

The Economic Impact of WWI on Major League Baseball

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Abstract

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JEL Classification Codes: L83, N42, Z21

Key Words: Baseball, Economic History, World War I

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Introduction

World War I began on July 28, 1914 with a declaration of war by Austria-Hungary against Serbia and quickly escalated to involve much of the world. Though tensions had been rising in Europe for some time, the assassination of Archduke Ferdinand in June of 1914 is often cited as the event that triggered the onset of the actual conflict. Active hostilities ended with a ceasefire on November 11, 1918, but the war did not formally end until the Treaty at Versailles in June of 1919. The Great War occurred at a time when the prevailing sentiment in the United States towards foreign affairs was more isolationist than active (Woodrow Wilson's 1916 campaign slogan was "He Kept Us Out of War"). Despite this desire to remain out of the conflict, the U.S. was eventually pulled into the war by the resumption of unrestricted submarine attacks by the Germans on February 1st 1917.² Thus, the U.S. involvement as a major combatant was limited to approximately 22 months, from early 1917 to the Armistice.

Though the United States was slow to enter the war, ultimately over 4.7 million U.S. soldiers participated and as a result, the impact of the United States' involvement in was profound both at abroad and at home. Abroad, the U.S. helped to turn the tide decisively in favor of the Allied forces. At home, the country was forced to transition quickly from peacetime to a wartime economy. This transition had a dramatic impact on consumer demand as well as the labor supply in every major U.S. industry, including both major league and minor league baseball, as players joined the services to fight and were pressed into service in industries such as shipbuilding and steel making.

² "Unrestricted submarine Warfare," *The History Learning Site*, at http://www.historylearningsite.co.uk/unrestricted_submarine_warfare.htm. Accessed June 11, 2012.

The purpose of this paper is to analyze the impact of World War I on professional baseball. The potential impacts of the war on the baseball market are of interest as a massive though short-lived shock to the broader economy, consumer disposable income and labor force (i.e. the supply of players). The impact of the war is perhaps of even greater interest given its place on the timeline of baseball history because it occurred immediately between two of the most significant events in baseball history: The challenge of the Federal League in 1914-15 and the Black Sox scandal of 1919. The paper contributes to economists' understanding of both the economic history of this tumultuous period as well as the early history of baseball.

Given the magnitude of the impact on the baseball industry, it is surprising that it has attracted so little research attention. An extensive written record of influence of the war on baseball exists in the popular press, in publications such as the *Sporting News* and major newspapers. These stories cover a wide variety of war related events, such as the appearance of baseball players in industrial leagues in late 1918 and the activities of the National Commission. Within the academic literature, there are a few examples of work on baseball and the war. Wakefield (1997), for example, focuses primarily on the spread of baseball culture to Europe, i.e. the "exporting" of baseball to Europe by troops who played the sport while stationed there – at times with equipment subsidized by Major League Baseball. Seymour's (1971) well known book *Baseball: The Golden Age* discusses the topic at some length. Though he was not an economist, Seymour does discuss the impact of the war on the economics of the league.

In this paper, I find that there are three primary areas of impact of the war on the baseball industry: Decreases in attendance and revenue that reduced profits; the loss of a reliable source of labor supply as players were ultimately mandated to either "work or fight"; and changes to competitive balance.

The remainder of this section describes the historical context of the war, most notably the immediately preceding impact of the conflict with the Federal League and the early response of the baseball owners and the National Commission to the looming challenge of the 1918 season. The remainder of the paper is divided into three main sections that cover each of the primary areas of impact: Decreases in attendance and revenue, disruption in the labor supply, and changes to competitive balance. A conclusion follows.

Historical context

As the United States entered the second decade of the twentieth century, Major League Baseball was truly the national pastime. The NFL and NBA were many years from the start of play, and though professional football and basketball did exist (in football, the New York Pro Football League and the Ohio League, and in basketball, the National Basketball League and others) they were not on minds of most Americans. Professional ice hockey was in its infancy and for all but those residents of the northern-most U.S. cities, not a preoccupation of any sort. In contrast, there were sixteen major league baseball teams, eight in the American and eight in the National League as well as dozens of minor leagues teams playing in leagues such as the Pacific Coast League and the New International League. Major League Baseball was led by a three person National Commission, including Ban Johnson, founder and president of the American League (AL), John Tener, president of the National League (NL), and August "Garry" Herrmann. Herrmann was head of the National Commission and also president of the Cincinnati Reds, in which he held part ownership.

With no television, teams relied almost exclusively on attendance related revenue (sales of tickets, programs, and concessions). Stadiums were unlit and Sunday baseball was a rarity. Given baseball's stature at the time, it is no surprise that *The Sporting News* typically referred to team owners and league presidents as the "magnates of baseball". As would become all too apparent in the coming

years, gambling among both fans and players was a major concern. As evidence of this, among the Herrmann papers are extensive notes from private detectives hired by Herrmann's club to follow Reds players and report on their activity as well as to report on suspicious activity in the stands.

In 1914 and 1915, the American and National Leagues faced the last meaningful challenge to their position as both monopolist and monopsonist in major league professional baseball from the Federal League. It was this challenge from the Federal League that ultimately led to the antitrust exemption granted by the Supreme Court in 1922. Although the Federal League ultimately failed, the victory came at great expense to the organized leagues, as attendance fell markedly and NL and AL teams were forced to more than double player salaries because Federal League owners did not respect the reserve lists of the AL and NL. Zimbalist (1992) reports that salaries increased from an average of \$1,200 in 1914 to \$2,800 in 1915. The failure of the Federal League restored the monopsony power of the NL and AL owners, who subsequently cut player salaries in 1916. An early iteration of the players' association, The Fraternity of Professional Baseball Players threatened a player strike in 1917, although according to Seymour the players' key issues were related to the treatment of minor league players. The strike was initially supported by a large number of players, but no work stoppage actually occurred and the owner's power was solidified (Seymour, 1971).

