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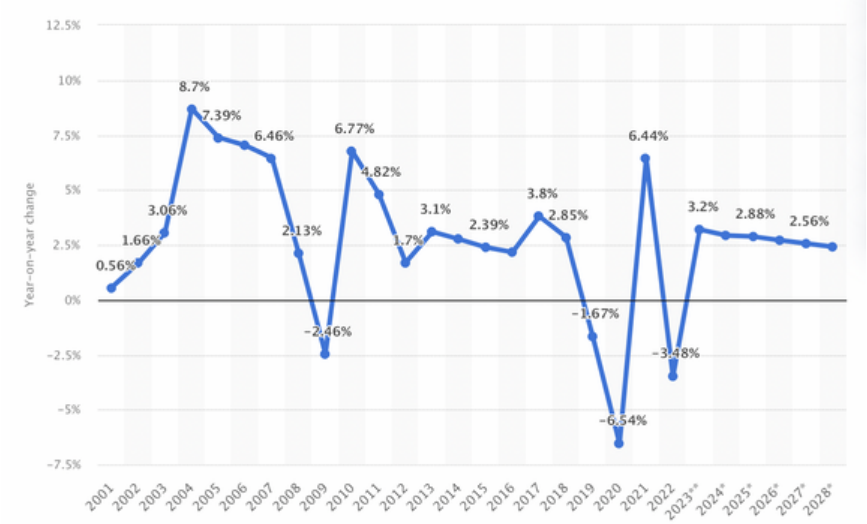
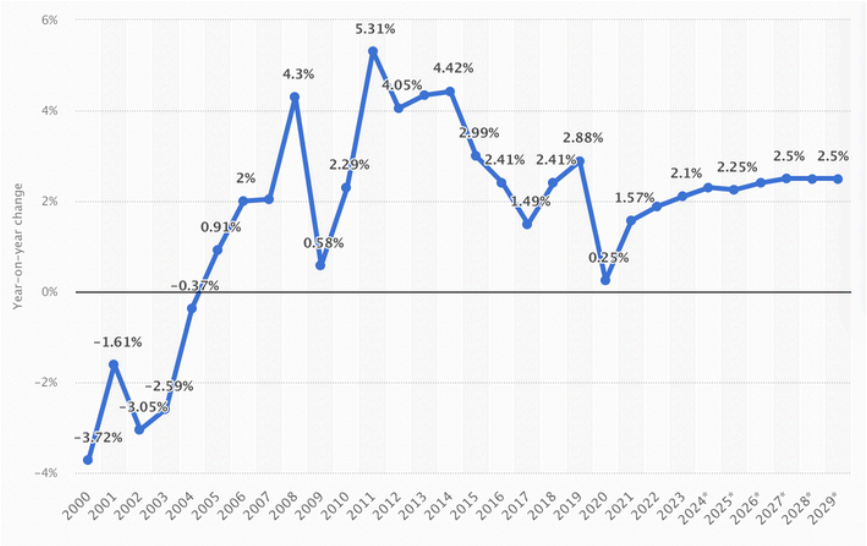
Hong Kong Economic Outlook 2024/2025

TIM HE

General Overview

Hong Kong has fortunately experienced a V-shaped recover since what the government defines as "the fifth wave of the local epidemic", with annual GDP growth bouncing back from –3.48% in 2022 to 3.2% in 2023. As for the GDP growth rate in 2024, it is predicted to be between 2.5–3.5% according to the Census and Statistics Department. Statista, a German statistics collection platform, predicts more specific growth rates for the following years to come, forecasting a gradually declining growth rate trend. The prediction of this weak downtrend is not without good reason, and will be further discussed in the sections below.





Inflation has also gradually risen, and the inflation rate is expected to gradually flatten out over the next few years, maintaining a rate of around 2.5%. This is ideal as a relatively stable and low inflation rate supports economic growth and maintains price stability, making it easier for businesses, consumers and investors to make informed decisions (on the other hand, rapid and volatile inflation creates fear and uncertainty), encouraging economic activity.

Challenges and Headwinds

Despite the positive inflation outlook, Hong Kong's economy is facing a significant challenge in one crucial area: loss of foreign investment and capital inflow due to global trade tensions. Historically, Hong Kong had served as a "geopolitically neutral" zone between China and the United States, serving as a major international finance hub with little to no trade restrictions. However, as political conflicts concerning trade between the two countries become increasingly heated, Hong Kong's economic bonus will gradually disappear. As nearly 60% of Hong Kong's GDP stems from 3 major sectors (financing and insurance services, public, administrative, and personal services, and import/export wholesale/retail trading) heavily dependent on international capital flow, the economy will inevitably take a substantial hit (Census and Statistics Department).

