

The Other Crisis

The idea of this Report is to dig a little on the post-crisis field of economic (and financial) theories. The way of the mental models is arid and we do not intend to test the well-known patience of our readers. Therefore, we prefer to divide this task into two Reports. In the first one, we evoke the arguments of the main schools of thought that dispute the hegemony of finance theory, and offer updated literary references on the subject. In the next Report, we will touch on a few elements missing in this discussion based on insights from the nature (structure) of interactive systems, a frequent topic in our writings.

The Model and Its Critics

We begin with the paradigm. Briefly, as the story is well-known. The neoclassical view of the world has prevailed in the contest of ideas in the economic domain. Its protagonist, *Homo economicus*, dominates the textbooks. The character is perfectly rational and aware of his goals, logically ranking his preferences. When *Homo economicus* faces uncertainty, he can accurately assign probabilities to future events. A world populated by such people would produce the following aggregate result: asset prices accurately and instantly incorporate all available information. In this sense, prices have no memory, no feelings, move only by stimuli of the arrival of news. As these are random, prices would then describe a *random walk*.

If agents are fundamentally rational, markets are 'efficient'. In efficient markets, distortions are quickly corrected. Non-rational movements are episodic and cancel out. Opportunities for arbitrage are rare. As a result, one cannot consistently beat the markets. The random trajectory of asset prices implies that price variations will be statistically independent of each other and their frequency distribution will follow the pattern of a normal curve. If so, large share price variations are very rare, negligible events. According to this model, an episode like that of October 19, 1987, when the S&P fell by 22.6%, should be statistically disregarded.

In summary: rational agents produce efficient markets. If markets are efficient, as described in the leading theory of finance: i) it is very difficult to outperform the indexes through active management. If left to their own devices, the markets know more, ii) one should not expect large changes in asset prices.

Conclusion i) above is an empirical reality: very few funds have consistently outperformed the market. One cannot say the same about conclusion ii). Empirical observation shows that markets swing more intensely and more frequently than the theory predicts.

Hence, investors and asset managers, more interested in practical aspects, address this theoretical construct with a certain disdain. The opinions of "businessmen" on this issue are already well known. In this Report, we prefer to focus on a more conceptual debate as a primary investigation source and as a way to look for insights which help shape our mental models. Such models are important tools for our fundamental analysis.

We would like to start and illustrate the discussion with a few brief remarks. Warren Buffett, commonly identified as the greatest evidence against efficient market theory, has said "*Investing in a market where people believe in efficiency is like playing bridge with someone who has been told it doesn't do any good to look at the cards*". Buffett is more subtle in another comment: "*Amazingly, the Efficient Market Hypothesis was embraced not only by academics, but by many investment professionals and corporate managers as well. Observing correctly that the market was frequently efficient, they went on to conclude incorrectly that it was always efficient. The difference between these propositions is night and day*". In GMO's quarterly letters, Jeremy Grantham is also often critical of excessive abstraction in finance theory. Grantham has recently denounced the complexity of financial instruments involved in the latest crisis and the huge asymmetry of information between issuers and investors, concluding (2009)¹: "*This makes a mockery of the 'rational expectations' and the efficient market hypothesis, which assumes (totally unproven, as usual), equivalent and perfect knowledge on both sides of all transactions*". George Soros is the investor that seems more interested in dealing with this theme in a systematic way. His theory of reflexivity (1987), an alternative to the "dominant paradigm", suggests that biases of individuals entering market transactions potentially provoke changes in perceptions of the economy and business fundamentals. As we discuss below, in a way Soros' proposal incorporates elements of two concepts that go against the traditional theory - behavior and interaction / adaptation.

¹ As usual, the complete references can be found in our website: <http://www.dynamo.com.br>, under Library.

In every financial crisis, asset prices tumble quickly, contradicting the mainstream approach, and reinforcing criticism of this prevailing view. And this time was no different. As usual, the first to raise their voice against efficient market theory were the supporters of Behavioral Finance (BF).

From the perspective of BF, players are quite different from the *Homo economicus* concept. This line of thought believes that humans suffer from cognitive limitations and are influenced by psychological and behavioral factors which influence their judgment, especially when the choices involve uncertainty. The logical individual from the traditional approach is an abstract construct. In practice, we are systematic violators of logical deduction because of limitations of cognitive nature, influence of emotions or interference from the social context.

