A Brief Modeling Summary of the Recent Changes to Vintage Leagues on MTGO

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1 Introduction

Recently, MTGO changed the payouts of vintage (and standard) leagues to combat win-traders[1]. These changes caused some controversy within the vintage community, and I felt like there was a lot of inaccurate math surrounding the discussion. This article is meant to add in some mathematical accuracy into the discussion.

Record	Previous Payout	Current Payout
5-0	150 PPs, 11 TCs, 5 QPs	140 PPs, 5 TCs, 5 QPs
4-1	120 PPs, 5 TCs, 2 QPs	120 PPs, 4 TCs, 2 QPs
3-2	100 PPs, 1 TC, 1QP	100 PPs, 1TC, 1 QP
2-3	50 PPs	50 PPs, 1 TC
1-4 or 0-5	Nothing	Nothing

The above table shows the payouts both before and after the changes. Here, PPs are play points, TCs are treasure chests, and QPs are qualifier points. For the purposes of this article, I will consider value in tickets[2]. The value of treasure chests fluctuates a lot, but currently they are worth roughly 2.4 tickets, so that is the value I will use. 10 play points are worth 1 ticket[3]. Qualifier points don't have as clear a value in tickets, and to win-traders they are actually useless. Goatbots assigns a value of .8 tickets to a qualifier point, and I will do most calculations involving normal players twice: once with qualifier points valued at no tickets and once with them valued at .8 tickets.

[1] Win-traders are people who have two accounts open, and queue at low population times to get one of these accounts a 5-0 and the other an 0-5.

[2] Tickets are worth about 90-95 cents (US) and can be fairly easily converted as such when you want to cash out.

