"THE CENTRAL EVENT OF THE TWENTIETH CENTURY IS THE OVERTHROW OF MATTER (...) THE POWERS OF MIND ARE EVERYWHERE ASCENDANT OVER THE BRUTE FORCE OF THINGS"[1]

The marginalist revolution[2], which began in the mid-nineteenth century, gave rise to an academic race that searched for market balances based on sophisticated mathematical theorems.

These models challenged the more pragmatic view that market dominance happened as a function of consistent gains to scale. The premise that businesses eventually converge to diminishing returns signalled a competitive game that excluded the possibility of monopolistic kingdoms. A curious phenomenon, as in the beginning of the twentieth century the "perfection" of markets had been called into question by the Trust-Busting that followed the passage of the Sherman Act[3].

Within this new idyllic framework, price signals should attract homogenous firms to a market, and as the number of businesses producing a specific good or service increased, economic profits would invariably decline. Ultimately, in sectors lacking barriers to entry, profits would tend to zero. In this supposed equilibrium, producers earn their cost of capital, and the bulk of economic surplus flows to consumers.

This theoretical universe has been challenged over the last decades. As put succinctly by Bill Gates in 2018, "*Software doesn't work like this. Microsoft might spend a lot of money to develop the first unit of a new program, but every unit after that is virtually free to produce*."

An economy of bits, as opposed to one of atoms, subverts the logic of traditional economic systems. As such, tangible assets are replaced by intangible assets - redundant on-premise servers migrate to the (far more efficient) cloud, and the capital required to produce an "equal net present value amount" decreases substantially. This highlights the antagonism between an economy defined by abundance and one defined by scarcity. The former enables exponential winners and, quite possibly, makes governmental policy more relevant, requiring competent deliberation in controversial topics such as income redistribution.

As an illustrative example, Facebook raised approximately US$8 billion since its founding in 2004 ($1.2 billion in venture capital before its IPO and US$6.8 billion in the IPO in 2012) and today possesses a market capitalization of approximately US$800 billion – 100 times the initial capital invested. One of the largest companies in history was created in less than 16 years with a sum of resources equivalent to half of the expenses of the London 2012 Summer Olympics.

The Facebook phenomenon is part of a collective of modern first-tier businesses in which the winners really do seem "to take it all". This is a consequence of the enormous differences in scale and returns between the most successful global companies of the modern era and the rest of the economy.

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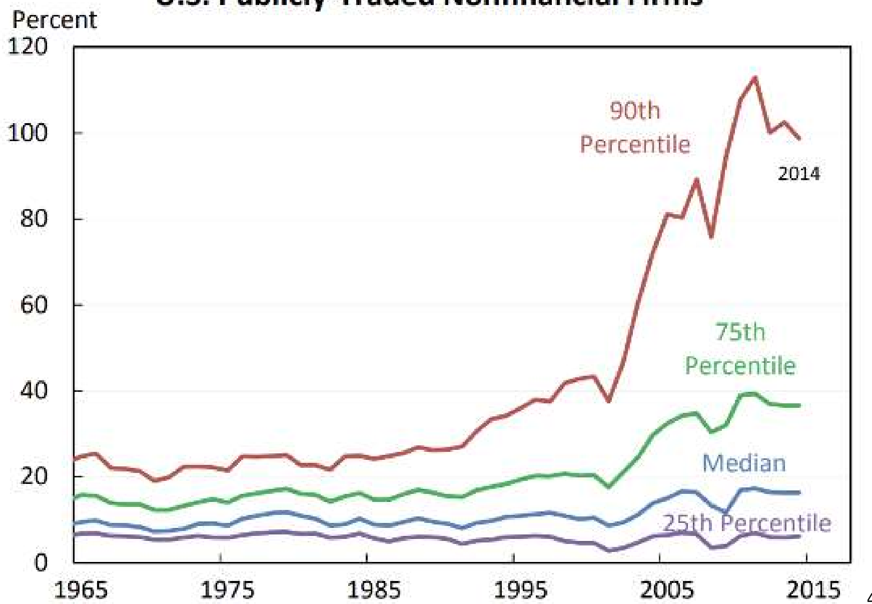
[1] George Gilder, American techno-enthusiast and investor.

[2] Development of the economic theory that gave birth to modern microeconomics, utilizing "incrementalism" to explain social phenomena that were until then abstract.

[3] First American antitrust law, enacted in 1890.



[4]

In the context of an emerging country like Brazil, one must pay attention to the long-run, but also to the more pressing matters of the day. Regulatory obstacles, a shortage of human capital, and a national history insufficiently focused on innovation still sustain anachronistic equilibria. In turn, the vibrant and innovative parts of the economy are either defined by the digital oligopolies from abroad, which absorb the bulk of economic profits, or are attacked on multiple fronts by fiercely competitive participants[5].

With this in mind, we decided to write up a more theoretical essay to illustrate the importance of competition in the formation of economic equilibria in different industries. By studying the past, we gain some insight into the arduous task of imagining prospective competitive scenarios. Industries that are currently being aggressively evaluated by investors may well end up destroying large sums of capital over the longer haul.