Figure 1: GDP change in the past few years (Statista).

Figure 2: inflation rate trends over time (Statista).

	GDP at current prices (1)											
	HK$ million				% contribution to GDP				Year-on-year % change			
Year	2019	2020	2021	2022 r	2019	2020	2021	2022 r	2019	2020	2021	2022 r
Economic Activity												
Agriculture, fishing, mining and quarrying	2,057	2,648	2,168	1,486	0.1	0.1	0.1	0.1	+16.7	+28.7	-18.1	-31.5
Manufacturing	29,366	25,525	26,175	26,598	1.1	1.0	1.0	1.0	+6.5	-13.1	+2.5	+1.6
Electricity, gas and water supply, and waste management	34,083	35,325	36,348	32,485	1.2	1.4	1.3	1.2	-4.4	+3.6	+2.9	-10.6
Construction	114,499	104,262	109,254	116,833	4.2	4.1	4.0	4.3	-5.0	-8.9	+4.8	+6.9
Services	2,560,716	2,392,895	2,571,873	2,558,082	93.4	93.4	93.7	93.5	+1.8	-6.6	+7.5	-0.5
Import/export, wholesale and retail trades	533,352	471,246	532,715	494,689	19.5	18.4	19.4	18.1	-7.3	-11.6	+13.0	-7.1
Import and export trade	440,363	408,372	462,630	430,367	16.1	15.9	16.8	15.7	-5.3	-7.3	+13.3	-7.0
Wholesale and retail trades	92,989	62,874	70,085	64,322	3.4	2.5	2.6	2.4	-15.4	-32.4	+11.5	-8.2
Accommodation and food services	75,918	36,934	45,394	45,350	2.8	1.4	1.7	1.7	-17.1	-51.4	+22.9	-0.1
Transportation, storage, postal and courier services	151,574	113,951	200,986	204,118	5.5	4.5	7.3	7.5	-4.3	-24.8	+76.4	+1.6
Transportation and storage	142,775	103,458	189,175	193,797	5.2	4.0	6.9	7.1	-4.6	-27.5	+82.9	+2.4
Postal and courier services	8,799	10,493	11,811	10,322	0.3	0.4	0.4	0.4	+0.8	+19.3	+12.6	-12.6
Information and communications	95,557	93,759	99,514	100,103	3.5	3.7	3.6	3.7	+4.5	-1.9	+6.1	+0.6
Financing and insurance	581,499	599,797	583,613	613,477	21.2	23.4	21.3	22.4	+8.7	+3.1	-2.7	+5.1
Real estate, professional and business services	276,497	244,337	250,306	233,094	10.1	9.5	9.1	8.5	-1.5	-11.6	+2.4	-6.9
Real estate	122,177	107,896	105,862	86,879	4.5	4.2	3.9	3.2	-2.3	-11.7	-1.9	-17.9
Professional and business services	154,320	136,440	144,444	146,215	5.6	5.3	5.3	5.3	-0.9	-11.6	+5.9	+1.2
Public administration, social and personal services	537,238	529,457	561,530	583,006	19.6	20.7	20.5	21.3	+7.6	-1.4	+6.1	+3.8
Ownership of premises	309,081	303,414	297,816	284,245	11.3	11.8	10.8	10.4	+9.2	-1.8	-1.8	-4.6
Total	**2,740,721**	**2,560,655**	**2,745,819**	**2,735,484**	**100.0**	**100.0**	**100.0**	**100.0**	**+1.5**	**-6.6**	**+7.2**	**-0.4**

Data table from (Census and Statistics Department).

