

# Analyzing World-Wide War Trends

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Presented by Jacob Ayers



Cartoon by Dr. Seuss, 1941



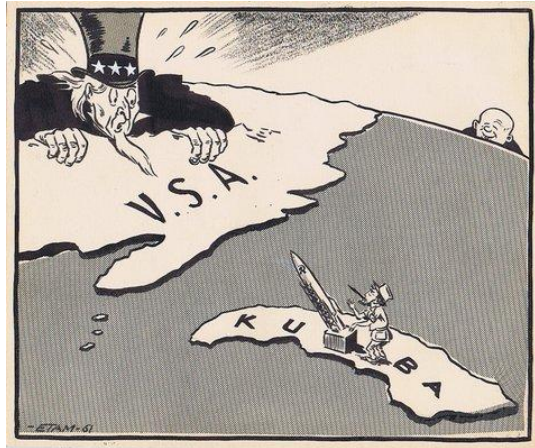
Poster by Y. Chudov, 1961

# Correlates of War Dataset

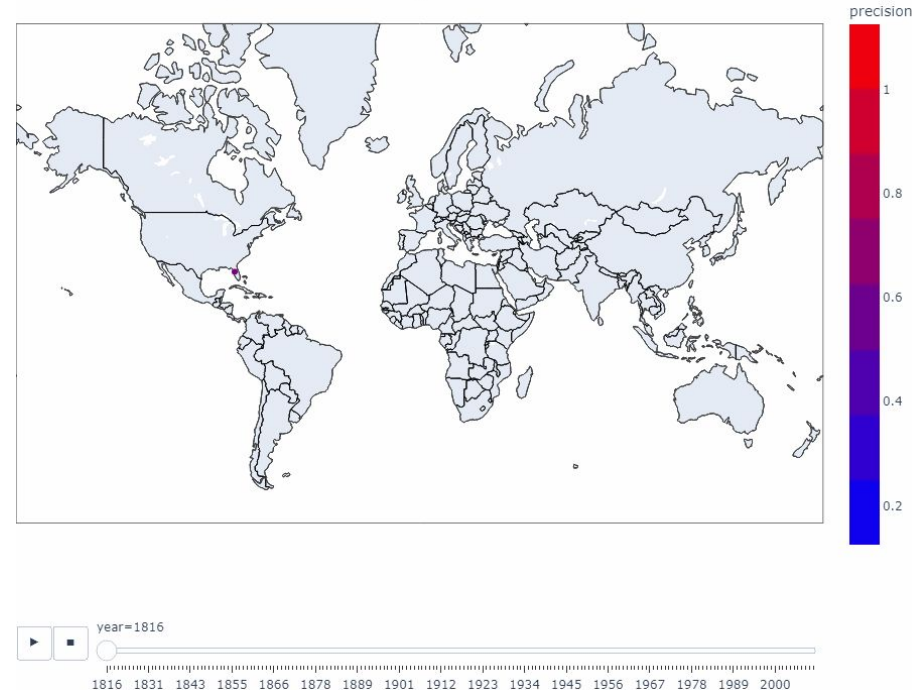
- “(S)eeks to facilitate the collection, dissemination, and use of accurate and reliable quantitative data in international relations.”
- Dataset of datasets!
  - Internationally recognized states, War Data, Militarized Interstate Disputes and Locations, National Material Capabilities, World Religion Data, Formal Alliances, Direct Contiguity (State Land and Sea Borders), Territorial Changes, Colonial Relations, Intergovernmental Organizations, Defense Cooperation Agreements, Diplomatic Exchanges, and Trade
  - Contains data from 1816-2014

# Militarized Interstate Disputes (v5.0) & Militarized Interstate Dispute Locations (v2.1)

- “Records all instances of when one state threatened, displayed, or used force against another.”
  - Disputes that fall short of actual war
  - Precision - reliability of dispute location



Cartoon by Die Vaderland, 1961



# Militarized Interstate Dispute Locations (v2.1)

- Spans from 1816-2010
- Shows locations of various military disputes
- Each point shows the entities involved and the location
  - In the Jupyter Notebook



