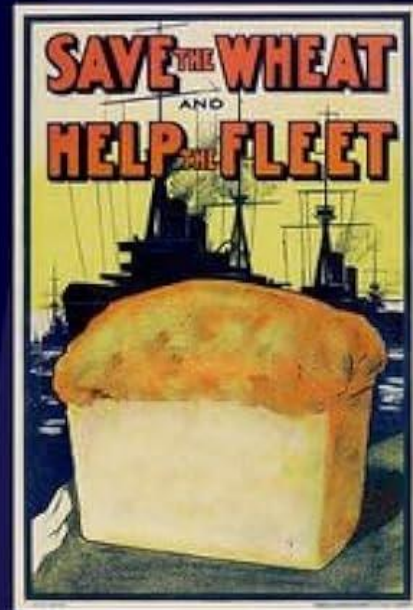




ROSELLA CAPPELLA ZIELINSKI  
AND PAUL POAST



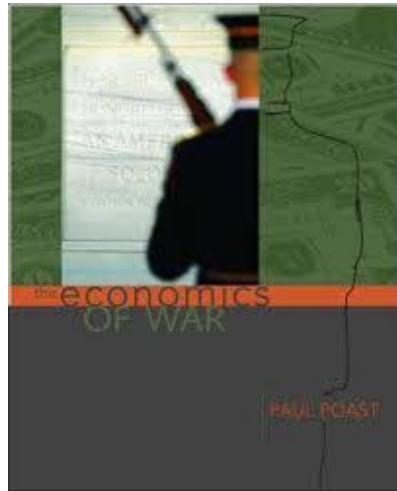
# WHEAT AT WAR

ALLIED ECONOMIC  
COOPERATION  
IN THE GREAT WAR

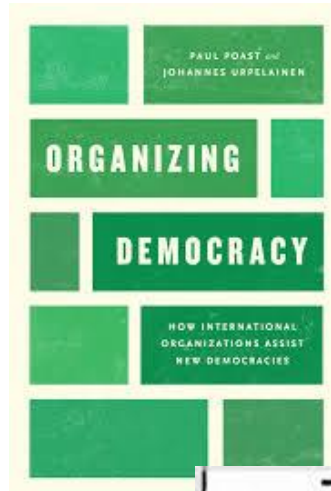
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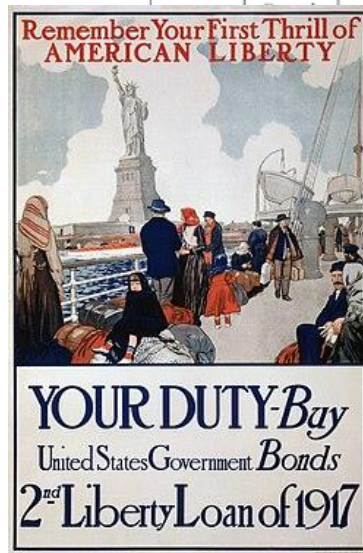
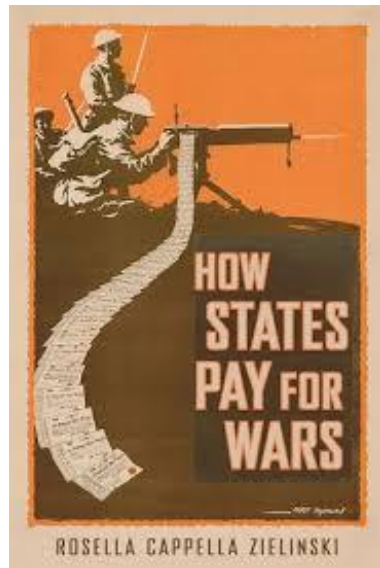
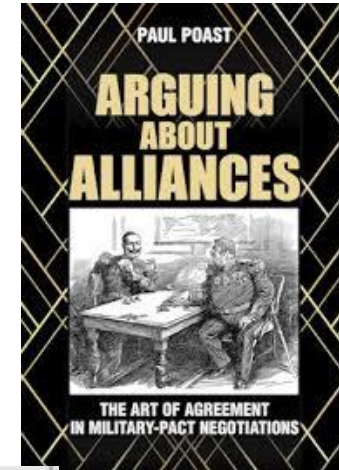
# Origins of the Book



+



+



## LIST OF PURCHASE ORDERS AND CONTRACTS BY THE ORDNANCE DEPARTMENT OF THE

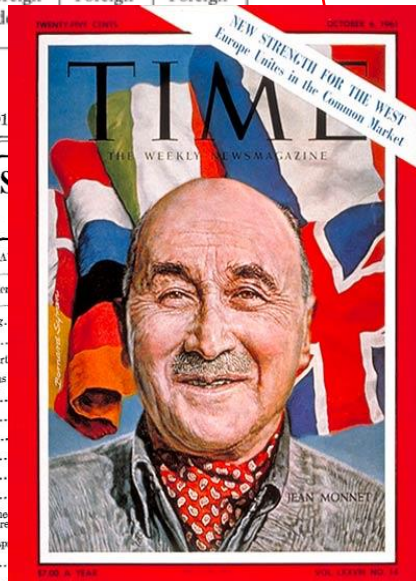
The following contracts have been placed by the Ordnance Department:

MAY 11, 1918.

| Material orders.                     | Firms.                                              |
|--------------------------------------|-----------------------------------------------------|
| Fuses.....                           | International Steel & Ordnance Co., Lowell, Mass.   |
| Photographs.....                     | Harris & Ewing, Washington, D.C.                    |
| Howitzers.....                       | Schneider & C&S, Paris, France.                     |
| Parts for gun sling.....             | Hewes & Potter, Boston, Mass.                       |
| Do.....                              | F. M. Hoyt Shoe Co., Manchester, N. H.              |
| Shovels.....                         | Ames Shovel & Tool Co., Boston, Mass.               |
| Steel stamps.....                    | Frankford Arsenal, Philadelphia, Pa.                |
| Bench hack saws.....                 | Gould-Fratt Co., Greenfield, Mass.                  |
| Steel stamps.....                    | Frankford Arsenal, Philadelphia, Pa.                |
| Stenels.....                         | Commanding officer, New York City, N.Y.             |
| Taps for drivers' seats, trucks..... | Keystone Vehicle Co., Reading, Pa.                  |
| Reservoirs for compressed gas.....   | Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa. |

MAY 11, 1918—Continued.

| Material orders.                    | Firms.                                          |
|-------------------------------------|-------------------------------------------------|
| Machine guns.....                   | Martin Rockwell Corporation, New Haven, Conn.   |
| Aircraft modification.....          | Colt's Patent Fire Arms Co., Hartford, Conn.    |
| Bolts.....                          | Winchester Repeating Arms Co., New Haven, Conn. |
| Machine guns.....                   | Martin Rockwell Corporation, New Haven, Conn.   |
| Ammonia compressors.....            | Triumph Ice Machine Co., Cincinnati, Ohio.      |
| Condensers.....                     | Do.                                             |
| Soda ash.....                       | Isaac Winkler & Bros. Co., Cincinnati, Ohio.    |
| Load, assemble, and pack shell..... | Evans Engineering Corporation, New York, N.Y.   |
| Sash cord.....                      | Samson Cordage Works, Boston, Mass.             |
| Cartridge base.....                 | Riegel Buck Co., New York, N.Y.                 |
| Pieric acid.....                    | Sonnet Solvay Co., Syracuse, N.Y.               |
| Wire levers.....                    | Post-Merriam Co., Meriden, Conn.                |
| Acco fasteners.....                 | S.C. Williams, Washington, D.C.                 |
| Refining crude oil.....             | The Northwestern Iron Co., Milwaukee, Wis.      |
| Pig tin.....                        | American Sheet & Tin Plate Co., New York, N.Y.  |



