Ec 980FF Final Paper Summary

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This paper will analyze the potential ramifications of the ongoing COVID-19 pandemic on the finances of the National Basketball Association (NBA) and the market for its teams and players. The NBA salary cap is the mechanism that effectively equilibrates supply and demand for players. The salary cap level is set based on Basketball Related Income (BRI). NBA Commissioner Adam Silver revealed in May 2020 that ticket sales for in-person fan attendances comprises an estimated 40% of the NBA's revenue. The NBA's revenue is split roughly 50-50 between players and the owners of these teams. Figure 1 shows how the players' and owners' split of BRI would each decrease according to this projection from $4 billion to $2.4 billion. If this is the case, the league might have to withhold an increased percentage of players' salaries in escrow for the upcoming season to finance the league's operations, potentially leading to heavily contested debates at the bargaining table for an updated Collective Bargaining Agreement. The two pressing economic problems this paper will address are the league's potentially inaccurate forward guidance provided to teams about salary cap levels for the upcoming season, as well as potential inequalities emerging from teams' varying levels of cash flows and spending power that could potentially harm competitive balance in a zero-sum league.

The potential and perhaps inevitable inaccuracies to the forward guidance provided by the league in regard to future salary cap levels is quite similar to the concept of expected inflation; accurate levels of expectations are in a lot of ways more important than the actual level. Teams plan their finances as it pertains to player salaries years in advance using the latest projections given to them by the league on future salary cap levels. The salary cap was $109.14 million in the 2019-2020 season, and the last pre-pandemic projection for the following season's level was $115 million. Now, most salary cap experts project that the salary cap staying at the $109.14 million level (the same as the previous season) is the best-case scenario.

Stemming off of this concept of inaccurate forward guidance, the looming problem is potential decreases in the competitive balance of the league, specifically a rise in correlation between payroll / team wealth and winning percentage. Figure 2 shows team valuation (as measured by Forbes in February 2020) compared to team winning percentage in the 2019-2020 season. We can see a near-zero correlation of 0.012, though this number might be affected by two of the three richest teams (the New York Knicks and Golden State Warriors) having two of the six worst records in the league this past season. Figure 3 shows the comparison of the same two variables, this time over the last ten years, and we see a more positive, yet still quite small, correlation of 0.125. Unlike the capitalistic nature of the American economy, the economy within the NBA and most other major sports leagues is quite socialist in nature. Although the 30 NBA teams are by no means equal in financial status - as evidenced by team wealth in Figure 4 and wealth of the team's majority owner in Figure 5 - the league is set up to promote competitive balance. This is done through policies like the teams with the worst records getting higher picks in the amateur player draft, teams generally being allowed to pay their players more than opposing teams can to retain their services, and revenue sharing to smaller-market teams that rely on this revenue to stay financially afloat. The fear among those plugged into the NBA community is that the dire financial conditions that some teams, presumably smaller-market and poorer, will face might force teams to prioritize saving money over improving their roster, which is the worst thing that could happen for the competitive balance of the league.

The five figures presented in this summary are merely a snapshot of the analysis that this paper will eventually conduct. Data will be collected on the businesses that these teams' majority owners are invested in and how their businesses have been impacted by COVID-19. For example, the owner of the Brooklyn Nets is the

co-founder of Alibaba (the equivalent of Amazon in China) whereas the owner of the Miami Heat has all of his money in cruise ships and the owner of the Indiana Pacers invests in shopping malls. Analyzing not only each NBA team's financial condition but also the financial condition of their majority owner will prove crucial to better understanding the financial situation of the NBA. I will also be looking at data for all 30 NBA teams about what financial commitments that have to players in the upcoming season to better understand / project the financial constraints that smaller-market teams with relatively large projected payroll mights face. I look forward to doing more research and writing an unorthodox, yet important paper that relates to the Economics of the Coronavirus.

Figure 1: Potential BRI Drop in 2020-2021 Season
Commisssioner Adam Silver projects ticket sales comprise 40% of BRI

BRI	Total	Players	Owners
2019-2020 Season	$8B	$4B	$4B
Projection for Next Season With No Fans	$4.8B	$2.4B	$2.4B