# Quantifying Militarized Interstate Disputes



- Most Disputes -

- 1816-1900: United Kingdom and France



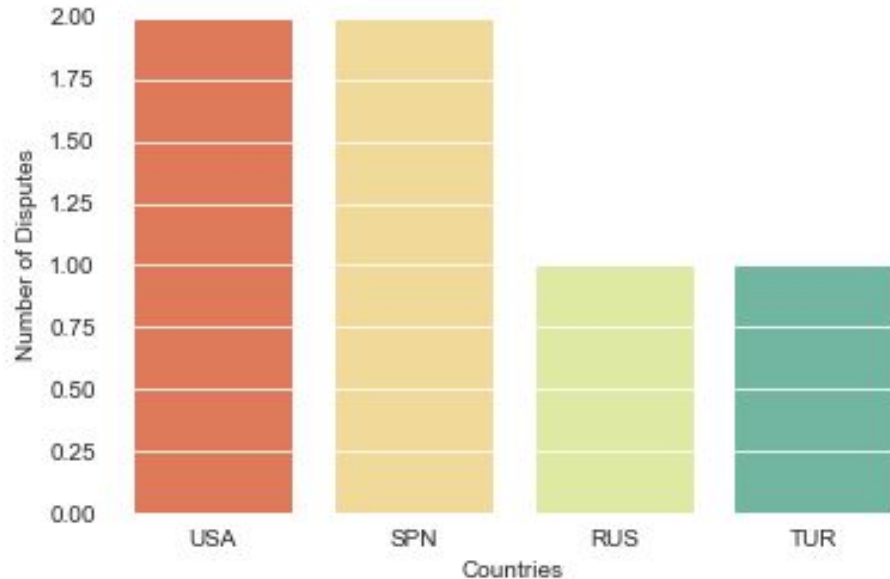
- 1900-1945: Germany



- 1945-2010: USSR/Russia

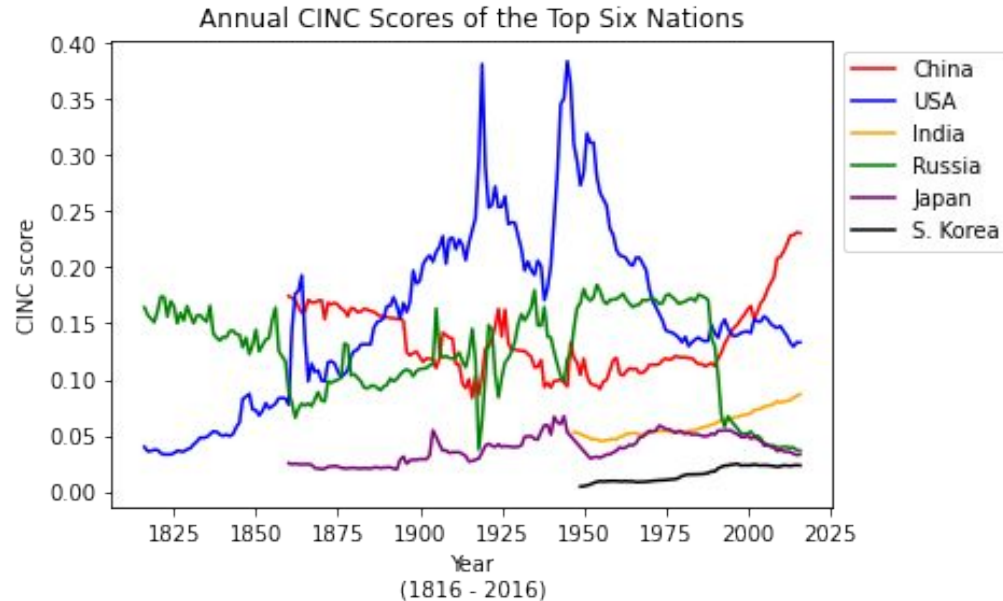


Countries involved in most disputes from 1816 to 1820



# National Material Capabilities (v6.0)

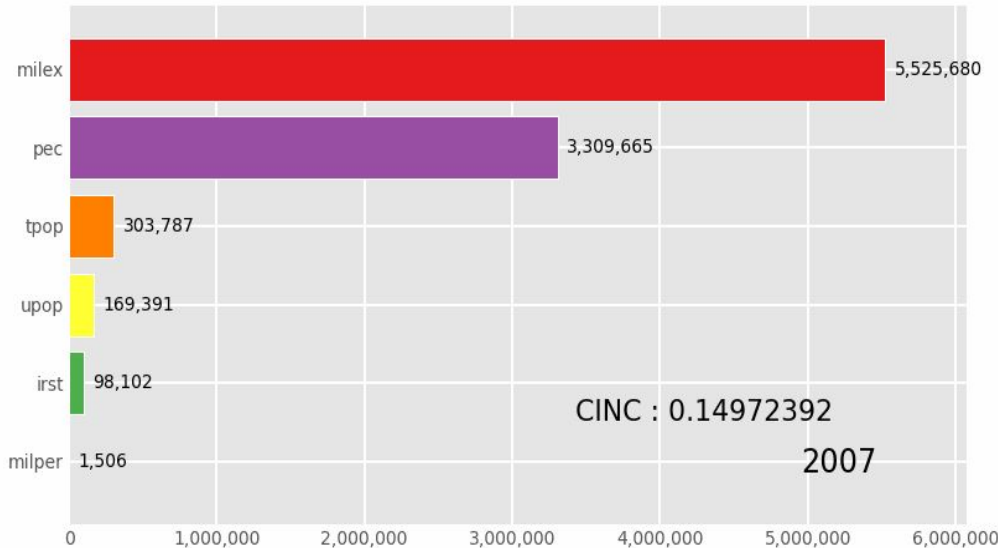
- Spans 1816-2016
- Quantifying six indicators associated with national power -
  1. Military expenditure
  2. Military personnel
  3. Energy consumption
  4. Iron and steel production
