is useful for testing binary (outcomes being 0 or 1) dependent variables. Even though linear regression is not appropriate for this model, we employ it as an initial tool to examine the data while considering its limitations given that the dependent variable is not continuous.

Since the outcome variable in this model is categorical with more than 2 distinct categories, it is appropriate to use the multinomial logistic regression which is an extension of the binary logistic regression. This methodology will give an estimation of the probability of membership within specific groups over the probability of being within a designated base group (the default base group is the one with the largest frequency). In addition, our dependent categorical variable is countable and its outcomes can be ranked, thus, it is appropriate to use ordinal logistic regression. The advantage of choosing ordinal over multinomial logistic analysis is that the former recognizes the increasing nature of the dependent variable (outcomes can be ranked). It is also appropriate to run a Poisson regression. With this regression analysis we assume that the original distribution of the outcome variable is Poisson, and its mean is equal to the variance.

The dependent variable in our model is number of previous abortions and the independent variables are grouped into 3 relevant categories. The literature did not reveal the existence of a theoretical model that explores the relationship between socioeconomic characteristics and the number of previous abortions. In general, such theoretical models describe the demand for abortion given existing legislature, cost of the service or abortion availability. Thus, our empirical model is:

$$Y = \beta_0 + \beta_1 D + \beta_2 HC + \beta_3 L + E$$

Demographic Characteristics (D)=Age+Marital Status+Race+Religion

Human Capital (HC)=Highest Degree of Education+Employment Status+Income

Location (L)=Region+Metropolitan Status

This model assumes that the independent variables are not jointly correlated, though our knowledge dictates that a certain level of correlation exists. When we test for correlation, the independent variables are correlated according to our *a priori* expectations. However, the exhibited degree of correlation is not large enough to negatively impact the standard errors and the results of the study.

First, we run a linear regression with the original income variable and then with the natural logarithm of the income variable to account for the nonlinear relationship between the dependent variable and income. After testing the model, we establish that it has a problem of autocorrelation, heteroskedasticity as well as omitted variable bias. We successfully solved for all but the omitted variable bias. Then, we run a multinomial logistic regression with the dependent variable, number of previous abortions, collapsed into a new variable with three categories. The original dependent variable has 10 categories that increase in frequency from 0 to 9 (positively-skewed distribution). We recode the dependent variable, and group the original categories into three new categories by frequency. For our model, it is convenient to choose only three categories, since this results in exhaustive and non-overlapping categories. The base category includes women who have had one or less previous abortions on average. This analysis gives for each independent variable the probability of a woman being in the second or third

Number of Previous Abortions	
OLS regression	
Characteristics	Coef.
Employment Status	0.068* (0.036)
Income	-0.000* (0.000)
Age	3.983e-02*** (3.132e-03)
Race	
Black	0.248*** (0.038)
Asian	0.054 (0.078)
Indian	0.073 (0.141)
Hispanic	0.058 (0.048)
Marital Status	
Married	-0.270*** (0.042)
Separated	-0.194*** (0.061)
Divorced	-0.305*** (0.054)
Widowed	-0.456*** (0.154)
Level of Education	
Through 8th Grade	-0.120 (0.104)
Through 11th Grade	-0.072 (0.052)
Through Highschool	-0.064* (0.037)
Through College	-0.186*** (0.051)
Religion	
Roman Catholic	-0.041 (0.044)
Jewish	0.401 (0.257)
Other	0.141** (0.056)
None	0.117*** (0.041)
Region	
North-east	0.287*** (0.040)
Mod-west	-0.030 (0.047)
West	0.221*** (0.043)
Metropolitan Status	
Non-metropolitan	-0.269*** (0.041)
Other country	-0.076 (0.139)
Constant	-0.056 (0.092)
Observations	6208
R-squared	0.073
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

category as opposed to being in the base category. Next, we run an ordinal logistic regression in order to account for the increasing nature of the original dependent variable where the outcomes vary from 0 to 9. Last, we run a Poisson regression which is appropriate for nonnegative count variables.

Each model has advantages and disadvantages. The multinomial and ordinal regressions are similar, though when multinomial logistic regression is used, the significance of the ordering is lost. Thus, when comparing the results of the multinomial and ordinal regression, we expect those of the ordinal regression to give a more accurate representation of the relationship between the outcome variable and the predictors. However, we also expect the Poisson regression to give the most accurate results of the three models despite its inherent heteroskedasticity, as it is specifically designed for count outcome variables. When the results are presented, only the statistically significant variables in the model will be discussed.

VI. Results

o *OLS Regression Analysis*

When a robust regression is run the independent variable for age and the dummy variables for black women, completing college, no religion indicated, northeast and west regions, nonmetropolitan areas and all dummy variables for marital status are statistically significant at the 10% significance level. The only variable that is statistically different from zero at the 5% significance level is the dummy variable for other religion specified.

We establish that if a woman is employed or black relative to white, and as her age increases, the average number

of previous abortions is higher. Even though, this is expected, it is also interesting because it establishes that abortion is not only a “single teenager” issue. This is also true if the woman has other or no religious beliefs relative to being Protestant, or is from the northeast or west parts of the US relative to residing in the south. The results also show that as a woman’s income increases, or she is married, divorced, widowed or separated relative to never married, the number of previous abortions decreases. In addition, there is a negative relationship between the number of previous abortions and competition of high school or college relative to having completed some years of college. The number of previous abortions also decreases if a woman identifies herself as Catholic relative to being Protestant, and if she lives in a nonmetropolitan area relative to residing in a metropolitan area. If the same robust OLS regression is run using the natural log of the income variable, there is only a small difference between the coefficients of the predictors for the two OLS regressions. However, the logged income variable and the dummy variable for completing high school are no longer statistically significant.

○ *Multinomial Logistic Regression Analysis*

Next, we study the results obtained from a multinomial logistic regression. The variables for employment and age are statistically significant at the 1% level when comparing both the second and third categories to the base category. The logged odds of having had between two and four previous abortions over having had less than

Number of Previous Abortions		
Multinomial Regression		
Characteristics	Coef. (2-4)	Coef. (5-9)
Employment Status	0.186*** (0.076)	0.060 (0.234)
Income	0.000 (1.82e-06)	-0.000** (6.60e-06)
Age	0.062*** (0.006)	0.145*** (0.017)
Race		
Black	0.500*** (0.079)	0.897*** (0.253)
Asian	0.201 (0.144)	0.166 (0.463)
Indian	0.300 (0.302)	0.171 (1.104)
Hispanic	0.225** (0.100)	-0.079 (0.346)
Marital Status		
Married	-0.308*** (0.087)	-0.237 (0.278)
Separated	-0.354*** (0.122)	0.334 (0.305)
Divorced	-0.482*** (0.119)	-0.456 (0.358)
Widowed	-0.729* (0.501)	-36.941 (1.01e+08)
Level of Education		
Through 8th Grade	-0.197 (0.206)	-0.148 (0.588)
Through 11th Grade	-0.046 (0.105)	0.009 (0.321)
Through High School	-0.133* (0.074)	-0.185 (0.237)
Through College	-0.424*** (0.105)	-0.344 (0.334)
Religion		
Roman Catholic	-0.103 (0.093)	0.320 (0.306)
Jewish	0.379 (0.377)	1.737** (0.772)
Other	0.379*** (0.106)	0.489 (0.345)
None	0.114 (0.085)	0.843*** (0.259)
Region		
North-east	0.481*** (0.080)	0.760*** (0.260)
Mid-west	-0.132 (0.112)	0.49 (0.340)
West	0.424*** (0.088)	0.626** (0.260)
Metropolitan Status		
Non-metropolitan	-0.390*** (0.122)	-1.296** (0.607)
Other Country	0.003 (0.345)	-36.638 (9.10e+07)
Constant	-3.165 (0.194)	-8.323 (0.652)
Observations	6,208	6,208
Standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

**Number of Previous Abortions
Ordered Logistic Regression**

Characteristics	Coef.
Employment Status	0.129** (0.057)
Income	-0.000 (0.000)
Age	5.671e-02*** (4.584e-03)
Race	
Black	0.364*** (0.060)
Asian	0.099 (0.113)
Indian	0.162 (0.241)
Hispanic	0.098 -0.076
Marital Status	
Married	-0.578*** (0.067)
Separated	-0.500*** (0.093)
Divorced	-0.526*** (0.088)
Widowed	-0.637* (0.337)
Level of Education	
Through 8th Grade	-0.321** (0.162)
Through 11th Grade	-0.216*** (0.082)
Through Highschool	-0.152*** (0.057)
Through College	-0.299*** (0.078)
Religion	
Roman Catholic	-0.089 (0.070)
Jewish	0.521* (0.303)
Other	0.214** (0.085)
None	0.174*** (0.065)
Region	
North-east	0.461*** (0.062)
Mid-west	-0.140* (0.079)
West	0.358*** (0.068)
Metropolitan Status	
Nonmetropolitan	-0.505*** (0.084)
Other Country	-0.014 (0.262)
Observations	6,208

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

one previous abortions increases with age. Also, the logged odds of having had between two and four previous abortions as opposed to one or less is higher for employed women than for unemployed, for black and Hispanic women relative to white women, for women who reside in the rest of the U.S. relative to the south part of the country. In addition, being married, separated or divorced decreases the logged odds of having had between two and four previous abortions over having less than one previous abortion.

Furthermore, the logged odds of having more than four previous abortions over the probability of having less or equal to one previous abortions increases by 0.14 for an increase in age and decreases for an increase in income. Also, black women have higher logged odds of having more than four previous abortions as opposed to less or equal than one relative to white women. The logged odds ratios of having more than four previous abortions increases for women of Jewish or no religious denomination relative to women who identify themselves as Protestant. In addition, the women who live in a nonmetropolitan area have smaller logged odds of having had more than four previous abortions over having had less or equal to one previous abortion relative to women who live in metropolitan areas.

Ordinal Logistic Regression Analysis

The third model presents an ordered logistic regression for the dependent variable. Age is statistically significant at the 1% confidence level, while the binary variable for employment status

is statistically different from zero at the 5% confidence level. Furthermore, the dummy variables for married, separated, and divorced are statistically significant at the 1% confidence level, while widowed is statistically significant in difference from zero at the 10% confidence level. The dummy variables for nonmetropolitan status and no religious affiliation are also statistically significant at the 1% confidence level. All of the dummy variables for education are statistically different from zero at the 1% confidence level, except the dummy for having completed 8th grade which is significant at the 5% confidence level. We establish that for an increase in age, *ceteris paribus*, the ordered log-odds of the number of previous abortion a woman has had, is expected to increase by 0.006 units. Thus, a woman is more likely to have had a higher number of previous abortions as age increases holding everything else constant. In addition, the ordered logit for employed women having had more previous abortions is 0.13 higher than for unemployed women, if the other variables in the model are held constant. The ordered log-odds for black women of having had a higher number of previous abortions are 0.36 units higher for non-blacks relative to white women. Furthermore, there is a positive relationship between a woman having had a higher number of previous abortions and being of Jewish, other or no religious denomination as opposed to being Protestant, *ceteris paribus*. Residing in the west part of the U.S. increases the ordered log-odds estimate of having had more previous abortions by 0.36 units.

Number of Previous Abortions Poisson Regression	
Characteristics	Coef.
Employment Status	0.059** (0.030)
Income	-0.000 (0.000)
Age	3.517e-02*** (2.252e-03)
Race	
Black	0.227*** (0.031)
Asian	0.060 (0.060)
Indian	0.086 (0.124)
Hispanic	0.034 (0.040)
Marital Status	
Married	-0.242*** (0.035)
Separated	-0.160*** (0.047)
Divorced	-0.262*** (0.047)
Widowed	-0.455** (0.207)
Level of Education	
Through 8th Grade	-0.117 (0.082)
Through 11th Grade	-0.071* (0.043)
Through Highschool	-0.059** (0.029)
Through College	-0.165*** (0.042)
Religion	
Roman Catholic	-0.015 (0.037)
Jewish	0.341** (0.142)
Other	0.125*** (0.043)
None	0.107*** (0.034)
Region	
North-east	0.269*** (0.032)
Mid-west	-0.036 (0.044)
West	0.205*** (0.035)
Metropolitan Status	
Non-metropolitan	-0.316*** (0.050)
Other Country	-0.063 (0.147)
Constant	-0.977*** (0.076)
Observations	6,208
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Furthermore, the ordered logistic regression model establishes a negative relationship between all of the dummy variables for marital status and the outcome variable. In other words being married, separated, divorced, or widowed decreases a woman's ordered log-odds estimate of having had more previous abortions relative to a woman who has never been married. In addition, the ordered log-odds for having had multiple abortions are negative for a woman who has completed her education through 8th grade, through 11th grade, through high school and through college relative to having completed only some years in college. The ordered logit of having had more previous abortions is also .51 units lower for women in nonmetropolitan areas relative to women in metropolitan areas.

- *Poisson Regression Analysis*

The fourth model we study is a Poisson regression. The variables for employment status and age are statistically significant at the 10% and 1% levels respectively. The dummy variable for black is also statistically significant at the 1% level. All of the dummy variables for marital status and the dummy variables for other or no declared religious affiliation are statistically significant in difference from zero at the 1% level. So is the dummy variable for metropolitan status.

The results of the Poisson regression indicate that an increase in age would lead to 0.04 units increase in the logs of expected counts, *ceteris paribus*. The difference in the logs of expected counts is 0.06 units for employed compared to unemployed women holding all other predictor variables constant. In addition, the differences in the logs of expected counts will on average be 0.23 units for black women compared to non-blacks relative to white women. Furthermore, there is a negative relationship between all of the marital status dummies relative to the dummy variable for never been married and the number of previous abortions – the difference in the logs of expected counts of the number of previous abortions will decrease. There is also a negative relationship between the dummy variables for education and the number of previous abortions – if a woman has graduated from high school or from college relative to having some years of college education, the logs of expected counts of the number of previous abortions decrease respectively by 0.06 and 0.16 units. If a woman lives in a metropolitan area, the difference in the logs of expected counts will be 0.98 units lower relative to women who live in a metropolitan area.

VII. Discussion

When comparing the results of the regressions, they confirm our *a priori* expectations based on our knowledge and the conclusions presented in the existing literature. The number of previous abortions increases with age. On average, black women are more likely to have had more previous abortions relative to whites. Also, the number of previous abortions decreases as women attain higher levels of education relative to completing some years of college. This may be caused by women who want to receive a higher return on their investment in education

(college). Furthermore, the number of previous abortions is expected to be lower for women who are or have been married, are widowed or separated relative to women who, on average, have never been married. This can be explained by the relatively higher opportunity cost of a pregnancy carried to term for a single woman. In addition, women from nonmetropolitan areas on average have a lower number of previous abortions relative to women who reside in metropolitan areas. In addition, the less strongly a woman is religiously affiliated, the more she is likely to have had a higher number of previous abortions.