# Why Wheat and the First World War?

The bloodshed at the Battle of the Somme was immense. French and British forces engaged in a five-month battle against the forces of Imperial Germany with no conclusive result. This battle, along with the German offensive at Verdun, typified the total war engulfing Europe in 1916. While the limits of manpower and steadiness of morale were being tested on the battlefields, the Allied powers of France, Britain, and Italy faced a more fundamental problem: shortages of wheat and shipping. Wheat and shipping were inextricably linked. The Allied countries, now wheat importers, were bidding against each other for wheat purchased in the Americas and freight to ship it to Europe. What was needed was a collective solution whereby wheat purchases were coordinated and scarce tonnage efficiently allocated. Yet, as Jean Monnet, then deputy to French Minister of Commerce Étienne Clémentel, wrote in his memoirs, “Two years after the outbreak of war, however, the question of an Allied transport pool could still not be tackled head on. It was too big a problem: it threatened to raise questions of sovereignty that no one was ready to answer.” He went on to say, “To put an end to this situation [of high wheat prices and shipping shortages] had become vital. To use the opportunity to try out a new method of co-operation had become possible.” The first test case of such a new method of cooperation, he believed, “should be wheat.”<sup>1</sup>

# Motivation



ECSC

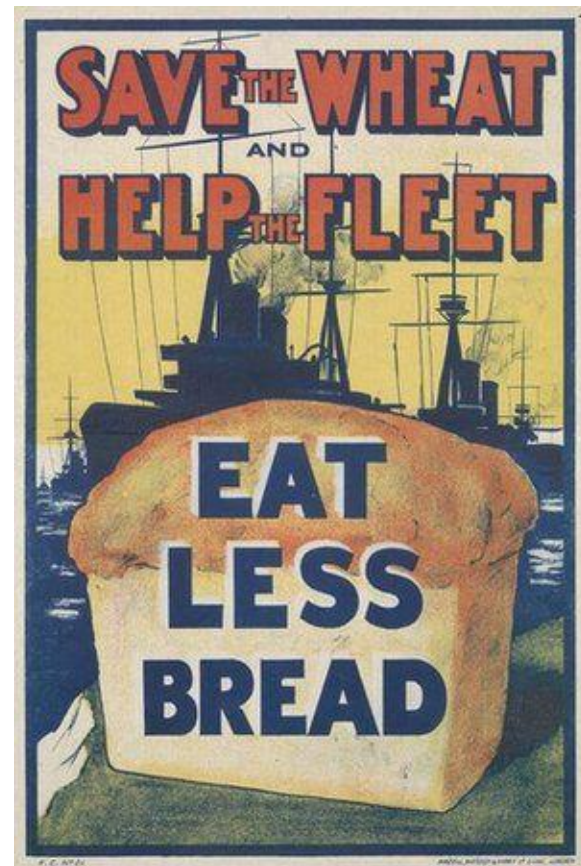
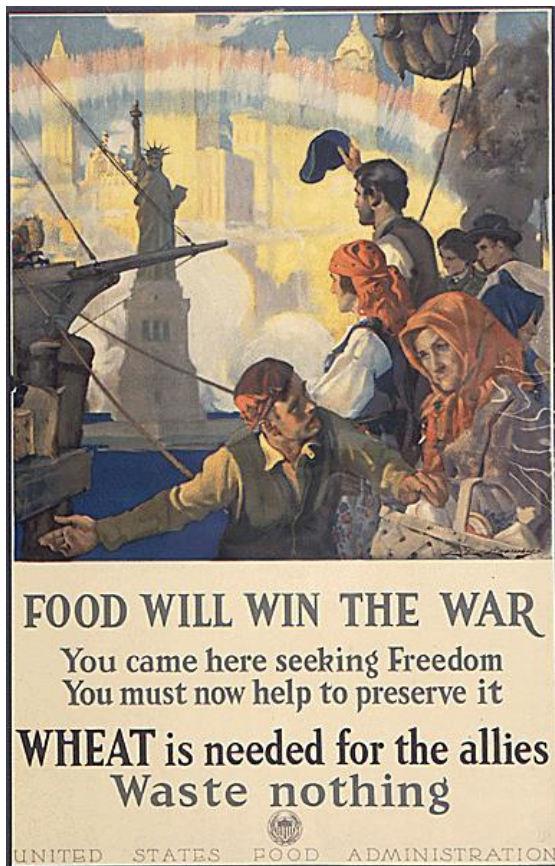


Bretton Woods Institutions



# Our Claim

Wheat Cooperation During the First World War is Origins of  
Today's Global Institutions



# How to Evaluate this Claim

- Mixed Method: Quantitative & Qualitative
- Quantitative: Large-N Statistical Analysis
  - Chicago Board of Trade Annual Reports
  - Statistical Software
- Qualitative: Cases drawing on primary and secondary sources
  - Archives and document collections:
    - *Foreign Relations of the United States*
    - Hoover archives
    - Runciman archives (University of New Castle)
    - FDR Archives (online)
    - British Parliament Archives (online)
    - Monnet Archives (Lausanne)
    - French National Library
    - Archives Nationales – Series F12
    - First Report of Royal Commission on Wheat Supplies
    - National Archives and Records Administration
  - Memoirs: Clementel, Salter, Monnet, Lloyd George
  - Historians: Tractenberg, Stevenson, several others

# Using Wheat Prices to Identify the Wheat Problems

THE FIFTY-NINTH ANNUAL  
REPORT  
OF THE  
TRADE AND COMMERCE  
OF  
CHICAGO  
FOR THE YEAR ENDED DECEMBER 31, 1916

---

BOARD OF TRADE

J. C. F. MERRILL, Secretary

---

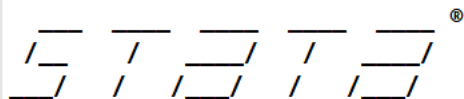
CHICAGO  
Hedstrom-Barry Co., Printers, Chicago  
1917

