Day trading for a living?*

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Abstract

We show that it is virtually impossible for individuals to day trade for a living, contrary to what course providers claim. We observe all individuals who began to day trade between 2013 and 2015 in the Brazilian equity futures market, the third in terms of volume in the world. We find that 97% of all investors who persisted for more than 300 days lost money. Only 1.1% earned more than the Brazilian minimum wage and only 0.5% earned more than the initial salary of a bank teller — all with great risk.

JEL Codes: C92, G02, G11, G12

Keywords: day trade, retail investors, course providers

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1 Introduction

"[...] *Our task is to use our research and teaching to curb the rent-seeking dimension of finance. We should use our research to challenge exiting practices in finance and blow the whistle on what does not work. We should be watchdogs of the financial industry* [...]."

2015 American Finance Association presidential address (Zingales, 2015).

Day trading is the activity of buying and selling the same financial asset on the same day in the same quantity. According to a 2017 article in Forbes, "day trading is the new sexy that gets an inordinate amount of hype."[1] A web search for the term "day trading for a living" displays encouraging results. For instance, an article by Investopedia[2] with the title "Should you quit your job to trade stocks?" begins as follows: "Trading is often viewed as a high barrier-to-entry field, but this is simply not the case in today's market. Now, anyone with ambition and patience can trade, and do it for a living, even with little to no money. Sounds fantastic? It is, and there are so many options available to people with the desire to put in the time to learn." Indeed, many brokerage houses and websites provide day trading courses for individuals.[3]

Is it really possible to day trade for a living? The few existing studies that evaluate the performance of retail day traders report somewhat encouraging results. Linnainmaa (2003; 2005), Jordan and Diltz (2003), Choe and Eom (2009), Ryu (2012), and Kuo and Lin (2013) document that more than 20% of the individuals profit. However, they do not differentiate individuals with a single day trade from those who day trade regularly. Naturally, the odds of winning at the casino roulette decreases with the number of times one plays. The same occurs with day trading, as we show.

[1] https://www.forbes.com/sites/nealegodfrey/2017/07/16/day-trading-smart-or-stupid/#411e5d8a1007 (as of June 12, 2020).

[2] Investopedia is an American website based in New York City that focuses on investing and financial education and has nearly 100 million monthly page views. The article can be found at https://www.investopedia.com/articles/trading/09/how-to-trade-for-a-living.asp (as of June 20, 2020).

[3] See, for instance, https://www.investopedia.com/articles/active-trading/061214/best-daytrading-schools.asp, as of June 20 2020.

Only two papers, Barber, Lee, Liu, and Odean (2014) and Barber et al. (2019), also split day traders according to the number of days they trade. They find that less than 3% of the *frequent* day traders present consistent profit. Our results confirm this low fraction. However, Barber, Lee, Liu, and Odean (2014) report that the top frequent day traders earn very high and consistent profits, what can still encourage individuals to try to day trade for a living. We do not find that. The very top frequent day trader in our sample earned only US$310 per day with a enormous risk (a standard deviation of US$2,560). A possible reason for the difference is that, during their sample (1992 to 2006), retail day traders did not have to compete for profits with institutional high-frequency trading (HFTs) algorithms, which are increasingly active in today's market.

We are also the first paper to analyze if frequent day traders improve their performance over time, a crucial piece of information for those willing to enroll in day trading courses. We find they do not.

2 The empirical analysis

Our dataset comes from the Comissão de Valores Mobiliários (CVM), the Brazilian equivalent to the Securities and Exchange Commission (SEC) in the US. We follow all individuals who day traded "mini-Ibovespa" futures contracts[4]. Mini-Ibovespa futures are the preferred assets by day traders in Brazil, being the third most traded equity index futures and options contracts in the world—ahead of the E-mini S&P 500 Futures and S&P 500 Index Options, for example.[5] We observe the day trading profits for the mini-Ibovespa futures contracts of all individuals, uniquely and anonymously identified, from 2012 to 2017.

We use the first year of our dataset, 2012, to identify new retail day traders as follows.

[4]The underlying asset of the mini-Ibovespa future is the Ibovespa index, a portfolio with the 66 most liquid stocks listed in Brazil.

[5]According to the Futures Industry Association (FIA) 2018 report, the mini-Ibovespa futures totaled 706 million contracts, ahead of the E-mini S&P 500 Futures (445 million contracts), S&P 500 Index Options (371), Euro Stoxx 50 Index Futures (318), and Nikkei 225 Mini Futures (273). Also according to this report, the futures and options trading volume of the Brazilian Exchange ranked third in the world with 2.57 billion contracts closed.

We say an individual began to day trade in 2013 if we see no day trading activity from him or her in 2012; analogously, we say an individual began to day trade in 2014 if we see no day trading activity from him or her in 2012 and 2013; and so on. We observe a total of 19,646 individuals beginning to day trade from 2013 to 2015. We do not consider the individuals who began to day trade in 2016 and 2017 (53,246 individuals) since we need to have at least two years of day trading to evaluate performance.

We analyze profits net of transaction costs by subtracting exchange and brokerage fees. Importantly, we abstract from income taxes and other relevant expenses such as costs of trading platforms and courses. As such, our results overestimate day trading profits.

