Report
DYNAMO 75
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The Fortunate[1]

It is said that this story took place in the eighties, in the department of engineering of the University of California in San Diego (UCSD). During an advanced statistics class of the doctoral program, the professor and his students were discussing the vicissitudes of chance in a world that obsessively seeks certainty and clarity. When discerning the polar types of this mess, it was suggested that a coin toss game would the best portrayal of pure luck. Neither intelligence nor talent is able to influence the game's result. It's pure luck. On the opposite side of the spectrum, and with a more literary inspiration, would be the tale of Robinson Crusoe, the ingenious entrepreneur. As a solitary castaway, he built a small empire. Talent and effort in their most conspicuous forms.

Beginning with luck: a coin (with no bias) is tossed (with no tricks) and the side facing up defines the winner. It isn't possible to train or to prepare to improve your performance. The probability of winning will always be equal to the probability of losing. Skill and talent are sterilized in the game. There is nothing to do but wait and see how the coin will land.

One can imagine the students' astonishment when the professor brought to class an individual that had, in a tournament, won the coin toss game ten consecutive times. Something that happens with a $(1/2)^{10}$ probability. Not exactly a rarity, but unlikely enough so that everyone admired the performance of this lucky man. They admired his performance but not him, whose role in such feat is known to be nonexistent. Were there 100 or 1000 victorious rounds, there still would not be any reason for someone to consider himself a specialist in this "sport". Or to say that he has put all of his effort into it. It is a matter of chance, not skill or effort.

The surprise was even greater when, a week later, a woman, who had also won ten consecutive rounds of coin toss, was brought to the classroom. The students were finding it all very strange, but congratulated the new champion out of respect for their teacher – though they did not see any merit in her victory. They didn't miss the opportunity to point out the luck and astonishing coincidence of the professor finding them precisely when this subject was being discussed in class.

Cleverly, three days later the professor announced that he would bring another person that achieved the same result. That was too much. The students now decided to manifest themselves more eloquently. Respectfully and somewhat embarrassed, they asked to take a look at one of those strange tournaments, where anomalies were frequently taking place. Seeing is believing. Solicitous, the professor led them to the chalkboard. There, he sketched a theoretical tournament of 1024 individuals organized into 512 pairs for a first round of coin tossing. 512 remained and continued to play, organized in 256 pairs and so forth, until the tenth round, in which only two people were left. One of them, in less than 15 minutes, would have necessarily won 10 consecutive rounds of the game. A simple algorithm would be able to produce as many fortunate individuals as desired. Exceptions being produced at an industrial level: a beautiful paradox and a great example for teaching. Intelligence tames chance? As a matter of fact, the subtlety lies in how easy it is to obtain this low-probability track record, though not being able to know which one of the 1024 individuals would be the winner. This selection, of the lucky one, happens by absolute chance. From a practical standpoint, it is an honest lottery.

1 *For the writing of this report, three main sources were used: (1) "The Foundations of Modern Political Thought", Vol. 1 – "The Renaissance" from Quentin Skinner, Cambridge University Press, 1978, specially the 5th chapter, "The Age of Princess", (2) "The Empire of Chance – How probability changed Science and Everyday Life", various authors, Cambridge University Press, 1989 and (3) "The Broken Dice and Other Mathematical Tales of Chance", from Ivar Ekeland, The University of Chicago Press, 1991. A complete bibliography will be available in our website.*

It is a common practice that at the end of short periods – days, months, quarters, semesters or years at most – to publish lists that rank the best money managers by category. Those who place in the first positions are considered the most profitable, or at least they held this position for the time period in question. This leads to the satisfaction of their investors and to the envy of those who didn't have the clairvoyance (luck?) to invest their resources there. This situation holds a certain resemblance with what was previously described. If no specific ability can be recognized in money management – which is evidently absurd or at least we hope it is – the market could be seen as a complex algorithm that, after multiple coin toss rounds (evidently the alternatives, in this case, are much more numerous), will show the ones who won. Nothing would prevent this victory to be celebrated and even explained, subsequently, by a long list of methods, ideas, intelligence, principles and science. Elegant letters to investors and annual reports would also be published in order to prove that there was talent in a case in which luck was the only factor involved.