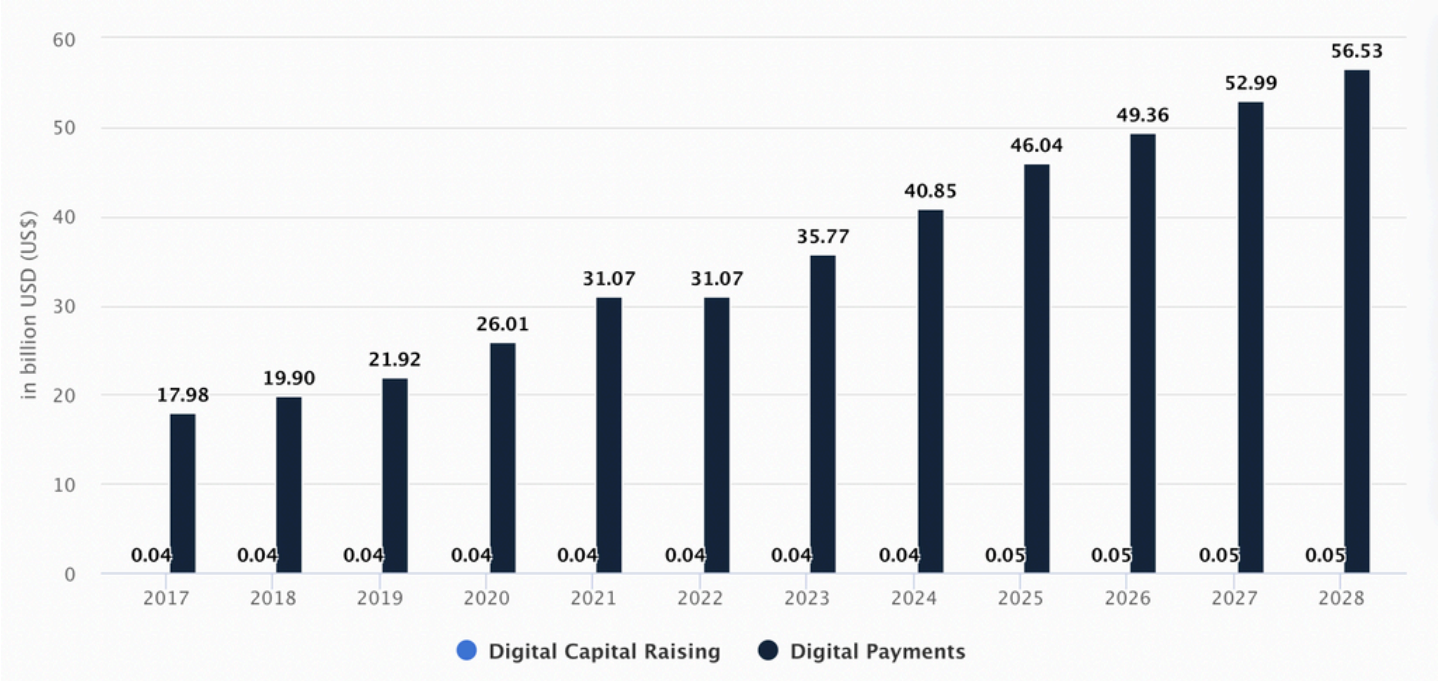
Opportunities and Potential Growth Sectors

The current industries in Hong Kong with the highest growth rates amidst economic uncertainty are the Creative Industry (art-related), FinTech, and Innovation Technology.

Although Hong Kong is slowly losing its position as a financial hub, it is still deemed as “Asia’s Creative Hub”, with a broad spectrum of creative areas spanning art and culture, design, media, digital marketing, advertisement, entertainment, film, music, gaming, eSports, multimedia, etc. It is also the host of many international fairs and events such as the Art Basel.

On the other hand, Hong Kong’s finance sector is transitioning away from traditional forms of banking towards various forms of FinTech, such as virtual banking and blockchain. The entire Hong Kong FinTech industry is projected to grow a staggering 14% in 2024, and is expected to maintain this rate of growth over the next 5 years (Statista).

Finally, as Hong Kong has major R&D infrastructures in place, such as Hong Kong Science and Technology Park and Cyberport. These infrastructures drive continuous innovation and nurture new startups while enforcing intellectual property protection, providing lucrative incentives for entrepreneurs and investors to enter.



Data from (Statista).

Conclusion

Although Hong Kong's economy as a whole is not performing as well as in previous years, there are still many high growth industries and sectors worth highlighting. The overall economy may be suffering from global trade tensions, but the industries detailed above retain explosive growth potential.

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Exchange Square Interviews

COLIN NGAN, TIM HE, SEBASTIAN ZHU, MICKY LYU, MARCELA CHEN

To thoroughly understand the global and local market environment, Economics Quarterly conducted a series of interviews with financial professionals and other individuals at Exchange Square.