  5. Urban population
  6. Total population
- Composite Index of National Capability (CINC)
  - Consolidates six indicators into one value



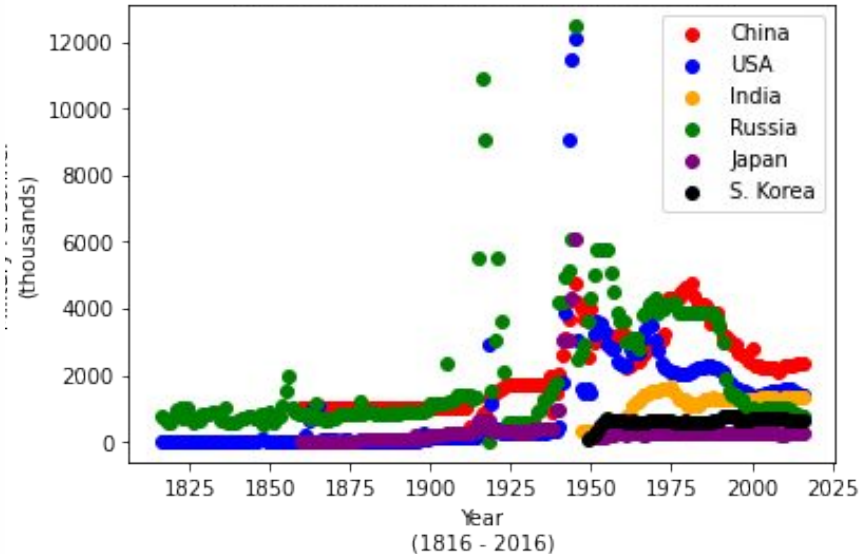
# Indicator with the least difference

- Look into six most powerful countries based on CINC of 2016
  - The U.S., Russia and China are the three most competitive countries, their composite indicator of national capability scores transcend each other in the entire timespan.
- Military personnel has the least difference of all indicators between countries