Library of Congress

# SPOT PRICES OF WHEAT AT CHICAGO.

*Range of prices during each week in 1916.*

|               |    | No. 2<br>Red<br>Winter<br>in Store or<br>by Sample | No. 2<br>Hard<br>Winter<br>in Store or<br>by Sample | No. 1<br>Northern<br>Spring<br>in Store or<br>by Sample | No. 3<br>Red Winter<br>by<br>Sample  | No. 3<br>Hard<br>Winter<br>by<br>Sample | No. 4<br>Red Winter<br>by<br>Sample | No. 3<br>Spring<br>and No. 3<br>Northern<br>Spring<br>by Sample |
|---------------|----|----------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------|--------------------------------------|-----------------------------------------|-------------------------------------|-----------------------------------------------------------------|
| January.....  | 7  | 121 $\frac{1}{2}$ @127 $\frac{1}{2}$               | 118 $\frac{1}{4}$ @125                              | 119 $\frac{1}{4}$ @127 $\frac{1}{2}$                    | 119 @125 $\frac{1}{2}$               | 115 @122 $\frac{1}{2}$                  | 105 @119 $\frac{1}{4}$              | 105 @125 $\frac{1}{4}$                                          |
|               | 14 | 125 @126 $\frac{1}{2}$                             | 121 @125                                            | 123 $\frac{1}{4}$ @128 $\frac{1}{4}$                    | 121 $\frac{1}{4}$ @127 $\frac{1}{2}$ | 114 @123 $\frac{1}{4}$                  | 92 @118 $\frac{1}{4}$               | 115 @123 $\frac{1}{4}$                                          |
|               | 21 | 128 $\frac{1}{4}$ @132                             | 122 $\frac{1}{4}$ @126 $\frac{1}{4}$                | 125 @133                                                | 125 $\frac{1}{4}$ @129 $\frac{1}{4}$ | 110 @126 $\frac{1}{2}$                  | 108 @122                            | 112 @128                                                        |
|               | 28 | 133 $\frac{1}{4}$ @134 $\frac{1}{4}$               | 129 $\frac{1}{4}$ @135                              | 134 $\frac{1}{4}$ @139 $\frac{1}{2}$                    | 127 @135                             | 129 $\frac{1}{4}$ @133                  | 110 @128 $\frac{1}{4}$              | 128 @130 $\frac{1}{2}$                                          |
| February..... | 4  | 132 @133 $\frac{1}{2}$                             | 131 @132 $\frac{1}{2}$                              | 133 @138                                                | 123 @133 $\frac{1}{2}$               | 122 $\frac{1}{4}$ @131 $\frac{1}{2}$    | 105 @122 $\frac{1}{2}$              | 117 @131                                                        |
|               | 11 | 129 @132                                           | 125 @132                                            | 127 @136                                                | 125 $\frac{1}{4}$ @130               | 122 $\frac{1}{4}$ @131                  | 108 @126 $\frac{1}{4}$              | 128 $\frac{1}{4}$ @130                                          |
|               | 18 | 126 $\frac{1}{2}$ @131                             | 124 @130 $\frac{1}{4}$                              | 133 @136                                                | 124 $\frac{1}{4}$ @129               | 120 $\frac{1}{4}$ @127 $\frac{1}{2}$    | 106 @125 $\frac{1}{4}$              | 123 $\frac{1}{4}$ @133                                          |
|               | 25 | 121 @125 $\frac{1}{2}$                             | 117 @129 $\frac{1}{4}$                              | 121 $\frac{1}{4}$ @134 $\frac{1}{2}$                    | 115 @127 $\frac{1}{2}$               | 110 @126 $\frac{1}{4}$                  | 100 @115 $\frac{1}{4}$              | 119 $\frac{1}{4}$ @132                                          |
| March.....    | 3  | 110 $\frac{1}{2}$ @117 $\frac{1}{2}$               | 109 @116 $\frac{1}{4}$                              | 112 @120 $\frac{1}{4}$                                  | 105 @116 $\frac{1}{2}$               | 101 @112 $\frac{1}{2}$                  | 95 @104 $\frac{1}{2}$               | 102 @111 $\frac{1}{4}$                                          |
|               | 10 | 110 $\frac{1}{2}$ @114 $\frac{1}{4}$               | 110 $\frac{1}{4}$ @115 $\frac{1}{4}$                | 115 @119 $\frac{1}{2}$                                  | 108 $\frac{1}{2}$ @112 $\frac{1}{2}$ | 106 $\frac{1}{2}$ @114 $\frac{1}{2}$    | 100 @106 $\frac{1}{4}$              | 105 @115                                                        |
|               | 17 | 107 @110 $\frac{1}{4}$                             | 105 $\frac{1}{4}$ @110 $\frac{1}{4}$                | 113 $\frac{1}{4}$ @118 $\frac{1}{4}$                    | 106 $\frac{1}{4}$ @108 $\frac{1}{2}$ | 103 @109 $\frac{1}{2}$                  | 97 @108 $\frac{1}{4}$               | 103 @115 $\frac{1}{4}$                                          |
|               | 24 | 109 @111                                           | 107 @112 $\frac{1}{2}$                              | 109 $\frac{1}{4}$ @116 $\frac{1}{4}$                    | 107 @110 $\frac{1}{2}$               | 100 @109                                | 98 @110                             | 101 @111 $\frac{1}{4}$                                          |
|               | 31 | 112 @117 $\frac{1}{2}$                             | 109 $\frac{1}{4}$ @114 $\frac{1}{2}$                | 114 $\frac{1}{2}$ @123                                  | 110 $\frac{1}{4}$ @115 $\frac{1}{2}$ | 100 @114 $\frac{1}{2}$                  | ..... 105                           | 106 $\frac{1}{4}$ @117 $\frac{1}{2}$                            |
| April.....    | 7  | 121 $\frac{1}{2}$ @124 $\frac{1}{4}$               | 115 $\frac{1}{4}$ @121 $\frac{1}{2}$                | 121 $\frac{1}{2}$ @128                                  | 119 $\frac{1}{2}$ @124 $\frac{1}{4}$ | 114 @118 $\frac{1}{2}$                  | 97 @107                             | 113 $\frac{1}{4}$ @122                                          |
|               | 14 | 120 @125 $\frac{1}{2}$                             | 116 $\frac{1}{4}$ @122 $\frac{1}{2}$                | 121 $\frac{1}{2}$ @128                                  | 115 @122 $\frac{1}{4}$               | 112 $\frac{1}{4}$ @120 $\frac{1}{4}$    | 100 @118 $\frac{1}{2}$              | 109 $\frac{1}{4}$ @122 $\frac{1}{4}$                            |
|               | 21 | 118 $\frac{1}{2}$ @121                             | 113 $\frac{1}{2}$ @118 $\frac{1}{2}$                | 119 @122 $\frac{1}{4}$                                  | 105 @119                             | 110 $\frac{1}{2}$ @118                  | 95 @111                             | 106 $\frac{1}{2}$ @122                                          |
|               | 28 | 117 @121 $\frac{1}{2}$                             | 113 $\frac{1}{2}$ @117                              | 119 @124                                                | 111 $\frac{1}{2}$ @118 $\frac{1}{2}$ | 109 @114                                | 103 @109 $\frac{1}{2}$              | 110 @116 $\frac{1}{4}$                                          |
| May.....      | 5  | 115 $\frac{1}{4}$ @122 $\frac{1}{2}$               | 113 $\frac{1}{2}$ @118 $\frac{1}{2}$                | 117 $\frac{1}{4}$ @125                                  | 112 $\frac{1}{2}$ @119 $\frac{1}{4}$ | 112 $\frac{1}{2}$ @115 $\frac{1}{4}$    | 98 @108 $\frac{1}{4}$               | 111 $\frac{1}{4}$ @118 $\frac{1}{4}$                            |
|               | 12 | 114 $\frac{1}{2}$ @118                             | 114 $\frac{1}{4}$ @119                              | 119 $\frac{1}{2}$ @125 $\frac{1}{2}$                    | 110 @116 $\frac{1}{2}$               | 109 $\frac{1}{4}$ @115 $\frac{1}{4}$    | 97 @108                             | 104 $\frac{1}{4}$ @114 $\frac{1}{4}$                            |
|               | 19 | 115 $\frac{1}{4}$ @118 $\frac{1}{4}$               | 112 $\frac{1}{4}$ @118 $\frac{1}{4}$                | 122 @126                                                | 110 @117 $\frac{1}{4}$               | 108 @116 $\frac{1}{4}$                  | 97 @113                             | ..... 117 $\frac{1}{4}$                                         |
|               | 26 | 109 @112 $\frac{1}{2}$                             | 107 $\frac{1}{2}$ @112 $\frac{1}{2}$                | 116 @120                                                | 100 @108 $\frac{1}{4}$               | 104 @109 $\frac{1}{4}$                  | 93 @104                             | 106 $\frac{1}{2}$ @109                                          |
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|               | 9  | 102 @106                                           | 105 @107 $\frac{1}{4}$                              | 110 @118                                                | 101 $\frac{1}{2}$ @105 $\frac{1}{2}$ | 102 @105 $\frac{1}{4}$                  | 87 @100                             | 105 $\frac{1}{4}$ @109                                          |
|               | 16 | 103 $\frac{1}{2}$ @104 $\frac{1}{4}$               | 102 $\frac{1}{4}$ @106                              | 109 $\frac{1}{4}$ @115                                  | 94 @103 $\frac{1}{2}$                | 92 $\frac{1}{2}$ @104 $\frac{1}{2}$     | 92 @95                              | 96 $\frac{1}{2}$                                                |
|               | 23 | 101 $\frac{1}{4}$ @102 $\frac{1}{2}$               | 98 $\frac{1}{4}$ @103 $\frac{1}{2}$                 | 106 $\frac{1}{2}$ @113 $\frac{1}{2}$                    | 98 @101 $\frac{1}{2}$                | 91 @100 $\frac{1}{2}$                   | 87 @96 $\frac{1}{2}$                | 100 $\frac{1}{4}$ @106                                          |
|               | 30 | 102 $\frac{1}{2}$ @104 $\frac{1}{2}$               | 101 $\frac{1}{2}$ @103 $\frac{1}{4}$                | 106 $\frac{1}{2}$ @113                                  | 96 @101 $\frac{1}{4}$                | 96 @101 $\frac{1}{2}$                   | 90 @97                              | 94 @106 $\frac{1}{4}$                                           |
| July.....     | 7  | 104 @107                                           | 105 @106                                            | 110 @115 $\frac{1}{2}$                                  | 107 @110                             | 104 $\frac{1}{4}$ @110                  | 94 @110 $\frac{1}{4}$               | 106 $\frac{1}{2}$ @112                                          |
|               | 14 | 111 @114                                           | 106 @111 $\frac{1}{4}$                              | 111 @121 $\frac{1}{2}$                                  | 113 @118 $\frac{1}{2}$               | 110 $\frac{1}{4}$ @118                  | 97 @113 $\frac{1}{2}$               | 109 @113                                                        |
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|               | 28 | 121 $\frac{1}{4}$ @128 $\frac{1}{4}$               | 118 @130                                            | 120 $\frac{1}{4}$ @131 $\frac{1}{2}$                    | 119 @126 $\frac{1}{2}$               | 115 $\frac{1}{4}$ @125                  | 105 @121                            | 101 @116                                                        |
| August.....   | 4  | 121 $\frac{1}{2}$ @138 $\frac{1}{2}$               | 121 @142                                            | 124 @143 $\frac{1}{4}$                                  | 121 $\frac{1}{2}$ @138               | 117 @140                                | 100 @136                            | 118 @126 $\frac{1}{4}$                                          |
|               | 11 | 129 @148 $\frac{1}{2}$                             | 132 $\frac{1}{2}$ @149                              | 137 @154 $\frac{1}{2}$                                  | 125 @145 $\frac{1}{2}$               | 128 @144 $\frac{1}{4}$                  | 115 @140                            | ..... 143 $\frac{1}{4}$                                         |
|               | 18 | 139 $\frac{1}{4}$ @147                             | 139 $\frac{1}{4}$ @152                              | 141 @153                                                | 134 @147                             | 136 @147                                | 110 @141                            | 139 @140 $\frac{1}{2}$                                          |
|               | 25 | 151 @157                                           | 148 $\frac{1}{4}$ @160                              | 150 $\frac{1}{2}$ @161 $\frac{1}{4}$                    | 115 @154                             | 141 @150 $\frac{1}{4}$                  | 125 @148                            | 150 @153                                                        |