Click the link or scan the QR code to watch the interviews.

https://youtu.be/Z5P7xuwGGos

Solar History in China

HOWARD DENG

In this era marked by urgent calls for environmental sustainability, the energy sector has undergone a tremendous shift from fossil fuels to renewable sources, particularly solar energy. Among the many nations involved in this transformation, China, with its large market and dominant solar technology leads as a dominant player.

China's journey towards becoming a powerhouse for solar energy had begun in the early 2000s. The Brightness Program, introduced in 2002, was one of the first legislative measures taken by the Chinese government which aimed to distribute solar power across rural provinces of China, illuminating areas with limited access to power grids, and replacing them with clean energy instead. This unprecedented initiative engendered the nation's transformation from conventional fossil energy sources to renewable sources and had been crucial in laying the foundations for more comprehensive and profound policies. The National Renewable Energy Law of 2005 which covers all forms of renewable sources subsequently laid the legal conditions to promote solar power as a primary energy source. In more recent years, especially from the outset of the US-China trade war, the Chinese government has strengthened these policies with subsidies, feed-in tariffs, and tax incentives aimed to nurture domestic development of the solar energy sector and to attract foreign investment.

The Chinese government's commitment to renewable energy has been highlighted in its current policies and strategic plan. The 14th Five-Year Plan in particular focuses on China's transformation to renewable energy and reducing carbon emissions. The plan targets a 50% growth in renewable energy generation and a 33% renewable energy consumption share (from 29.14 percent as of 2023) by 2025. Moreover, President Xi Jinping pledged for China to achieve total carbon neutrality by 2060 and peak carbon emissions by 2030. These goals reflect the strong governmental narrative emphasizing China's transition to become renewable energy dependent, giving the solar energy sector significant growth potential in the coming years.

Globally, the Chinese solar panel industry stands strong. Through adherence to international quality standards, China's solar panel industry has earned a reputation for its high quality, cutting edge, and affordable panels. With the US Department of Energy estimating that China has already invested 47 billion dollars in its domestic solar panel production, there is no doubt that its remarkable development will only continue. Although China's largest technological competitor, the United States, has more energy-efficient solar panels, its high cost has dissuaded many consumers, who instead opted for more economical Chinese solar panels. Additionally, many solar panel corporations in the US are reliant on Chinese labor and technical parts, including solar cells. The US government's several legislative measures aimed at combating trade imbalance with China have prevented buyers from choosing Chinese solar panels over domestically produced ones. With current polls highly favoring a Republic victory in the 2024 US presidential election, this will bolster China's position in dominating the global solar energy market, as the Republican agenda is largely uninterested in addressing environmental affairs.

In closing, this shows the immense growth potential the Chinese solar industry has, as its unparalleled market position in the global solar energy sector, supported by progressive governmental policies and strong narrative, positions it as the dominant player in the global shift to renewable energy. As the world progresses into a greener future, China's leadership in this transformation is both pivotal and influential, setting the pace for global renewable energy adoption and environmental sustainability.

Recommended Holding

TIM HE

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Whirlpool Corporation

NYSE: WHR

Note: This holding was recommended on May 26th, when the share price of the respective stock at market close was $86.52.

Company Overview

Whirlpool is a major manufacturer and marketer of home appliances, primarily known for household appliances like refrigerators, washing machines, dryers, ovens, and dishwashers. It is a renowned Fortune 500 brand with a long-standing reputation for providing high quality and user friendly products. Whirlpool sustains continuous investment in research and development, particularly in emerging areas like smart appliances and energy efficiency. Although it has recently expanded into new endeavors with partnerships, such as collaborating with Eisai on drug development, appliances remain as its core focus.

Fundamentals Analysis

Recent Company News

Whirlpool is making strategic moves to adapt to the changing appliance market. They are investing heavily in research for smart appliances and energy-efficient models, aligning with what consumers are looking for these days. Additionally, they're focusing on expanding their customer base in emerging markets like Asia and Latin America, where they have already seen success. This strategy has the potential to significantly grow their market share globally.

In Europe, Whirlpool recently underwent a major restructuring. They sold a large portion of their European business to Arcelik, a Turkish appliance company. While they're keeping their KitchenAid and InSinkErator brands in Europe, the rest will join forces with Arcelik to form a new company called Beko Europe B.V. This deal is expected to bring Whirlpool over $750 million in future profits and allows them to streamline their business and focus on other markets, even though they only own a quarter of the new European company.