As an activity influenced by a large number of variables and by the subjectivity of the players, it's clear that at least some of the managers' performance should be credited to chance. As the time period shrinks, this statement becomes even more credible. This component, when isolated, interferes in the results in the same fashion as the professor's algorithm does. Someone in the near future is going to have the best performance but it's not possible to know beforehand who that will be. Nevertheless, it doesn't make any sense to think about competence when only mere chance is involved. If the management of those funds was a non-stop lottery, investors would be left with deciding on the basis of a roulette or voices from beyond the grave.

It is obvious that the market is not a coin toss game. It is much more complicated than that. Fundamentalists believe to have an advantage in terms of knowledge that makes their decisions more technical and less dependent on chance. Graphical analysts believe in the interpolations and measurements that, in their understanding, have the value of a scientific method. Market timers perceive short variations as a fine tuned seismograph. Insiders – who shouldn't exist, but they do – have a blind faith in what they are buying and by doing so, they feel that their bets are safe. The intuitive ones believe that spontaneous reactions to a certain problem give them enough operational confidence to justify their calls. Each one, in their own fashion, tries to avoid the treachery of an uncertain future with the talent and ability at their disposal. For all of them, perfect or not, the market is definitely not a dice game. Not every time, at least. On the other hand, it is impossible to deny that sometimes we aim at something but inevitably hit something we didn't even know existed. Said in a more erudite way, these are the famous non-intentional consequences that will garnish sober investment decisions.

The fact is that skill and luck come together in variable proportions in our activity and the performance of each manager depends on both. Hence, it is reasonable that we analyze those qualities in a more profound way, so that throughout this letter and at the very end we are able to comment on some aspects of the problem as we see it here at Dynamo, and which highly interests us.

Has the reader ever heard of Tyche? She is a goddess, the daughter of Zeus, who defines the luck of mortals in Greek mythology. Later, in Roman mythology, she is renamed Fortuna. Misfortune or divine gifts without apparent cause are exclusively the work of Tyche. She is certainly not among the most popular figures of the Olympus. And that doesn't happen without a reason. Following the main thread of Greek mythology – going through Plato and Aristotle until it reaches the most structured and broad angle which is Stoicism – we can understand why that happens. For the Stoics, the essence of the world is its harmony, the place that it holds in the cosmos. There should be a perfect functioning of the machinery that binds destiny and history. Accidents do happen (Tyche is responsible for this part), but sooner or later order is reestablished. It is clear that in this mindset, chance doesn't have a place and this idea cannot be developed. The exclusion of the fortuitous aspect, although with less intensity, will reach and diminish the Latin form of this divinity. Paradoxically, it will be in Christianity and through Saint Augustine that Fortuna is revived. Not as a goddess, but as an idea of impossibility or insignificance on the physical specter. In the city of god, there is no room for the independence of chance. Tyche's cult is heretic and ignorant. Everything is subject to Divine Will. Whatever seems to be unexplainable can

be explained by the First Cause. Everything that seems to be unpredictable has actually already been set by the Divine Providence.

Niccolo Machiavelli, in the first breaths of Renaissance, will readdress the issue of skill and luck as a pillar for the understanding of human behavior. At least in politics. Dedicated to the magnificent Lorenzo of Medici, "The Prince", announces in the first chapter what will be one of the main subjects of the book. This book serves as a manual of conduct for the governor that is inspired by the opposition between fortune and virtue. According to the author, fortune is the biggest threat to rational political action. Partly because, he says, domains are conquered by virtue or by fortune. The first one is of the individual's responsibility, merit. The second one directly dictates the course of events, but through an unpredictable path for the agents. In Machiavelli's work there is even the curious suggestion that when fortune is responsible for defining the course of action, it does so in a way that won't benefit the agent. For that reason, part of the work is designed to show the Prince how the virtuous man should be able to oppose it. For that to be possible, fortune, despite powerful, can't influence all outcomes. It's when it is absent that talented leaders will be able to determine the destiny of their people (such as Moses, Cyrus of Persia, Romulus of Rome and Theseus). Machiavelli even states that when fortune wants to act independently, the best course of action is to stand down and not annoy her. At another point in time, when she chooses to retreat, that is the time to act with talent, dedication and ability. By the use of an uncommon symmetry (a greatly appreciated characteristic in the Renaissance), he says that fortune is the judge of half of our actions, leaving us to rule on the other half. In this case, the governor must have the basic wisdom of using both pre-vision and preparation (something that we know well and seek to do here at Dynamo). To anticipate events under our jurisdiction and to be perfectly prepared to react to them in our best interest. That is the name of virtue. If the merit of the Prince is to enamor the leader's strategic intelligence when dealing with state affairs, this is accomplished by compromising a secondary fundamental effect: unleashing, to the occidental world, the horrible beasts associated with an unpredictable future, a concept that was addressed by the Greeks, Romans and the Christian doctrine. Reinvigorated, fortune will gain strength until it is confronted directly. Adam Ferguson, one of the most brilliant thinkers of the Scottish age of enlightenment, stated that "History is the result of human action, not of human design." Thereafter, we start to have a daily intimacy with chance. Against that, we will make use of the powerful mathematics of chance. We'll be throwing ourselves against the *Gods*. Ultimately, it can be said that the laws of fortune's reign are the theories of probability and statistics.