None of the models in our study perfectly describes the relationship between the number of previous abortions a woman has had and the socioeconomic and demographic characteristics that define her because of various shortcomings. Nevertheless, we believe that the Poisson regression model used gives the best representation of this relationship because it is specifically designed to examine models in which the response variable is a count variable. The shortcomings of the Poisson regression in this study are the result of the over dispersion of the data due to the 25% difference between the mean and the variance of the number of previous abortions. In spite of this, the Poisson regression is superior to OLS, as the latter is not applicable for non-continuous outcome variables, which is evident in the low R-squared value (0.07). The Poisson regression is also preferred to the multinomial logistic regression because it gives a good representation of the constantly increasing nature of the dependent variable. The multinomial and ordinal regressions do represent the relationship between our dependent variable and the predictors in the model with a varying degree of success. However, the multinomial logistic regression does not account for the increasing nature of our dependent variable. The ordinal logistic regression does account for the change in the outcome variable, but it assumes that the distances between the individual levels are unknown. Since in our model the dependent variable changes at a rate of one, we believe that the Poisson regression provides the best model for our study.

The ideal data for a study on female reproductive behavior by focusing on past abortion instances is panel data that observes the behavior of a randomly selected sample of women throughout their reproductive lifespan, as opposed to cross-sectional data. This would allow for a better understanding of how women's characteristics influence the average number of previous abortions. A further expansion can be achieved if the sample has pregnancy outcomes as its units of analysis – it should include the number of live births, number of induced abortions and number of spontaneous abortions. In other words, the sample would consist of women who are not pregnant; in the case of a pregnancy there are three possible outcomes: live birth, spontaneous abortion or induced abortion. This will increase the depth of the study of women's reproductive behavior by introducing the concept of choice and provide a better understanding of why women seek an abortion and what had influenced their decision to have had a previous abortion. This would also allow us to make better predictions about future reproductive patterns in women who have had a previous abortion.

Thus, given that the dataset is expanded, further research should focus on exploring the relationship between the number of past and possible future instances of abortion. Furthermore, the response rate on what are considered “sensitive” questions, such as those regarding income, race, and even the number of previous abortions, is relatively low. So, it is important both for providers and legislators to study the factors behind these phenomena in order to ensure more accurate and comprehensive responses. This would eliminate bias in and enhance the accuracy of studies that focus on women who abort. Further research can also investigate the relationship between the choice to have an abortion and possible lack of provider availability in nonmetropolitan areas which can lead to overreporting in metropolitan areas.

The results presented in this study describe the relationship between the average number of abortions a woman has had and the socioeconomic and demographic characteristics that describe her best. In order to reduce the number of abortion, policy-makers need to be informed on what characterizes the women who have had a higher number of previous abortions. Furthermore, there needs to be a continuous and coherent effort on the state and national level to collect individual-level data on the specific characteristics of women who seek legal abortions. This study illustrates through quantitative methods the relationship between those characteristics and the number of previous abortions a woman has had in order to emphasize the importance of targeting those women specifically and providing them with adequate care and access to services.

—BIBLIOGRAPHY—

- Baker, Peter. “Obama Reverses Rule on U.S. Abortion Aid.” *The New York Times*. 01/24/2009 Section A p. 13
- Bankole, Akinrinola, Taylor Haas and Susheela Singh. “Reasons Why Women Have Induced Abortions: Evidence from 27 Countries.” *International Family Planning Perspectives* 24:3 (1998): 117-27.
- Berg, Cynthia, Sonya V. Bowens, Jeani Chnag, Joy Herndon, Wilda Y. Parker, Lilo T. Strauss, and Suzanne B. Zane. 2004. Morbidity and Mortality Weekly Report (Producer) Abortion Surveillance—United States, 2001. Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion: Atlanta GA (Producer and Distributor)
- Binkin, Nancy J., Ellen Blain, Stanley K. Henshaw, and Jack C. Smith. “A Portrait of Women Who Obtain Abortions.” *Family Planning And Perspectives* 17:2 (1985): 90-6.
- Darroch, Jacqueline E., Stanley K. Henshaw, and Rachel K. Jones. “Patterns in Socioeconomic Characteristics of Women Obtaining Abortions in 2000-2001.” *Perspectives on Sexual and Reproductive Health*. 34:5 (2002) 226-35.
- Darroch Jacqueline E., Stanley K. Henshaw, and R.K. Jones. 2004. 2001-01 National Survey of Contraceptive Use Among Women Having Abortions. (Data Set R3, McKean, E.A. & Card, J.J.) New York, NY: The Alan Guttmacher Institute (Producer). Los Angeles, CA: Sociometric Corporation, Data Archive on Adolescent Pregnancy and Pregnancy Prevention (Producer and Distributor).
- Dauphinee, Lindsay E., Lawrence B. Finer, Lori F. Frohwirth, Ann M. Moore, and Susheela Singh. “Reasons U.S. Women Have Abortions: Quantitative and Qualitative Perspectives.” *Perspectives on Sexual Reproductive Health* 37:3 (2005): 110-8.
- Finer, Lawrence B.; Henshaw, Stanley K. “Estimates of U.S. Abortion Incidents, 2001-2003.” *Guttmacher Institute*. August 3, 2006.
- Henshaw, Stanley K., and Kevin O’Reilly. “Characteristics of Abortion Patients in the United States, 1979 and 1980.” *Family Planning Perspectives* 15:1 (1983): 5-16.
- Henshaw, Stanley K., Lisa M. Koonin, and Jack C. Smith. “Characteristics of U.S. Women Having Abortions, 1987.” *Family Planning Perspective* 23:2 (1991): 75-81.
- Powell-Griner, Eve, and Katherine Trent. “Differences in Race, Marital Status, and Education Among Women Obtaining Abortions.” *Social Forces* 69:4 (1991): 1121-41.

READING ADAM SMITH: UNDERSTANDING THE MISINTERPRETATIONS & THE FALLACY OF THE “ADAM SMITH PROBLEM”

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ABSTRACT

This paper investigates Adam Smith’s intricate vision of human motivation and seeks to expose the fallacy of the “Adam Smith Problem”. Through an expansive study of the famed economist’s two most prominent works, *An Inquiry into the Nature and Causes of the Wealth of Nations* (*WN*) and *The Theory of Moral Sentiments* (*TMS*), I will show that the two are perfect complements of one other and that Adam Smith did not set down in one place his views on the nature of man (Coase, 1). Adam Smith saw man for what he truly is, dominated by self-interest but not without concern for others, able to reason but not necessarily able to reach the best or right conclusion while all the time seeing one’s own actions through a veil of self-delusion. *WN* and *TMS* are equally important books, and in order to understand the economics and philosophy of Adam Smith, both must be read and studied.

INTRODUCTION

Adam Smith’s two most prominent works, *An Inquiry into the Nature and Causes of the Wealth of Nations* (*WN*) and *The Theory of Moral Sentiments* (*TMS*), are to many economists and philosophers, very different, and even contradictory in the way each defines and advances the concept of human motivation. This notion of contradiction has led to the creation of what is referred to as the “Adam Smith Problem.” Many economists and philosophers alike have used these so-called contradictions and inconsistencies to attack the authorial integrity of Adam Smith’s work, their main argument being that *WN* is built on self-interest and *TMS* is built on altruism and sympathy. This argument presumes a single motivation, one of either self-interest or altruism. This idea that human behavior rests upon a single motivating factor, regardless of which you believe, seems incredibly simplistic and naïve. This paper will explain Smith’s intricate vision of human motivation through an expansive study of his two most prominent works. It will argue that *WN* and *TMS* are perfect complements of one another and that Adam Smith did not set down in one place his views on the nature of man (Coase, 1).

Section one of this paper will be a detailed discussion of why it is difficult to know exactly what Smith meant in his writings, particularly in today’s modern context, and why the concept of the “Adam Smith Problem” ever came to be. Section two will briefly discuss the book, *Adam’s Fallacy: a Guide to Economic Theology*, and will develop the book as a reference point for the later sections when discussing the frequent misinterpretations and misrepresentations of Adam Smith’s writing. Section three will begin to unravel the complex relationship

between altruism, or benevolence, and self-interest. Section four will investigate Adam Smith's view of man. Section five will specifically scrutinize the concept of the "impartial spectator." Section six will discuss the importance of both benevolence and self-interest in the capitalist economic system, and the final section, section seven, will be the conclusion and summation of the findings.

READING ADAM SMITH

The meaning of a word lies in its use (Tribe, 617). Words, more than anything else, tell us a person's opinions, feelings, and intentions. However, when it comes to understanding the writings of a person who is deceased, and who has left little behind besides their works to let us know who they were, there lies an inherent risk of interpreting the person's writings incorrectly. Without the person being there to explain his/her meaning, misinterpretation is bound to happen on a variety of scales. This problem is compounded if you are trying to understand and interpret the writings of someone who died over 200 years ago. Without the right historical context, it is extremely hard to understand the writer's motivations and the circumstances that shape his/her opinion.

Adam Smith is one of the greatest victims of this misinterpretation and misrepresentation. Smith's reputation as the father of modern economics will most likely endure the test of time, and that is a title with which many would agree. The problem is not the title however, but the concepts that are associated with the name Adam Smith.

The canonical status of *WN* has survived successive revisions, with associated adjustments in emphasis and interpretation to what the name "Smith" stands for along the way (Tribe, 609). Economic and historical journals continue to publish articles dealing with particular aspects of Smith's contributions, with Smith's concepts broached by the understanding of Smith as an "economic liberal." Famed economist George Stigler once noted that *WN* is a "stupendous palace erected upon the granite of self-interest" (Tribe, 622). This common understanding of Smith offers vindication of his arguments for natural liberty, self-interest, and laissez-faire. However, this understanding of Smith is incorrect due to how the term "self-interest" was used by Smith in his time versus how the term is understood today.

Adam Smith understood self-interest as the awareness and care of one's own well-being. Today's understanding of the term "self-interest" implies an inherent selfishness that goes beyond one's care for their personal well-being and enters the realm of greed. Therefore, the perception of Smith, which is largely based on the misinterpretation on what Smith meant by self-interest, set forth by economists such as Stigler, is extremely simplistic and naïve, something that has been recognized by economists, historians, philosophers, and psychologists over the past fifty or so years.

The understanding of *WN* has been expanded, and a more sophisticated image has emerged. Four broad trends can be distinguished in recent studies.

First, there is the conventional appraisal of Smithian analysis by historians of economics. The second tendency is for historians to locate Smith's writing in a wider cultural and political context. The third trend reconstructs the eighteenth-century Smith as a critic of twentieth-century economies. And lastly, the fourth trend emphasizes a "cultural-historical" Smith, which makes him more accessible to analysis to those whose domain of work has recently shifted away from "literature" towards a general study of textual politics (Tribe, 610).

Recent interpretations of Smith have drawn upon some of his other writings besides *WN* and *TMS*. Until recently, the world's understanding of Smith's contributions had been shaped by two centuries of commentary, based almost exclusively on *WN* and *TMS*, where the textual foundation for this commentary had been altered through misinterpretation. To appreciate how recent interpretation differs from older understanding, one needs to know something of the biography of Smith's work (Tribe, 610).

In 1752, Smith was appointed Chief of Moral Philosophy in Glasgow. His Glasgow lectures were the origins of both *WN* and *TMS*. As stated earlier, however, Smith's reputation is primarily based on *WN* - a reputation that links him directly to classical economics. In accordance, the book was read as a series of propositions about employment, the benefits of freedom of commerce, the nature of capital accumulation, and a rebuttal of Physiocratic and Mercantilist systems of economic thought (Tribe, 613).

German scholars sought to broaden their understanding of Smith by comparing the psychological assumptions of *WN* and *TMS*. These scholars found the assumptions of the two works contradictory, and thus the "Adam Smith Problem" was born. Smith's moral philosophy and economics were labeled incompatible by these German scholars, bringing into question whether Smith had held a unifying vision of civil society. Whether or not this argument ever had merit will be discussed in depth later, but for now it is irrelevant. What is relevant here is that there was a renewed interest in Smith's work. There was a broadening of understanding of Smith as an author and this led to the rediscovery of *WN* as a "history and a criticism of all European civilization" (Morrow, 157).

As stated earlier, recent works have used other writings by Smith to help understand the concepts of *WN* and *TMS*. These lectures, notes, and correspondence however, have revealed little on his private thoughts and beliefs. As a consequence, his published works remain the only chief resource to understanding his motives and intentions. Nevertheless, the limited correspondence, lectures, and essays that have been discovered have been able to provide a new context for the rereading of *WN* (Tribe, 615). The question is, how should one go about rereading Smith? This will be discussed in the following sections.

A common argument used by economists when it comes to reading Adam Smith is that Smith's relevance to us is a function of the degree to which his arguments retain their validity, propositions advanced by Smith being directly applicable to, and testable against, modern issues (Friedman, 7-8). This is a very

ahistorical approach. It should be noted however, that when most economists decide to write on a given subject, histories of economics are generally written by economists for other economists (Tribe, 615). Here, economists use language and other familiar economic tools, which then leads to groups of writings that are all addressing the same issue and reviewing the same information. The approach of the historian, as mentioned earlier, is a new way to look at economics, because the historians' reconstruction of past events and arguments presumes that their significance and meaning is not immediately accessible to us, therefore eliminating an easy, generic answer. This allows people to learn to think about Adam Smith as something other than a proto-neoclassical economist, and allows us to discover new and more meaningful ways of making use of our knowledge of markets, politics, and wealth (Tribe, 616).

The problem with this historical approach is that it is limited in its ability to understand Smith. This approach attempts to establish a connection between modern economics and past writings, which creates problems because what Adam Smith was writing about in the eighteenth century has a completely different context if it is applied to today's economy. We learn more from Smith by not converting him into a twentieth-century critic, but by understanding him rather as an eighteenth-century moralist (Tribe, 629). In addition, not all of his writings are given equal status, as mentioned earlier (*WN* being the dominant work studied and quoted). His lectures and correspondence are widely ignored, and only those sections of *TMS* that can be directly brought into relation with the economic themes of *WN* tend to be mentioned (Tribe, 616). If we are to understand what Smith is saying properly, then one cannot impose upon his works our modern understanding of economics, language, and politics. This historical approach to writing intellectual history however, does allow for a more in depth study of economic and political language during Smith's time.

Another important development in the focus on language in economics is associated with the "linguistic turn" in humanities. This method subjects economic arguments to analysis with instruments that are usually found in the hands of literary theorists, instruments such as style, metaphor, and narrative (Tribe, 618). The purpose is to emphasize that all discourse deploys strategies of persuasion. Smith treated the domain of rhetoric as equivalent to human communication, and therefore a pathway to an understanding of human motivation (Tribe, 618). This focus directs our attention to the manner in which use of language uses "facts" as devices to make an argument legitimate.

New historical and linguistic avenues have opened the possibility of the reconstruction of the world's understanding of Adam Smith. These are derived from the study of modern political theory, which concluded that Smith was not just an economist, but a theorist of civilization and human conduct. Smith is an analyst of commercial society, ethics, and social progress, something that conventional histories of economics has neglected (Tribe, 619).

A NON-CAPITALIST MISINTERPRETATION OF SMITH

There are many misinterpretations of Adam Smith and his overwhelming contributions to the study of economics and philosophy. Much of this paper will criticize the misinterpretations of capitalist/free market economists; however, these economists are not the only ones doing the misinterpreting. In this section, I examine a recent misrepresentation. The work in question is titled *Adam's Fallacy: a Guide to Economic Theology* and it is written by institutionalist economist Duncan K. Foley.