Baseball's early response to the war

Because the early response of the U.S. to the war was to stay uninvolved, there were no large scale impacts on organized baseball in 1915 and 1916. Though the 1917 season was also played in its entirety, the impact of the war was apparent at the box office and on the roster sheet. A military draft was instituted in June of 1917, raising the owners' concern that they may lose control over their labor supply. Ban Johnson was reported in the *Pittsburgh Dispatch* to have suggested that 288 baseball players be exempted from the draft (18 players per team). In part, he stated, "Neither the American

nor the National League could hope to keep up the usual high standard of the game...if some of the clubs were riddled through the draft and other teams composed of older and, perhaps, married men untouched” (Davies, date unknown). Tener publicly denounced the idea that players should be exempt and threatened to resign if the owners endorsed Johnson’s plan, calling it unpatriotic. Johnson later changed his position. A November 22 newspaper article states that Johnson “realizes his mistake” and “somewhat changed his phraseology” (“Tener Wants No Draft Favoritism,” 1917).³ Charles Comisky of the White Sox was reported as being opposed to any sort of special favors, referring to the availability of players over and under the draft age (“Comisky Declares...,” *Chicago Herald*, November 27, 1917). When the 1917 season ended, the owners were well aware of the coming challenges in 1918. As early as October of 1917, the *Sporting News* reported that the owners were considering a shortened season for 1918 (“Everything Favors...” 1917). After initially deciding to play the entire 154 game season at a meeting in December, the owners (having receiving stinging criticism for their insensitivity) formally announced that the 1918 season would be shortened from 154 to 140 games (Seymour, 1971).

As the summer of 1918 wore on and the number of U.S. troops in Europe continued to climb, the primary concern in the baseball industry was whether the players would be subject to the Crowder regulations (named for Provost Major General Enoch Crowder). As discussed in detail in section IV, the Crowder regulations, commonly known as the “work-or-fight” order, mandated that all workers in “non-essential” industries to either join the armed services or find work in a war related industry. Based on the scope of these regulations, the owners were rightly concerned that if players were bound by them, the labor supply would be highly compromised.

Other Economic Responses to and impacts of the War

³ Because the Herrmann papers represent an archive of documents preserved from over 100 years ago, full citation information not always available. For example, some newspaper clippings that Herrmann or his staff placed into files do not contain by-lines, dates or in some cases even the name of the newspaper. In all cases, I provide the most complete citation information available.

The National Commission responded in a variety of ways to the war. Some are best characterized as patriotic and supportive, others were much less so. As an example of the former, a letter from the three member National Commission to all clubs requested that teams reschedule “one or more regularly scheduled games between clubs of these respective leagues on certain Sundays to be agreed upon in each of the following cities: New York, Brooklyn, Philadelphia, Boston, Pittsburg (*sic*) and Washington...The entire receipts of all these games less an amount deducted for expenses...shall be turned over to the treasurer of the National Commission and by him to the proper officials of the Army and Navy...for the benefit of dependents left at home” (A. Herrmann, J. Tener and B. Johnson, personal communication⁴, May 25, 1917). More preservationist responses were typically aimed at protecting their markets and labor supply. One of the sorest points of contention was the potential competition and conflict of interest created by reserved players in the military playing for industrial teams. For example, a letter from the National Commission to all clubs stated that voluntary retired players (a status given to players who had entered the military) under reservation by major league clubs may play on a team representing their post, even against National Agreement clubs, but they may not play for minor league clubs against any other minor league clubs (A. Herrmann, J. Tener and B. Johnson, pc, May 13, 1918). On this point, the heads of organized baseball were not alone. In August, 1918 *Baseball Magazine* ran a story titled “A Rising Menace to the National Game,” noting “how certain shipbuilding and steel making corporations, by enticing Major League players to sign slacker contracts, are doing a grave injustice to a patriotic industry” (Lane, 1918).

The war continued to impact Major League Baseball through the 1919 season. The owners again agreed to play a 140 game season rather than the full 154 games. As Seymour (1971) notes, however, attendance was at a record pace, ending at over 6.5 million. And, had the remaining 14 games

⁴ To conserve space, personal communication is abbreviated pc in all remaining references.

been played with the same average attendance, the owners would have benefitted from an additional 650,000 fans.

As all who study the history of baseball know well, no sport in American history has a past that is as long and well documented as baseball. Thus, it is worth noting the data challenges inherent in studying this particular time period. Detailed data on player and team performance are relatively easy to find. Much more challenging to find are data on player salaries, ticket prices, revenue sharing agreements, and a host of other information that analysts of modern baseball take for granted. Beyond reference to previously published work, Data and historical information collected for this paper are primarily from two sources: *Baseball-Reference.com*, which contains attendance data, roster and player data (including very limited information on player salaries; and most importantly, the Herrmann papers, which include some league and team financial records from this period and correspondence to and from Herrmann and others in both his role as president of the Reds and head of the National Commission.

III. Attendance and Revenue Impacts

From the standpoint of the team owners, the loss of attendance due to the decrease in available fans with enough time and disposable income to attend a game served as a major threat to profitability. With almost 5 million Americans overseas and those at home preoccupied with the events of the war, attendance fell sharply.

Before evaluating the attendance impact of the war, it will be useful to get some perspective on the sources of revenue for teams in this era. Table 1 below shows financial data for the Boston National League club (the Boston Rustlers) for 1911, from the team's "Comparative Statement of Receipts and Disbursements for 1910 and 1911" (hereafter "Statement of Account"). As noted in the introduction, the historical record from this era is far from complete, and no such data were available for any team from the 1917 or 1918 season. That said, given that there were no significant changes in how fans

consumed games in the intervening years, we can still learn a great deal about the sources of team revenue. As the table makes clear, virtually all revenue was either directly or indirectly attributable to attendance. The first two rows show revenue from home games as well as away games or “games abroad”. (Note that gate revenue sharing was actively in place during this period of Major League Baseball. The 5% fund is a disbursement from the league and so another form of revenue sharing.) The remainder of the table shows various sources of revenue such as refreshments and score cards, also related to attendance. The exception is Telegraph revenue – the 1911 equivalent of a media contract – for which teams received revenue from Western Union for the right to broadcast scores.⁵ As Table 1 makes clear, team owners could ill-afford a major decrease in attendance, especially immediately on the heels of the Federal League “war”.