"WE CAN USEFULLY THINK OF TWO ECONOMIC REGIMES OR WORLDS: A BULK-PRODUCTION WORLD WITH LITTLE KNOWLEDGE AND OPERATING ACCORDING TO MARSHALL'S PRINCIPLES OF DIMINISHING RETURNS AND A KNOWLEDGE-BASED ECONOMY YIELDING PRODUCTS THAT ESSENTIALLY ARE CONGEALED KNOWLEDGE OPERATING UNDER INCREASING RETURNS"[6]

Businesses that present diminishing returns, but that have built a strong brand, distribution advantages, and a well-honed political lobbying capacity, among many other elements, can still deliver excellent results over time.

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[4] Source: Furman, Jason; "Beyond Antitrust: The Role of Competition Policy in Promoting Inclusive Growth" (2016), https://bit.ly/3dpLD3J

[5] Such as marketplaces.

[6] Brian Arthur, "Increasing returns and the new world of business" – https://bit.ly/3fyLBsT

Problems arise when these companies start to obsessively pursue growth[7], intoxicated with the idea that they are capable of dominating the world. Human optimism tends to model the behavior of businesses that grow as a perpetual motion machine, without paying due attention to the competitive forces that may emerge over time or the nefarious effects accruing from diseconomies of scale. When coupled with brutal competition, growth is undesirable and dilutes the compounding of capital. For most traditional businesses, in the long run, a benign competitive landscape is far more important than accelerated growth.

Under specific circumstances, however, empire building instincts take time to be checked. What is born as a healthy pursuit of market share culminates, more often than not, in a bloody battle for dominance.

The Tobacco and Telecom industries serve as examples of the two antagonistic poles discussed here.

"I WENT ON A RIGOROUS DIET. I CUT ALCOHOL, FAT, AND SUGAR. IN TWO WEEKS, I LOST 14 DAYS"[8]

The first inhabitants of the American continent used tobacco in religious ceremonies and various rites of passage. Nonetheless, the plant would only start being consumed with relative high frequency after the discovery of the Americas by the West. It took approximately a century from its discovery for tobacco to become popularized and for smoking to be subsequently normalized as a recreational activity. Following its growing demand, English settler John Rolfe arrived in Virginia in 1609 and became the first commercial producer of the plant.

From then on, the product was nicknamed "brown gold" and began being used as a bargaining chip, leaving behind a trail of both fortune and destruction - after all, the commercialization of tobacco has always been intrinsically linked to the slave trade. Exemplifying the power of the commodity, by the end of the 19th century, taxes on tobacco amounted to over 20% of the total tax revenue of the U.S. federal government.

After the American Civil War ended in 1865, artisanal consumption of tobacco via pipes or chewable products came to be replaced by cigarettes, driving increased demand for the crop. This was accompanied by the invention of machines capable of large-scale production of cigarettes, reducing the marginal cost of production and increasing the total addressable market.

As in every technological rupture in a capitalist system, an entrepreneur often emerges shortly thereafter to create a business model that adapts to the surroundings and attempts to monopolize the supply. In 1890, James Buchanan Duke acquired the licenses of the newly-invented automated cigarette manufacturing machinery, thus concentrating around 40% of the American pre-rolled cigarette supply. In the wake of his success, Duke founded the American Tobacco Company – the culmination of a rapid consolidation of his competitors under one umbrella – which, at its peak, reached a market share nearing 90%. From Duke's American Tobacco Company, and more than a couple of conflicts that succeeded it, emerged British American Tobacco (BAT). Duke's monopoly ended in 1906 with the passage of the Sherman Act, but his "legacy" remains intact in the form of BAT, the only company he maintained complete control over and which remains an industry leader in the Western market until today.

The tobacco industry has delivered significant results for decades. If we divide the global stock market into sectors at the beginning of the last century, the tobacco industry would be positioned within the first decile of returns. Despite successful campaigns to combat consumption and a significant (and fair) sector-specific tax increase, investor returns remained high.

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[7] In today's world of structurally low interest rates, where marginal bps of future growth are immensely important in the theoretical valuation of the firm, management is even more encouraged to pursue growth at any cost.

[8] Tim Maia, Brazilian musician and songwriter.

In the case of BAT, an emblematic example, taxes rose from ~54% of revenues in the early 2000s to a peak of ~69% in 2016. Still, throughout this period, the company managed to grow revenue per share in line with inflation. Operating income per share grew at a rate of ~6.5% p.a. and during this whole period the company managed to return all of its profits and some additional dollars in the form of leverage to shareholders. The stock yielded[9] ~20% p.a. in U.S. dollars between 2000 and 2016[10], a notable accomplishment for a company belonging to an antiquated industry beset by taxation, lobbying, negative media, and billion-dollar litigations[11].

Sectors lacking charming narratives often present themselves in interesting ways to investors, as they attract less competition. Tobacco is a classic case of an industry with negative headlines and low volume growth that, despite these challenges, presented above-average returns. By giving up on bloated capital allocation plans oriented toward aggressive expansion, one may find low competition and guarantee a handsome return, especially in sectors that manage to build loyalty with their customer bases.

