Value of a Sports Tradition: Mississippi State Football Fans Ringing Cowbells in the Stadium

Naomi Taylor, Environmental Economics and Management

Abstract

A topic increasingly studied in the realm of economics is the intangible benefits of sporting events and the value they hold to fans and players. However, there has been little to no research on the value of sport traditions. At Mississippi State University, the cowbell has become a symbol for the school and Bulldog fans and is rung at home football games. However, the SEC has placed rules the users of these artificial noisemakers must abide by, and when not followed, the university is given a fine. There remains the possibility that the SEC schools may vote to overturn the right to ring cowbells if violations continue. Given the University's continued possibility of losing its right to cowbells in the stadium, it may be interested to know the value of this tradition to the fans. This study attempts to estimate this value using a contingent valuation survey that was administered to MSU football fans during the fall 2014 football season online and in-person with self-administered computer surveys. The survey presented respondents with a hypothetical trade-off; would respondents accept a cheaper average ticket price to forgo their current right to bring cowbells into the stadium and ring them during games? These choices were analyzed in a logit model, the results of which led us to several conclusions. In general, we found that people strongly value their right to ring cowbells during football games at MSU. The value appears to be even greater for students, males, and alumni of the university. Older respondents seem to value the cowbells less. The passion for the cowbells was evidently high until the Bulldogs lost their first game, when respondents became slightly more likely to accept the offered lower price and the ban on cowbells.

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Naomi Taylor, Environmental Economics and Management

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Final Report

The research experience I have had with the College of Agriculture and Life Sciences Undergraduate Research Scholar Program has been one full of learning, growth, and accomplishments. My faculty research advisor, Dr. Matthew Interis of the Department of Agricultural Economics, gave me the honor of helping him discover the value of Mississippi State University's cowbell tradition, and I could not be more grateful. My research experience as a sophomore started in September 2014 and has yet to conclude.

Our research project began with an idea: what is the value of cowbells to MSU football fans when the fines are enormous for SEC regulations set on their ringing and there is a constant threat to being banned? Previous research has examined the intangible benefits of sporting events, such as the culture and community they bring to the area, and how much these factors are worth to the populous. However, we found no research on the value of a sporting tradition. Mississippi State University may wish to know the value of the right to ring cowbells in the football stadium at home games for a couple reasons. The SEC has only recently allowed cowbells to be rung in the stadium after previously being banned as "artificial noisemakers" that distract the players. However, they now hold strict regulations on the ringing. When there are violations of these rules, SEC imposes a fine on Mississippi State. Each time, the fine increases. MSU has been fined in the past, and there is the potential they could be fined again. The worth of the cowbells to fans may factor into whether MSU wants to continue the risk of paying these fines. There is also the chance cowbells can be banned again with a simple vote by the SEC schools, so MSU may want to know the value of the tradition when arguing for why the fans need their cowbells.

We created a contingent valuation survey, which is centered on a hypothetical scenario that makes it necessary for a respondent to make a choice. This makes it possible for the researchers to place a value on something that may be intangible. In this case, the scenario was that cowbells are banned, and the sports tradition, the right to ring cowbells, was our intangible good. For those that want cowbells to be banned, they told us how much they would be willing to pay extra on ticket prices to enforce the new ban. These answers will be used to find the "willingness to pay" (WTP) value, or the minimum amount a person would pay to have something positive in exchange. For those that do not want cowbells banned, they told us how

much they would be willing to accept as a discount on ticket prices since there is no longer a risk of fines. These answers were used to find the "willingness to accept" (WTA) value, or the minimum amount a person would accept in exchange for something negative. Respondents answered this choice question, along with background questions on their ticket-buying habits, for example, and necessary demographics.

We used an online survey maker program called Qualtrics to make the online survey. I learned how crucial wording and text font and format is in a survey to make sure your point comes across clearly so the respondents understand what you are asking them. The number of choices, or if a respondent was given choices at all, is another strategic way to receive answers in a survey. Getting the flow just right was equally important; the question the respondent answered next was based on how they answered the previous question at many points during the survey. This part of our research project took much patience as we test-ran the survey through each of the possible pathways several times.

Before the survey could be distributed, it had to be submitted to the IRB Board for approval and I had to take an online training to interact with human subjects. I learned a lot about what not to do in surveys, as well as the rights and wrongs when administering the survey. I never knew there could be so many rules and guidelines for something like answering a few questions, and I have a new appreciation for the hard work that goes into the surveys I occasionally take for others.

The survey was then distributed during the 2014 Mississippi State Bulldogs football season. It was my responsibility at each home game to target certain areas of the tailgate each time to collect survey responses using the Qualtrics app on iPads. This part of our research was very rewarding; I found I loved interacting with people and their enthusiasm to contribute towards the data. Doing the surveys in-person was a great way to receive feedback on the survey and hear what people had to say about cowbells in the stadium. We also sent the survey to all "msstate.edu" emails to collect a greater sample size. We had almost 4,000 respondents total. Of these respondents, 84% of respondents answered the survey "provided enough information," 88% said it was "easy to understand," and 74% agreed it was "presented in an unbiased way." This tells us we made a quality survey, so this was very exciting!