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var9[7]

|     | year | month | weekof | low     | high    | average |  |  |
|-----|------|-------|--------|---------|---------|---------|--|--|
| 79  | 1916 | 1     | 7      | 121.375 | 127.625 | 124.5   |  |  |
| 80  | 1916 | 1     | 14     | 125     | 126.5   | 125.75  |  |  |
| 81  | 1916 | 1     | 21     | 128.5   | 132     | 130.25  |  |  |
| 82  | 1916 | 1     | 28     | 133.5   | 134.25  | 133.875 |  |  |
| 83  | 1916 | 2     | 4      | 132     | 133.5   | 132.75  |  |  |
| 84  | 1916 | 2     | 11     | 129     | 132     | 130.5   |  |  |
| 85  | 1916 | 2     | 18     | 126.5   | 131     | 128.75  |  |  |
| 86  | 1916 | 2     | 25     | 121     | 125.5   | 123.25  |  |  |
| 87  | 1916 | 3     | 3      | 110.5   | 117.5   | 114     |  |  |
| 88  | 1916 | 3     | 10     | 110.5   | 114.75  | 112.625 |  |  |
| 89  | 1916 | 3     | 17     | 107     | 110.25  | 108.625 |  |  |
| 90  | 1916 | 3     | 24     | 109     | 111     | 110     |  |  |
| 91  | 1916 | 3     | 31     | 112     | 117.5   | 114.75  |  |  |
| 92  | 1916 | 4     | 7      | 121.5   | 124.25  | 122.875 |  |  |
| 93  | 1916 | 4     | 14     | 120     | 125.875 | 122.938 |  |  |
| 94  | 1916 | 4     | 21     | 118.625 | 121     | 119.813 |  |  |
| 95  | 1916 | 4     | 28     | 117     | 121.5   | 119.25  |  |  |
| 96  | 1916 | 5     | 5      | 115.5   | 122.5   | 119     |  |  |
| 97  | 1916 | 5     | 12     | 114.5   | 118     | 116.25  |  |  |
| 98  | 1916 | 5     | 19     | 115.25  | 118.75  | 117     |  |  |
| 99  | 1916 | 5     | 26     | 109     | 112.75  | 110.875 |  |  |
| 100 | 1916 | 6     | 2      | 106     | 109     | 107.5   |  |  |
| 101 | 1916 | 6     | 9      | 102     | 106     | 104     |  |  |
| 102 | 1916 | 6     | 16     | 103.5   | 104.375 | 103.938 |  |  |
| 103 | 1916 | 6     | 23     | 101.75  | 102.375 | 102.063 |  |  |
| 104 | 1916 | 6     | 30     | 102.5   | 104.5   | 103.5   |  |  |
| 105 | 1916 | 7     | 7      | 104     | 107     | 105.5   |  |  |
| 106 | 1916 | 7     | 14     | 111     | 114     | 112.5   |  |  |
| 107 | 1916 | 7     | 21     | 115     | 120     | 117.5   |  |  |