[Insert Table 1 about here]

Ticket Prices and Revenue Sharing

Perhaps the most interesting thing about ticket prices in this era is that it appears that they were nearly uniform across teams. Seymour (1971) states that the average ticket price from 1909 to 1916 was 66 cents, and that owners had effectively eliminated 25 cent tickets by 1920 (p.69). During the War, prices per ticket were as follows:

Bleacher: 25 cents

Grandstand: 50 cents

Pavilion: 75 cents

⁵ It is worth noting that the Rustlers were an extremely weak team in 1911 (*Baseball-Reference.com* reports that they finished 44-107, 54 games out of first place). Nevertheless, the sources of revenue would likely be the same for all teams.

Box: \$1.00 (though there is evidence that some teams had seats at \$1.25 and \$1.50)⁶

Though not central to the arguments in this paper, it is noteworthy that while the agreements have grown in complexity over time, revenue sharing has existed for more than 100 years. The Rustlers Statement of Account indicates that about 39 percent of gate revenue was derived from “games abroad”. And, just as today, team executives debated over the extent to which revenue should be shared and the role of revenue sharing in preserving the game. A letter to Herrmann from Sam Breadon, president of the St. Louis Cardinals, dated December 31, 1924 shows Breadon’s concern over high revenue versus low revenue teams. The letter is a response to Herrmann’s apparent objection to a previously proposed change in the revenue sharing arrangement in which Breadon had suggested that on all seats priced \$1.00 or more, the visiting team would receive an additional 10 cents. Breadon reiterates his position, noting that Herrmann must have misunderstood his original point because the Reds would be a primary beneficiary of the new arrangement. He then continues, citing his reasons for the suggested change:

“Aside from the fact that the second division clubs make little or no money under the present arrangement it is necessary to the large cities and the stronger clubs to keep the smaller cities and the poorer clubs strong. Under the present conditions of high salaries...the second division clubs can’t make money and thus it is impossible for them to strengthen for the next year’s race. This will mean in time that three or four clubs will overshadow the others and consequently the public will lose interest in baseball” (S. Breadon, pc, December 31, 1924)

Attendance and Profits

⁶ A Statement of Account in the Herrmann papers appears to show commissions for group sales on the stationery of the *The Cincinnati Exhibition Company* (the Cincinnati Reds) shows tickets priced at \$1.25. Seymour (1971; p.68) also claims that some teams had \$1.50 seats.

While the Federal League was active, attendance in the American and National League suffered badly. Figure 1 shows that total attendance was 6.36 million in 1913, but dropped almost 27 percent to an average of 4.66 million during 1914-15. After the collapse of the Federal League, attendance rebounded sharply to 6.5 million in 1916 over a 154 game schedule. Unfortunately for the owners, the decrease in attendance due to the war was even greater than that of the Federal League challenge. Total attendance fell by over one million fans in 1917 to about 5.1 million, and by an additional two million more to just over 3 million in 1918. In the year immediately following the War (1919) attendance again rebounded to almost exactly what it had been in 1916 despite playing only a 140 game schedule as opposed to the normal 154 game full season played in 1916. As Seymour (1971) notes, had the leagues agreed to play the 154 game schedule and average attendance was maintained for the additional games, attendance would have surpassed 7 million – an all-time record. Thus, for the year in which the impact of the war was greatest, attendance was less than half the total in 1916 or 1919 and only 70 percent of the total for the worst year during the Federal League era.

[Insert Figure 1 about here]

In part, the drop in attendance, particularly in 1918, was surely due to the owners' decision to shorten the season. Though the owners had decided at the outset to reduce the season to 140 games, once the final decision was made on the Crowder regulations and players were subject to the "work or fight" order, the season was further shortened and teams averaged just 126 games. As Figure 2 shows, the shortened season was only responsible for part of the decline in attendance. Even at the per-game level, attendance in 1918 was by far the worst in the ten-year period from 1913 through 1922, most notably including the Federal League years (3,013 in 1918 versus 3,536 in 1914).

[Insert Figure 2 about here]

Some portion of the decline in attendance was also likely due to the imposition of a ten percent tax on amusements that was applied to all tickets. While the members of the National Commission and the owners were no doubt unhappy with the imposition of the tax, they did comply. Even among those in the government, there was some disappointment at having to levy the tax. Nicholas Longworth of the House Ways and Means Committee acknowledges in a letter to Herrmann that this may not be wise method of taxation, but adds “we are literally at our wits’ end for money. While no doubt such a tax will result in some diminishing of attendance in theatres, movie shows and baseball games and the like, I don’t believe in the long run that it will be very harmful” (N. Longworth, pc, May 17, 1917).

The Herrmann papers contain a significant flow of correspondence related to the tax, how it will be applied to season passes, children and orphans and most notably, the issue of rounding and the need to have a large volume of pennies on hand to make change. A ten percent tax on a 25 cent ticket would mean a final price of 27.5 cents. Fifty cent and one dollar seats were not problematic as they round to even 5 cent increments. A 75 cent seat becomes 82.5 cents. In the end, ticket prices were rounded up to 30 cents for a 25 cent ticket and 85 cents for a 75 cent ticket and as a result consumers paid more than 10 percent on these two ticket types. While there is no way to partial out the effect of the tax on attendance in the midst of all of the other changes that were happening at the time, it no doubt contributed to the decline in attendance as Longworth suggested. The impact on revenue is also difficult to isolate as it depends on the elasticity of demand for attendance.

Profits

Most important to owners of course, was the impact of this decrease in attendance on profitability. No records exist in the Herrmann papers regarding the profits of any team in the league during the war era (or immediately before or after). Thus we can only infer from the attendance and revenue data available what might have been behind the owners’ decision to shorten the season. As

discussed in detail below, the loss of a reliable labor supply in the wake of the Crowder regulations is perhaps the most obvious candidate. Seymour (1971), however, makes clear that the government at no time asked baseball to cease play and in fact, President Wilson suggested that there was no reason to do so. He goes on to argue that owners made the decision to shorten the season further and suspend play after 128 games for a different reason: to avoid losses. "The truth is that big-league owners chose to shut down early because of dwindling gate receipts" (p. 252). Using data from Table 1 to estimate the returns to attendance along with attendance data from *Baseball-reference.com*, it is possible to estimate the extent to which this may have been a driving force in the owners' decision to end the season early.

