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EDITORIAL

The *New York Economic Review* is an annual journal, published in the Fall. The *Review* publishes theoretical and empirical articles, and also interpretive reviews of the literature. We also encourage short articles. The *Review's* policy is to have less than a three month turnaround time for reviewing articles for publication.

MANUSCRIPT GUIDELINES

1. Please submit three copies of a manuscript.
2. All manuscripts are to be typed, double spaced and proofread. Prepared on a IBM PC/compatible computer in Microsoft Word format, the computer disk should be submitted in addition to the three hard copies.
3. All charts and graphs *must* be reproduction quality (Microsoft Word or Excel).
4. Footnotes should appear at the end of the article under the heading of "Endnotes."
5. Citations in the text should include the author and year of publication, as found in the references, in brackets. For instance (Marshall, 1980).
6. A compilation of bibliographic entries should appear at the very end of the manuscript under the heading "References."

Manuscript submissions should be sent to the editor, William O'Dea.

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Consumer Confidence and the Unemployment Rate in New York State: A Panel Study

Arindam Mandal* and Joseph McCollum**

Abstract

This paper explores the short-term and long-run relationship between the unemployment rate and the consumer confidence index in five metropolitan statistical areas (MSAs) of New York State. The paper utilizes a unique dataset collected by the Siena Research Institute (SRI) between 2001 and 2010. We use panel cointegration and panel error-correction models (ECM) to explore the causal relationship between these two variables. The short-run coefficients indicate a negative causality from consumer sentiment to unemployment and vice versa, indicating that unemployment and consumer sentiment reinforce each other in the short run. In the long-run, we find significant negative causality from consumer confidence to unemployment. However, the direction of causality from unemployment to consumer confidence is not significant.

1. Introduction

The purpose of this study is to explore the short-run and long-run relationship between the New York State (NYS) unemployment rate and consumer sentiment as measured by the Index of Consumer Sentiments (ICS) and its sub-indices - Index of Current Economic Conditions (ICC) and Index of Consumer Expectations. The paper utilizes a unique panel dataset collected by the Siena College Research Institute (SRI) from 2001-2010 documenting the quarterly NYS consumer sentiment across five Metropolitan Statistical Areas (MSAs) of the state. The idea and purpose of the SRI Consumer Sentiment Survey is to replicate for NYS the national level Survey of Consumers conducted by the University of Michigan. The NYS Consumer Sentiment Survey not only reports consumer sentiment for NYS, but also for five Metropolitan Statistical Areas (MSAs) throughout NYS. This enables us to exploit variations in data across time and cross section to explore the relationship between the unemployment rate and consumer sentiment. We use panel cointegration and panel error-correction models (ECM) to explore the causal relationship between these two variables. Our study finds convincing evidence that in the short-run there is negative causality between unemployment rate and consumer confidence, which runs both ways. However, in the long-run though there is negative causality from consumer sentiment to unemployment rate but the reverse causality is not statistically significant.

In the 1940s, George Katona developed the Consumer Sentiment Index as a direct measure of expectations in models of savings and investment behavior (Katona, 1975; Curtin, 1983). The Consumer sentiment surveys are based on the premise that data on consumer sentiments both predict and are predicted by a wide range of economic variables (Curtin, 2007). Katona hypothesized that

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consumer spending depends on both their “ability and willingness to buy.” By spending, he meant discretionary purchases; by ability, he meant consumers’ current income and by willingness, he meant consumers’ assessment of their future income prospects (Curtin, 2007). Based on Katona’s ideas, modern day consumer sentiment surveys are designed to measure the psychological aspect of consumer wellbeing by asking respondents a series of subjective questions.

However, the usefulness of the consumer sentiment index to forecast or explain the economy in general and consumer behavior in particular has often been challenged. In the second half of the fifties, the Board of Governors appointed a committee to evaluate the usefulness of consumer surveys in anticipating consumer behavior. The broad outcome of the committee report was that consumer surveys were not useful (Board of Governors, 1955). The subsequent work by Tobin (1959) and Juster (1964) supported the conclusion of the Board of Governor’s report. From a theoretical point of view, given the rational expectations hypothesis, it can be surmised that consumer sentiment indices are not supposed to have additional information if they are based on expected macroeconomic variables. However, subsequent empirical research has shown mixed results. In some cases it was shown that these indices were useful as explanatory variables in the consumption function. See: Mueller, 1963; Suits and Sparks, 1965; Fair, 1971a and 1971b; Adams and Klein, 1972. In other studies they were seen as nothing more than a synthesis of macroeconomic indicators. See: Friend and Adams, 1964; Adams and Green, 1965; Hymans et al., 1970; Juster and Wachtel, 1972 and Juster et al. 1972; Shapiro, 1972; McNeil, 1974; Lovell, 1975. The prevailing opinion now seems to be that it may help predict the evolution of economic activity. See: Garner, 1991; Fuhrer, 1993; Carrol et al., 1994; Kumar et al., 1995; Matsusaka and Sbordone, 1995; Eppright et al., 1998, Bram and Ludvigson, 1998.

Prior studies exploring the relationship between the unemployment rate and consumer confidence assumed that causality ran from the unemployment rate to consumer confidence (Mueller, 1966, Calerio, 2007). However, the relationship between the unemployment rate and consumer sentiment may not be straightforward. Consumer sentiment is affected by an individual’s general feeling of optimism or pessimism. Therefore periods of economic growth and low unemployment are typically expected to have a positive impact on consumer sentiment. Similarly the labor market is also intimately linked to general economic conditions. Therefore it may not be inappropriate to assume an intrinsic link between the unemployment rate and consumer sentiment, but the direction of causation between these two variables may not be that obvious. In this paper we are particularly interested in exploring the long-run and short-run relationship between the unemployment rate and consumer sentiment in NYS. The focus of the study is to explore the direction of causality between these two variables. The rest of the paper is organized as follows. Section 2 discusses the data. The results of the panel unit root tests and the error correction models are presented in section 3. Section 4 concludes.

2. Data description

Each month, the Siena Research Institute (SRI) publishes a Consumer Confidence index number for New York State consumers. The survey is comparable with the similar national survey conducted by the University of Michigan's Consumer Sentiment index. Current consumer confidence is measured by the Index of Current Economic Conditions, whereas future consumer confidence is measured by the Index of Consumer Expectations. These two indices are combined to calculate the Index of Consumer Sentiments. SRI also produces a quarterly consumer confidence index that looks at five regions (MSAs) of New York State: Albany, Binghamton, New York City, Rochester and Syracuse. The survey also collects data for the Mid-Hudson, Long Island and Utica regions. However, for these regions data are available only from 2007 onwards. Therefore these regions are not included in the study. The quarterly Consumer Confidence index provides regional measures of the state's economic health. The index is constructed based on random telephone calls to at least 2400 NYS residents across various MSAs and over the age of 18 years. The sample is selected based on a random digit dialing (RDD) sample obtained from Sample Survey International (SSI).

The Index of Consumer Sentiment (ICS) is derived from the following five questions:

- "We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?"
- "Now looking ahead--do you think that a year from now you (and your family living there) will be better off financially, or worse off, or just about the same as now?"
- "Now turning to business conditions in the country as a whole--do you think that during the next twelve months we'll have good times financially, or bad times, or what?"
- "Looking ahead, which would you say is more likely--that in the country as a whole we'll have continuous good times during the next five years or so, or that we will have periods of widespread unemployment or depression, or what?"
- "About the big things people buy for their homes--such as furniture, a refrigerator, stove, television, and things like that. Generally speaking, do you think now is a good or bad time for people to buy major household items?"

Time series for unemployed and employed are obtained from the Local Area Unemployment Statistics survey conducted monthly by the U.S. Bureau of Labor Statistics. The monthly data are converted into quarterly data using a simple average. All the data have been converted to natural logarithms to stabilize the variance.

Though monthly state level data are available from January 1999, MSA data is only available quarterly from the fourth quarter of 2001. Hence the period under study is 2001:IV-2010:IV. The MSAs considered in this study are Albany, Binghamton, New York City (NYC), Rochester and Syracuse. We look at the consumer confidence index (Index of Consumer Sentiment (ICS), Index of Consumer Expectations (ICE) and Index of Current Economic Conditions (ICC)), and the unemployment rate. The

extent of study and the frequency of data are primarily guided by the availability of the data. The data are deseasonalized using the Census Bureau's X-12-ARIMA seasonal adjustment procedure.

The descriptive statistics in Table 1 show substantial variation in the unemployment rate ranging from 4.09 percent to 9.38 percent. Some of these variations are due to changes in demographic factors rather than business cycle fluctuations. The distribution of the unemployment rate does vary from area to area in the state. We find substantial variation in ICS, ICC and ICE also.

Table 1: Descriptive Statistics – New York State

| | Index of Consumer Sentiments (ICS) [*] | Index of Current Economic Conditions (ICC) [*] | Index of Consumer Expectations (ICE) [*] | Unemployment Rate |
|---------------------|--|---|--|----------------------|
| Mean | 73.11 | 77.05 | 70.57 | 6.09% |
| Median | 77.00 | 80.00 | 72.00 | 5.77% |
| Maximum | 87.00 | 91.00 | 88.00 | 9.38% |
| Minimum | 54.00 | 54.00 | 53.00 | 4.09% |
| Std. Dev. | 9.2580 | 11.2841 | 8.4838 | 0.0146 |
| Skewness | -0.5311 | -0.5742 | -0.2803 | 0.7114 |
| Kurtosis | 2.1715 | 1.9595 | 2.4868 | 2.3544 |
| Jarque-Bera | 2.7975 | 3.7021 | 0.8905 | 3.7631 |
| Observations | 37 | 37 | 37 | 37 |

Notes:

* Index Value (1966=100)

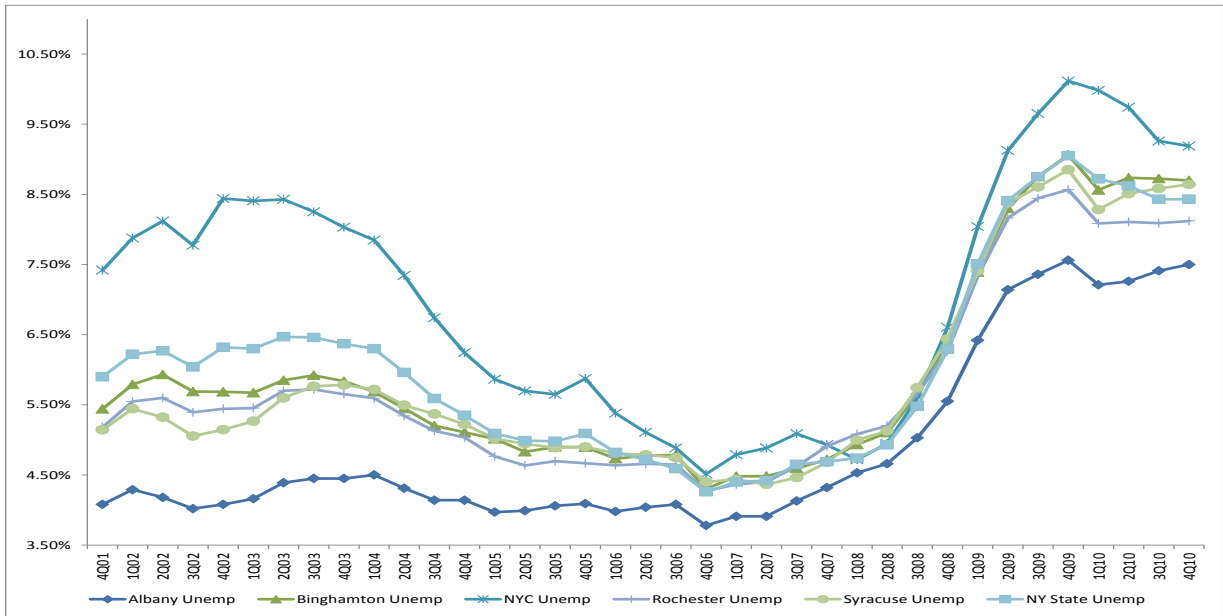
Figure 1 shows the unemployment rate in New York State and the MSAs under study. New York City has both a relatively higher unemployment rate and more volatility in its unemployment rate as compared to the rest of the state. On the other hand Albany typically has a lower unemployment rate as compared to the rest of the state. The unemployment rates in the rest of the state follow each other closely.

Among the MSAs, Albany consistently has the lowest unemployment rate and the highest consumer sentiments. The unemployment rate in Binghamton follows the average trend in New York State. However, it has the lowest consumer sentiment as measured by all the three indices.

3. Estimations

The point of departure for our study is the use of panel data to explore the long-run and short-run relationship between consumer sentiment and the unemployment rate. To our knowledge this is the only

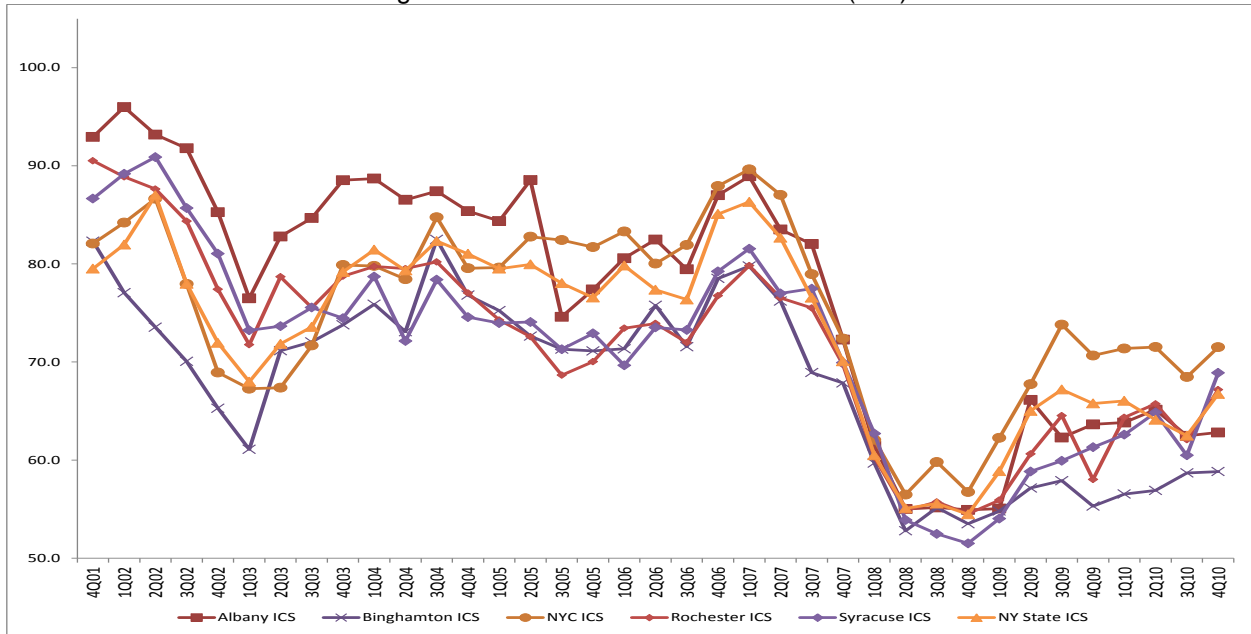
Figure 1: Unemployment Rate



Source: Local Area Unemployment Statistics

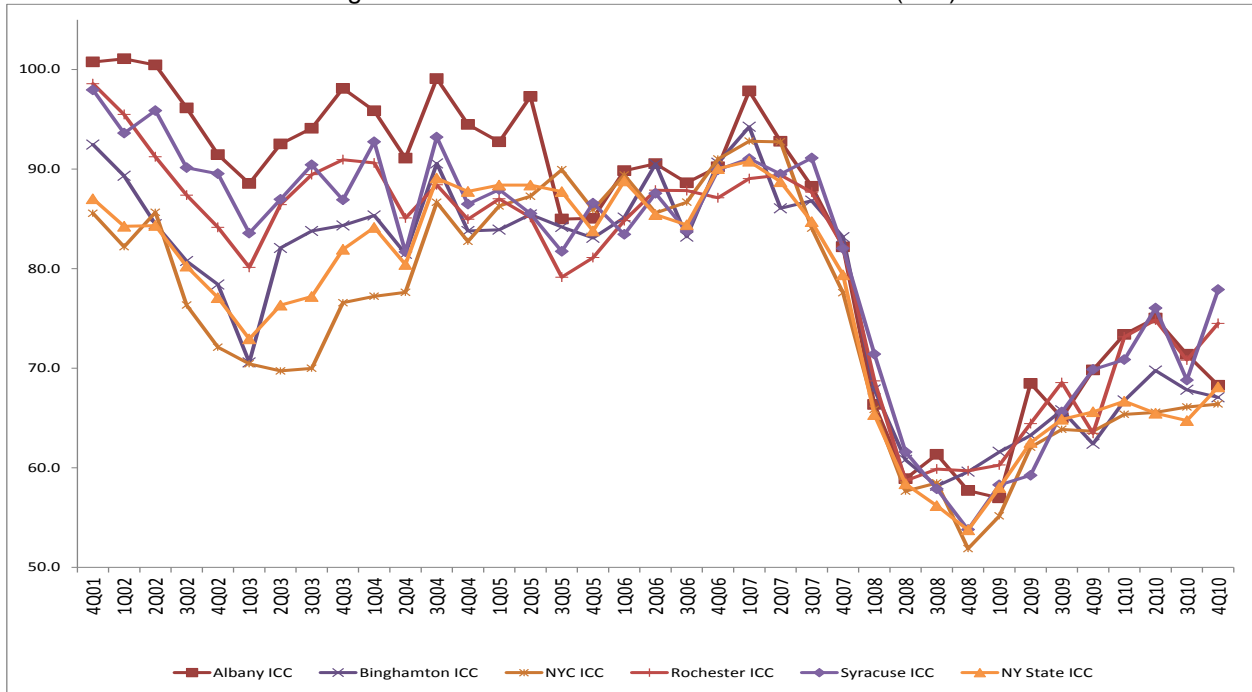
Figure 2,3 and 4 show the behavior of the consumer sentiment indices.

Figure 2: Index of Consumer Sentiment (ICS)



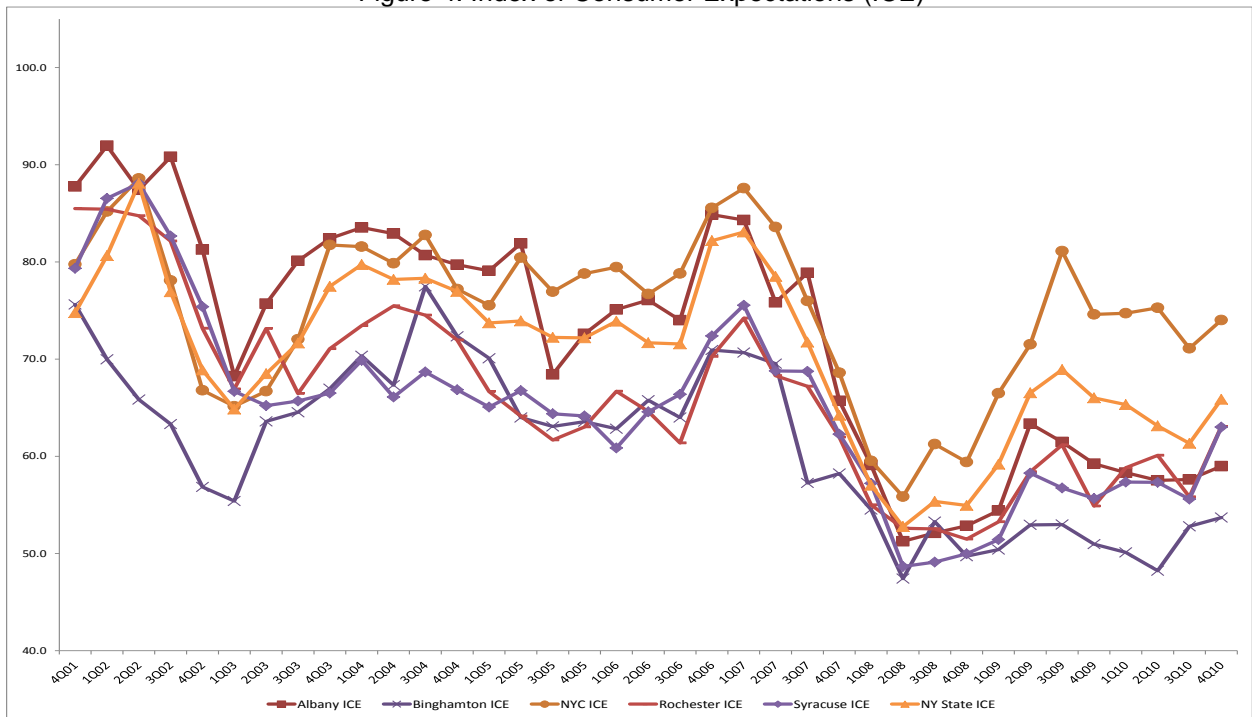
Source: Siena Research Institute

Figure 3: Index of Current Economic Conditions (ICC)



Source: Siena Research Institute

Figure 4: Index of Consumer Expectations (ICE)



Source: Siena Research Institute

study exploiting the panel features of the consumer sentiment data produced by the Siena Research Institute to explore its relationship with the unemployment rate. In addition, by combining the time series dimension with the cross-sectional dimension, the panel data help to reduce collinearity among the explanatory variables, increase the degrees of freedom, take care of the omitted variable problem, and give more variability and efficiency.

3.1 Estimation Technique

Based on the methods developed by Granger (1969) and popularized by Sims(1972), we can test causality, in the Granger sense, by using F -tests to determine whether lagged information on a stationary variable Y provides any statistically significant information about a stationary variable X in the presence of lagged X . If not, then " Y does not Granger-cause X ." So we can test Granger causality using the following bivariate autoregressive-distributed lag model

$$y_{it} = \alpha_0 + \sum_{j=1}^t \alpha_j y_{it-j} + \sum_{j=0}^t \delta_j x_{it-j} + f_i + u_{it}$$

$$x_{it} = \beta_0 + \sum_{j=1}^t \beta_j y_{it-j} + \sum_{j=0}^t \gamma_j x_{it-j} + \mu_i + \varepsilon_{it}$$

where index $i=1\dots N$ refers to the MSAs and $t=1\dots T$ to the time periods. The disturbances u_{it} and ε_{it} are assumed to be independently and identically distributed with a zero mean. MSA specific effects are captured by f_i and μ_i . In the above model x Granger causes y if all δ_j are not equal to zero. Using the same argument y Granger causes x if all γ_j are not equal to zero. However, Engle and Granger (1987) have shown that, if the series x and y are cointegrated, the standard Granger causality test is misspecified. Also a cointegrating regression considers only the long-run property of the model, and does not deal with the short-run relation explicitly. To account for short-run dynamics and the long-run equilibrium simultaneously, we need to use an error correction model (ECM) (Engle and Granger, 1987). Our first step is to apply a unit root test to check for the stationarity of our data set. Based on our stationarity test results, we will test for the existence of a cointegrating relationship. In the presence of a cointegrating relationship, we would use an ECM model to explore short run dynamics and the long-run relation between variables.

3.2 Panel Unit Root Test

We check panel stationarity by using a panel unit root test using the LLC test developed by Levin et al. (2002). Though there are other panel unit root tests notably the IPS test by Im et al. (2003) and Fisher type tests by Maddala and Wu(1999) and Choi(2001), however, we are using the LLC test since our data

set has only five MSAs and 37 time periods and Levin et al. requires $\frac{N}{T} \rightarrow 0$ as $T \rightarrow \infty$. Following Levin et al. (2001), in order to mitigate the impact of cross-sectional dependence, cross-sectional means are subtracted from the series. The panel unit root test results are shown in the table 2.

Table 2: Panel Unit Root Test Results for Unemployment rate, ICC, ICS and ICE

| Variable | LLC Panel Unit root test | P-value | First Difference LLC Panel Unit root test | P-value |
|--------------------------|--------------------------|---------|---|---------|
| Unemployment Rate | -0.2977 | 0.3830 | -4.9733*** | 0.0000 |
| ICC | -0.1683 | 0.4332 | -7.0349*** | 0.0000 |
| ICS | -1.4750* | 0.0701 | -6.4866*** | 0.0000 |
| ICE | -0.3402 | 0.3668 | -4.8896*** | 0.0000 |

Notes:

- * Rejects the null of a unit root at the 10% level
- ** Rejects the null of a unit root at the 5% level
- *** Rejects the null of a unit root at the 1% level

Based on the LLC panel unit root test, we reject the null hypothesis of no unit root for the unemployment rate, the ICC and the ICE at the 1 percent level of significance; however, for the ICS it is not rejected at a 10 percent level of significance. On the other hand, using first differences we find all the series are stationary. Hence, the following analysis is based on first differenced data.

3.3 Panel Cointegration Test

Since the panel unit root tests presented above indicate that the variables are integrated of order one $I(1)$, we test for cointegration using the panel cointegration test developed by Westerlund (2007) and Persyn and Westerlund (2008). It is an error correction based panel cointegration test and the tests are general enough to allow for a large degree of heterogeneity, both in the long-run cointegrating relationship and in the short-run dynamics, and dependence within as well as across the cross-sectional units. The results of the Westerlund panel cointegration tests between the unemployment rate and confidence indices using the optimal lag length selected by the Akaike Information Criterion (AIC) are presented below in table 3.

The test contains four cointegrations statistics, the first two (G_T, G_α) are called group mean tests and the last two (P_T, P_α) are called panel tests. The tests (G_T, P_T) are computed with the standard errors of the intercept term, estimated in a standard way and the tests (G_α, P_α) are based on the Newey and West

Table 3: Panel Cointegration Tests

| Statistic | ICC | | ICE | | ICS | |
|------------|-----------|---------|---------|---------|-----------|---------|
| | Z-Value | P-Value | Z-Value | P-Value | Z-Value | P-Value |
| G_T | -4.671*** | 0.000 | -1.352* | 0.088 | -3.319*** | 0.001 |
| G_α | -2.746*** | 0.003 | 0.126 | 0.550 | -1.182 | 0.119 |
| P_T | -4.701*** | 0.000 | -1.372* | 0.085 | -3.278*** | 0.001 |
| P_α | -5.142*** | 0.000 | -1.247 | 0.106 | -3.148*** | 0.001 |

Notes:

* Rejects the null of no cointegration at the 10% level

** Rejects the null of no cointegration at the 5% level

*** Rejects the null of no cointegration at the 1% level

(1994) adjusted standard errors for heteroscedasticity. Based on panel unit root cointegration tests, we convincingly reject the null hypothesis at 1 percent level of significance, indicating that the unemployment rate and ICC exhibit a cointegration relationship. We can draw similar conclusions about the relationship between the unemployment rate and the ICS. However, we failed to reject one of the null hypotheses. We failed to reject the null hypothesis for the cointegration test between the unemployment rate and the ICE, indicating that perhaps no significant cointegrating relationship exists between these two variables.

3.4 Error Correction Estimations

Engle and Granger (1987) showed that if two variables are cointegrated of the same order, then one needs to model the short-run dynamics and long-term relation between these two cointegrated variables using an error correction model. However, following Banerjee et al. (1993) it is advisable to use a generalized one step error correction model rather than the two step error correction model suggested by Engle and Granger. Banerjee et al.(1993) show that the one step error correction model is asymptotically equivalent to more complex full-information maximum-likelihood and fully modified estimators when the processes are weakly exogenous. Therefore the one step error correction model is efficient and unbiased, as well as consistent. The generalized error correction model is estimated in one step using the following equation.

$$\Delta y_{it} = \alpha_0 + \beta_0 \Delta x_{it} - \beta_1 (y_{i,t-1} - \beta_2 x_{i,t-1}) + \varepsilon_{it} \quad (1)$$

The error correction term is given by $(y_{i,t-1} - \beta_2 x_{i,t-1})$ and its estimated coefficient β_1 gives the estimated error correction rate. If $(y_{i,t-1} - \beta_2 x_{i,t-1})$ equals 0, then x and y are in their equilibrium state. Any increase in x will cause a deviation from equilibrium and cause y to be too low. As a result y will increase a total of β_2 points in the long-run to correct for this disequilibrium, and β_1 percent of the deviation would

be corrected in each subsequent time period. The short term contemporaneous adjustment is captured by β_0 .

Following De Boef (2000), it can be shown by simple algebra that equation (1) can be estimated by the following equation.

$$\Delta y_{it} = \alpha_0 + \alpha_1 \Delta x_{it} - \gamma (y_{i,t-1} - x_{i,t-1}) + \theta x_{i,t-1} + \varepsilon_{it}$$

where the short-run adjustment, β_0 in equation (1), is measured by α_1 and the long-run equilibrium, β_2 in equation (1), is estimated by $(1 - \frac{\theta}{\gamma})$. However, the standard error for $\beta_2 = (1 - \frac{\theta}{\gamma})$ is not obtained directly from the one step error correction regression. The standard error is obtained by a Bewley transformation (Bewley, 1979, De Boef and Keele, 2008). It is computationally convenient for calculating the standard error for the long-run multiplier and is not meant to serve as a representation of the underlying dynamics. The Bewley transformation requires estimating the following regression

$$y_{it} = \alpha_0 + \alpha_1 \Delta y_{it} + \alpha_2 x_{it} - \alpha_3 \Delta x_{it} + u_{it}$$

where α_2 is the estimated long-run effect. However, Δy_{it} appears on the right side of above equation. Therefore we need to proxy Δy_{it} as

$$\Delta y_{it} = \alpha_0 + \beta_1 y_{i,t-1} + \beta_2 x_{it} + \beta_3 \Delta x_{it} + \varepsilon_{it}$$

and we use the predicted value of Δy_{it} from above equation in the Bewley transformation regression.

The results of the corresponding error correction regressions between the unemployment rate and ICC and the unemployment rate and ICS are summarized in tables 4 and 5. They include coefficients of the regressions, the short-run effects and the calculated long-run effects along with the corresponding standard errors in brackets and the level of significance denoted by asterisks. The first column under dependent variables explores the impact of the confidence indices on the unemployment rate and the second column explores the other direction of causality.

The coefficients of the error-correction term give the adjustment rate at which a short-run disequilibrium converges to a long-run equilibrium. With respect to our model, it is the rate at which the gap between the unemployment rate and the confidence index is closed. All of these error-correction coefficients are negative and highly significant indicating that there exists a long-run relationship between these two variables and providing evidence of a the existence of a cointegrating relationship between the variables.

Table 4 : Short Run and Long-run Relationship between Unemployment Rate and ICC

| Model | Dependent Variables | |
|---|---|--|
| | $\Delta \ln \text{unemp}$ | $\Delta \ln \text{ICC}$ |
| Constant | 1.4277 ^{***} (0.09653) | 0.52488 ^{**} (0.147342) |
| $\Delta \ln \text{ICC}$ | -0.11740 ^{***} (0.02039) | |
| $\Delta \ln \text{unemp}$ | | -0.29262 ^{**} (0.074719) |
| ($\ln \text{unemp}_{t-1} - \ln \text{ICC}_{t-1}$) | -0.09898 ^{***} (0.00642) | |
| ($\ln \text{ICC}_{t-1} - \ln \text{unemp}_{t-1}$) | | -0.13235 ^{***} (0.02831) |
| $\ln \text{ICC}_{t-1}$ | -0.38371 ^{***} (0.02527) | |
| $\ln \text{unemp}_{t-1}$ | | -0.10386 ^{**} (0.04229) |
| Short-run Coefficient (α_1) | -0.11740 ^{***} (0.02039) | -0.29262 ^{***} (0.07472) |
| Long-run Coefficient ($1-\theta/\gamma$) | -2.87647 ^{***} (0.01405) [#] | 0.21522 ^{***} (0.02188) [#] |
| F-test (model) | 114.92 [*] | 26.63 ^{**} |
| R ² (within) | 0.4483 | 0.1132 |
| R ² (between) | 0.2847 | 0.4171 |
| R ² (overall) | 0.4470 | 0.1014 |
| Observations | 180 | 180 |

Notes:

- (1) Robust standard errors reported in parentheses
- (2) *, ** and *** denote significance at 10%, 5% and 1% level
- (3) # denotes standard errors are estimated by Bewley transformation.