Finally, as part of a larger effort to simplify operations, Whirlpool confirmed plans to lay off 1,000 employees worldwide. This workforce reduction is part of their ongoing restructuring efforts.

Company Insight

Positives

Brand Strength & Recognition: Trusted brands translate to customer loyalty and market share.

Global Presence: Diversification and growth potential in emerging markets.

Innovation Focus: Investing in smart appliances and energy efficiency for a competitive edge.

Dividend Payer: Attractive to income-seeking investors.

Negatives

Industry Cyclicality: Sales depend on economic conditions, potentially dropping during recessions.

Stiff Competition: Faces competition from LG, Samsung, and Bosch.

Supply Chain Issues: Global disruptions can impact production and delivery.

Overall, it is a well-established company with a solid foundation. Whirlpool boasts a strong brand portfolio and global reach. An analysis using the Discounted Cash Flow (DCF) method suggests the stock could be undervalued by 56%, with a potential price target of $206. This aligns with the company's low P/E and forward P/E ratios, which can indicate room for future growth.

Key Factors in Q1 Earnings Report

Positive News:

- Strong performance in Latin America, Asia, and SDA Global (increased market share and cost control).
- Europe transaction closed, expected to generate significant future cash flow.
- Increased promotional program prices in North America to offset challenges.
- Continued commitment to shareholder value through dividends ($1.75 per share in Q1 & Q2) and debt reduction ($500 million loan repaid).
- Improved profit margin (excluding one-time charge related to Europe transaction).
- Reaffirmed full-year earnings and cash flow guidance (excluding one-time charge).

Challenges:

Difficult economic conditions in North America impacted results.

Financial Highlights (Q1 2024)

- Profit Margin: 4.3% (excluding one-time charge)
- Earnings per Share: $1.78 (excluding one-time charge)

Full-Year Guidance

- Earnings per Share: $5.00 to $7.00 (including one-time charge)
- Cash Flow: $1.15 to $1.25 billion
- Free Cash Flow: $550 to $650 million

Technicals Analysis and Entry

In the weekly chart of Whirlpool Corporation's share price, key levels have been marked out, with red lines as current resistances ($144, $175) and green lines ($54, $76, $91) as current supports. We adopt an accumulation entry strategy with this recommendation, gradually buying into the position at prices highlighted in the white area shaded on the chart ($54 to $91). This allows us the opportunity to average down in positions and build it slowly until price has the chance to bounce from one of the support levels. The resistance levels highlighted can also act as targets.

Recommended Investment Time Horizon

The recommended investment time horizon, which is the approximate amount of time to hold the respective equity, is a minimum of 6 months for this holding recommendation. Keep in mind this is a relatively long term investment, and small price changes should not prompt one to immediately exit.

Update on Previous Recommendations

Recommendation	Alerted Price	T1	T2	T3	Current Price + Notes
Volkswagen AGVWAGY	$11.17	Hit $15.71 40.6%	N/A	N/A	Current: $15.09 Our 1st target at $15.71 hit on April 3rd, 2024, and immediately rejected from the resistance level, falling back to $15.09. Extra: 0.98 dividend announced May 31st
indie Semiconductor, Inc.INDI	$6.40	N/A	N/A	N/A	Current: $6.44 No targets hit yet. Price has dipped into the accumulation zone multiple times, allowing for many buying opportunities.

Investing Concepts 3: Active Investing Strategies — How to Beat the EMH

COLIN NGAN

Investment strategies are methods of determining how to invest and what to invest in. Traditionally, if you were an investor in the 50s or 60s, you would use the "security analysis" approach to pick stocks, where you look deeply into a company's financial statements, carefully analyze the business, and determine whether it is a good investment. This method, though simple, allowed Warren Buffet to become one of the most successful investors of all time.

Nowadays, more sophisticated strategies are available. You could use top-down approaches where you try to predict the economy's direction and allocate investments in sectors, or asset classes likely to perform well. Another option would be technical strategies where you use support-resistance lines, moving averages, RSI indicators etc. to predict which stocks will rise and fall. Earnings strategies seek to profit from stocks going up after the release of earnings reports, momentum strategies make the bet that stocks that have recently been strong will continue to be strong. Growth, Value, GARP, and other factor investing strategies are also very common.

These strategies use all kinds of different methods to analyze information, pick stocks and allocate investments, but at their core, all of them can be boiled down to this: Analyze lots of data and information to identify assets that you think will perform well, then invest.