Figure 2: Team Valuation vs. 2019−2020 Winning Percentage

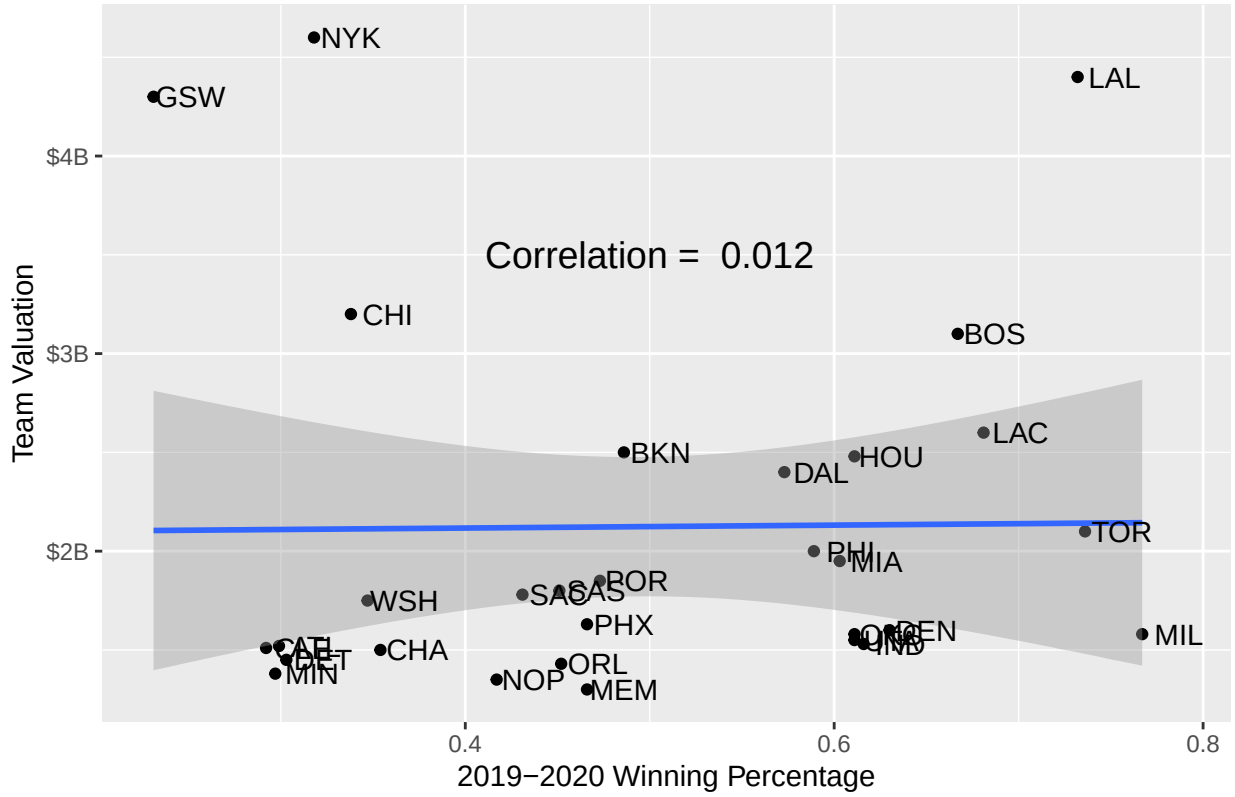


