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ECONOTE No. 102 Q: Are Financial Markets Casinos? A: Most definitely not !

31 May 2021

## Summary

Calling financial markets and the assets traded therein as “Casinos”, a view based mostly on volatility of their prices, exhibits not only ignorance of the financial markets but, much worse, of what Casinos are and what they do! In a **Casino** the odds of all the games, both those of pure chance such as roulette or dice, or those of partial chance and perhaps some skill such as card games, are stacked against the players. This means, and this is essential to emphasize, that if punters play consistently and over a long time period, they are guaranteed to lose. The occasional jackpot hit by a ninety-year-old granny playing slots for the first time in her life, is no proof of the contrary but simply part of an infinite series of pulls on the lever, where, she just happened to be the one on the queue at the right time! Financial markets do not involve games of chance and even the degree by which skilled stock picking can make a difference is still hotly disputed.

## Investment Conclusions

The recent performance of the price of Bitcoin and the earlier examples of Game shop as well as the amazingly derivatives- driven convoluted affairs which led to the huge losses of Archegos and of Greenshills have caused media exasperation and led, inevitably, to comparing financial markets to “Casinos”. The implication here is that financial gains and losses are not connected to anything in particular, anything goes for anyone involved and people’s wealth and fortune is hostage to pure chance. It is, of course, correct to associated volatility with risk and, even better, it is easy to measure it. However, as we will show, whereas in Casinos the bank always wins and the players always lose, this is far from the truth in financial markets where investors, of course, can make gains and not just losses.

## Financial markets: chance, volatility and returns

In financial markets there is no element of pure chance influencing returns in buying and selling assets. Neither is there is any concrete evidence that some investors can beat the market consistently, meaning that they can earn above average, risk-adjusted returns, over a long period of time through skill or through some method, be it arcane or software -based. Nor, of course, there is any evidence, unlike for Casinos that investors are guaranteed to lose their investments if they buy and sell consistently and over a long time period! **Hence the difference.** In Casinos all players over a long time period of playing will lose (although some grannies will win occasionally!) whereas in financial markets not everybody makes consistent positive returns but neither lose their investments over a long period of trading.

**Since players cannot beat the Casinos and make consistently gains, can they beat the markets?** The answer is complex but boils down to “unlikely” which is qualified by the definition of what “beating the market” means. This means earning greater than from a “buy and hold” policy, minus the fees charged. The returns must be risk-adjusted, as some portfolios may have very low returns but with near zero risk or high risk with high returns. There is also the tricky issue as to how long has the technique of beating the markets has been applied, and over what time period. Fig.1 shows the price of Bitcoin whose recent extraordinary variations transfixed the markets. It was easy to see why the doubling of the price of an asset over a very short time period was likened to that of hitting the jackpot in slots, or being dealt a royal flush in poker. Needless to say the two “events” are unrelated as one is the result of sharp increases in the demand for an

Asset and the other is the result of certain events coming together such as the aligning of bells in a slot machine. S&P 500 exhibits volatility- sharply falling or rising prices. ( Fig.2).The VIX index ( Fig.2) measures expected volatility in the S&P in the next 30 days by using the option prices of the component stocks. Standard deviation, the spread of prices around the mean, is a simple form of measuring volatility except that it is historic rather than expectational such as the VIX. The chance of a coin flip coming heads is a fixed and certain 50%, but the likelihood of the S&P rising or falling by X% in any particular day can not be predicted. if at all. anywhere near with this kind of certainty.

Fig 1. Bitcoin 2020-2021 in USD



Source: Bloomberg

## Casino operations: a very basic primer

Casinos make money by offering games, which pay less than the true statistical odds of the game. Consider the following:

**Roulette.** There are 18 red and 18 black holes plus two holes (0 and 00), which do win, a total of 38 although the latter 00 may not appear in some tables. So the chance for the player of getting a single red or black is  $18/38 = 47.4\%$  but for the Casino is  $18/36 = 50.0\%$ , the difference of 2.6% in favor of the Casino. The players are sold a "lottery ticket" which pay less than the true odds of 50.0%. **Dice:** The chance of rolling any single number on a six-faced dice is  $1/6 = 16.6\%$ . All the Casino needs to do is to pay less than the true odds of 16.6% on the main and side bets **Slots:** These are programmed, effectively, to pay less than they receive, however, in most cases the percentage payout being fixed by the licensing authority. **Blackjack:** Here the player and the dealer have exactly the same probability of drawing the card that will give a "natural" 21 or a near enough number to 21 to win. Yes, except that the player has to play his hand before the dealer does. If your hand "busts", the chips are immediately lost before the dealer plays his hand. Even if the dealer busts, the player's chips are lost. If the dealer has a 21, the player does not get the