3.5 Results

In the panel econometric literature there are debates about which particular panel technique to use. Often the choice is between fixed effect, random effect and dynamic panel models. Clearly in our dataset we have a dynamic relationship and hence it is reasonable to use dynamic panel estimations. However, dynamic panel estimations popularly developed by Arellano and Bond (1991) are designed for panels with relatively large cross-sections and small time series. But in our dataset we have large time series and relatively small cross-sections. Beck and Katz (2011) and Judson and Owen (1999) suggests that for cases with large time series and small cross-section it is advisable to use fixed effect panel estimations

Table 5: Short Run and Long-run Relationship between Unemployment Rate and ICS

| Model | Dependent Variables | |
|---|---|--|
| | $\Delta \ln \text{unemp}$ | $\Delta \ln \text{ICS}$ |
| Constant | 1.27481 ^{***} (0.09381) | 0.45378 ^{***} (0.11216) |
| $\Delta \ln \text{ICS}$ | -0.08141 [*] (0.03605) | |
| $\Delta \ln \text{unemp}$ | | -0.15644 (0.08299) |
| ($\ln \text{unemp}_{t-1} - \ln \text{ICS}_{t-1}$) | -0.07399 ^{***} (0.00862) | |
| ($\ln \text{ICS}_{t-1} - \ln \text{unemp}_{t-1}$) | | -0.11919 ^{***} (0.02183) |
| $\ln \text{ICS}_{t-1}$ | -0.3393 ^{***} (0.02342) | |
| $\ln \text{unemp}_{t-1}$ | | -0.09012 [*] (0.03315) |
| Short-run Coefficient (α_1) | -0.08141 [*] (0.03605) | -0.15644 (0.08299) |
| Long-run Coefficient ($1-\theta/Y$) | -3.58555 ^{***} (0.03725) [#] | 0.24395 ^{***} (0.01845) [#] |
| F-test (model) | 75.62 ^{***} | 27.59 ^{**} |
| R² (within) | 0.3561 | 0.0938 |
| R² (between) | 0.4954 | 0.1852 |
| R² (overall) | 0.3226 | 0.0863 |
| Observations | 180 | 180 |

Notes:

- (1) Robust standard errors reported in parentheses
- (2) *, ** and *** denote significance at the 10%, 5% and 1% level
- (3) # denotes standard errors are estimated by Bewley transformation.

rather than dynamic panel estimations. The large time series takes care of the biases caused by the lagged dependent variable on the right side of the panel regressions. Therefore all of our results in this study are based on fixed effect panel estimations. The regression results are presented in tables 4 and 5. Table 4 regression results are obtained by estimating the following equations:

$$\Delta \ln \text{unemp}_{i,t} = \alpha_0 + \alpha_1 \Delta \ln \text{ICS}_{i,t} - \beta_1 (\ln \text{unemp}_{i,t-1} - \beta_2 \ln \text{ICS}_{i,t-1}) + \theta \ln \text{ICS}_{i,t-1} + \varepsilon_{i,t}$$

$$\Delta \ln \text{ICS}_{i,t} = \alpha_0 + \alpha_1 \Delta \ln \text{unemp}_{i,t} - \beta_1 (\ln \text{ICS}_{i,t-1} - \beta_2 \ln \text{unemp}_{i,t-1}) + \theta \ln \text{unemp}_{i,t-1} + \varepsilon_{i,t}$$

Similarly Table 5 results are obtained by estimating following equations:-

$$\Delta \ln unemp_{i,t} = \alpha_0 + \alpha_1 \Delta \ln ICS_{i,t} - \beta_1 (\ln unemp_{i,t-1} - \beta_2 \ln ICS_{i,t-1}) + \theta \ln ICS_{i,t-1} + \varepsilon_{i,t}$$

$$\Delta \ln ICS_{i,t} = \alpha_0 + \alpha_1 \Delta \ln unemp_{i,t} - \beta_1 (\ln ICS_{i,t-1} - \beta_2 \ln unemp_{i,t-1}) + \theta \ln unemp_{i,t-1} + \varepsilon_{i,t}$$

Based on first columns under the dependent variables heading in tables 4 and 5, we find that all the coefficients are highly significant at the 1 percent level of significance except for the coefficient on the change in the ICS in table 5 which is significant at 10 percent level. As expected the error correction terms are negative and significant, indicating that there is a long-run relationship between consumer confidence and the unemployment rate. It implies that whenever there are deviations from long-run equilibrium, the short-run adjustments in ICC and ICS would reestablish the long-run equilibrium. The speed of adjustment is given by the coefficients of the error-correction term. In the case of the causality from ICC to the unemployment rate, the adjustment rate is (-0.09898) or -9.8 percent, whereas from ICS to the unemployment rate the adjustment rate is (-0.07399) or -7.3 percent. The corresponding short-run effects are measured by the coefficients of ($\Delta \ln ICC$) and ($\Delta \ln ICS$). In our estimation results, the short-run coefficients (-0.11740) for $\Delta \ln ICC$ and (-0.08141) for $\Delta \ln ICS$, are both negative and significant. It implies that in the short-run, both ICC and ICS have negative effects on the unemployment rate. It implies the higher the consumer confidence, either measured by ICC or ICS, the lower the unemployment rate is in the short-run. The long-run effects are measured by taking the ratio of the coefficients of the lagged independent variable and of the error correction term and then subtracting it from one. The long run effect of the ICC on the unemployment rate is (-2.87647) and for ICS on unemployment rate is (-3.58555). We find that the long-run effect of the ICC and the ICS are both negative and significant. Intuitively it means in the long-run, consumer confidence reflects general wellbeing in the economy, and hence it results in a reduction of the unemployment rate.

The results of the analysis of causality from the unemployment rate to the confidence indices are given in the second columns under the dependent variables heading in tables 4 and 5. In case of the causality from the unemployment rate to ICC, all the coefficients in table 4 are significant at the 5 percent level of significance at least. The results for causality from the unemployment rate to the ICS presented in table 5 are much more mixed. Though all the coefficients are negative, the coefficient of the change in the unemployment rate ($\Delta \ln unemp$) is not significant and the coefficient of the lag unemployment rate ($\ln unemp_{i,t-1}$) is significant only at the 10 percent level of significance. The rate of adjustment given by the coefficients of the error-correction term are (-0.13235) or -13.23 percent for causality from unemployment rate to ICC and (-0.11919) or -11.91 percent for causality from unemployment rate to ICS. The rate of adjustment, however, is faster than the reversed model. The short-run effect of the unemployment rate on confidence indices are negative for ICC and ICS, however, it is significant only for ICC. However, to our surprise the long-run effect is significant but positive. It is hard to interpret the positive long-run effect. One possible interpretation is that higher unemployment creates positive future expectations that eventually will cause unemployment to decrease to its natural rate in the long-run. Hence the unemployment rate has a positive impact on confidence.

4. Conclusion

The paper explores the short-run and long-run causal relationship between the New York State (NYS) unemployment rate and the consumer sentiments as measured by the Index of Consumer Sentiments (ICS) and its sub-indices the Index of Current Economic Conditions (ICC) and the Index of Consumer Expectations. The study uses a unique dataset collected by the Siena Research Institute (SRI). The SRI provides quarterly data for confidence indices across NYS MSAs and hence in the study we have been able to exploit both the cross-section and the time series aspects of the dataset and as a result we are able to reduce collinearity among the explanatory variables, increase the degrees of freedom, take care of the omitted variable problem, and obtain more variability and efficiency. The results suggest that there are strong causal relationships between the unemployment rate and the ICC and the ICS, however, the study failed to find any relationship between the unemployment rate and the ICE. With respect to the ICC and the ICS, the relationship between the unemployment rate and the ICC is much stronger than the relationship between the unemployment rate and the ICS. The effect of ICS is diluted by the fact that the ICE is not causally related with unemployment rate. The short-run causality between the unemployment rate and the ICC runs both ways and is negative. However, in the long-run the causality from the unemployment rate to the ICC is negative but the reverse causality is positive. We find a similar relationship between the unemployment rate and the ICS; however, the short run relationship between the ICS and the unemployment rate is not significant. Based on the results, both long-run and short-run causality from the ICS to the unemployment rate is much stronger than the reverse causality. We believe that the causal relationship between the unemployment rate and the confidence indices have important policy implications, especially for forecasting purposes. Both the unemployment rate and confidence indices can help us to predict the behavior of each other. We believe that the dataset collected by the SRI is underutilized and in the future perhaps the SRI dataset can be used for understanding the behavior of the NYS economy, especially the behavior of the unemployment rate.

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Unions, Right-to-Work Laws, and Job Satisfaction in the Teaching Profession

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Abstract

The purpose of the present study is to determine if union status has any effects on job satisfaction for a sample of public school teachers. The present study differs from prior research in that it assumes union membership is endogenous and uses as an instrumental variable state-level right-to-work laws. Although it was found that union membership has an insignificant effect on overall job satisfaction, teachers in unions were found to be more enthusiastic about teaching and were less likely to leave for better pay. It was also found that teachers who earned higher incomes, who were women, and who worked in schools that had fewer students, or teachers who were minorities were more satisfied with their jobs. It was also found that teachers who worked in schools that had merit or performance-pay were less enthusiastic about teaching and were more likely to transfer to another school. Finally, results provided further support of the exit-voice hypothesis in that long-term union members were found to be more dissatisfied with their jobs.

Introduction

Prior research on the relationship between job satisfaction and union membership has yielded mixed results. Some studies have found that union workers are much less satisfied with their jobs than are non-union workers (Borjas, 1979; Berger et al., 1983; Steele and Ovalle, 1984; Clark, 1997; Meng, 1990; Lillydahl and Singell, 1993; Heywood et al., 2002). Other studies have found no significant relationship between union membership and job satisfaction (Gomez-Mejia and Balkin, 1984; Gordon and Denisi, 1995; Bryson et al., 2004; and Donohue and Heywood, 2004). Finally, one study even found that union workers were more satisfied than non-union workers (Pfeffer and Davis-Blake, 1990).

Several theories have been proposed to explain the impact of unions on job satisfaction. One theory, proposed by Freeman and Medhoff (1984) suggests that union workers aren't really that dissatisfied. Rather, union workers claim to be dissatisfied so that they can argue for more pay and better benefits (Borjas, 1979). This theory is known as the exit-voice hypothesis (Heywood et al., 2002; Hammer and Avgar, 2005). Another theory states that unions usually arise in occupations and industries that are dangerous and unpleasant (Duncan and Stafford, 1980; Premack and Hunter, 1988; Heywood et al., 2002; Hammer and Avgar, 2005). A third theory contends that union leaders unrealistically raise workers' expectations about job characteristics and potential compensation. Workers then become dissatisfied because their jobs aren't getting any better (Kochan and Helfman, 1981; Gordon and Denisi, 1995; Hammer and Avgar, 2005).

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Another theory states that workers may become dissatisfied because unions have a tendency to compartmentalize workers; some workers may feel unsatisfied because their abilities are not being fully utilized or rewarded (Super and Hall, 1978; Hackman and Oldham, 1980; Hammer and Avgar, 2005). It may also be the case that union workers have different preferences than non-union workers. Union leaders may stress certain aspects of a job, such as pay and benefits, while ignoring other aspects of a job. Thus, union workers may be unhappy not because they are not paid well, but because they are unfulfilled (Hammer and Avgar, 2005).

Other recent explanations include an industrial relations theory (the naturally adversarial role of unions leads to dissatisfaction in the workplace), an expanded utility theory (workers include many factors or aspects of a job in their utility functions), and a personal characteristic theory (people with certain attributes are naturally drawn to union jobs) (Heywood et al., 2002; Hammer and Avgar, 2005).

Although many of the above theories suggest that union workers may be less satisfied with their jobs than non-union workers, it is also possible that a positive relationship exists between union membership and worker satisfaction. According to Pfeffer and Davis-Blake (1990), union workers may report greater job satisfaction than non-union workers because unions reduce wage inequality and give workers a semblance of control over the functioning of their workplace.

Several of the above theories suggest that union status may be endogenous in an estimation of the determinants of job satisfaction. Unions may create dissatisfied workers, and these dissatisfied workers may then be more likely to join a union than others. This may result in the allocation of workers between non-union and union jobs being nonrandom. Hence, union membership should be viewed as being endogenous in a worker satisfaction regression (Bryson et al., 2004).

One way to mitigate at least some of this endogeneity is to examine only one occupation, thus isolating factors that are potentially responsible for some of the reported differences in satisfaction between union and non-union workers (Gordon and Denisi, 1995; Hammer and Avgar, 2005). By examining only one profession, job-related characteristics that may affect the overall desirability of a job and the proclivity of workers to form a union are eliminated. In the present study, only the teaching profession is used to examine the effect of unions on worker satisfaction. Although prior research has noted that looking at only one profession may lead to results that cannot be extrapolated to a wider population, it is reasonable to assume that many of the more generic attributes of workers, such as age and sex, have similar effects on satisfaction regardless of industry or occupation (Bryson et al., 2004).

To more completely control for the endogeneity of union membership, an instrumental variable approach should be employed. Although several prior studies have used this approach to estimate the determinants of job satisfaction, the present study differs from this prior research in the type of instrument used: state-level right-to-work laws (Borjas, 1979; Pfeffer and Davis-Blake, 1990; Lillydahl and Singell, 1993; and Bryson et al., 2004). Right-to-work laws prohibit unions from compelling workers to join unions in order to secure employment, hence greatly reducing the ability of unions to organize and retain members. It is reasonable to assume that this variable should have a significant impact on the likelihood

that an individual employee will be a member of union. Thus, the purpose of the present study is to use an instrumental variable approach to estimate the effects of union membership on job satisfaction for a sample of public school teachers.

Empirical Technique

As noted previously, some theories on worker satisfaction suggest that unsatisfied workers are more likely to join a union, while others suggest that unions may sow dissatisfaction among workers; hence, it is reasonable to assume that union status is endogenous in the estimation of the determinants of worker satisfaction. In order to control for this endogeneity, an instrumental variable approach is used.

An important issue is the selection of an appropriate instrument for union membership. It is necessary that this instrument is exogenous in the estimation of union membership and is uncorrelated with the error term in the second stage. In prior studies that assumed the endogeneity of union membership, various different types of instruments were employed. Bryson et al. (2004) used a set of dummy variables denoting manager-employee relations; Pfeffer and Davis-Blake (1990) used a variety of industry-specific variables. Both of these studies used data sets that encompassed a wide variety of industries and occupations. Hence, they employed instruments that would capture differences in work environments that may possibly explain the rise of unions in a particular industry. For example, if a particular industry is relatively dangerous to work in, then it is expected that a union would be more likely to arise in that industry rather than in an industry that is relatively safe. Since only one industry is examined in the present study, the use of such instruments is not warranted

As noted earlier, the instrument used in the present study in the union regression is a dummy variable denoting state-level right-to-work laws. These laws forbid unions from forcing workers to become members of a union in order to be employed by an organization. In addition, these laws allow workers to leave the union at any time but still benefit from any collective bargaining agreements. Currently, 22 states, most of which are located in the Southeast or Midwest, have right-to-work laws. It is reasonable to expect that states that have right-to-work laws would have much lower union participation rates than states that do not have such laws. Hence, a person who is a teacher in a right-to-work state is much less likely to be a union member, holding all other factors constant. In addition, given that a right-to-work law is not a direct indicator of workplace conditions or overall work environment, it is reasonable to assume that right-to-work laws would have no statistically-significant effects on worker satisfaction.

Given the above, the following equation is estimated in the present study:

$$\begin{aligned}
 Y = & \alpha_0 + \alpha_1 \text{ PUNION} + \alpha_2 \text{ MALE} + \alpha_3 \text{ HISPANIC} + \alpha_4 \text{ BLACK} \\
 & + \alpha_5 \text{ ASIAN} + \alpha_6 \text{ SIZE} + \alpha_7 \text{ STR} + \alpha_8 \text{ TMIN} + \alpha_9 \text{ SMIN} + \alpha_{10} \text{ EXP} \quad (1) \\
 & + \alpha_{11} \text{ EXP}^2 + \alpha_{12} \text{ CHARTER} + \alpha_{13} \text{ NORTH} + \alpha_{14} \text{ MIDW} + \alpha_{15} \text{ SOUTH} \\
 & + \alpha_{16} \text{ CITY} + \alpha_{17} \text{ ADVDEG} + \alpha_{18} \text{ ELEM} + \alpha_{19} \text{ BONUS} + \alpha_{20} \text{ LINC} \\
 & + \alpha_{21} \text{ HOURS} + \alpha_{22} \text{ AGE}
 \end{aligned}$$

In an instrumental variable approach, the endogenous variable, union membership is estimated. The set of regressors used in this regression consists of a dummy variable denoting state-level right-to-work laws and a subset of the regressors used in the second stage regression where the dependent variable is worker satisfaction. Using Bryson et al. (2004) as a guide, several job characteristic variables included in the second stage were excluded from the union regression primarily because they may be items that were subject to contractual union negotiations.

In equation (1), PUNION is the predicted value of UNION obtained from the first stage, and Y denotes various measures of teacher satisfaction. These satisfaction variables are all binary, and the SASS questions from which they are taken are as follows:

(1) SATIS: "I am generally satisfied with being a teacher at this school."

(2) WORTH: "The stress and disappointments involved in teaching at this school aren't really worth it." (For purposes of this study, the responses to this statement were inverted.)

(3) ENTHU: "I don't seem to have as much enthusiasm now as I did when I began teaching." (For purposes of this study, the responses to this statement were inverted.)

(4) LEAVE: "If I could get a higher paying job, I'd leave teaching as soon as possible." (For purposes of this study, the responses to this statement were inverted.)

(5) TRANS: "I think about transferring to another school." (For purposes of this study, the responses to this statement were inverted.)

A value of one for any of the above variables indicates that the teacher is satisfied in some particular way with his or her current position. As noted above, the responses to four of the questions were inverted such that agreement with the statement indicates satisfaction. The explanatory variables are defined as follows:

- (1) MALE equals one if teacher is male
- (2) HISPANIC equals one if teacher is Hispanic
- (3) BLACK equals one if teacher is African-American
- (4) ASIAN equals one if teacher is Asian-American
- (5) SIZE is total student enrollment in the teacher's school
- (6) STR is the student-teacher ratio in the teacher's school
- (7) TMIN is the percentage of teachers who are of a racial/ethnic minority
- (8) SMIN is the percentage of students who are of a racial/ethnic minority
- (9) EXP is the number of years of teaching experience
- (10) EXP² is experience squared
- (11) CHARTER equals one if teacher's school is a charter school
- (12) NORTH equals one if school is in the Northeast
- (13) MIDW equals one if school is in the Midwest
- (14) SOUTH equals one if school is in the South

- (15) CITY equals one if school is in an urban area
- (16) ADVDEG equals one if the teacher holds at least a Master's degree
- (17) ELEM equals one if teacher works in an elementary school
- (18) BONUS equals one if teacher's school has a merit pay system
- (19) LINC is the log of the teacher's total salary, including any bonuses or supplemental pay; outside employment income is not included in this value
- (20) AGE is the teacher's age
- (21) HOURS is the total number of hours worked; hours spent at outside employment are not included in this value
- (22) RTW equals one if the state where the teacher is employed has a right-to-work statute.

All of the explanatory variables included in the second-stage regression were used in prior research on this topic (Chapman and Lowther, 1982; Meng, 1990; Lillydahl and Singell, 1993; Gordon and Denisi, 1995; Clark, 1997; Heywood et al., 2002; Donohue and Heywood, 2004; and Bryson et al., 2004). Logistic regressions were used to estimate both stages of the model.

Data and Results

All data used in the present study was obtained from the Schools and Staffing Survey (SASS) which is compiled by the US Department of Education. This survey, which is conducted every three years, collects data on teachers, administrators, schools, and districts from a randomly-selected sample. The present study uses data from the 2007 SASS. Only full-time, public school teachers were included in the sample. Any teachers with missing data were excluded. The final sample used in the present study contains about 32,050 observations. Given the large size of the final sample, the exclusion of teacher observations should not significantly bias the data. Sample sizes were rounded to the nearest ten due to the use of restricted data.

All of the second-stage dependent variables are recorded in SASS as having one of four possible outcomes. They are "strongly agree", "somewhat agree", "somewhat disagree", and "strongly disagree." In order to simplify the estimation of the dependent variables, these multinomial variables were turned into binary variables. A value of one was used if the response was one of the "agree" options; if one of the "disagree" options was chosen, a value of zero was noted. For all satisfaction variables, a two-stage logistic regression is used.

Descriptive statistics for all variables used are presented on Table 1. First stage regression results are presented on Table 2. Second stage results are presented on Table 3.

For the sample used in the present study, 92 percent of teachers said they were satisfied with their jobs. However, 20 percent felt that teaching wasn't important, and 39 percent said that they were not very enthusiastic about teaching. Further, 28 percent said that they would leave for better pay, and 29

| Variable | Mean | Standard Deviation | Variable | Mean | Standard Deviation |
|----------|-------|--------------------|----------|----------|--------------------|
| SATIS | 0.927 | 0.259 | HISPANIC | 0.041 | 0.198 |
| WORTH | 0.804 | 0.397 | BLACK | 0.056 | 0.23 |
| ENTHU | 0.612 | 0.487 | ASIAN | 0.016 | 0.125 |
| LEAVE | 0.716 | 0.45 | SIZE | 861 | 666 |
| TRANS | 0.708 | 0.454 | TMIN | 0.127 | 0.212 |
| MALE | 0.312 | 0.463 | SMIN | 0.367 | 0.343 |
| NORTH | 0.143 | 0.35 | EXP | 13.9 | 10.38 |
| MIDW | 0.262 | 0.44 | CHARTER | 0.022 | 0.149 |
| SOUTH | 0.344 | 0.475 | ADVDEG | 0.485 | 0.499 |
| CITY | 0.197 | 0.397 | ELEM | 0.321 | 0.466 |
| AGE | 42.45 | 11.62 | BONUS | 0.15 | 0.357 |
| HOURS | 53.35 | 8.68 | INCOME | \$47,966 | 13762 |
| RTW | 0.475 | 0.499 | | | |

percent said that they would transfer to another school given the opportunity. Hence, it appears as if teachers were giving conflicting answers regarding their overall satisfaction with their jobs.

Regarding the first-stage results, RTW is significant and negative, as expected. A teacher is 8.9 percent less likely to be a union member if they work in a state that has a right-to-work law. In the sample used in the present study, 47.5 percent of teachers work in states that have such laws. It is important to note, however, that even though many states with right-to-work laws are located in the South, the correlation between RTW and the South dummy variable was minimal. Other significant explanatory variables in the first-stage regression include region of country, gender, experience, and race.

For the second-stage results, it appears as if union membership has mixed effects on job satisfaction. The union variable is insignificant in three of the five regressions. The union variable was only significant in the ENTHU and LEAVE regressions. Hence, union members are enthusiastic about teaching, and they are less likely to leave for better pay. In looking at the effects of unions on job satisfaction, it appears as if the non-teaching specific results of the present study corroborate the findings of Gomez-Mejia and Balkin (1984), Gordon and Denisi (1995), Donohue and Heywood (2004), and Bryson et al. (2004).

In comparing these results to the results of prior research on teacher satisfaction, most studies have also found that the effects of unions are mixed. Some studies have shown that teachers suffer from overall dissatisfaction with their jobs (Cooke, 1982; Eberts and Stone, 1984), while others have found that unionized teachers are not any more dissatisfied with their jobs than are non-unionized teachers (Kowalczyk, 1982). Hence, these results are mixed and corroborate the findings of the present study. Finally, when the endogeneity of UNION is not corrected for, the union variable is insignificant in four of the five regressions; these results are available upon request.

| Table 2 First-Stage Logit Regression Results Dependent Variable – UNION | | | |
|---|-------------|--------------------|----------------|
| Variable | Coefficient | Standard Deviation | Test Statistic |
| Constant | 0.488 | 0.0928 | 5.260*** |
| RTW | -1.048 | 0.0319 | -32.819*** |
| MALE | -0.249 | 0.0301 | -8.304*** |
| HISPANIC | -0.185 | 0.0671.209 | -2.748*** |
| BLACK | 0.391 | 0.0618 | 6.321*** |
| ASIAN | 0.296 | 0.119 | 2.481** |
| SIZE | 0.00013 | 0.0000257 | 5.058*** |
| STR | 0.022 | 0.00387 | 5.702*** |
| TMIN | 0.114 | 0.082 | 1.393 |
| SMIN | -0.066 | 0.0507 | -1.304 |
| EXP | 0.0129 | 0.002 | 6.392*** |
| NORTH | 1.0207 | 0.0636 | 16.043*** |
| MIDW | 0.618 | 0.0414 | 14.931*** |
| SOUTH | -0.256 | 0.0365 | -7.003*** |
| CITY | 0.0531 | 0.0336 | 1.578 |
| ADVDEG | 0.261 | 0.028 | 9.312*** |
| ELEM | 0.024 | 0.032 | 0.741 |
| AGE | 0.00492 | 0.00176 | 2.807*** |
| Log-likelihood Function = -16836.08 | | | |
| Significant at 10 percent level = * | | | |
| Significant at 5 percent level = ** | | | |
| Significant at 1 percent level = *** | | | |

Another factor that had a significant effect on satisfaction was the sex of the worker; on average, men were less satisfied with their jobs; they were more likely to leave for better pay; and they were more likely to transfer to another school. Male teachers were, however, more enthusiastic about teaching than their female counterparts. These results corroborate earlier research in this area (Chapman and Lowther, 1982; Meng, 1990; Lillydahl and Singell, 1993; Gordon and Denisi, 1995; Clark, 1997; Donohue and Heywood, 2004; and Bryson et al., 2004).

Besides gender, other factors that were statistically significant in most, if not all, of the satisfaction regressions were income, experience, whether or not the teacher was an elementary school teacher, size of school, percentage of teachers and students in the school that were minorities, and hours worked. Generally, higher salaried teachers were more satisfied; more experienced teachers were less satisfied; elementary school teachers were happier than other types of teachers; the bigger the school, the more satisfied the teacher was; the more minorities in the school, the less happy the teacher was; and the more hours they worked, the less satisfied they were. In addition, a teacher who worked in a charter school was statistically not less satisfied than a teacher who did not work in a charter school, except for one category of satisfaction; a charter school teacher was more likely to transfer to another school. Most of the non-teaching specific results corroborate the findings of other studies on job satisfaction (Borjas,

1979; Meng, 1990; Pfeffer and Savis-Blake, 1990; Lillydahl and Singell, 1993; Clark, 1997; Donohue and Heywood, 2002; and Heywood et al., 2002).

| Variable | SATIS | WORTH | ENTHU | LEAVE | TRANS |
|------------------|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Constant | 2.484 (4.193)*** | -0.0798 (-0.168) | -0.77 (-1.747) | -3.75 (-6.233)*** | -1.25 (-2.749)*** |
| UNION | -0.279 (-1.081) | 0.266 (1.589) | 0.336 (2.431)** | 0.65 (4.385)*** | -0.222 (-1.518) |
| MALE | -0.0902 (-1.822) | -0.022 (-0.673) | 0.163(5.945)*** | -0.183 (-6.323)*** | -0.101 (-3.465)*** |
| HISPANIC | 0.174 (1.612) | 0.00285 (0.040) | 0.247 (3.917)*** | -0.238 (-3.779)*** | 0.285 (4.345)*** |
| BLACK | 0.139 (1.467) | 0.090 (1.372) | 0.0917 (1.594) | -0.19 (-3.216)*** | 0.344 (5.58)*** |
| ASIAN | -0.991 (-0.656) | -0.351 (-3.429)*** | 0.123 (1.259) | -0.34 (-3.454)*** | 0.328 (3.193)*** |
| SIZE | 0.0001 (2.466)** | 0.000074 (2.751)*** | 0.000031 (1.395) | 0.000072 (2.968)*** | 0.00011 (4.623)*** |
| STR | -0.0013 (-0.222) | -0.0054 (-1.384) | -0.00772 (-2.392)** | -0.000199 (-0.057) | 0.0138 (3.791)*** |
| TMIN | -0.563 (-4.847)*** | -0.459 (-5.593)*** | -0.337 (-4.599)*** | -0.36 (-4.708)*** | -0.511 (-6.775)*** |
| SMIN | -0.683 (-9.248)*** | -0.463 (-9.147)*** | -0.133 (-3.081)*** | -0.0645 (-1.377) | -0.451 (-10.006) |
| EXP | 0.0086 (1.017) | -0.0203 (-3.628)*** | -0.112 (-23.510)*** | -0.0698 (-13.291)*** | -0.0227 (-4.362)*** |
| EXP ² | 0.388 (0.179) | 0.00037 (2.64)*** | 0.00221 (19.052)*** | 0.00153 (12.046)*** | 0.00119 (8.684)*** |
| NORTH | -0.20 (-2.166)** | 0.00484 (0.078) | 0.174 (3.412)*** | 0.163 (2.904)*** | 0.195 (3.546)*** |
| MIDW | 0.00089 (0.013) | 0.0835 (1.816) | 0.057 (1.516) | -0.0086 (-0.212) | 0.068 (1.691) |
| SOUTH | -0.127 (-1.764) | 0.016 (0.36) | -0.00032 (-0.008) | 0.00532 (0.132) | 0.0856 (2.096)** |
| CITY | -0.0368 (-0.657) | -0.0383 (-1.063) | 0.003 (0.101) | -0.00841 (-0.264) | 0.085 (2.616)*** |
| ADVDEG | -0.10 (-2.053)** | -0.0286 (-0.891) | -0.025 (-0.941) | -0.0717 (-2.481)*** | -0.142 (-4.943)*** |
| ELEM | 0.222 (4.098)*** | 0.148 (4.244)*** | 0.082 (2.86)*** | 0.176 (5.675)*** | 0.162 (5.27)*** |
| AGE | -0.0021 (-0.745) | -0.00075 (-0.397) | 0.0043 (2.693)*** | 0.00127 (0.748) | 0.0158 (9.431)*** |
| CHARTER | -0.19 (-1.528) | -0.145 (-1.62) | 0.039 (0.481) | -0.0991 (-1.181) | -0.229 (-2.881)*** |
| LINC | 0.113 (2.104)** | 0.209 (4.714)*** | 0.154 (3.663)*** | 0.46 (7.875)*** | 0.179 (4.131)*** |
| HOURS | -0.0113 (-4.715)*** | -0.010 (-6.22)*** | 0.00248 (1.828) | -0.00406 (-2.815)*** | -0.00787 (-5.473)*** |
| BONUS | 0.0418 (0.671) | 0.0599 (1.484) | -0.0617 (-1.874) | 0.0206 (0.583) | -0.116 (-3.324)*** |
| | Log-Likelihood = -8184.09 | Log-Likelihood = -15657.59 | Log-Likelihood = -20787.35 | Log-Likelihood = -18784.60 | Log-Likelihood = -18744.99 |

Significant at 10 percent level = *; Significant at 5 percent level = **; Significant at 1 percent level = ***

One factor that affected teacher satisfaction and that was not used in other studies is the existence of a merit pay system. According to the regression results, teachers who were subject to a merit or bonus pay system were less likely to be enthusiastic about their jobs, and were more likely to transfer to another school within their district. These results suggest that a merit pay system results in teachers who are unenthusiastic and who want to get out. Because of the growing popularity of merit pay systems, these results have important implications for the retaining of quality instructors, the administration of merit pay systems, and the teaching profession overall.

Finally, given that only one occupation was examined, most of the theories on the effects of union membership on job satisfaction cannot be tested in the present study. One theory, however, that may be tested using the SASS data is the exit-voice hypothesis. According to Borjas (1979), the exit-voice theory predicts that union members with greater tenure will be more dissatisfied with their jobs than less experienced union members. This prediction should hold true even within the context of one industry and one occupation. In order to test this theory, equation (2) is re-estimated, adding an interaction variable between UNION and EXP. This equation is estimated using a single stage logit regression. If the exit-voice hypothesis is true, then the coefficient on the interaction variable should be negative. The results of this regression, which are presented on Table 4, confirm this theory, but only for the general satisfaction index (SATIS) dependent variable.

Although UNION and EXP were both significant and positive in this regression, the interaction term was significant and negative. Hence, even though union members, on average, may be more satisfied with their jobs, the more experienced union members are not. This result suggests that, over time, unions create dissatisfied workers. As noted earlier, the exit-voice hypothesis suggested that just such a result would occur; by creating dissatisfied workers, the union would then try to negotiate for better pay and better working conditions. This result corroborates the findings of Borjas (1979). The interaction term, however, was insignificant for all of the other satisfaction measures; these results are not reported in this study although they are available upon request.