Figure 3: Team Valuation vs. Ten Year Winning Percentage

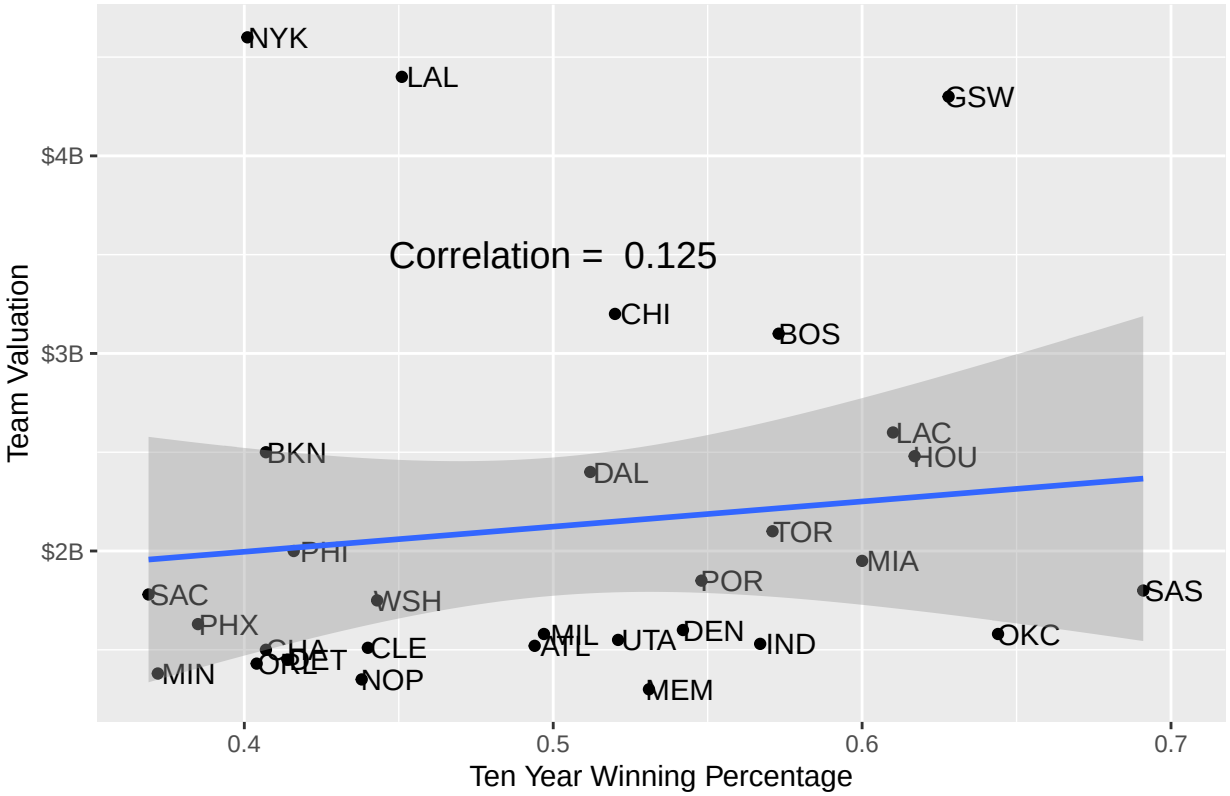