These strategies are called "active strategies". An "active investor" bets that the price of an asset will move a certain way (i.e. up, down, or sideways), then makes an investment designed to profit from that movement. This investment could be a simple stock purchase, or it could be a trade involving hedging, derivatives, and complex financial engineering.

13 (https://www.datamation.com/big-data/what-is-data-analytics/)

Yet there is a problem. Let's say you follow a strategy and after analyzing the available data, you predict that a particular stock will go up. Who's to say you're the only person who has made that prediction? There are millions of other investors, using the same strategy as you, with access to the same data and information as you, who hold the same view as you. And out of those millions of other investors, a lot of them are institutional investors, which have better and faster access to information. So they probably made that prediction and bought into the stock way earlier than you did. With all those people having bought into the stock before you, the price would have already been pushed up – What you predicted would happen, i.e., the price going up, has already happened. Thus, by the time you determine that an asset's price will rise, the price has already risen to most of its potential. So there's no point in you buying in anymore since there is only little room left, if any, for the price to rise further.

This problem is called the Efficient Market Hypothesis (EMH). The EMH proposes that at any given time, all available information about an asset is already reflected in its price, and because of that, all active strategies are inherently unreliable.

(https://www.wsj.com/articles/hong-kong-brokers-make-final-stand-against-trading-floors-demise-1503921255)

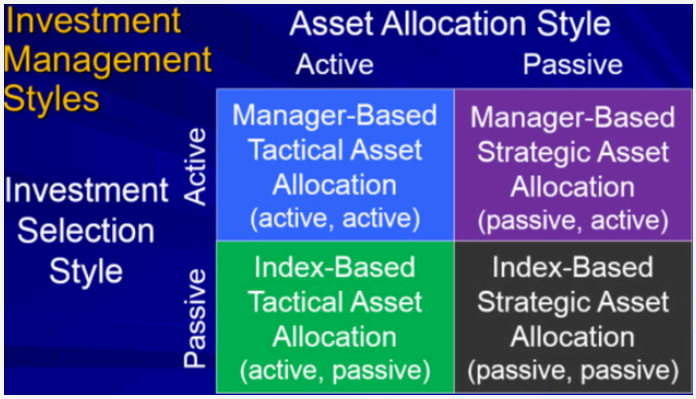
Wait what? Why are all active strategies unreliable? The logic goes like this: Since active strategies analyze information to predict price movements, but according to the EMH, all of that information is already reflected in the price, any price-movement prediction is worthless – millions of other people have also made that prediction and acted on it before you, causing your prediction – and any potential profits – to have already been realized before you got the chance to capitalize.

Look at this paper from Columbia University discussing the EMH in more detail.

This seems very counterintuitive. Surely it's possible to make money by analyzing information and making informed trades. On certain occasions, you indeed can. What the EMH says is that you cannot do so sustainably — for every time you get lucky and get in early, there'll be a time where you lose out.

In practice, market efficiency takes multiple forms. On the most extreme side of the spectrum, the market is perfectly efficient ("Strong form efficiency") — all existing information is already reflected in the price. On the less extreme side, "Semi-strong form efficiency" proposes that only information known to the public is reflected in the price, so if you have a piece of information not known to the public, you can still do insider trading (a very naughty crime, please don't do it) and profit. This seems more plausible. Further down the spectrum, "Weak form efficiency" proposes that only historical information is reflected in the price, but current information might still be useful. So if you analyze current information in a smart enough way, you can indeed sustainably make profits. When we take into account the complexities of financial markets, we are probably somewhere on this spectrum.

(https://www.hivelr.com/2023/05/efficient-market-hypothesis/)

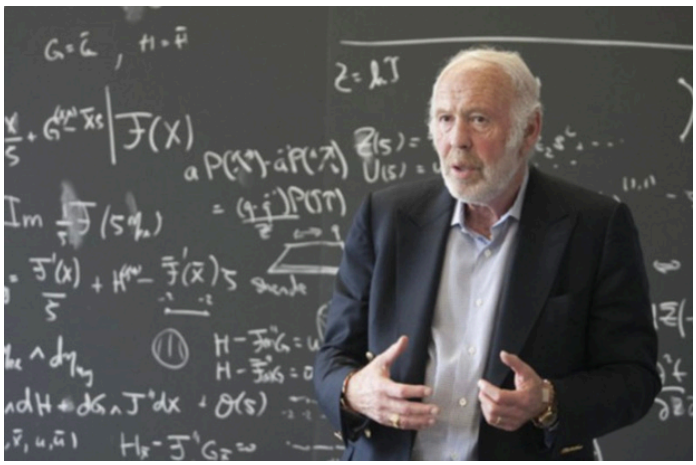


(https://www.kitces.com/blog/active-passive-strategic-tactical-whats-your-investment-management-style/)