But, the forced eclipse years until the Renaissance redemption left Tyche indisposed towards mere mortals. When she turns herself to the prominence of mundane phenomenon, the goddess becomes amused by harassing the attempts of human reasoning: perfect markets, rational expectations, statistics, maximizing utilities, probability and many others. Among her various perverse strategies – very interesting from a practical and intellectual point of view – three of them can be randomly (?!) highlighted to show how the respect for fortune is important in our day-to-day activity.

The first one, which counts among her favorite ironies, is the one that defines that really small odds aren't a guarantee that the event won't occur. We've grown accustomed to confusing 95% intervals of chance with certainty itself. Now, if an investment has a high probability of being successful and a low chance of being a failure, the theory of expected value would tell us to make it. And with a bit of goodwill, as the numbers look good, why not leverage the position and enhance the return over the invested capital? There lies the danger. It's clear that probabilities are much more reliable with a larger number of repetitions of an event. But, in general, investment opportunities are usually isolated events. Nevertheless, chances are calculated and investments are made. There are variations around this method. For instance, it is known that fund managers acting as if investing their own personal funds will take on different levels of risk than those acting as pure third-party money managers. It is a fact that the expected value law is sometimes set aside. Still, from above (or below, who can tell) Tyche can find her way to influence the investment, the company or the fund that is managed by geniuses with PhDs and Nobel laureates leading to a failed experiment. Later, literature will tell those stories hypertrophying the "accident". For that reason, here at Dynamo, we have an olympic reverence for fortune's bad mood (or mood only). The fundamentals of the down side are very important for

us. We do so using Karl Popper's way of thinking which means submitting each investment thesis or business proposition to harsh rounds of internal discussions, where the objective is to prove that everything is going to be a massive failure. Only after reassuring ourselves that the breaches through which Tyche could penetrate are narrow enough, we then proceed with the investment. With that, we hope to be benefiting from fortune's best feature, that of luck and good results. We tend to believe that when Warren Buffett says that it is better to buy a wonderful company paying a reasonable price than buying a reasonable company paying a wonderful price, he knows the goddess he's dealing with.

The second one is much more sophisticated. It comes from the diabolical alliance between fortune and vanity. Verse 2, 1st chapter of Ecclesiastes: *vanitas vanitatum, et omnia vanitas (*vanity of vanities, all is vanity). A powerful ally, it resembles self love, maybe even being confused with it. Fortune and vanity, this widely coupled duo interferes in human conduct. Almost all of us have seen it acting in ourselves or, much easier to spot, in another person. It is good to remember the famous sentence of Titus Livius: "Fortune blinds the minds of men when she does not want them to oppose her designs." In this task, it is helped very efficiently by vanity. Usually, in our realm of financial markets, this pair appears as a classic storyline (presented here in its most synthesized form): you, money manager, trader, speculator or something similar, make a successful decision. Other than your talent (you must have some), many other things will be beneficial to a favorable cosmic alignment. In this initial stage, you still recognize them. You receive praise and stimulating words for your result. Those are your first two minutes of fame. Gratifying. Following that, another success, probably an even bigger bet. This implies that the first call wasn't an isolated fact, there is consistency in your work. Your success is fast and well deserved. You start to believe in what people are saying: you have talent. Your decisions are intelligent and accurate. You can see farther than others and you know what you are doing – you just don't know that this is when you start to be closely observed by the duo. A few mistakes are made, but it's easy to explain them. They are anomalies, exceptions. You proceed, then, on an enlightened path and the third success is phenomenal, a big shot: no luck involved, only your extraordinary and indisputable natural competence, your skill. You are exceptional, and for that you deserve praise and the bonuses. It's in this sense that Machado de Assis predicted that vanity is, however, the beginning of corruption. And Machiavelli warns the Prince that he should be prudent and resist the temptation to see virtue where chance has been prevalent. This temptation is constant, because distinguishing results from one and the other is often difficult. "Fortune tends to reap special pleasure in punishing hubris" cautions the philosopher. Imperious, you tend to be annoyed by critics, questions and obstacles. You want to proceed in doing what you know has to be done – and works. You start leveraging your bets and start to believe that mistakes are scarce. You seek more successes and compliments – and probably more status and financial rewards. You think about fortune. Not the one mentioned previously, but the financial one. It is time for the goddess to make her move. And when you call for the biggest deal of your life, everything goes wrong. A sequence of unbelievable events conspires to the failure of your well thought-out plan. A lot is lost, or even everything. The end. A bad ending. How many times have we seen this happen, and with the best of breeds. For us, here at Dynamo, the best to way protect ourselves from those traps is to develop a culture that is deeply rooted in collective action. Of course, this is much simpler when dealing with a small company, with few people, which is our case. As we make decisions, attribute importance, compensate, give partnership and even work, all is thought of in a way that repels the treacherous duo from here. We do not forget Terence's inspiring saying: *homo sum, humani nihil a me alienum puto* (I am a human being, I consider nothing that is human alien to me). There is no way to be definitely protected given that we are made of a flawed raw material, but we believe that the Dynamo culture works a bit like a burglar alarm: they can be trespassed – but when carefully installed in our homes they suggest that the robbers look at the house next door.