According to the author, Adam's fallacy "lies in the idea that it is possible to separate an economic sphere of life, in which the pursuit of self-interest is guided by objective laws to a socially beneficent outcome, from the rest of social life, in which the pursuit of self-interest is morally problematic and has to be weighed against other ends" (Foley, xiii). The author notes that Smith is alleged to have argued that the consistent pursuit of self-interest would lead to beneficial social outcomes, and Foley suggests that this perspective has become the dominating principle of modern economics, which sees Smith as its founder (Foley, xiii).

There are many fundamental problems with the author's claim and the only fallacy here is Foley's. First, at no point does Adam Smith ever suggest that there are two separate spheres of life, one being economic and one being social. Although the concept of self-interested behavior equaling increased social wealth and well-being is all too commonly associated with Smith, it was not Smith who created this idea. Adam Smith at no point states that the pursuit of self-interest will always lead to the betterment of society. This was first argued by Bernard Mandeville in his work *Fable of the Bees*, which was strongly criticized by Smith. Mandeville believed benevolence did absolutely no social good. In response, Smith's opening sentence for *TMS* was this:

How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it. (Smith, 1790; par.1, pt.1, sec.1, ch.1)

As we can see from the opening passage of *TMS*, Smith was certainly not a believer in the strict and narrow concept that only self-interest served in generating social wealth, but that he believed benevolence played a vital role in human motivation.

In addition, Foley makes the following claim that what made Smith's book unique was its ability to "put forward a clear vision of how capitalist society might develop" and to address:

more directly than anyone else the central anxiety that besets capitalism - the question of how to be a good person and live a good and moral life within the antagonistic, impersonal, and self-regarding social relations that capitalism imposes...By

being selfish within the rules of capitalist property relations, Smith promises, we are actually being good to our fellow human beings. (Foley, 2)

This is the crux of Adam's fallacy and "neither Smith nor any of his successors has been able to demonstrate rigorously and robustly how private selfishness turns into public altruism" (Foley, 3). This again is a severe misinterpretation that is solely based on the common misconceptions of *WN*, and holds no reference to *TMS*, which, makes this claim uninformed and more importantly irresponsible.

The third problem with Foley's argument is that he insists that Smith is to blame for the savagery and competitiveness of today's capitalistic economies. Whether or not one believes in capitalism as the best economic model is another debate in and of itself and is not an important question for this paper. What is important to think about is whether it is correct to blame someone for the misinterpretations of their work or does the blame lie on the shoulders of those scholars who are doing the misinterpreting. What we are seeing here is the classic mistake of reading Smith as if he were a modern day economist. Due to this critical mistake, Foley, an institutionalist, arrives at many of the same erroneous conclusions free market capitalists have traditionally arrived at when reading Smith.

Foley's *Adam's Fallacy: a Guide to Economic Theology* is an important example because it demonstrates the depth of the misinterpretation of Adam Smith. The majority of this paper is dedicated to criticizing the misinterpretations of free market capitalists, who in all respects view Smith as the godfather of economics. Foley is an institutionalist, who is very critical of Smith and his assumed role in the current state of capitalism. However, as I have noted here, Foley trips over the same misinterpretations that the capitalists do, demonstrating just how critical it is to address this issue of the "Adam Smith Problem."

THE COMPLEX RELATIONSHIP BETWEEN ALTRUISM & SELF-INTEREST

The first step in dissecting Smith's complex relationship between altruism and self-interest is to understand his system of natural liberty. Smith's system of natural liberty is built on two key assumptions - one at the individual level and one at the social level. At the individual level, Smith said that society is composed of individuals who are all similar and are guided by an innate human propensity to trade and pursue self-interest. On the social level, Smith said that this system, to the extent that it accommodates human nature and to the extent that it establishes social harmony through economic growth, is an ideal social order:

All systems either of preference or of restraint, therefore, being thus completely taken away, the obvious and simple system of natural liberty establishes itself of its own accord. Every man, as long as he does not violate the laws of justice, is left perfectly free to pursue his own interest his own way, and to bring both

his industry and capital into competition with those of any other man, or order of men. (Smith, 1776: 51)

These two assumptions are the pillars that hold together Smith's beliefs and theories, and are particularly important in understanding how *WN* was written.

WN was written as an analysis of the social phenomena he saw during the Industrial Revolution that arose due to self-interest. At no point in *WN*, however, does Smith suggest that self-interest is the single motivating factor of all human beings. *WN* was an attempt to find a basis on which people could live together when the Church no longer provided an unquestioned set of answers to inquiries about how society should be organized (Backhouse, 132). In addition, Smith was exploring how commercial society could prosper as a whole, even when men were pursuing their own self-interest (Backhouse, 123). By doing this, Smith could suspend morality when answering economic questions and create a model where economic growth was possible.

Some economists, including Jacob Viner, believe that the most important inconsistency between *TMS* and *WN* is that in *TMS*, Smith assumes that there exists a natural harmony, and in *WN*, Smith abandons this belief. I believe this is due to a gross misunderstanding of the two works. First, it should be noted that *TMS* is not an abstract treatise upon virtuous conduct, but a study of human psychology. It was written to show how self-interest, mitigated by sympathy and self-command, can result in prudent and sometimes beneficent actions (Tribe, 622). In comparison, *WN*'s purpose was to explain how commercial societies originate and create wealth. Put simply, *WN* is a study of the organization of economic life. It should be understood however, that Smith does not analyze how they are governed (Tribe, 623). As we can now see, *TMS* and *WN* are composed according to two very distinct forms of rhetorical strategy and the claim of inconsistency between the two books in regards to natural harmony is a weak claim at best.

Of course, there are other so-called inconsistencies other economists have pointed to over the years. One important claim is that in *TMS*, human action is influenced by benevolence and in *WN* this is absent. As mentioned before, this is the most common reason given for the creation of the "Adam Smith Problem." Economists who believe this claim commonly cite the following passage: "It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our own dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages" (Smith, 1776: 14). What these economists forget is what Smith says earlier in the same paragraph, that in a civilized society, man needs cooperation and assistance of great multitudes, because in his whole life he is going to only find a few friends (Smith, 1776: 14). Here, the intertwined nature of altruism and self-interest can be seen, and in order to understand it, Smith's view of man needs to be understood.

SMITH'S VIEW OF MAN

Adam Smith's view of man and human nature are important in helping us to understand his economics. For better or for worse, Smith is most famous for his development of the case for laissez-faire, the concept that government should not control economic activity. According to Smith, an economic system is governed by natural laws and is driven by prudence and the pursuit of self-interest. As stated earlier however, Smith never says self-interest is the sole motivating factor behind human behavior. This points out the main flaw in the creation of the Adam Smith Problem, because this problem presumes a single motivation, one of self-interest or altruism, a concept that relies on two extremes and does not give room for multiple motivations.

Smith's writings actually point out that there are multiple motivating factors in human behavior. Smith asserts that people do not only rely on the benevolence of others and that it is quite possible to be self-interested and have other concerns as well. Self-interest and benevolence have a multifaceted and complementary relationship with one another, something of which Smith is well aware and fully expects the reader to understand.

According to the writings of Adam Smith, sympathy is the basis for people's concerns for others. We form our idea of how others feel by considering how we would feel in like circumstances (Coase, 2). This concept refers back to the earlier section of the paper which discusses the vast differences between the writings of Bernard Mandeville and Adam Smith and how Smith believed that both self-interest and benevolence play a vital role in human motivation. Put simply, if one realizes that something is making another person unhappy, that realization makes oneself unhappy and vice versa. These feelings of sympathy are strengthened by the fact the mutual sympathy is in itself a pleasure. "Nothing pleases us more than to observe in other men a fellow-feeling with all the emotions of our own breast" (Smith, 1790; par. 1, pt. 1, sec. 1, ch. 2). Because of this, humans are led to see ourselves as others see us.

Next, Smith investigates human nature when it comes to one's own well-being, whether it be financially or dealing with one's health, when compared to that of a complete stranger. Smith states that the loss or gain of a small interest of one's own appears vastly more important than the greatest concerns of a complete stranger. Smith provides a great hypothetical example of this conundrum in *TMS*, where he points out that if a man from Europe were to hear of a great disaster in China, where a hundred million people lost their lives, he would feel an initial sorrow for the people and might stay in a melancholy state for a time, but would sooner than later go back to his normal business:

Let us suppose that the great empire of China, with all its myriads of inhabitants, was suddenly swallowed up by an earthquake, and let us consider how a man of humanity in Europe, who

had no sort of connexion with that part of the world, would be affected upon receiving intelligence of this dreadful calamity. He would, I imagine, first of all, express very strongly his sorrow for the misfortune of that unhappy people, he would make many melancholy reflections upon the precariousness of human life, and the vanity of all the labours of man, which could thus be annihilated in a moment. He would too, perhaps, if he was a man of speculation, enter into many reasonings concerning the effects which this disaster might produce upon the commerce of Europe, and the trade and business of the world in general. And when all this fine philosophy was over, when all these humane sentiments had been once fairly expressed, he would pursue his business or his pleasure, take his repose or his diversion, with the same ease and tranquillity, as if no such accident had happened. The most frivolous disaster which could befall himself would occasion a more real disturbance. (Smith, 1790; par.4, pt.3, ch.3)

Smith goes on to say that if that same person were to know that he would lose his little finger the following day, the man would not be able to sleep all night. As stated earlier, the man knowing of the tremendous loss in China would snore throughout the night, and in all likelihood would not give the disaster a second thought.

Smith suggests two reasons for this. The first is one of self-interest, which is discussed within the context of the story. The second reason is that every individual is naturally more attached to his own society than to any other. Smith's argument here is that benevolence is strongest within the family, and as one moves further and further down the line, away from family and friends, we do not only see an absence of benevolence but the presence of malevolence. Smith believes benevolence operates weakly when dealing with strangers and I am strongly inclined to believe him.

Nevertheless, many economists would view Smith's example as a clear indicator that self-interest is the sole motivator in human decision making. This statement however, completely ignores the subtlety of Adam Smith's mind. Smith follows up on his explanation of his previous example by asking the following question: suppose that it were possible to prevent the loss of those hundred million lives by sacrificing his little finger, would a man of humanity be unwilling to make the sacrifice (Coase, 5)? Smith answers this question by stating that while our passive feelings are almost always so selfish, our active principles often are generous. He believes that it is not the soft power of humanity or a spark of benevolence in the heart that counteracts the strongest impulses of self-love, but it is a stronger, more powerful love of what is honorable and noble and the feeling

of superiority of our own characters (Smith, 1790; par.4, pt.3, ch.3). Therefore, it is not the love of mankind that makes one willing to sacrifice, but it is because he/she sees himself/herself through the eyes of an impartial spectator.

THE “IMPARTIAL SPECTATOR” & BOURGEOIS VIRTUE

The concept of the “impartial spectator” is rooted in the writings of esteemed philosopher and political economist Bernard Mandeville. According to Mandeville, an individual must take account of the desires of others in seeking to attain his or her own ends because these desires represent potential obstacles to the attainment of satisfaction (Tribe, 621). Smith took this concept from Mandeville and expanded and modified it into his own idea of the “impartial spectator.” Smith’s model illustrated a system of social reciprocity, where each person judges others as a spectator. According to Smith, society acts like a mirror where all actions are rehearsed and conduct is governed by an internalized construct, the impartial spectator. Therefore with this understanding of Smith’s impartial spectator, we can deduce that the Smithian conception of self-interest is not an injunction to act without moral scruple. Instead, it is embedded within the framework of social reciprocity, which allows for the formation of moral judgment (Tribe, 621).

Smith, however, was not oblivious to the fact that some individuals would be less responsive to the promptings of the impartial spectator. Smith argued that individuals tend to think more highly of themselves than what is really warranted. “We are all naturally disposed to overrate the excellencies of our own character” (Smith, 1790; par.34, pt.3, ch.2). Nevertheless, as discussed earlier, Smith did not believe that these introverted feelings left people unable to act sensibly or morally, and this desire to act morally is reflected in the codes of conduct seen throughout society. The “impartial spectator” is then embodied in the codes of conduct that individuals and societies create. We conform to the codes of conduct because we wish to be admired by others. According to Smith, we not only have a desire to be approved of, we also wish to be what is approved of in others (Smith, 1790; par.7, pt.3, ch.2). The liberty on which commercial society is based implies a moral order that links the individual to sociability.

The notion of the “impartial spectator” is seen in both *WN* and *TMS*. The problem, however, is that this concept is seen by many as the foundation of *TMS* but not *WN*. The reason for this problem lies with their misinterpretation of the “impartial spectator” as an all-knowing guide instead of seeing it as an evaluation tool for judgment. Put simply, the concept of the “impartial spectator” is not an effective way to analyze economic decision-making by itself. This is not to say that morality does not play a role in economic deliberation, but there are many other factors, such as the effect it has on your family, the repercussions it will have on the local, state, or global market, and how it will affect your relationships, that go into making a sound and beneficial economic decision. *TMS* argues in favor of this as well, arguing that the greatest cause of corruption of moral sentiments

is admiration for the rich. The concept of “impartial spectator” by its very nature counters the economic desires of people.

There is a link, however, between the “impartial spectator” and economics. It is a link between culture and economy; this is known as a “bourgeois virtue.” What is meant by bourgeois virtue is not an apology for every mistake; Smith was opposed to the reduction of ethics to greedy interest. Adam Smith’s intention was to create an ethical system for the bourgeoisie (McCloskey, 301). Smith, of course, did not approve of all the activities of the bourgeoisie, and he noted that the interests of the bourgeoisie are “always in some respects different from, and even opposite to, that of the public” (Smith, 1776: 267). Therefore, prudence and solidarity are needed for a commercial society to work. It should be easy to see how prudence depends on solidarity, but it should also be noted that solidarity depends just as much on prudence. Who we are depends on what we do and our ethics depend on our business (McCloskey, 310). What this means is that commerce is capable of teaching ethics. Most economists would disagree with this statement, believing that the ethics of the bourgeoisie erode virtue.

I believe Adam Smith would disagree with these economists, because overall the virtues of the bourgeois are the virtues that are necessary for commerce and government. The uncertainty and skepticism of trade is common in the market. Therefore, the “dogma of doubt” is an important bourgeois virtue and an attitude that is perfectly suited for the vagaries of the marketplace (McCloskey, 311). Charity is another bourgeois virtue and is founded in the bourgeois norm of reciprocity. Bourgeois virtue is capable of keeping bourgeois vice in check. This process is what creates transactions between people. Nowadays, in rich countries, about a quarter of national income is earned from merely bourgeois and feminine persuasion (McCloskey, 312). In addition, division of labor is the consequence of propensity and it is the necessary consequence of reason of speech (Smith, 1776: 25). Smith also referred to speech as the characteristic faculty of human nature (Smith, 1790; par.25, pt.7, sec.4). The bourgeoisie work with their mouths and are proof of the importance of communication. Therefore, according to Smith, there are many characteristics of the bourgeoisie that are, in fact, good.

BENEVOLENCE, SELF-INTEREST & THEIR ROLE IN CAPITALISM

Adam Smith was not a strict advocate of laissez faire as so many believe him to be. Smith saw that self-interest and competition were sometimes treacherous to the public interest they were supposed to serve, and he was prepared to have government exercise some measure of control over them where the need could be shown and the competence of government for the task demonstrated (Viner, 231-232). He knew that laissez-faire could be both good and bad.