Figure 4: Team Valuations

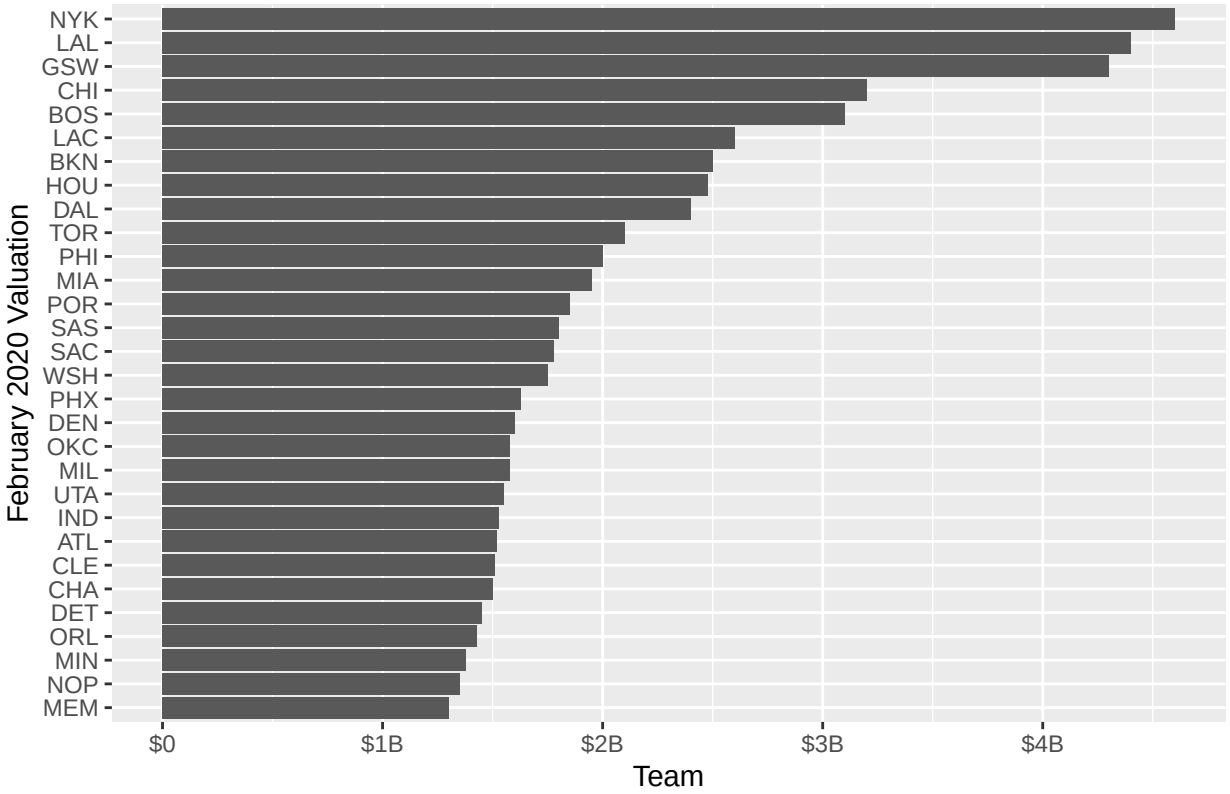
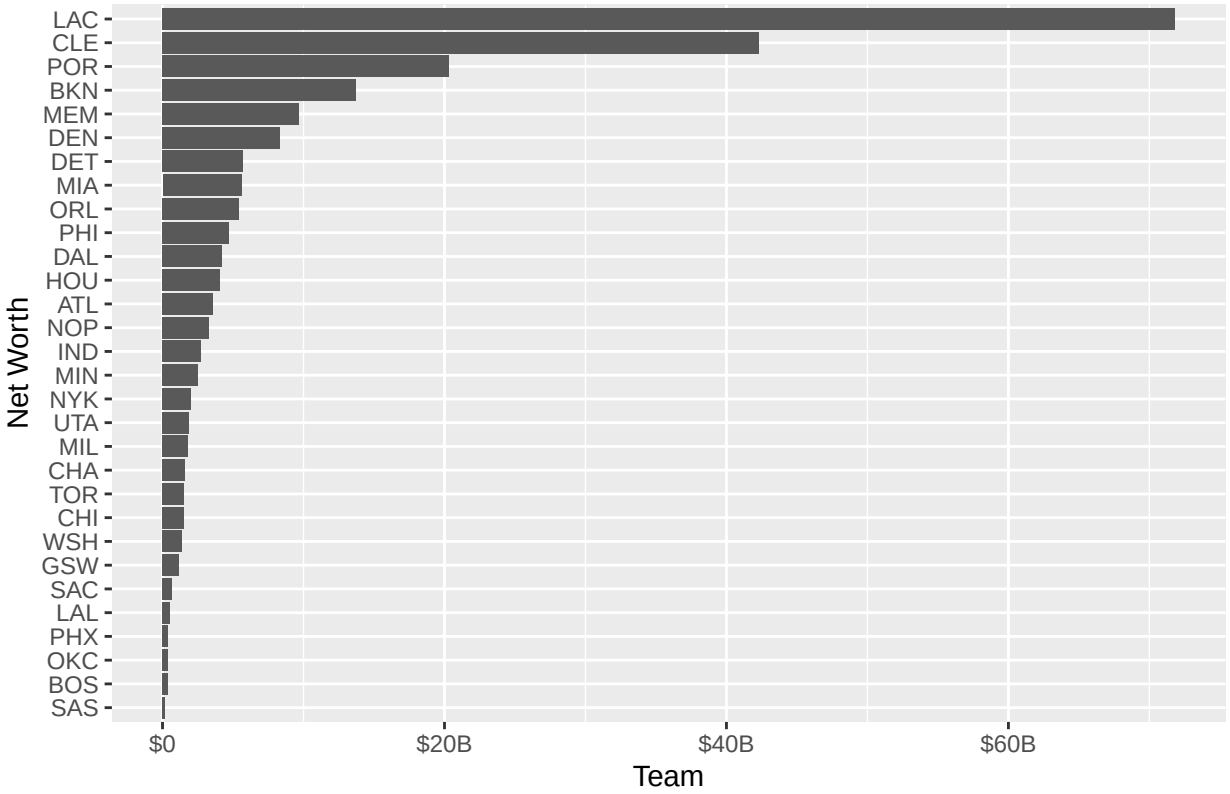


