The Resilience of Entertainment Over Business Cycles

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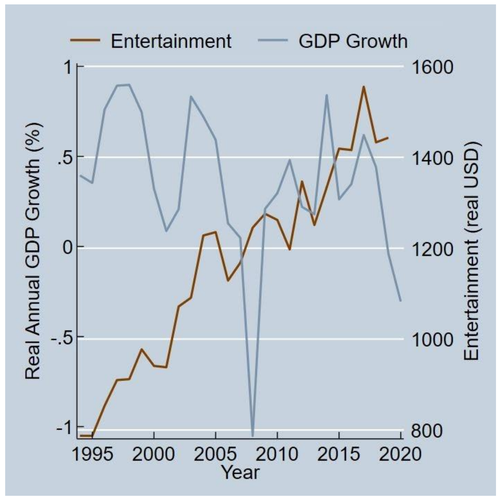
Economics Senior Thesis

Introduction

- Do "recession-proof " industries exist?
  - There has been a belief that consumption of entertainment or leisure activities may persist or even increase in times of recession
- The goal of this Thesis is to identify how consumers spend on entertainment in times of recession, and what decisions they make to change their spending across different categories
- I analyze how changes in Unemployment and GDP Growth rates affect consumption of entertainment and durable goods at both a macro and micro level
- Substitution and changing marginal utility influence consumer decisions
- Entertainment expenditure increases over time as GDP fluctuates



Relevant Literature

- Evidence that consumers will make substitutions in the presence of price shocks (Griffith, 2016)
- When unemployment rises, people have more free time that can be used for leisure activities (Aguiar, 2013)
- Increase in cinema attendance during the Great Depression (Pautz, 2002)
- Aspects of the gaming industry were proven to be unaffected by the Recession in 2007 (Zheng, 2013)

References

Aguiar, Mark, Erik Hurst, and Loukas Karabarbounis. "Time Use During the Great Recession." The American economic review 103, no. 5 (August 2013): 1664–1696.

Griffith, Rachel, Martin O'Connell, and Kate Smith. "Shopping Around: How Households Adjusted Food Spending Over the Great Recession." Economica (London) 83, no. 330 (April 2016): 247–280.

Pautz, Michelle C., "The Decline in Average Weekly Cinema Attendance, 1930-2000" (2002). Political Science Faculty Publications. 25.

Zheng, Tianshu, John Farrish, Lee Ming-Lun, and Hui Yu. 2013. "Is the Gaming Industry Still Recession-Proof?: A Time Series with Intervention Analysis of Gaming Volume in Iowa." International Journal of Contemporary Hospitality Management 25 (7): 1135-1152.

Methods

- Ran linear regressions for macroeconomic and microeconomic variables separately
- Compare entertainment variables to non-entertainment consumption

Macro Analysis

$$C_t = \beta_0 + \beta_1 per\ capita\ GDP\ Growth\ Rate_t + \beta_2 Unemployment\ Rate_t + \lambda X_t + \epsilon_t$$

C_t is the different measures of consumption including MLB attendance, box office revenue and annual entertainment, food, apparel, and transportation expenditures

X_t is a vector of control variables e.g. household income, race

Micro Analysis

$$c_{it} = \beta_0 + \beta_1 per\ capita\ GDP\ Growth\ Rate_t + \beta_2 Unemployment\ Rate_t + \lambda X_{it} + \epsilon_{it}$$

cit is the different measures of consumption expenditure for entertainment goods at the household level
Xit is a vector of control variables which could include income before taxes, family type, age, gender, region, education etc.

$$cF_{it} = \beta_0 + \beta_1 per\ capita\ GDP\ Growth\ Rate_t + \beta_2 Unemployment\ Rate_t + \lambda X_{it} + \epsilon_{it}$$

cFit is the measure of consumption expenditure for food, clothing, housing, and transportation at the individual level
Xit is a vector of control variables which could include income before taxes, family type, age, gender, region, education etc.

Macro Regressions

VARIABLES	Q. Box Office	MLB Annual	Food at Home	Entertainment	Apparel	Transportation
Q. Unemployment	0.0362					
	(0.0234)					
Q. Real GDP Growth	0.0372					
	(0.0370)					
HH Income	0.164	-10.71***	317.2**	53.59	19.17	-66.85
	(0.150)	(2.835)	(125.0)	(88.67)	(97.66)	(496.7)
Black HH	0.0898	-8.731**	-107.9	-63.18	-145.3*	-428.5
	(0.132)	(3.002)	(106.4)	(75.45)	(83.09)	(422.6)
White HH	0.140***	5.512**	-123.0***	23.61	-10.07	250.2**
	(0.0300)	(1.993)	(24.19)	(17.15)	(18.89)	(96.10)
Hispanic HH	-0.141	-2.413	231.8***	58.09	-6.846	-238.6
	(0.0893)	(3.278)	(70.63)	(50.09)	(55.17)	(280.6)
Annual Unemployment		-1.652***	32.91	1.732	-52.20***	-296.1***
		(0.473)	(19.66)	(13.95)	(15.36)	(78.13)
Annual Real GDP Growth		-1.831	-77.41	44.78	14.23	-48.13
		(1.302)	(46.38)	(32.89)	(36.23)	(184.3)
Constant	-11.44***	-213.4	12,439***	-1,208	5,567***	-1,739
	(2.216)	(151.8)	(1,738)	(1,233)	(1,357)	(6,905)
Observations	103	19	26	26	26	26
R-squared	0.851	0.776	0.672	0.943	0.974	0.743