Out of the 19,646 new day traders, 1,111 (5.7%) day traded only one day, 9,978 (50.8%) between 2 to 50 days, 3,100 (15.8%) between 51 to 100 days, 2,738 (13.9%) between 101 to 200 days, 1,168 (5.9%) between 201 to 300 days, and 1,551 (7.9%) for more than 300 days. Figure 1 shows the fraction of individuals with a positive net profit in each of these six groups. The probability of an individual exhibiting a positive profit monotonically decreases with the number of days he or she trades. This peculiar pattern is contrary to what "self-selection"—individuals who persist in an activity are generally those with better performance—and "learning by doing" would suggest. In turn, patterns like this are usually found in gambling activities, such as the casino roulette, where the proportion of successful players also monotonically decreases with the number of rounds played.

We then run individual-day panel regressions (with the 1,551 individuals who decided to persist for at least 300 trading days) of the day trade daily profit on *seq*, a variable that chronologically orders the trading day of each individual (it is 1 for the first day of day trading, 2 for the second day of day trading, and so on). Alternatively, we use as explanatory variables two dummy variables, *first third* and *last third*, that are one in the first third of the investor's trading days and in the last third of the investor's trading days, respectively. Regressions include day traders fixed-effects. If there is learning on average among these persistent day traders, we should observe a positive coefficient of *seq,* and a

positive coefficient of *last third* along with a negative coefficient of *first third*. Table 1 shows the results. In columns 1 and 2 (gross profit) and 3 and 4 (net profit) we find no evidence of learning.

[Table 1 about here]

Finally, we evaluate the performance of the 1,551 individuals who day traded for at least 300 days. Considering the performance net of exchange and brokerage fees, we find that 97% of all investors who persisted for more than 300 days lost money. Only 17 individuals (1.1% of 1,551) earned more than the Brazilian minimum wage (US$ 16 per day), only eight individuals (0.5% of 1,551) earned more than the initial salary of a bank teller (US$ 54 per day), and the individual who earned the most earned US$ 310 per day on average.[6] Importantly, the eight individuals who earned more than the initial salary of a bank teller did so with great volatility: the standard deviation of the daily profit of these eight individuals ranges from US$ 632 to US$ 3,308. This can be seen in Figure 2, which displays a scatter-plot with the the daily net profit average (horizontal axis) and the daily net profit standard deviation (vertical axis) of each one of the 47 day traders who obtained positive net profit.

[Figure 2 about here]

3 Conclusion

We show that it is virtually impossible for an individual to day trade for a living, contrary to what brokerage specialists and course providers often claim. The previous literature was not so clear about this.

[6]The average minimum wage in Brazil during the years 2013-2017 is US$3,965.96 per year. Our reference for a bank teller wage is US$13,648.86 per year, which is the minimum bank teller wage agreed between unions and banks for 2016 (we consider the bank workers' union with the largest number of members in Brazil, see http://spbancarios.com.br/sites/default/files/cct/arquivo/1181_cct_2016_2018.pdf). All legal benefits are included to compute yearly wages.