Concluding Remarks

Teaching is a difficult profession. Much is demanded of teachers, and their compensation is typically subject to public criticism. Given the demands of this occupation, it would not be surprising to find low job satisfaction among teachers. However, in a sample of over 32,000 public school teachers, 92 percent said they were satisfied with their jobs. Further, even though some states have enacted laws and policies that would restrict or even strip away the collective bargaining rights of teachers, the results of the present study suggest that this may not even be that significant, at least with regards to teacher satisfaction. Based on several measures of teacher satisfaction, the present study found that there are few differences between union employees and non-union employees when it comes to job satisfaction in the teaching profession. Teachers who are union members were found to be more enthusiastic and were less likely to leave for better pay than non-union teachers.

| Table 4 Logit Regression Results Dependent Variable – SATIS Union-Experience Interaction Variable Included | | |
|---|-------------|----------------|
| Variable | Coefficient | Test Statistic |
| Constant | 2.271 | 3.835*** |
| UNION | 0.1712 | 2.182** |
| MALE | -0.077 | -1.597 |
| HISPANIC | 0.1844 | 1.708 |
| BLACK | 0.117 | 1.258 |
| ASIAN | -0.1257 | -0.841 |
| SIZE | 0.000093 | 2.297** |
| STR | -0.00242 | -0.409 |
| TMIN | -0.574 | -4.961*** |
| SMIN | -0.68 | -9.214*** |
| EXP | 0.015 | 1.688 |
| EXP ² | 0.0001 | 0.459 |
| NORTH | -0.257 | -3.29** |
| MIDW | -0.0288 | -0.429 |
| SOUTH | -0.0792 | -1.305 |
| CITY | -0.038 | -0.679 |
| ADVDEG | -0.121 | -2.622** |
| ELEM | 0.221 | 4.076*** |
| AGE | -0.00226 | -0.811 |
| CHARTER | -0.154 | -1.209 |
| LINC | 0.108 | 1.996** |
| HOURS | -0.01137 | -4.704*** |
| BONUS | 0.0521 | 0.844 |
| UNION*EXP | -0.0124 | -2.469** |
| Log-Likelihood = -8181.46 Significant at 10 percent level = * Significant at 5 percent level = ** Significant at 1 percent level = *** | | |

Regarding other factors that were significant, it was found that income, experience, whether the teacher was an elementary school teacher, size of school, percentage of teachers and students in the school that were minorities, and hours worked all had statistically-significant effects on teacher satisfaction. Well-paid teachers who were inexperienced, worked fewer hours, and worked in large, elementary schools that were not diverse were, in general, more likely to be happy than others. In addition, it was found that male teachers were less happy at their jobs than female teachers. This is true even though men only make up about 31 percent of teachers. This finding corroborates earlier research in the area of gender and worker satisfaction (Chapman and Lowther, 1982; Clark, 1997).

Given that teaching is essentially a white-collar occupation in a service industry, it is possible to generalize some of the more generic (non-teaching specific) results of the present study to the general population of workers. Regarding these more generic variables, results of the present study suggest that that inexperienced, but well-paid, women who do not work long hours are more likely to be satisfied in their jobs than others. Most of these results are supported by prior research.

It was also found that merit pay systems resulted in teachers who were less enthusiastic and who were more eager to leave for better pay. No prior study has examined the relationship between a merit pay system for teachers and job satisfaction. These results are very timely given the recent interest in implementing merit pay for public school teachers.

Finally, support was found for the exit-voice hypothesis. This theory predicts that union members with greater tenure will be more dissatisfied with their jobs than less experienced union members. Using an interaction variable between UNION and EXP, it was found that, even though union members, on average, may be more satisfied with their jobs, the more experienced union members are not. This result suggests that, over time, unions create dissatisfied workers. This finding corroborates the results of Borjas (1979).

In conclusion, the present study uses a much larger and much more recent data set than any other study on unions and job satisfaction; it also uses a two-stage model where the instrument is a variable denoting the existence of a state-level right-to-work law. While corroborating the results of some prior research, the present study also brings to light new issues regarding teacher satisfaction. One possible extension of the present study would be to only examine teachers in right-to-work states. Given the very large sample size used in the present study, it would be possible to look at job satisfaction for both union and non-union teachers in a right-to-work setting.

Another possible extension of the present study would be to use panel data in order to capture fixed effects and control for unobserved heterogeneity that may exist among teachers. In addition, the use of longitudinal data would allow for the examination of the effects of union membership on worker satisfaction over time, as workers age and gain experience. Although experience was found to have a somewhat negative effect on teacher satisfaction in the present study, it is possible that the use of longitudinal data would shed further light on this relationship and would refine even further our understanding of the relationship between union membership and worker satisfaction.

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The Yankee Effect in Minor League Baseball

Rodney J. Paul* and Andrew P. Weinbach**

ABSTRACT

The New York Yankees, as a visiting team, have been shown to have a positive and significant effect on attendance for their opponent (Paul et al., 2004). This paper explores the possibility of a “Yankees Effect” at the minor league level. Through a study of individual game attendance for the 2011 season, having the Yankees-affiliate as the visiting team was shown to have a positive and significant effect on attendance at the AAA-level (International League). The Yankees-affiliate was shown to have a positive, but statistically insignificant, effect on attendance at the AA-level (Eastern League). It appears the “Yankees Effect” occurs in the minor leagues for the players closest to playing at the major league level.

I. Introduction

In a 2004 article in the *New York Economic Review*, Paul et al. explored the concept of the “Yankee Effect” in Major League Baseball. With the introduction of interleague play, many touted the structural change in scheduling, allowing for American and National League teams to play each other on a limited basis during the regular season, as a success by looking at the overall average increase in attendance at Major League Baseball games during interleague play. Paul et al. (2004) explored this topic and showed that the statistically significant increase in attendance was mainly due to the New York Yankees being the interleague opponent for National League teams, with the rest of the matchups having statistically insignificant impacts on attendance. Furthermore, Paul et al. (2004) showed that significant increases in attendance also occurred in intra-league games with the Yankees as an opponent. This revealed the Yankees were a dominant team at the gate, attracting more fans and producing greater revenues for opposing teams.

This study takes the “Yankee Effect” concept beyond Major League Baseball into the minor leagues. Minor League baseball has a hierarchy of levels with the top prospects (closest to majors) placed on AAA rosters, the next closest at AA, with a step down to A (broken down into advanced and regular leagues at the A-level) and then short-season and rookie leagues. The leagues are then broken down regionally, generally keeping the farm teams of the parent club relatively close to their minor league affiliates and keeping travel costs within-league to a reasonable level.

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The New York Yankees have minor league affiliates at the AAA-level in Scranton/Wilkes-Barre, PA (International League) and at the AA-level in Trenton, NJ (Eastern League). Both teams are geographically close to New York City, and may receive spillover benefits from their relationship with the Yankees. The Scranton/Wilkes-Barre team furthered the direct association with the parent club by actually having their team nickname as the Yankees¹, with a similar logo (the nickname of Trenton's team is the Thunder). Both teams appear to actively promote their association with the Yankees, using the Yankees brand to help market and promote their franchise.

Given the success on the road of the New York Yankees in Major League Baseball, this study examines the question of whether this road success also translates to the AAA and AA levels of minor league baseball. If baseball fans around the country enjoy following the New York Yankees, they may want to follow their prospects on the way to the majors. If so, the minor league affiliates of the New York Yankees might see the same "Yankee Effect" at the gate, with increased attendance on days the visiting team is part of the Yankees farm system. If minor league fans really do not associate the minor league team with its parent club or simply care more about the overall game day experience (promotions, activities, events, etc.) at the ballpark than the actual players or team success, then the "Yankee Effect" may not exist at minor league stadiums.

We attempt to answer this question by estimating a model to explain attendance of minor league baseball for the International (AAA) and Eastern (AA) Leagues, where the Yankees farm system teams participate. Controlling for city demographics, day of the week and monthly effects, team success, weather, and promotions, we examine if having the New York Yankees affiliate as the visiting team leads to significant increases in attendance in these leagues. It should be noted that neither Yankees-affiliate had an outstanding or particularly poor season in 2011 (the year studied). Scranton/Wilkes-Barre had a record of 73-69 and finished 8 games behind the division leader. Trenton fared slightly worse at 68-73 and finished 8.5 games back of the division leader. Neither team made the playoffs in the 2011 season.

Baseball attendance has been studied by economists in a variety of settings with many different sets of independent variables in the analysis. Consumer behavior of baseball fans and demand for baseball game attendance have been examined through different regression models, some focusing on annual attendance, others focusing on game-to-game differences in attendance. Some of these studies include an investigation into population, income per capita, star players, and recent success (Noll, 1974), televised games, quality of the team, and availability of substitutes (Demmert, 1973), expected probabilities of winning a championship (Whitney, 1988), salary structure (Richards and Guell, 1998), turnover in team rosters (Kahane and Shmanske, 1997), the impact of interleague play (Butler, 2002; Paul et al. 2004), new stadium effects (Coates and Humphreys, 2005; Depken, 2006), team performance as well as the impact of MLB affiliate proximity and pricing on minor league baseball attendance (Gitter and Rhoads, 2010). Studies of minor league baseball include Siegfried and Eisenberg (1980), Gifis and Sommers (2006), Paul et al. (2007), and Anthon, et al. (2012).

This study focuses on game-by-game attendance in the International and Eastern Leagues for each of its teams, using many of the independent variables discussed in the papers mentioned above. The main focus of this paper, however, is the direct impact of the New York Yankee affiliate on attendance when they are the visiting team. The paper proceeds as follows: the next section presents the regression model and discusses the empirical results. The final section summarizes the findings and concludes the paper.

II. Regression model of International League (AAA) and Eastern League (AA) Attendance

To test for the possibility of a “Yankees Effect” in the minor leagues, a simple regression model was specified with daily game-by-game attendance as the dependent variable for games played in the 2011 baseball season. The attendance was taken from the box scores of each team in the International and Eastern Leagues. The independent variables in the regression model include common factors used in analysis of daily attendance figures in baseball including city demographics, weekday and month of the game, team performance, weather factors, promotions, and a dummy variable indicating whether the Yankees farm teams (Scranton/Wilkes-Barre in the International League and Trenton in the Eastern League) are the visiting opponent to measure the potential “Yankees Effect.”

After the intercept, the next set of independent variables included in the regression model is city demographic variables. These independent variables include population and income per capita of the city. If higher-populated areas attract more fans to minor league baseball games, population should have a positive and significant effect on attendance. In relation to income per capita, the ultimate impact of this variable depends on whether minor league baseball is a normal or inferior good. If normal, the sign will be positive; if inferior, the sign will be negative. Information on these variables was gathered for each city in the International and Eastern Leagues from www.city-data.com.

The next category of independent variables is the dummy variables for the days of the week and the months of the season. Weekend days are expected to be more popular than weekday games due to the opportunity cost of the time required to attend a baseball game. With respect to the months of the season, early season games are likely to have fewer fans in attendance (except opening day), while the summer months and end-of-season playoff races could lead to increased interest. Wednesday and June are the omitted daily and monthly dummy categories.

Team performance is included for both the home team and the road team as the next category in the regression model. Pre-game home team win percentage is calculated as a running average throughout the season. It is expected to have a positive impact on attendance if fans value team success at the minor league level. Opponent win percentage is also included in the model, and is calculated in the same fashion as the home team win percentage. If fans value the overall quality and success of the road team, the sign on this variable will be positive.

Weather was included in the regression model in two ways. First, the temperature was directly included as an independent variable. Given that fans likely prefer warm days to cold days for attending

outdoor minor league baseball games, the expected sign on this variable is positive. In addition to the temperature, the weather category noted in the box score was also included as a series of dummy variables in the regression model. The categories noted in the box score include partly cloudy, cloudy, clear, sunny, rain, and drizzle. The omitted category is partly cloudy, with all results compared to that weather condition.

Promotions are an important part of the game day experience for many fans of baseball, especially minor league baseball, therefore categories of promotions were included as independent variables in the regression model. Although there are many different promotions across teams and leagues, enough similar promotions existed to group the promotions into eight categories. We included promotional categories for opening day, merchandise giveaways, fireworks, group nights, free or discounted food/drink, free or discounted beer, “Dogs to the Park” nights, and post-game concerts. If fans value these promotions, especially the major promotions such as fireworks and concerts, these promotional categories should have a positive effect on attendance.

To account for the possible “Yankees Effect” a dummy variable was included when the visiting team was a Yankees-affiliate. If fans prefer the Yankees to other teams, as they do in Major League Baseball, and enjoy following Yankees’ prospects on the path to the majors, the coefficient on this variable should be positive.

Summary statistics for the International League and Eastern League are presented in Tables I and II. A frequency table for dummy variables is shown in Table III. Table IV presents the regression results for the International League, the Eastern League, and combined results for both leagues (using a dummy for the AA games in that model specification). Due to heteroskedasticity issues in the regression model, White’s heteroskedasticity-consistent standard errors and co-variances was used in the results below. Coefficients of each variable are presented with corresponding t-statistics in parentheses.

Table I: Summary Statistics – International League

| | Attendance | Temperature | Population | Income Per Capita |
|----------------|------------|-------------|------------|-------------------|
| Mean | 7,015 | 75 | 333,023 | 22,718 |
| Median | 6,830 | 78 | 252,057 | 21,479 |
| Std. Deviation | 2,873 | 12 | 259,047 | 5,548 |

Table II: Summary Statistics – Eastern League

| | Attendance | Temperature | Population | Income Per Capita |
|----------------|------------|-------------|------------|-------------------|
| Mean | 4,975 | 75 | 84,173 | 22,465 |
| Median | 4,915 | 77 | 73,206 | 19,433 |
| Std. Deviation | 2,038 | 11 | 45,473 | 7,433 |

To discuss the results, we will address the three separate regressions (Combined leagues, International League, and Eastern League) simultaneously, noting any key differences between the specifications. Overall, AA-teams were found to attract nearly 2,000 fewer fans than AAA baseball

Table III: Frequency Table – International and Eastern League

| Variable | International League | Eastern League | Variable | International League | Eastern League |
|---------------|----------------------|----------------|-----------|----------------------|----------------|
| Partly Cloudy | 356 | 220 | Sunday | 158 | 119 |
| Cloudy | 273 | 168 | Monday | 144 | 80 |
| Clear | 236 | 229 | Tuesday | 138 | 116 |
| Sunny | 72 | 65 | Wednesday | 111 | 105 |
| Rain | 16 | 10 | Thursday | 159 | 125 |
| Drizzle | 11 | 12 | Friday | 150 | 119 |
| Overcast | 44 | 0 | Saturday | 152 | 124 |
| Opening Day | 14 | 11 | April | 167 | 113 |
| Merchandise | 186 | 193 | May | 199 | 165 |
| Fireworks | 191 | 201 | June | 203 | 150 |
| Group | 104 | 214 | July | 200 | 169 |
| Food | 126 | 66 | August | 206 | 159 |
| Beer | 31 | 76 | September | 37 | 32 |
| Discount | 161 | 206 | | | |
| Dogs to Park | 15 | 21 | | | |
| Concerts | 17 | 29 | | | |

(specification I), likely due to the smaller markets of AA-baseball and the quality of players participating in AAA compared to AA. In relation to city demographics, population was found to have a positive and significant effect (1 percent level) on attendance in all three specifications. Income per capita, on the other hand, was found to have a negative and significant effect (1 percent level) on attendance in all three regression models. More fans attended games in larger cities for the minor leagues studied in this sample, but minor league baseball could be classified as an inferior good for the residents of these cities. While team representatives generally prefer to refer to baseball as value family entertainment, it is likely that as income rises in an area, consumers are able to afford higher quality forms of entertainment (sports included) which are sold at higher prices. Therefore, for higher-income areas, substitution of a longer trip to a Major League Baseball ballpark may serve as viable entertainment option that consumers from poorer areas may not be able to afford.

The days of the week revealed the expected result that weekend days are the most popular days for attendance in the International and Eastern Leagues. Saturday was shown to have the largest impact, with positive and significant effects at the 1 percent level. Thursday, Friday, and Sunday were also shown to have positive and significant effects on attendance, compared to the omitted day Wednesday, with Friday having the next largest impact after Saturday. Thursday nights were more popular than Sundays in the International League, but Sunday was a greater draw in the Eastern League.

The months of the season only showed significant effects early in the season. In the months of April and May, when the weather is not ideal for baseball in the northeastern U.S., and public schools are still in session, fewer fans attended games. Results for these months were found to be significant at the 1 percent level, with April showing the fewest fans in attendance at baseball games.

Table IV: Regression Model of Attendance for International (AAA), Eastern (AA), and Both Leagues

| Variable | International and Eastern Leagues Combined | International League (AAA) | Eastern League (AA) |
|-------------------|--|----------------------------|---------------------------|
| Intercept | 6510.235*** (6.8338) | 7371.251*** (6.2320) | 6001.071*** (5.1174) |
| Population | 0.00139** (2.3253) | 0.0017*** (3.0667) | 0.0171*** (11.5436) |
| Income Per Capita | -0.0910*** (-8.1749) | -0.1643*** (-8.1844) | -0.0402*** (-3.7531) |
| Sunday | 430.2759** (2.3245) | 616.9522** (2.2094) | 663.7426*** (2.9299) |
| Monday | 97.3340 (0.5344) | 254.8244 (0.9317) | 138.1304 (0.6693) |
| Tuesday | 386.7103** (2.1397) | 589.2773** (1.9818) | 51.6321 (0.2675) |
| Thursday | 462.4927*** (2.7697) | 772.1439*** (3.0614) | 388.8413* (1.9438) |
| Friday | 735.6735*** (4.0168) | 941.2551*** (3.4092) | 795.5852*** (3.5835) |
| Saturday | 1165.518*** (5.8733) | 1520.221*** (4.9398) | 1180.012*** (4.7646) |
| April | -1915.211*** (-6.6058) | -2131.463*** (-5.3795) | -1694.061*** (-6.9318) |
| May | -863.9150*** (-3.6433) | -1025.106*** (-2.8895) | -606.9015*** (-3.1105) |
| July | 189.8350 (0.7779) | 219.9526 (0.5972) | 118.8240 (0.5905) |
| August | 257.9626 (0.9485) | 368.0885 (0.9258) | 192.6018 (0.8496) |
| September | 433.4735 (1.1212) | 823.9547 (1.5310) | -16.1951 (-0.0396) |
| Win Percentage | 2386.357*** (3.1007) | 2124.278** (2.0266) | -798.0547 (-1.1202) |
| Opponent Win Pct. | 721.0064 (0.6129) | 644.8537 (0.4852) | -2058.528 (-1.0124) |
| Temperature | 3.6099 (0.4944) | 10.4532 (1.0847) | -8.7068 (-1.0982) |
| Cloudy | -263.7016* (-1.8278) | 12.0059 (0.0631) | -674.6277*** (-4.3348) |
| Clear | -112.8421 (-0.8335) | -98.0928 (-0.4937) | 25.0916 (0.1620) |
| Sunny | 9.4962 (0.0467) | 96.7256 (0.3395) | 120.4616 (0.4801) |
| Rain | -730.2034* (-1.8728) | -400.9276 (-0.6987) | -1506.732*** (-5.2406) |
| Drizzle | -586.8499 (-1.5112) | -634.5419 (-1.1525) | -1066.792*** (-2.6157) |
| Opening Day | 2804.477*** (3.9337) | 3551.095*** (3.5554) | 2121.385*** (5.3190) |
| Merchandise | 509.5322*** (3.7872) | 701.0381*** (3.5869) | 327.4970** (2.1480) |
| Fireworks | 1601.153*** (10.4439) | 1885.300*** (7.9367) | 1262.085*** (7.1345) |

| | | | |
|------------------------------------|---------------------------|---------------------------|---------------------------|
| Group | -30.6788 (-0.1925) | -622.8200** (-2.2815) | 570.3076*** (3.9712) |
| Food | -223.1785 (-1.4598) | 52.1092 (0.2358) | -151.1475 (-0.7249) |
| Beer | -696.3498** (-2.4517) | 176.0442 (0.3124) | -567.0435*** (-2.7005) |
| Discount Tickets | -714.8886*** (-4.3069) | -1039.579*** (-4.7334) | -81.0498 (-0.4073) |
| Dogs to Park | 86.6798 (0.3408) | 86.1226 (0.1989) | -136.1273 (-0.4758) |
| Concerts | 1370.857*** (3.5285) | 1973.738*** (2.6106) | 960.8517*** (3.0163) |
| AA | -1988.708*** (-8.0937) | | |
| Yankees-Affiliate as Visiting Team | 660.8292*** (2.5949) | 850.3257*** (2.6267) | 85.8401 (0.2906) |
| | | | |
| R-squared | 0.4560 | 0.4310 | 0.4814 |
| Adjusted R-squared | 0.4289 | 0.4117 | 0.4533 |
| F-statistic | 14.8632 | 15.12394 | 14.2827 |
| Number of Observations | 1800 | 1012 | 788 |

*significant at the 10 percent level, ** significant at the 5 percent level, and *** significant at the 1 percent level.

Fans appeared to care more about winning for teams at the AAA International League. For the International League, the win percentage was shown to have a positive and significant effect on game attendance. In the AA Eastern League, a negative, but statistically insignificant effect of win percentage was found. Fans of minor league baseball in the U.S. northeast may care more about team success the closer the prospects are to the majors. This result is different than the result seen in Gitter and Rhoads (2010) where win percentage was found to have a positive and significant effect on AA-level baseball, but not at the AAA-level. Their sample used a long time series where the dependent variable is average per game attendance, while ours is a single-year sample with each individual game attendance used as the dependent variable. Their sample also aggregated leagues across all levels (A, AA, AAA), while ours used individual leagues. These differences in time and level of aggregation may account for the differences seen. Opponent win percentage was not found to have a significant impact on attendance in these leagues.

In relation to the weather, temperature was not shown to have a significant impact on attendance, but certain weather categories had a major influence on Eastern League attendance. Poor weather conditions, characterized as Rain, Drizzle, or Cloudy days, were all shown to have a negative and significant (at the 1 percent level) impact on attendance. Rain led to over 1,500 fewer fans in attendance and days classified as Drizzle were shown to decrease crowds by over 1,000 fans. Cloudy days did not have as large of an effect, but its impact was still statistically significant. In contrast, fans of AAA baseball did not appear to be as sensitive to weather conditions. AAA-baseball fans may be less sensitive to the

weather in AA cities because the attraction of the games is more tightly linked to performance, while the AA-level games may be attracting more of a general audience, that may not follow baseball closely, but views the games as a source of entertainment that may be easily substituted for by another form of entertainment if weather conditions are less favorable.

With the promotional categories included in the regression model, some results were quite consistent across leagues. Opening day, merchandise giveaways, fireworks shows, and concerts were all shown to positively affect game attendance in both the International League and the Eastern League. All four categories of promotions were statistically significant at the 1 percent level. Beer promotions and reduced priced tickets were shown to have negative and significant effects on attendance, but differed by league. In the International league, discount tickets were found to have a significant impact, but beer did not. While the negative impact of discounted tickets may seem counter-intuitive, it may be that the discount tickets variable is intentionally linked to games where management has forecasted poor attendance based on the relative popularity of certain opponents, or the timing of special events that may directly compete for fans, such as a fair or circus that is outside of our available data. In the Eastern League, beer was found to have a negative and significant effect on attendance. Although surprising on the surface, as many fans associate drinking beer with attending sporting events, many people see baseball games with their family, which may drive away a significant portion of the fan base for games when free- or reduced-priced beer is offered. Having free or cheap beer may lead to negative externalities for other fans, who simply decide not to attend games having this promotion. Dogs to the Park and free- or reduced-price food promotions were not found to have statistically significant effects on attendance. The Dogs to the Park promotion may attract people who would not otherwise attend games, and simultaneously keeping some baseball (but not dog) fans away.

It does appear that the strength of the Yankees brand extends to the AAA level in Minor League Baseball. In testing for the “Yankees-Effect” at the minor-league level, the Yankees-affiliate as the visiting team was shown to have a positive and significant effect on attendance for the regression model specification I, where both leagues are included. However, the significant impact of the Yankees-affiliate lies nearly entirely in the AAA International League. When Wilkes-Barre/Scranton (the AAA Yankees-affiliate) visited the other International League teams, over 850 additional fans attended these games, with statistical significance at the 1 percent level. In the Eastern League, however, a non-statistically significant result of 85 additional fans was shown for games where Trenton (AA Yankees-affiliate) visited other Eastern League teams. Although the Yankees-affiliate is quite popular at the gate as an opposing team at the AAA-level, the overall impact appears to quickly drop-off as lower-levels of minor leagues are examined. This may have to do with how recognizable the top prospects are to followers of the Yankees, with more top-notch prospects playing in AAA-baseball compared to AA-baseball, at least in terms of readiness to capture a potential spot on the Yankees roster. This result may also be a function of players who appeared with the Yankees previously, who are either sent to the minors as a short-term rehabilitation assignment or may be fringe MLB players, moving back-and-forth between AAA and the

majors based upon injuries and recent performance. Another possibility for this result is that Trenton does not use the Yankees as its nickname, instead opting for the Thunder, while Scranton/Wilkes-Barre actually uses the name brand of the Yankees, which more directly associates the team with its parent organization.

III. Conclusions

Minor League Baseball attendance at its top two levels, AAA and AA, were examined in relation to the impact of the New York Yankees affiliate as the visiting team. Previous research has shown that the New York Yankees attract large crowds on the road in Major League Baseball (Paul et al., 2004). That study showed that most of the increase in attendance attributed to interleague play was driven by games where the Yankees were the visiting team. This study extends this analysis to minor league baseball by examining attendance in the International (AAA) and Eastern (AA) leagues. AAA-baseball features more skilled players than AA since AAA-ball is only one step removed from the majors and AA is a notch lower on the development ladder.

A regression model was constructed for each individual league (International and Eastern) and for both leagues together. Game-by-game attendance was the dependent variable with independent variables included to control for city demographics, day of the week, month of the year, team performance, weather, game promotions, and a dummy variable for the New York Yankees affiliate as the visiting team. The majority of the results are similar to what has been found in previous studies of Minor League Baseball. Population was found to have a positive and significant effect on attendance, but Minor League Baseball was shown to be an inferior good at both levels of play, consistent with the idea that Minor League Baseball games are attractive to the value-oriented consumer.

Weekend games, as expected, were shown to be more popular than weekdays and early season games (April and May) were shown to have significantly lower attendance figures. Win percentage of the team was shown to have a positive and significant effect at the AAA level, but not at the AA level, perhaps indicating that fans have higher expectations of play quality for games at the AAA level, and may view AA level games as general entertainment. Weather had some effects, as poor-quality days led to lower attendance. Opening day, merchandise giveaways, fireworks, and concerts all led to significantly higher attendance figures at both the AAA and AA level.

The key aspect of attendance investigated in this paper, the "Yankee effect" at the minor league level, was shown to have a positive and significant effect on attendance at the AAA-level, but was not statistically significant at the AA-level. When the New York Yankees affiliates in the International League (Scranton/Wilkes-Barre Yankees) was the visiting team, attendance rose by 850 fans, a figure statistically significant at the 1 percent level. However, in the Eastern League, when the Trenton Yankees were the visiting team, attendance rose by 85 fans, but it was not found to be statistically significant.

Overall, it appears that fans of AAA baseball more closely associate the Yankees prospects with the major league club. As one moves down a notch on the minor league hierarchy, fans are not as interested

in seeing Yankees prospects at the AA-level. This result is consistent with the findings on win-percentage, where AAA-level fans are more sensitive to winning than AA-fans. It appears that AAA-fans prefer to attend games involving higher quality teams and players. With the major league Yankees being a popular and successful team across much of the landscape of the cities of the International League, attendance in opposing stadiums significantly rise when the Wilkes-Barre/Scranton Yankees visit their stadium. At the AA-level, however, fans do not appear to care as much about winning, nor do they follow the local Yankees prospects when they come to town. The closer the prospects are to the majors, the more Yankees' fans follow them across minor league baseball, implying a "Yankee effect" exists at the AAA-level (as it does in the majors), but not at the AA-level.

ENDNOTES

1. For the 2013 season, Wilkes-Barre/Scranton changed their nickname to the RailRiders.

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Global Viewpoints: The Effect of Geographic Background and Travel Experience on Choice of Study

Richard Vogel*

Abstract

In any particular class, students rarely have the opportunity to select the topics that they study. So when given a choice, such as on a semester long research project, do students choose something close to home, or a topic that will require a more global perspective? This question is addressed using data from a survey of students in a range of social science and business courses. The analysis finds that if given the choice, students as a whole tend to focus on domestic topics in their research. Business students are more likely to conduct research on international topics than other students. Students that have spent more than a week outside of the United States and visited either Canada or Mexico are more likely to conduct research on an international topic, while students that have visited Asia are less likely to conduct research on an international topic. Additionally, survey results show that Farmingdale students have limited travel experience: 50 percent of the students surveyed have traveled no more than 4 times outside of the Northeastern United States; 66 percent of the students have spent at least one week outside of the U.S., and the top two destinations of these students are either in North America (Canada or Mexico) or the Caribbean Islands.

1. Introduction

In any particular class, students rarely have the opportunity to select the topics that they study. So when given a choice, such as on a semester long research project, what do students choose, something close to home, or a topic that will require a more global perspective? This question is addressed using data from a survey of instructors in a range of social science and business disciplines. In a globalized world where the financial health of a country with approximately 10 million people has the ability to cause the collapse of the entire European banking community which would affect the entire world economy it is important to gauge the world view of our students.

College students are exposed to a wide range of concepts and ideas as they pass from the first year to the final year of their programs. Selecting a major such as business, engineering, or communications sets the student on a prescribed pathway towards completion in which they will be required to take a number of specific courses designed to give them the skills that they will need to work and practice in their chosen professions. Alongside this pre-selected pathway students are also required to take a

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range of liberal arts and science courses to round out their academic experience. Given the scope and scale of the global economy, it is important that students gain some understanding of the world community in which they will eventually live and work.

In this study, I examine students' exposure and interest in the global community through two channels, their backgrounds and their choices. While utility theory would suggest that students' past travel or background reflects their choices, that view would only apply if students fully planned their own travel. Given that, college students typically range in age from 17 to 22, how much travel have they actually planned themselves, and how much travel was planned by others (family trips)? That being said, past travel experience may affect students' choices. Another important factor is the question of whether students in fact do have a choice in what they can focus on in a particular class. If an instructor has preselected a topic/area to study, then the student has little choice but to follow that particular path.

Over the past decade, the question of a student's global perspective has taken on greater importance. Speter (2011) reports that over fifty percent of the nation's college students do have some concern over globalization and globalized economic activity. One of the prime issues for Speter is that college students represent the future leaders of the country – and thus, how they view themselves, the country and world in terms of globalization is an important indicator of the direction the country will move in the future. He does conclude though that over eighty percent of college students believe that "... we should embrace globalization (p.54)."

Shaidul (2011) and Shaidul and Manaloor's (2012) evaluation of introductory economics instruction points out that these courses are taken by a wide range of students – particularly business majors. Instructor approaches and materials must accommodate the diverse backgrounds and educational goals of these various students. While they do not directly address globalization, their analysis does suggest that this issue must be addressed in some way in the economics classroom – and further implies that it should be addressed in a much broader context across a wider range of courses from business to the social sciences.

Weldon et al. (2010) report on faculty members' viewpoints on globalization from a range of educational institutions in and around Los Angeles. Their study finds that globalization has increased the level of diversity both within the classroom and within the respective institutions surveyed. This has resulted in an increase in the diverse viewpoints that are brought into the classroom and the research domain. That being said, faculty at research institutions were concerned with the political ramifications of what they perceived to be the neoliberal policies attached to current globalization trends that affected their research agendas. Faculty at teaching institutions and community colleges on the other hand tended to have a far more positive view of globalization. Overall, their study indicates that globalization has positively influenced the classroom and academic environment.

While globalization does affect higher education at the institutional level (see for example Douglass, 2005), the concern in this study is how it may be influencing education at the classroom level. A number of recent studies have investigated this issue including: An (2009) and Kim (2012). Both of these papers

evaluate how the sociological and cultural backgrounds of students affect learning and student identity. An (2009, p.108) develops a model of international student identity in which a student entering an American institution passes through six stages: pre-exposure, exposure, enclosure, emergence, integration, and internationalization. Within this framework, international students are seen as undergoing a process of self-realization as they integrate themselves into American college or university life. Kim's (2012) analysis of Korean students studying in U.S. high schools found that students' individual migration experiences affected their perspective and interpretation of American history.

Janavara et al. (2008) surveyed students from business and the liberal arts to evaluate potential differences in views on globalization. They found that as a whole, business students had a more positive view of concepts of globalization than liberal arts students. The analysis did not find significant differences between business student's views though. The authors attributed the difference in viewpoints to the skill sets that business students were learning that helped prepare them for competitive careers within the global economy.

Akcam et al. (2012) follow up on Janavara et al. and evaluate factors that may account for business students' more positive views on globalization. They conclude that business students realize that they will be entering into a world where they do have to compete on a global level, organizations benefit from globalization, and that individually, they would have to master the requisite skills to be competitive.