Six indicators of USA



Top Six Countries for Military Personnel

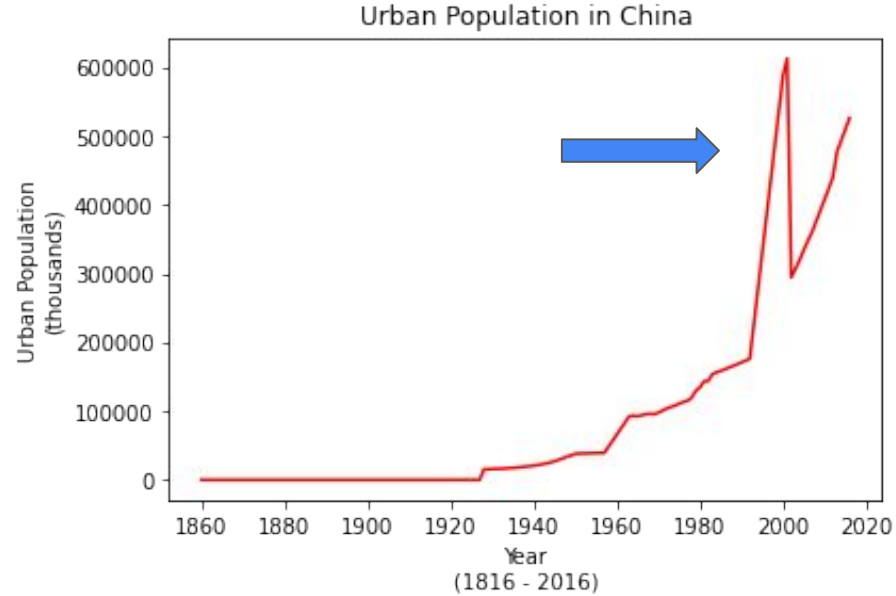




# Effects of economy and policy

- Economic Reform by Deng led to a take-off of China's economy in the 1980s.
- Family planning policy (One-child) was implemented nationwide in the 80s. In recent years, it begun to relax.

## Chronology of Family Planning in China





# Formal Alliances (v4.1)

- Spans 1816-2012
- Includes -
  - Defense pacts
    - “I defend you if you defend me”
  - Neutrality or non-aggression treaties
    - “I won’t attack you if you don’t attack me”
  - Entente agreements
    - “I don’t like you, you don’t like me, but we have to put that aside for now”