Faced with the complex task of assessing probabilities and predicting future values, we often use heuristics - mental rules that simplify the decision process. These 'rules of thumb' are extremely valuable because they speed up information processing, letting us focus on what is relevant / urgent for decision making. In most cases, heuristics function without reducing the quality of the decisions made. For example, we often make good decisions based on pure intuition (Gigerenzer, 2007). However, sometimes, these simplifications lead us to inconsistencies or biases. These cognitive inconsistencies are persistent and predictable, generating patterns of behavior understood by BF theory.

A new group has recently emerged, accompanying the choir of behavioral critics of mainstream theory. These are the supporters of the adaptive markets hypothesis (AMH), so named by its chief proponent, MIT economist Andrew Lo. AMH tries to reconcile the traditional view with the behavioral alternative by incorporating evolutionary concepts - competition, adaptation and natural selection - into the reality of financial interactions. AMH is based on recent developments in neuroscience that indicate that individual behavior and decision making result from competitive and cooperative activities of several specialized components of the brain. The interaction between these autonomous and controlled mechanisms that make up the brain helps us find the best response to a continuously changing environment. Thus, individuals are able to do very complex and precise calculations (under the command of the central cortex), typical of rational agents described in the traditional theory, while receiving stimuli from the limbic system, responsible for emotions, instincts and social behaviors (which generate the various 'biases' reported by BF). At the same time, the brainstem functions uninterruptedly, coordinating physiological functions such as breath and heartbeat.

According to AMH, an investment decision requires activity not only in regions of the brain that produce strictly rational responses (traditional theory) but also in brain areas that suffer from cognitive failures and emotional interference (BF). Accordingly, investors' preferences change following adaptation and survival responses to the highly competitive environment of the financial markets. Individuals make right and wrong decisions, learn, innovate, adapt and interact in accordance with the forces

of natural selection. The dynamics of the system are determined in this evolutionary context, where competition (natural selection) defines the natural balance of the market.

It will take some time before our way of thinking about economy and finance dissociates from physics and adopts a language derived from biology. AMH is still in its infancy, but promises some interesting insights. Because the environment is constantly changing and competition modifies the (dominant) response (rational or behavioral) of the participants, investment strategies may achieve different performances depending on these transformations. Strategies which are (at times) successful may not always be so. In other words, a track record is necessary but not sufficient. Another conclusion is that there is room for arbitrage in the market. Since conditions of competition frequently change and individuals' adaptation is not automatic, there is incentive for active management. Good news for us, as in this case there will probably be some 'food' (opportunity for profit) for the ecological niche of value investors.

Over the last thirty years, the combination of successive financial crises and empirical results of BF research and Experimental Economics knocked down the *Homo rationalis* notion of the neoclassical world. For example, in 1978 Michael Jensen, a great enthusiast of this approach, said: "*I believe there is no other proposition in economics which has more solid empirical evidence supporting it than the Efficient Market Hypothesis*" (Jensen, 1978). However, in 2004, Jensen went in the opposite direction and wrote an article about the dilemmas of corporate governance in 'overvalued' companies saying: "*Some might be tempted to conclude that the problems associated with overvalued equity are likely to be some occasional episodic phenomena that may not recur for many years. I doubt this*" (Jensen, 2004). Even Eugene Fama, one of the leading names of modern finance theory, admits in a more recent article that misinformation can be more durable than the standard theory of asset pricing (CAPM) predicts: "*Our analysis implies, however, that the price effects of bad beliefs do not disappear in time, unless the beliefs of the misinformed about today's new converge to the beliefs of the informed*". Fama concludes with a hint of adaptive hypothesis: "*For prices to converge to rational values, the misinformed must learn the error of their ways, so eventually there is complete agreement about old news.*" (Fama 2005).

The list of important names involved with BF research is extensive. Robert Shiller has been one of the most frequent critics of pure rationality. By 1984, he had already warned: "*The efficient market hypothesis is the most remarkable error in the history of economic theory.*" In the wake of the Internet boom in 2000, Shiller published *Irrational Exuberance*, a study on the formation, the elements and evidence of speculative bubbles. Following the latest financial crisis, Shiller and George Akerloff co-wrote *Animal Spirits: How Human Psychology Drives the Economy, and Why it Matters for Global Capitalism* (2009). Not surprisingly, given the reputation of the authors, the work had great impact. In a sense, it summarizes the latest developments

on the discussion of market theory. Hence, we should take a closer look at their study.