It's worth noting that active strategies aren't the only strategies out there. "Passive strategies" invest in a way that doesn't aim to profit from short-term price movements. Indexing is the purest passive strategy – you invest in a set of stocks designed to replicate the composition of a particular sector or market like the S&P, earning a stable long-term return. Active and passive strategies can also be combined.

Since passive strategies don't depend so much on price movements, they're the preferred method for EMH believers. The data seems to suggest that passive strategies do work a little better. This paper from California State University finds that over the past 30 years, passive has outperformed active by 0.59%.

Yet at the same time, most of the best-performing and famous hedge funds are actively managed — Renaissance Technologies' Medallion Fund at one point reached a staggering 98.5% return. It used quantitative data-driven strategies designed to profit from pricing inefficiencies — an active approach. George Soros' famous Quantum Fund has, on average, performed three times better than the S&P over the past 30 years. It uses a macro investing approach to identify pricing inefficiencies — another active strategy.



(Renaissance Technologies Founder Jim Simons, https://bloombudfox.medium.com/renaissance-technologies-big-year-should-scare-many-47f3ae579676)

How are these funds able to perform so well while still using an active strategy? How do they overcome market efficiency? How do they beat the EMH?

(https://www.businesswire.com/news/home/20151015006479/en/NYSE-Welcomes-First-Data-Corporation-Largest-U.S.-IPO-of-2015)

(https://stock.adobe.com/hk/search?k=%22bull+run%22)

The important thing to remember is this: The only thing that actually affects an asset's price is the number of people who buy and sell it. All the news and information out there only affect an asset's price because investors see that news and react to it by either buying or selling. So if you want to profit from an active strategy, you have to be right when others are wrong – when we say "all available information is already reflected in an asset's price", what we actually mean is "the market's interpretation of all available information is reflected in the asset's price". If you're confident that other investors' interpretation of the data is wrong, and you have analyzed it in a better way and came up with a different prediction – then you have a chance to profit. Let's say you've identified a stock that the market has priced very cheaply, indicating that most investors don't see value in it, but you believe it is worth much more, and you buy in early (this is the foundation of value investing) — Once the market realizes it was wrong and you were right, it corrects the pricing error by pushing the price upwards, and with that, guess what? You profit.

If you step back and think about it, it seems obvious: The only way to succeed in investing is to consistently be right when others are wrong, and that means constantly innovating — a strategy that beat the market 10 years ago likely won't perform as well today, because the market learns and adapts, so you need to come up with a new, better strategy that beats the market. Active investing is a race against the EMH — you will profit sustainably for so long as your strategy is able to be right when the majority of other investors are wrong. That is how you beat the EMH — you outrun it.

The Terra LUNA Catastrophe: Why did Terra LUNA collapse

KONNOR WAN

Losses in the cryptocurrency market can generally be attributed to the loss of confidence. A glaring example of this is in the cryptocurrency Terra LUNA. After establishing itself as one of the largest cryptocurrencies with a valuation in the tens of billions of dollars, it lost over 99.99% of its value in a short span of two months. In this article, we will seek to uncover the cause of Terra LUNA's crash, as well as examine its aftermath.

First some background. Created in 2018 the Terra LUNA blockchain project was co-founded by Do Kwon and Daniel Shin. With Do Kwon as the public face of the cryptocurrency, keep this in mind for later (Savic and Cha). Terra LUNA like all cryptocurrencies was designed to facilitate decentralised payment. However, what set it apart was a two-token system made up of a standard cryptocurrency (Terra) and a stablecoin (UST). Stablecoins are another form of cryptocurrency that is pegged to a currency. The one of note that Terra LUNA used was UST, which was pegged to the USD at a rate of 1 UST to 1 USD. On the Terra LUNA blockchain users could turn 1 USD worth of Terra LUNA token to 1 USD worth of UST. If the UST's value stood at more than 1 USD, then burning 1 USD worth of Terra LUNA to mint 1 UST would allow the user to sell the remainder for profit. 1 UST token could always be exchanged for 1 USD worth of Luna tokens. The exchange of 1 UST for 1 USD worth of LUNA was thought to be a solution that could be self-stabilizing, and for approximately one and a half years this system worked brilliantly, allowing it to self-regulate and keep itself sustainable whilst simultaneously allowing all who invested to prosper. However, in the middle of May of 2022, UST's price crashed to significantly below the 1 USD peg, taking the entire Terra LUNA cryptocurrency down with it (Wind).