It is in my opinion that capitalism is the hope of the poor of the world; therefore capitalism cannot be unethical or bad in nature. Capitalism needs to take the bourgeois virtues seriously and nurture society. The world market is run by the bourgeoisie; therefore bourgeois virtue cannot be ignored. This is the Adam

Smith that emerges when careful attention is paid to his readings. Commonly believed metaphors, such as the treatment of the “invisible hand” as a metaphor for the price mechanism, need to be seen in a new light. The invisible hand should now also be viewed as an allusion to the manner in which self-interest and sociability combine to render commercial society virtuous and prosperous (Tribe, 627). The connection between commerce and liberty can be seen in the interaction of free individuals in the pursuit of their own interests and how that brings an increase in the wealth of all.

Seen in this light, Smith’s argument for the use of the market for the organization of economic activity is very strong. The greatest advantage of the market is that it is able to use the strength of self-interest to offset the weakness and partiality of benevolence (Coase, 28). One should not forget however, the role that benevolence and moral sentiments play in making the market system possible. As Smith notes, society cannot exist among those who are ready to hurt and injure one another at all times (Smith, 1776: 325).

CONCLUSION

More so than anything else, after reading this paper one should see that the relationship between benevolence and self-interest is a complex one. Section one of this paper explained the reasons behind the misrepresentations of Smith and why the concept of the “Adam Smith Problem” was ever conceived. We saw that the canonical status of *WN* has distorted the world’s perception of Smith and his ideas on human motivation and that in order to read Smith correctly, one must take into account all of his writings. Section two used Duncan K. Foley’s book *Adam’s Fallacy: a Guide to Economic Theology* to point out the depth of the misinterpretations of Adam Smith’s work. We saw here that it is not only capitalists who have misread and misused Smith’s writings, but even economists who believe in other economic systems, like Foley, are fumbling over the same passages and making the same mistakes. In section three we delved deeper into the multifaceted relationship of benevolence and self-interest, pulling apart passages in both works in order to understand how the two books do not counter, but complement each other. Section four took a look at Adam Smith’s view of human nature and shows that there is a balance and connection between self-love and benevolence and that people are capable of a wide range of emotions depending upon how it affects them and the people they are close to. Section five put specific emphasis on Smith’s concept of the “impartial spectator” and how this model is used to understand human motivation and action better. Section six attempted to show how benevolence and self-interest work in capitalism and how the two affect the marketplace. Here, we saw that both benevolence and self-interest have dynamic roles in the creation and running of the marketplace.

There is nothing in Smith’s writings to suggest that the Adam Smith Problem is legitimate. I believe any person can see the fallacies of the Adam

Smith Problem if they read *WN* and *TMS* thoughtfully and carefully. Of course we all hold biases, but if we look only at the words of Adam Smith and fight the tendency to generalize him as a pure economic liberal who paved the way for laissez-faire economics and self-interest (in today's language), we can see Smith and the message of his writings in the right light.

Adam Smith saw man for what he truly is, dominated by self-interest but not without concern for others, able to reason but not necessarily able to reach the best or right conclusion while all the time seeing one's own actions through a veil of self-delusion. According to Smith, a person can have both self-interested and altruistic motivations for his/her actions. At no point does Smith suggest that there is a clear and single reason for mankind's motives, and the only reason the "Adam Smith Problem" was conceived is due to a class of radicals, many of whom wanted to explain social phenomena without reference to a deity, who separated *WN* from moral philosophy because it acquired a more scientific character (Backhouse, 132). *WN* and *TMS* are equally important books, and in order to understand the economics and philosophy of Adam Smith, both must be read and studied.

—REFERENCES—

- Backhouse, Roger E. *The Ordinary Business of Life: a History of Economics from the Ancient World to the Twenty-First Century*. Princeton: Princeton University Press, 2002.
- Brown, Vivienne. *Adam Smith's Discourse: Canonicity, Commerce and Conscience*. London: Routledge, 1994.
- Coase, R.H. "Adam Smith's View of Man." *Journal of Law and Economics*, Vol 19 (1976): 529-546.
- Fitzgibbons, Athol. *Adam Smith's System of Liberty, Wealth, and Virtue: the Moral and political foundations of the Wealth of Nations*. New York: Oxford University Press, 1995.
- Foley, Duncan K. *Adam's Fallacy: A Guide to Economic Theology*. The Belknap Press of Harvard University Press, Cambridge, Massachusetts, 2006.
- Friedman, Milton. "Adam Smith's Relevance for 1976." *Bicentennial Essays*, (1978): 7-20.
- Hunt, E K. *History of Economic Thought: a Critical Perspective*. 2nd ed. Armonk: M.E. Sharpe, Inc., 2002.
- McCloskey, Deirdre N. "Bourgeois Virtue and the History of P and S." *The Journal of Economic History*, Vol. 58 (1998): 297-317.
- Morrow, Glen R. "Adam Smith: Moralism and Philosopher." *Adam Smith 1776-1926: Lectures to Commemorate the Sesquicentennial of the Publication of the Wealth of Nations*. University of Chicago Press, (1928): 156-179.
- Smith, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: W. Strahan and T. Cadell, 1776.
- Smith, Adam. *The Theory of Moral Sentiments*. London: A. Millar, 6th Edition, 1790.
- Tribe, Keith. "Adam Smith: Critical Theorist." *Journal of Economic Literature*, Vol. 37 (1999): 609-632.
- Viner, Jacob. "Adam Smith and Laissez Faire." *The Journal of Political Economy*, Vol 35, (1927): 198-232.

THE STRENGTH OF THE VEBLENIAN CRITIQUE OF NEOCLASSICAL ECONOMICS

Svetoslav Semov

I. Introduction

More than one hundred years ago, Thorstein Veblen wrote a powerful critique of neoclassical economics that castigated the discipline for turning the individual into a “lightning calculator of pleasures and pains, who oscillates like a homogeneous globule”, or equivalently, for the individual’s static maximization of utility based on exogenous preferences. His critique is relevant even today, since there are economists who still continue to criticize the assumptions of *homo economicus* and exogenous preferences, and insist on introducing more realism to economic theory (Tsakalotos 2005, 894). Furthermore, recent developments in game theory and experimental economics, which stand at the cutting-edge of economics today, are far more accommodating to the ideas of institutions that were central to Veblen’s theory than neoclassical economics (Hodgson 2007, 328).

The goal of this paper is to examine the strengths of the Veblenian critique of neoclassical economics. In particular, it investigates whether or not Veblen’s rejection of the axiomatic approaches to economics is merely an attack on neoclassical economics which fails to provide an alternative positive theory (Hunt 2002, 343). Starting with their conception of the individual, going through their theoretical frameworks, and ending with an investigation of how they approach a concrete issue, this paper offers a comparative exposition of the Veblenian and neoclassical approaches to economic theory.

Seven sections follow. The first describes the notion of the individual in orthodox and heterodox economics. The second focuses on the different methodologies of these two strains of economics as developed out of their conceptualization of the individual. The third section presents the mainstream theory of consumption. The theory of Thorstein Veblen is used as a representative of heterodox economics and, consequently, the fourth section describes Veblen’s theory of conspicuous consumption. The fifth outlines a specific case – credit card debt – to which the two theories of consumption are applied. The sixth provides an accommodating picture of Veblenian thinking in the face of mainstream economics. The last section assesses the ideas presented and offers a conclusion.

II. Origins of the concept of the individual in economics

A theory is defined by the way in which it conceptualizes the individual (Davis 2003, 16). Orthodox economics places a greater emphasis on the individual and conceptualizes it as a relatively autonomous and atomistic being. In contrast, heterodox economics regards the individual as a being embedded in social and economic relationships.

The orthodox notion of the individual originates with John Locke and his idea that there must always be something about the individual that remains

unchanged (Davis, 24). The individual's consciousness is disengaged from the world. There is a dualistic separation of the individual from the world. However, this presents the dilemma of how the inner subjective worlds of individuals link with the outer objective world. In *The Wealth of Nations*, Adam Smith (Davis, 24) only superficially resolved the dilemma by using the concept of unintended consequences and the idea that the market worked as if governed by an invisible hand. Yet Smith did not explain the precise mechanisms with which human psychology produced its effects on the market.

At the end of the nineteenth century a new strategy for linking Locke's two worlds emerged – the theory of choice used by the early neoclassicals (Davis, 25). They understood individual human behavior specifically as choice behavior. In contrast to Smith's metaphorical treatment of how subjective interest is at work in the market, neoclassicals explained how subjective interest became material. That was achieved, for example, by using the concept of marginal utility to derive an individual's demand for goods.

Contemporary mainstream economics took the neoclassical approach a step further towards the total elimination of subjectivity. Locke's dilemma was resolved not by making a better connection between subjective and objective but by totally dispensing with the former. Consequently, all psychological content of the concept of the individual was emptied out (Davis, 26). His preferences came to be taken as given, rendering their character irrelevant to the analysis of rational choice.

The heterodox version of the individual originates in the thinking of mid-nineteenth century authors such as Karl Marx and Emile Durkheim. Marx's view of the individual is rooted in the theory of historical materialism (Davis, 109). There are two main components to this theory. The first is that the character of a society's production and associated economic relations explain how its political and cultural relationships develop. The second is that all societies possess two main classes: one which supports the other through its work, and a second to direct the labor of the first. There is not much space for an important role of the individual. The individual is seen as a bearer of class identity and, consequently, not an independent agent. To put it differently, Marx is seen as the principle source of a tradition of economic thinking that treats the individual as being determined by social relationships.

The work of Durkheim further continues this tradition (Davis, 110). He criticizes neoclassical economics for its individualist orientation and contends that human nature is shaped by society. Society is an independent entity and needs to be examined on its own. Furthermore, the group thinks and acts quite differently from the individuals comprising it. As a result, if economic analysis falls on the individual it may fail to explain what takes place at the level of the group.

The framework for thinking about the individual established by Marx and Durkheim is used to various degrees in heterodox economics ever since. Original institutional economics, Marxism, Post-Keynesian, New Institutional and

Austrian economics provide a descriptively richer, contextually subjective, and fuller illustration of the individual than the concept of rational and economic man found in orthodox economics (Wrenn 2006, 489). Through discussions of mental models, structure, and agency, they are able to address the actual range of human behavior and reach beyond simple utility maximizing motivations. This does not suggest that these diverse groups of thought share a common method, but, rather, that, they possess common theoretical ground with respect to the conceptualization of the individual. A major common thread is the interdependence of agent and structure - in other words, interactive agency, where the individuals are affected by each other and by the institutional setting (Wrenn, 489). Clearly, this has its roots in the Marx-Durkheim framework of thought.

III. Methodology

Using this rather simplistic dichotomy between orthodox and heterodox economics, Thorstein Veblen's work could be easily classified as heterodox. Veblen proposed that economics should be reconstructed as a "post-Darwinian" science. Basing his arguments on the core ideas of Darwinism, Veblen insisted on developing causal explanations, where a cause is understood as necessarily involving transfers of matter or energy (Hodgson 2003, 86). Divine, spiritual or uncaused causes are ruled out. When Veblen's understanding of Darwinism - in terms of a commitment to a detailed and sequential causal analysis - is transferred to the realm of economics, it meant that human intentionality and values also have to be explained.

The central tenets of orthodox economics are in stark contrast to those of heterodox economics. The ongoing debate between the two is multi-layered. One of the dimensions of that debate positions the "positive" realm of facts and theory against the "normative" realm of values. In heterodox economics, as observed in Veblen's understanding of Darwinism, the entanglement of values and economic theory is essential, for economics is concerned with reality and values are an integral part of it (Tsakalatos, 894). In contrast, orthodox economics bases its assumptions on *homo Economicus* and exogenous preferences (Tsakalatos 2005, 894). Its proponents claim that it should be devoid of values and based solely on facts. They refuse to consider values as open to rational scrutiny. In other words, they do not require inquiry into their genesis but understand them as "revealed preferences" in the market with a price tag attached to them (Tilman 2006, 103). Furthermore, if their origin is at issue at all, it is for philosophers, sociologists and cultural anthropologists to further inquire.

As already suggested in the preceding section, an important dimension of the debate between orthodox and heterodox economics is based on their conceptualization of the individual. In orthodox economics, the individual and his rationality are viewed as separate or isolated from the rest of society and social relations. This is the so-called "undersocialized conception of human action" (Yilmaz 2007, 842). The individual is seen as having an internalist view

of rationality – he is formed from the inside out (Wunder 2007, 833). Tastes, preferences, and beliefs also come from inside the person and are thus exogenous. The claim here is analogous to the case of values – the field of economics is restricted to internalist rational action, whereas the study of irrational action is relegated to sociology.

In contrast, heterodox economics, as suggested by Veblen’s insistence on a full explanation of human intentionality, employs an externalist view of rationality – tastes preferences and beliefs are socially constructed. Veblen’s concept of the individual is one in which the primary aspects of its beliefs are the result of the groups to which the individual belongs and the social norms and institutions to which the individual adheres (Wunder, 833). As explained later, Veblen’s depiction of “invidious distinction” and “emulation” as powerful forces, illustrates the case of the individual following the group. To put it differently, economic analysis, because of its ability to impact the institutional framework, should be more sensitive to the endogeneity of preferences and values (Tsakalotos, 899).

Another facet of the debate between orthodox and heterodox economics is the clash between the realism and the predictive capacity of economic theories. In “The Methodology of Positive Economics,” Milton Friedman argues that the ultimate goal of positive economics is the development of a theory or hypothesis that yields valid and meaningful predictions about phenomena not yet observed (Friedman 1966, 7). Such a theory should be a complex mixture of two elements – it should construct a “language” designed to promote systematic methods of reasoning and it should contain substantive hypotheses that abstract essential features of the complex reality.

He goes on to contend that truly important and significant hypotheses are found to have assumptions that are wildly inaccurate descriptive representations of reality - the more significant the theory, the more unrealistic the assumptions (Friedman, 14). The reason is that a theory cannot possibly be thoroughly realistic in the immediate descriptive sense so often assigned. Any attempt to achieve this kind of realism renders a theory useless. To put it differently, according to Milton Friedman, any criticism of the axiomatic approaches of orthodox economics is largely beside the point unless supplemented by evidence that a hypothesis differing in its assumptions from the theory being criticized yields better predictions for a wide range of phenomena. The ultimate test of the assumptions of a theory is the validity of its predictions.

Consistent with Milton Friedman’s critique of unorthodox approaches as presenting merely criticism without yielding better predictions than the theory being criticized, Peukert argues that what Veblen offers instead of *Homo economicus* is *Homo absurdus* (2001, 544). Veblen’s intention was not to advance a theory in any positive sense. According to Peukert,

He [Veblen] had only one scientific aim, which he pursued by three different means. This aim was a radical and deconstructive critique of what he called prevailing habits of thought. He did not, and did not

want to, unfold a positive, new, and evolutionary approach which could practically be applied to the analysis of economic processes. He did not pretend to uncover any developmental logic of economic history or institutions. Instead, his destruction of deterministic theories and implicit teleological tendencies should be interpreted as his attempts to uncover the implications of the basic freedom of human choice and valuation. (2001, 544)

As already suggested, the heterodox approach to economic theory, as represented by the work of Thorstein Veblen, differs radically from the orthodoxy. Veblen's insistence on causal analysis emphasizes an inquiry into the genesis of values and rationality in a push toward more realism, whereas orthodox economics adheres to the importance of the predictive capacity and facts, associated with a theory. Undoubtedly, one of the most powerful attacks on Veblen is Peukert's assertion that the former is merely constructing *homo absurdus*. The comparison between Veblen's theory of conspicuous consumption and the mainstream theory of consumption that follows, suggests that this might not be the case.