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Micro Regressions

VARIABLES	(1) Entertainment	(2) Food	(3) Clothing	(4) Housing	(5) Transportation
Q. Unemployment	0.000285***	0.00131***	-0.000666***	0.000523***	-0.000439***
	(4.98e-05)	(9.16e-05)	(4.00e-05)	(0.000144)	(0.000123)
Race	0.00819***	-0.00540***	-0.00147***	-0.0261***	0.00810***
	(0.000235)	(0.000431)	(0.000188)	(0.000678)	(0.000580)
Family Type 1	-0.000499	-0.0101***	-0.00144***	0.0246***	0.000600
	(0.000342)	(0.000628)	(0.000274)	(0.000987)	(0.000844)
Family Type 2	0.000293	0.0190***	0.00483***	0.0400***	-0.0137***
	(0.000471)	(0.000866)	(0.000378)	(0.00136)	(0.00116)
Family Type 3	0.00131***	0.00252***	0.000892***	0.0317***	-0.0166***
	(0.000305)	(0.000561)	(0.000245)	(0.000882)	(0.000754)
Family Type 4	0.000208	0.00137**	-0.00130***	0.0263***	-0.00647***
	(0.000326)	(0.000599)	(0.000262)	(0.000942)	(0.000806)
Income Before Taxes	2.27e-08***	-3.49e-07***	-1.29e-08***	-1.85e-07***	-9.13e-08***
	(1.62e-09)	(2.98e-09)	(1.30e-09)	(4.68e-09)	(4.00e-09)
Education 1	0.00721***	-0.0249***	-0.00229***	-0.0119***	0.0140***
	(0.000424)	(0.000779)	(0.000340)	(0.00122)	(0.00105)
Education 2	0.0116***	-0.0438***	-0.000373	-0.0137***	0.0141***
	(0.000425)	(0.000781)	(0.000341)	(0.00123)	(0.00105)
Education 3	0.0112***	-0.0490***	0.000900**	-0.00181	0.00548***
	(0.000499)	(0.000917)	(0.000401)	(0.00144)	(0.00123)
Housing Tenure	-0.00876***	0.00791***	0.00297***	0.0521***	-0.0216***
	(0.000217)	(0.000399)	(0.000175)	(0.000628)	(0.000537)
Age	-0.000126***	5.47e-06	-0.000318***	0.000659***	-0.000902***
	(6.04e-06)	(1.11e-05)	(4.86e-06)	(1.75e-05)	(1.49e-05)
Urban	-0.00209***	-0.00320***	0.00185***	0.0541***	-0.0214***
	(0.000357)	(0.000656)	(0.000287)	(0.00103)	(0.000882)
Number of Children	0.00267***	-0.000592*	0.00187***	0.0224***	-0.0153***
	(0.000170)	(0.000313)	(0.000137)	(0.000492)	(0.000421)
Family Size	-0.00277***	0.00936***	0.000375***	-0.0145***	0.0101***
	(0.000152)	(0.000279)	(0.000122)	(0.000439)	(0.000376)
Constant	0.0410***	0.213***	0.0424***	0.307***	0.182***
	(0.000838)	(0.00154)	(0.000673)	(0.00242)	(0.00207)
Observations	367,360	367,360	367,360	367,360	367,360
R-squared	0.018	0.095	0.031	0.081	0.030

Preliminary Results

- Positive coefficient between Box Office Revenue and Unemployment
- The coefficient between MLB Attendance and GDP Growth is negative and large
- Positive and statistically significant relationship between Unemployment and household entertainment expenditure
  - Compared to negative and statistically significant relationship between clothing and transportation expenditure and unemployment
- My micro regressions are more influential in supporting the idea that entertainment persists over business cycles
  - There are substantially more observations in the micro regressions

Data Sources

"Consumer Expenditure Surveys (CE) Public Use Microdata Data Files." U.S. Bureau of Labor Statistics. U.S. Bureau of Labor Statistics, September 9, 2020. https://www.bls.gov/cex/pumd_data.htm.

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"MLB Attendance Report." ESPN. ESPN Internet Ventures, 2019. http://www.espn.com/mlb/attendance/_/year/2018.

"Unemployment Rate." FRED. Federal Reserve Bank of St. Louis, November 6, 2020. https://fred.stlouisfed.org/series/UNRATE.