The third is more curious, because it is apparently innocuous to our activity. But it only appears so. It is the fact that we, as mortals, find it hard to generate chance or random numbers to use the more technical term. With that, we eliminate the immunity of practically all the studies on fundamental statistics. And here lies the irony: when we wish to use chance as an instrument, to tame it, when we want fortune to bless us with its randomness, it refuses to do so. We cannot steal luck

as Prometheus stole fire. We spare our liver, but we are unable to access the perfect roulettes, with no vices. From the first manual or mechanical attempts at games of chance, dices and cards, it has been acknowledged that there will always be a physical limitation (from one to six in dices, for instance) and that dooms them to a limited possibility of outcomes. With the technological evolution of computers, specific programming techniques have become a new and promising frontier. But that wasn't the case, as even the most powerful computer isn't able to reproduce the properties that we attribute to spontaneous chance. There is always a deterministic formation of the numbers that is defined by the programmer and that compromises the idea of randomness. There were so many difficulties to obtain something that seemed quite simple, that questions have been raised about the existence of randomness itself, or if it is a result of our imagination, an ideal type, using Weber's strict definition. A construction that is as artificial as the perfect geometric forms that only exist in our minds. "God doesn't play dice" famously said Einstein. Only recently, using a strategy taken from the world of sub atomic particles – the uncertainty of quantum mechanics – that we believe to have gone from using so called pseudo random numbers to proper random ones. And that is an example of the capitulation of human talent and effort to the forces of nature. It's the only place where we will be able to obtain random number series that can't be found elsewhere. It can be said that, in general, the knowledge obtained by surveys and simulations are biased by that basic deviation. The objective implication that can be derived for our activities and investment methods is that knowing the universe is necessary, even if that may prove to be exhaustive and painful. To interact with the company and its management team during extended periods of time is a way of escaping from convenient approximations, supported by partial knowledge. Likewise, it's not sufficient to study one balance sheet or even a couple of them. The sensibility with the numbers will be developed by the constant evaluation over many years, semesters and quarters of the various figures that the company's accountability will show. To be satisfied with a small sample is to incur in a methodological trap that could cause lots of damage.

Not recognizing the importance and the inevitability of chance in human actions is unacceptable. Maybe it's even impossible to do so. To be prepared for this contingency is essential – to the extent possible. More than that, as we will see in the next Report, the search for the best antidote to counter the wild forces of fortune, has already been addressed in literature in support of the Prince from the 19th century. It is the clash between Fortuna (chance) and Athens (wisdom). For this task, we have apparently come to a consensus. Nothing is more efficient than the combination of dedication, talent and persistency to support the strange and almost paradoxical popular saying that recommends "helping luck". And here we are back to the heteropolar bond (it's always good to praise the gods before exalting something very human) that was being discussed in the UCSD classroom. Having explored, to the extent possible, the characteristics of the first term and its implications for Dynamo, we will balance that, in the next Report, in which we will go back to the adventures of Robinson Crusoe: an individual that was literally abandoned by luck and had to struggle first to survive and then to prevail. Finally, we will try to draw some provincial conclusions, although important for us, which we find useful when dealing with the clash between the anthropology of knowledge and the mythology of luck. Something that fell short at the professor's class at UCSD.