In 1911, the Rustlers earned \$103,809.07 from tickets, concessions and score cards on 116,000 home attendees, or an average of 89.5 cents per attendee. They also earned \$64,680.66 from away 78 games. Assuming that the average attendance of these 78 games was equal to the average home attendance of the other seven national league teams for that year (5,690) they would have earned their away gate revenue from 443,820 fans, which amounts to an average of 14.6 cents per away attendee.

In 1918, ticket prices were roughly equal – marginally higher due to the rounding up to avoid pennies with the ticket tax included as discussed above. Thus, if we assume that the proportion of seats filled of each type is the same across the league in 1918 as for the Rustlers in 1911, we can estimate the revenue from attendance using the 89.5 cent and 14.6 cent per fan values. Table 2 shows for each team in the AL and NL, the loss of gate revenue assuming 126 games versus 140 games and the original full schedule of 156 games. In each case, revenue is estimated in the following way:

$$\text{Revenue} = .895 * \text{Ave.Att.} + .146 * \text{AveAway}$$

where AveAway is the average attendance of the other seven teams in the league. The revenue lost based on a 156 game schedule is for illustrative purposes only, as the relevant decision facing owners

was to play the last 14 games of a 140 game schedule or end the season after 126. The RevLoss140 column shows that American League teams on average stood to lose substantially more revenue than National League teams due to their higher average attendance. The average AL team lost about \$24,500 in revenue while the average NL team lost about \$19,300. All American League teams stood to lose at least \$18,000, while in the NL, high revenue teams (the Cubs and Giants) had losses of over \$30,000, while low revenue teams (The Cardinals and the Robins⁷) likely lost just over less than \$13,000. Again with slight increases in ticket prices, these revenues are likely a lower bound estimate.

[Insert Table 2 about here]

Decreased revenue, however, does not necessarily mean decreased profit. If, as Seymour implies, teams saved money by shutting down early, the cost savings would have to eclipse the revenue loss. No detailed cost data are available from this season but data from the 1911 Rustlers Statement of Account indicates that other than shares paid to visiting clubs which are accounted for above, approximately 43 percent of costs were player salaries and most of the remaining costs were almost certainly sunk and would not be saved by shortening the season. The primary exceptions would be transportation and hotels and baggage.

When the season ended early, Steinberg (2008) notes that the owners essentially had their cake and ate it too by releasing the players (and so avoiding the cost of paying them), but also agreeing to honor one another's reserve lists (maintaining their full monopsony power). Seymour (1971) estimates that releasing the players saved the owners an average of \$12,500 per team (p.253). Using the limited salary data available from *Baseball-Reference.com* for 1918 (n=22, which is about equal to one roster) yields a similar result. The total salary of the 22 players is \$156,200. Based on this figure, releasing the players from the last 10% of the schedule, owners saved \$15, 620. Based on the data from the Rustlers

⁷ The Brooklyn Dodgers changed their nickname to the Robins from 1914 to 1931 while Wlibert Robinson was the field manager ("Brooklyn Robins," at <http://www.brooklynrobins.com/>)

Statement of Account, ten percent of baggage and transportation would have been approximately \$1,500 at 1911 prices. This is surely an underestimate of the 1918 figure, as train fares had increased markedly due to the war (Steinberg (2008) states the National Railroad Board had doubled train fares). Assuming a similar increase in baggage fees, the savings in variable costs would have been about \$3,000 per team plus the savings to salaries. Depending on which salary estimate we use, total savings were between about \$15-\$18 thousand dollars. Based on these figures, the average National League team came out about even after cancelling the games and in the American League the savings are less than the foregone revenue for all teams. This analysis sheds additional light on Seymour's conclusion that shutting down early was profit maximizing. While for low revenue teams, this was very likely the case, it is unlikely that high revenue teams benefitted from the shutdown. However, the revenue from attendance estimates here assume that attendance would have continued at the average rate for the remainder of the season. If attendance was dwindling as Seymour suggests, revenues would have been lower. Without accurate game by game figures, there is no way to know. It is also worth noting that I found no evidence in the Herrmann papers (which contain numerous pieces of confidential correspondence between Herrmann and other club presidents) that anyone on the National Commission or among the club presidents wanted to shut the season down early.

In summary, the war greatly reduced the demand for attendance. Both total attendance and attendance per game fell dramatically, particularly in 1918. All teams were undoubtedly made worse off by the war, due to the shortened season and reduced per game attendance. This reduction in profits appears to have exacerbated by prematurely ending the season in the wake of the final ruling on the Crowder regulations, as revenue losses from the cancellation of the last 14 games appear to have been greater than cost savings for most teams. In the next section, I discuss disruptions in supply of the owners' key input: playing talent.

IV. Disruption in Labor Supply

Risks for the owners were not limited to the demand side. On the supply side, owners had to contend with the potential loss of their most vital input: players. As the U.S. combat role grew over the course of 1917, the armed forces moved from an all-volunteer army to a draft in June. Table 3 shows the number of players who were drafted and volunteered as of October, 1917 (i.e. as of the end of the season). The losses were substantial. On average, from each teams reserve list of about 35 players, close to ten were in the service. The loss of reserved players was much worse in the American League where teams lost on average more than one-third of their players, compared to 24 percent in the National League.⁸ An Article from the *Pittsburgh Post*, from November 20, 1917 notes that previously granted exemptions for players have been withdrawn and as a result, “about 90 percent of the players whose names now appear on the reserve lists of the two big leagues are again subject to the call to arms.” (“National League...,” 1917). Pittsburgh club president Barney Dreyfuss reacted strongly to the *Post* article in a letter to Tener advocating a meeting of club owners to discuss options (B. Dreyfuss, pc, n.d.). Tables 4 and 5 show the average roster turnover compiled from rosters listed on *Baseball-Reference.com*. The table shows the percentage of players on a given year’s roster that were on the roster the previous year. Turnover increased in both 1918 and 1919, particularly in the American League in 1918, where the proportion of returning players falls from .71 in 1917 to .47 in 1918 and .45 in 1919. Turnover in the National League increased to more than half the roster on average as well, though the proportion of returning players was already relatively low in 1917 (.58).

