Heuristic Analysis

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For this game-playing agent, we are taking into consideration different weighted ratios between #my-moves vs #opponent-moves. This would indeed be good for the custom score and also #my-moves shall always stay positive and having a greater chance for it to win with moves left. Each weighed parameter has been tested individually.

Below are the snapshots of the performance of the AI Agent using different ratios and their winning percentage:-

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                         *************************
                              Playing Matches
                         *************************

 Match #    Opponent     AB_Improved    AB_Custom    AB_Custom_2   AB_Custom_3
                         Won | Lost    Won | Lost   Won | Lost    Won | Lost
    1        Random       9  |  1       9  |  1      9  |  1       8  |  2
    2        MM_Open      7  |  3       1  |  9      6  |  4       4  |  6
    3       MM_Center     6  |  4       8  |  2      8  |  2       8  |  2
    4      MM_Improved    6  |  4       5  |  5      5  |  5       7  |  3
    5        AB_Open      4  |  6       4  |  6      5  |  5       6  |  4
    6       AB_Center     6  |  4       7  |  3      6  |  4       7  |  3
    7      AB_Improved    4  |  6       5  |  5      5  |  5       7  |  3
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          Win Rate:        60.0%         55.7%        62.9%         67.1%
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(Just for clarification)

Ratios for AB_Custom:-1 to 1.5

Ratios for AB_Custom_2:-2 to 3

Ratios for AB_Custom_3:-2.5 to 2

As we can see, AB_Custom _3 is the clear winner(Yay!). Thus supporting our thesis.