IV. The mainstream theory of consumption

A huge break in orthodox economics that had implications for consumption theory is to be found in Irving Fisher's work on interest (1930). Fisher objected to the classification of incomes as wages, rent, profits and interest in classical theory (Landreth, 267). He saw interest not as a share of income received by capital but as a manner of examining income flows of every kind. Fisher used the concept of intertemporal choices that he traced back to John Rae and Eugene Böhm-Bawerk (Chao 2007, 231). He argued that people prefer present over future consumption. This "human impatience" in its marginal form determines the rate of interest as the premium between the exchange of present and future goods (Chao, 231). Moreover, individuals can alter their income flows, and accordingly, consumption, by saving or borrowing (Landreth, 269). Consequently, the consumption level is a function of interest rates: at higher levels of interest, the quantity of consumption will decrease.

The starting point of the modern macroeconomic theory of consumer behavior are two theories developed in the 1950s by Milton Friedman and Franco Modigliani – the permanent-income hypothesis and the life-cycle model of consumption respectively (Jones 2008, 250). They were based on Fisher's intertemporal choice model. Both of them stem from the observation that people prefer to smooth their consumption over time. This is nothing more than an application of the standard theory of diminishing marginal utility. The permanent-income hypothesis then says that people will base their consumption on the constant income stream that has the same present discounted value as the actual income stream rather than on their current income. The life-cycle model of consumption applies the same reasoning to a person's lifetime. Consumption is based on "average" lifetime income rather than on income at any given age.

One crucial element of the framework of intertemporal choices is the expectations of future income when consumers face uncertainty. Friedman adopts the framework of adaptive expectations in forming expected income as a proxy for permanent income. However, this was challenged by Robert Hall's rational expectations revolution in the 1960s as the latter was seen as a more realistic account of how consumers form their expectations (Chao, 232). Hall's theory suggests that the consumer uses today's consumption as the best predictor of future consumption because any available information was included in today's consumption. In other words, Hall proved that consumption is a "random walk" – its future value is only a function of its present value. Hence, other variables, particularly, current and past incomes, can be excluded from the consumption function.

Although this is in clear contradiction with the conclusions of the theories of Friedman and Modigliani, economists usually see Hall's theory as a continuation of the life-cycle-permanent income hypothesis. The reason is that Hall's consumption theory contains a Fisherian framework in which the representative consumer intertemporally allocates his/her wealth on consumption (Chao, 232).

Chao argues that even if a model is not supported by empirical data when the model is considered as containing the true structure, it is not rejected, but instead a new model is constructed with the same true structure and certain modifications (240). Furthermore, economists hold a strong prior belief in economic theories that are based on well-specified optimization-based behavioral assumptions. All of this means that while anomalies may reject the permanent income hypothesis or the life-cycle hypothesis, this will only make economists modify the "true structure", the Fisherian framework, instead of abandoning it (Chao, 243). In other words, the Fisher-Friedman-Modigliani theory could be seen as the core of the mainstream theory of consumption.

V. Veblen's theory of conspicuous consumption

Veblen's theory of conspicuous consumption is an extension of his concept of the "social" individual. In contrast to the orthodoxy's static maximization of utility in an intertemporal framework, Veblen develops a model in which preferences are determined socially according to the position of an individual in the social hierarchy (Trigg 2001, 100). Veblen's theory of conspicuous consumption starts with the development of a leisure class whose members are not required to work, but appropriate a surplus²⁰ produced by the working class. Once societies start to produce that surplus, the relationship between private property and status grows in importance. To own property is to have a status in the hierarchy that emerges; to have no property is to have no status.

²⁰ Surplus here denotes the excess output above and beyond what is necessary to produce the means of livelihood of the worker.

The accumulation of wealth could, of course, indicate that a person is efficient and productive, but Veblen contends that inherited wealth confers even more status. The money provides the most prestige, since it establishes the most distance from the work required for its accumulation. Key to the transformation of wealth into status is the social performance of the individual. Status stems from the opinion of the other members of the society regarding the position of an individual in that particular society. In order for this position to be established there must be a display of wealth. Veblen delineates two main ways for this to be done – through extensive leisure activities and through lavish expenditures on consumption. Their common feature is that they must entail a wasteful component.

In principle, both methods are equally effective in displaying wealth – all that is required is an effective network for the word to get around about a person’s degree of leisure and the objects he or she possesses. Veblen argues, however, that as societies become more mobile, the display of wealth through consumption becomes more important than the display of leisure, since people will be less informed about the leisure activities of others. Such consumption has a separate label in Veblen’s analysis – *conspicuous consumption*. It denotes spending on artifacts of consumption that would enhance the social position of the individual.

Conspicuous consumption is viewed by Veblen as one of the paramount factors in determining consumer behavior. This applies not just to the rich, but also to all social classes. The result of this theory is that members of each stratum in the society will emulate those above them and try to rank as high as possible in comparison to the rest of the community (Hunt 2002, 338). Another important facet of the theory is that the process is never ending; what at one time may confer status may later be acquired by all and confer no status, leading to a chronic dissatisfaction. In other words, the core of Veblen’s theory of conspicuous consumption is that consumption is socially determined and does not come from within the individual (Trigg, 100).

VI. Credit Card Use and Abuse: A Veblenian Analysis²¹

There is an enormous amount of consumer credit card debt in the United States. Revolving credit card debt is about \$900 billion and has increased at 9 percent over the past decade (Scott 2007, 567). This became possible through an institutional change that led to reduced regulation on credit card lending. The U.S Supreme Court’s 1978 Marquette Decision was primarily responsible for that. The ruling stated that only the usury ceiling of the state in which the bank is located and not that of the state in which the consumer is located, will restrict the interest rates (Scott, 568). Thus, it enabled banks to charge whatever interest rates they want on their credit cards loans by moving their credit card operations to states where there were limited usury laws. Consequently, credit cards exploded in use (Scott, 568).

21 This section is heavily borrowed from Scott, Robert H.

The Fisher-Friedman-Modigliani theory of consumption, which as already explained is the building block of mainstream theories of consumption, does not account for why consumers took advantage of the available credit cards and began steadily accumulating debt at exorbitant interest rates, in most cases unable to repay that debt later (Scott, 568). In order to construct the theory, which was already explained, Friedman and Modigliani had to make broad assumptions (Scott, 569). These included – individuals are rational, they have access to perfect information, possess foresight and stable and well-defined exogenous preferences. Furthermore, the life-cycle-permanent income hypothesis assumes away any role institutions may play in consumer spending/borrowing decisions. It makes individuals solely responsible for their credit card debt. Consequently, any public policy attempt to decrease it is doomed as the impetus comes solely from within the individual.

Veblen's theory of conspicuous consumption could be used to treat the credit card issue in an entirely different way (Scott, 570). As already mentioned, Veblen's theory stated that the propensity for emulation and conspicuous consumption are pervading traits of human nature. It is not standard items that guide our consumption, but rather those items that are just beyond our reach. Furthermore, most people want to be living in one class above what they presently live in.

Applying this to the issue of credit cards means that a large portion of borrowers will over-spend, first, because of the ever-rising income inequality in the U.S. that pushes people toward emulation, and, second, because of the easy access to credit, given without the necessary consideration of whether it could be repaid (Scott, 570). By borrowing people will have the ability to reach to a higher class level. The problem is further aggravated by the fact that, today, the variety of goods and services offered is unparalleled to any other time in history. Expensive clothes, vacations, restaurants – all that is easily available because of credit cards.

Besides the emulative human nature, a Veblenian analysis identifies another cause for the credit card debt problem – the companies (Scott, 570). Veblen sees companies, such as the credit card ones, that are trying to produce nothing of substance and still get a profit as predatory lenders. Credit card companies extend credit to people arbitrarily, and when people fail to pay, they raise interest rates to absurd levels.

They also charge penalties and fees, which further aggravate the problem. Using Veblen's metaphor, a parasite/host relationship emerges between debtors and credit card companies. Credit card companies drain their hosts, making a yearly profit of \$90 billion dollars, 30 percent of which is generated from penalty fees (Scott, 571). The most profits are made from people who accumulate a considerable debt. Therefore, there is a clear incentive for credit card companies to maximize the financial indiscretion of individuals, luring them into borrowing that could not be repaid.

As already mentioned, the neoclassical theory of consumption attempts to explain the enormous levels of credit card indebtedness as stemming from within the individual and thus gives no prescription for how to address the problem. In contrast, a Veblenian approach to the issue provides clear policy options (Scott, 571). The driving force behind the credit card problem is the social influence on consumers to spend and the institutional setting that puts no reins on that. The first solution may be curbing the increasing income inequality in the United States, which is one of the factors, that spurs the never-ending process of emulation described by Veblen. People are quick to increase their consumption as income rises but they are slow in decreasing it after a relative fall in income. Thus, the widening income gap should be addressed as it reduces the relative income of a huge portion of the population.

The second solution is to directly address the institutional setting. As already mentioned, households are not able to handle the level of credit that the credit companies seek to provide them. Thus, a reasonable measure is to regulate credit card lending operations. In particular, a maximum limit should be put on credit card interest rates, fees and penalties. This would ensure that borrowers are given an amount of credit they can handle (Scott, 572).

In summary, a Veblenian analysis of the credit card over-borrowing problem provides clear-cut policy options. In contrast, the neoclassical approach gives no prescriptions whatsoever. The reason is that it disregards the role of institutions and assumes a rational individual that could not be experiencing an irrational problem of over-borrowing.

VII. Changing face of mainstream economics

The revival of Veblenian thinking is not limited to the particular example of credit card use. The face of modern economics is much more accommodating to Veblen's ideas than the core neoclassical economic theory ever was (Hodgson 2007, 328). During the 1980s, game theory established itself at the cutting-edge of mainstream economics, in part because of theoretical problems in general equilibrium analysis. The results of it depend on particular rules and modes of play of the game. Instead of everything being in contact with everything else as in general equilibrium analysis, game theory assumes limited interconnectedness. Thus, it is more accommodating to the ideas of institutions and rules.

Experimental economics also examines human interaction under designed system of rules (Hodgson 2007, 328). In simulating markets in the laboratory, experimental economists must set up a specific institutional structure. This, of course, challenges the neoclassical notion of the abstract market as a universal form of human interaction, free from any specific rules (Hodgson, 328). Experimental economics also makes the case for a situated rather than context-independent concept of rationality. It claims that generalized rational preferences should be replaced by rules of thumb specific to the particular situation. It rejects the idea that people come to problems equipped with a complete set of preferences and clear decisions.

Recent work in psychology has also undermined the rational deliberative thinking model of neoclassical economics (Hodgson, 329). It has been argued that this model downplays both the temporal and situated aspects of human reasoning. Instead of considering individuals as having representative models of the world in their brains, psychologists claim that human cognition depends on the social and material environment and on the interactions with other people. This is definitely a move away from the mind seen as an independent rational deliberator.

In summary, the core of neoclassical economics – the individual as a primary and given self – has been undermined by all these recent developments. Furthermore, the adoption of a context-dependent rationality as that is found in experimental economics and psychology is consistent with Veblen’s institutional economics in which agency and structure are mutually dependent.

VIII. Assessment of ideas and conclusion

In orthodox economics the individual is emptied out of all psychological content. His preferences are taken as given and his character is treated as irrelevant to any economic analysis. In contrast, the heterodox strand of economics views the individual as determined by social relationships. Veblen’s individual, being a social creature, falls squarely in that category.

As a corollary of its way of conceptualizing the individual, orthodox economics takes an axiomatic approach to economic theory. It claims that any criticism of that approach is ineffective unless it constructs a theory that yields better predictions than the one being criticized. On the contrary, heterodox economics, as represented by Thorstein Veblen’s theory, insists on a causal explanation of any characteristics attributed to the individual.

Two completely different theories of consumption stem from the two approaches – Veblen’s theory of conspicuous consumption and the mainstream theory of consumption. The first one stresses the social determination of consumption – individuals are always trying to emulate the spending habits of those that live one class above them. The second one treats the consumer as a rational being using an intertemporal framework to calculate his or her choice between present and future consumption.

Following Peukert’s assertion that Veblen creates no theory in any positive sense and Friedman’s defense of the superiority of the axiomatic approach to economic theory as capable of yielding better outcomes, it would be expected that the mainstream consumption theory is omnipotent, while Veblen’s theory of conspicuous consumption – totally ineffective. However, the case of credit card “use and abuse” suggests the opposite.

The Fisher-Friedman-Modigliani theory attributes the enormous amount of credit card debt in the United States to the choices of the individual; that is a tautology is employed – the aberrant behavior of the individual is explained as coming from within the individual. In contrast, Veblen’s theory of conspicuous consumption provides clear-cut policies that can address the issue (Scott, 571).

These include curbing the increasing income inequality in the United States and changing the current institutional setting – regulating credit card companies.

In summary, the particular case of credit card use and abuse shows that Veblen’s theory of conspicuous consumption, while avoiding the axiomatic approach of orthodox economics is still capable of providing solutions to concrete problems. Furthermore, it suggests that it may not be the case that the more unrealistic the assumptions of a theory, the more powerful it will be, as Milton Friedman contends. By being a more accurate description of reality, Veblen’s theory does not render itself useless. On the contrary, it makes a better policy proposal than its mainstream counterpart. Moreover, the strength of Veblen’s analysis is not limited to a particular case or to a single theory. Some recent developments in the mainstream of economics – game theory and experimental economics – are rather accommodating to institutions and rules. This calls for a revival of Veblenian Institutional Economics (Hodgson, 325).

—REFERENCES—

- Chao, Hsiang-Ke. 2007. A Structure of the Consumption Function. *Journal of Economic Methodology* 14: 227-248.
- Davis, John. 2003. *The Theory of the Individual in Economics*. London and New York: Routledge.
- Dugger, William, 2006. Veblen’s Radical Theory of Social Evolution. *Journal of Economic Issues* XL: 651-671.
- Edgell, Stephen. 2001. *Veblen in Perspective: His Life and Thought*. Armonk, NY and London, UK: M.E. Sharpe.
- Friedman, Milton. 1966. The Methodology of Positive Economics. In *Essays in Positive Economics*, 30- 43. Chicago: University of Chicago Press.
- Hodgson, Geoffrey. 2003. Darwinism and Institutional Economics. *Journal of Economic Issues* XXXVII: 85-97.
- Hodgson, Geoffrey. 2007. The Revival of Veblenian Institutional Economics. *Journal of Economic Issues* XLI: 325- 340.
- Hodgson, Geoffrey. 2008. How Veblen Generalized Darwinism. *Journal of Economic Issues* XLII: 399-405.
- Hunt, E. K. 2002. *History of Economic Thought: A Critical Perspective*. Updated Second Edition. Armonk, NY and London, UK: M.E. Sharpe.
- Jones, Charles. 2008. *Macroeconomics*. New York: W.W. Norton & Company.