How interested are students in the greater world, and how does their background affect their choices in what they study? This is the underlying question that is addressed in this study. To answer this question, a range of students in social science and business courses were surveyed. The rest of this paper is organized as follows. Section 2 provides an overview of the survey and the classes surveyed. The results of the survey are reported in Section 3. Section 4 is a logit analysis to evaluate how student backgrounds and exposure to globalization (in the form of travel abroad) affect what they choose to conduct research on. The conclusions of the study are presented in Section 5.

2. Survey and Population

Surveys were sent out to faculty members in Business, Economics, Politics, Criminal Justice, History, and Technology Studies. While no specific classes in particular were targeted, department chairs and the administrative personnel who distributed the surveys to the faculty in each department were asked to select instructors who required students to complete independent research projects as part of their courses. Thus surveys come from a range of introductory to upper level courses in these various disciplines. Following campus IRB protocols and approvals for this particular survey, with the exception of the course name and number, all survey responses from both instructors and students are anonymous. Out of the 40 packets (each packet contained 40 surveys and an instructor survey) of surveys that were sent out, 27 completed classroom surveys were returned which ultimately yielded data for 506 students.

The instructor survey asked the faculty member 4 questions – the course name and number; if students were required to complete a independent research for the course; if students could select their

own topics; and how many students selected international topics (Table 1). The results are shown in Table 2. The first 4 questions of the 12 question student survey asked essentially the same questions as the instructor survey. Students were asked 8 additional questions regarding their past travel experiences. The survey is shown in Table 3.

Table1: Instructor Survey

Instructor Survey: Your participation and completion of this survey is purely voluntary. Place an “x” in the space provided to indicate your response to the question.

1. Course name/number
2. Are students required to complete or conduct research (such as for a presentation, paper, project, or class assignment) for this course?
Yes ___ No ___
3. Can students select their own research topic/area related to the field of study?
Yes ___ No ___
4. In your estimation, what percentage of students in your class selected topics that are international in scope?

Table 2: Instructor Survey Results

| Course Area | Q2 | Q3 | Q4 |
|-------------|-----|-----|----------|
| ECO | 1 | 1 | 20% |
| BUS | 1 | 1 | 100% |
| CRJ | 1 | 0 | N/A |
| BUS | 1 | 1 | N/A |
| BUS | 1 | 1 | N/A |
| BUS | 1 | 1 | 100% |
| BUS | 1 | 1 | 100% |
| BUS | 1 | 1 | 100% |
| TST | 1 | 1 | 40% |
| CRJ | 1 | 1 | 10% |
| POL | 0 | 0 | 100% |
| ECO | 1 | 1 | 20% |
| ECO | 0 | 0 | N/A |
| CRJ | 1 | 0 | over 50% |
| ECO | N/A | N/A | N/A |
| ECO | 1 | 1 | 40% |
| ECO | 0 | N/A | N/A |
| HIS | 1 | 1 | 50% |
| CRJ | 1 | 0 | 30% |
| ECO | N/A | N/A | N/A |
| BUS | N/A | N/A | N/A |
| BUS | 1 | 1 | 50% |
| HIS | 1 | 1 | N/A |
| BUS | 1 | 1 | 30% |
| BUS | N/A | N/A | N/A |
| BUS | 1 | 0 | 50% |
| BUS | N/A | N/A | N/A |

The bulk of the course surveys were conducted during the last three weeks of the spring semester. Several instructors in the Business Management department held on to their packets at the end of the

spring semester and conducted additional class surveys in the Summer A semester. Surveys returned for tabulation came back from all of the respective departments over a two month period. There was no specific coding for spring or summer semesters, and thus it is not possible to differentiate the surveys conducted by business faculty during the summer from the rest of the surveys conducted during the spring.

Table 3: Student Survey

Student Survey: Your participation and completion of this survey is purely voluntary. If you are under the age of 18, please do not complete this survey. Place an 'x' in the box to indicate your response to the question.

1. Course name/number:
2. Were you required to complete research for this course (such as for a presentation, paper, project, or class assignment)?
 - Yes
 - No
3. If you answered yes to question 2, were you allowed to select your own research topic/area related to the course?
 - Yes
 - No
4. If you answered yes to question 3, what was your topic on, a domestic (U.S. or local) issue or global/ international (pertaining to a country/firm outside of the U.S.)?
 - Domestic
 - International
5. Are you an international student? Yes/No
 - Yes
 - No
6. If you answered yes to question 5, was your research related to your home country? Yes/No
 - Yes
 - No
7. How much have you traveled outside of the Northeastern U.S.?
 - Never or infrequently (0 to 4 times in your life)
 - Occasionally (once or twice a year)
 - Frequently (3 or more times a year)
8. Have you spent more than 1 week outside of the United States?
 - Yes
 - No
9. If you answered yes to question 8, what part of the world did you visit?
 - Canada or Mexico
 - Western Europe
 - Eastern Europe
 - Asia
 - South or Central America
 - Australia
 - Caribbean Islands
 - Africa
 - Other
10. If you answered yes to question 8, approximately how much time have you spent outside of the U.S.?
 - 3 days or less
 - 4 to 7 days (1 week)
 - 8 to 21 days (2-3 weeks)
 - Approximately 1 month

- Over 1 month to 3 months
- Over 3 months to 6 months
- Over 6 months

If you answered over 6 months, please provide an approximation of time spent outside of the U.S. in years and months: _____

11. Did you serve in the U.S. military?

- Yes
- No

12. If you answered yes to question 11, was your international travel related to military service?

- Yes
- No

3. Survey results

The results of the survey for those 27 courses reporting are presented in Table 4 and include 12 business courses, 7 economics courses, 4 criminal justice courses, 2 history courses, 1 politics course, and 1 course from the technology studies program (an interdisciplinary social sciences program). Instructor survey results (Table 2) indicate that at least 70 percent of the courses surveyed did require students to conduct independent research (Q2). Over 55 percent of the students were able to select their own topics (Q3). Additionally, 9 courses reported that 50 percent or more of the student research was on an international topic. A few instructors (18.5 percent) did not complete the survey, and 22 percent of those reporting did not provide estimates of the percentage of students conducting research on an international topic (Q4).

Table 4: Student survey summary statistics

| Survey Question | Mean | Std. Dev. | Observations |
|---|----------|-----------|--------------|
| Q2. Research required (REQRES) | 0.867327 | 0.339558 | 505 |
| Q3. Select topic (SELTOP) | 0.673289 | 0.469529 | 453 |
| Q4. Domestic/International (DOMINT) | 0.549575 | 0.498242 | 353 |
| Q5. International Student (INTSTU) | 0.049603 | 0.217339 | 504 |
| Q6. Research on home country (INTHOME) | 0.280488 | 0.478537 | 82 |
| Q7. Travel frequency (TRAVFREQ) | 0.596421 | 0.657585 | 503 |
| Q8. Travel outside of U.S. (OUTSIDE) | 0.662675 | 0.477477 | 501 |
| Q9. Travel location (CANMEX) | 0.314851 | 0.464917 | 505 |
| Q9. Travel location (WEEU) | 0.19802 | 0.398902 | 505 |
| Q9. Travel location (EAEU) | 0.132673 | 0.339558 | 505 |
| Q9. Travel location (ASIA) | 0.10297 | 0.304221 | 505 |
| Q9. Travel location (SCAM) | 0.110891 | 0.314309 | 505 |
| Q9. Travel location (AUS) | 0.029703 | 0.169935 | 505 |
| Q9. Travel location (CAB) | 0.340594 | 0.474379 | 505 |
| Q9. Travel location (AFRICA) | 0.031683 | 0.175329 | 505 |
| Q9. Travel location (OTHER) | 0.124752 | 0.330766 | 505 |
| Q10. Time outside U.S. (TIMEOUT) | 2.227064 | 1.883089 | 436 |
| Q11. Military service (MILI) | 0.038627 | 0.19291 | 466 |
| Q12. Travel related to military service (MILTRAV) | 0.191781 | 0.396426 | 73 |

Summary student survey results are reported in Table 4. For questions 2, 3, 5, 6, 8, 11, and 12, all student responses are recorded as a dichotomous variable (0, 1) where “1” represents “yes” and “0” represents “no”. For question 4, “domestic” was recorded as “0” and “international” was recorded as “1”. In the case of question 7, responses were recorded from “0” to “2” (0 – infrequent, 1 – occasional, 2 – frequent). Student responses for question 9 are recorded as a dichotomous variable with “1” representing that a student had visited a particular region, and “0” that a student had not visited that region. Question number 10 was recorded on a scale from “0” to “6” (0 – 3 days or less, 1 – 1 week, 2 – 3 weeks, 3 – 1 month, 4 – 1 to 3 months, 5 – 3 to 6 months, 6 – over 6 months).

Summary data indicates that 86 percent of the students reported that some type of independent research was required in the courses surveyed, and that for most of these courses, students were allowed to select their own research topic (67 percent). In reporting these survey results, it should be noted that there are some discrepancies between what some instructors reported as requirements for their courses and what some students reported regarding these requirements. In some instances, an instructor may have indicated that the course included a research component, but some of the students in the course responded with an opposite response to that question, and vice versa. Thus, while 86 percent of the 505 students reported that their course required a research component which should imply that there should be 434 responding to Question 3 on the survey, 453 students responded. These discrepancies arise from several potential sources including the possibility that some students may have misunderstood the question or that they may not have fully understood the requirements of the course that they were taking.

Approximately 54 percent of the students that were required to conduct independent research completed that research on an international topic. In reporting that figure, it should be noted that there were several international business and operations research courses included in the survey, with a focus on international sourcing issues but all of these courses allowed students to select their own research topic. Out of the 506 students surveyed, just under 5 percent were international students.

In terms of questions related to travel and international travel, the reported median of “0” for question 7 indicates that 50 percent of the surveyed students had traveled no more than 4 times outside of the Northeastern United States. As far as international travel is concerned, 66 percent of the students had spent at least 1 week outside of the U.S. The top travel destinations in order are the Caribbean, Canada/Mexico, and Western Europe. These locations are followed by Eastern Europe (14 percent), Other (12.5 percent), South and Central America (11 percent) and Asia (10 percent). Destinations below 10 percent include Africa (3 percent), and Australia (2.9 percent). The mean time spent outside of the U.S. (TIMEOUT) based upon the categorical breakdown was between 2 to 3 weeks. Approximately 3.8 percent of the students reported serving in the military and 19 percent of those students reported that their international travel was related to their military service.

Four additional dummy variables are included in the analysis (Table 5). “Business” is a dichotomous variable taking on the value of “1” if the course is a business course and “0” otherwise. Out of the 27 courses surveyed, 41 percent of the students were in business courses. The variable “Level400” is also a dichotomous dummy variable taking on the value of “1” if the course is a 400 level course and “0” otherwise. Twelve percent of the students surveyed were taking a 400 level course. “Travel” is a dummy variable generated from Question 7 of the survey taking the value of “1” if a student travels outside of the Northeastern U.S. more than 3 times a year, and “0” otherwise. The fourth variable, “TimeSp” is dichotomous dummy variable generated from “Timeout” taking on the value of “1” if a student has spent more than 1 month outside of the U.S. and “0” otherwise. Out of 506 students, 22 percent had spent more than 1 month outside of the U.S.

Table 5: Additional summary data

| Variable | Mean | Std. Dev. | Observations |
|----------|----------|-----------|--------------|
| Business | 0.41502 | 0.493213 | 506 |
| Level400 | 0.126482 | 0.332721 | 506 |
| Travel | 0.095238 | 0.293835 | 504 |
| TimeSp | 0.225296 | 0.418191 | 506 |

4. Analysis of the Survey Results

Are there identifiable factors that may help to predict or explain the particular topic that a student chooses to conduct their research on? A number of factors influence a student’s choice of what to research including course/assignment requirements and student background/interests. The survey data can be analyzed using a logit model. In this particular case, we hypothesize that the topic a student completes their research on (DOMINT) is a function of whether the instructor allowed them to select their own topic (SELTOP), their exposure to international experience (INTSTU, TRAVFREQ, OUTSIDE, TIMEOUT, and MILI), and what type of course a student was taking (Business, Level400). A variant of the basic analysis is also presented using the dummy variable Travel (the dichotomous dummy variable generated from TRAVFREQ) and the destination variables generated from question 9 of the survey as an alternative way in which to capture the affects of travel and international travel on student interests. Regression results are presented in Tables 6 and 7.

The initial analysis (Table 6) does not definitively identify any particular factors from a student’s personal experience that can account for whether a student selected an international topic or not. While the estimated coefficients on travel frequency (TRAVFREQ) and time spent outside of the U.S (TIMEOUT) are both found not to be significant, their signs are of interest. More frequent travel appears to have a negative impact on whether a student selects an international topic, while the amount of time spent out of the country leads to the opposite effect. Similarly the coefficient on military service, while not significant, is estimated to be negative.

Table 6: Dependent Variable: DOMINT

| Variable | Coefficient | z-Statistic | Odds Ratio |
|-----------------------|-------------|-------------|------------|
| C | -0.2067 | -0.51 | |
| SELTOP | -0.1866 | -0.49 | 0.8296 |
| TRAVFREQ | -0.0548 | -0.22 | 0.9466 |
| TIMEOUT | 0.02055 | 0.22 | 1.0207 |
| INTSTU | -0.0783 | -0.16 | 0.9246 |
| MILI | -1.0406 | -1.34 | 0.3532 |
| BUSINESS | 1.62396 | 5.82*** | 5.0731 |
| LEVEL400 | -0.0498 | -0.12 | 0.9513 |
| Pseudo R ² | 0.1153 | | |
| # of Observations | 286 | | |

Levels of significance: *0.10, **0.05, ***0.01: Logit/Logistic function

Table 7: Alternate specification: DOMINT (dep. var.)

| Variable | Coefficient | z-Statistic | Odds Ratio |
|-----------------------|-------------|-------------|------------|
| C | -0.1411 | -0.45 | |
| SELTOP | -0.5460 | -1.71* | 0.5792 |
| TRAVEL | -0.1128 | -0.24 | 0.8932 |
| ASIA | -0.7215 | -1.92* | 0.4859 |
| CANMEX | 0.47356 | 1.78* | 1.6057 |
| BUSINESS | 1.51647 | 6.35*** | 4.5561 |
| Level400 | -0.0061 | -0.02 | 0.9939 |
| Pseudo R ² | 0.1107 | | |
| # of Observations | 350 | | |

Levels of significance: *0.10, **0.05, ***0.01: Logit/Logistic regression

Two dummy variables are used to ascertain differences across business and social science disciplines. BUSINESS is found to be positive and significant. Estimates of the odds ratio indicate that business students are 5 times (Table 6) more likely to have conducted their research on an international topic than other students. The level of the class that a student was enrolled in, LEVEL400, was not found to be significant.

Using the dichotomous dummy variable "TRAVEL" and including travel destination variables in the analysis to evaluate how travel frequency affects student research choices changes the analysis significantly. The coefficient on SELTOP was estimated to be negative and significant. As a whole, when given the choice, students were less likely to select an international topic than a domestic one. Business students and students that had visited Canada or Mexico were more likely to select an international topic. In this case, the odds of a student selecting an international topic were 4.5 (BUSINESS) and 1.6 (CANMEX) respectively. The odds that a student that had visited a destination in Asia was less likely to write about an international topic are 0.48. It should be noted that all of the other destination variables were evaluated as a group and individually. However, the only destination variables found to be statistically significant in both group and individual regressions were ASIA and CANMEX.

5. Conclusions

The analysis does identify some travel experiences leading students towards conducting research on international issues. Given that the destination variables required conditional responses on the survey, students that visited Canada or Mexico and had spent at least one week outside of the U.S. were more likely to select an international topic to research. Students that had visited destinations in Asia were less likely to research an international topic.

As a whole, if students were given the choice, they were less likely to conduct research on an international topic than a domestic one. On the other hand, business students are approximately five times more likely to conduct research on international issues than their peers in other disciplines. This result is consistent with other studies such as Janavara et al. (2008) and Speter (2011) which finds that business students appear to have a more positive outlook on international issues than other students.

As a whole, the survey results suggest that Farmingdale students have limited travel experience and 50 percent of the students surveyed have traveled no more than 4 times outside of the Northeastern U.S. in their lives. That being said, 66 percent of the students have spent at least one week outside of the U.S., although it should be noted that the top two destinations of these students are either in North America (Canada or Mexico) or the Caribbean Islands.

The world-view of our students is an important concern as the pace of global interconnectedness continues to expand. The results support the view that travel experience and discipline of study affect student research choices. That does not imply though that this is necessarily a causal relationship. It is possible that these choices reflect various aspects of the characteristics and attitudes of the students as well as the fact that students must work within the framework and structure of the particular courses that they are enrolled in. The inclusion of more specific course detail in future work would help to disentangle some of these relationships. Additionally, the inclusion of demographic and socioeconomic data especially regarding gender, ethnic, and cultural heritage may shed greater light on U.S. college students' research interests in global and international issues. Both An's (2009) and Kim's (2012) papers work point to the importance of these factors in student learning outcomes. The incorporation of academic performance and student characteristics information such as choice of major, the academic level of the respondents (freshman, sophomore, junior, senior), and academic standing (e.g. GPA) may also provide valuable insights into this issue. These factors will certainly be incorporated into future research.

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Promoting Economic Literacy and Self-Awareness Through An Understanding Of Economic Ideology

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ABSTRACT

Economic ideology is defined in the Oxford Dictionary as “a system of ideas and ideals, especially one which forms the basis of economic or political theory and policy.” Because it is the foundation for understanding disagreements about economic theories and policy we argue that students should have a sound understanding of economic ideology. With such an understanding, we hope, students will be more inclined to view disagreements among economic educators and practitioners as representing a variety of fundamental beliefs rather than a failure of the science. To help students better understand their own economic ideology as well as the nature of opposing viewpoints in the profession we develop a survey from which a summary statistic is produced, measuring economic ideology along a continuum from very conservative to very liberal. Analysis of survey responses by students in Principles classes demonstrates the survey’s validity and reliability. We provide examples for integrating the survey into the Principles course.

I. INTRODUCTION

Economists disagree on a wide-range of economic issues and assumptions underlying economic theory and often times their views are at odds with the public (Alston et al. 1992; Amdur 2012; Blendon et al. 1997; Fuller and Geide-Stevenson 2007). Such disagreement may confuse students when they hear conflicting views from economists (for example, from two professors, or from discussion in the news) and contribute to students’ skepticism concerning the validity of economic principles when their professor proposes a view that differs from their own. What students and the public think is of particular importance since, as Amdur (2012) notes in his analysis of public perception of the effectiveness of monetary and fiscal policy, “... voters' opinions help shape actual policy outcomes.”

A range of opinions among economists results from differences in views of fundamental aspects of economic theory and the assumptions upon which they are based. Consider as an example the labor market, as told by Blackhouse (2010, p. 169): “Some economists take the view that the only legitimate

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way to model labour supply is as the result of rational choice in a competitive market, which means that unemployment must be voluntary. Other economists take involuntary unemployment as a reality and consider it better to make a seemingly ad hoc assumption, such as that wages do not fall in response to unemployment, as a better way to describe how the labour market works.” Models often require mathematical rigor that compel unrealistic assumptions that some see as so unrealistic that the model is unacceptable even as others see those same assumptions as similarly unrealistic but worthy of acceptance because of the analytical gains available from the use of mathematics. These different views not only lead to alternative models but also, quite naturally, to different policy prescriptions.

At the core of these disagreements is *economic ideology* – “how one views the world” or, as Riddell et al. (2005, p. 11) define it, a set of “ideas and beliefs that tend to justify morally a society’s social and economic relationships.”¹ Disagreements among economists on models and policy prescriptions result from differences in the beliefs they hold about basic human nature, the appropriateness of certain assumptions, and the weight given to existing and contradictory empirical evidence. For example, reasonable people may disagree over whether poorly educated workers are primarily *unable* or *unwilling* to earn college degrees or about the decision-making capacity of individuals. Without a laboratory in which to perform controlled experiments these disagreements persist.² These differences often show up in the level of government involvement in market economies one deems optimal: someone with a conservative economic ideology tends to favor unfettered market forces while someone with a liberal ideology tends to favor government intervention.

With a better understanding of why economists disagree among themselves, with the general public, and with policy makers, students will be better equipped to critically evaluate conflicting arguments. A discussion of economic ideology in Principles of Economics will also promote respect for the profession and the varying perspectives presented by their professors, an understanding of the spectrum of opinions on current issues, and appreciation of the evolution of economic thought.

To help students better understand economic ideology, and to assist instructors in discussing the concept, we have developed a short survey. This survey generates a summary measure of economic ideology along a continuum from “very conservative” to “very liberal.” It may be used as a springboard to classroom discussion providing a hands-on introduction that will catch students’ attention, or as the basis for class exercises and assignments. Students will learn what differentiates economic conservatives and liberals, why economists disagree, and why economics is an evolving discipline.

Given that most college students do not go beyond the principles class, we maintain that the primary purpose of principles is to educate future citizens so they can make informed decisions in the public sphere. With an understanding of economic ideology, and the ability this understanding brings to sorting through economic arguments, student-citizens will be more likely to pay heed to debates within the economics profession. This increased attention may have the side-effect of encouraging students to pursue further study of economics. For those students who choose to continue with economics coursework, a greater understanding of economic ideology will add insight into their studies. As students

become aware of their own economic ideology (and how economic ideology differs from social or political ideology) they also become better learners.

In the next section, we explain why teaching economic ideology should be integrated into economic principles courses; the objective is for students to gain a deeper understanding of classroom instruction and real-world debates, by examining their own beliefs and connecting them with disagreements in the profession. The next section summarizes surveys developed to measure economic views. In sections IV and V, our primary purpose is to describe the development of our survey and report results of its administration to several hundred principles students across multiple classrooms. In section VI, we describe how the survey can be used to increase student understanding of economic principles and policy debates. The final section concludes.

II. A NEED FOR A GREATER DISCUSSION OF IDEOLOGY IN PRINCIPLES

Few Principles texts contain a detailed examination of economic ideology *per se*.³ Exceptions include Riddell et al. (2005), which contains an entire section on economic ideology, including a detailed description of the basic tenets of the conservative, liberal, and radical perspectives (pp. 9-16). Colander (2010) also discusses ideology in detail in a chapter on microeconomic policy. In this context, he cites both interpretation of often imprecise empirical evidence and choice of economic models as primary factors leading to differing ideologies or ‘worldviews.’ The economist’s worldview “determines how and when the economic model will be applied” (p. 527). Others such as Baumol and Blinder (2011) discuss differences between conservative and liberal ideologies in the context of support for markets generally or specific policies. Mankiw (2012) also provides a detailed examination of conservative and liberal views on taxes and income inequality. Some texts discuss disagreements among economists. Krugman and Wells (2012) in a section titled “When and why economists disagree” note that economists disagree over the income tax versus the value-added tax. The two primary sources of disagreement identified by Krugman and Wells are values and modeling, in other words, normative and positive analysis.

Nearly all texts discuss the distinction between normative and positive analysis, sometimes in great detail. However, normative/positive analysis and economic ideology are distinct, albeit related, concepts. What, after all, explains the vastly different approaches to economic theorizing, model building, and policy recommendations of economists at the University of Chicago and the University of Massachusetts at Amherst?⁴ We see economic ideology as a view of the world that influences what one considers important topics for research and teaching, the way one models economic behavior, and the resultant policy views. Presenting a discussion of normative versus positive analysis while minimizing economic ideology may leave the impression that no economist can validly disagree on the fundamental economics of a particular issue – be it poverty, unemployment, budget deficits, central bank policy, or trade. Certainly, normative views (i.e., descriptions of the world as it should be) are informed by one’s economic ideology. But economic ideology also informs positive views.

Our survey and associated exercises will supplement the discussion in Principles classes that use texts that already contain a discussion of economic ideology and add value to those that do not. Any student who pays attention to economic arguments outside the classroom – where economists sometimes disagree – will likely be unimpressed with economics instruction that leaves out a discussion of what amounts to the origins of views of professionals in the field. In short, such an ‘oversight’ (or, lack of insight) in Principles courses diminishes the actual and perceived value of economic education. Our goal is to remediate that deficit.

III. PRIOR SURVEYS

Several authors have developed survey tools to measure economic views, although none directly addresses economic ideology for students in college-level Principles courses. While each of these has its own strengths, our survey offers several advantages.

O'Brien and Ingels (1987) provide an “Economics Values Inventory.” Their focus is middle school students (grades 7 – 9). Rather than ideology, their survey assesses an understanding of basic principles about which conservatives and liberals are not likely to disagree. Consider true/false (or agree/disagree) statements with binary responses: “Resources are always limited, and we must make hard choices about the best way to use them” and “Groups of individuals with specialized skills, working together, can produce better products than individuals working alone.” An example of an ideology based statement that they do use is, “My freedom to choose my own occupation is very important to me.” But even this one may be too oblique to distinguish between conservative and liberal views of economic systems.

Cobb and Luker (1993) measure “market bias in microeconomics” with a “test of Interventionist/ Noninterventionist Attitudes, designed to measure and analyze changes in students' socioeconomic attitudes as a result of participation in a course” (p. 364). Their survey is good at capturing individual pro- or anti-government views on a range of issues. Nevertheless, it has several disadvantages for our purposes. First, some statements measure more than economic ideology by, for example, using statements concerning seat belt usage and inoculation of dogs and cats which may have little to do with fundamental economic views. (e.g. “Owners of dogs and cats should be required to have their animals inoculated regularly”) Second, they also use some inflammatory language; for example, “The only people who are hungry are lazy bums.” We attempt to avoid such language in our statements.

Whaples’ (1995) survey for college economics students measures attitudes about “fairness of the market.” An advantage of the survey is that it is short, only six statements. It also allows only yes-no responses, a shortcoming when the desire is to measure attitudes along a continuum. The statements measure behaviors such as an increase in the price of flowers or tables (“On a holiday, when there is a great demand for flowers, their prices usually go up. Is it fair for flower sellers to raise their prices like this?”; “A small factory produces kitchen tables and sells them at \$200 each. There is so much demand for the tables that it cannot meet it fully. The factory decides to raise the prices of its tables by \$20 when

there was no change in the costs of producing tables. Is this fair?"). Conservatives and liberals economists would likely respond similarly.

Fuller and Geide-Stevenson (2007) survey two distinct groups, politicians at political conventions and economists. Their survey poses statements that require more knowledge than students entering Principles would be expected to have (we envision our survey being used near the beginning of a Principles course). For example, "Tariffs and import quotas usually reduce the general welfare of society" and "A large federal budget deficit has an adverse effect on the economy." Most students just beginning Principles would not know how to respond to these – they might be more appropriate for end of semester. Even then, students' responses may be an attempt by students to supply the 'right' answer.

Our survey contributes to and builds upon the usefulness of related survey instruments by focusing on economic ideology and requiring no detailed knowledge of economic terms or concepts by respondents. Our final survey is also brief, containing 12 easily understood statements which allow for a range of agreement. The survey is appropriate for students with little or no prior background in economics and as such can be used in a wide range of settings (including high school economics courses and among the general public).

IV. SURVEY DEVELOPMENT

Our survey was developed in stages with an overarching goal of creating a single measure of economic ideology, a summary statistic, along a continuum from very conservative to very liberal. Such a measure will demonstrate to students that ideology is not black-and-white; i.e., ideology has no clear line of demarcation between conservative and liberal.

We also want to show that economic ideology and social/political ideology are not the same (as discussed in detail in Feldman and Johnston, 2009). Thus, we sought to rely on statements with a clear link to economic issues. Our experience is that often students conflate economic and social/political ideologies. Further, students typically have a clearer sense of the social/political conservative-liberal distinction than they do of the economic conservative-liberal distinction. Based on our interaction with students, it is common for students to associate anti-marijuana, pro-marriage, anti-abortion, anti-deficit, and low tax views with 'conservatives.' Of course, a pro-market, i.e. more ideologically conservative economist would favor legalization of marijuana (and a balanced budget and low taxes), *ceteris paribus*, while the views on marriage and abortion are not directly related to economic ideology. Students also describe conservatives as those who "preserve the status quo" which is at odds with expansion of markets into areas such as immigration (Becker, 2004) and kidneys distribution (Roth, 2007).

Another goal is that the survey be accessible – understandable by those without an economics background. As Blinder and Krueger (2004, p. 343) note, "Economists often want to see survey questions that make sense to them. Such questions may involve complicated concepts and numerous provisos that leave ordinary people confused. Good poll questions need to be understandable by ordinary people with limited attention spans and no training in economics." We also want the survey to be brief, so that the

burden of completion is small (in terms of student effort and time). Finally, we seek a valid and reliable survey. That is, a survey based upon sound economic views, one that differentiates between ideological conservatives and ideological liberals, and produces consistent results from similar samples.

In developing our statements, we identified underlying tenets of conservative and liberal economic ideology. Conservatives strongly emphasize the efficiency and freedom of markets. Specifically, unfettered markets:

- a. produce maximum social welfare;
- b. reward participants according to their contribution/value added;
- c. resolve shortages/surplus, and reflect consumer sovereignty;
- d. require individual self-reliance and personal responsibility in economic choices;
- e. reflect rational choice and self-interest;
- f. maximize opportunity and freedom in economic settings;
- g. require clear and well-defined property rights;
- h. encourage information production.

The conservative view that markets work best without government interference is aptly captured by Milton Friedman: “Pick any three letters from the alphabet, put them in any order, and you will have an acronym of a federal agency we can do without.” (As quoted in Will, 2008.) In short, strong conservatives contend that government intervention (even to correct market failure) leads to inferior outcomes compared to no intervention.⁵

Liberals, like conservatives, believe markets create value. Nevertheless, liberals assert that market failures are inevitable, and that markets by themselves do not necessarily create maximum social welfare. For example, liberals tend to emphasize factors other than worker productivity as important determinants of market wages; that market prices may adjust slowly to shocks; that consumers sometimes make irrational choices; that markets can be coercive rather than liberating for some; and that markets sometimes lack sufficient information for consumers to make optimal choices. Thus, liberals believe there is a role for government to correct market failures and thereby improve market outcomes through policies that tax, spend, redistribute, regulate, and provide information.

With this understanding, we developed the 12-statement survey shown in Appendix 1. Details concerning the development of the survey, from testing to final version, are contained in Appendix 2. Respondents are provided a seven-point Likert-type scale to indicate their level of agreement to each statement, ranging from “strongly disagree” (0 points) to “strongly agree” (6 points), with “neither disagree nor agree” in the middle (3). Statements 1 and 4 are reverse coded, 6 – response. All other statements are coded with the response. Summing the appropriately coded responses, possible economic ideology scores range from 0 to 72; the lower the score the more conservative the economic ideology, the higher the score the more liberal. A relatively very low score towards 0 is representative of a libertarian economic ideology, and a relatively high score, towards 72, is representative of a radical economic ideology. Most

respondents will score in the middle of the distribution and relatively fewer will have a score in the ends of the distribution.

V. SURVEY ADMINISTRATION

A. First administration

The survey was initially administered between May 3 and May 7, 2010, in eight Economics Principles classes taught by five faculty at a small, state-sponsored college in the Northeastern United States. The classes were either Microeconomics (3 sections), Macroeconomics (2), or combined principles (3). A total of 222 students completed a survey (215 are usable). Table 1 shows the academic and demographic characteristics reported by students. All students present on the day of the survey completed the survey.

Table 1: Respondent characteristics, Number of students (of those who responded to the question indicated)

| | | | |
|---------------------------------------|-----------------------|-------------|--------------|
| Number of econ courses in high school | | | |
| | Courses | First Admin | Second Admin |
| | 0 | 33 | 25 |
| | 1 | 151 | 138 |
| | 2 | 27 | 24 |
| | 3 | 3 | 5 |
| Number of econ courses in college | | | |
| | Courses | First Admin | Second Admin |
| | 0 | 113 | 138 |
| | 1 | 66 | 36 |
| | 2 | 26 | 13 |
| | 3 | 10 | 5 |
| Class year | | | |
| | | First Admin | Second Admin |
| | Freshman | 95 | 74 |
| | Sophomore | 48 | 60 |
| | Junior | 55 | 38 |
| | Senior | 15 | 18 |
| Major | | | |
| | | First Admin | Second Admin |
| | Business | 53 | 66 |
| | Economics | 4 | 2 |
| | Accounting | 21 | 20 |
| | Other | 137 | 102 |
| Self-rated ideology | | | |
| | | First Admin | Second Admin |
| | Very Liberal | 12 | 9 |
| | Liberal | 41 | 35 |
| | Moderate Liberal | 45 | 45 |
| | Neither | 55 | 43 |
| | Moderate Conservative | 35 | 38 |
| | Conservative | 18 | 17 |
| | Very Conservative | 6 | 3 |
| Gender | | | |
| | | First Admin | Second Admin |
| | Male | 111 | 110 |
| | Female | 93 | 70 |

Numbers may not add up to same for all categories as not all students answered all questions.