According to the authors, in the traditional view, agents with purely economic motives, pursuing their own interests, will find optimal social choices (based on Adam Smith's invisible hand idea) when free from external interference. This notion can be used to explain the workings of the economy most of the time. But, episodically, the economy "takes rollercoaster rides" and the traditional model is unable to explain these movements. Akerloff and Shiller then suggest that these deviations are caused by factors such as changes in confidence, temptations, envy, resentment, illusions and changes in the story plots about the nature of the economy. In other words, the deviations are the result of "human" elements, in line with Keynes' concept of 'animal spirits'. The authors' interpretation is that animal spirit, in the context of modern economy, "refers to our peculiar relationship with ambiguity or uncertainty. Sometimes we are paralyzed by it. Yet at other times it refreshes and energizes us, overcoming our fears and indecision".

In this ambiguous environment, populated by contrasting feelings, it would be reckless to leave the economy and the markets hostage to their own excesses. "Such world of animal spirits gives the government an opportunity to step in. Its role is to set the conditions in which our animal spirit can be harnessed creatively to serve the greater good. Government must set the rules of the game". In the episode of the sirens, the state would be a major supplier of ropes to tie Ulysses to the mast. The authors also make an analogy between children education and the government's role in capitalism: overly permissive homes foster uncontrolled children, while authoritarian parents raise superficially obedient children, who become rebels. Parents' role is to establish limits within which children can grow up with independence, creativity, respect and responsibility. The same concept applies to a capitalist society: it can be extremely creative, but if left to its own devices might produce excesses. The government has to set the tone.

They conclude: "Indeed if we thought that people were totally rational, and that they acted almost entirely out of economic motives, we too would believe that government should play little role in the regulation of financial markets, and perhaps determining the level of aggregate demand. But, on the contrary, all of those animal spirits tend to drive the economy sometimes one way and sometimes another. Without intervention by the government the economy will suffer massive swings in employment. And the financial markets will, from time to time, fall into chaos."

Now let's see what supporters of another theory, the Adaptive approach, have to say. The argument is similar. In his testimony to Congress on the financial crisis and the performance of hedge funds, Andrew Lo (2008) argued that economists have preferred the model of rational optimizing agents in the context of free markets to the behavioral approach when explaining economic phenomena. The 'ineluctable' logic of neoclassic economics is difficult to challenge. However, Lo points out that

recent neuroscience research has provided experimental evidence that the human decision-making process consists of a combination of logical calculation and emotional responses. "Under normal circumstances, that blend typically leads to decisions that work well in free markets. However, under extreme conditions, the balance between logic and emotion can shift, leading to extreme behavior such as the recent gyrations in the stock market around the world in September and October 2008". Lo concludes: "This new perspective also yields a broader interpretation of free-market economics and presents a new rationale for regulatory oversight. Left to their own devices, market forces generally yield economically efficient outcomes under normal market conditions, and regulatory intervention is not only unnecessary but often counter-productive. However, under atypical market conditions - prolonged periods of prosperity, or episodes of great uncertainty - market forces cannot be trusted to yield the most desirable outcomes, which motivates the need for regulation".

The Critics and Their Critics

Shiller / Akerloff fall into a methodological trap: they propose a solution incompatible with their system. If individuals are affected by an animal spirit and the government is composed of individuals, why wouldn't the government as an institution suffer from the same ills? The authors start from assumptions about the behavior of agents and halfway through their analysis call for an external solution, a Leviathan, an entity whose nature and virtue cannot be explained within the authors' own premises. At no time do Shiller / Akerloff offer clues to the reader about how and when this institution, the government, must act and why it is best qualified to resolve such complex issues. Another limitation of the text is that the authors, outside observers ex post, suggest normative prescriptions. Identifying financial crises, as well as outbreaks of infantile rebellion, after they happen is not so complicated. The hard part is knowing whether the economy is moving towards an abyss or simply following the normal course of ups and downs in production cycles. Similarly, the dilemma of an educator or parent is to see in advance if excessive freedom in a child's education will turn into disarray because of a lack of social boundaries or, alternatively, distinguish whether a certain stillness is the result of healthy introspection / self-confidence or the outcome of excessive authority².