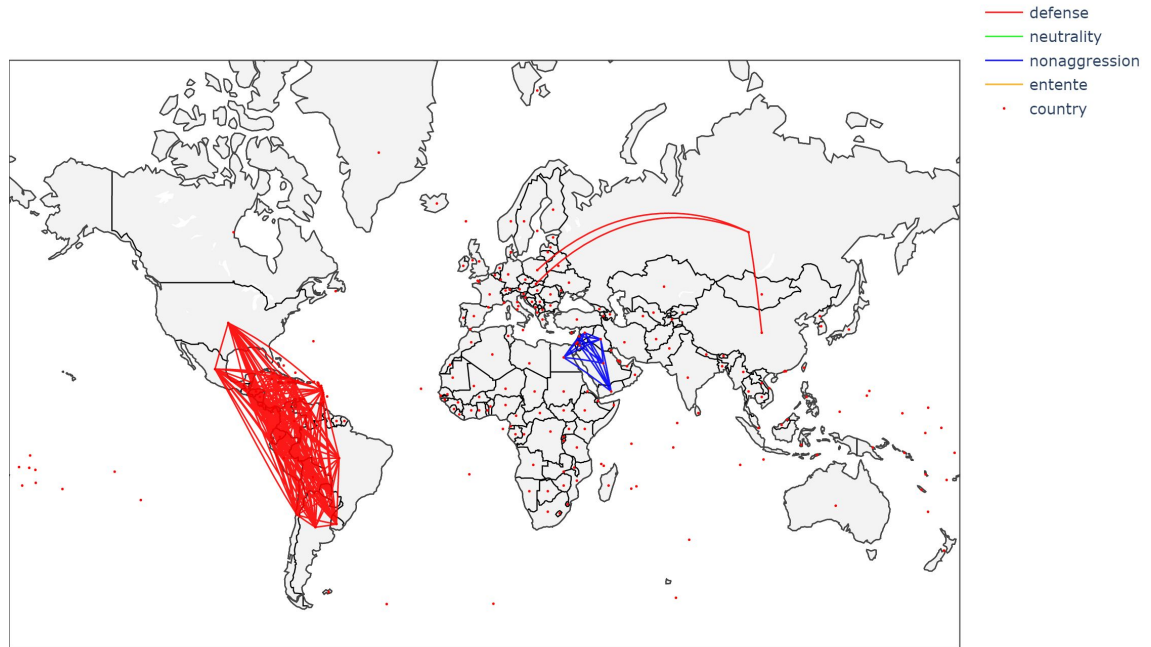
1816



# Post World War II Alliances

- 1945
  - United Nations Created
  - Soviet Union creates Warsaw Pact
  - Arab League formed
- 1948
  - Warsaw Pact Expanded
- 1949
  - Creation of North Atlantic Treaty Organization (NATO)
- 1951
  - NATO expanded

1945

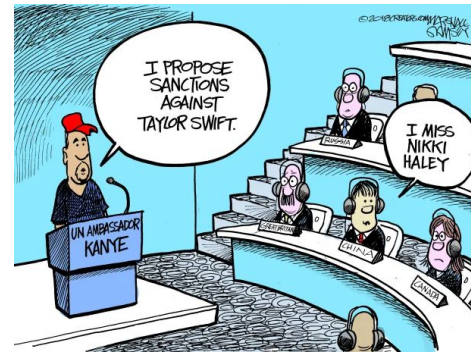


# Diplomatic Exchanges (v2006.1)

- Spans 1817-2005
- Tracks various kinds of diplomats between nations
  - Chargé d'affaire - default head diplomat of an embassy
  - Minister - State representative in foreign nation
  - Ambassador - Head of state embassy in foreign nations



Cartoon by Global Times, 2021

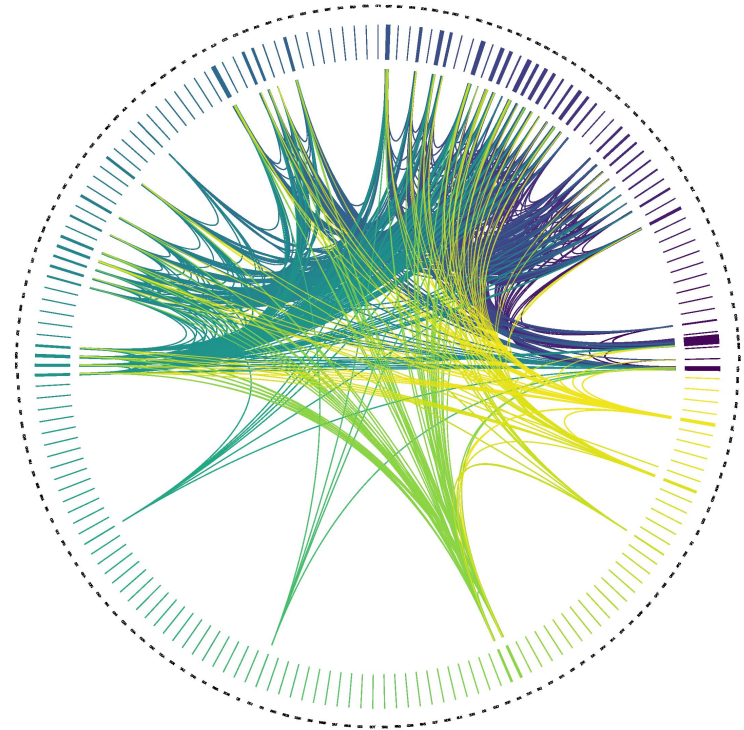


Cartoon by Marshall Ramsey, 2018

# Diplomatic Exchanges (v2006.1)

Year:1920 Num:200

- Sankey Diagram
  - Method to visualize graphs
  - Randomly selected 200 countries
  - Nodes - Countries
  - Edges - Diplomatic Exchanges
  - We don't differentiate between types of diplomats
- Drastic increase of diplomatic exchanges post-WWII
  - New sovereign nations due to decolonization
  - Improvements in telecommunications
  - Threat of nuclear war forces diplomacy