"First Admin" is first administration, May 2010. "Second Admin" is second administration, September 2010.

Cronbach's alpha measure of internal consistency is 0.800, well exceeding the minimum generally acceptable level (0.700).⁶ This high value indicates that the items on the survey are closely related as a group and that administration of the survey to a similar sample of respondents is likely to produce similar results (as we in fact show later).

Table 2 shows means, standard deviations, and item-to-total correlations for individual statements, and summary statistics for the scale total (sum of the twelve statements).⁷ We see that scores for the 12-statement-total ranged from 12 to 68. The maximum possible range is 0 (very conservative) to 72 (very liberal), given a 7-point scale of 0 to 6 for each statement, with a middle value (indifference) of 36. The observed mean was 45.7 points, and the median 47. After reverse coding two statements (see footnote

Table 2: Item Statistics (n=215 usable surveys); Scale ranges from 0 (Strongly Disagree) to 6 (Strongly Agree); 3 is neutral

| Item | Statement | Mean | Standard Deviation | Item-total correlation |
|--------|---|-------------------|--------------------|------------------------|
| s1* | If people are poor it is mostly because of their own actions. | 2.81 | 1.672 | 0.324 |
| s2 | The price of pharmaceuticals (drugs) should be regulated by the government so that the drugs are more affordable to the average person. | 4.16 | 1.641 | 0.500 |
| s3 | Government is needed to help the less fortunate. | 3.86 ^δ | 1.475 | 0.557 |
| s4* | At birth, everyone has an equal opportunity to become rich. | 2.39 | 1.918 | 0.261 |
| s5 | The government should provide unemployment compensation and retraining to people who lose their jobs as a result of a weak economy. | 4.00 ^δ | 1.365 | 0.419 |
| s6 | People with very high incomes should be heavily taxed. | 3.26 | 1.687 | 0.341 |
| s7 | Consumers need active government protection from unethical business practices. | 4.32 | 1.320 | 0.521 |
| s8 | Women and minorities face significant discrimination in the labor market. | 3.45 ^δ | 1.619 | 0.329 |
| s9 | Sick persons should always be provided healthcare whether or not they have ability to pay. | 4.13 ^δ | 1.684 | 0.667 |
| s10 | The government should provide basic housing to those unable to pay market price rent. | 3.25 ^δ | 1.456 | 0.504 |
| s11 | The government should use tax money to subsidize the development of environmentally sustainable (green) technologies. | 4.02 | 1.504 | 0.524 |
| s12 | Every employed person should be guaranteed a fair wage. | 4.40 | 1.702 | 0.476 |
| TOTAL* | Mean | 45.65 | | |
| | Median | 47 | | |
| | Maximum | 68 | | |
| | Minimum | 12 | | |

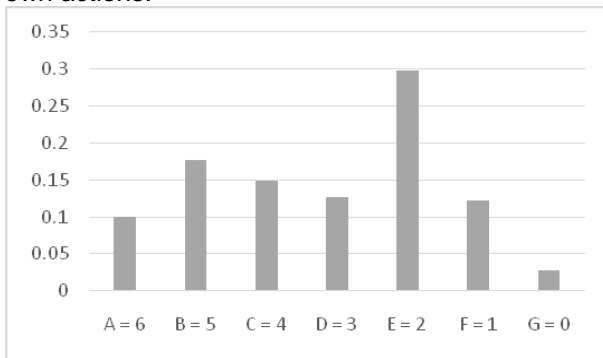
* Scores for items s1 and s4 are reverse coded – i.e., the higher the score the *more* conservative the response, contrary to the other statements. These were reverse scored (i.e., a response of 1 is changed to a 5) before summing to obtain the scale score and before calculating the item-to-total correlation.

^δ Denotes statistically significant differences (p<0.05) between male and female respondents on this item.

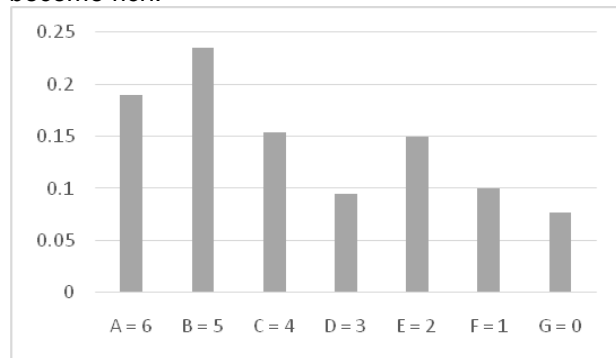
5), average responses on individual statements range from 3.19 to 4.40. The average for every statement exceeded the mid-point on the scale for every statement, although to varying degrees. These results (a generally liberal leaning ideology) are expected given the common view that New York is a liberal state. What is important to note, though, is that even in this sample of generally liberal students there is a range of scores (see Figure 1).

Figure 1: Distributions of responses (n = 215). Survey administration May 2010 (Percentages of all respondents on the vertical axis)

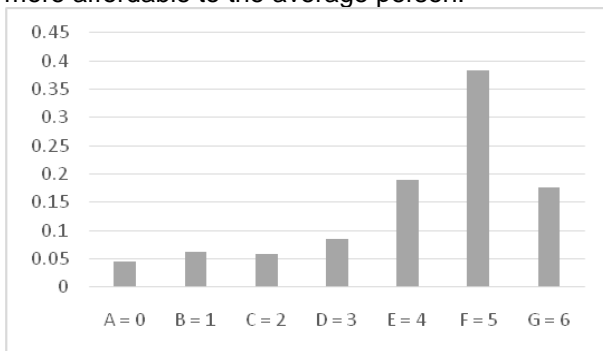
S1. If people are poor it is mostly because of their own actions.



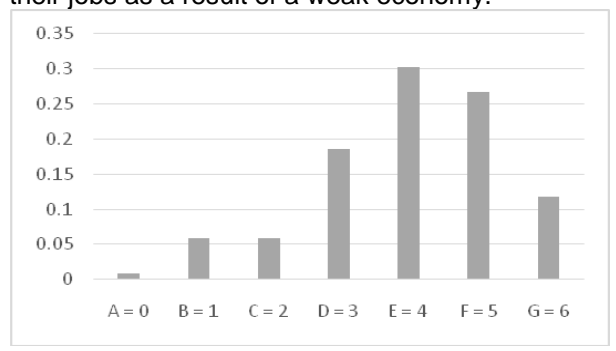
S4. At birth, everyone has an equal opportunity to become rich.



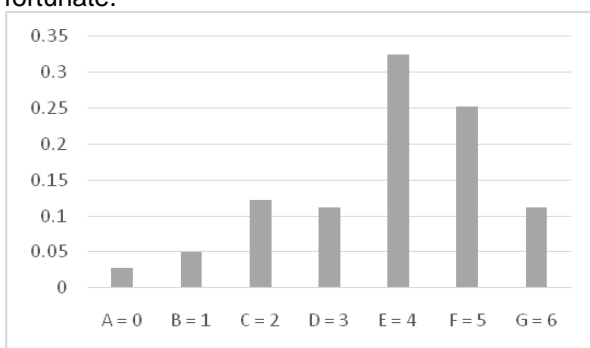
S2. The price of pharmaceuticals (drugs) should be regulated by the government so that the drugs are more affordable to the average person.



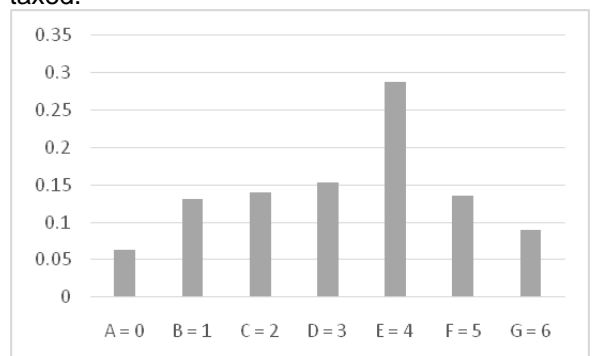
S5. The government should provide unemployment compensation and retraining to people who lose their jobs as a result of a weak economy.



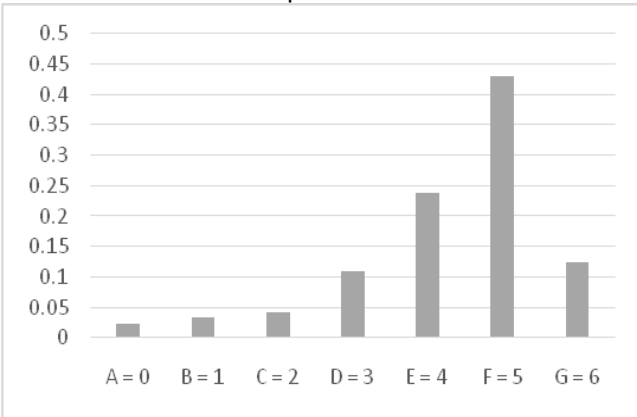
S3. Government is needed to help the less fortunate.



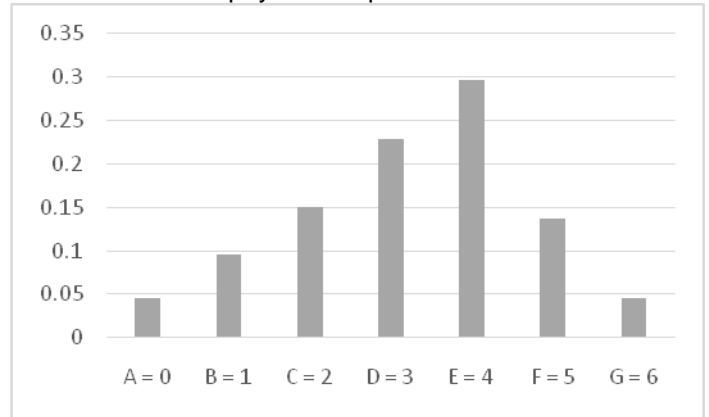
S6. People with very high incomes should be heavily taxed.



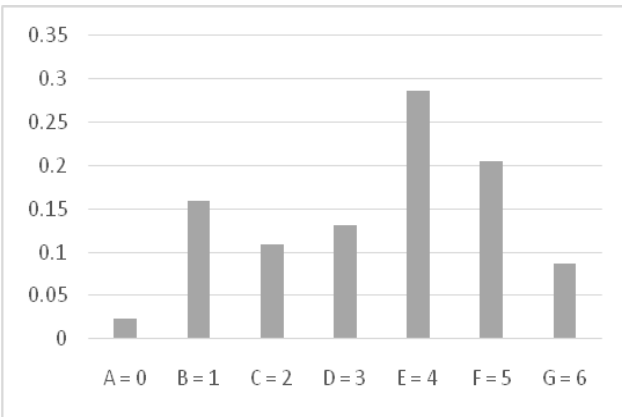
S7. Consumers need active government protection from unethical business practices.



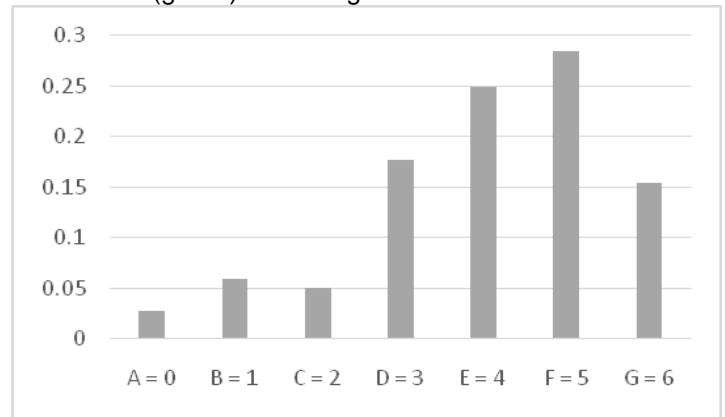
S10. The government should provide basic housing to those unable to pay market price rent.



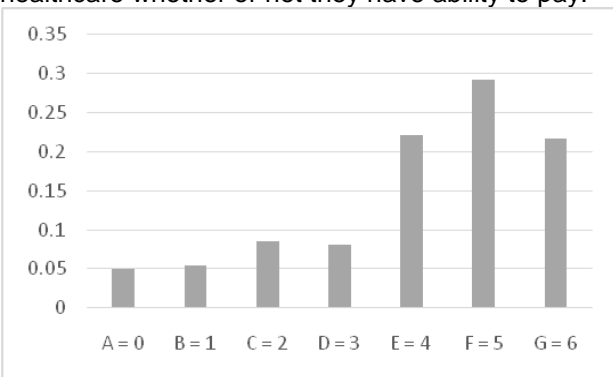
S8. Women and minorities face significant discrimination in the labor market.



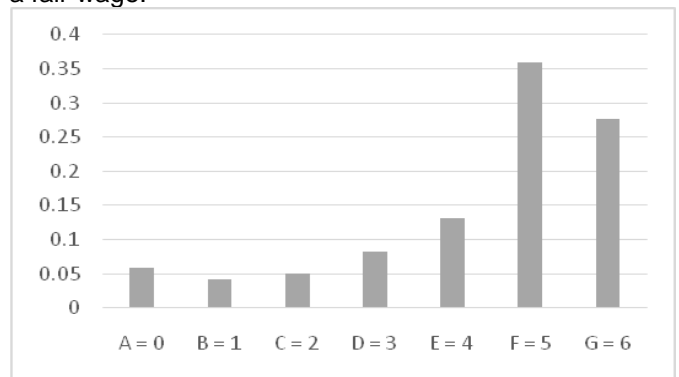
S11. The government should use tax money to subsidize the development of environmentally sustainable (green) technologies.



S9. Sick persons should always be provided healthcare whether or not they have ability to pay.



S12. Every employed person should be guaranteed a fair wage.



Students answered most conservatively to statements 1, 6, and 10. All three statements deal with income and poverty or wealth. Students were most liberal on statement 12 – concerning the need for a guaranteed fair wage (the key being *guaranteed*).

Table 3 shows responses by gender, major, and self-rated ideology. Females scored higher (were more liberal) over all, and on statements 3 ($p < 0.02$), 5 ($p < 0.02$), 8 ($p < 0.001$), 9 ($p < 0.01$), and 10 ($p < 0.04$). We also find that declared business majors are more conservative than non-business majors (41.6 vs. 47.5; $p < 0.002$), with the small number of accounting and economics majors scoring in-between. Figure 2 shows that on average, student respondents are more liberal, and self-describe as more liberal.

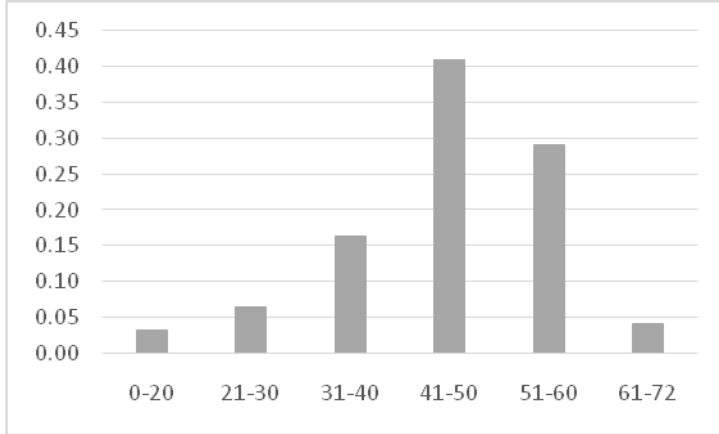
Table 3: First Administration. Values on Scale (sum of responses), by group (for those who responded to the grouping indicated)

| <u>Grouping</u> | <u>Mean</u> | <u>N</u> | <u>Min</u> | <u>Max</u> |
|----------------------------|-------------|----------|------------|------------|
| <u>GENDER</u> | | | | |
| Male | 43.5 | 111 | 12 | 68 |
| Female | 48.1 | 93 | 22 | 66 |
| <u>MAJOR</u> | | | | |
| Business | 41.6 | 53 | 18 | 62 |
| Economics | 45.3 | 4 | 24 | 65 |
| Accounting | 44.7 | 21 | 18 | 66 |
| Other | 47.5 | 137 | 12 | 68 |
| <u>SELF-RATED IDEOLOGY</u> | | | | |
| Very Liberal | 48.4 | 12 | 34 | 65 |
| Liberal | 50.8 | 41 | 28 | 65 |
| Moderate Liberal | 50.0 | 45 | 19 | 66 |
| Neither | 44.1 | 55 | 12 | 59 |
| Moderate Conservative | 41.7 | 35 | 27 | 68 |
| Conservative | 42.7 | 18 | 21 | 58 |
| Very Conservative | 25.5 | 6 | 13 | 50 |

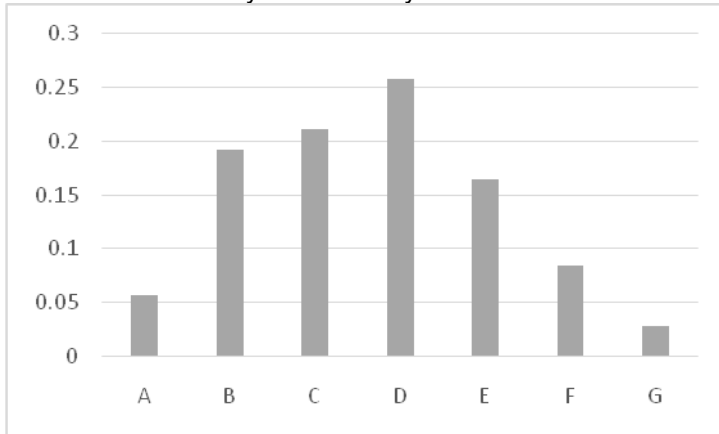
The survey scale is reflective of students’ self-rated ideology (question 17 on the survey): the scale score was lower the more conservative the student rated themselves (see Figure 2 for the score histogram and figure 1 for the statements’ histograms). The sample correlation coefficient between the economic ideology score and the self-rating is 0.40, so the score and self-rating are related.⁸ Students who identified themselves as “Very Liberal” scored almost twice as high on our survey as those who identified themselves as “Very Conservative” (48.4 vs. 25.5). This is important for two reasons. First, for the survey to be an effective teaching tool, the scale must reflect to some extent students’

Figure 2: Distributions of responses (n = 215). Survey administration May 2010 (Percentages of all respondents on the vertical axis)

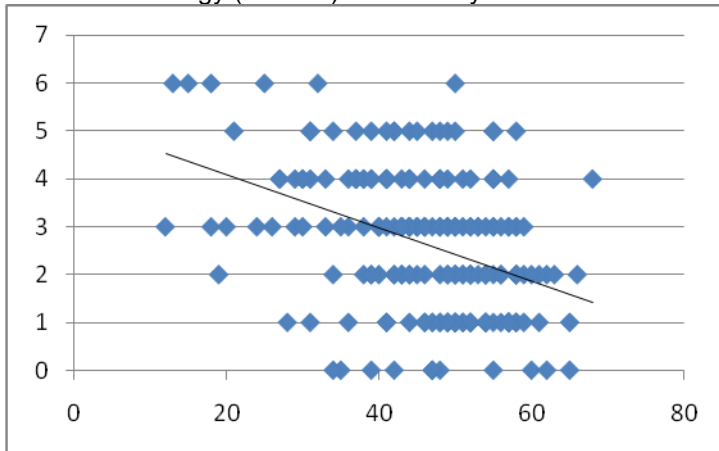
Survey Total score.



Item 17. How would you describe yourself on economic issues? (“Very Liberal” to “Very Conservative”).



Self-rated ideology (Item 17) and Survey Total Score.



perception of their own ideology. Yet, students' perceptions are often inaccurate. As Feldman and Johnston (2009, p. 23) note, "These measures are often good predictors of political outcomes. However, ... self identification may mean different things to different people. ... [W]hile people may have some understanding of a liberal-conservative dimension, the meaning of that dimension may vary." As noted earlier, students may be conflating economic ideology and social ideology. This survey and the subsequent discussion is meant to highlight the differences, differences which show in the (expected) imperfect correlation between self-rated ideology and the survey score. Second, correlation of our scale with an independent measure of ideology is another indication of reliability (Nunnally and Bernstein 1994). Note that the question asking for self-rating was reverse coded relative to the scale (higher score on this item indicated greater conservatism), adding to our belief that students did carefully complete the survey.

Additional findings of interest include: males and females are not different at the 5 percent level on self-rated ideology; and there are no differences in students' ideology scores across instructor, class year, or number of economics courses.

In Table 4, students' economic ideology scores are regressed on their respondent characteristics and the estimated coefficients are shown. Previously completed economics courses in high school or college do not significantly affect ideology, nor do year in school, gender, or declaring an accounting major. Of interest, all else equal, students declaring the business economics major have an economic ideology score 3.6 points lower than other majors. In addition, students' ideology self-rating is inversely related to their survey ideology score.

Table 4: Survey score on student characteristics

| | Coefficients | Standard Error | t-Stat |
|-------------------------------|--------------|----------------|--------|
| Intercept | 44.40** | 1.96 | 22.70 |
| High School Economics Course | -0.43 | 1.03 | -0.42 |
| College Economics Course | -0.26 | 0.77 | -0.33 |
| College Year | 0.51 | 0.63 | 0.80 |
| Business Economics Major | -3.60* | 1.67 | -2.16 |
| Professional Accounting Major | -0.40 | 2.19 | -0.18 |
| Self-Rated Ideology | -1.82** | 0.42 | -4.34 |
| Gender | 0.70 | 1.02 | 0.69 |
| Usable observations | 215 | | |
| Adjusted R ² | 0.106 | | |
| Standard error | 8.940 | | |
| F-statistic | 4.620** | | |

*Significant at 5 percent level; ** 1 percent.

B. Second administration

A majority of the initial survey statements are normative in nature – i.e., policy oriented. This may be suitable for the survey’s intended audience, those with little or no formal economic training for whom policy questions are more salient; and we think it adequately captures respondents’ economic view of the world, but economic ideology has roots in positive views so we revised seven of the statements to be less policy focused and more positive. These revised statements are shown in Table 5 (s13 through s19).

We administered the revised survey, with the original 12 statements and the seven revised statements, in September 2010 to 192 students. Table 1 shows academic and demographic characteristics reported by these students. Administering all 19 statements allowed us to replicate the original findings for statements 1 – 12, as well as test the new statements. Results are shown in table 5.

Table 5: Mean scores. Original administration (May 2010), Second administration (original 12 statements; administered September 2010), Second Administration, with revised questions (seven statements from the original survey plus five revised statements; administered September 2010).

| Item | Statement | Original | Second Administration | Revised Group |
|------|--|----------|-----------------------|---------------|
| s1* | If people are poor it is mostly because of their own actions. | 2.81 | 3.21 | 3.21 |
| s2 | The price of pharmaceuticals (drugs) should be regulated by the government so that the drugs are more affordable to the average person. | 4.16 | 4.48 | |
| s3 | Government is needed to help the less fortunate. | 3.86 | 3.84 | 3.84 |
| s4* | At birth, everyone has an equal opportunity to become rich.* | 2.39 | 2.39 | 2.39 |
| s5 | The government should provide unemployment compensation and retraining to people who lose their jobs as a result of a weak economy. | 4.00 | 4.10 | |
| s6 | People with very high incomes should be heavily taxed. | 3.26 | 3.14 | |
| s7 | Consumers need active government protection from unethical business practices. | 4.32 | 4.30 | |
| s8 | Women and minorities face significant discrimination in the labor market. | 3.45 | 3.21 | 3.21 |
| s9 | Sick persons should always be provided healthcare whether or not they have ability to pay. | 4.13 | 4.38 | |
| s10 | The government should provide basic housing to those unable to pay market price rent. | 3.25 | 2.99 | 2.99 |
| s11 | The government should use tax money to subsidize the development of environmentally sustainable (green) technologies. | 4.02 | 3.91 | |
| s12 | Every employed person should be guaranteed a fair wage. | 4.40 | 4.81 | |
| s13* | Regulating the price of pharmaceuticals so that everyone who needs the drugs can afford them will cause more harm than good. Replaces s2. | | | 2.22 |

| | | | | |
|------|--|-------|-------|-------|
| s14* | If left to itself, the economy will ensure that everyone who wants a job will find one at the market wage rate. Replaces s5. | | | 2.21 |
| s15* | People with very high incomes are deserving of their income and should not be forced to share it with those who have less. Replaces s6. | | | 3.25 |
| s16* | Unethical or unscrupulous businesses will eventually be driven from the market place. Replaces s7. | | | 2.79 |
| s17 | Health care is a fundamental good whose provision should not be left to the market place where if you don't have money to pay for it you don't get it. Replaces s9. | | | 3.49 |
| s18* | Businesses will develop the correct amount of environmentally sustainable ("green") technology required by society. Replaces s11. | | | 2.57 |
| s19* | Competition ensures that workers are paid what they deserve. Replaces s12. | | | 3.32 |
| | Mean | 45.65 | 45.56 | 39.61 |
| | Median | 47 | 47 | 40 |
| | Max | 68 | 68 | 67 |
| | Min | 12 | 11 | 2 |
| | | | | |
| | Cronbach's Alpha | 0.800 | 0.738 | 0.717 |

* indicates the score is to be reversed before calculating survey total.

Table 6 shows that small gender differences remain for the original 12 statements but are not present on the revised version. Small differences remain between business and non-business majors, for both the original survey and the revision. A similar pattern with regard to self-rated ideology also persists.

Given the consistency of the measures, we are confident that the survey, both in original and revised forms, provides valuable information regarding respondents' economic ideology.

VI. CLASSROOM EXERCISES

The primary reason for developing the survey is for its pedagogical value. We made the case earlier for the importance of a discussion of economic ideology in Principles. Here we provide examples of how the survey can be used in class.

One of the authors asks students to line up from lowest score to highest (doing so is voluntary, although seldom does a student not participate). This allows students to see the range of views held by classmates. Volunteers near the ends are then asked to discuss their views, sometimes focusing on specific questions. It is an illuminating experience for some as they realize where they fit in compared to classmates.⁹ When asked about what they learned from the survey one student commented, "I learned that I am much more conservative than I originally thought. Whereas originally, I believed myself to be somewhere in the middle, the survey showed that I had significantly more conservative ideals." This is a common observation among students and occurs all along the continuum.

Table 6: Second Administration. Mean values on Scale (sum of responses), by group (for those who responded to the grouping indicated)

| <u>Grouping</u> | <u>Original 12 Statements</u> | <u>Revised 12 Statements</u> |
|--------------------------------|-----------------------------------|----------------------------------|
| <u>GENDER</u> | | |
| Male | 44.3 | 39.1 |
| Female | 48.0 | 40.8 |
| <u>MAJOR</u> | | |
| Business | 44.8 | 38.1 |
| Economics | 42.0 | 30.0 |
| Accounting | 43.7 | 38.7 |
| Other | 46.6 | 41.2 |
| <u>SELF-RATED IDEOLOGY</u> | | |
| Very Liberal | 50.9 | 41.2 |
| Liberal | 48.0 | 43.3 |
| Moderate Liberal | 47.9 | 41.4 |
| Neither | 47.3 | 41.0 |
| Moderate Conservative | 44.1 | 38.0 |
| Conservative | 35.8 | 32.1 |
| Very Conservative | 19.3 | 12.0 |

Other possibilities for incorporating the survey into Principles classes include:

- Use the measure of ideology to group students into discussion groups, creating a mix of conservative and liberal students in the same group. Have them discuss some controversial issue, one on which conservatives and liberals typically disagree. Diversity of economic ideology will likely lead to richer discussion – but this remains to be determined by future research. Moore (2011) examines group composition and student performance, noting “there is very little empirical work that sheds light on how to choose the most effective teams (groups) for individual student learning, especially in economics” (p. 120).
- Pair a conservative with a liberal for an assignment in which students interview each other and write a report of those views. This will lead students to consider the views of others who differ from their own. A variant might be to randomly pair students and have them determine each other’s ideology based on discussion of a chosen topic rather than revelation of scores. Survey scores could then be used to assess the students’ assessment.
- Readings and assignments can be based on the results (perhaps asking students to examine a position that conflicts with their measured ideology).

VII. CONCLUSION

We have argued that understanding economic ideology is central to an understanding of economic debates and so should be a part of Principles classes. We have provided examples of how the results of the survey can be incorporated into class exercises.

We have shown our survey is internally consistent and reliable and that its measure of ideology resembles students' own self-rating. Accordingly, one can be confident that this survey provides a useful measure of economic ideology.

Our recommendation is that a discussion of economic ideology occur at the beginning of the Principles course, perhaps side-by-side with the discussion of normative and positive analysis and the role of markets generally (and then throughout as alternative models and policies are discussed). Our survey could be used as part of that discussion.

Major benefits for students of completing this survey include:

- Students will get a better sense of their own economic ideology and what it means to have one. The survey is an active learning tool and students become self-aware learners.
- One of the hallmarks of an educated person is the understanding that others can hold opposing views and still be honest, thinking persons; that disagreements can be based on intellectual points of view. Similarly, class discussion can emphasize that a society's dominant economic orientation is not something that simply "happens." Rather, members of society form a consensus, with disagreement always existing about where to be on the continuum from socialism to free-markets (e.g., the ongoing health care debate in the U.S.). Students will realize that others in their class have different views – different ideology. This will encourage respectful dialogue.
- If the instructor completes the survey, her/his ideology will also be known to students. Such an open, honest acknowledgment will "lay the cards on the table" and will, if the instructor is open to the opinions of others, enrich the classroom experience for students (and instructor). (Students typically want to know the instructor's score.) Klein and Stern (2007) have criticized economists, particularly professors, for being biased. This survey will make the instructor's ideology clear to students, and perhaps spur the faculty to recognize students' differing views. (After the survey is discussed, one of the authors tells students his score, but also stresses that he strives to present views consistent with "6 and 60" on the scale. In other words, an inclusive discussion.)

We hope that the present paper and related future research leads to an expanded discussion of economic ideology in the Principles classroom. Future research will administer the survey to a wider audience, to determine if, for instance, college students differ from the general public; or if regional differences exist. Future research could also use the survey to:

- Assess the impact of group composition on group discussion and consensus. Does the mix of ideologies (from homogeneous to a balance between conservatives and liberals) affect group dynamics and learning?

- Assess instructor influence on economic ideology (measure instructor and students' ideology at the beginning of the course and students' ideology again at the end). There are several papers that do this. For example, Riddle (1978) finds that students become more conservative as a result of taking an economics principles class. Jackstadt, Brennan, and Thompson (1985) find a similar result in some of the classes they surveyed. Magee (2009) finds the individual professor's opinions influence student opinions on a survey.
- Assess the influence of the level and extent of economics instruction on economic ideology.

ENDNOTES

1. Parvin (1992, p. 67) examines the formation of ideology, beginning with a definition: "ideology is an invisible guideline by which individuals understand society and participate in it."
2. Shiller and Shiller (2011, p. 8) recall Alfred Marshall on this topic: "economics cannot be compared with the exact physical sciences, for it deals with the ever-changing and subtle forces of human nature."
3. We reviewed thirty leading texts. A complete listing with findings is available upon request.
4. For example, Slonimczyk and Skotty (2010) develop a model that shows how an increase in the minimum wage can raise both total and low-skill employment, and produce a fall in inequality and over education. They conclude that "evidence from the US suggests that these theoretical results are empirically relevant" (p. 1; see also p. 22). Gorry (2008) provides a model in which a minimum wage has differential (negative) effects on market participants depending on participants' connections in the labor market.
5. With regard to the effects of government intervention, we quote Friedman's discussion of externalities: "As a result a government attempt to rectify the situation may very well end up making matters worse rather than better..." (1980, p. 23).
6. Cronbach's alpha is a widely used measure of reliability which measures whether the instrument generates the same results each time it is administered and whether all items in the survey instrument score the same thing on a scale of 0 to 1.00. A measure for alpha closer to 1.00 has greater internal consistency: a measurement for alpha exceeding 0.70 is acceptable while one below 0.50 is unacceptable (George and Mallery, 2001, pp. 208-209, 217).
7. Agreement to statements 1 and 4 indicates a conservative view whereas agreement to the other statements indicates a liberal view. Therefore, responses to statements 1 and 4 were reverse scored before adding to the summary. Thus, a raw score of 2.81 converts to 3.19 and 2.39 converts to 3.61. All numbers in the text refer to the reversed scores.
8. The fitted line in the third diagram to figure 2 is $5.2045 - 0.0557$ survey score. The coefficient of determination is 16.07%.
9. Students are told that although the survey has been tested and is a reliable measure of economic ideology, it is but one measure, based solely on the set of questions provided and so is not perfect. They are told its primary purpose is not to pigeonhole but to get students thinking.