- Landreth, Harry and David Colander. 2002. *History of Economic Thought*. Boston and Toronto: Houghton Mifflin Company.
- Peukert, Helge. 2001. On the Origins of Modern Evolutionary Economics: The Veblen Legend after 100 Years. *Journal of Economic Issues XXXV*: 543-555.
- Scott, Robert. 2007. Credit Card Use and Abuse: A Veblenian Analysis. *Journal of Economic Issues XLI*: 567-574.
- Tilman, Rick. 2006. Colin Campbell on Thorstein Veblen on Conspicuous Consumption. *Journal of Economic Issues XV*: 97-112.
- Trigg, Andrew. 2001. Veblen, Bourdieu, and Conspicuous Consumption. *Journal of Economic Issues XXXV* : 99-115.
- Tsakalotos, Euclid. "Homo Economicus and the Reconstruction of Political Economy: Six Theses on the Role of Values in Economics." *Cambridge Journal of Economics* 29 (2005): 893-908
- Veblen, Thorstein. 1953. *The Theory of Leisure Class: an Economic Study of Institutions*. New York: New American Library.
- Wrenn, Mary. 2006. Agency and Mental Models in Heterodox Economics. *Journal of Economic Issues XL*: 483-491.
- Wunder, Timothy. 2007. Toward an Evolutionary Economics: The 'Theory of the Individual' In Thorstein Veblen and Joseph Schumpeter. *Journal of Economic Issues XLI*: 827-839.
- Yilmaz, Ferudun. 2007. Veblen and the Problem of Rationality. *Journal of Economic Issues XLI*: 841- 861.

THE ECONOMIC DECLINE OF ZIMBABWE

Chido Munangagwa

ABSTRACT

For the past decade, Zimbabwe has been experiencing an economic decline that has resulted in an inflation rate of 231 million percent and an unemployment rate of over 90 percent. Past research has concluded that the economic decline of Zimbabwe has mainly been caused by poor monetary policies and failure of fiscal policies to control the budget deficit. This research aimed to closely examine some of these policies that the Zimbabwean government implemented, the effects of these policies on economic activity, employment and inflation levels in the country. By interviewing many economic analysts in Zimbabwe, I managed to gather the main causes of the country's decline. In an effort to understand the effects of inflation on a country, I looked at other developing countries that have survived similar economic challenges and assessed some of the steps they took to overcome the challenges. From the research, I managed to conclude that although government policies on agriculture, participation in armed conflicts, government spending and investment have been weak, structural reforms can be successfully implemented to get the economy functioning again.

INTRODUCTION

This paper evaluates the economic decline of the Zimbabwean economy by a close examination of the country's macro-economic policies and their subsequent effects on the economy, the country's GDP and output in the different sectors of society. Zimbabwe's economic decline since 1997, has seen the country's macro-economic condition deteriorate progressively into a hyperinflationary environment. This has resulted in a unsustainable socio-economic conditions that have forced 37.8 % of the population to migrate internationally (International Organization for Migration 2008). I will analyze government policies that were the main driving forces in the decline of the Zimbabwean economy while simultaneously assessing the government's argument that sanctions and drought are the main contributors to the current state of the Zimbabwean economy.

The country's economic problems go beyond macroeconomic policies, but are reflective of a political impasse that has challenged the current government of President Robert Mugabe. Since Independence, the Mugabe regime has tried maintaining a one-party state, and has gained significant control of the country's main governing bodies, including the Reserve Bank of Zimbabwe. It is therefore imperative to consider the political economy when looking at Zimbabwe as the entanglement makes the Zimbabwean crisis solution even more complex. The current economic crisis is above all a political problem, that is exacerbated by failed policies. Currently, the Mugabe regime, is facing international condemnation and pressure to relinquish their 30 year reign in power.

Between now and Zimbabwe's political solution, many short term solutions can be put in place to transition into a new political and economic leadership team. In this paper, I analyze the conditions that led Zimbabwe into this state, and various solutions that a stable leadership body can implement.

ECONOMIC HISTORY OF ZIMBABWE

During the pre-independence period, much of the country's wealth was in the hands of the white minority under the rule of Ian Smith who served as Prime Minister of the British colony known as Rhodesia. The colonial period was characterized by the following occurrences:

1. The occupation of land owned by local inhabitants and the relocation of the black people to outlying communal lands. Land was taken from black people without compensation and given to white veterans, many of who were retired World War I soldiers. Blacks were forbidden to own land in these fertile areas.
2. Blacks were excluded from the political process.
3. Black Zimbabweans were forbidden from the best schools and residential areas in Rhodesia.

After 1965, the United Kingdom adopted a different policy towards colonies. A few colonies such as Kenya had now gained independence, and the British government adopted a policy of 'No Independence Before Majority African Rule (NIBMAR).' The Rhodesian Front, the white regime run by Ian Smith, rejected that policy and wanted to maintain governance over Rhodesia.

The Smith regime signed a Unilateral Declaration of Independence in 1965 in opposition to black majority. The British government, the Commonwealth and the United Nations condemned this action and declared it illegal. The United Kingdom went on to impose economic sanctions on Rhodesia, as it viewed their actions as racist. Smith argued that Rhodesia was no longer a British colony and that it had gained independence from Britain, although power was not in the hands of the black majority. South Africa and Portugal were the only two countries that supported Rhodesia and no other country recognized Rhodesia as a state. On the macro-economic level, these sanctions encouraged internal production and a desire to achieve self-sustenance because many countries refused to trade with Rhodesia. In the meantime, two political forces were growing within the black majority – the Mugabe-led ZANU party, consisting of the majority Shona people, and the ZAPU party headed by Joshua Nkomo, consisting of the minority Ndebele people. Africans had always resisted European rulers and in Zimbabwe in 1896-1897, the first Chimurenga war had been fought. The locals had lost the war due to a lack of sophisticated weapons.

From July 1964 to 1979, the Second Chimurenga war took place between the white Rhodesians and the ZANU and ZAPU forces. This war, also known as

the Rhodesia Bush War, was a struggle for liberation from the oppressive white minority rule. With China and North Korea backing the ZANU forces, and the Soviet Union and East Germany supporting the ZAPU faction, and with no foreign support, the Rhodesian government was overthrown. Rhodesia gained its independence in 1980 and was renamed Zimbabwe. Robert Mugabe became the first President of Zimbabwe since Independence to date. Zimbabwe achieved majority rule in 1980, and the first decade after independence, the new government focused on programs aimed at building the health and education sectors. The economy continued to be run as in the pre-independence period, as a command economy. The Zimbabwe government made it clear that the state was to play a central role in the country's economic and social development (UNDP Discussion Document 2008). Although not high on a global scale, Zimbabwe's growth rate during the eighties was higher than that of sub-Saharan Africa as a whole. With the end of the liberation war, and good rainfall, farming output strongly boosted Zimbabwe's growth. In the 1980's however, drought had a negative impact on growth. The drought of 1982-3 was followed by another in 1987, when the contribution of agriculture to GDP growth was negative.²² As the drought took place, there was also a world recession that resulted in commodity export prices decreasing. Because of these events, the government decided that it was time to shift economic policies.

Since 1990, policy makers in Zimbabwe worked to liberalize the economic system through the Economic Structural Adjustment Program (ESAP), which allowed for an open market economy driven by a strong export base. The main goals of this program were to:

- achieve GDP growth of 5 percent during 1991 to 1995
- raise savings to 25 percent of GDP
- reduce budget deficit from over 10 percent of GDP to 5 percent by 1995
- reduce inflation from 17.7 percent to 10 percent by 1995 (Kanyenze 2004)

ESAP was implemented to achieve economic recovery and sustained growth through balancing the budget, strengthening the private sector and removing controls on trade. Growth in the 1990s under new macroeconomic policies was a failure. Performance indicators show that the economy grew by a respectable average of 4.3 percent per annum under the 'bad' control policies of the 1980s but only by a miserable 0.8 percent under the so-called 'good' policies.²³ The failure to achieve the expected 5 percent growth rate under ESAP can be attributed to the adverse effect on the manufacturing industry. Although liberalization was viewed by many as positive, it had the effect of exposing the manufacturing industry to foreign competition for which it was unprepared. The agricultural sector needed

22 The Economic Decline of Zimbabwe, Neither Growth Nor Equity. Carolyn Jenkins and John Knight p132

23 Macro-economic and Structural Adjustment Policies in Zimbabwe. Edited by C Mumbengegwi p 3

the boost in exports and so it benefitted from ESAP. Local manufacturers of goods such as clothing, however, faced fierce competition from cheap imports from countries such as China and were also affected by the decline of real wages of consumers. Some economists concluded that the collapse of ESAP was largely due to the government’s failure to control public expenditure and financing of the program through borrowing from domestic banks as opposed to other forms of financing, e.g. taxation. Realizing that the general public was not satisfied with ESAP the government decided to focus on fiscal discipline on the government’s part. The next phase of economic recovery consisted of another set of policies called the Zimbabwe Program for Economic and Social Transformation (ZIMPREST) from 1996 to 2000 that aimed at improving ESAP. Due to poor fiscal policies, however, the budget deficit continued to grow and foreign currency reserves remained low.

THE BEGINNING OF THE ECONOMIC DECLINE

Table 1: Selected Macroeconomic Indicators

Indicator	2000	2001	2002	2003	2004	2005	2006
GDP(current US\$ million)	8,135.8	12,882.6	17,875.6	7,913.1	4,712.1	3,372.5	7,033.7
GNP	7,150.0	12,800.0	30,800.0	7,850.0	4,640.0	3,180.0	n.a.
Population	12,595.0	12,698.0	12,786.0	12,863.0	12,936.0	13,010.0	13,085.0
Current account balance(as % of GDP)	-0.4	-1.0	-2.6	-4.6	-5.6	-7.5	-4.0
Fiscal deficit, including grants (% of GDP)	-18.6	-7.0	-2.7	-0.2	-7.6	-6.1	-3.1
GNS per GDP (%)	11.1	7.0	4.9	-1.4	-3.2	-6.7	4.0
Gross official reserves (months of imports)	1.5	0.6	0.7	n.a.	n.a.	n.a.	n.a.
GDP growth rates	-7.3	-2.7	-4.4	-10.4	-3.8	-6.5	-5.1
CPI inflation	55.6	73.4	133.2	365.0	350.0	237.8	1,216.0

Sources: African Development Bank database; IMF (for balance-of-payments current account balance) – pg 12

Table 1 above looks at the key macroeconomic indicators. The figures appear inconsistent partly because of the numerous currency conversions that took place between 2005 to date. The Reserve Bank has removed zeros from the currency

many times in an effort to manage inflation, so that when such efforts are made, measures of GDP can be ambiguous if they do not account for these changes.

a) *Civil unrest*

In 1997, Zimbabwe's economic decline began to visibly take place. It began with the crash of the stock market on November 14, 1997. Civil society groups began to agitate for their rights as these had been eroded under ESAP. In 1997 alone, 232 strikes were recorded, the largest number in any year since independence (Kanyenze 2004). During the first half of 1997, the war veterans organized themselves and demonstrations that were initially ignored by the government. As the intensity of the strikes grew, the government was forced to pay the war veterans a once-off gratuity of ZWD \$50,000 by December 31, 1997 and a monthly pension of \$2,000USD beginning January 1998 (Kanyenze 2004). To raise money for this unbudgeted expense, the government tried to introduce a 'war veterans' levy,' but they faced much opposition from the labor force and had to effectively borrow money to meet these obligations. Following the massive depreciation of the Zimbabwean dollar in 1997, the cost of agricultural inputs soared, undermining the viability of the producers who in turn demanded that the producer price of maize (corn) be raised. Millers then hiked prices by 24 percent in January 1998 by 24 percent and the consequent increase in the price of maize meal triggered nation-wide riots during the last month. The government intervened by introducing price controls on all basic commodities. (Kanyenze 2004)

Many interventionist moves were undertaken to try to reverse some of the negative effects of the Structural Adjustment Programs and to try to strengthen the private sector that was suffering from decreasing output and increasing competition from cheap imported products. Some of the most detrimental policies that followed include:

b) *War in the Democratic Republic of Congo*

In a move widely criticized, Zimbabwe entered the war in the Democratic Republic of Congo in 1998. Assessing the involvement of Zimbabwe's troops in the war in the Democratic Republic of Congo, it is evident that this was one of the pivotal starting points of Zimbabwe's economic decline. Zimbabwe aligned itself to the government of Laurent Kabila and fought against the Tutsi rebels of the Rwandan and Burundi forces. Some view the intervention in the war as a move by certain individuals to enrich themselves through the illegal diamond industry that was booming in the Congo.

The costs to Zimbabwe were estimated to have been almost 3 million USD per day, and analysts state that the government spent ZWD 6 billion in unbudgeted expenditure on the war.²⁴ Although different sources quote ambiguous values for government expenditure for that war, the values still reflect a large portion of the budget. Many economists have viewed this as the beginning of the downfall of the Zimbabwean economy due to increased unbudgeted government spending.

c) *The Land Reform Program*

24 <http://www.hrforumzim.com/reports/tort990003/torture990003b.htm>

Commercial farming was one of the largest contributors to national income and export earnings. The question of land ownership has for a long time been in contention in Zimbabwe and it has always been an aim of the Zimbabwean government to ensure equitable land ownership. 'About 5,600 white commercial farmers had access to 15.5 million hectares of land, while over 780,000 smallholder farmers had to subsist on 16.4 million hectares of land. Whereas the average size of a commercial farm was over 1,000 hectares, the average size of a communal farm was less than 10 hectares.'²⁵ This inequitable distribution of land was a result of the Lancaster Agreement that was signed during Independence to protect white farmers from losing their land under the new government. The agreement was to last for ten years and assured white farmers that land would not be taken from them for land resettlement programs without compensation. After 1990, the Lancaster Agreement was no longer valid, and the government slowly began to redistribute land while compensating the white farmers. According to many independent views, since the Lancaster Agreement did not hold any longer, the government in 1994 began to distribute the land that was set for resettlement, among the government ministers and ruling party loyalists. By 1997, much of Zimbabwe's very fertile land was still in the hands of the thousands of white farmers that resided in Zimbabwe and also now in the hands of government officials who were benefitting from initial land redistribution efforts. In 2000, President Mugabe initiated the 'Fast Track' land reform program to redistribute land to the black majority. Many independent critics view this as an unruly process that did not redistribute land within the judicial framework. Farms were taken by force and many farmers were given a one day ultimatum to evacuate their farms without prior warning. This project was later relabeled the 'Fast Track Land Reform program' and was aimed at creating 51,000 new farmers. There was a huge disparity between the quality of farming that took place on commercial farms and communal farms; many Zimbabwean economists argue that this was due to property rights. Commercial farmers had title deeds to the land and therefore had access to loans for equipment whereas the black majority on communal farming areas suffered from the tragedy of the commons. The government undertook the first of the white owned farm invasions in a bid to reclaim land that was in the hands of the white minority. Hawkins (2008) states however that the disorderly and hurried way in which the program was carried out contributed greatly to a decrease in production. From then on, agricultural output, which was once Zimbabwe's pride, began to fall drastically. In spite of falling tax revenues, civil servants' salaries were increased. The budget deficit progressively worsened from 5.5 percent of GDP in 1998 to 24.1 percent by the end of 2000. The deficit had been targeted to decline to 3.8 percent of GDP by the end of 2000.²⁶

25 Comprehensive Economic Recovery in Zimbabwe, A Discussion Paper UNDP and independent economists, Zimbabwe 2008

26 Godfrey Kanyenze, The Zimbabwe Situation . www.zimbabwesituation.com

By 2003, Zimbabwe’s economy was the fastest shrinking in the world, at 18 percent per year.²⁷ The most detrimental effects of the land reform program on the economy have been the following:

- Commercial farmers utilized economies of scale to achieve high yields at the lowest possible costs. The Land Reform program redistributed land by partitioning land into smaller farms, thereby eliminating this cost-cutting mechanism.
- A tremendous drop in output has been recorded

To demonstrate this decline in output by looking at Table 2 below, wheat production has declined from about 270, 000 tons in 1998 to 62,000 tons in 2007. There is a wide variation between the production levels, but maize, tobacco and beef have fallen by about a third of 1998 levels. The right hand side of the table shows the proportion of the commodities that are still being produced by commercial farmers. For example, although wheat and dairy production have fallen, the proportion of these goods produced by commercial farmers has increased reflecting that small holder production of these goods has decreased. Although the table states that cotton production dropped to zero on a commercial scale in 2007, small scale farmers had taken over the production of this crop.