Figure 5: Team Majority Owner's Net Worth



Code

```
knitr::opts_chunk$set(echo = FALSE)
library(tidyverse)
library(ggplot2)
library(gt)

# Reading in the data
nbainfo <- read_csv("nbainfo.csv",
                    col_type = cols(team = col_character(),
                                    "1920winpct" = col_number(),
                                    winpctrank = col_number(),
                                    "1920ortg" = col_number(),
                                    ortgrank = col_number(),
                                    "1920drtg" = col_number(),
                                     drtgrank = col_number(),
                                    "1920nrtg" = col_number(),
                                     nrtgrank = col_number(),
                                    "1920pace" = col_number(),
                                     pacerank = col_number(),
                                    gtcontracts = col_number(),
                                    po_ngs = col_number(),
                                    avgage = col_number(),
                                    medage = col_number(),
                                    avgexp = col_number(),
                                    medexp = col_number(),
                                    "2021projsalary" = col_number(),
                                    "2021projcapspace" = col_number(),
                                    "2021projexceptions" = col_character(),
                                    tenyrwin = col_number(),
                                    tenyrloss = col_number(),
                                    tenyrwinpct = col_number(),
                                    winpctrank_10 = col_number(),
                                    playoffpct = col_number(),
                                    principal_owner = col_character(),
                                    nw = col_number(),
                                    owned_since = col_number(),
                                    business = col_character(),
                                    other_owners = col_character(),
                                    valuation = col_number(),
                                    percent_change = col_number(),
                                    debt_to_value = col_number(),
                                    revenue = col_number(),
                                    operating_income = col_number())) %>%
  rename_with(~ str_replace(.x, "1920", "current")) %>%
  rename_with(~ str_replace(.x, "2021", "future")) %>%
  slice(1:30) %>%
  subset(select = -futureprojcapspace)

playercontracts <- read_csv("bbrefcontractdata.csv", col_type = cols(
  playername = col_character(),
  playerid = col_character(),
  team = col_character(),
```

```
  salary1920 = col_double(),
  salary2021 = col_double(),
  salary2122 = col_double(),
  salary2223 = col_double(),
  salary2324 = col_double(),
  salary2425 = col_double(),
  signedusing = col_character(),
  guaranteed = col_double()
))

playercontracts_modified <- playercontracts %>%
  filter(salary2021 >= 20000000) %>%
  arrange(desc(salary2021))

tibble(subject = c("2019-2020 Season",
                   "Projection for Next Season With No Fans"),
       ynear = c("$8B", "$4.8B"),
       yfar = c("$4B", "$2.4B"),
       ydiff = c("$4B", "$2.4B")) %>%

    # table setup
    gt() %>%
    cols_label(subject = "BRI",
               ynear = "Total",
               yfar = "Players",
               ydiff = "Owners") %>%
    tab_style(cell_borders(sides = "right"),
              location = cells_body(columns = vars(subject))) %>%
    tab_style(cell_text(weight = "bold"),
              location = cells_body(columns = vars(subject))) %>%
    cols_align(align = "center", columns = TRUE) %>%
    fmt_markdown(columns = TRUE) %>%
    tab_header(title = "Figure 1: Potential BRI Drop in 2020-2021 Season",
               subtitle = "Commisssioner Adam Silver projects ticket sales
               comprise 40% of BRI")
# Some cool graphs

nbainfo %>%
ggplot(aes(x = currentwinpct, y = valuation, label = team)) +
  geom_point() +
  stat_smooth(formula = y ~ x, method = "lm", se = TRUE) +
  geom_text(nudge_x = 0.02) +
  annotate(x=0.5, y=3.5, label=paste("Correlation = ",
                                     round(cor(nbainfo$currentwinpct,
                                               nbainfo$valuation), 3)),
           geom="text", size=5) +
  labs(title = "Figure 2: Team Valuation vs. 2019-2020 Winning Percentage",
       x = "2019-2020 Winning Percentage", y = "Team Valuation") +
  scale_y_continuous(breaks = c(0, 1, 2, 3, 4),
                     labels = c("$0", "$1B", "$2B", "$3B", "$4B"))

nbainfo %>%
ggplot(aes(x = tenyrwinpct, y = valuation, label = team)) +
```

```
  geom_point() +
  geom_text(nudge_x = 0.01) +
  stat_smooth(formula = y ~ x, method = "lm", se = TRUE) +
  annotate(x=0.5, y=3.5, label=paste("Correlation = ",
                                     round(cor(nbainfo$tenyrwinpct,
                                               nbainfo$valuation), 3)),
           geom="text", size=5) +
  labs(title = "Figure 3: Team Valuation vs. Ten Year Winning Percentage",
       x = "Ten Year Winning Percentage", y = "Team Valuation") +
  scale_y_continuous(breaks = c(0, 1, 2, 3, 4),
                     labels = c("$0", "$1B", "$2B", "$3B", "$4B"))

nbainfo %>%
  ggplot(aes(x = fct_reorder(team, valuation), y = valuation)) +
    geom_col() +
    coord_flip() +
    labs(title = "Figure 4: Team Valuations", x = "February 2020 Valuation",
         y = "Team") +
    scale_y_continuous(breaks = c(0, 1, 2, 3, 4),
                       labels = c("$0", "$1B", "$2B", "$3B", "$4B"))

nbainfo %>%
  ggplot(aes(x = fct_reorder(team, nw), y = nw)) +
    geom_col() +
    coord_flip() +
    labs(title = "Figure 5: Team Majority Owner's Net Worth", x = "Net Worth",
         y = "Team") +
    scale_y_continuous(breaks = c(0, 20, 40, 60, 80),
                       labels = c("$0", "$20B", "$40B", "$60B", "$80B"))
```