[Insert Table 3 about here]

[Insert Table 4 about here]

⁸ While there is no way to know, the difference in player losses across leagues may have been a contributing factor to the varying positions of Johnson and Tener on whether players should be exempt from the draft.

[Insert Table 5 about here]

While the loss of close to 30 percent of the players would be a heavy blow under any circumstances, two factors combined to make matters worse as the 1918 season began. The first was that the most ready source of substitute talent, the minor leagues, was suffering the same problem. Thus, teams could only reliably restock their rosters with players who were either under 21 or over 31 (and so not subject to the draft). The second problem was that war required more than soldiers on the ground in Europe. Steinberg (2008) noted that “A close look at the lineups during that month of severe labor shortages reveals a fascinating amalgam of regulars, aged veterans, and marginal players in big league box scores.” The data in Table 6 support Steinberg’s claim. Table 6a shows that the average age of American League batters increased by more than one year between 1917 and 1918 from 25.9 to 27.0, while the average age of AL pitchers increased by just under one year from 25.7 to 26.8. In the National League, the changes were negligible. More important than the average age is the standard deviation of ages. If teams filled out their rosters with both older and younger players, we would expect to see an increase in the variability of ages. The data in Table 6b bear this out, as the standard deviation jumps dramatically for AL players between 1917 and 1918. Again the change is present but much smaller in the National League. The difference in impact across leagues is consistent with the differences in the number of players in service and roster turnover described in Tables 3 through 5.

[Insert Table 6 about here]

At home, increases in “essential industry” production, including the production of armaments, steelmaking and shipbuilding, meant a shortage of labor in those industries as well. In response, Major General Enoch Crowder issued what became known as the Crowder regulations, or more commonly, the “work-or-fight” order in May, 31 1918. These regulations stipulated that all able bodied men working in non-essential industries, such as saloon keepers, elevator operators, and others were required to leave

their current positions and find work in an essential industry. In a letter from Herrmann to John Heydler, Secretary of the National League, Herrmann quotes the portion of the Crowder regulations that pertain to baseball (section 121-k(c)): "Persons including ushers and those in attendance or occupied in any connection with games, sports, and amusements excepting actual performers in legitimate concerts, operas and theatrical performances" (A. Herrmann, pc, June 13, 1918).

Baseball owners and members of the National Commission were surprised and outraged to find that baseball players were classified as "non-essential" and so subject to the order. The owners, especially provoked by the fact that actors were exempt from the order due to the morale boosting nature of their occupations, promptly appealed. The owners appeal rested on three pillars. The first was that organized baseball was already doing its part to support the war through the collection of the ten percent tax on admissions. Second, the owners argued that their industry had already borne a heavy burden in terms of loss of workers (players). In fact, the data from Table 3 were collected by the National Commission in part as part of the appeal to show the large percentage of their labor force that was already taking part in the war. (Of course, the reason that losses were so high in baseball is that the game is played by relatively young men – exactly the group that was most heavily involved the war.) Finally, the owners strongly believed that to discontinue baseball would have devastating morale effects both at home and abroad with the troops (Seymour, 1971). As evidence, they noted that cricket had for a time been suspended in England, but resumed on the grounds that it boosted morale. Correspondence among various club presidents and league officials in the Herrmann papers indicate that the National Commission went to great lengths to prepare and present their case. Given the exemption for actors and other entertainers, it seemed that baseball had not only reason for optimism, but a compelling reason to argue their case.

Herrmann wrote to Tener and Johnson, “It is manifestly unjust to ball players...to withhold from them the recognition and exemption accorded performers in...theatrical performances” (A. Herrmann, pc, June 14, 1918). In their appeal, they also argued in several documents in the Herrmann papers that the baseball industry was already contributing to the war effort as it generated substantial tax revenue through the ten percent war tax on amusements and the Liberty bond drives held at stadiums, as well as the donation of use of the grounds for patriotic events. Pittsburgh President Barney Dreyfuss was perhaps the most outspoken in opposition to requiring players to serve in the military (especially since actors were not required to do so). He wrote numerous letters and telegrams to Herrmann in May of 1918, noting a May 27 telegram that players would comprise “barely a regiment” but would take away from the diversion of thousands (B. Dreyfuss, pc, May 27, 1918). On July 1, 1918, Crowder issued his decision on the appeal: that players were non-essential and along with saloonkeepers, clerks, elevator operators, were ruled non-exempt (“Non-Essential Work Named...”, n.d.). This was a devastating blow to baseball. Table 7 shows the potential losses under the Crowder regulations as compiled by the National Commission. Most teams would suffer roster losses greater than 80 percent. And, as Seymour (1971) notes, their usual source of substitute labor was unavailable: “out of the nine lower leagues that started the 1918 season, only one finished it.” (p.252).

[Insert Table 7 about here]

Following the July 1 ruling, Washington Senators owner Griffith Clark staged one final appeal through their catcher, Eddie Ainsmith. Seymour (1971) wrote that this appeal was based on three arguments: that baseball’s investments and property would be rendered temporarily worthless because it could not be used for other purposes, that baseball players lacked the skill to enter other occupations without significant loss of earnings, and that it was the national sport, providing valuable outdoor recreation to many (p.249). Secretary of War Baker denied the appeal. The *Cincinnati Enquirer* reported

in their July 20, 1918 edition that the initial ruling would stand: baseball was non-essential (“Secretary of War..., 1918).

The owners did receive some good news when Baker granted extensions for players through September 1 to allow them to complete the season (or nearly so). Not every team played through the holiday weekend however, as some players had already lined up essential industry employment and did not want to miss the start of work on Tuesday (Seymour, 1971). On July 29, the members of the National Commission made another appeal to the War Department, that the two teams playing in the World Series be granted an additional exemption such that the series might be played beginning on September 3. The appeal was approved and the series played.