# Plot it out

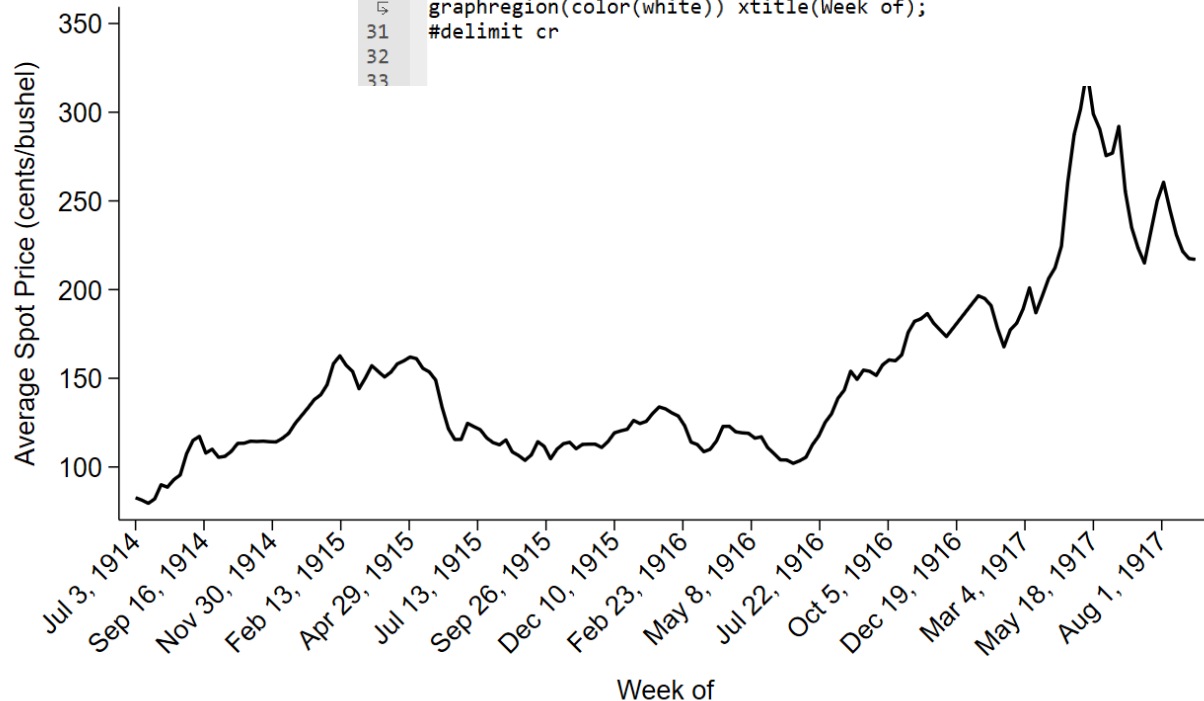
| var9[7] |      |       |        |         |         |         |
|---------|------|-------|--------|---------|---------|---------|
|         | year | month | weekof | low     | high    | average |
| 79      | 1916 | 1     | 7      | 121.375 | 127.625 | 124.5   |
| 80      | 1916 | 1     | 14     | 125     | 126.5   | 125.75  |
| 81      | 1916 | 1     | 21     | 128.5   | 132     | 130.25  |
| 82      | 1916 | 1     | 28     | 133.5   | 134.25  | 133.875 |
| 83      | 1916 | 2     | 4      | 132     | 133.5   | 132.75  |
| 84      | 1916 | 2     | 11     | 129     | 132     | 130.5   |
| 85      | 1916 | 2     | 18     | 126.5   | 131     | 128.75  |
| 86      | 1916 | 2     | 25     | 121     | 125.5   | 123.25  |
| 87      | 1916 | 3     | 3      | 110.5   | 117.5   | 114     |
| 88      | 1916 | 3     | 10     | 110.5   | 114.75  | 112.625 |
| 89      | 1916 | 3     | 17     | 107     | 110.25  | 108.625 |
| 90      | 1916 | 3     | 24     | 109     | 111     | 110     |
| 91      | 1916 | 3     | 31     | 112     | 117.5   | 114.75  |
| 92      | 1916 | 4     | 7      | 121.5   | 124.25  | 122.875 |
| 93      | 1916 | 4     | 14     | 120     | 125.875 | 122.938 |
| 94      | 1916 | 4     | 21     | 118.625 | 121     | 119.813 |
| 95      | 1916 | 4     | 28     | 117     | 121.5   | 119.25  |
| 96      | 1916 | 5     | 5      | 115.5   | 122.5   | 119     |
| 97      | 1916 | 5     | 12     | 114.5   | 118     | 116.25  |
| 98      | 1916 | 5     | 19     | 115.25  | 118.75  | 117     |
| 99      | 1916 | 5     | 26     | 109     | 112.75  | 110.875 |
| 100     | 1916 | 6     | 2      | 106     | 109     | 107.5   |
| 101     | 1916 | 6     | 9      | 102     | 106     | 104     |
| 102     | 1916 | 6     | 16     | 103.5   | 104.375 | 103.938 |
| 103     | 1916 | 6     | 23     | 101.75  | 102.375 | 102.063 |
| 104     | 1916 | 6     | 30     | 102.5   | 104.5   | 103.5   |
| 105     | 1916 | 7     | 7      | 104     | 107     | 105.5   |
| 106     | 1916 | 7     | 14     | 111     | 114     | 112.5   |
| 107     | 1916 | 7     | 21     | 115     | 120     | 117.5   |

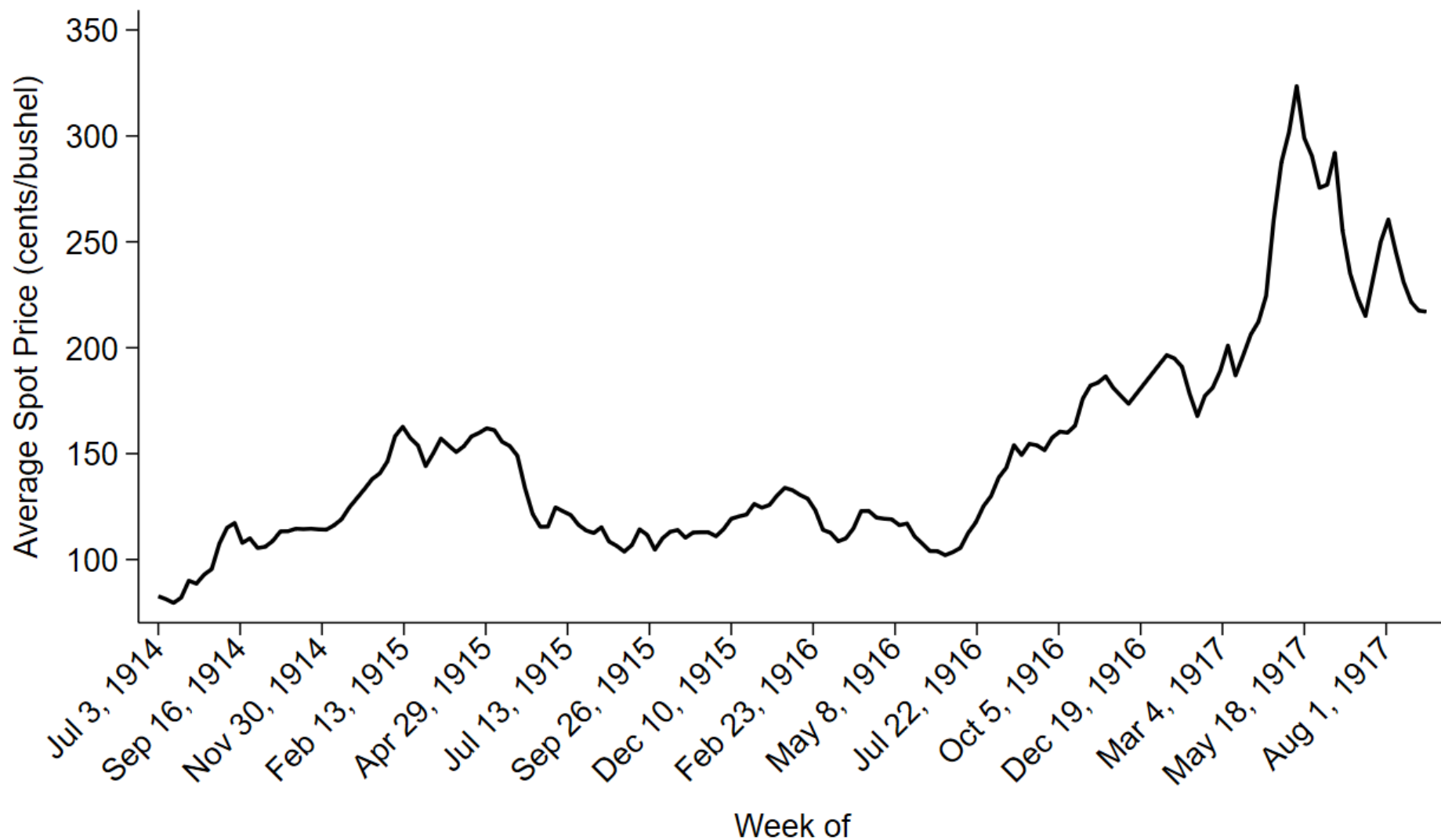


```

11
12 tempfile wheat oil bacon corn
13
14 use "Chicago 1914-1917 Daily Price Data.dta", clear
15
16 gen price = average
17
18 capture drop mdate
19 gen mdate = mdy(month, weekof, year)
20
21 gen mdate2 = mdate
22 xtset price mdate2, daily
23 sort mdate
24
25 label var price "Average Weekly Price"
26
27 #delimit ;
28 graph twoway ||
29 line price mdate2 ||
30 , ylabel(, nogrid) legend(off) /*subtitle("Chicago Board of Trade, July 1914-December
31 1918") title("Price of Key Commodities Purchased by European Allies")*/ ytitle("Average
32 Spot Price (cents/bushel)") /*ylabels(0(50)350)*/ xlabel(-16618(75)-15456, angle(45))
33 graphregion(color(white)) xtitle(Week of);
34 #delimit cr