Table 2: Decline in commercial agricultural production for selected commodities between 1998 and 2007

Category	Crop	Commercial Production		Percent of 1998 levels %	Proportion of commercial production in total production %		Percent of 1998 levels %
		1998	2007		1998	2007	
Food crops	Maize	521	160	31	36	23	63
	Wheat	270	62	23	90	96	106
	Soyabeans	113	64	57	99	95	96
Export and plantation	Cotton	77	0	0	28	0	0
	Tobacco	210	65	31	97	88	92
	Coffee	10	1	10	99	98	99
	Tea	18	15	83	99	97	98
	Sugar	553	384	69	97	96	98
Livestock	Dairy	184	86	47	93	98	105
	Beef	350	120	34	67	48	72
TOTAL		2306	957	42			

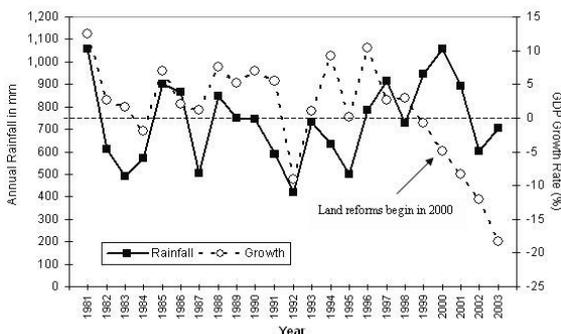
Sources: Commercial Farmers’ Union

²⁷ How the Loss of Property Rights caused Zimbabwe’s Collapse. Craig Richardson. November 14, 2005. http://www.cato.org/pub_display.php?pub_id=9294

- The new farmers do not have access to loans. Due to the tightening of the system, banks started becoming more reluctant to lend money to individual farmers. This is because after the Land Reform Program, banks had no mandate to lend to farmers as the farmers cannot use the land as collateral.
- As a result of the lack of access to loans, the government has had to hand out farming inputs including equipment and fertilizer, increasing unbudgeted expenses

Today, the government argues that the agricultural sector has collapsed due to the continuous effects of drought. In the Monetary Policy presented by the Reserve Bank Governor, Food inflation poses the greatest challenge to efforts to tame inflation. The situation has been exacerbated by projected lower than normal output of grains as a result of incessant rains experienced during the first half of the season and the very hot and dry weather experienced between January and February, 2008 (Gono 2008). During the early 2000s, a drought hit the southern African region, and the Zimbabwean government often refers to this as one of the causes of Zimbabwe’s inflationary economy. The drought led to lower tax revenues from the agricultural sector causing the budget deficit to increase. But according to Figure 2, when the crisis began around 2000 annual rainfall was significantly higher than the calculated average of 754mm. The beginning of the crisis corresponds closely to the implementation of the land reform program. One can therefore conclude that the drought alone was not wholly responsible for the downturn in the Zimbabwean economy. Richardson (2005) estimated that the land reform played a bigger role in creating the crisis than the drought: ‘My econometric estimates indicate that the independent effect of the land reforms, after controlling for rainfall, foreign aid, capital, and labor productivity, led to a 12.5 percent annual decline in GDP growth for each of the four years between 2000 and 2003. ¹³ The drop in rainfall in the 2001–02 growing season contributed to less than one-seventh of the overall downturn. Without above-average rains, Zimbabwe’s economy would have been in even worse shape, hard as that is to believe.’

Figure 1. Annual rainfall and GDP Growth



Sources: Meteorological Services Department, Zimbabwe; and World Bank, World Development Indicators (Washington: World Bank, 2002). 2003 is an OECD estimate.

One of the main challenges associated with land reform in Zimbabwe is the fact that although there was transference of land, there was no transference of skill and knowledge about how to run these farms. The white farmers were forced to leave the farms taking their managerial knowledge and in some cases their tools, leaving the new breed of farmers with a piece of land and no skills to farm it. In retrospect, would it have been more efficient if instead of partitioning these farms, the government had allowed a tenancy situation whereby the white farmers remain and offer their managerial skills and then the black majority would ‘rent’ some of the land? Such a form of private contracting might seem more desirable because the economies of scale would not be lost and there would be no social cost because of a lack of farming skills. Also larger farms are more resilient to handle cyclical turns in the weather making this more efficient at least in the short run until the new farmers acquire more knowledge and skills on large scale farming.

When the economy does recover, how will the new farmers pay back these subsidized loans they are currently receiving especially since many of them are not using the land productively?

a) Quasi-Fiscal Activities (QFAs)

Quasi-fiscal expenditures by the Reserve Bank of Zimbabwe consist of unbudgeted spending on government-led initiatives. These expenditures by the RBZ serve as a substitute for international loans. Mackenzie and Stella (1996) define a QFA as “an operation or measure carried out by a central bank or other public financial institution with an effect that can, in principle, be duplicated by budgetary measures in the form of an explicit tax, subsidy, or direct expenditure and that has or may have an impact on the financial operations of the central bank, other public financial institutions, or government.”²⁸ For the RBZ, seigniorage has fallen from over 5 percent of GDP in 2001 to about 0.1 percent of GDP in 2005 because, given very high rates of inflation, real base money has declined drastically in relation to nominal GDP and the RBZ has invested in assets, including QFAs, with large negative real interest rates.²⁹ Here seigniorage can be considered to be the net revenue earned from issuing currency, i.e. the difference between the production cost and circulation cost of issuing currency and the interest earned on securities when the securities are traded for notes. These QFAs consist of the following:

- **subsidies** to farmers and banks. These are accounted for as no-interest receivables from the government on the ‘other assets’ part of the RBZ balance sheet. The major subsidy programs have been to the agricultural and public enterprise sectors through programs such as Agricultural

28 Sónia Muñoz, Central Bank Quasi-fiscal Losses and High Inflation in Zimbabwe: A Note

29 Sónia Muñoz, Central Bank Quasi-fiscal Losses and High Inflation in Zimbabwe: A Note

Sector Enhancement Facility (ASPEF), the Productive Sector Facility (PSF) and more recently Basic Commodity Supply Side Intervention (BACOSI) – which consisted of imported food hampers that were sold at a highly subsidized rate.

- losses from exchange rates as banks bought foreign currency from exporters at higher price than they sold it to importers
- **losses** due to the fact that foreign liabilities exceed foreign assets. Total external debt increased from US 3,1 billion in 1991 to almost US 5 billion by 1997, before falling to US 3,5 billion by 2000. This decline represents the drying up of traditional sources of external financing following the fall-out with the IMF and subsequent withdrawal of development partners. (Kanyeze 2004)

Although the full extent of quasi fiscal activities is unknown, estimates by the International Monetary Fund (IMF) put the overall financial borrowing requirement at 64 percent of GDP in 2005, when the central budget deficit was 3 percent of GDP, implying a quasi-fiscal deficit of 61 percent of GDP and of 82 percent in 2006, when the central government deficit was 7.5 percent, indicating a quasi-fiscal deficit in the region of three-quarters of GDP.³⁰

Table 3: Zimbabwe Budget Balance 2007/2008

\$ Trillions	Budget (Dec 2006)	Estimated out-turn (November 2007)	Actual out-turn
Revenue	29.4	46.6	99.8
Expenditure	43.3	43.6	86.5
Deficit	13.9	+3.0(surplus)	+13.3(surplus)
Domestic Debt, year end	0.176 (2006)	21,176 (2007)	+21.0 (increase)

Sources: Government of Zimbabwe: Financial Statements 2008 Budget; Reserve Bank of Zimbabwe

IMPACT ON CONSUMERS

An inverse relationship exists between real income and inflation. As inflation steadily rises in Zimbabwe, the average consumer's real income is drastically falling because wages are not keeping pace. A series of government led initiatives to aid consumers proved to be counter-productive. In July 2007, the government engaged in the implementation of price controls to ease the burden on consumers. Because producers were not able to meet demand pressures, shortages quickly arose. Consumers hoarded the cheaper goods that were now available; producers incurred significant losses on selling goods at a price lower than the

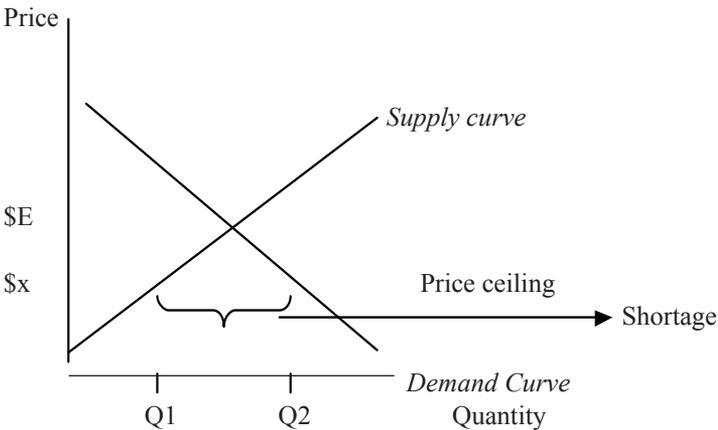
³⁰ Comprehensive Economic Recovery in Zimbabwe, A Discussion Paper UNDP and independent economists, Zimbabwe 2008

market price \$E, and queues for basic goods became the order of the day (as shown in Figure 4 below). As a result, economic activity shifted to the informal sector. According to independent estimates, 80 percent of economic activity is in the informal sector, however, no formal studies have been made as it is difficult to measure.

As a result of the inflationary pressures and price ceilings, the main effects were:

- a thriving parallel market
- shortages of basic goods
- informalization of the economy as Zimbabweans began to cross borders to buy basic goods and sell them in foreign currency at a much higher price.

Figure 2: Effects of a Price Ceiling

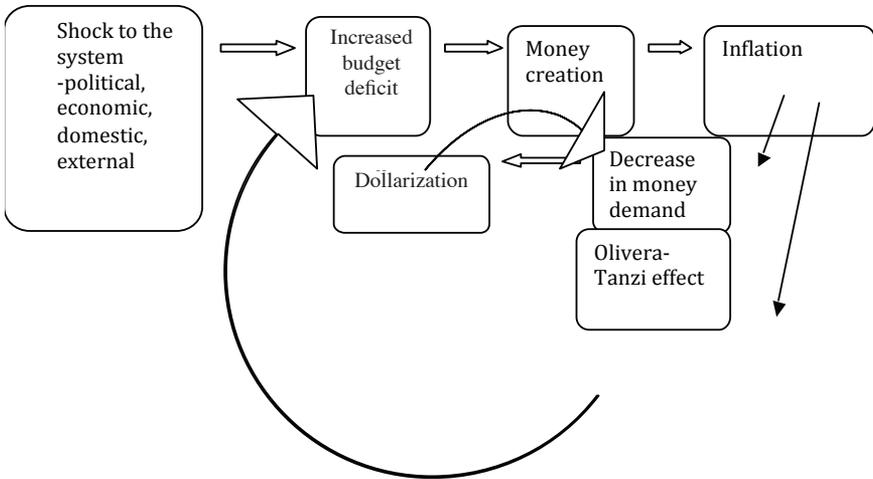


HYPERINFLATION

In the last decade Zimbabwe experienced chronic high inflation which exploded into hyperinflation in 2006-2007.

HOW HYPERINFLATION OCCURS

Figure 3: The process of hyperinflation



As shown in Fig. 3 above, the phenomenon of hyperinflation is always triggered when an economic system faces a shock, be it external, political, or domestic. In many cases, such an unprecedented shock leads governments to spend more money than they receive from revenues, thereby increasing the budget deficit. In the case of Zimbabwe, the shock consisted of the war veterans' gratuities in 1997 and subsequently, the participation of Zimbabwean armed forces in the DRC war.

High inflation in Zimbabwe has been fueled by a rapidly growing money supply reflecting growing fiscal and quasi-fiscal deficits. Quasi-fiscal losses have increased greatly since 2004, due to huge foreign exchange subsidies to public enterprises and government, price supports to exporters (to compensate them partially for the highly overvalued exchange rate), and interest payments on open market operations.³¹ In August 2006 Zimbabwe's annual inflation rose above 1,000 percent, dramatizing the severity of its economic crisis. Redenominated notes were issued in August so that 1,000 old Zimbabwean dollars become one new dollar. The annual inflation rate, already the highest in the world, raced to 1,729.9 per cent in February 2007 from 1,593.6 per cent the previous month. On a monthly basis, however, inflation slowed to 37.8 percent from January's 45.4 percent. The inflation rate dropped momentarily due to the artificial effect of price controls to alleviate the suffering of many Zimbabweans. The controls led to hoarding of goods, however, and even longer lines for basic goods. Manufacturers were forced to close businesses as they were incurring huge losses.

In 2007 government spending increased once again in real terms. In the budget announcement, there was no mention of ways to lower the Quasi-Fiscal Activities

31 IMF Working Paper. Lessons from High Inflation Episodes for Stabilizing the Economy in Zimbabwe WP0799

and the budget made very little accommodations for QFAs. In June of the same year, the government adopted price freezes, followed by a wage freeze 2 months later. According to the government, inflation dropped to 6,592.8 percent in August from 7,634.8 percent in July. Queues for basic goods became a common characteristic, as consumers hoarded products after price reductions leading to shortages of basic goods. This in turn, causes the parallel market to thrive, as individuals choose to engage in 'cross-border trading' – buying goods in neighboring South Africa, Botswana or Zambia and selling them on the parallel market at much higher prices. In 2007, the hyperinflation was really biting the pockets of the ordinary man on the streets. In an effort to cushion the general consumer from the deteriorating value of his money, the government implemented price controls on all basic goods. However, these controls backfired as the general public rushed to hoard the incredibly cheap goods and any profits that the manufacturers were making were inevitably eroded resulting in many of them being forced to stop production.

Expectations of inflation also fuel the crisis. Because people see the prices rising, they expect them to continue to do so in the future. The more chronic people's expectations are of an increase in inflation, the more they adapt their behavior to fit those expectations. People begin to get rid of their money more quickly, causing prices to rise faster.