2 Another comment, merely out of curiosity. The book attributes to Adam Smith the economic tradition of thinking about individuals as selfish, strictly rational agents. This is the description in *Wealth of Nations*, where Smith notes how people behave in everyday life. But Adam Smith's true theory of individual conduct is presented in his treatise *Theory of Moral Sentiments*. Its basic idea is that individuals are guided by constantly conflicting elemental passions, which are balanced by a particular cognitive agent, the 'impartial spectator'. The individual is seen as an evolutionary system that oscillates between the poles of biological passions and social construction. Smith is much closer to Shiller / Akerloff concept of animal spirits than they even realize. In fact, Ashrat, Camerer and Loewenstein, colleagues of Shiller in BF research, tag along this line of argument in the excellent article: *Adam Smith, Behavioral Economist* (2004).

The adaptive hypothesis also falls into a similar trap. Here the assumption is that moments of “atypical” behavior in the market will be perfectly discernible. Again, proponents of a theory assume that an external superior judgment is capable of drawing a dividing line between the end of normality and the beginning of extravagance. Moreover, Lo’s argument faces a methodological problem: *“under extreme conditions, the balance between logic and emotion can shift, leading to extreme behavior.”* In other words, a disorganized environment confuses individuals, inducing ill-adapted responses. But wouldn’t the environment (the market) be the actual result of individual responses on a continuous interactive process? In this case, the breakdown would have already occurred, provoked by individuals whose decisions produced extreme environment conditions. So, we face an unsolved problem of infinite regression.

The two alternative models take for granted the fundamental question to be solved: how to identify the time of path deviation, to discern whether and when the economy and the markets leave their “normal” course and take collision trajectories. It is this ability that in theory would trigger necessary intervention, which would then promote the desired incentives to bring the economy back on track. The question is whether this ability can be so easily grasped. For illustration purposes, let’s take the case of former Fed Chairman, Mr. Alan Greenspan.

The Maestro and His Critics

From 1987 to 2006, a particularly interesting and troubled period, Greenspan served the longest ever mandate as FED chairman. In 1996, concerned with the appreciation of the U.S. stock market, he wondered if the rise in asset prices could be the result of an undue *irrational exuberance*. He lived with this doubt for much of his tenure, though he never repeated these words. With the passing of time and reflection, Greenspan chose the argument that markets were reflecting advances in new technologies and the resulting significant productivity gains. According to him, these factors promoted continuous downward pressure on price indices, facilitating the work of the guardian of the North American currency. A collective sense that the American society was experiencing a new era gave psychological support to that argument.

In fact, in 2000, Shiller himself observed that investors tend to overestimate technological innovations. Every asset price bubble in the last century coincided with a superficially plausible and widespread view that people were living in a unique moment, a new era brought about by transformational advances in technology. It happened in the early twentieth century (faster trains, radio, transmission lines), in the 1920s (cheaper cars, highways, commercial radio broadcasting, electricity industry), in the 50s and 60s (television, space travel) and late 90s (internet, computers, IT, digital business platform). Greenspan repeated history. After all, who, at least for a moment, has not been seduced by the argument that the Internet would lead to a revolution in consumers’ lifestyle, companies’ cost structure and revenue mix?

In the same year 2000, the Fed chairman shared his existential doubt, in a prophetic way: *“When we look back at the 1990s, from the perspective of say 2010 ... we may conceivably conclude from that vantage point that, at the turn of the millennium, the American economy was experiencing a once-in-a-century acceleration of innovation, which propelled forward productivity, output, corporate profits and stock prices at a pace not seen in generations, if ever. Alternatively, the 2010 retrospective might well conclude that a good deal of what we are currently experiencing was just one of the euphoric speculative bubbles that have dotted human history.”*

With the crisis, Greenspan’s doubts were forgotten and his critics did not spare derogatory adjectives³. His overly loose monetary policy has fueled speculative bubbles in real estate and stock markets. The Maestro went to trial.

The mea culpa came in a hearing in Congress about “the financial crisis and the role of federal regulators” in 2008. In the interpretation of the former FED chairman, the crisis was precipitated by agents’ inability to accurately price mortgage risk, despite the impressive progress in mathematical, financial and computer techniques that had properly sustained the paradigm of risk management until then. *“The whole intellectual edifice, however, collapsed in the Summer of last year because the data inputted into the risk management models generally covered only the past two decades, a period of euphoria”*. Later in the testimony, he admits: *“I found a flaw in the model that I perceived is the critical functioning structure that defines how the world works, so to speak”*. Henry Waxman, the congressman who led the committee, interrupted Greenspan: *“In other words, you found that your view of the world, your ideology, was not right, it was not working”*. Greenspan responded: *“Precisely. That’s precisely the reason I was shocked, because I had been going for 40 years or more with very considerable evidence that it was working exceptionally well”*.