```





**Lots of fluctuation?**

**When did the wheat market CHANGE versus just noise?**

# Breakpoint Analysis

JOURNAL OF APPLIED ECONOMETRICS

*J. Appl. Econ.* **18**: 1–22 (2003)

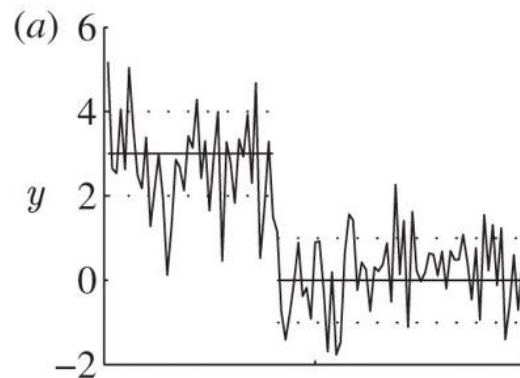
Published online 8 October 2002 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/jae.659

## COMPUTATION AND ANALYSIS OF MULTIPLE STRUCTURAL CHANGE MODELS

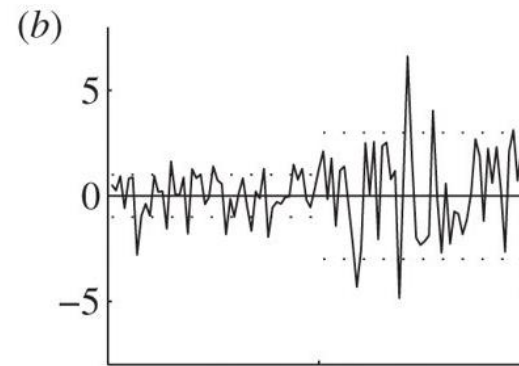
JUSHAN BAI<sup>a</sup> AND PIERRE PERRON<sup>b\*</sup>

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<sup>b</sup> *Department of Economics, Boston University, 270 Bay State Rd., Boston, MA, 02215, USA*



**“Break” found**



**No “Break”  
found**

```

35  ** II. Identify Break Points Technique
36
37  *use "Chicago 1914-1917 Daily Price Data.dta", clear
38
39  *gen price = average
40
41  *capture drop mdate
42  *gen mdate = mdy(month, weekof, year)
43
44  *sort mdate
45  sort year month weekof
46  capture drop date
47  gen date = _n
48  capture drop iprice
49  ipolate price date, gen(iprice)
50
51  tsset date
52  *xtset iprice mdate2, daily
53
54  *tsspell price
55
56  ** Stata: Supremum Wald test for a structural break at an unknown break date
57  for current estimation results using default symmetric trimming of 15%
58  reg iprice
59  estat sbsingle
60
61  *** Report the Break
62  return list
63  local break = r(breakdate)
64
65  list mdate2 if date==`break'
66
67  *** Graph of Breaks
68  sum iprice if date<=`break'
69  local avg_i1 = r(mean)
70  gen yline1 = `avg_i1'

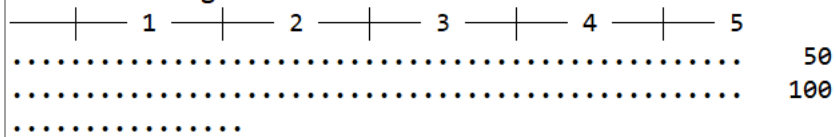
```

```
. reg iprice
```

| Source   | SS         | df  | MS         | Number of obs | = | 166    |
|----------|------------|-----|------------|---------------|---|--------|
| Model    | 0          | 0   | .          | F(0, 165)     | = | 0.00   |
| Residual | 438858.715 | 165 | 2659.74979 | Prob > F      | = | .      |
|          |            |     |            | R-squared     | = | 0.0000 |
|          |            |     |            | Adj R-squared | = | 0.0000 |
| Total    | 438858.715 | 165 | 2659.74979 | Root MSE      | = | 51.573 |

| iprice | Coefficient | Std. err. | t     | P> t  | [95% conf. interval] |          |
|--------|-------------|-----------|-------|-------|----------------------|----------|
| _cons  | 150.2732    | 4.002823  | 37.54 | 0.000 | 142.3699             | 158.1766 |

```
. estat sbsingle
```