It is also common knowledge to all Zimbabweans, that for many years, the Zimbabwean dollar has been overvalued. For example, in 2007, the official rate was still 250 ZWD to one USD, yet the USD was trading at hundreds of thousands of Zimbabwean dollars on the parallel market. This posed a huge problem, in that only those in influential positions who had access to this rate were able to acquire foreign currency from the banks for such a cheap rate and were therefore able to finance lavish lifestyles and trips abroad. Consequently, one would find that some members of the population were not eager to see the crisis being resolved as they were benefitting from it greatly. Also, producers of goods are required to sell some of their foreign currency to the Reserve Bank at a much lower rate than they would be able to acquire on the parallel market.

One of the main hindrances to reducing hyperinflation in Zimbabwe is the recurring wave of political instability that have resulted in a loss of investor confidence and caused many foreign investors to pull out of the country, citing that the environment is unstable, unpredictable and risky. The Indigenization Bill that was passed in Parliament that aims at shifting 51% of ownership of companies into the hands of Zimbabweans has been criticized by some as adversely affecting investor relations within the global economy. Analysts argue that foreign-owned companies will not be willing to invest in a country where their companies have the potential to be nationalized. This results in a reduction of foreign currency in the economy. Fig. 3 demonstrates the above as events in 1997 shocked the system, driving the government to achieving a much higher budget deficit. The Reserve Bank of Zimbabwe has over the years been engaged

in rapid money supply, for example, increasing M3 supply from **1 638.4%** in January 2007 to **51 768.8** in November 2007 (Gono 2008), further fuelling inflation.

EMERGENCE OF A PARALLEL MARKET AND MULTIPLE EXCHANGE RATES

As can be expected of a hyperinflationary environment, black market for foreign currency and basic goods that are either not available in stores or too expensive to buy, is now the most reliable source of goods. Having returned home this summer to conduct informational interviews, I discovered that individuals and businesses alike could not access foreign currency from any banks and had to resort to securing this money from the parallel market, which consists of many skilled laborers who have had to move from formal employment to become informal traders as their formal wages were being eroded by hyperinflation. The main currencies that are traded are the South African rand, the Botswana Pula and the United States dollar.

Every day as I travelled through the streets of the capital city, I encountered many traders who typically stood by the side of the road and solicited deals by whispering to passers-by, “I can help you change your money to Rands, US dollars or pulas.” Having just come from the States and in desperate need of the local currency, I ‘shopped around’ for the best Zimbabwean dollar rate that I could get for my US dollars. After some screening, I found one trader who I thought seemed slightly trustworthy, and decided to trade with him. In a bid to be as discreet as possible, he took me up many flights of stairs of a nearby building, to a room that was filled with other traders, and where massive amounts of different currencies were trading hands. He quickly handed me the equivalent Zimbabwean dollar amount that I required, took my US dollars and immediately began trading with the person next to him who was looking for US dollars. And that was it, I had my foreign currency and he had made a huge profit by selling me trillions of Zimbabwean dollars that would be worthless by the next morning and obtaining the stable US dollar. Daily, the ordinary Zimbabwean is forced to engage in such illegal acts because foreign currency and goods are readily available on the parallel market. The parallel market is the most desirable choice because it is the most efficient market in Zimbabwe currently. It avoids the hassles of applying for bank drafts for foreign currency that are never approved; it is very responsive to changes in demand for foreign currency and very responsive to what is happening in the media. For example, when the Reserve Bank requires foreign currency for a project, usually a QFA, they have no alternative but to get the money from the parallel market. Since the bank buys the foreign currency in bulk, supply of foreign currency in the market decreases, pushing up the trading rate for that day. Other drivers of the market included the recent talks between the political parties that sent the rates shooting downwards as optimism filled the market. At the first signs of collapse between the two parties, however the ZWD to USD exchange rates shot up tremendously.

The major problem with foreign currency in Zimbabwe is the fact that there are multiple exchange rates (six in August 2008 – the cash rate, the transfer rate, the UN rate, the Old Mutual rate, the Inter-bank rate, the government rate). The reason behind multiple exchange rates lies in the fact that the government holds the government exchange rate at an extremely artificially low rate that no one can access except government officials, giving them no incentive to eliminate this overvaluation and inequity. Those who can access foreign currency at very reduced rates buy it and then sell it at mark-up prices of up to four thousand percent. This arbitrage, backed by the population's inflation expectations, results in rapidly increasing prices. Because there are very limited exports, much of Zimbabwe's foreign currency comes in from remittances sent to families by the workers in the Diaspora.

It will be interesting to see what becomes of the many illegal foreign currency dealers who have amassed a large amount of foreign currency when the economy recovers.

EFFECTS OF THE CRISIS

Currently the Zimbabwean economy is being run by the informal sector. At least eighty percent of the economy uses foreign currency, but there is still a huge demand for Zimbabwean dollars because until recently, most stores were not allowed to legally sell their goods in foreign currency. As a result, most official transactions occur in Zimbabwean dollars leading to a great demand of the local currency. Many companies have been forced to close shops and service providers such as schools are being forced to charge their fees either in US dollars or in fuel coupons, especially when world oil prices are going up. This is very rational behavior especially now that the US faces the threat of going into a recession; the next best way for companies to store value is to charge in foreign currency. If the government was keen, they could possibly initiate a very sophisticated form of dollarization, where they used these fuel coupons as currency to restore the public's confidence in some form of storage. The government is reluctant to dollarize using the South African rand because of the politics in the region. Because of these various factors, people in Zimbabwe generally like to keep their money in non-monetary assets or in foreign currency, mainly the British pound, the US dollar and the South African rand (ZAR). Because of the economic crisis, millions of Zimbabweans are now in the Diaspora, hoping that the remittances they send through agents such as Western Union will alleviate the families suffering from the hyperinflation.

The policies that have been adopted so far in Zimbabwe have proven to be ineffective as these target the effects and not the causes. These measures, which include price controls and price freezes, only provide very temporary alleviation from the suffering but are ineffective in the long term. Price controls, imposed in Zimbabwe in 2007, faced two major obstacles: the first was to set prices for all prices of consumer goods, intermediate goods and raw materials in the economy;

the second was to adjust them to scarcities and surpluses. Since the first problem made the goal of controlling 'all' prices impossible, government usually set prices for a basket of consumer goods. But that created another set of problems since producers of these products had their prices controlled but not their inputs. Profit margins disappeared and, sooner or later, the products themselves.³² Price freezes, which were adopted in August 2006 in Zimbabwe, aim at keeping the prices of all goods stagnant. This measure is usually difficult to adopt as it requires shops to be monitored or for shop owners to submit a list of their prices every so often, but this is not feasible as it is time consuming and gives way to corruption.

As the economic crisis deepens, and the general discontent grows, the Zimbabwean power making forces are becoming highly centralized due to the mistrust and elitism that characterizes the current regime. Many major political and economic decisions are controlled by a few in power, which is similar to the economic conditions of Russia under Brezhnev.

POSSIBLE MACRO-ECONOMIC SOLUTIONS

Different solutions have been presented, including recommendations by US economist Steve Hanke. In his paper, titled Zimbabwe, From Hyperinflation to Growth, Hanke argues that if Zimbabwe adopts certain principles, it could well be on the road to recovery. His suggestions include dollarization of the economy, which would effectively result in Zimbabwe adopting the US dollar or the South African rand as the official currency. As of September 2008, the Zimbabwean economy moved to partial dollarization with the Reserve bank approving a few licensed producers to sell their goods in foreign currency. Local economists have criticized suggestions to dollarize because in the cases where dollarization has taken place, the economies have been very small and undiversified such as Lesotho that now uses the South African rand. Although it might not be that apparent, Zimbabwe's economy is very diversified. Zimbabwe was ranked among many middle income countries such as Turkey, Singapore, Malaysia and Nigeria in the 1970's and used to engage in trade with the US and Europe. Zimbabwe had the fourth strongest economy in the world. With this in mind, many feel that eradicating the multiple exchange rates would be more desirable.

Steve Hanke also suggests that Zimbabwe adopts a currency board and a free banking system where banks freely issue notes with minimum government regulation as opposed to the Reserve Bank handling that responsibility. This is because when the state intervenes in note issues, it crowds out competition and forces everyone to accept the quality of service set by the state, and this limits flexibility if choice. Also in the case where by too many notes are issued, the public will have a difficult time getting rid of an over issue of notes.

While conducting my research, I discovered that many Zimbabwean economists were of the opinion that although credible, Steve Hanke's proposals would not function in Zimbabwe, because they do not take into account the political

32 www.kubatana.net/docs/econ/zimcodd_breakfree_0708.pdf. Zimbabwe Coalition on Debt and Development

economy. They preferred a more comprehensive macro-economic reform strategy that corrects that corrects the pricing side, that tackles government expenditure, liberalizes the one-sided judicial system, and reduces inflation expectations by restoring confidence in the general public. How that will be done is yet to be seen, but in the case of Zimbabwe, one cannot separate the politics and the economics as the two go hand in hand.

After careful analysis, I propose that although the ultimate solution in Zimbabwe must begin with a political settlement. However, in between now and a political settlement much can be done in the short-term to remedy the current crisis.

- **Short term solutions**

One problem in Zimbabwe is that the accurate measure of the value of goods is distorted by people's inflation expectations; therefore each retailer sells goods at above the real value of the good, so as to evade losses incurred from hyperinflationary pressures.

To tackle this problem in the short term, the government could adopt a store of value that is appreciating in value as the official medium of exchange. A good example of this could be fuel coupons. However, given the current financial crisis, and the lack of access to credit, demand for gas has decreased sharply, causing oil prices per barrel to drop significantly since July 2008. Regardless of this fact, once the global economy recovers from the worst of the recession period, oil prices will begin to stabilize.

Another way to curb the unprecedented increase in prices and to restore consumer confidence is to re-introduce price controls on goods charged in foreign currency. Since the government has recently moved to allowing partial dollarization of the economy by letting licensed retailers sell their goods in foreign currency, they should impose price caps on the prices of basic goods because retailers are still inflating prices even though their revenue is in the form of stable foreign currencies.

It is worth noting that these minor remedies will not be able to effect much change in the production sector of Zimbabwe. The intractable problem of output can only be solved by restoration of investor confidence, and a monetary boost from bodies such as the IMF. Policy recommendations that examine the economic decline and hyperinflation as solely an economic problem under represent the severity of the crisis. Short term solutions exist, but are ultimately inadequate.

- **Long term solutions**

In the long term, once the political impasse has been resolved, the government can put in place a comprehensive macro-economic stabilization policy that encompasses all sectors of the economy. According to the IMF, there are 5 key elements necessary in ensuring that Zimbabwe achieves reasonable stabilization:

1. *Transparent transfer of quasi-fiscal activities to the government budget, as announced by the 2007 budget.* ³³No entity outside the budget should undertake any activity of a fiscal nature (including interest payments, subsidized credits etc) without offsetting transfers transparently provided for in the budget. Although this would not reduce inflation, it would allow for increased transparency and accountability and the rigor with which fiscal actions are reviewed would also be applied to these measures.
2. *Substantial fiscal tightening, including the newly absorbed QFAs of the RBZ or any other entity.* ³⁴For example, to lower inflation by about 800 percentage points, it was found that a minor adjustment of at least 10 percentage points of GDP would be necessary, based on 2006 figures. This must be complemented by government reduction of the government wage bill, and reduction of capital expenditure which more than doubled in 2006.
3. *Liberalizing the exchange regime by unifying the exchange rate and removing restrictions on current international payments and transfers.* ³⁵ This would involve the devaluation of the interbank exchange rate, pegging it closer and closer to the parallel market rate. Only one exchange rate must be in operation.
4. *Deregulating prices and imposing a hard budget constraint on public enterprises.* ³⁶ (Enterprises need a hard budget constraint that requires them to cut costs and operate at present levels of budget subsidies and agreed pricing formulas. Deregulating prices and allowing public enterprises to introduce cost-recovery pricing would be an essential element of a plan to move the operation of these enterprises to a commercial footing. Price deregulation would likely lead to a one-off spike in prices, but strong fiscal adjustment would ultimately reduce inflation pressures.)
5. *Establishing a strong money anchor to reduce inflation and inflation expectations.* ³⁷

From many cases of inflation that have been studied, it has been concluded that output levels can be restored fairly quickly, within the first two years of stabilization. In the case of Zimbabwe, maintaining the growth in output will depend on addressing a few factors including public enterprise and civil service reform, central bank reform, public expenditure and tax reform to sustain the fiscal adjustment and stimulate output growth.³⁸

33 IMF Working Paper. Lessons from High Inflation Episodes for Stabilizing the Economy in Zimbabwe WP0799

34 IMF Working Paper. Lessons from High Inflation Episodes for Stabilizing the Economy in Zimbabwe WP0799

35 IMF Working Paper. Lessons from High Inflation Episodes for Stabilizing the Economy in Zimbabwe WP0799

36 IMF Working Paper. Lessons from High Inflation Episodes for Stabilizing the Economy in Zimbabwe WP0799

37 IMF Working Paper. Lessons from High Inflation Episodes for Stabilizing the Economy in Zimbabwe WP0799

38 IMF Working Paper. Lessons from High Inflation Episodes for Stabilizing the Economy in Zimbabwe WP0799

Although there is lack of external support, Zimbabwe could begin an effective stabilization program with assistance in the form of policy measures from external bodies.

In conclusion, it is clear that most of the government policies although intended for the public good ignored the social costs associated and were not carried out in the most efficient, transparent manner. The agricultural sector in Zimbabwe would probably be the quickest to revive as it requires basic knowledge and minimum skills and it is not dependent on other factors of production besides inputs, good rain and knowledge. Manufacturing on the other hand will be slower to recover because it is partly dependent on the agricultural sector and requires a greater number of skilled labor, most of whom have left the country. Mining and tourism are also strong areas with the fastest growth potential as soon as investor confidence is restored in Zimbabwe. However, Zimbabwe first needs to re-examine its political condition, before any long-term stabilization effort can be put in place.

—Works Cited—

Gono, Gideon. “First Quarter Monetary Policy Statement: A Focus on Food, Foreign Exchange Generation, Producer Viability and Increased Supply of Basic Commodities.” April 2008.

Hanke, Steve. “Zimbabwe: From Hyperinflation to Growth.” CATO Institute (June 25, 2008).

Harold-Barry, David, ed. Zimbabwe, the Past is the Future. Weaver Press, 2004.

Hawkins, Tony, G. Kanyenze, D. Dore, D. Makina, D. Ndlela. “Comprehensive Economic Recovery in Zimbabwe: A Discussion Document - UNDP.” (2008).

IOM. “International Organization for Migration: Zimbabwe Country Profile.” 2008.

Jenkins, Carolyn and John Knight. The Economic Decline of Zimbabwe., 2002.

Mumbengegwi, Clever, ed. Macroeconomic and Structural Adjustment Policies in Zimbabwe. Palgrave Publishers Ltd, 2002.

Munoz, Sonia. “Central Bank Quasi-Fiscal Losses and High Inflation in Zimbabwe : A Note.” (2007).

Muzulu, Joseph. “Economic Turnaroud- A Challenge to Zimbabwe.” CIS Conference - Sheraton, 27 April 2006.

Richardson, Craig. “How the Loss of Property Rights Caused Zimbabwe’s Collapse.” (November 14, 2005).

Robertson, John. Inflation and Exchange Rate Developments: The Revalued Currency After One Month., 2008.

World Bank. “Interim Strategy Note for the Republic of Zimbabwe : World Bank.” (April 12, 2007).