After data collection from October to December, it was time to analyze the data. Dr. Interis helped me learn an econometrics regression program called SAS, which we used to create code to translate the data into variables we could put into our Random Utility Model. The variables are connected in a mathematical relationship that we specify which depends on parameters. These parameters are estimated through maximum likelihood estimation, which maximizes the likelihood of us observing the choices we actually observe. The estimated parameters are then used to calculate the value of the right to ring cowbells.

The table below contains our complete list of variables with the positive or negative sign of their estimate and whether or not this estimate is significant. As of now, the only data analyzed and model created was for respondents who want cowbells allowed in the stadium and were asked the WTA question. A positive estimate means the respondent was more likely to

accept the discount in exchange for giving up the right to ring cowbells, and a negative sign means they were less likely to accept the discount in exchange for giving up the right to ring cowbells. Students and non-students were separated to interact with the price variable. Because we found students to be completely insensitive to price, we were unable to estimate their WTA value.

Variable	Estimate	Significant?
Price for Non-students	+	Yes
Price for Students	-	No
Games Before Loss Relative to Week 1	-	Yes
Games After Loss Relative to Week 1	-	No
Alumnus	-	Yes
Cowbell Bringer	-	Yes
Attended over 10 games in past 5 years	-	Yes
Student	+	No
Faculty	-	No
Staff	+	No
Buys Own Tickets	-	No
Income	-	Yes
Age	+	Yes
Age^2	-	Yes
Male	-	Yes
Survey Will Have Effect	+	Yes

I created an interesting variable called "Week," which separated respondents into the time periods between games. When these dummy variables were placed into the model, it was clear that Weeks 1 through 6 tended to cluster together, as did 7 and 8. We lumped these variables together into the variables you now see in the above table, and we realized Weeks 7 and 8 were the first losses of the Mississippi State Bulldogs 2014 football season. The

insignificance of this variable in the table reveals the passion for the cowbells diminished after the winning streak was ruined, and respondents became more likely to accept the discounted ticket price.

Alumni appear to be the most passionate MSU fans, being the least likely to accept the discount on ticket prices in exchange for their right to ring cowbells. Many other variables made sense as well. Those that bring cowbells and those that have attended more than 10 home football games in the last 5 years were less likely to accept the discount. The greater a respondent's income, the less likely they were to accept as well, perhaps because they had less need for a discount. The older a respondent was, until a certain age (shown as age^2) where the likelihood tapered off, the more likely they were to accept the discount. In addition, males were slightly more passionate about their right to ring cowbells than their female counterparts.

We calculated several WTA values. The first was the Willingness to Accept of non-students, which came out to be about $46. The most expensive single ticket (divided out of the season ticket package) is about $44, so as many respondents told us, tickets would have to be free before even considering giving up their right to ring cowbells. However, when the winning streak is removed from the equation, WTA cuts in almost half to $27. This could signal the passion for cowbells is highly related to the performance of the football team. Among respondents that do not bring cowbells, but still do like them, WTA is only $30. When both the winning streak and cowbell bringers are removed, WTA is less than $10.

It is my belief the most accurate value is $27, when the winning streak is removed. This is more likely to be the value when the Bulldogs have a "normal" season, with intermixed wins and losses. The value over an entire football season of 7 games with 55,000 attendees per game would come to about $10.4 million. However, this value would be lower once the damages incurred to those that do not like cowbells in the stadium are subtracted.

In the survey, we did have a willingness to pay treatment for those that would prefer cowbells to not be allowed in the stadium. We plan to make a separate model for this treatment in order to find the WTP and subtract the cost from the current value of the cowbells during an entire football season.

On April 23, 2015, I competed at the Undergraduate Research Symposium held at Mississippi State University and hosted by the Shackouls Honors College with a talk in the Social Sciences section. I created a PowerPoint presentation for a 10 minute talk with 3 minutes of questions afterwards. The judges collaborated, and I was awarded 2nd place out of the Social Sciences talks.

Outside the office and working with SAS, I researched other contingent valuation surveys and sports economics articles to help me begin the paper. The manuscript currently has an outline and completed introduction with sources. I have never before written an economic paper, so this is also a learning experience. Dr. Interis is helping me, as well as other researcher's papers for reference, to learn the correct format, new terminology, and how to create effective tables. These are just a few things I have learned; as the paper progresses, I will certainly be expanding upon this new knowledge.

I plan to execute the writing of a paper in time for this summer's American Agricultural Economics Association annual meeting in San Francisco at the end of July 2015, where I will compete with other agricultural economics research undergraduates from around the nation with a presentation and my paper. We hope to finalize a paper and attempt to have in published in the Journal of Sports Economics in the future.