There is no way to know for certain what the National Commission and the owners would have done had the Armistice not occurred. It seems extremely unlikely given the data in Table 5 that the 1919 season could have been played at all. Had the 1919 season been cancelled in its entirety, the Black Sox scandal would have at least been delayed.

V. Competitive Balance Effects

The large turnover in rosters during 1917 and 1918 may have led to changes in the relative strength of teams and within-season competitive balance. Additionally, changes in relative team quality across the war year seasons (i.e. between-seasons) may have occurred with or without changes to the within-season standard deviation of winning percentages. Table 8 shows the within-season standard

deviation, ideal standard deviation, and the ratio of the actual to the ideal.⁹ It is interesting to note that competitive balance improved in both leagues in 1918 – though more markedly so in the American League where the ratio of actual to ideal fell by 32 percent (compared to a 14 percent decline in the National League). As soon as the war ended, the level of dispersion increased quite dramatically in both Leagues. Thus, the loss of players to the war appears to have had a leveling effect on competition.¹⁰

[Insert Table 8 about here]

The data in Table 3 indicate that roster losses were not evenly spread across teams. Within the American league, losses ranged from a low of 7 players (Yankees and Browns) to a high of 16 players (Red sox). In the National League, roster losses ranged were lower in general, but with similar variability. While the Reds lost only 2 players, the Braves and the Robins lost 10 each. Table 9 shows the final standings as of the end of the 1916 – 1918 seasons, as well as the number of players in the armed forces as reported in Table 3 and the change in rank order finish for the teams across the three seasons. In general, the results do not show a relationship between the number of players in the service and the fortunes of the team. In the American League, half the teams maintained the same rank in 1918 as they had in 1916. Among the other four, the two teams that improved their ranking by a total of eight places between them lost almost the same number of players as the two teams who declined by a total of eight places. In the National League, the Reds lost by far the fewest players in all of baseball and also increased their rank order finish more than any other club. The two teams that lost 10 players saw their rank order decline by four each, but the National League team that lost the most players (The Pirates) improved their rank by two positions. Given the limited sample size, it is not possible to say anything more definitive about the impact of player losses on competitive balance. It is possible that

⁹ For a complete explanation of these measures of competitive balance, see Humphries (2002).

¹⁰ Fort and Lee (2005) evaluated a much longer time period (1901 – 1999) and found that competitive balance improved in the NL but was unchanged in the AL in what they refer to as the “Giants” period (1909 – 1918). The results here are not necessarily inconsistent with the Fort and Lee finding as the ratio of actual to idealized standard deviations in Table 8 is lower for the NL is lower for the entire 1915 – 1920 period.

more detailed analysis of roster changes including *who* was in the service (i.e. a measure of player quality or contribution to the team), not just *how many* would be more revealing. As Lee and Fort (2005) note, conducting such an analysis would be extremely challenging if not impossible because it would require game by game roster information.

[Insert Table 9 about here]

VI. Summary

The First World War had a profound impact on major league baseball. Perhaps because it occurred immediately after the challenge of the Federal League, it has not received much attention from economists even though the attendance impacts were substantially greater as was the threat to the labor supply. The analysis here indicates that the attendance drop off caused in part by the decision to prematurely end the season and in part by the ticket tax left the average team at about breakeven for the 1918 season. Had the war continued into 1919, it is unlikely that the season could have been played given the available labor supply. Finally, while competitive balance does appear to have been improved during the war, the duration of the disruption was so short that it likely had no impact on the success of the league. There is great potential for future research on the economic impact of major labor supply disruptions and decreases in demand due to war on Major League Baseball by studying the World War II (WWII) era. Economists could also learn about the impact of war on developing industries by studying the impact of WWII on professional basketball and professional football.

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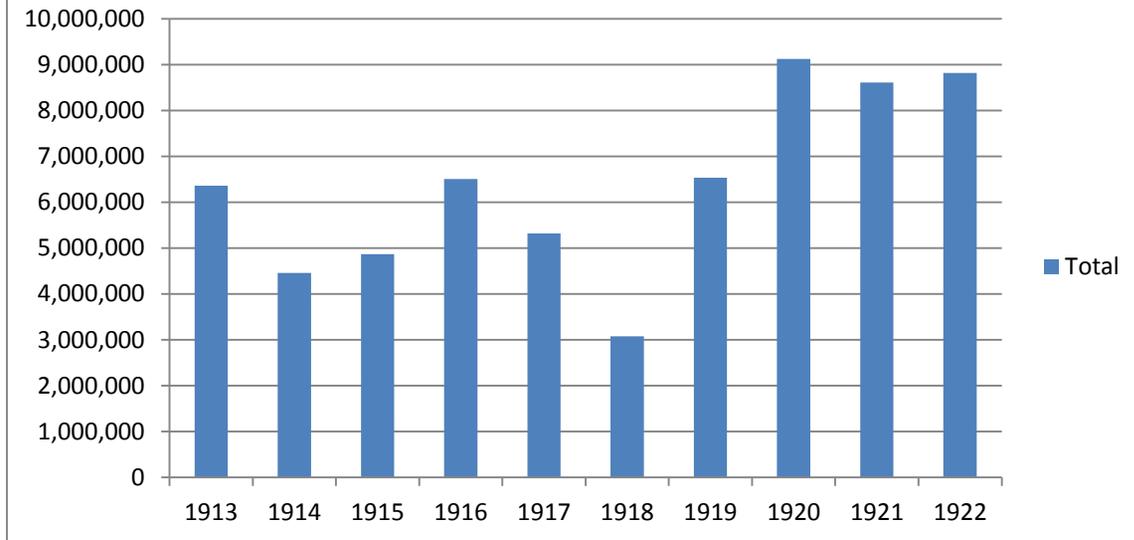
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Table 1. Receipts for the Boston NL club (Rustlers) for 1911

