**War, frequency:**

For this test, we looked at incremental changes in the number of rounds and monitored the war frequency as we increased the number of rounds. Our suspicion was that, as the world was allowed to work out for a longer period of time the countries will approach and possibly go under their survival threshold set in the resource excel file. Consequently, the countries will tend to war with each other to get resources as the world period was increased.

# Global Parameters  
num\_rounds = { i : 5, 10, 15, 20, 25, 30}  
frontier\_size = 100  
  
# Calculate solution\_limit and depth limit dynamically based on country properties ?  
use\_dynamic\_solution\_limit = True  
use\_dynamic\_depth\_limit = True  
solution\_limit = 1000  
depth = 3  
  
interventions\_on = True # Do we want interventions ?  
log\_inequality = False # Track inequality in the world  
  
seed = 123456654321  
  
# Parameters for trade selectivity, index 0 and 1 are k and x\_0 for not selective countries,  
# index 2 and 3 are are k and x\_0 for selective countries  
trade\_selectivity\_parameters = [1, 100, 2, 200]  
  
  
# Game Input Files  
initial\_state\_filename = "./input\_files/countries\_for\_test.xlsx"  
initial\_resource\_filename = "./input\_files/Resources.xlsx"  
initial\_interventions\_filename = "./input\_files/Interventions\_case0.xlsx"  
  
  
# Game Output Files  
output\_schedule\_filename = "./output\_files/num - i.txt" # Output - Print for each search best EU and path.  
  
game\_state\_print = True # Print game state ?  
game\_state\_filename = "./game\_output\_files/num - i.csv" # Game State Delta State Quality outputs

Tests Results:

We found a significant increase in war actions with the increasing in number of rounds, which by itself might not seem interesting. However, the lack of revenue inflow of revenue gain outside of the initial start state makes it difficult for the world to be self-sustaining. Because each country ends up transforming or transferring enough to discourage themselves from any other action apart from war. This leads to increased occurrences of wars. However, we also saw a similar increase in transfers even though the war events increased

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| num | wars | transfers | all actions | w freq | tr freq |
| 5 | 29 | 60 | 174 | 0.166667 | 0.344828 |
| 10 | 59 | 120 | 374 | 0.33908 | 0.689655 |
| 15 | 91 | 180 | 516 | 0.522989 | 1.034483 |
| 20 | 125 | 240 | 665 | 0.718391 | 1.37931 |
| 25 | 157 | 300 | 785 | 0.902299 | 1.724138 |
| 30 | 183 | 360 | 886 | 1.051724 | 2.068966 |