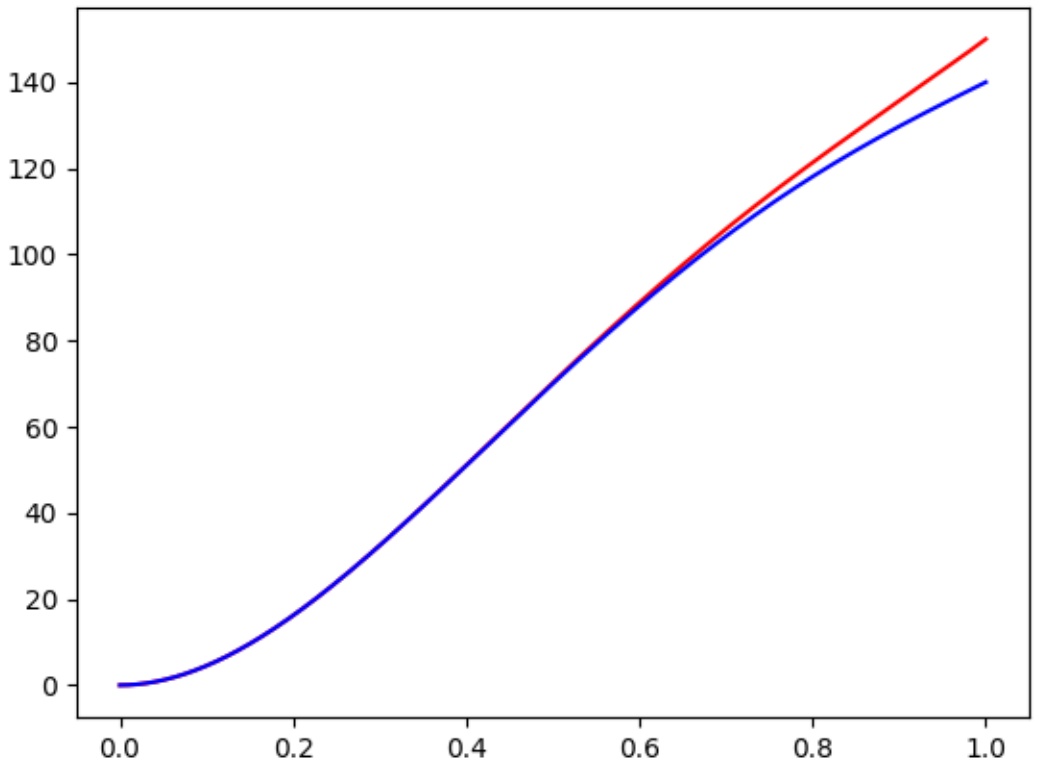
[3] but see the section 3

2 Calculations for Normal Players

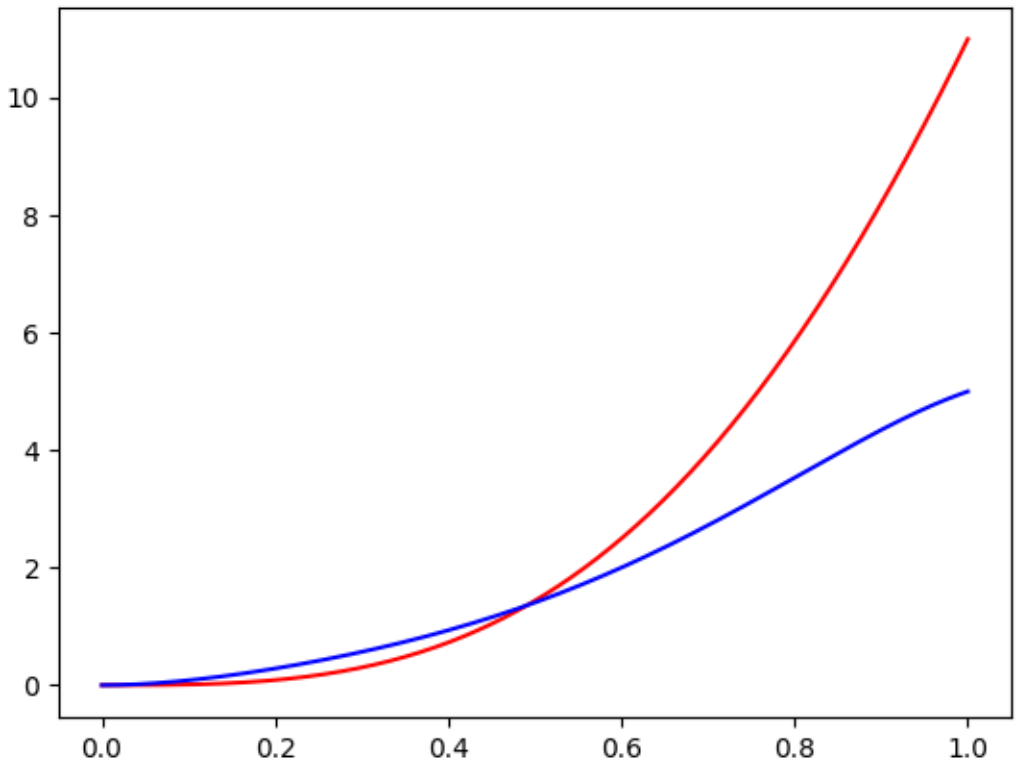
This section will calculate how these changes affect normal vintage players. One of the basic assumptions I will make is that a player that wins x portion of their games in leagues does so in a manner that is independent within a league; as an example, I expect a $50-50$ player to go 5-0 .03125 of the time and to go $3-2$ .3125 of the time, and so on. It's not clear this assumption is accurate, but it's hard to model things without this assumption.

2.1 Changes in Expected Value

This section is going to compute the changes in the expected value of entering a league. Here is a graph of what happens to play points, with red being before and blue being after:

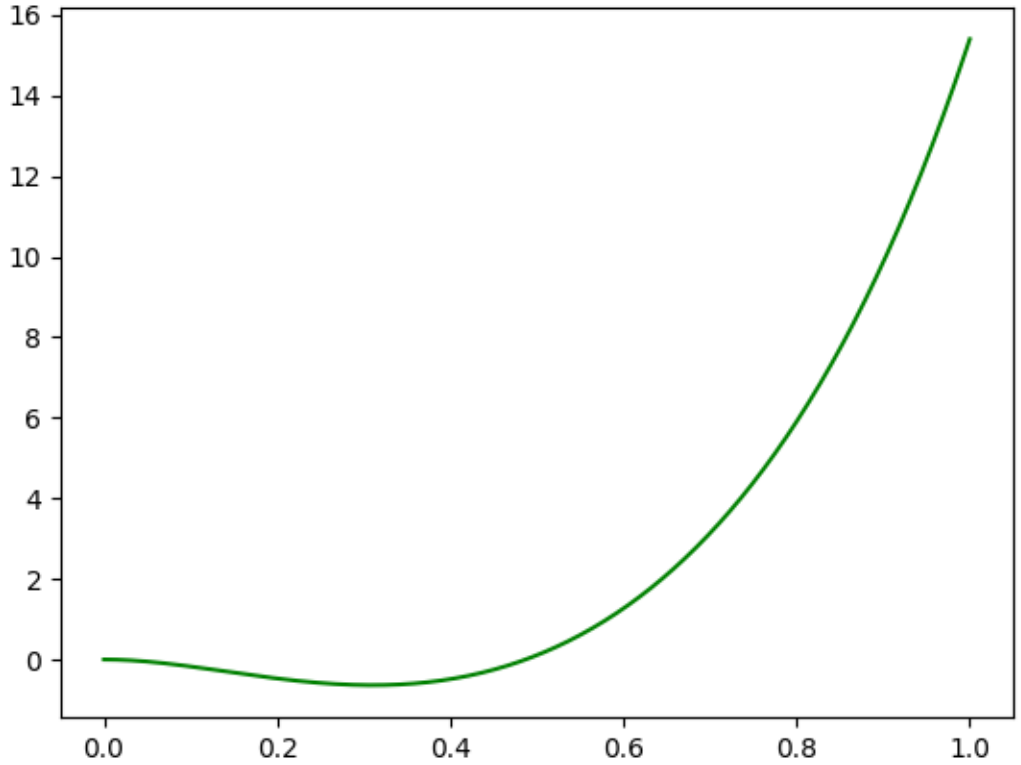


And this is a graph of the expected number of treasure chests:



Nothing has changed about qualifier points, and so there is no need to discuss changes. Obviously, there are just fewer play points because you never get more play points after the changes. However, you do get more treasure chests if you win at most 49.062% of the time, which makes sense.

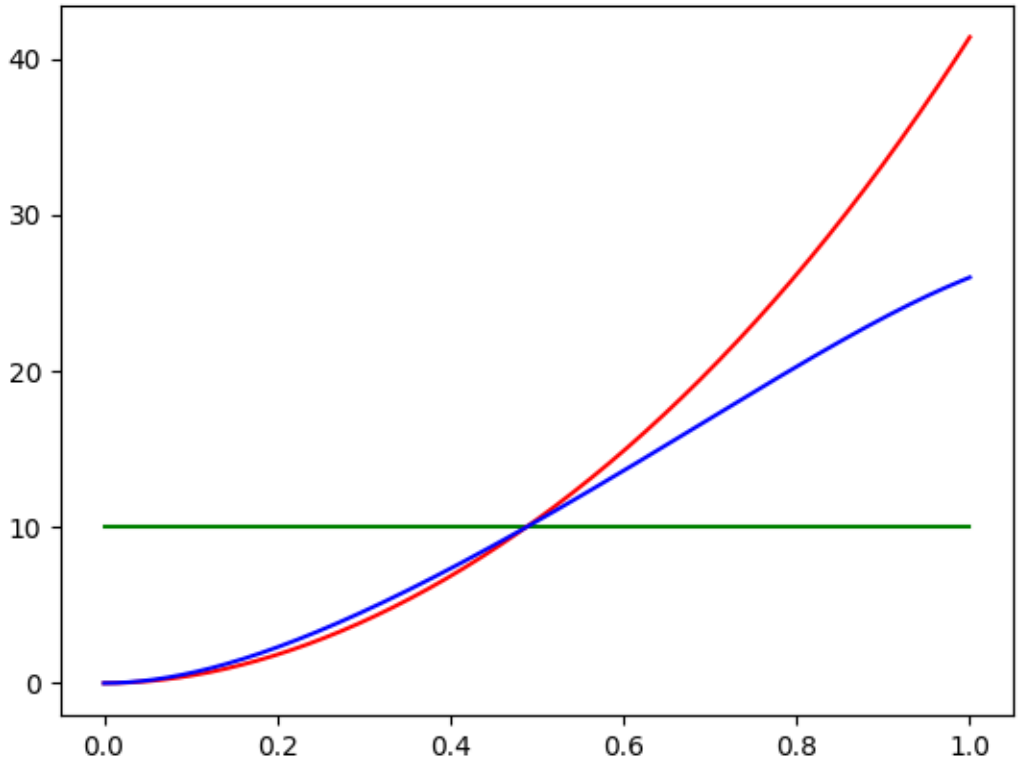
Finally, here is how the expected value reduced going from the old method to the new one:



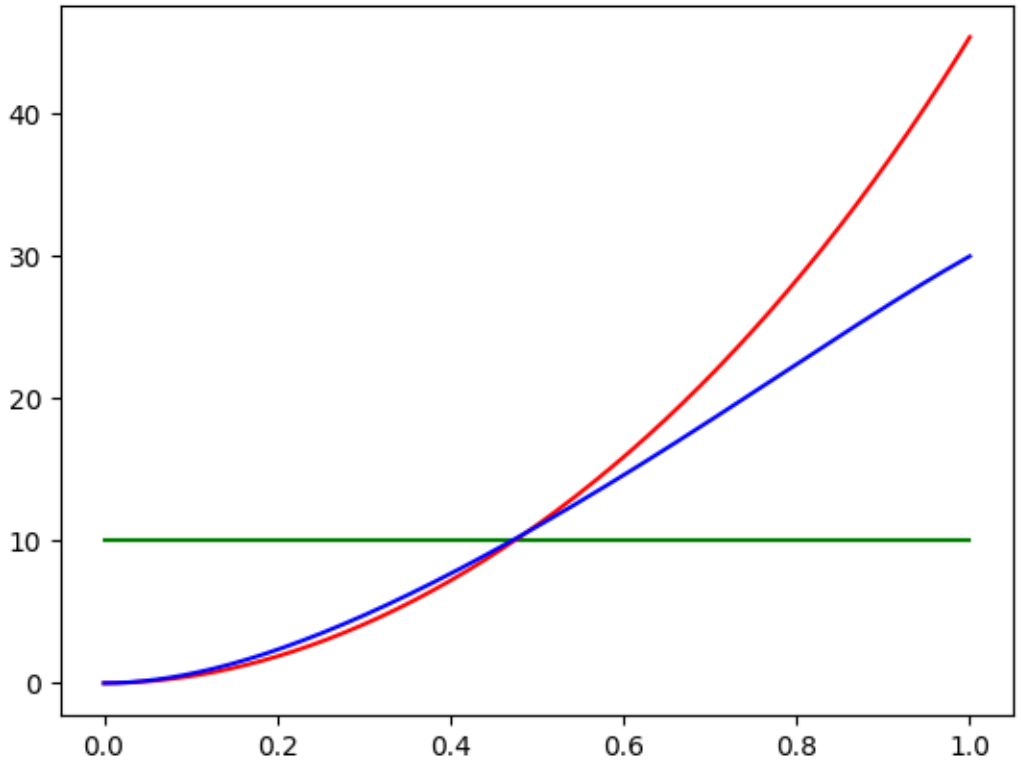
All told, the expected value of a league has increased if you win at most 48.704% of your matches, and it has decreased by less than one ticket if you win at most 58.126% of your matches.

2.2 Going Infinite

The next question is how does the math on going infinite change. To be clear, I will say someone goes infinite if the expected value of entering a league is equal to the cost of entering the league. Below is a graph of the expected value of entering a league valuing qualifier points at nothing, with the old payout in red, the new payout in blue, and the cost in green.



And this graph is the same but with qualifier points valued at .8 tickets:



The crossing points are almost identical in both graphs. In the first case, you went infinite with a 49.241% win rate before and a 49.132% win rate after. In the second case, you went infinite with a 47.398% win rate before, and with a 47.078% win rate after.