Rio de Janeiro, November 6th, 2012.

DYNAMO COUGAR x IBX x IBOVESPA
Performance up to October/2012 (in R$)

Period	Dynamo Cougar	IBX	Ibovespa
60 months	87,6%	-4,0%	-12,6%
36 months	73,3%	5,6%	-7,3%
24 months	27,1%	-6,7%	-19,3%
12 months	22,5%	5,7%	-2,2%
Year to date	17,1%	5,3%	0,6%

NAV/Share on October 31st = R$ 380,162821554

DYNAMO COUGAR x FGV-100 x IBOVESPA
(Performance – Percentage Change in US$ dollars)

Period	DYNAMO COUGAR*		FGV-100**		IBOVESPA***	
	Year	Since 01/09/93	Year	Since 01/09/93	Year	Since 01/09/93
1993	38,8%	38,8%	9,1%	9,1%	11,1%	11,1%
1994	245,6%	379,5%	165,3%	189,3%	58,6%	76,2%
1995	-3,6%	362,2%	-35,1%	87,9%	-13,5%	52,5%
1996	53,6%	609,8%	6,6%	100,3%	53,2%	133,6%
1997	-6,2%	565,5%	-4,1%	92,0%	34,4%	213,8%
1998	-19,1%	438,1%	-31,5%	31,5%	-38,4%	93,3%
1999	104,6%	1.001,2%	116,5%	184,7%	69,5%	227,6%
2000	3,0%	1.034,5%	-2,6%	177,2%	-18,1%	168,3%
2001	-6,4%	962,4%	-8,8%	152,7%	-24,0%	104,0%
2002	-7,9%	878,9%	-24,2%	91,7%	-46,0%	10,1%
2003	93,9%	1.798,5%	145,2%	369,9%	141,0%	165,4%
2004	64,4%	3.020,2%	45,0%	581,2%	28,2%	240,2%
2005	41,2%	4.305,5%	30,8%	790,7%	44,1%	390,2%
2006	49,8%	6.498,3%	43,2%	1.175,8%	46,4%	617,7%
2007	59,7%	10.436,6%	68,4%	2.048,7%	73,4%	1.144,6%
2008	-47,1%	5.470,1%	-50,1%	973,3%	-55,5%	453,7%
2009	143,7%	13.472,6%	151,9%	2.603,3%	144,0%	1.250,7%
2010	28,1%	17.282,0%	15,2%	3.013,2%	6,2%	1.334,5%
2011	-4,4%	16.514,5%	-20,6%	2.373,0%	-27,4%	941,7%

2012	DYNAMO COUGAR*		FGV-100**		IBOVESPA***	
	Month	Year	Month	Year	Month	Year
JAN	12,0%	12,0%	15,5%	15,5%	19,9%	19,9%
FEV	8,6%	21,6%	7,1%	23,7%	6,2%	27,3%
MAR	-5,9%	15,1%	-4,0%	18,8%	-8,1%	17,0%
ABR	-3,5%	11,0%	-2,3%	16,0%	-7,7%	8,0%
MAI	-9,4%	0,6%	-18,2%	-5,1%	-17,5%	-10,9%
JUN	2,5%	3,1%	3,9%	-1,4%	-0,2%	-11,1%
JUN	2,5%	3,1%	3,9%	-1,4%	-0,2%	-11,1%
JUL	2,6%	5,8%	-1,1%	-2,5%	1,8%	-9,6%
AGO	1,7%	7,6%	-0,5%	-3,0%	2,6%	-7,4%
SET	0,8%	8,5%	6,7%	3,5%	4,0%	-3,7%
OUT	-0,3%	8,1%	0,5%	4,0%	-3,6%	-7,1%

Average Net Asset Value for Dynamo Cougar (Last 12 months): R$ 1.800.754.488

(*) The Dynamo Cougar Fund figures are audited by Price Waterhouse and Coopers and returns net of all costs and fees, except for Adjustment of Performance Fee, if due. (**) Index that includes 100 companies, but excludes banks and state-owned companies. (***) Ibovespa closing.

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www.dynamo.com.br

DYNAMO

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