The former Chairman’s privileged position to observe economic and financial events brings even more dramatic contours to his self-analysis. In theory, few individuals would be better prepared to understand the workings of the world economy or, at least, to avoid being surprised by their subterfuges.

Some (eg, Fox [2009] and Krugman [2008]) tried to link Greenspan’s short-sightedness to a commitment to the idea of efficient markets. Investors are rational, prices always reflect their best assessment; the markets know best. But this was not the case. In his memoir, Greenspan (2007) points out that money managers’ difficulty to beat the market consistently conspires in favor of the traditional theory, *“yet the theory of efficient market cannot explain stock-market crashes”*. In October 1987, recently named FED Chairman, Greenspan believed that there was no reason (new information) to justify the sharp fall in markets. *“As prices careened downward all that day, human nature, in the form of unreasoning fear, took hold, and investors sought relief from pain by unloading their positions regardless of whether it*

3 Fleckenstein (2008) was perhaps Greenspan’s most acid and striking critic.

made financial sense. No financial information was driving those prices. The fear of continued loss of wealth had simply become unbearable. (...) When markets are behaving rationally, as they do almost all the time, they appear to engage in a 'random walk'. (...) But sometimes the walk is interrupted by a stampede. When gripped by fear, people rush to disengage from commitments, and stocks will plunge. And when people are driven by euphoria, they will drive up prices to nonsensical levels. (...) Perhaps someday investors will be able to gauge when markets veer from the rational and turn irrational. But I doubt it. Inbred human propensities to swing from euphoria to fear and back again seem permanent".

Greenspan's mistake was not confidence in the efficient markets model. The above passage strikingly resembles arguments of efficient markets critics. Greenspan, in this case, is also a behavioral economist. The flaw in his model, which has caused much surprise and disappointment, was "in presuming that the self-interest of organizations, specifically banks and others, were such that they were best capable of protecting their own shareholders and their equity in the firms" (2008). In other words, what caused the disruption of the system was a mismatch of interests and incentives within financial institutions, in line with what we discussed on Dynamo Report nº 59.

We are not saying that excesses cannot be perceived. Experienced investors and fund managers have repeatedly warned about bubbles forming in various assets. Although some of them, ex post, insist on dismissing the competence of the former FED chairman, we prefer a different approach: bubbles are a complex phenomenon, ambiguous, difficult to interpret and, in this case, the exuberance was even greater because of an incentive problem - the risk of removing the 'punch' from the party when everyone is sober.

Similarly, we do not wish to make value judgments about the government's role or the need for regulation. It is a known fact that many of the excesses that led to painful adjustments in the financial crisis proliferated because of regulatory gaps. The role of the regulator is to perceive when and where individual incentives collide with collective interests of system stability and act promptly, which was not the case. Therefore, better quality surveillance is certainly welcome.

We return to our main theme. The latest financial crisis coincides with a crisis of ideas. Traditional economic theory starts from unrealistic assumptions and arrives at ambiguous empirical results. In practice, asset prices vary much more than expected by the model. On the other hand, in fact, it is difficult to beat the market in its random walk. The proposed alternatives are much more interesting descriptions of the behavior of individuals. But in aggregate, cannot adequately explain price movements. BF and AMH followers admit that the mainstream

view works most of the time and appeal to an element 'outside' of the system to identify and correct the excesses that 'more human' agents provoke.

When domestic product is growing, inflation is under control, and asset prices are appreciating, the traditional theory rests on the laurels of rationality. Microeconomics is a precise and elegant exercise of resource optimization. Macroeconomics is the submission of the aggregates to the design of infallible mechanical rules. Cartesian reason knows the content of the production functions and the paths of technical progress, moving the gears of the economic machine. Everything flows in this world of low entropy and advances in an orderly environment of little corrosion. It is the triumph of the Enlightenment. The feeling of well-being is general; life in peace with doctrine.

Then, a crisis comes. Consumption is startled, investment is omitted, and domestic product shrinks. Asset prices collapse without breaks. Reason is gone, animal spirit takes over, science is dismal. Decisions are biased, interests collide, men are herd and pure instincts. Left alone, we are doomed to excess or idleness. One must order the barbarism. Government and regulation are called to the emergency room.