"INVESTING SHOULD BE MORE LIKE WATCHING PAINT DRY OR WATCHING GRASS GROW. IF YOU WANT EXCITEMENT, TAKE $800 AND GO TO LAS VEGAS"[12]

For a contrasting example, we move to the Telecom industry. In the 1990s, this sector represented innovation and the hope of a long cycle of growth.

The race for dominance began with frantic attempts by companies to leave footprints everywhere, vying for every inch in practically any market. In both developed and frontier markets, they participated in aggressive privatizations. When growth pulsates in front of investors, hope for rational consolidation typically drifts away.

Looking through a retrospective lens, what happened in the industry's early innings in the 1990's (as it started opening up to the private sector) was a proverbial festival of overestimation in most KPIs - both pertaining to the potential of the market and the ability to differentiate products and services. It is hard to find a single player that managed to achieve a degree of differentiation that successfully alienated competition[13]. The dispute in most markets raged in a violent war, focused almost exclusively on discounts. The consumer emerged as the winner and the big telecom operators as losers, with their massive investments poorly calibrated by the dream of a bright and promising future.

The narrative is an accurate illustration of the eternal conflict between prudence and ambition, between short- and long-term thinking. Initially, there was the attraction of huge sums of capital, followed by fierce competition for market share after fixed costs had already been incurred[14], in turn followed by the natural search for financial leverage aimed at compensating for mediocre returns, which finally ended in the widespread bankruptcy of several players and the eventual governmental intervention to prevent the interruption of essential services.

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[9] With the reinvestment at an average dividend yield of ~4.5%, an EPS growth of ~10.5% p.a., and a re-rating throughout the entire period from 17xE2001 to 24xE2017.

[10] This period encompasses a long cycle predating the strong derating of tobacco shares over the last four years. This was the result of a series of factors, including the advent of the ESG which ostracizes the actions of the sector, in addition to the competitive fears related to the nicotine vaping industry. However, despite the recent movement, from 2000 to 2020, the IRR of a BAT investor would still have been ~16.5% p.a. in US dollars.

[11] Like the Tobacco Master Settlement Agreement of 1998, for example.

[12] Paul Samuelson, renowned American economist.

[13] Until the most recent, and not yet proven, example of Jio Telecom in India.

[14] In this specific case, one cannot forget the ill-founded attempt at global dominance by several of the players in the sector: Deutsche Telekom buying VoiceStream, currently T-Mobile, in the US; Telefónica fighting for territory in Latin America; Vodafone expanding its presence globally, among many other examples. For more see: https://on.ft.com/39yHJVc

In the case of Verizon, one of the largest players in the American telecommunications market, the company grew revenue per share in line with inflation between 2004 and 2020[15], despite the fact that it allocated relevant sums of capital throughout the period[16]. Throughout this timeframe, earnings per share growth ticked at a meager ~3% p.a. on average, while Verizon paid an average dividend yield of ~4.5%. Perhaps the most successful among the large wireless carriers in the West, operating in a relatively less regulated market, in a country with solid institutions and little state intervention, the company achieved a mediocre return in almost every cycle, both in relative and absolute terms.

As a comparison, it is worth mentioning that the history of European SOEs is even more ominous. Deutsche Telekom, during this same period, generated an unwholesome nominal IRR of ~3% p.a. to its investors.

"IT IS JUST AS FOOLISH TO COMPLAIN THAT PEOPLE ARE SELFISH AND TREACHEROUS AS IT IS TO COMPLAIN THAT THE MAGNETIC FIELD DOES NOT INCREASE UNLESS THE ELECTRIC FIELD HAS A CURL. BOTH ARE LAWS OF NATURE"[17]

The game of long-term value creation is intrinsically linked to the level of competition within a sector. Besides the number of active players, many other factors contribute to industry dynamics.

Microeconomics has already reflected profoundly on these themes, demonstrating how, even in a concentrated sector, how difficult it is to achieve equilibrium in the form of a cartel. As desirable as this situation may be, primitive instincts related to short-term greed, in a repeated game where there is no end in sight, recurringly lead to a breakdown in cooperation and an unbridled dispute for market share. The effect of one player's betrayal, usually due to a misalignment or impatience, can create long-lasting negative consequences.

Alignments, the competitive structure of a sector and the governance of its protagonists, if reflected ex-ante, help create a matrix of potential long-term "equilibria". Compensation models, ownership structures, the number and rationality of players and the degree of differentiation vis-à-vis substitute products are valuable characteristics that allow for substantive reflections.

Nowadays, the obsession with an aggressive short-term asset pricing narrative that reflexively turns into a competitive advantage via M&A and the attraction of talent has become yet another fundamental factor to explain the aggressive pursuit of growth in certain industries.

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[15] We started in 2004 due to limitations in reliable databases.

[16] Having even made a large acquisition of the ~45% stake that Vodafone held in Verizon Wireless in 2014.

[17] John Von Neumann, renowned Hungarian mathematician.