In summary, these numbers functionally haven't changed. If you were going infinite before, you might need to win one more match out of 900 to go infinite now.

2.3 War Chest Changes

There is one final dynamic worth talking about: how likely you are to go bust. In this section, I will assume that qualifier points have no value. One simple example of this: assume you win 50% of your matches, and start with 100 tickets in the bank. How likely are you to get under 10 tickets before completing 100 leagues? This is an easy question to at least simulate, and simulations show that you were about 19% to go bust before the changes and 11% after the changes. If you want 100 tickets to last 200 leagues, then you were about 30% likely to go bust before and are about 21% likely to go bust now. If you up your winrate to 55%, then you only had a .4% chance of not making it through 100 leagues before, and you now only have a .1% chance of not making it through 100 leagues.

This, again, broadly makes sense: the variance of entering a league has gone down, so while extremely good results are unlikely, the bad results are less bad as well.

2.4 Summary for normal players

In summary, if you are a normal player, then these changes are broadly speaking good for you if you have around a 50% win rate and start being noticeably worse for you once you get to a 55% win rate or so (of course, ignoring the effects on win trading).

3 Calculations for Win Traders

Before the changes, win trading was fairly straight-forward. A trader would open an account, give it 10 tickets, use the new account to 5-0 a league, spend 100 of the 150 won play points to 5-0 another league, and then be left with 200 play points in the bank. These 200 play points would fund this account 0-5ing the next two leagues, at which point the trader could trade everything out of the account and close it to avoid detection. In summary, an account lasted for 4 leagues, and the win-trader would spend 10 tickets and 2 leagues of time to get 22 treasure chests, for a profit of 42.8 tickets in total, or 21.4 tickets per league.

Things get messier after the changes though. One of the core assumptions in the previous section is that 10 play points are worth 1 ticket. This broadly speaking assumes that you participate in MTGO frequently and are able to spend almost all of your play points on playing magic (if you only play leagues, and have acquired 45380 play points over the course of your time on MTGO, then you could buy entries into 435 leagues, which is close enough to converting 10 play points into 1 ticket that it doesn't really make a difference). However, for a win-trader, it is much more accurate to say that 100 play points are worth 10 tickets, as they can only spend play points in increments of 100.

If the win-trader doesn't want to strand any play points in dead accounts, then they need to pay a new account 10 tickets, and win 5 leagues. They will be left with 300 play points, and so this account can lose the first three leagues to the next account, but you need to bring in more dedicated losing accounts to cover the gap. In total, they spend 30 tickets and 5 leagues worth of time to get 25 chests, for a profit of 30 tickets in total, or 6 tickets per league. An account needs to be open for 8 leagues instead of 4 (which has a much higher risk of getting detected and banned), and you need to maintain burner accounts as well. In short, to maximize profit, you need to have greater risk, maintain more accounts, and even then you only make 28.3% of what you did before.

If the win-trader can only stomach keeping an account active for 5 leagues, then they can pay in 10 tickets, win 3 leagues, and with the remaining 220 play points lose two leagues. They will strand 20 play points, and will still need to lose one more league, so it costs 20 tickets to get 15 chests over 3 leagues, for a total profit of 16 tickets, or 5.333 tickets per league. In short, the profit has been cut to 25.2% of what it was before, and they are still taking more risk and maintaining burner accounts.

If the win-trader really doesn't want to increase risk, then the best they can do is open an account, win one league, lose the next, and close the account. This has less risk and doesn't maintain burner accounts, but they generate 5 chests for 10 tickets and 1 league worth of time, for a profit of 2 tickets per league. This is pretty clearly a huge loss, to the tune of making less than 10% of what was made before.

In summary, in the best case, you can eat a lot more risk and get your profits slashed by at least 70%, and risk-aversion is highly punished. This probably seriously eats into the incentives to trade wins. Only time will tell if this actually ends win trading, but this is promising.

4 Final Notes

The code I used to do the calculations is here and here. It is written in python, and was run on version 3.10. The percentages when discussing going infinite were computed using WolframAlpha.

Finally, if you want to contact me about this, I hang out in the vintage streaming discord with username `rp2knight#4913`.