This is the schizophrenic screenplay of economic ideas following the oscillation of production cycles. Here at Dynamo, we observe these movements from a distance. We usually follow with curiosity news from centers of idea generation in order to import insights that can make a difference in our difficult task of selecting good investments. But in this case, the polarization of rationality and behavior does not seem appropriate. We have never been seduced by it. Or, to be more accurate, we should say that we are seduced by both. Our mental model is syncretic, unbiased, and pragmatic. Our goal is to understand what is happening and act accordingly. We keep all instruments that may be useful in this task handy. However, in our view, we are still missing important aspects on the discussion of economic and financial ideas. But this is subject for our next Report.

DYNAMO COUGAR x IBX x IBOVESPA Performance up to December/2009 (in R\$)

Period	Dynamo Cougar	IBX average	Ibovespa average
60 months	185,3%	176,8%	160,4%
36 months	67,5%	48,4%	53,3%
24 months	26,6%	0,0%	6,7%
12 months	81,5%	72,1%	81,8%
3 months	17,9%	10,3%	10,8%

NAV/Share on December 31st = R\$ 246,224428156

DYNAMO COUGAR x FGV-100 x IBOVESPA

(Performance – Percentage Change in US\$ dollars)

Period	DYNAMO COUGAR*			FGV-100**			IBOVESPA***		
	Quarter	Year to Date	Since 01/09/93	Quarter	Year to Date	Since 01/09/93	Quarter	Year to Date	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%
1 st Quar/05	-1,7%	-1,7%	2.967,4%	-1,7%	-1,7%	569,9%	1,1%	1,1%	243,8%
2 nd Quar/05	5,4%	3,6%	3.133,2%	3,0%	1,3%	589,8%	7,5%	8,7%	269,6%
3 rd Quar/05	32,3%	37,1%	4.178,3%	25,2%	26,8%	763,7%	31,6%	43,0%	386,5%
4 th Quar/05	3,0%	41,2%	4.305,5%	3,1%	30,8%	790,7%	0,8%	44,1%	390,2%
1 st Quar/06	23,3%	23,3%	5.332,9%	18,9%	18,9%	959,0%	22,5%	22,5%	500,5%
2 nd Quar/06	-3,9%	18,5%	5.122,2%	-4,6%	13,4%	910,5%	-2,7%	19,2%	484,4%
3 rd Quar/06	5,7%	25,3%	5.418,6%	2,6%	16,4%	937,2%	-1,0%	18,0%	478,4%
4 th Quar/06	19,6%	49,8%	6.498,3%	23,0%	43,2%	1.175,8%	24,1%	46,4%	617,7%
1 st Quar/07	9,7%	9,7%	7.136,3%	10,1%	10,1%	1.304,3%	6,7%	6,7%	665,8%
2 nd Quar/07	29,3%	41,9%	9.259,4%	28,8%	41,8%	1.709,3%	27,2%	35,7%	874,1%
3 rd Quar/07	7,5%	52,4%	9.957,6%	15,7%	64,1%	1.993,7%	16,4%	58,0%	1.033,7%
4 th Quar/07	4,8%	59,7%	10.436,6%	2,6%	68,4%	2.048,7%	9,8%	73,4%	1.144,6%
1 st Quar/08	-1,7%	-1,7%	10.253,1%	4,1%	4,1%	2.136,6%	-4,1%	-4,1%	1.094,1%
2 nd Quar/08	16,4%	14,4%	11.950,7%	11,6%	16,1%	2.395,0%	17,9%	13,2%	1.308,3%
3 rd Quar/08	-32,9%	-23,3%	7.983,4%	-23,4%	-26,0%	1.480,9%	-38,7%	-30,7%	763,2%
4 th Quar/08	-31,1%	-47,1%	5.470,1%	-17,6%	-50,1%	973,3%	-35,9%	-55,5%	453,7%
1 st Quar/09	8,1%	8,1%	5.919,9%	5,1%	5,1%	1.027,5%	10,6%	10,6%	512,5%
2 nd Quar/09	44,7%	56,41%	8.612,4%	52,0%	59,6%	1.613,5%	48,8%	64,6%	811,6%
3 rd Quar/09	29,4%	102,4%	11.175,9%	34,8%	115,2%	2.210,2%	30,9%	115,5%	1.093,2%
4 th Quar/09	20,4%	143,7%	13.472,6%	17,0%	151,9%	2.603,3%	13,2%	144,0%	1.250,7%

Average Net Asset Value for Dynamo Cougar (Last 36 months): R\$ 894.761.554,31

(*) 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 average.

Please visit our website if you would like to compare the performance of Dynamo funds to other indices:

www.dynamo.com.br

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