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Appendix 1. Final survey instrument.

DIRECTIONS: Please read each statement carefully, and indicate how strongly you agree or disagree with each item using the following rating scale:

- A. Strongly disagree
- B. Disagree
- C. Somewhat (slightly) disagree
- D. Neither disagree nor agree
- E. Somewhat (slightly) agree
- F. Agree
- G. Strongly agree

| | |
|-----|---|
| 1. | If people are poor it is mostly because of their own actions. |
| 2. | The price of pharmaceuticals (drugs) should be regulated by the government so that the drugs are more affordable to the average person. |
| 3. | Government is needed to help the less fortunate. |
| 4. | At birth, everyone has an equal opportunity to become rich. |
| 5. | The government should provide unemployment compensation and retraining to people who lose their jobs as a result of a weak economy. |
| 6. | People with very high incomes should be heavily taxed. |
| 7. | Consumers need active government protection from unethical business practices. |
| 8. | Women and minorities face significant discrimination in the labor market. |
| 9. | Sick persons should always be provided healthcare whether or not they have ability to pay. |
| 10. | The government should provide basic housing to those unable to pay market price rent. |
| 11. | The government should use tax money to subsidize the development of environmentally sustainable (green) technologies. |
| 12. | Every employed person should be guaranteed a fair wage. |

For the following use the response scale provided with each statement.

| | |
|-----|---|
| 13. | How many economics courses did you complete in high school? A. 0 B. 1 C. 2 D. 3 E. 4 or more |
| 14. | How many economics courses have you completed in college (not counting this semester)? A. 0 B. 1 C. 2 D. 3 E. 4 or more |
| 15. | Class year (right now) A. Freshman B. Sophomore C. Junior D. Senior |
| 16. | Major A. Business or Business Economics B. Economics C. Accounting D. Other |
| 17. | How would you describe yourself on economic issues? A. Very Liberal B. Liberal C. Moderately Liberal D. Neither conservative nor liberal E. Moderately conservative F. Conservative G. Very Conservative |
| 18. | What is your gender? A. Male B. Female C. Prefer not to answer |

Appendix 2. Testing of the survey and selection of final statements.

We initially developed 39 statements that we thought would distinguish conservatives from liberals and pre-tested the statements on six students in April 2010. Respondents were provided a seven-point Likert-type scale to report their level of agreement to each statement, ranging from “strongly disagree” to “strongly agree” (with “neither disagree nor agree” in the middle). The purposes of this phase were to gauge the time necessary for completion and to determine if the statements were clear and unbiased. Based on the students’ feedback we deleted nine statements and made slight modifications to several others. The 30 statements selected for full testing are shown on the next page.

We then performed full testing of these 30 statements. Some statements were worded such that agreement indicated a conservative view, while for others agreement indicated a liberal view. In this phase, 168 students from four Intermediate Micro and Macro classes and two Principles classes completed the survey. We used Intermediate classes in the testing phase so as to preserve the Principles classes for the final phase. Sampling Intermediate students (and students at the end of Principles rather than the beginning) does not align with our proposed final use of the survey, but responses from the testing phase (shown in the appendix) and the final phase are comparable. We make two observations: responses did not differ by class level and responses are not correlated with students’ self-reported number of economics classes completed (in college and high school). In other words, the extent of prior course work in education seems immaterial. Students ranged in age from 18 to 26, were predominantly Business majors in the Intermediate classes and from a wide range of majors in the Principles classes. All students in the Intermediate classes had completed separate Micro and Macro Principles courses and were finishing their first or second Intermediate theory course. Most students in the Principles class were completing their second Principles class. Administration of the survey was consistent across classes. The same preface was read to students for each administration: Students were told that their assistance was voluntary and anonymous and if they chose to complete the survey it would take no more than 10 to 12 minutes. No inducements (points, money, and so on) were offered. Responses were similar across classes.

We chose 12 statements for our final survey based on conventional evaluation criteria for survey statement selection, including high item-to-total correlation (for most of the retained statements this was 0.4 or higher) and minimum increase in Cronbach’s alpha if deleted (Nunnally and Bernstein 1994).

Statements used in full testing phase.

| | |
|-----|---|
| 1. | If people are poor it is mostly because of their own actions. |
| 2. | It is acceptable for a grocery store that normally sells ice for \$2 per bag to raise its price to \$10 when a hurricane approaches. |
| 3. | More regulation protecting the environment would impose too many costs on the economy. |
| 4. | A person’s productivity is the only significant determinant of one’s income in a market economy. |
| 5. | The price of pharmaceuticals (drugs) should be regulated by the government so that the drugs are more affordable to the average person. |
| 6. | Government is needed to help the less fortunate. |
| 7. | At birth, everyone has an equal opportunity to become rich. |
| 8. | The government should provide unemployment compensation and retraining to people who lose their jobs as a result of a weak economy. |
| 9. | Government should break apart companies that become too big and powerful. |
| 10. | People with very high incomes should be heavily taxed. |
| 11. | Consumers need active government protection from unethical business practices. |
| 12. | Consumers require more information to make good purchasing decisions than businesses typically provide. |
| 13. | Women and minorities face significant discrimination in the labor market. |
| 14. | Workers who do not like their job are easily able to find new employment in a similar job. |

| | |
|-----|---|
| 15. | Children should be able to inherit their parents' estates of \$1 million or more without being required to pay tax on it. |
| 16. | Sick persons should always be provided healthcare whether or not they have ability to pay. |
| 17. | Society is harmed when government takes private property, even when it is for public purposes and it pays fair market value. |
| 18. | Everyone, whether employed or not, should be guaranteed a fair income. |
| 19. | Anyone who desires to attend college should be able to, without regard to ability to pay. |
| 20. | The government should provide basic housing to those unable to pay market price rent. |
| 21. | The government should use tax money to subsidize the development of environmentally sustainable (green) technologies. |
| 22. | Free trade between countries, such as the U.S. and China, does more good than harm. |
| 23. | When cheap foreign produced goods are imported, domestic firms should be protected and their employees' jobs saved. |
| 24. | Where natural disasters, such as hurricanes and earthquakes, reduce the availability of necessities, businesses will increase the supply of food and water without any government assistance. |
| 25. | A society that uses tax policy to promote a more equal distribution of income will have lower economic growth and economic opportunity for its citizens. |
| 26. | I trust government to do the right thing most of the time. |
| 27. | Handouts (charity) make the recipients lazy and dependent. |
| 28. | Deficit spending by the government is unwise. |
| 29. | Every employed person should be guaranteed a fair wage. |
| 30. | At birth, everyone has an equal chance to become destitute. |

The Effect of Major League Baseball Rehab Assignments on Attendance in the International Baseball League

Andrew Turner

I. Introduction

Dustin Pedroia successfully launched his first full season in Major League Baseball (MLB) by winning Rookie of the Year honors and helping his team win the 2007 World Series. He would follow-up his rookie season in 2008 by being voted an All-Star by fans, receiving the American League Most Valuable Player Award from the Baseball Writers Association of America, and named a Gold Glover and Silver Slugger. By the summer of 2010, Pedroia had already been selected to a third consecutive All-Star game. One can intuitively expect that a player with such success should positively affect attendance during a rehab assignment in Minor League Baseball (MiLB).

This is exactly what happened. Attendance averaged 10,661 fans during Pedroia's three game rehab assignment with the Pawtucket Red Sox in August of 2010. This compares to an average August attendance of 9,671 fans. Why such a difference in the average attendance? Rehab assignments provide a unique opportunity to the MiLB community. They afford fans access to players that typically possess a level of talent that is reserved for MLB. Previous studies identify factors that affect attendance in MiLB. This study introduces a new explanatory variable – rehab assignments.

A rehab assignment is when a MLB player is assigned to a MiLB club prior to his return from the disabled list. The effect of MLB rehab assignments on MiLB attendance is a question that is particularly pertinent to baseball operations. In MiLB, ballpark staffing varies game-to-game. Portions of ballpark staff are hired on an "on-call" basis due to inconsistencies in daily attendance. Ticket pre-sales are limited in their ability to forecast daily attendance because walk-up fans purchase the majority of tickets. An advantage of considering the impact of rehab assignments on attendance is that management will better understand fan preferences and have an improved ability to forecast input needs.

The International Baseball League (IL) is a MiLB league at the in Triple-A (AAA) level. Team composition at the AAA level tends to consist of young top-rated prospects, along with veterans who appear to have reached a professional ceiling. In the year studied, 2010, the IL consisted of three divisions (North, South, and West) and had a total of 14 teams. All of the teams are affiliates of MLB teams.¹ A regression model is specified to determine the effect of MLB rehab assignments on attendance in the IL. Other independent variables considered include: win percentages and streaks, promotions, team effects, and day of the week. Data from 11 IL teams are analyzed to provide insight on the significance of each variable.²

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A second contribution in this paper is that a new technique is introduced to measure the impact of rivalry. The rival variable measures the intensity of a particular matchup. I examine rivalries in the IL, as well as the rivalries of their MLB affiliates and a combination of both. For example, consider the rivalry between the Pawtucket Red Sox and the Scranton/Wilkes-Barre Yankees. These two teams are rivals in both MLB and AAA baseball because they are in the same division at each level. It can be assumed that when opponents are both MLB and AAA rivals, the effect on attendance will be greater because the rivalry is more intense.

The paper proceeds as follows. Section II provides a review of literature on the topic. Section III presents the data analysis, methodology, and regression model. Section IV discusses the results and Section V concludes.

II. Literature Review

Many economists have studied the factors that drive fan attendance in baseball, from collegiate baseball to MiLB to MLB. Variables considered include: population, per capita income, stadium age, star players, ticket price (Noll, 1974), team composition (Kahane and Shmanske, 1997), team payroll (Rivers and Deschraver, 2002), wins versus championships (Whitney, 1998), divisional and interleague rivalries (Lemke et al., 2010), categorized promotions (Boyd and Krehbiel, 2003), and promotions combined with interaction variables (Boyd and Krehbiel, 2006). It is clear that attendance is affected by many variables and that understanding the components of fan demand is essential for forecasting input needs.

Noll (1974) is considered the pioneer attendance study in MLB. He examines a variety of variables and their effect on MLB attendance, including income, playing success, number of star players, competition, stadium age, ticket prices, population, and race. His approach consists of multiplying each independent variable by population, creating a series of interaction terms. Noll's technique is hindered by problems of multicollinearity and yields results that are difficult to interpret.

Whitney (1988) considers whether the pursuit of wins and championships are interchangeable components of fan interest. He concludes that fan interest is motivated by, "a mix of game-winning and flag-winning prospects," with the latter having a slightly greater effect (Whitney, 709). Studies on attendance in MLB were further expanded in 1997 when the effect of team roster turnover and the importance of team composition were considered. Kahane and Shmanske (1997) examine several turnover measures, such as roster turnover³ and salary-weighted turnover.⁴ Kahane and Shmanske (1997) found that all turnover measure variables significantly affect attendance, a conclusion that represents a source of bias in existing work that has omitted the roster turnover effect. Rehab assignments represent a source of changes in team composition and roster turnover.

McDonald and Raseker (2000) focus on the effect of promotions on MLB attendance and, more importantly, include a "watering down effect," when fans are overexposed to promotions. They find promotions significantly affect attendance and a "watering down effect" is evident. As the number of promotions increases, the marginal impact of each promotion decreases. The authors do not consider if

the effect is present in variables other than promotions. Rehab assignments may be subject to the same “watering down effect” as promotions. Players with extended or multiple rehab stints are likely to become too familiar to ballpark fans, thus reducing the marginal impact of each assignment.

Other studies consider the effect of star players on attendance. Rivers and Deschriver (2002) focus on whether relationships exist between attendance at MLB games and both team payroll and star player presence. Team payroll is determined to be positively related to attendance. The authors also note that larger variations in salaries negatively affect attendance. However, the presence of players who were stars in the previous year or during the prior five years does not significantly affect attendance. Similarly, rehab assignments can consist of star players from MLB teams. It is likely that a star rehab assignment has a greater impact on attendance than a normal rehab assignment.

Boyd and Krehbiel (2003) introduce variable categorization. They focus on three different categories of promotions and their effect on MLB attendance: special pricing, giveaways, and special features. The authors expand prior research, examining the effects of promotions when combined with two interaction variables, weekday/weekend games and games against non-rivals/rivals. For six clubs, they determine that giveaways and special features significantly affect attendance. Decreasing marginal returns occur when promotions are combined with interaction variables that increase game attractiveness.

In a follow-up investigation (2006), Boyd and Krehbiel’s sample size is expanded to every game played in 2002 for all MLB teams. The new variables considered include: team, inter-league game, inclement weather, bobblehead, giveaway valued less than \$5, giveaway valued greater than \$5, two or more special events, and a combination of a giveaway and a special event. Promotions are found to significantly affect attendance for 16 MLB teams. They conclude that bobblehead giveaways, a combination of a giveaway and special event, and two or more special events have the greatest impact on attendance.

Siegfried and Eisenberg (1980) replicate Noll (1974) and other studies of MLB attendance for factors that affect attendance at MiLB games. Their model explains 80 percent of the variation in MiLB attendance, compared to Noll’s 69 percent. Attendance is negatively related to price, which supports the theory of consumer demand. Per capita income and winning have little or no effect on attendance, while promotions increase it. These conclusions differ from Noll’s in that per capita income is negatively related to attendance and that the demand for MLB games is price inelastic.

Paul et al.’s (2007) study of attendance in the NY-Penn League extended Siegfried and Eisenberg’s (1980) attendance study and included the effects of demographic, team performance, game time, and promotion variables. Few previous studies examine MiLB attendance, and those that do use a sample from varying levels (A, AA, AAA), rather than a sample of all teams from one specific league. They conclude that NY-Penn League games are a normal good and that promotions, income per capita, win percentage, day of the week, and promotion variables significantly affect attendance.

Bernthal and Graham (2003) extend MiLB and MLB studies into collegiate baseball. Their study focuses on differences in fan motivation factors between MiLB and collegiate baseball. This study was

the first to explore fan motivation in two different settings of the same sport. Bernthal and Graham (2003) chose MiLB A and NCAA Division I baseball because they believe that the two levels are similar in terms of level of play. Another reason for their choice is that the two levels tend to be present in the same cities. This availability of comparable substitutes means teams compete for fans in the same market. The authors conclude MiLB attendance is driven by value and entertainment factors, while collegiate attendance is influenced by game and communal factors.

III. Data Sample & Methodology

An Ordinary Least Square (OLS) regression model is specified to determine the factors that affect attendance in the IL from a sample of 11 IL teams that responded to information requests. Attendance at each home game for clubs of home teams in 2010 is the dependent variable. The 59 independent variables relate to team performance, promotions, and game timing. Rehab assignments, of both normal and star players, are the primary focus for this study.

Data were collected on the variables shown in Table 1 for a total of 771 home games. A total of 68 to 72 home games were played per team. The OLS regression model is defined as:

$$\begin{aligned} \text{ATTEND}_{ij} = & \beta_0 + \beta_1 \text{ATTEND_L}_{ij} + \beta_2 \text{OD}_{ij} + \beta_3 \text{LD}_{ij} + \beta_4 \text{MON}_{ij} + \beta_5 \text{TUE}_{ij} + \beta_6 \text{THU}_{ij} + \beta_7 \text{FRI}_{ij} + \beta_8 \text{SAT}_{ij} + \\ & \beta_9 \text{SUN}_{ij} + \beta_{10} \text{TUETD}_{ij} + \beta_{11} \text{FRIFIRE}_{ij} + \beta_{12} \text{GP15}_{ij} + \beta_{13} \text{GP2}_{ij} + \beta_{14} \text{APR}_{ij} + \beta_{15} \text{MAY}_{ij} + \\ & \beta_{16} \text{JUL}_{ij} + \beta_{17} \text{AUG}_{ij} + \beta_{18} \text{SEPT}_{ij} + \beta_{19} \text{WLPCT}_{ij} + \beta_{20} \text{OPPWLPC}_{ij} + \beta_{21} \text{FHOME}_{ij} + \\ & \beta_{22} \text{LHOME}_{ij} + \beta_{23} \text{WIN3}_{ij} + \beta_{24} \text{LOSE3}_{ij} + \beta_{25} \text{AAA}_{ij} + \beta_{26} \text{MLB}_{ij} + \beta_{27} \text{BOTH}_{ij} + \beta_{28} \text{STRAS}_{ij} + \\ & \beta_{29} \text{BOB}_{ij} + \beta_{30} \text{FIRE}_{ij} + \beta_{31} \text{GA}_{ij} + \beta_{32} \text{CD}_{ij} + \beta_{33} \text{TD}_{ij} + \beta_{34} \text{SF}_{ij} + \beta_{35} \text{NORM1}_{ij} + \beta_{36} \text{STAR1}_{ij} + \\ & \beta_{37} \text{BUF_H}_{ij} + \beta_{38} \text{CHA_H}_{ij} + \beta_{39} \text{COL_H}_{ij} + \beta_{40} \text{GWN_H}_{ij} + \beta_{41} \text{IND_H}_{ij} + \beta_{42} \text{LOU_H}_{ij} + \\ & \beta_{43} \text{PAW_H}_{ij} + \beta_{44} \text{SWB_H}_{ij} + \beta_{45} \text{SYR_H}_{ij} + \beta_{46} \text{TLD_H}_{ij} + \beta_{47} \text{BUF_A}_{ij} + \beta_{48} \text{CHA_A}_{ij} + \\ & \beta_{49} \text{COL_A}_{ij} + \beta_{50} \text{DUR_A}_{ij} + \beta_{51} \text{GWN_A}_{ij} + \beta_{52} \text{IND_A}_{ij} + \beta_{53} \text{LHV_A}_{ij} + \beta_{54} \text{LOU_A}_{ij} + \\ & \beta_{55} \text{NOR_A}_{ij} + \beta_{56} \text{PAW_A}_{ij} + \beta_{57} \text{SWB_A}_{ij} + \beta_{58} \text{SYR_A}_{ij} + \beta_{59} \text{TLD_A}_{ij} + \varepsilon \end{aligned}$$

Autocorrelation was a concern in the original model. This issue was resolved with the inclusion of a lag of the dependent variable as an independent variable.⁵ ATTEND_L represents attendance at each team's previous home game. The first observation lag, per team, is set equal to the team's first home attendance of the season. Dropping each team's first observation did not significantly affect the independent variables, thus these observations are included in the final model. Tests for multicollinearity and heteroskedasticity were performed. The results proved the absence of multicollinearity, but indicated problems with heteroskedasticity.⁶ White's heteroskedasticity-constant standard errors and co-variance adjustment is applied in the reported results.

The OLS regression model represents unbalanced panel data, due to the variation in the number of home games per team. Home and away team dummy variables are added to capture fixed effects. Unlike previous studies, population and income per capita variables are excluded from the model.

Table 1. Description of Variables

| Variable | Description |
|----------|--|
| ATTEND | The attendance at home games of team <i>i</i> on dates <i>j</i> . |
| ATTEND_L | The lagged attendance at home games of team <i>i</i> on dates <i>j</i> . |
| OD | A dummy variable; 1 if the game took place on Opening Day, otherwise 0. |
| LD | A dummy variable; 1 if the game took place on the last home game, otherwise 0. |
| MON | A dummy variable; 1 if the game took place on Monday, otherwise 0. |
| TUE | A dummy variable; 1 if the game took place on Tuesday, otherwise 0. |
| THU | A dummy variable; 1 if the game took place on Thursday, otherwise 0. |
| FRI | A dummy variable; 1 if the game took place on Friday, otherwise 0. |
| SAT | A dummy variable; 1 if the game took place on Saturday, otherwise 0. |
| SUN | A dummy variable; 1 if the game took place on Sunday, otherwise 0. |
| TUETD | A dummy variable; 1 if the game took place on a Tuesday and featured a ticket discount, otherwise 0. |
| FRIFIRE | A dummy variable; 1 if the game took place on a Friday and featured post-game fireworks, otherwise 0. |
| GP15 | A dummy variable; 1 if a combination of a scheduled game and an unfinished game were played, otherwise 0. |
| GP2 | A dummy variable; 1 if a combination of a scheduled game and a postponed game were played (a.k.a. doubleheader), otherwise 0. |
| APR | A dummy variable; 1 if the game took place in April, otherwise 0. |
| MAY | A dummy variable; 1 if the game took place in May, otherwise 0. |
| JUL | A dummy variable; 1 if the game took place in July, otherwise 0. |
| AUG | A dummy variable; 1 if the game took place in August, otherwise 0. |
| SEPT | A dummy variable; 1 if the game took place in September, otherwise 0. |
| WLPCT | The home team's winning percentage prior to the start of the game. The first observation, per team, represents the home team's winning percentage at the end of the 2009 season. |
| OPPWLPCT | The away team's winning percentage prior to the start of the game. The first observation, per team, represents the away team's winning percentage at the end of the 2009 season. |
| FHOME | A dummy variable; 1 if the game was the first game of a home stand, otherwise 0. |
| LHOME | A dummy variable; 1 if the game was the last game of a home stand, otherwise 0. |
| WIN3 | A dummy variable; 1 if the home team had a 3+ winning streak, otherwise 0. |
| LOSE3 | A dummy variable; 1 if the home team had a 3+ losing streak, otherwise 0. |
| AAA | A dummy variable; 1 if the game was played against an AAA divisional opponent, otherwise 0. |
| MLB | A dummy variable; 1 if the game was played against an MLB divisional opponent, otherwise 0. |
| BOTH | A dummy variable; 1 if the game was played against both an AAA and MLB divisional opponent, otherwise 0. |
| STRAS | A dummy variable; 1 if Stephen Strasburg was the starting pitcher, otherwise 0. |
| BOB | A dummy variable; 1 if the game featured a bobblehead giveaway, otherwise 0. |
| FIRE | A dummy variable; 1 if the game featured post-game fireworks, otherwise 0. |
| GA | A dummy variable; 1 if the game featured a merchandise giveaway (magnetic schedule, team card set, team autograph booklet, etc.), otherwise 0. |

| | |
|-------|---|
| CD | A dummy variable; 1 if the game featured a concession stand discount (25 cent hotdogs, \$1 Budweiser, etc.), otherwise 0. |
| TD | A dummy variable; 1 if the game featured a ticket discount, otherwise 0. Ticket discounts were normally subject to a requirement (report card, membership identification, KRAFT Singles wrapper, etc.). |
| SF | A dummy variable; 1 if the game offered a special feature (Kids Run the Bases, Have a Catch Sunday, Dora the Explorer appearance, etc.), otherwise 0. |
| NORM1 | A dummy variable; 1 if a normal rehab assignment player started the game, otherwise 0. |
| STAR1 | A dummy variable; 1 if a star rehab assignment player started the game, otherwise 0. Star status is defined as a player that was honored as an All-Star, Gold Glover, or Silver Slugger at any time during his career prior to the 2010 season. |
| BUF_H | A dummy variable; 1 if the Buffalo Bisons were the home team, otherwise 0. |
| CHA_H | A dummy variable; 1 if the Charlotte Knights were the home team, otherwise 0. |
| COL_H | A dummy variable; 1 if the Columbus Clippers were the home team, otherwise 0. |
| GWN_H | A dummy variable; 1 if the Gwinnett Braves were the home team, otherwise 0. |
| IND_H | A dummy variable; 1 if the Indianapolis Indians were the home team, otherwise 0. |
| LOU_H | A dummy variable; 1 if the Louisville Bats were the home team, otherwise 0. |
| PAW_H | A dummy variable; 1 if the Pawtucket Red Sox were the home team, otherwise 0. |
| SWB_H | A dummy variable; 1 if the S/WB Yankees were the home team, otherwise 0. |
| SYR_H | A dummy variable; 1 if the Syracuse Chiefs were the home team, otherwise 0. |
| TLD_H | A dummy variable; 1 if the Toledo Mud Hens were the home team, otherwise 0. |
| BUF_A | A dummy variable; 1 if the Buffalo Bisons were the away team, otherwise 0. |
| CHA_A | A dummy variable; 1 if the Charlotte Knights were the away team, otherwise 0. |
| COL_A | A dummy variable; 1 if the Columbus Clippers were the away team, otherwise 0. |
| DUR_A | A dummy variable; 1 if the Durham Bulls were the away team, otherwise 0. |
| GWN_A | A dummy variable; 1 if the Gwinnett Braves were the away team, otherwise 0. |
| IND_A | A dummy variable; 1 if the Indianapolis Indians were the away team, otherwise 0. |
| LHV_A | A dummy variable; 1 if the LV Iron Pigs were the away team, otherwise 0. |
| LOU_A | A dummy variable; 1 if the Louisville Bats were the away team, otherwise 0. |
| NOR_A | A dummy variable; 1 if the Norfolk Tides were the away team, otherwise 0. |
| PAW_A | A dummy variable; 1 if the Pawtucket Red Sox were the away team, otherwise 0. |
| SWB_A | A dummy variable; 1 if the S/WB Yankees were the away team, otherwise 0. |
| SYR_A | A dummy variable; 1 if the Syracuse Chiefs were the away team, otherwise 0. |
| TLD_A | A dummy variable; 1 if the Toledo Mud Hens were the away team, otherwise 0. |
| i | 1, 2, . . . , 11 teams in sample. |
| j | 1, 2, . . . , "n" home games per team in sample (n = 68 to 72 home games). |

These effects are captured by the inclusion of team dummy variables. The Rochester Red Wings had the worst record during the 2010 season (49-95) and represent the team dummy reference. Winning and losing streaks are added to capture intertemporal effects.

Data were collected from three sources. Rehab assignment data are from each team's transaction history obtained at www.mlb.com and www.milb.com, as well as award and game log data found at www.baseball-reference.com. Data for the remaining variables were obtained from www.milb.com and personal correspondence with the teams. It is important to note that the rehab assignment designation was selective. Some players are sent down or outrighted to the minor leagues after spending time on the disabled list. This is not a rehab assignment, since an outrighted player is removed from the MLB 40-

man roster. This differs from simply being sent down because the player is still paid according to his MLB contract. Including these data in the study would create a bias in the results, as a rehab assignment should reflect the expectation that the player will return to the majors.

Summary statistics for the variables are shown in Table 2. The average 2010 game attendance was 7,007 fans, with a high of 17,527 and a low of 1,111. The 11 IL teams in the sample held 1,060 promotions during the 2010 season. Special features accounted for the largest percentage of promotions at 33.0 percent. Ticket discounts, giveaways, concession discounts, fireworks, and bobbleheads accounted respectively for 22.5, 17.0, 14.7, 12.2, and 0.6 percent of promotions. In terms of game days, Saturday is most common, 120 games, and Wednesday is least common, 88 games.

Table 2. Descriptive Statistics for International Baseball League Games during the 2010 Season

| Dependent Variable | MEAN | SD | MIN | MAX | FREQ |
|--|-------|-------|-------|--------|------|
| Attendance ¹ | 7,007 | 2,952 | 1,111 | 17,527 | 771 |
| Time Factors | | | | | |
| Lagged Attendance | 6,999 | 2,942 | 1,111 | 17,527 | 771 |
| Opening Day | 0.014 | 0.119 | 0 | 1 | 11 |
| Last Home Game | 0.014 | 0.119 | 0 | 1 | 11 |
| Played on Monday | 0.141 | 0.349 | 0 | 1 | 109 |
| Played on Tuesday | 0.136 | 0.343 | 0 | 1 | 105 |
| Played on Thursday | 0.153 | 0.360 | 0 | 1 | 118 |
| Played on Friday | 0.147 | 0.354 | 0 | 1 | 113 |
| Played on Saturday | 0.156 | 0.363 | 0 | 1 | 120 |
| Played on Sunday | 0.153 | 0.360 | 0 | 1 | 118 |
| Played on Tuesday and featured a ticket discount ¹ | 0.109 | 0.312 | 0 | 1 | 84 |
| Played on Friday and featured post-game fireworks ¹ | 0.080 | 0.272 | 0 | 1 | 62 |
| Played scheduled and postponed game | 0.012 | 0.107 | 0 | 1 | 9 |
| Played doubleheader | 0.025 | 0.155 | 0 | 1 | 19 |
| Played in April | 0.162 | 0.369 | 0 | 1 | 125 |
| Played in May | 0.195 | 0.396 | 0 | 1 | 150 |
| Played in July | 0.192 | 0.394 | 0 | 1 | 148 |
| Played in August | 0.209 | 0.407 | 0 | 1 | 161 |
| Played in September | 0.038 | 0.190 | 0 | 1 | 29 |
| Fan Interest | | | | | |
| The home team's win percentage | 0.507 | 0.093 | 0 | 1 | 771 |
| The away team's win percentage | 0.495 | 0.101 | 0 | 1 | 771 |
| First game of home stand | 0.175 | 0.380 | 0 | 1 | 135 |
| Last game of home stand | 0.175 | 0.380 | 0 | 1 | 135 |
| Three or more game winning streak | 0.149 | 0.356 | 0 | 1 | 115 |
| Three or more game losing streak | 0.112 | 0.315 | 0 | 1 | 86 |
| An AAA divisional game | 0.486 | 0.500 | 0 | 1 | 375 |
| An MLB divisional game | 0.213 | 0.409 | 0 | 1 | 164 |
| An AAA/MLB divisional game | 0.117 | 0.321 | 0 | 1 | 90 |
| Stephen Strasburg was the starter | 0.008 | 0.088 | 0 | 1 | 6 |

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| | | | | | |
|---|-------|-------|---|---|-----|
| Game featured a bobblehead giveaway ¹ | 0.009 | 0.095 | 0 | 1 | 7 |
| Game featured post-game fireworks ¹ | 0.167 | 0.373 | 0 | 1 | 129 |
| Game featured a merchandise giveaway ¹ | 0.233 | 0.423 | 0 | 1 | 180 |
| Game featured a concession stand discount ¹ | 0.202 | 0.402 | 0 | 1 | 156 |
| Game featured a ticket discount ¹ | 0.309 | 0.462 | 0 | 1 | 238 |
| Game offered a special feature ¹ | 0.454 | 0.498 | 0 | 1 | 350 |
| Rehab Assignment | | | | | |
| Normal rehab assignment player present ^{1, 2} | 0.256 | 0.436 | 0 | 1 | 197 |
| Star rehab assignment player present ^{1, 2, and 3} (All-Star, Silver Slugger, or Gold Glover) | 0.115 | 0.320 | 0 | 1 | 89 |
| Home Team | | | | | |
| Buffalo Bisons | 0.091 | 0.287 | 0 | 1 | 70 |
| Charlotte Knights | 0.093 | 0.291 | 0 | 1 | 72 |
| Columbus Clippers | 0.092 | 0.289 | 0 | 1 | 71 |
| Gwinnett Braves | 0.091 | 0.287 | 0 | 1 | 70 |
| Indianapolis Indians | 0.092 | 0.289 | 0 | 1 | 71 |
| Louisville Bats | 0.092 | 0.289 | 0 | 1 | 71 |
| Pawtucket Red Sox | 0.092 | 0.289 | 0 | 1 | 71 |
| Scranton/Wilkes-Barre Yankees | 0.088 | 0.284 | 0 | 1 | 68 |
| Syracuse Chiefs | 0.088 | 0.284 | 0 | 1 | 68 |
| Toledo Mud Hens | 0.091 | 0.287 | 0 | 1 | 70 |
| Away Team | | | | | |
| Buffalo Bisons | 0.071 | 0.258 | 0 | 1 | 55 |
| Charlotte Knights | 0.061 | 0.239 | 0 | 1 | 47 |
| Columbus Clippers | 0.074 | 0.262 | 0 | 1 | 57 |
| Durham Bulls | 0.071 | 0.258 | 0 | 1 | 55 |
| Gwinnett Braves | 0.058 | 0.235 | 0 | 1 | 45 |
| Indianapolis Indians | 0.078 | 0.268 | 0 | 1 | 60 |
| Lehigh Valley Iron Pigs | 0.079 | 0.270 | 0 | 1 | 61 |
| Louisville Bats | 0.074 | 0.262 | 0 | 1 | 57 |
| Norfolk Tides | 0.074 | 0.262 | 0 | 1 | 57 |
| Pawtucket Red Sox | 0.071 | 0.258 | 0 | 1 | 55 |
| Scranton/Wilkes-Barre Yankees | 0.070 | 0.255 | 0 | 1 | 54 |
| Syracuse Chiefs | 0.070 | 0.255 | 0 | 1 | 54 |
| Toledo Mud Hens | 0.077 | 0.266 | 0 | 1 | 59 |

Notes: The data set includes 771 home games played during the 2010 International League season.