<u>Category</u>	<u>Receipts</u>
Games at Home	\$100,811.20
Games Abroad	64,680.66
Refreshments	1,400.00
Score Cards	1,597.87
Rent of Grounds	125.00
Exhibition Games	650.05
Telegraph (Net)	1,718.45
5% Fund	1,397.84
Total	\$172,381.07

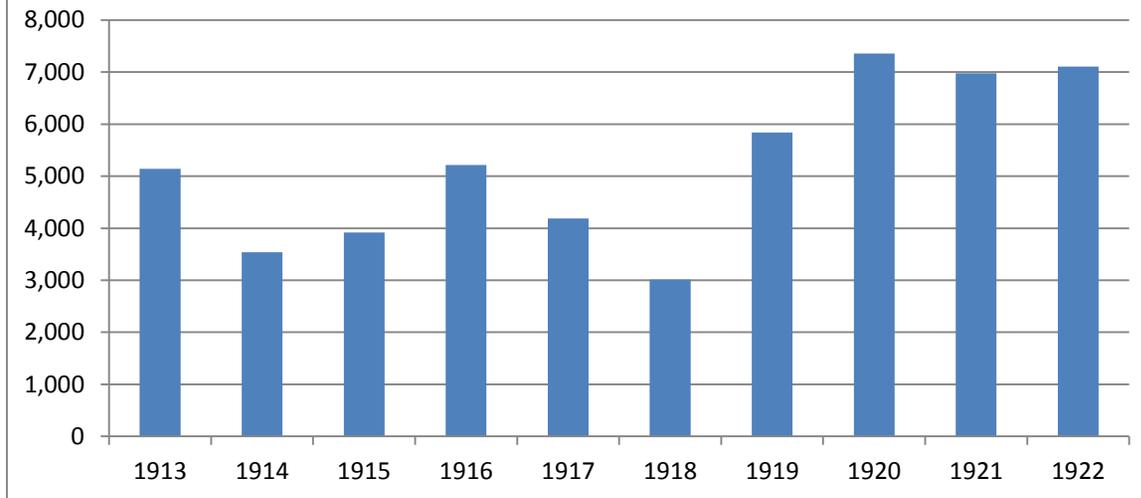
Source: From the personal papers of Garry Herrmann,
A. Bartlett Giamatti Research Center, Baseball Hall of Fame

Figure 1. Total MLB Attendance 1913 - 1922*



*source: Attendance data are from Baseball-Reference.com

**Figure 2. Average Attendance per Game
1913 - 1922***



*Source: Attendance data are from Baseball-Reference.com

Table 2. Revenue Losses from Cancelled Games: 1918

AL Team	Total Att	Ave. Att.	ave. away	home rev	away rev	RevLoss140	RevLoss154
BOS	249513	3564	3336	3190	487	25738	51476
CHW	195081	3484	3348	3118	489	25248	50497
CLE	295515	4766	3164	4266	462	33093	66186
DET	203719	3512	3344	3143	488	25420	50840
NYY	282047	4210	3244	3768	474	29691	59382
PHA	177926	2617	3471	2342	507	19943	39887
SLB	122076	2303	3516	2061	513	18022	36044
<u>WSH</u>	<u>182122</u>	<u>2461</u>	<u>3494</u>	<u>2203</u>	<u>510</u>	<u>18989</u>	<u>37977</u>
Average		3365	3365	\$ 3,011.34	\$ 491.23	\$ 24,518.02	\$ 49,036.04

NL Team	Total Att.	Ave. Att.	ave. away	home rev	away rev	RevLoss140	RevLoss154
BRO	83831	1552	2820	1389	412	12605	25210
BSN	84938	1633	2808	1462	410	13101	26201
CHC	337256	4558	2390	4079	349	30999	61997
CIN	163009	2296	2713	2055	396	17158	34315
NYG	256618	4582	2387	4101	348	31146	62291
PHI	122266	2145	2735	1920	399	16234	32467
PIT	213610	3009	2612	2693	381	21520	43041
<u>STL</u>	<u>110599</u>	<u>1515</u>	<u>2825</u>	<u>1356</u>	<u>412</u>	<u>12379</u>	<u>24757</u>
		2661	2661	\$ 2,381.82	\$ 388.54	\$ 19,392.53	\$ 38,785.05

Source: Author calculations based on attendance data at *Baseball-Reference.com*

Table 3. Players in the Service as of Oct 1917

Team	On reserve*	Volunteered for service	Salary	Drafted into service	salary	Total in service	% in service	
American League								
Chicago White Sox	35	8	16200	2	2200	10	28.57	
Philadelphia A's	32	6	12000	7	14000	13	40.63	
Cleveland Indians	31	5	14700	8	18950	13	41.94	
Wash. Senators	33	4	8700	9	20000	13	39.39	
New York Yankees	35	3	13133	4	7200	7	20.00	
Boston Red Sox	33	14	43800	2	6800	16	48.48	
Detroit Tigers	42	7	16000	6	15000	13	30.95	
St. Louis Browns	33	5	9000	2	5350	7	21.21	33.90
National League								
Phila. Phillies	31	2	6000	3	8500	5	16.13	
Boston Braves	28	8	23200	2	4200	10	35.71	
Cincinnati Reds	30	1	2400	1	2100	2	6.67	
Pittsburgh Pirates	35	8	14700	4	8700	12	34.29	
New York Giants	35	4	5200	3	12500	7	20.00	
St. Louis Cardinals	30	5	11400	2	2300	7	23.33	
Chicago Cubs	35	7	23000	2	6000	9	25.71	
Brooklyn Robins	33	4	10000	6	20000	10	30.30	24.02
Average	35.25	5.69		3.94		9.63	27.30	

Source: Garry Herrmann papers

Table 4. Roster Turnover in the American League: 1915 – 1920.