Test for a structural break: Unknown break date

Full sample: 1 thru 166

Trimmed sample: 26 thru 142

Estimated break date: 121

H0: No structural break

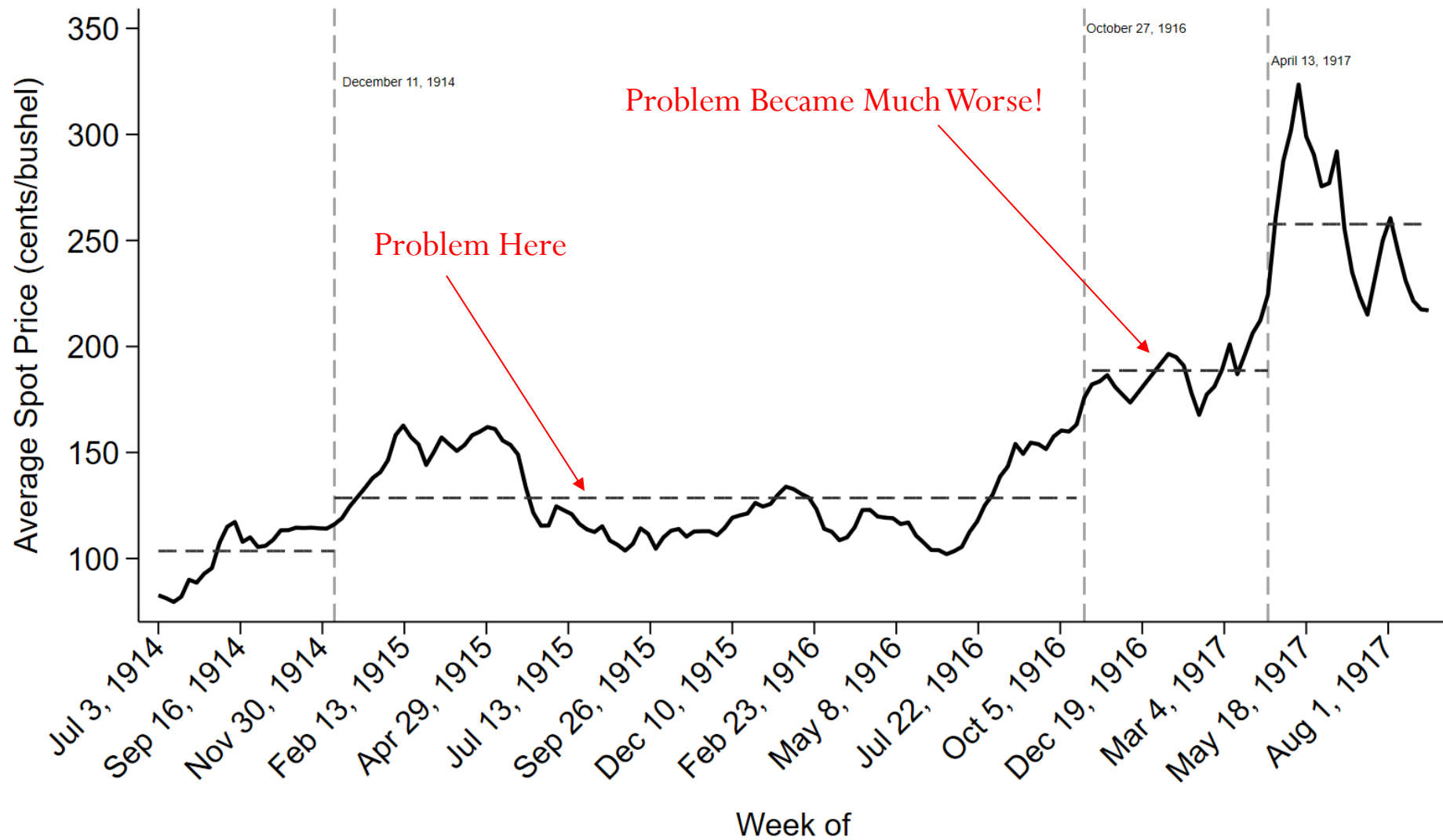
Number of obs = 166

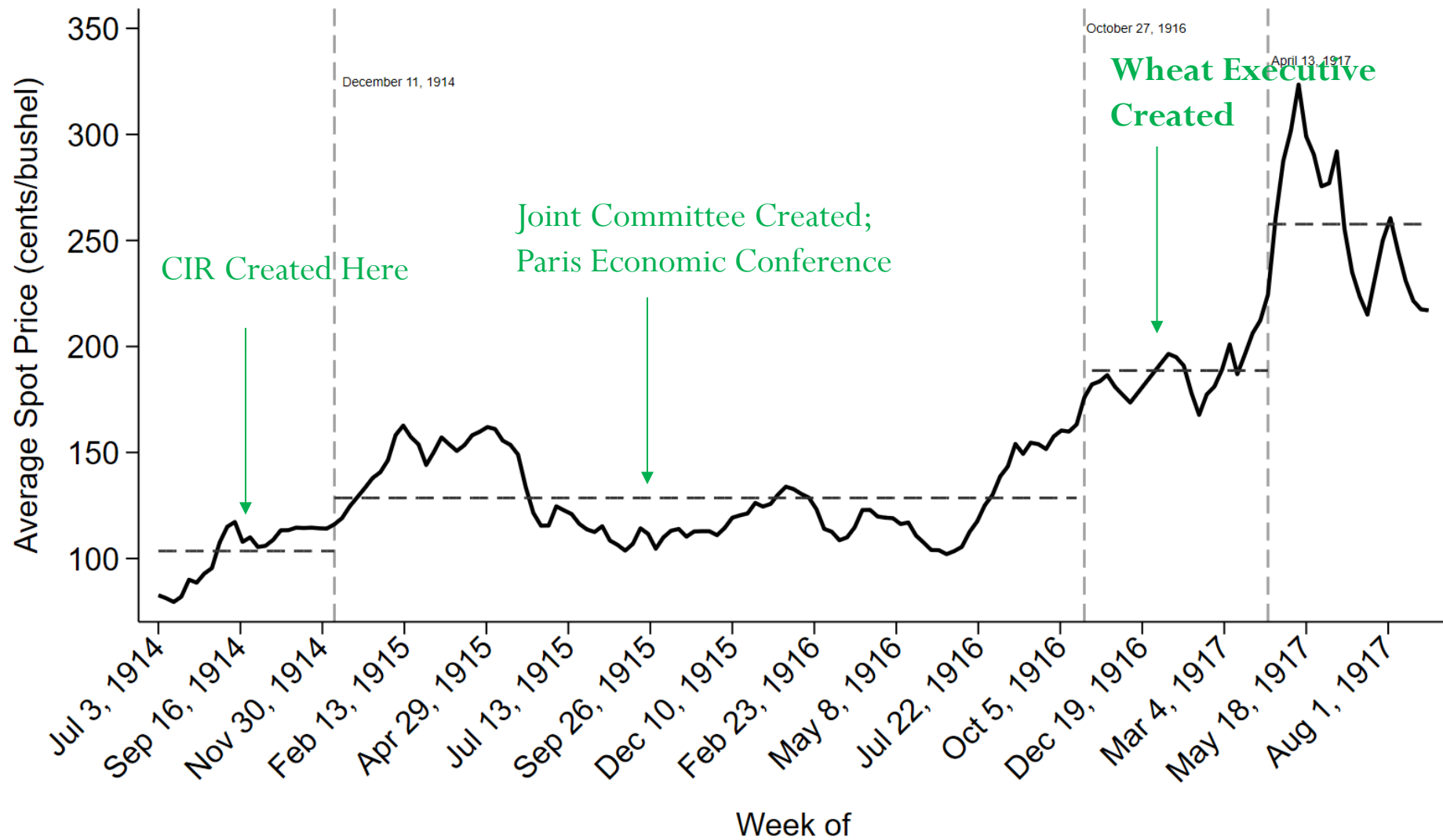
| Test          | Statistic | p-value |
|---------------|-----------|---------|
| Supremum Wald | 387.3520  | 0.0000  |

Coefficients included in test: \_cons

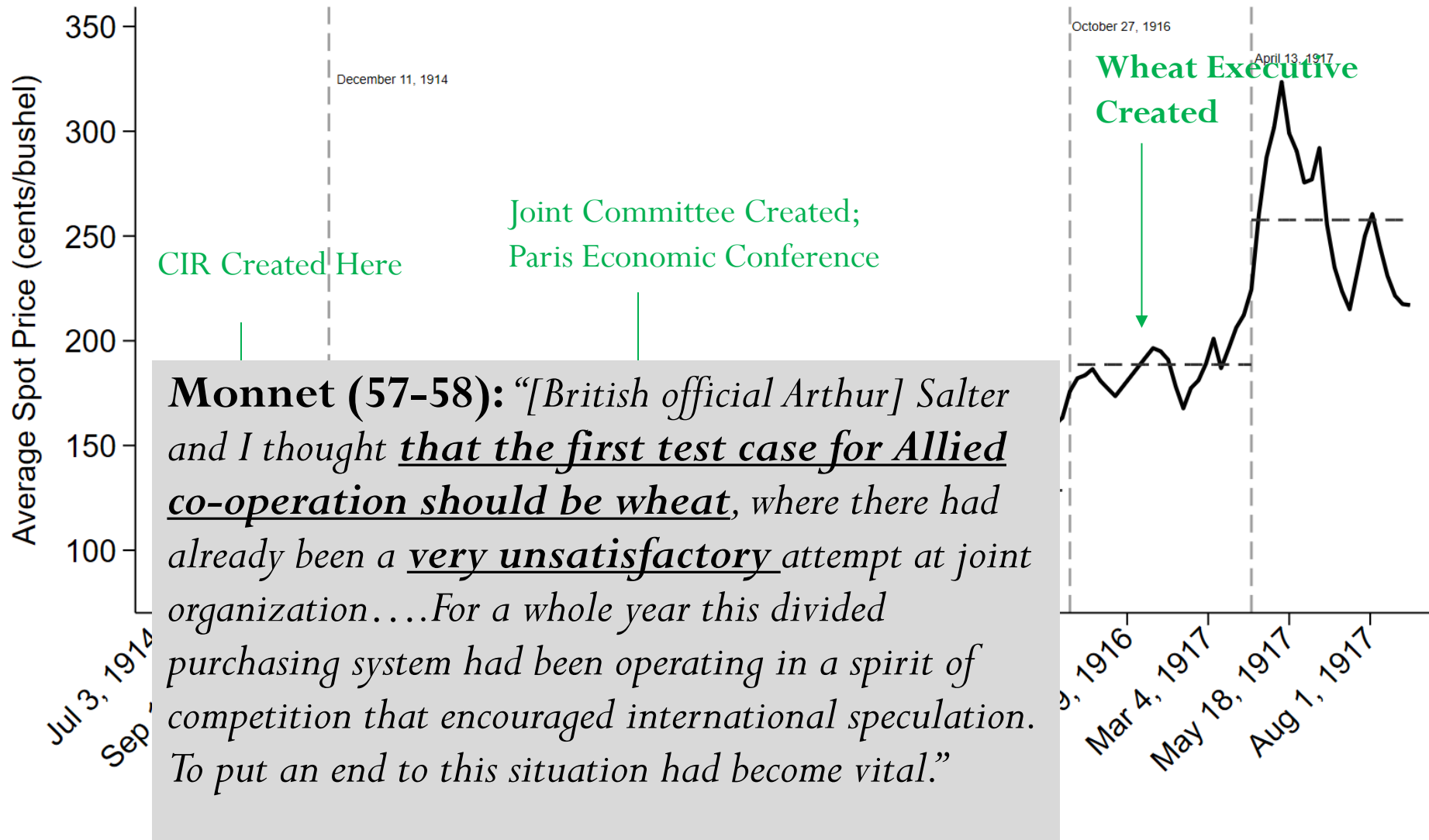
```
.  
. *** Report the Break  
. return list
```

scalars:



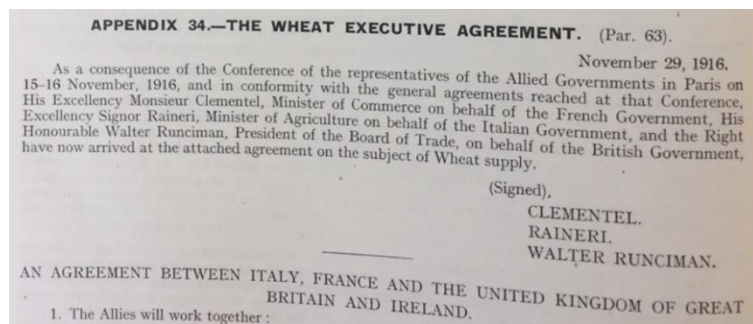


# Turn to Qualitative Evidence!



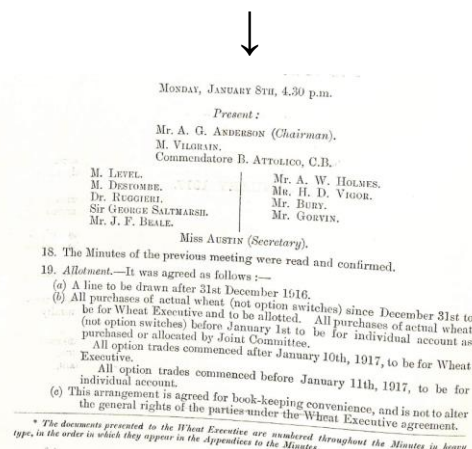
## Wheat Executive Created:

- Established: Nov 16
- Agreement Signed: Nov 29
- Operational: For Bookkeeping purpose, Jan 1
- Operational: Unofficial “At Once” (already taking actions in December)



- Based in London
- Three representatives: 1 British, 1 French, 1 Italian
- “full authority to meet Allied needs regarding the purchase and sharing of those grains subject to inventory, and to arrange for their shipment.”

## Wheat Executive Meets (~weekly)



## Order given to Royal Wheat Commission

## Order relayed to Wheat Export Co. (in NYC)

## REPORT

OF THE

U.S. FEDERAL TRADE COMMISSION

**THE WHEAT EXPORT Co. (INC.).**—The Wheat Export Co. (Inc.), New York, was organized in 1916 under the laws of New York as the official wheat-exporting agency for the allied Governments. In 1919 it exported 61,173,000 bushels of wheat, and in 1920, 8,018,000 bushels. It has been inactive since early in 1920 and is now winding up its affairs with offices at the British ministry of shipping, New York. It had a nominal capitalization of \$500 held by Herbert T. Robson, London, partner in Paul, Robson & Co., New York (see above), 2 shares; W. J. Robson, New York, 2 shares; G. Rae Callendar, New York, of Paul Robson & Co., 2 shares; Gerald F. Earle, of Sanday & Co., New York, 2 shares; L. M. Pultz, of Sanday & Co., New York, 1 share; and Kenneth B. Stoddart, of Sanday & Co., New York, 1 share.



**Salter:** “To exchange an Italian cargo in North America for a British cargo in Australia meant a saving of two thousand miles of steaming. This the Wheat Executive now made possible. No longer did empty Italian ships going west for American wheat and empty British ships going east for Australian wheat pass each other in the Mediterranean.”



**Monnet:** “The Wheat Executive, in fact, showed me the first concrete proof that when men are put in a certain situation they see that they have common interests. . . . It is easy to see that the men who thus lived through one of the first experiments in joint action by different countries began to cherish high hopes, and to grow impatient to apply their experience on a broader front”

# Tracing the Legacy

**Salter to Beale, May 6, 1918:**

*"...where Executive are not already in existence dealing with particular imports or clauses of imports, inter-allied bodies shall be formed to draw up programs of imports similar to those drawn up by the Wheat and other Executives."*

## ARTICLE VII

*"At an early convenient date, conversations shall be begun between the two Governments"*

1916  
Wheat Executive

1917  
Allied Maritime  
Trade Commission

1939  
The Anglo-French  
Coordinating  
Committee

1942  
Anglo-American  
Mutual Aid  
Agreement  
"Lend Lease"

1944  
Bretton Woods



**Daldier to Chamberlain,  
September 20, 1939:**

*"I have no doubt that you like me are anxious for us to avoid at all costs the mistake that was made in the last war, when our two countries took three years to set up the inter-Allied machinery which ensured us our supplies in 1917 and 1918."*

## APPENDIX 34.—THE WHEAT EXECUTIVE AGREEMENT. (Par. 63).

November 29, 1916.  
a consequence of the Conference of the representatives of the Allied Governments in Paris on November, 1916, and in conformity with the general agreements reached at that Conference, by Monsieur Clemotel, Minister of Commerce on behalf of the French Government, His Excellency Signor Raineri, Minister of Agriculture on behalf of the Italian Government, and the Right Honorable Walter Runciman, President of the Board of Trade, on behalf of the British Government, have arrived at the attached agreement on the subject of Wheat supply.

(Signed),  
CLEMENTEL.  
RAINERI.  
WALTER RUNCIMAN.

AGREEMENT BETWEEN ITALY, FRANCE AND THE UNITED KINGDOM OF GREAT  
BRITAIN AND IRELAND.  
The Allies will work together:

# Continuing the Legacy?

## 7

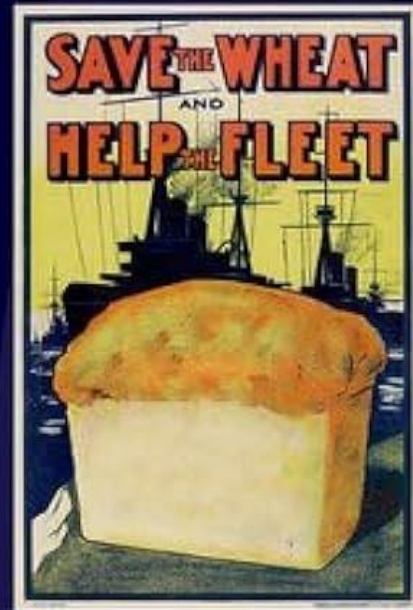
### **Wheat During the Great War: Legacy and Implications**

The need for such an international organization is more urgent than ever. There will be future shocks to the global economy, be it another pandemic, another war, or the continuing effects of global climate change. Each of these types of shock, or the combination of some or all of them, could stress the global economy to the breaking point, just as during the Great War. Fortunately for us all, the leaders of today's global economy can draw on the lessons of that global crisis and establish the necessary international institutions before the situation is once again dire. The hope is that leaders will actually turn to those lessons.

Thank you and Questions?



ROSELLA CAPPELLA ZIELINSKI  
AND PAUL POAST



# WHEAT AT WAR

ALLIED ECONOMIC  
COOPERATION  
IN THE GREAT WAR