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A Tables and Graphs

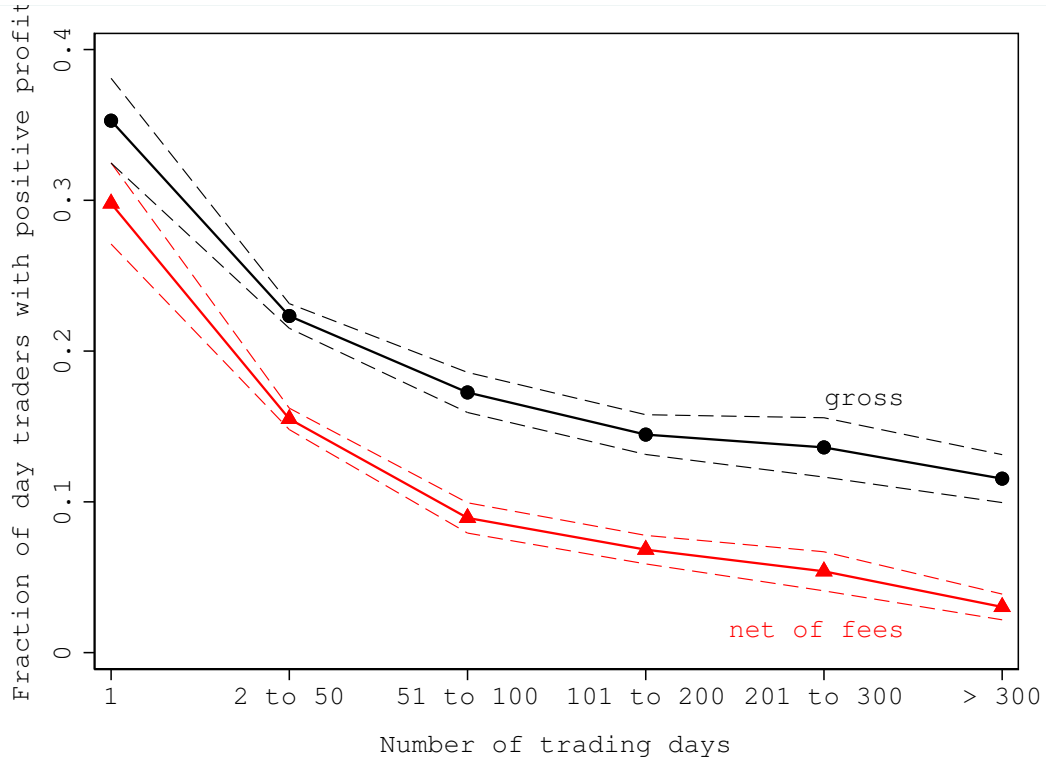

Figure 1: Fraction of day traders with positive profit
This figure shows the fraction of individuals with positive gross profit (black line with circles) and positive net profit (red line with triangles). Individuals are separated into six groups according to their total number of trading days. The dashed lines indicate the 95% confidence interval.

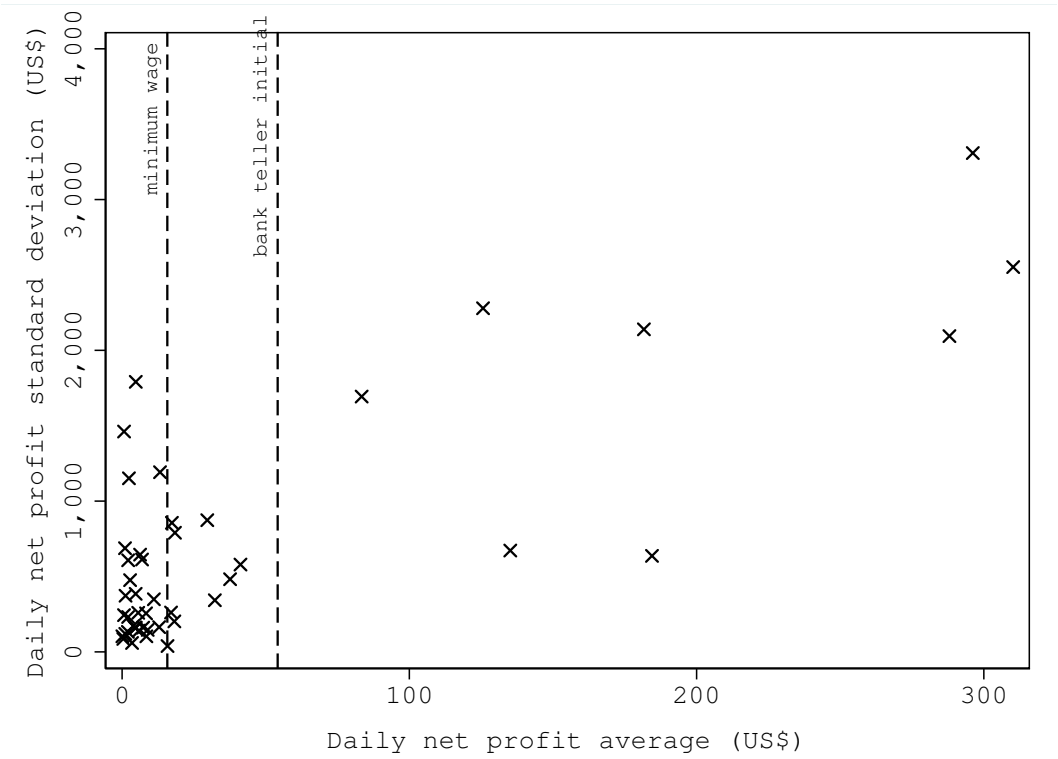

Figure 2: A closer look at the 47 day traders with positive net profit
This figure shows the daily net profit average (horizontal axis) and the daily net profit standard deviation (vertical axis) of each one of the 47 day traders (3.0% of the 1,551 persistent day traders) who obtained positive net profit. The first dashed vertical line indicates the Brazilian minimum wage (US$ 16 per day) and the second, the initial salary of a bank teller (US$ 54 per day).

Table 1: Learning by day trading

This table shows individual-day panel regressions with the 1,551 day traders who decided to persist for at least 300 trading days. We regress their daily profit (in US$) on *seq*, a variable that chronologically orders the investor's day trades (1 for the first day, 2 for the second day, and so on...), and on two dummy variables, "first third" and "last third," that are one in the first third of the investor's trading days and in the last third of the investor's trading days, respectively. Columns 1 and 2 consider day trade gross profits, and columns 3 and 4 consider day trade profits net of exchange and brokerage fees. All regressions include day trader fixed effects. Standard errors clustered at the investor level are in parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	daily gross profit		daily net profit	
	(1)	(2)	(3)	(4)
seq	0.005		-0.019*	
	(0.011)		(0.011)	
first third		-0.533		1.742
		(2.490)		(2.757)
last third		-0.120		-5.769
		(3.396)		(3.596)
constant	-29.47***	-28.07***	-44.99***	-48.45***
	(2.72)	(1.53)	(2.85)	(1.63)
R2	1.32%	1.32%	2.04%	2.04%
N	714,637	714,637	714,637	714,637