AL	BOS		DET		CHW		WSH		NYN		SLB		CLE		PHA		average
	Batter	Pitch															
1915	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
1916	0.84	0.70	0.60	0.50	0.43	0.78	0.75	0.69	0.68	0.62	0.38	0.69	0.37	0.29	0.27	0.21	0.55
1917	0.89	0.89	0.68	0.67	0.78	1.00	0.82	0.67	0.68	0.53	0.52	0.89	0.83	0.75	0.33	0.40	0.71
1918	0.20	0.50	0.61	0.41	0.62	0.64	0.56	0.43	0.62	0.53	0.53	0.43	0.45	0.50	0.50	0.06	0.47
1919	0.35	0.31	0.71	0.55	0.86	0.41	0.36	0.39	0.58	0.42	0.50	0.39	0.60	0.33	0.19	0.22	0.45
1920	0.24	0.36	0.65	0.29	0.75	0.60	0.42	0.50	0.72	0.80	0.57	0.50	0.88	0.57	0.58	0.36	0.55
avg	0.50	0.55	0.65	0.48	0.69	0.69	0.58	0.54	0.66	0.58	0.50	0.58	0.63	0.49	0.37	0.25	0.55

Source: Baseball-Reference.com

Table 5. Roster Turnover in the National League: 1915-1920.

AL	BOS		DET		CHW		WSH		NYG		SLB		CLE		PHA		average
	Batter	Pitch															
1915	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
1916	0.84	0.70	0.60	0.50	0.43	0.78	0.75	0.69	0.68	0.62	0.38	0.69	0.37	0.29	0.27	0.21	0.55
1917	0.89	0.89	0.68	0.67	0.78	1.00	0.82	0.67	0.68	0.53	0.52	0.89	0.83	0.75	0.33	0.40	0.71
1918	0.20	0.50	0.61	0.41	0.62	0.64	0.56	0.43	0.62	0.53	0.53	0.43	0.45	0.50	0.50	0.06	0.47
1919	0.35	0.31	0.71	0.55	0.86	0.41	0.36	0.39	0.58	0.42	0.50	0.39	0.60	0.33	0.19	0.22	0.45
1920	0.24	0.36	0.65	0.29	0.75	0.60	0.42	0.50	0.72	0.80	0.57	0.50	0.88	0.57	0.58	0.36	0.55
avg	0.50	0.55	0.65	0.48	0.69	0.69	0.58	0.54	0.66	0.58	0.50	0.58	0.63	0.49	0.37	0.25	0.55

Source: Baseball-Reference.com

Table 6a. Average Player Age by League and Group, 1915 - 1920

Player Group	1915	1916	1917	1918	1919	1920
AL Batters	24.9	25.8	25.9	27.0	27.0	27.0
NL Batters	26.5	27.2	27.2	27.5	27.3	27.3
AL Pitchers	24.7	25.4	25.7	26.6	26.6	26.3
NL Pitchers	25.9	27.0	26.7	26.8	27.2	26.9

Source: Author calculations based on data from *Baseball Reference.com*

Table 6b. Standard Deviation of Player Ages by League and Position, 1915-1920

Player Group	1915	1916	1917	1918	1919	1920
AL Batters	3.72	4.15	3.63	4.44	3.84	3.66
NL Batters	4.18	4.10	3.96	4.20	3.88	3.89
AL Pitchers	3.33	3.52	3.18	3.98	3.71	3.48
NL Pitchers	3.82	4.10	3.52	3.77	4.01	3.66

Source: Author calculations based on data from *Baseball Reference.com*

Table 7. Potential Losses to Roster Under Crowder Regulations.

Team	On roster as of June 15, 1918	Of Draft Age	% Draft Age
American League			
Chicago White Sox	23	21	91.3
Philadelphia Athletics	20	17	85.0
Cleveland Indians	20	15	75.0
Washington Senators	17	11	64.7
New York Yankees	23	20	87.0
Boston Red Sox	18	15	83.3
Detroit Tigers	20	17	85.0
St. Louis Browns	23	19	82.6
National League			
Philadelphia Phillies	18	16	88.9
Boston Braves	22	18	81.8
Cincinnati Reds	17	15	88.2
Pittsburgh Pirates	20	17	85.0
New York Giants	21	11	52.4
St. Louis Cardinals	19	15	78.9
Chicago Cubs	22	19	86.4
Brooklyn Robins	16	12	75.0

Source: Garry Herrmann Papers

Table 8. Standard Deviation of WPCT: 1915 - 1920

Year	G	ideal	American League		National League	
			w/in-season	ratio ($\sigma_{w,t}/\sigma_l$)	w/in-season	ratio ($\sigma_{w,t}/\sigma_l$)
1915	154	.0403	.1313	3.257	.0460	1.142
1916	154	.0403	.1057	2.622	.0909	2.256
1917	154	.0403	.0963	2.389	.0839	2.082
1918	126	.0446	.0650	1.457	.0798	1.789
1919	140	.0422	.1162	2.753	.1088	2.578
1920	154	.0403	.1102	2.734	.0647	1.605

Source: Author calculations based on data from Baseball-Reference.com

Table 9. Changes in Relative Finish Order 1916-1918

American League

<u>Team</u>	<u>Rank</u> <u>'16</u>	<u>Rank</u> <u>'17</u>	<u>Rank</u> <u>'18</u>	<u>Change '16-'18</u>	<u>Players In</u> <u>Service</u>
Red sox	1	2	1	0	16
White Sox	2	1	6	-4	10
Tigers	3	4	7	-4	13
Yankees	4	6	4	0	7
Browns	5	7	5	0	7
Indians	6	3	2	4	13
Senators	7	5	3	4	13
<u>Athletics</u>	<u>8</u>	<u>8</u>	<u>8</u>	<u>0</u>	<u>13</u>

National League

<u>Team</u>	<u>Rank</u> <u>'16</u>	<u>Rank</u> <u>'17</u>	<u>Rank</u> <u>'18</u>	<u>Change '16-'18</u>	<u>Players In</u> <u>Service</u>
Robins	1	7	5	-4	10
Phillies	2	2	6	-4	5
Braves	3	6	7	-4	10
Giants	4	1	2	2	7
Cubs	5	5	1	4	9
Pirates	6	8	4	2	12
Cardinals	7	3	8	-1	7
Reds	8	4	3	5	2

Source: Baseball-Reference.com