¹ Minor League Baseball (www.milb.com)

² Major League Baseball (www.mlb.com)

³ Baseball-Reference
(www.baseball-reference.com)

Correlations between variables are shown in Table 3. Variables followed by “1” denote a rehab assignment player started and when followed by “2” denote a rehab assignment player was present. All-Star (AS1, AS2), Gold Glover (GG1, GG2), and Silver Slugger (SS1, SS2) variables are highly correlated. This means that an All-Star player has a tendency to be either a Gold Glover or Silver Slugger too. The six variables are combined into two variables, STAR1 and STAR2. An Excel IF function is used to

Table 3. Correlation of Variables

| Variable | TUE | FRI | FIRE | TD | AS1 | GG1 | SS1 | AS2 | GG2 | S2 |
|------------------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Tuesday Game | 1.000 | -0.165 | -0.178 | 0.422 | -0.005 | 0.003 | -0.014 | -0.013 | -0.028 | -0.043 |
| Friday Game | — | 1.000 | 0.423 | -0.205 | -0.028 | -0.029 | -0.042 | -0.035 | -0.032 | -0.010 |
| Fireworks | — | — | 1.000 | -0.247 | -0.028 | -0.009 | -0.004 | -0.031 | 0.000 | 0.032 |
| Ticket Discount | — | — | — | 1.000 | 0.026 | -0.028 | -0.016 | -0.013 | -0.071 | -0.051 |
| All-Star Playing | — | — | — | — | 1.000 | 0.496 | 0.546 | 0.760 | 0.361 | 0.409 |
| Gold Glover Playing | — | — | — | — | — | 1.000 | 0.542 | 0.376 | 0.759 | 0.417 |
| Silver Slugger Playing | — | — | — | — | — | — | 1.000 | 0.414 | 0.405 | 0.734 |
| All-Star Present | — | — | — | — | — | — | — | 1.000 | 0.496 | 0.567 |
| Gold Glover Present | — | — | — | — | — | — | — | — | 1.000 | 0.572 |
| Silver Slugger Present | — | — | — | — | — | — | — | — | — | 1.000 |

perform a logical true or false test. STAR1 (STAR2) is assigned a value of 1 if the sum of AS1, GG1, and SS1 (AS2, GG2, and SS2) is greater than zero.

A high correlation is also noted between the variables FRI and FIRE, along with TUE and TD. This means fireworks have a tendency to take place on Friday and ticket discounts have a tendency to take place on Tuesday. Interaction variables are included in the model by multiplying FRI by FIRE and TUE by TD. The FRIFIRE variable, when its value is 1, represents games that take place on Friday and feature post-game fireworks. The TUETD variable, when its value is 1, represents games that take place on Tuesday and feature a ticket discount.

IV. Results & Analysis

The first regression determines the significance of the NORM1 and STAR1 variables and the second regression determines the significance of the NORM2 and STAR2 variables. The NORM2 and STAR2 variables are defined as:

NORM2: A dummy variable; 1 if a normal rehab assignment player was present during the game, otherwise 0.

STAR2: A dummy variable; 1 if a star rehab assignment player was present during the game, otherwise 0. Star status is defined as a player that was honored as an All-Star, Gold Glover, or Silver Slugger at any time during their career prior to the 2010 season.

The complete list of “normal” and “star” rehab assignments is shown in Table 4. When the linear regression is estimated using NORM1 and STAR1, 30 out of 59 variables presented in Table 5 are found to be statistically significant. The NORM1 and STAR1 variables are not found to be statistically significant. When the linear regression is estimated using NORM2 and STAR2, 35 out of 59 variables presented in Table 6 are found to be statistically significant, including the NORM2 and STAR2 variables.

Table 4. Rehab Assignment Players

| Last Name | First Name | Status | Last Name | First Name | Status |
|------------|------------|--------|----------------|------------|--------|
| Ambriz | Hector | Normal | Marquis | Jason | Star |
| Baez | Danys | Star | Matsuzaka | Daisuke | Normal |
| Bailey | Homer | Normal | Mijares | Jose | Normal |
| Bartlett | Jason | Star | Mitre | Sergio | Normal |
| Beckett | Josh | Star | Niese | Jon | Normal |
| Bonser | Boof | Normal | O'Flaherty | Eric | Normal |
| Buchholz | Clay | Normal | Okajima | Hideki | Star |
| Cameron | Mike | Star | Park | Chan Ho | Star |
| Cash | Kevin | Normal | Patterson | Eric | Normal |
| Castro | Ramon | Normal | Pedroia | Dustin | Star |
| Condrey | Clay | Normal | Perez | Oliver | Normal |
| Detwiler | Ross | Normal | Perry | Ryan | Normal |
| Diaz | Matt | Normal | Prado | Martin | Normal |
| Ellsbury | Jacoby | Normal | Romero | J.C. | Normal |
| Escobar | Yunel | Normal | Ruiz | Carlos | Normal |
| Glaus | Troy | Star | Saito | Takashi | Star |
| Gonzalez | Mike | Normal | Saltalamacchia | Jarrold | Normal |
| Granderson | Curtis | Star | Schneider | Brian | Normal |
| Guillen | Carlos | Star | Shoppach | Kelly | Normal |
| Harang | Aaron | Normal | Teahen | Mark | Normal |
| Hermida | Jeremy | Normal | Thames | Marcus | Normal |
| Jurrjens | Jair | Normal | Threets | Erick | Normal |
| Lidge | Brad | Star | Uehara | Koji | Normal |
| Lowell | Mike | Star | Varitek | Jason | Star |
| Lowrie | Jed | Normal | Victorino | Shane | Star |
| Madson | Ryan | Normal | Volquez | Edison | Star |
| Maine | John | Normal | | | |

A comparison of the results shows that rehab assignment players only have to be present and do not have to play in the game. One possible explanation for this is that fans are more interested in autographs than a player’s performance. Another possible explanation is that starting lineups for any given game are not posted well in advance, thus a fan’s expectation that a player might start holds more weight than the actual outcome. The significance of NORM2 reaffirms the importance of “star” status, as typical rehab assignments decrease attendance.

Table 5. Regression Results (NORM1, STAR1)Adjusted R² – 0.654

Degrees of Freedom – 711

Observations – 771

F Statistic – 25.71

Dependent Variable – Attendance

| Explanatory Variable | COEFF | STD ERR | T-STAT | SIGNIF | |
|--|-------|-----------|----------|--------|-------|
| Time Factors | | | | | |
| Lagged Attendance ** | | 0.08 | 0.03 | 2.48 | 0.013 |
| Opening Day *** | | 2,918.22 | 648.10 | 4.50 | 0.000 |
| Last Home Game *** | | 1,935.85 | 692.34 | 2.80 | 0.005 |
| Played on Monday * | | -481.19 | 255.64 | -1.88 | 0.060 |
| Played on Tuesday | | -561.79 | 344.10 | -1.63 | 0.103 |
| Played on Thursday | | 149.65 | 251.69 | 0.59 | 0.552 |
| Played on Friday *** | | 1,063.70 | 311.84 | 3.41 | 0.001 |
| Played on Saturday *** | | 1,609.14 | 274.57 | 5.86 | 0.000 |
| Played on Sunday | | 374.31 | 269.47 | 1.39 | 0.165 |
| Played on Tuesday and featured a ticket discount | | 424.35 | 385.72 | 1.10 | 0.272 |
| Played on Friday and featured post-game fireworks | | -174.50 | 478.43 | -0.36 | 0.715 |
| Played scheduled and postponed game *** | | -1,121.26 | 353.69 | -3.17 | 0.002 |
| Played doubleheader | | -51.74 | 352.48 | -0.15 | 0.883 |
| Played in April *** | | -1,532.36 | 231.38 | -6.62 | 0.000 |
| Played in May *** | | -693.59 | 199.57 | -3.48 | 0.001 |
| Played in July ** | | 426.13 | 190.90 | 2.23 | 0.026 |
| Played in August | | 193.20 | 193.80 | 1.00 | 0.319 |
| Played in September | | 120.77 | 476.01 | 0.25 | 0.800 |
| Fan Interest | | | | | |
| The home team's win percentage | | 1,042.68 | 1,209.31 | 0.86 | 0.389 |
| The away team's win percentage ** | | 3,232.54 | 1,268.31 | 2.55 | 0.011 |
| First game of home stand ** | | 438.78 | 198.03 | 2.22 | 0.027 |
| Last game of home stand *** | | 460.68 | 175.19 | 2.63 | 0.001 |
| Three or more game winning streak | | 270.05 | 190.56 | 1.42 | 0.157 |
| Three or more game losing streak | | 181.72 | 209.40 | 0.87 | 0.386 |
| An AAA divisional game | | -67.15 | 175.96 | -0.38 | 0.703 |
| An MLB divisional game | | 54.31 | 216.68 | 0.25 | 0.802 |
| An AAA/MLB divisional game | | -139.60 | 309.52 | -0.45 | 0.652 |
| Stephen Strasburg was the starter *** | | 6,855.46 | 957.70 | 7.16 | 0.000 |
| Game featured a bobblehead giveaway *** | | 1,772.92 | 547.74 | 3.24 | 0.001 |
| Game featured post-game fireworks *** | | 2,049.79 | 312.14 | 6.57 | 0.000 |
| Game featured a merchandise giveaway | | 221.26 | 169.65 | 1.30 | 0.193 |
| Game featured a concession stand discount ** | | 402.63 | 180.71 | 2.23 | 0.026 |
| Game featured a ticket discount ** | | -394.54 | 185.23 | -2.13 | 0.034 |
| Game offered a special feature ** | | 392.27 | 173.20 | 2.26 | 0.024 |

*** Statistically significant at 1 percent level

** Statistically significant at 5 percent level

* Statistically significant at 10 percent level

Table 5. Regression Results (NORM1, STAR1)Adjusted R² – 0.654

Degrees of Freedom – 711

Observations – 771

F Statistic – 25.71

Dependent Variable – Attendance

| Explanatory Variable | COEFF | STD ERR | T-STAT | SIGNIF | |
|--|-------|-----------|--------|--------|-------|
| Rehab Assignment | | | | | |
| Normal rehab assignment player started | | -282.51 | 201.75 | -1.40 | 0.162 |
| Star rehab assignment player started (All-Star, Silver Slugger, or Gold Glover) | | 285.39 | 304.02 | 0.94 | 0.348 |
| Home Team | | | | | |
| Buffalo Bisons *** | | 1,533.16 | 375.61 | 4.08 | 0.000 |
| Charlotte Knights *** | | -1,968.94 | 326.76 | -6.03 | 0.000 |
| Columbus Clippers *** | | 2,269.61 | 397.24 | 5.71 | 0.000 |
| Gwinnett Braves *** | | -1,180.80 | 286.40 | -4.12 | 0.000 |
| Indianapolis Indians *** | | 1,461.59 | 370.84 | 3.94 | 0.000 |
| Louisville Bats *** | | 1,679.31 | 349.68 | 4.80 | 0.000 |
| Pawtucket Red Sox *** | | 2,114.81 | 318.13 | 6.65 | 0.000 |
| Scranton/Wilkes-Barre Yankees *** | | -1,227.09 | 340.81 | -3.60 | 0.000 |
| Syracuse Chiefs | | -591.33 | 395.23 | -1.50 | 0.135 |
| Toledo Mud Hens *** | | 865.71 | 316.37 | 2.74 | 0.001 |
| Away Team | | | | | |
| Buffalo Bisons * | | -661.96 | 386.28 | -1.71 | 0.087 |
| Charlotte Knights | | -403.92 | 364.92 | -1.11 | 0.269 |
| Columbus Clippers | | -634.56 | 432.92 | -1.47 | 0.143 |
| Durham Bulls * | | -779.68 | 442.89 | -1.76 | 0.079 |
| Gwinnett Braves | | -197.87 | 373.91 | -0.53 | 0.597 |
| Indianapolis Indians | | -331.97 | 370.37 | -0.90 | 0.370 |
| Lehigh Valley Iron Pigs | | -251.44 | 323.56 | -0.78 | 0.437 |
| Louisville Bats | | -554.21 | 356.05 | -1.56 | 0.120 |
| Norfolk Tides | | -123.73 | 387.45 | -0.32 | 0.750 |
| Pawtucket Red Sox | | 77.72 | 356.73 | 0.22 | 0.828 |
| Scranton/Wilkes-Barre Yankees | | -297.86 | 454.37 | -0.66 | 0.512 |
| Syracuse Chiefs | | -553.61 | 476.91 | -1.16 | 0.246 |
| Toledo Mud Hens | | -168.88 | 402.70 | -0.42 | 0.675 |

*** Statistically significant at 1 percent level

** Statistically significant at 5 percent level

* Statistically significant at 10 percent level

The promotion variable with the biggest effect on attendance is post-game fireworks (FIRE). This variable is statistically significant at the 1 percent level and helps draw an additional 2,059 fans to the ballpark. Bobbleheads, concession discounts, and special features (listed in order of largest to smallest effect) are statistically significant at the 1 and 5 percent levels. The BOB variable, CD variable, and SF variables increased attendance by: 1,626; 396; and 393 fans respectively. Ticket discounts are statistically

Table 6. Regression Results (NORM2, STAR2)Adjusted R² – 0.659

Degrees of Freedom – 711

Observations – 771

F Statistic – 26.19

Dependent Variable – Attendance

| Explanatory Variable | COEFF | STD ERR | T-STAT | SIGNIF | |
|--|-------|-----------|----------|--------|-------|
| Time Factors | | | | | |
| Lagged Attendance ** | | 0.07 | 0.03 | 2.18 | 0.029 |
| Opening Day *** | | 3,023.81 | 656.80 | 4.60 | 0.000 |
| Last Home Game *** | | 1,868.77 | 690.14 | 2.71 | 0.007 |
| Played on Monday * | | -489.65 | 256.11 | -1.91 | 0.056 |
| Played on Tuesday | | -570.88 | 350.88 | -1.63 | 0.104 |
| Played on Thursday | | 138.45 | 250.14 | 0.55 | 0.580 |
| Played on Friday *** | | 1,086.05 | 310.98 | 3.49 | 0.001 |
| Played on Saturday *** | | 1,624.04 | 275.05 | 5.90 | 0.000 |
| Played on Sunday | | 385.98 | 270.72 | 1.43 | 0.154 |
| Played on Tuesday and featured a ticket discount | | 397.15 | 387.08 | 1.03 | 0.305 |
| Played on Friday and featured post-game fireworks | | -199.60 | 477.99 | -0.42 | 0.676 |
| Played scheduled and postponed game *** | | -1,080.38 | 363.60 | -2.97 | 0.003 |
| Played doubleheader | | -35.38 | 349.32 | -0.10 | 0.919 |
| Played in April *** | | -1,500.02 | 231.19 | -6.49 | 0.000 |
| Played in May *** | | -726.44 | 199.55 | -3.64 | 0.000 |
| Played in July * | | 371.53 | 190.14 | 1.95 | 0.051 |
| Played in August | | 192.96 | 196.23 | 0.98 | 0.326 |
| Played in September | | 154.51 | 472.49 | 0.33 | 0.744 |
| Fan Interest | | | | | |
| The home team's win percentage | | 1,291.21 | 1,215.70 | 1.06 | 0.289 |
| The away team's win percentage *** | | 3,379.01 | 1,265.93 | 2.67 | 0.008 |
| First game of home stand ** | | 440.05 | 196.21 | 2.24 | 0.025 |
| Last game of home stand *** | | 469.69 | 174.87 | 2.69 | 0.007 |
| Three or more game winning streak | | 248.26 | 188.85 | 1.31 | 0.189 |
| Three or more game losing streak | | 188.78 | 206.35 | 0.91 | 0.361 |
| An AAA divisional game | | -75.42 | 174.61 | -0.43 | 0.666 |
| An MLB divisional game | | 88.21 | 227.14 | 0.39 | 0.698 |
| An AAA/MLB divisional game | | -143.17 | 319.52 | -0.45 | 0.654 |
| Stephen Strasburg was the starter *** | | 6,859.91 | 940.30 | 7.30 | 0.000 |
| Game featured a bobblehead giveaway *** | | 1,626.24 | 543.55 | 2.99 | 0.003 |
| Game featured post-game fireworks *** | | 2,058.77 | 315.32 | 6.53 | 0.000 |
| Game featured a merchandise giveaway | | 232.72 | 168.08 | 1.38 | 0.167 |
| Game featured a concession stand discount ** | | 395.93 | 180.23 | 2.20 | 0.028 |
| Game featured a ticket discount ** | | -366.38 | 183.08 | -2.00 | 0.046 |
| Game offered a special feature ** | | 392.86 | 171.42 | 2.29 | 0.022 |

*** Statistically significant at 1 percent level

** Statistically significant at 5 percent level

* Statistically significant at 10 percent level

Table 6. Regression Results (NORM2, STAR2)Adjusted R² – 0.659

Degrees of Freedom – 711

Observations – 771

F Statistic – 26.19

Dependent Variable – Attendance

| Explanatory Variable | COEFF | STD ERR | T-STAT | SIGNIF | |
|--|-------|-----------|--------|--------|-------|
| Rehab Assignment | | | | | |
| Normal rehab assignment player present ** | | -326.31 | 161.92 | -2.02 | 0.044 |
| Star rehab assignment player present *** (All-Star, Silver Slugger, or Gold Glover) | | 613.09 | 218.94 | 2.80 | 0.005 |
| Home Team | | | | | |
| Buffalo Bisons *** | | 1,522.05 | 374.18 | 4.07 | 0.000 |
| Charlotte Knights *** | | -1,993.91 | 322.65 | -6.18 | 0.000 |
| Columbus Clippers *** | | 2,281.98 | 393.51 | 5.80 | 0.000 |
| Gwinnett Braves *** | | -1,239.65 | 281.47 | -4.40 | 0.000 |
| Indianapolis Indians *** | | 1,477.92 | 369.31 | 4.00 | 0.000 |
| Louisville Bats *** | | 1,693.13 | 349.48 | 4.84 | 0.000 |
| Pawtucket Red Sox *** | | 2,112.58 | 316.81 | 6.67 | 0.000 |
| Scranton/Wilkes-Barre Yankees *** | | -1,316.33 | 337.02 | -3.91 | 0.000 |
| Syracuse Chiefs * | | -712.00 | 393.05 | -1.81 | 0.071 |
| Toledo Mud Hens *** | | 833.74 | 315.00 | 2.65 | 0.001 |
| Away Team | | | | | |
| Buffalo Bisons * | | -724.79 | 385.13 | -1.88 | 0.060 |
| Charlotte Knights | | -477.90 | 364.36 | -1.31 | 0.190 |
| Columbus Clippers * | | -722.54 | 433.86 | -1.67 | 0.096 |
| Durham Bulls ** | | -926.62 | 444.41 | -2.09 | 0.037 |
| Gwinnett Braves | | -196.51 | 384.54 | -0.51 | 0.601 |
| Indianapolis Indians | | -423.71 | 368.88 | -1.15 | 0.251 |
| Lehigh Valley Iron Pigs | | -344.57 | 322.56 | -1.07 | 0.286 |
| Louisville Bats * | | -614.27 | 356.29 | -1.72 | 0.085 |
| Norfolk Tides | | -182.97 | 384.23 | -0.48 | 0.634 |
| Pawtucket Red Sox | | -31.63 | 364.39 | -0.09 | 0.931 |
| Scranton/Wilkes-Barre Yankees | | -389.00 | 450.64 | -0.86 | 0.388 |
| Syracuse Chiefs | | -674.72 | 479.72 | -1.41 | 0.160 |
| Toledo Mud Hens | | -313.14 | 402.76 | -0.78 | 0.437 |

*** Statistically significant at 1 percent level

** Statistically significant at 5 percent level

* Statistically significant at 10 percent level

significant at the 5 percent level and cause attendance to decrease by 366 fans. This discount likely tends to be offered on days when average attendance is already low. In addition, ticket discounts are usually subject to a requirement (membership identification, KRAFT Singles wrapper, etc.). The cost of acquiring a membership card or package of KRAFT Singles likely reduces the net expected benefit.

In terms of timing of the game, Friday and Saturday are statistically significant at the 1 percent level. Friday games, compared to Wednesday games, draw an additional 1,086 fans. Saturday games, compared to Wednesday games, draw an additional 1,624 fans. Monday is statistically significant at the 10 percent level and causes attendance to decrease by 490 fans compared to Wednesday games. Fans have a higher opportunity cost for attending weekday games. Between Monday and Thursday, students have school assignments to complete or school events to attend, while parents have home and work obligations.

Month variables are used as a proxy for average weather conditions. April and May games, compared to June games, draw 1,500 and 726 fewer fans respectively, which is statistically significant at the 1 percent level. July games draw an additional 372 fans compared to June games which is statistically significant at the 10 percent level. Average temperatures tend to be colder in the beginning months of the season and school is still in session. Both of these factors likely impose higher opportunity costs on fans. On days in which a scheduled game and an unfinished game were played, the GP15 variable, attendance decreased by 1,080 fans. One possible explanation for this is that staying an additional amount of time at the ballpark causes opportunity cost of attendance to increase because games are played later into the night.

The Strasburg effect is measured by the STRAS variable. Stephen Strasburg is the much-hyped first pick in the 2009 Major League Baseball Draft. On days Strasburg pitched, an additional 6,860 fans attended and it is statistically significant at the 1 percent level. This increase in attendance can likely be explained by a variety of factors including: his collegiate performance while at San Diego State, his record-breaking contract for a first round draft pick, media attention, and analysts' expectations of a quick ascension to the majors.

The significance of winning percentage variables of the home and away team were split. A home team's winning percentage, (WLPCT), is not found to be statistically significant. This differs from the results of other studies. Baseball fans likely display loyalty to their home team regardless of its record. The opponent's winning percentage, (OPPWLPC), is statistically significant at the 1 percent level. Fans likely respond to the quality of the opposing team because it makes for a more competitive game, not to mention bragging rights to the winning team.

Winning and losing streaks of three or more games are not found to be statistically significant. The impact of rivalries, as defined by three different measures (AAA, MLB, and BOTH), are not found to be statistically significant. One possible explanation is that an opponent's winning percentage holds considerably more value than a rivalry itself. What good is a rivalry if one team is leading the division and the other team is in last place? It can be argued that a rivalry only holds value when the two teams are in close competition for a common goal, such as a divisional crown or playoff spot.

Opening Day, (OD), and the last home game of the season, (LD), are statistically significant at the 1 percent level by drawing an additional 3,024 and 1,869 fans respectively. This effect is reflected to a lesser degree in the FHOME and LHOME variables. The first game of a home stand is statistically

significant at the 5 percent level and draws an additional 440 fans to the ballpark. The last game of a home stand is statistically significant at the 1 percent level and draws an additional 470 fans to the ballpark. One possible explanation is that fans take part in welcoming back and sending off teams. Another possible explanation is that a lack of comparable substitutes causes fans to open up their schedules when the team returns to town.

All home team dummy variables are found to be statistically significant at either the 1 or 10 percent level. The Columbus Clippers, Pawtucket Red Sox, Louisville Bats, Buffalo Bisons, Indianapolis Indians, and Toledo Mud Hens (listed in order of largest to smallest effect) draw additional fans compared to the Rochester Red Wings. The Charlotte Knights, Scranton/Wilkes-Barre Yankees, Gwinnett Braves, and Syracuse Chiefs (listed in order of largest to smallest effect) draw fewer fans compared to the Rochester Red Wings. Four away team dummy variables are found to be statistically significant and each has a negative impact on attendance, compared to the Rochester Red Wings.

V: Conclusion

The primary objective of this study is to determine the effect of MLB rehab assignments on attendance in the IL. Regression results reveal two important conclusions. First, players on rehab assignments only need to be present to affect attendance in the IL. This is reflected in the insignificance of the NORM1 and STAR1 variables. Two possible explanations discussed include a player's availability for autographs and timing factors related to the release of starting lineups. Second, rehab assignments have a conditional effect on attendance in the IL. Players on rehab assignments must be of star status in order to draw additional fans. The NORM2 variable is statistically significant at the 5 percent level. A normal player on rehab assignment decreases attendance by 326 fans. The opposite is true for the STAR2 variable. A star player on rehab assignment draws an additional 613 fans to the ballpark and is statistically significant at the 1 percent level.

The results of this study may not hold across different levels and leagues of MiLB (North, South, East, West; AA, A, A-SS, Rookie). Levels vary in player quality and leagues are subject to demographic and geographic differences. Researchers have the opportunity to expand on this study in the future through the consideration of different levels and leagues. The results of this study help provide a better understanding of consumer preferences and allow minor league teams to better forecast supply needs associated with profit maximization. Teams leave profits on the table if they are understaffed and lack the appropriate inventory. On the other hand, teams incur unnecessary expenses if they are overstaffed and have excess inventory.

ENDNOTES

1. Buffalo Bisons (New York Mets), Charlotte Knights (Chicago White Sox), Columbus Clippers (Cleveland Indians), Durham Bulls (Tampa Bay Rays), Gwinnett Braves (Atlanta Braves),

Indianapolis Indians (Pittsburgh Pirates), Lehigh Valley Iron Pigs (Philadelphia Phillies), Louisville Bats (Cincinnati Reds), Norfolk Tides (Baltimore Orioles), Pawtucket Red Sox (Boston Red Sox), Rochester Red Wings (Minnesota Twins), Scranton/Wilkes-Barre Yankees (New York Yankees), Syracuse Chiefs (Washington Nationals), and Toledo Mud Hens (Detroit Tigers).

2. The Durham Bulls, Lehigh Valley Iron Pigs, and Norfolk Tides declined to provide promotion data and are not included in the data set. This reduced the overall sample size from 14 to 11 teams.
3. Players in Year_{t-1} versus Players in Year_t.
4. Team Payroll in Year_{t-1} versus Team Payroll in Year_t.
5. The Durbin-Watson statistic was calculated with the addition of a lag of the dependent variable. No autocorrelation was found with reported values of 1.97 and 1.98 respectively.
6. The variance inflation factor analysis was carried out to test for multicollinearity. White's test was performed and rejected the null hypothesis of no heteroskedasticity.

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Market Efficiency and Recreational Betting

Ladd Kochman*, Ken Gilliam*, and Randy Goodwin*

Abstract

The expanding legalization of sports betting will most assuredly swell the ranks of bettors nationwide and invariably attract some who would gamble less for financial gain than for entertainment value. While random betting can quickly end the fun for these “recreational bettors”, we propose a strategy that relies on the efficiency of the market for bets on college football to minimize the risk and sustain the action.

Background

Academic writers have long lamented the efficiency of the football betting market. Strategies as imaginative as betting on college home teams in arid regions (e.g., Kuester and Sanders, 2011) or as uncomplicated as wagering on underdogs in the National Football League (e.g., Kochman and Goodwin, 2004) produce few anomalies. But what is frustrating to researchers is a boon to bettors who are more interested in action than windfall. An efficient market promises that while regular profits are elusive, regular losses are equally rare. That guarantee of sorts, however, comes with three conditions. One, betting must be confined to a rule that is applied consistently and unfailingly. Two, the rule should have some historical support or rationale for doing no worse than breaking even. Three, the rule cannot be subject to any bettor bias.

Betting to break even was first explored by Kochman and Gilliam (2010). They showed that wagers on the 1483 visiting NFL underdogs during the 2000-2008 seasons cost recreational bettors only \$395—or less than \$0.27 per bet—when risking \$11 to win \$10. Their 51.1-percent wins-to-bets ratio was slightly less than the implied breakeven rate of 52.4 percent. Kochman, Gilliam and Goodwin (2013) reported that bets on NFL teams to reverse their prior game’s outcome against the point spread over the 2001-2010 seasons also failed to be statistically significant but did generate a profit of \$259 on modest wagers of \$11-to-\$10 as well as the entertainment derived from 2779 bets.

Methodology

The purpose of this paper is to search for more proof that recreational betting merits a place in the efficient markets literature. To start, we wondered if the poor performance by college football teams against the spread (ATS) in one year had any predictive value for the next. It may be that such schools will become out-of-favor and underbet by bettors—conditions found favorable for positive returns by Kochman and Gilliam (2012). Additionally, internal adjustments (e.g., a coaching change)

*Kennesaw State University

could lead to greater success. Our curiosity led to the records of college football teams ATS for the 2002-2011 seasons. Our data source was Steele (2013). “Poor performance” was equated with failing to beat the spread in nine or more of the 12 games which colleges normally schedule per year. To doubt that our recreational bettors would do the research necessary to identify such schools is to doubt that mining data for trends and overlooked statistics is part of the entertainment experience.

Schools winning three or fewer games against the spread in one season were bet to beat the spread in the next. Conceding regular profits, we screened the wins-to-bets ratios for nonrandomness per Equation (1). Cumulative dollar outcomes were also recorded as well as profit or loss per bet. Wagers were limited to \$11 (to win \$10) in keeping with our recreational theme.

$$(1) \quad Z_R = \frac{(W/B - 0.50)}{\{[0.50](1 - 0.50)/B\}^{1/2}}$$

where: Z_R = statistic for testing the null hypothesis of randomness
 W = number of winning bets
 B = total number of bets

Results

Wins-to-bets ratios in Table 1 suggest that past and future performances against the point spread can be negatively related. Former one-game winners outperformed former two- and three-game winners by margins of 5.4 percent and 7.3 percent, respectively, while former two-game winners beat former three-game winners by 1.9 percent. Spread over the nine seasons in which wagers were possible, our 1157 total bets averaged roughly 130 per year—or 10 per week.

| <i>Prior season's wins</i> | <i>Following season's bets</i> | <i>Winning bets</i> | <i>Wins to bets</i> | <i>Dollar return</i> | <i>Dollar return per bet</i> |
|----------------------------|--------------------------------|---------------------|---------------------|----------------------|------------------------------|
| Three | 789 | 395 | 50.1% | - 384 | - 0.49 |
| Two | 300 | 156 | 52.0% | + 24 | +0.08 |
| One | 68 | 39 | 57.4% | + 71 | +1.04 |
| Zero | 0 | | | | |
| Totals | 1157 | 590 | 51.0% | -337 | -0.29 |

Not surprisingly, none of our wins-to-bets ratios was significantly nonrandom after adjusting for transaction costs. Nonetheless, former one- and two-game winners managed cumulative returns of \$71 and \$24, respectively. Cumulative losses of \$384 for former three-game winners reduced to less than 50 cents per wager. Overall, our 1157 wagers incurred a net loss of \$337—or 29 cents per bet.

Conclusions

If you can't beat 'em, join 'em. That's the cry of recreational bettors who accept the reality of an efficient market for bets on football games and, to a limited extent, exploit it. Profits come in the form of weekly entertainment. And when football betting replaces more costly hobbies, financial gains can be reaped.

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REFEREES

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2. Paul Bauer
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4. Robert Culp
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11. Dona Siregar
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The New York State Economics Association

65th Annual Conference

Farmingdale State College

October 5th and 6th, 2012

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Program

Friday, October 5

Reception, Towneplace Suites

Saturday, October 6

on the FSC Campus

Registration and
Continental Breakfast

Welcome

Concurrent Sessions:

Group A

Morning Break

Concurrent Sessions:

Group B

Luncheon and Keynote

Address

Concurrent Sessions:

Group C

Afternoon Break

Concurrent Sessions:

Group D

Business Meeting

(all are welcome)

6:00-8:00 p.m.

7:30-8:00 a.m.

8:00-8:15 a.m.

8:15-9:35 a.m.

9:35-9:50 a.m.

9:50-11:10 a.m.

11:25-12:40 p.m.

12:50-2:10 p.m.

2:10-2:25 p.m.

2:25-3:45 p.m.

4:00-5:00 p.m.

Friday, October 5

6:00-8:00 p.m. Reception, TownePlace Suites by Marriott

6:30 p.m. Welcome

Dr. Hubert Keen, President, Farmingdale State College

Dr. Jeff Gaab, Chair, Economics Department, Farmingdale State College

Saturday, October 6

7:30-8:00 a.m. Registration and Continental Breakfast

FSC Campus, Roosevelt Hall – Multi-Purpose Room

(Registration moves to the Lobby of Nathan Hale Hall

at 8:30 AM)

7:50-8:05 Welcome

Dr. Lucia Cepriano, Provost, Farmingdale State College

8:15-9:35 Concurrent Sessions: Group A, A10-A17 Session A10

Macroeconomics, Nathan Hale 126

Chair: Alex Chung (Bard College),
achung@bard.edu

Title: Could Accruals predict R2?