### Fact Box: How do Casinos make money and players lose

As these explanations can get very boring, here is, cutting to the chase, with an example that fits all the Q&A! Suppose that you are offered a lottery ticket with a 50-50 chance of winning USD1. What is the maximum price you would pay for that ticket? Answer is 50 cents as this is probabilistic value of the gain, that 50% of USD 1. Buying two tickets will cost you USD 1, one ticket may lose and you will lose your 50 cents, one ticket may win and you will get USD 1. Net position is the costs of the two tickets, USD 1, a gain of USD 1 and, thus, a net position of zero gain/loss. If you could buy the lottery ticket for **less** than 50 cents and if you bought a lot of them, you will, on average, make money. The sellers of the lottery tickets must also make money as well, and so they will sell you the ticket at a price of **over** 50 cents, thus guaranteeing that over the sale of a lot of tickets, on average, the punters will be making losses and the seller of the tickets will be making gains.

The chance to play his hand, except if that is also a 21, when the casino may, just, allows the chips to be returned. **Baccarat** is almost an identical game with 9 as the desired total rather than 21. **Technical and psychological.** Remembering that the probabilities shown above hold true over repeated tries. It is possible that a fair coin tossed fairly may come out heads, time after time, 100s of tosses. But over thousands or millions of tosses it will come 50-50 heads or tails. Same for roulette spins, dice tosses and card pulls. Thus large numbers are essential. One single player has only 24h in a playing day and, presumably, limited financial resources even if they run into millions. Millions of players have billions of hours to play and trillions of money, and, that is what gives the edge to the Casino over a single but determined player. For the player who insists to win over the casino by playing endlessly, this guarantees losses. The only way to "win" is to make a huge bet, win, and leave immediately and never return! This almost never happens because people will wish to run with their lucky strike, or the reverse, having lost the bet, try to recover it. This is also the reason why casinos do not have clocks and no natural light in order to ensure that time loses its dimension and encourages people to play long, thus increasing their chances of losing.

Fig.2: S&P 500 (green), VIX (red) 2005-2021



Source: Bloomberg

## Financial markets are not Casinos

### Financial markets

The question whether an investor can or cannot "win over the market" in the same way that a player can or cannot win over a casino, is here irrelevant. The investor is not playing against the dealer, as there is none. So the odds, by definition, cannot be fixed. The investor here is trying to predict the next market move so as to buy low and sell high.

**The Efficient Market Hypothesis (EMH)** posits that asset prices reflect all the available information. Other than illegal insider trading, what the investors see in their screens, or newspapers or pay to read in advisory newsletters and daily market reports is all there is. If some available information is not yet reflected in the price of the asset, some investors will act on it and the profitable differential will soon close. Perfectly consistent correct forecasts cannot, therefore, exist. If they did, people would act on them and this would tend to close the profitable differential aided by the fact that imitation ("invest like Warren...") Would also help eliminate the gap. Hence the inherent uselessness of books with titles such "Follow my trading method to become a millionaire in two weeks" ("Best seller, more than 1 million copies sold"). Why does the author want to share this valuable information with everyone instead of quietly making a mint on his own? And why should anyone buy a recipe to riches, which is already known to one million other people who are, presumably, acting on it, thereby negating its value? A sophisticated way of saying all this is that asset price movements follow a Random Walk, although the statistical definition is a little stricter than the words used here.

**But is the EMH true?** Well, not quite so simply put, because like all scientific tests, a theory cannot be proven right or wrong, but it can be shown to be, or not to be, repeatedly supported or contradicted by facts and evidence. There is a humongous amount of academic and non-academic literature on the topic frequently offering opposing conclusions, not because people cannot make their mind but because, among other reasons, of the differences as to what a perfect prediction of a price actually means. **In sum Financial markets are not like Casinos, as in Casinos the players will always lose money in the long run, whereas investment in financial assets may yields positive returns both in the short and long run. Can investors "guarantee" these returns by good predictions and expert asset picking? Possibly, and selectively, over some periods of time and for some assets and depending on a lot of other factors. There is no clear answer. But financial markets, ain't no Casinos**