# Trade (v4.0)

- Spans 1870-2014
- Records total imports and exports for states normalized with respect to modern U.S. dollars
  - Import - commodity or service brought into a nation from abroad for sale
  - Export - commodity or service sold abroad from a nation



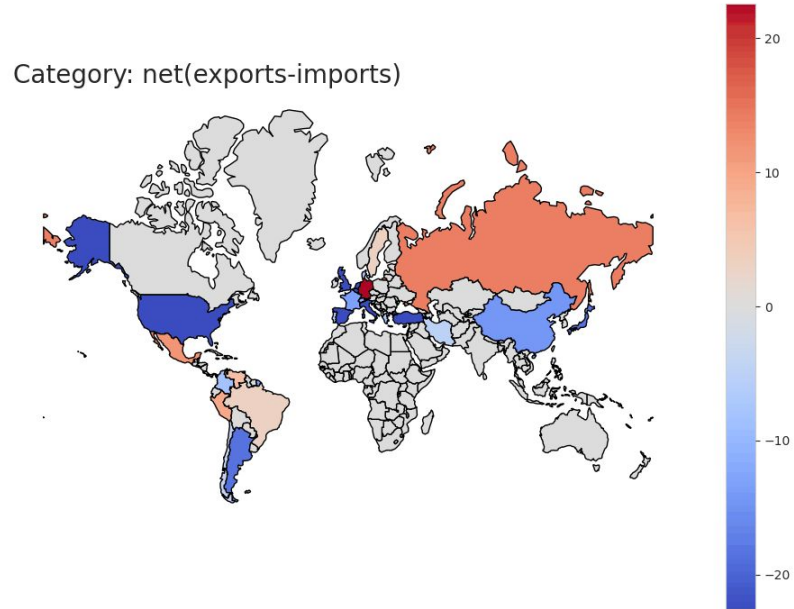
Cartoon by Washington Post, 2018



Cartoon by Dr. Seuss, 1941

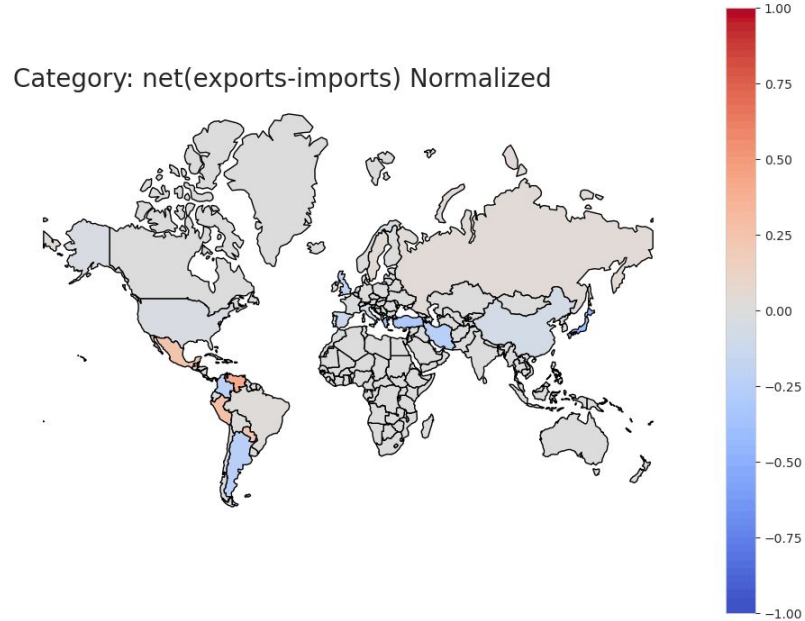
# Comparing the Difference Between Exports and Imports

- No Data  $\Rightarrow$  0
- European Nation Imports
  - U.K., France, Netherlands dominate world stage in imports prior to World War II
- U.S. Economic Swap
  - More exports than imports prior to direct Vietnam War involvement (1964)
  - Vice versa afterwards
- Chinese Industrialization
  - China becomes largest exporter in the 21st century



# Comparing the Difference Between Exports and Imports

- Normalization Method
  - $(Ex - Im)/(Ex + Im)$
  - Only Exports  $\Rightarrow +1$
  - Only Imports  $\Rightarrow -1$
- Places greater emphasis on nations with relatively smaller economies
  - More volatile to change year-by-year
  - Most noticeable as new nations gain sovereignty