Author: Alex Chung (Bard College),
achung@bard.edu, Rong Qi (St. Johns University),
rchi_1999@yahoo.com, Thom Thurston (CUNY
Queens College), tthurston@qc.cuny.edu

Discussant: Udayan Roy (Long Island University,
LIU Post), uroy@liu.edu

Title: Deflation, Depression, and the Zero Lower Bound

Author: Udayan Roy (Long Island University,
LIU Post), uroy@liu.edu, Sebastien Buttet (Long
Island University, LIU Post),
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Discussant: Alex Chung (Bard College),
achung@bard.edu

Title: New Composite Indicators for Bulgarian Business Cycle

Author: Roumen Vesselinov (CUNY Queens
College) roumen.vesselinov@qc.cuny.edu,

Discussant: Nadia Doytch (CUNY Brooklyn
College), ndoytch@gmail.com

Title: Accounting for Income Inequality

Author: Eric Doviak (Brooklyn College),
eric@doviak.net

Discussant: Roumen Vesselinov (CUNY Queens
College), roumen.vesselinov@qc.cuny.edu

Session A11 Firm Behavior, Nathan Hale 137

Chair: William Kolberg (Ithaca College),
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Title: Financial risk strategies of family firms

Author: Sirousse Tabriztchi (SUNY Old
Westbury),
sy@tabrizcpa.com, Elena Smirnova (SUNY Old
Westbury), smirnovae@oldwestbury.edu

Discussant: Alfredo M. Bobillo (University of
Valladolid), amartbob@eade.uva.es

Title: Leverage and Economic Value Creation in the Family Firm

Author: Alfredo M. Bobillo (University of
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Rodriguez Sanz (University of Valladolid),
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(University of Valladolid), tejerina@sid.eup.uva.es
Discussant: William Kolberg (Ithaca College),
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Title: Anatomy and impact of Bribery on Siemens AG

Author: Amod Choudhary (CUNY Lehman
College), achoudhary@yahoo.com

Discussant: Sirousse Tabriztchi (SUNY Old
Westbury),
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Title: Follow-the-Leader Market Dynamics in an Experimental Market with Robot Firms

Author: William Kolberg (Ithaca College),
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Discussant: Amod Choudhary (CUNY Lehman
College), achoudhary@yahoo.com

Session A12 Financial Economics., Nathan Hale 224

Chair: Fangxia Lin (CUNY CityTech),
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Title: What Do Investment Practitioners Read?
Author: M.E. Ellis (St. Johns University),
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Discussant: Ordean Olson (Nova Southeastern
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Title: A Model of Balance of Payment Crisis and
 the von Neumann Model
Author: Ordean Olson (Nova Southeastern
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 University), olson@nova.edu
Discussant: Fangxia Lin (CUNY CityTech),
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Title: Tail Dependence between the Stock Index
 Returns and the Foreign Exchange Rate movement
 -
 a Copula Approach
Author: Fangxia Lin (CUNY CityTech),
 fangxial@hotmail.com
Discussant: M.E. Ellis (St. Johns University),
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*Session A13 Health Economics, Nathan
 Hale 226*

Chair: Niev Duffy (SUNY Old Westbury),
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Title: The Effect of Massachusetts Health Care
 Reform on the Rate of Preventable Hospitalizations
Author: Elisha Cohen (CUNY Hunter College),
 cohen.elisha@gmail.com, Rebecca Gorges (CUNY
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 College), rebecca.gorges@gmail.com
 Ruirui Sun (CUNY Graduate Center),
 rsun1@gc.cuny.edu
Discussant: Niev Duffy (SUNY Old Westbury),
duffyn@oldwestbury.edu

Title: The Effect Of Divorce On Womens Health
Author: Alice Zulkarnain (CUNY Graduate
 Center),
 azulkarnain@gc.cuny.edu
Discussant: Elisha Cohen (CUNY Hunter College),
 cohen.elisha@gmail.com

Title: Will Healthcare Reform Yield Public Savings
 on

Reimbursement of Hospital Charity Care?
Author: Niev Duffy (SUNY Old Westbury),
 duffyn@oldwestbury.edu
Discussant: Alice Zulkarnain (CUNY Graduate
 Center), azulkarnain@gc.cuny.edu

*Session A14 Environmental Economics,
 Nathan Hale 231*

Chair: Kent A. Klitgaard (Wells College),
 kentk@wells.edu

Title: Optimum reserve size, fishing induced
 change in
 carrying capacity and phenotypic diversity
Author: Worku T. Bitew (SUNY Farmingdale),
 biteww@farmingdale.edu, Wisdom Akpalu (SUNY
 Farmingdale), wisdom.akpalu@farmingdale.edu
Discussant: James Booker (Siena College),
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Title: Marcellus Shale Gas Development in New
 York State: Contrasting Potential Impacts
Author: James Booker (Siena College),
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Discussant: Wisdom Akpalu (SUNY Farmingdale),
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Title: The Essence of Biophysical Economics
Author: Kent A. Klitgaard (Wells College),
 kentk@wells.edu
Discussant: Luke Gelber (Johns Hopkins
 University),
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*Session A15 Economic Development,
 Nathan Hale 234*

Chair: Yaqin Su (University at Buffalo),
 yaqinsu@buffalo.edu

Title: Complementarity between FDI and Human
 Capital in the Growth of Chinese Cities
Author: Yaqin Su (University at Buffalo),
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Discussant: Christine Farias (CUNY Baruch
 College),
christine.farias@baruch.cuny.edu

Title: Exporter, Innovation and Productivity
 Growth -- A Dynamic and Heterogeneous Analysis
 of Firm Level Adjustment
Author: Ruohan Wu (Ohio State University),

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Discussant: Yaqin Su (University at Buffalo),
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Title: Social Entrepreneurship and Issues of Scale

Author: Christine Farias (CUNY Baruch College), christine.farias@baruch.cuny.edu, Gerard Farias (Fairleigh Dickinson University), gfarias@fdu.edu, Margaret Sands (Seeds of Africa Foundation), maggie@seedsof africa.org

Discussant: Ruohan Wu (Ohio State University),
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Sessions A16 & A17 -- Undergraduate Student

Paper Competition, Lupton T101 (8:10 AM - 9:40)

Chair: Florence P. Shu (SUNY Potsdam),
shufp@potsdam.edu

Title: Behavioral Finance and Retirement Preparedness: Road to Financial Security and Well-Being

Author: Linda Watson (CUNY City College),
lwatson02@ccny.cuny.edu

Discussant: William P. ODea (SUNY Oneonta),
odeawp@oneonta.edu

Title: Divorcing Government from Marriage: A Public Choice Answer to the Marriage Debate

Author: John Eaves (St. John Fisher College),
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Discussant: Jeffrey Wagner (Rochester Institute of Technology), jeffrey.wagner@rit.edu

Title: Wage Differentials Between Natives and Immigrants

Author: Maryna Ivets (CUNY Hunter College),
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Discussant: Florence P. Shu (SUNY Potsdam),
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Title: The Determinants of Gold Prices: a study using Granger Causality, Johansen Cointegration and VECM

Author: Chau Minh Nguyen (Miss),
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Discussant: Florence P. Shu (SUNY Potsdam),
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Title: The Pros and Cons of Unemployment Benefit Extension

Author: Courtney Finnegan (Marist College),
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Discussant: Abeda Mussa (SUNY Farmingdale),
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Title: An Econometric Analysis of the Effect of Advertising on Saving and Consumption

Author: Michael Cauvel (Siena College),
mj26cauv@siena.edu

Discussant: Cynthia Bansak (St Lawrence University),
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9:35-9:50 Morning Break in Nathan Hale Lobby

9:50-11:10 Concurrent Sessions: B20-B27, Group B

Session B20 Tax and Income Policy, Nathan Hale 126

Chair: Robert Cherry (CUNY Brooklyn College),
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Title: Welfare Effect of Consumption Taxes

Author: Qian Li (SUNY Stony Brook),
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Discussant: Robert Cherry (CUNY Brooklyn College), robertc@brooklyn.cuny.edu

Title: Revisit Capital Taxation during the Great Depression with Household Heterogeneity

Author: Lunan Jiang (SUNY Stony Brook),
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Discussant: Qian Li (SUNY Stony Brook),
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Title: Has the Income Penalty for Gay Men Disappeared?

Author: Geoffrey Clarke (CUNY Hunter College),
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Discussant: Lunan Jiang (SUNY Stony Brook),
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Title: New Mother Tax Relief Proposal
Author: Robert Cherry (CUNY Brooklyn College),
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Discussant: Geoffrey Clarke (CUNY Hunter College),
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Session B21 Health Economics, Nathan Hale 137

Chair: Ruirui Sun (CUNY Graduate Center),
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Title: Health, Economics and Education: Aggregated Level Analysis
Author: Ruirui Sun (CUNY Graduate Center),
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Discussant: Kpoti Kitissou (Binghamton University),
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Title: Population Demographics on Sport-Specific Small Business Success
Author: Brian Pereira (CUNY Hunter College),
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Discussant: Onur Altindag (CUNY Graduate Center),
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Title: Mothers Schooling and Childs Health: Evidence from a Natural Experiment in Turkey
Author: Onur Altindag (CUNY Graduate Center),
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Discussant: Brian Pereira (CUNY Hunter College),
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Title: The impact of HIV on Women Marriage Outcomes in Sub-Saharan Africa: An Observation on Human Capital Investment
Author: Kpoti Kitissou (Binghamton University),
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Discussant: Ruirui Sun (CUNY Graduate Center),
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Session B22 Industrial Organization, Nathan Hale 224

Chair: Gregory DeFreitas (Hofstra University),
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Title: How optimal are credit card companies? Comparing randomized vs. non-randomized offers
Author: Yan Yuan (SUNY Stony Brook),
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Discussant: Kameshwari Shankar (CUNY City College),
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Title: Developers Incentives and Open Source Software Licensing: GPL vs. BSD
Author: Kameshwari Shankar (CUNY City College),
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Discussant: Gregory DeFreitas (Hofstra University),
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Title: An Examination of the Resource-Based Horizontal Acquisition Strategy of JBS - the Biggest Meat Packer in the World
Author: K. Matthew Wong (St. Johns University),
 wongk@stjohns.edu, Ronald Jean Degen (HSM Education, Sao Paulo, Brazil),
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Discussant: Yan Yuan (SUNY Stony Brook),
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Title: Small Business, Credit Access and Job Creation: New Findings from a 2012 Survey of Micro-Manufacturers
Author: Gregory DeFreitas (Hofstra University),
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Discussant: K. Matthew Wong (St. Johns University),
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Session B23 Economic Education, Nathan Hale 226

Chair: Michael McAvoy (SUNY Oneonta),

michael.mcavoy@oneonta.edu

Title: Do College Textbooks Cover All Categories of Market Failure?
Author: L. Chukwudi Ikwueze (Pace University),

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Discussant: Clair A Smith (St. John Fisher College),
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Title: Economic Ideology and Deficit Reduction Choices of Students in a Principles of Economics Course

Author: Michael McAvoy (SUNY Oneonta), michael.mcavoy@oneonta.edu, Lester Hadsell (SUNY Oneonta), lester.hadsell@oneonta.edu, William P. ODea (SUNY Oneonta), william.odea@oneonta.edu

Discussant: L. Chukwudi Ikwueze (Pace University),
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Title: First Impressions: The Portrayal of Markets and Government in Childrens Literature

Author: Clair A Smith (St. John Fisher College),
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Discussant: Michael McAvoy (SUNY Oneonta), michael.mcavoy@oneonta.edu

Session B24 Economic Development, Nathan Hale 231

Chair: Gonzalo Cordova (CUNY Graduate Center), gonzalo.cordova@earthlink.net

Title: Three Growth Sectors for a Restructured Greek Economy

Author: Anthony Pappas (St. Johns University), anthonyppapas1988@gmail.com

Discussant: Ambrose Jusu (SUNY Farmingdale), ambrose.jusu@farmingdale.edu

Title: Tenure insecurity and renting out decision among female small holder farmers in Ethiopia

Author: Wisdom Akpalu (SUNY Farmingdale), akpaluw@farmingdale.edu, Mintewab Bezabih

Discussant: Sora Park (Rockefeller College of Public Affairs and Policy), sorapark@buffalo.edu

Title: Environmental Performance and Relationship to Growth in the Late Revoulutionary Period in Cuba

Author: Gonzalo Cordova (CUNY Graduate Center),
gonzalo.cordova@earthlink.net

Discussant: Anthony Pappas (St. Johns University), anthonyppapas1988@gmail.com

Title: Income Inequality and Civil Wars in Sub-Saharan Africa

Author: Ambrose Jusu (SUNY Farmingdale), ambrose.jusu@farmingdale.edu

Discussant: Gonzalo Cordova (CUNY Graduate Center), gonzalo.cordova@earthlink.net

Session B25 Recent Developments in Municipal Debt, Nathan Hale 234

Chair: Catherine Lau (Carthage College), clau@gc.cuny.edu

Title: Performance of Insured Municipal Bonds During the Financial Crisis

Author: Catherine Lau (Carthage College), clau@gc.cuny.edu, Su Huang (CUNY Graduate Center), shuang@gc.cuny.edu

Discussant: Robert Culp (Dalton State College), rculp@daltonstate.edu

Title: And Then There Were None: The Rise and Fall of the Financial Guaranty Industry

Author: Catherine Lau (Carthage College), clau@gc.cuny.edu

Discussant: Su Huang (CUNY Graduate Center), shuang@gc.cuny.edu

Title: What Does the Financial Crisis Tell Us About the Determinants of Municipal Bonds Yields?

Author: Su Huang (CUNY Graduate Center), shuang@gc.cuny.edu

Discussant: Milos Vulcanovic (Western New England University), milos.vulanovic@wne.edu

Session B26 & B27 -- Undergraduate Student

Paper Competition, Lupton T101(9:50-11:20) Chair: Florence P. Shu (SUNY Potsdam), shufp@potdams.edu

Title: Government and Business: An Evolving Relationship

Author: Allison Beres (Marist College), ann.davis@marist.edu

Discussant: Eric Doviak (Brooklyn College), eric@doviak.net

Title: Does History Repeat Itself: Financial Crises

Author: Mubashir Shabil Billah (CUNY Brooklyn College), billah90@gmail.com

Discussant: Manimoy Paul (Siena College),
mpaul@siena.edu

Title: The Economic Influence of Immigration

Author: Kevin Peterson (Marist College),
ann.davis@marist.edu

Discussant: Arindam Mandal (Siena College),
amandal@siena.edu

Title: This Time is Different: History and
Implications

Author: Thomas Scimonelli (Marist College),
ann.davis@marist.edu

Discussant: David Ring (SUNY Oneonta),
ringdw@oneonta.edu

*11:25-12:40 Luncheon and Keynote
Address,
Roosevelt Hall, Multipurpose Room*

“Personality and Choice in Risky and Ambiguous
Environments: An Experimental Study”

Dr. Andrew Schotter
New York University

Andrew Schotter is a Professor of Economics at New York University and the Director of the Center for Experimental Social Science. He received his BS degree from Cornell University in 1969 and his Ph.D from New York University in 1973. Since that time he has been a full time faculty member at New York University where he served as Chair of the Economics Department from 1988-1993 and from 1996-1999. Professor Schotter’s research is in the field of Experimental Economics and Game Theory. He is the past president of the Economic Science Association which is the main international organization of experimental economists.

Professor Schotter is the author of numerous articles in the profession’s top journal and is also the author of six books including the “Economic Theory of Social Institutions”, “Free Market Economics: A Critical Appraisal”, and “Microeconomics: A Modern Approach”. He is an Associate editor of *Econometrica*, *Management Science*, *Games and Economic Behavior* and *Experimental Economics* and the general editor of *The Handbook of Economic Methodologies* published by Oxford University Press.

In addition to teaching at NYU Professor Schotter

has also held visiting positions at the University of Amsterdam, Tel Aviv University, The Charles University in Prague, the University of Paris, the Institute for Advanced Studies in Vienna, and was a visiting Scholar at the Russell Sage Foundation. His research has been funded by a wide variety of funding institutions including the National Science Foundation, the Spencer Foundation, and the Office of Naval Research. He was also awarded the Kenan Enterprise Award in 1993 and was selected as an Economic Theory Fellow of the Society for Advancement of Economic Theory, July 2011.

12:50-2:10 p.m. Concurrent Sessions: C30-C37, Group C

*Session C30 Regional Economics, Nathan
Hale 126*

Chair: Sean P. MacDonald (CUNY CityTech),
smacdonald@citytech.cuny.edu

Title: The Economic Landscape of the Foreclosure
Crisis

Author: Sean P. MacDonald (CUNY CityTech),
smacdonald@citytech.cuny.edu, Eric Doviak
(CUNY Brooklyn College), eric@doviak.net

Discussant: Jeffrey Wagner (Rochester Institute of
Technology), jeffrey.wagner@rit.edu

Title: Greenness versus Safety in Vehicle Footprint
Selection

Author: Jeffrey Wagner (Rochester Institute of
Technology), jeffrey.wagner@rit.edu, Kyle Kinler
(Rochester Institute of Technology),
krk9993@rit.edu

Discussant: Sean P. MacDonald (CUNY
CityTech), smacdonald@citytech.cuny.edu

Title: A View of Poverty using Alternative Poverty
Measures and Emerging Geospatial Technologies
in the Buffalo-Niagara Falls MSA: 1970-2000

Author: Craig Rogers (Canisius College),
rogersc@canisius.edu

Discussant: Abeba Mussa (SUNY Farmingdale),
mussaa@farmingdale.edu

Title: Immigration and Housing: A Spatial
Econometric Analysis

Author: Abeba Mussa (SUNY Farmingdale),
mussaa@farmingdale.edu, Uwaoma George
Nwaogu (Western Michigan University),
uwaoma.g.nwaogu@wmich.edu, Suzan Pozo

(Western Michigan University),
susan.pozo@wmich.edu
Discussant: Craig Rogers (Canisius College),
rogersc@canisius.edu

*Session C31 Credit Markets and
Commercial Banking, Nathan Hale 137*
Chair: Michael R. Dohan (CUNY Queens
College),
michael.dohan@qc.cuny.edu

Title: Credit Market Imperfection, Income
Inequality,
and Individual Happiness
Author: George Vachadze (CUNY Staten Island
and Graduate Center),
george_vachadze@yahoo.com
Discussant: Michael R. Dohan (CUNY Queens
College), michael.dohan@qc.cuny.edu

Title: SPACs with focus on China
Author: Milos Vulanovic (Western New England
University), milos.vulanovic@wne.edu, Milan
Lakicevic (University of Montenegro),
milanl@ac.me, Yochanan Shachmurove (CUNY
City College), yochanan@ssc.upenn.edu
Discussant: Mine Aysen Doyran (CUNY Lehman
College), mine.doyran@lehman.cuny.edu

Title: Mortgage Brokers, The Principal-Agent
Problem and Complex-Paradigm Problem as
Causes of The Sub-Prime Mortgage Crisis
Author: Michael R. Dohan (CUNY Queens
College),
michael.dohan@qc.cuny.edu
Discussant: George Vachadze (CUNY Staten
Island and Graduate Center),
george_vachadze@yahoo.com

Title: A Comparison of Argentine and Mexican
Commercial Bank Performance
Author: Mine Aysen Doyran (CUNY Lehman
College), mine.doyran@lehman.cuny.edu, Emre
Erdogan (Istanbul Bilgi University),
emre.erdogan@infakto.com.tr
Discussant: Milos Vulanovic (Western New
England University), milos.vulanovic@wne.edu

*Session C32 Health Economics, Nathan
Hale 224*
Chair: Kittaya Vichansavakul (Albany College of

Pharmacy and Health Sciences),
kittaya.vichansavaku@acphs.edu

Title: An Economic Evaluation of Nanomedicines
Used in Cancer Treatment
Author: Kittaya Vichansavakul (Albany College
of Pharmacy and Health Sciences),
kittaya.vichansavaku@acphs.edu, John M.
Polimeni (Albany College of Pharmacy and Health
Sciences), john.polimeni@acphs.edu
Discussant: Kpoti Kitissou (Binghamton
University), kkitiss1@binghamton.edu

Title: Estimating the Effect of Friendship Networks
on Educational Outcomes and Health Behaviors of
Adolescents
Author: Yuxiu Zhang (Yale School of Public
Health), yuxiu909@gmail.com, Jason Fletcher
(Yale School of Public Health),
jason.fletcher@yale.edu, Stephen Ross (University
of Connecticut), stephen.l.ross@uconn.edu
Discussant: Gayle DeLong (Baruch College),
gayle.delong@baruch.cuny.edu

Title: No-fault Injury Compensation: A Shot in the
Arm for Vaccine Manufacturers Worldwide
Author: Gayle DeLong (Baruch College),
gayle.delong@baruch.cuny.edu

Discussant: Kittaya Vichansavakul (Albany
College
of Pharmacy and Health Sciences),
kittaya.vichansavaku@acphs.edu

Title: Do Hormonal Contraceptives Increase HIV
Infection Rates in Sub-Saharan Africa?
Author: Kpoti Kitissou (Binghamton University),
kkitiss1@binghamton.edu, Bong Joon Yoon
(Binghamton University), yoon@binghamton.edu
Discussant: Yuxiu Zhang (Yale School of Public
Health), yuxiu909@gmail.com

*Session C33 Microeconomics and Policy,
Nathan Hale 226*
Chair: Wade Thomas (SUNY Oneonta),
thomaswl@oneonta.edu

Title: Strategic Guilt Induction
Author: Eric Cardella (Rochester Institute of
Technology), eric.cardella@gmail.com
Discussant: L. Chukwudi Ikwueze (SUNY
Farmingdale), ikwuezc@farmingdale.edu

Title: The Joint Use of Taxes and Liability for Managing Harm

Author: Jeffrey Wagner (Rochester Institute of Technology),

jeffrey.wagner@rit.edu, Ran Pang (Rochester Institute of Technology), rxp1957@rit.edu

Discussant: Eric Cardella (Rochester Institute of Technology), eric.cardella@gmail.com

Title: How Nonmarket Participants Cause market Failure:

A Conceptual Perspective

Author: L. Chukwudi Ikwueze (SUNY Farmingdale), ikwuezc@farmingdale.edu

Discussant: Stephen D. OConnell (CUNY Graduate Center), soconnell@gc.cuny.edu

Title: Female Political Empowerment and Peace: Evidence from India's Panchayati Raj

Author: Stephen D. OConnell (CUNY Graduate Center), soconnell@gc.cuny.edu, David A. Jaeger (CUNY Graduate Center and NBER), djaeger@gc.cuny.edu

Discussant: Wade Thomas (SUNY Oneonta), thomaswl@oneonta.edu

Session C34 Economics Education, Nathan Hale 231

Chair: Robert Culp (Dalton State College), rculp@daltonstate.edu

Title: The Impact of a Web-based Tutorial on Student Exams

Author: Jeannette Mitchell (Rochester Institute of Technology), jcmgsm@rit.edu, Johanna Mitchell (Hartwick College), mitchellj@hartwick.edu

Discussant: Robert Culp (Dalton State College),

rculp@daltonstate.edu

Title: Are Reverse Classrooms an Effective Method of Economics Instruction?

Author: Robert Culp (Dalton State College), rculp@daltonstate.edu, Dong-Gook DK Kim (Dalton State College), dkim@daltonstate.edu

Discussant: Patrick Meister (Ithaca College), pmeister@ithaca.edu

Title: Economic Sanctions: In-class exercise

Author: Patrick Meister (Ithaca College), pmeister@ithaca.edu

Discussant: Jeannette Mitchell (Rochester Institute of Technology), jcmgsm@rit.edu

Title: Student Evaluations: what is a Chair to Do?

Author: William P. ODea (SUNY Oneonta), odeawp@oneonta.edu

Discussant: Della Lee Sue (Marist College), della.lee.sue@marist.edu

Session C35 Economic Well-Being of Persons with Disabilities, Nathan Hale 234

Chair: Sophie Mitra (Fordham University), mitra@fordham.edu

Title: Estimating the Additional Costs Associated with Disability in the United States

Author: Navena Chaitoo (Fordham University), nchaitoo@fordham.edu

Discussant: Joseph Mauro (Fordham University), jmauro117@gmail.com

Title: Disability and Poverty in the United States

Author: Joseph Mauro (Fordham University), jmauro117@gmail.com, Debra Brucker (New Hampshire University), Navena Chaitoo (Fordham University), Sophie Mitra (Fordham University)

Discussant: Onur Altindag (CUNY Graduate Center), ronuraltindag@gmail.com

Title: The Great Recession, Workers with Disabilities, and Implications for Retirement Security

Author: Onur Altindag (CUNY Graduate Center), ronuraltindag@gmail.com, Purvi Sevak (CUNY Graduate Center and Brooklyn College), Lucie Schmidt (Williams College)

Discussant: Navena Chaitoo (Fordham University), nchaitoo@fordham.edu

2:10-2:25 Afternoon Break in Bldg. Nathan Hale Lobby

2:25-3:45 Concurrent Sessions: D40-D47, Group D

Session D40 International Economics, Nathan Hale 126

Chair: Nadia Doytch (CUNY Brooklyn College), ndoytch@gmail.com

Title: Does the Introduction of the Euro have an impact on Exchange Rate Exposure?

Author: Junnan Zhao (CUNY Graduate Center), junnanzhao@gmail.com

Discussant: Roumen Vesselinov (CUNY Queens College), roumen.vesselinov@qc.cuny.edu

Title: Deficits and Economic Growth: A Feder Model

Author: Jeannette Mitchell (Rochester Institute of Technology), jcmgsm@rit.edu, Adam Kohn (Rochester Institute of Technology), ackohn@gmail.com

Discussant: Junnan Zhao (CUNY Graduate Center), junnanzhao@gmail.com

Title: Culture and Foreign Direct Investment

Author: Raymond MacDermott (Virginia Military Institute), macdermottrj@vmi.edu

Discussant: Jeannette Mitchell (Rochester Institute of Technology), jcmgsm@rit.edu

Title: Globalization and the Environmental Spillovers of sectoral FDI

Author: Nadia Doytch (CUNY Brooklyn College), ndoytch@gmail.com, Merih Uctum (CUNY Graduate Center and Brooklyn College), muctum@gc.cuny.edu

Discussant: Raymond MacDermott (Virginia Military Institute), macdermottrj@vmi.edu

Session 41 Financial Markets, Nathan Hale 137

Chair: Emily Johnston (CUNY Graduate Center), ejohnston@gc.cuny.edu

Title: Money Market Mutual Funds: Fund Structure and Regulatory Reform

Author: Aiwu Zhao (Skidmore College), azhao@skidmore.edu, Jonathan Zeidan

Discussant: Emily Johnston (CUNY Graduate Center), ejohnston@gc.cuny.edu

Title: Pricing Kernels and Market Distress

Author: Emily Johnston (CUNY Graduate Center), ejohnston@gc.cuny.edu

Discussant: Manimoy Paul (Siena College), mpaul@siena.edu

Title: Performance of Hedge funds

Author: Manimoy Paul (Siena College), mpaul@siena.edu

Discussant: Wei W. Simi (CUNY Queens College), drwsimi@gmail.com

Title: Time-Changed Levy Jump Processes and Reverse Convertibles Valuation

Author: Wei W. Simi (CUNY Queens College), drwsimi@gmail.com

Discussant: Emily Johnston (CUNY Graduate Center), ejohnston@gc.cuny.edu

Session D42 Gender, Marriage and Labor Market,

Nathan Hale 224

Chair: Celia Patricia Vera (SUNY Stony Brook), cvera@ic.sunysb.edu

Title: A dynamic model of teachers careers paths

Author: Celia Patricia Vera (SUNY Stony Brook),

cvera@ic.sunysb.edu

Discussant: Sukanya Basu (Vassar College), subasu@vassar.edu

Title: Family Job Search and Consumption

Author: Silvio R. Rendon (SUNY Stony Brook), srendon@ms.cc.stonybrook.edu

Ignacio Garcia-Perez (Universidad Pablo de Olavide), jigarper@gmail.com

Discussant: Celia Patricia Vera (SUNY Stony Brook),

cvera@ic.sunysb.edu

Title: Modeling Monopsony Labor and Gender Pay Differences in Brazil

Author: Brandon Vick (Fordham University), vick@fordham.edu

Discussant: Silvio R. Rendon (SUNY Stony Brook),

srendon@ms.cc.stonybrook.edu

Title: Inter-marriage and Labor Market Outcomes of Asian Women

Author: Sukanya Basu (Vassar College), subasu@vassar.edu

Discussant: Brandon Vick (Fordham University), vick@fordham.edu

Session D43 New York State Economy, Nathan Hale 226

Chair: Della Lee Sue (Marist College), della.lee.sue@marist.edu

Title: Geographic Mobility, Unemployment, Education and Income Inequality: A Case Study of

New York State

Author: Della Lee Sue (Marist College),
della.lee.sue@marist.edu

Discussant: Arindam Mandal (Siena College),
amandal@siena.edu

Title: Consumer Confidence and the Labor Market
in New York State

Author: Arindam Mandal (Siena College),
amandal@siena.edu, Joseph McCollum (Siena
College), jmcollum@siena.edu

Discussant: Gregory DeFreitas (Hofstra
University),
ecoged@hofstra.edu

Title: The State of New York Unions: 1986-2012

Author: Gregory DeFreitas (Hofstra University),
ecoged@hofstra.edu, Bhaswati Sengupta (Hofstra
University), bhaswati.sengupta@hofstra.edu

Discussant: Sarbjit Singh (Farmingdale State
College), singhs@farmingdale.edu

Title: Economic Fait Accompli? Does Simple
Supply and Demand Predict the Future of the New
York Islanders?

Author: Sarbjit Singh (Farmingdale State
College),
singhs@farmingdale.edu, Ira Stolzenberg
(Farmingdale State College),
stolzei@farmingdale.edu

discussant: Della Lee Sue (Marist College),
della.lee.sue@marist.edu

Session D44 Sports Economics, Nathan Hale 231

Chair: Darius Conger (Ithaca College),
dconger@ithaca.edu

Title: Teaching Sports Economics

Author: Glenn Gerstner (St. Johns University),
gerstneg@stjohns.edu

Discussant: Emese Ivan (St Johns University),
ivane@stjohns.edu

Title: A Blended Learning approach to the teaching
of sports economics

Author: Richard Vogel (SUNY Farmingdale),
richard.vogel@farmingdale.edu

Discussant: Glenn Gerstner (St. Johns University),
gerstneg@stjohns.edu

Title: Teaching Principles of Economics of Sports

through Online Instruction

Author: Emese Ivan (St Johns University),
ivane@stjohns.edu

Discussant: Richard Vogel (SUNY Farmingdale),
richard.vogel@farmingdale.edu

Session D45 Health Economics, Nathan Hale 234

Chair: Inas R. Kelly (CUNY Queens College),
inas.kelly@qc.cuny.edu

Title: Disability, Obesity, and Employment:
Exploring Nationally-Representative Data

Author: Inas R. Kelly (CUNY Queens College),
inas.kelly@qc.cuny.edu, Jennifer Tennant (Ithaca
College), jtennant@ithaca.edu

Discussant: Yan Song (CUNY Graduate Center),
songyan0708@hotmail.com

Title: Domestic Migration, Benefit Spillovers, and
Local Education Spending: Evidence from China
1993-2009

Author: Gang Guo (University of Mississippi),
gg@olemiss.edu

Discussant: Xu Zhang (SUNY Farmingdale),
xu.zhang@farmingdale.edu

Title: Fast Food Consumption and Child BMI in
China: Application of Switching Regression Model

Author: Xu Zhang (SUNY Farmingdale),
xu.zhang@farmingdale.edu, Wisdom Akpalu
(SUNY Farmingdale),
wisdom.akpalu@farmingdale.edu

Discussant: Gang Guo (University of Mississippi),
gg@olemiss.edu

Title: Interaction effect between price and time
preference
on the cigarette consumption

Author: Yan Song (CUNY Graduate Center),
songyan0708@hotmail.com

Discussant: Inas R. Kelly (CUNY Queens
College),
inas.kelly@qc.cuny.edu

*4:00-5:00pm NYSEA Business Meeting
(all are welcome), Lupton T101*

New York State Economics Association Submission of Papers for the Online Proceedings

Participants of the New York State Economics Association annual conference may submit their paper to the Online Proceedings editor for publication. The Proceedings volume is edited by Richard Vogel at State University of New York at Farmingdale and will be published in the Spring of 2013. Papers must arrive at the office of the Proceedings editor by January 20, 2013. Papers should be submitted electronically to richard.vogel@farmingdale.edu. The editor reserves the right to include only those articles in the Proceedings that reflect the standards of the New York State Economics Association. Papers are limited to ten pages, including tables, figures, and appendices. The paper must be submitted using Microsoft Word. Papers in any other format, including WordPerfect, will not be accepted. If you have to convert a file to Word, check that quotation marks (“), apostrophes (,), and other symbols come out as intended after the conversion (including all mathematical equations). If they do not, change them manually before submitting the paper. Formatting Guidelines can be found at the NYSEA website (www.nysea@bizland.com). All papers must conform to the guidelines to be considered for publication.

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FRIDAY AND SATURDAY

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