Participating in undergraduate research was one of the most rewarding experiences I have had yet. I learned the importance of survey design, as well as administration. This was my first time conducting research with such a large sample size and using statistical regression to analyze the data. I learned the difficulties of the SAS program, but also how necessary it will be in my future. At times I was overwhelmed, confused, and not sure what I was doing, but I have now come out the other side with more than I could have hoped. After two semesters of collecting data and analyzing that data to come out with values that actually make sense is an amazing accomplishment. I could not have been more honored or proud to receive the 2nd place award for all our hard work. It is amazing to see the economics and public speaking classes I have taken be applicable in the "real world."

Overall, I have learned and gained so much from this research experience through CALS and with the help of Dr. Interis. The career skills and confidence I have gained from completing this project and presenting it will help me in my future, beginning with Dr. Interis' upper-level econometrics class and beyond to my career. I definitely see more research ahead of me, and with the CALS Undergraduate Research Program behind me, I will feel and be capable of tackling it head-on.

The Value of a Sports Tradition: Mississippi State Football Fans Ringing Cowbells in the Stadium

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Mississippi State University
Undergraduate Research Symposium
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Introduction (Abstract)

- Previous research has examined intangible benefits of sporting events – e.g. Walton, Longo, & Dawson, A Contingent Valuation Of The 2012 London Olympic Games (JSE 2008)
- None have examined the value of a sports tradition.
- Violations of SEC regulations on cowbell ringing lead to fines and in the future, perhaps a loss of the right to ring them.
- What is the value to MSU football fans of being able to bring in and ring cowbells during home games?

The Economics of Value

- Place value on many aspects of life
  - Football tickets and the right to ring cowbells
- Faced with a choice, people choose which they value more
- Willingness to Accept – the minimum a person will accept in exchange for something negative
  - In this case, a discount in ticket prices that fans would accept to forgo the right to ring cowbells at home football games.
  - Not willingness to pay due to property rights Knetsch (2010)

The Survey

- Contingent Valuation Survey
- Qualtrics - administered during 2014 football season
  - In-person surveys on iPad app at home tailgates Oct-Nov
  - Online surveys sent to “msstate.edu” e-mails Oct 3-Dec 5
- Target: self-proclaimed Mississippi State Bulldogs football fans
- Respondents reviewed survey
  - Provided enough information (84%)
  - Easy to understand (88%)
  - Presented in an unbiased way (74%)

Main Choice Question

- Posed only to those that answered they would prefer cowbells NOT be banned from the stadium.
- No more risk of fines, so cheaper ticket prices

> Based on your previous responses, your average ticket cost, for a single game, is about $. Suppose the average price of a single home football game ticket were $X less for students and $Y less for non-students than it is currently, but that cowbells would no longer be allowed in the stadium and that the ban would be strictly enforced.
>
> Would you be in favor of this change?

Theory Behind the Model

Utility = f(price of tickets, bringer of cowbell, team record, demographics)

- The variables are connected in a mathematical relationship that we specify which depends on parameters.
- These parameters are estimated through maximum likelihood estimation, which maximizes the likelihood of us observing the choices we actually observe.
- The estimated parameters are then used to calculate the value of the right to ring cowbells.
- Used the Random Utility Model according to Haab, T. and K.E. McConnell, Valuing Environmental and Natural Resources, Ch. 2 (2002)

Results

Variable	Estimate	Significant?
Price for Non-students	+	Yes
Price for Students	-	No
Games Before Loss Relative to Week 1	-	Yes
Games After Loss Relative to Week 1	-	No
Alumnus	-	Yes
Cowbell Bringer	-	Yes
Attended over 10 games in past 5 years	-	Yes

Variable	Estimate	Significant?
Student	+	No
Faculty	-	No
Staff	+	No
Buys Own Tickets	-	No
Income	-	Yes
Age	+	Yes
Age^2	-	Yes
Male	-	Yes
Survey Will Have Effect	+	Yes

Willingness to Accept Values

- Non-Student Willingness to Accept Value: $46.31
  - Most expensive price per ticket is about $44.28
  - (Season Ticket package for 2014 was $310 divided by 7 home games)
- As many respondents reported – tickets would have to be free for Mississippi State Bulldogs to give up their right to ring cowbells
- If the winning streak is out of the equation, WTA drops to about $27
- Among respondents that do not bring cowbells (but do like them), WTA is about $30
- If the winning streak and cowbell bringers are both removed, WTA is less than $10

Conclusions

- Value over a whole football season would be **$10,395,000** when average game attendance is 55,000 fans per game. (Ending net value would be lower when damages to those that do not like cowbells are subtracted.)
- We also did a treatment for those that believe cowbells should be banned and would have a negative value, but data analysis is still in progress.

For future research on something intangible people are passionate about:

- Difficulties determining who did not take the tradeoff seriously
- Difficulties creating a believable hypothetical situation


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