# Vietnam Case Study: Historical Context

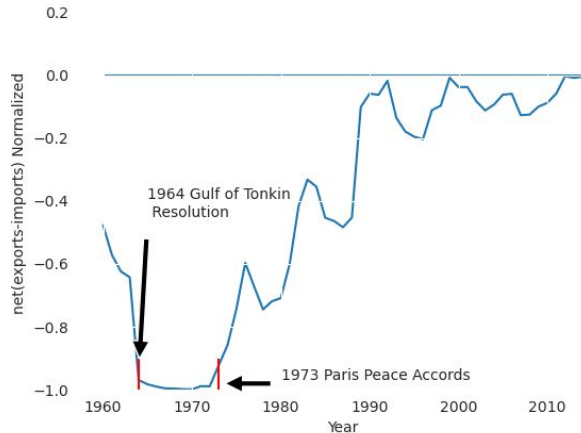
- Relevant Dates
  - 1964 - U.S. congress passes the Gulf of Tonkin Resolution providing president LBJ a “blank check” to take the nation to war in Vietnam.
  - 1973 - Paris Peace Accords leads to a U.S. military withdrawal from Vietnam



# Vietnam Case Study: Imports and Modern Ramifications

- During the era of direct U.S. military involvement in the Vietnam War, the Vietnamese economy consisted almost entirely of imports
  - U.S. and its allies supported Southern Vietnam
  - Soviet Union and its allies supported Northern Vietnam

Vietnam net(exports-imports) vs. Time



Ukraine net(exports-imports) vs. Time



Cartoon by Herbert Block, 1967

# References

- Github Organization - <https://github.com/orgs/ECE-143-FA-2022/repositories>
  - Note that most of our visuals are designed with user interactivity in mind
- Master Jupyter Notebook Repository -  
[https://github.com/ECE-143-FA-2022/merged\\_code](https://github.com/ECE-143-FA-2022/merged_code)

# Correlates of War Bibliography

- Militarized Interstate Disputes (v5.0)
  - Palmer, Glenn, Roseanne W. McManus, Vito D'Orazio, Michael R. Kenwick, Mikaela Karstens, Chase Bloch, Nick Dietrich, Kayla Kahn, Kellan Ritter, Michael J. Soules. 2020. "The MID5 Dataset, 2011-2014: Procedures, Coding Rules, and Description." Working paper. Available at <https://correlatesofwar.org/data-sets/MIDs/mid-5-data-and-supporting-materials.zip/view>.
- National Material Capabilities (v6.0)
  - Singer, J. David, Stuart Bremer, and John Stuckey. (1972). "Capability Distribution, Uncertainty, and Major Power War, 1820-1965." in Bruce Russett (ed) *Peace, War, and Numbers*, Beverly Hills: Sage, 19-48.
- Militarized Interstate Dispute Locations (v2.1)
  - Braithwaite, A. 2010. "MIDLOC: Introducing the Militarized Interstate Dispute (MID) Location Dataset." *Journal of Peace Research* 47(1): 91-98.
  - Bezerra, P., & Braithwaite, A. 2019. Codebook for the Militarized Interstate Dispute Location (MIDLOC-A/I) Dataset, v2.1.
- Formal Alliances (v4.1)
  - Gibler, Douglas M. 2009. *International military alliances, 1648-2008*. CQ Press.

# Correlates of War Bibliography

- Diplomatic Exchanges (v2006.1)
  - Bayer, Reşat. 2006. "Diplomatic Exchange Data set, v2006.1." Online: <http://correlatesofwar.org>
- Trade (v4.0)
  - Barbieri, Katherine and Omar M. G. Omar Keshk. 2016. Correlates of War Project Trade Data Set Codebook, Version 4.0. Online: <https://correlatesofwar.org>.
  - Barbieri, Katherine, Omar M. G. Keshk, and Brian Pollins. 2009. "TRADING DATA: Evaluating our Assumptions and Coding Rules." Conflict Management and Peace Science. 26(5): 471-491.