However, this seems to not have been unexpected, Do Kwon, realised that this self-stabilisation mechanism had its flaws. So about three months before the catastrophe, he created a UST reserve known as the LUNA Foundation Guard that would hold three and a half billion USD worth in cryptocurrencies, including Bitcoin, to defend the cryptocurrency from any pressures it would suffer from ("Why Did Luna Crash? | CFI").

Figure 1: "Crashing of Terra LUNA's Stock" Chart (Wind)

In the second week of May 2022, UST began to slip from the 1 USD peg, falling to as low as 0.67 USD but then slowly recovering at around the 0.90 USD mark. This proved to only be temporary however as UST once again began slipping, this time to the 0.23 USD mark. The LUNA Foundation Guard deployed its three-and-a-half billion dollar reserve, yet even this was not enough to steady the cryptocurrency. Because of the possibility of exchanging UST for Terra LUNA, people suddenly found themselves rushing to sell off their UST for Terra LUNA, causing serious hyperinflation. On the tenth of May, there were approximately 380 million Terra LUNA tokens minted, but three days later on the 13th of May there were approximately 6.5 trillion Terra LUNA Tokens. This insane hyperinflation caused Terra LUNA to lose nearly all of its value, as the market began being flooded with trillions more tokens. As can be seen in Figure 1, at its highest point, Terra LUNA was 119.18 USD, but immediately after the crash, it began trading at around 0.0003 USD. Approximately 60 billion dollars disappeared overnight in this debacle. (Savic)

A wide variety of rumors, ideas and theories floated around, however one that has gained the most traction was that a sophisticated group of traders identified Terra Luna's vulnerabilities and deliberately exploited the system by shorting the UST stock to put the 1 USD peg in jeopardy and thus trigger the collapse of the entire cryptocurrency (Wind).

Do Kwon, one of the founders of the Terra LUNA crypto, had a warrant issued by the South Korean government for his arrest, prompting Interpol to issue a red notice. In March of 2023, he was found and charged with wire fraud, commodities fraud, securities fraud and conspiracy (Savic).

The Terra LUNA crash showed us the risks displayed by algorithmic stablecoins and their susceptibility to market volatility. This piece is not financial advice of any sort, but rather simply to provide a basic overview of the main events of this crash.

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Quantum Economics — An Examination

SEBASTIAN ZHU

Introduction

In today's economic theory, the subject of economics is often referred to as the "Science of scarcity", since British economist Lionel Robbins first used the phrase in his paper "An Essay on the Nature and Significance of Economic Science"[1]. This definition attempts to separate the subject of economics from social sciences, and psychology in particular. However, this definition along with the orthodox modern economic theory stemming from Adam Smith has been criticized; largely in part owing to the fact that its models failed to predict, mitigate or even explain financial crises and market crashes, such as the dot-com bubble and the 2007-08 global financial crisis. Thus, economists are looking for alternative theories that may be a better fit for today's economy.

[1] (Robbins, "An Essay")

One such theory is Quantum Economics. There is really nothing in this theory that has to do with subatomic particles behaving like little wizards; the term is simply coined as Asghar Qadir, the author of the original 1978 paper "Quantum Economics", received inspiration from quantum mechanics, and many of its concepts are their quantum physics counterparts imported straight into the field of economics[2]. Its name has caused concern for many in the academic community, as anything to do with "quantum" really doesn't have a place outside of physics, and during a wave of hype in the 2010s just about anything could be associated with the term with some clever marketing tricks. Despite its humble status, the theory does offer an interesting alternate perspective from neoclassical physics.

[2] (Qadir, "Quantum Economics", 117–26)

This article aims to examine the basic concepts of Quantum Economics from the theoretical standpoint within both the frameworks of Physics and Economics, discussing the shortcomings and ideas behind its notions.

The Role of Money

In neoclassical economics, money is often seen as a distraction from the exchange of goods. Or rather, it does not possess any important qualities of its own; it is only seen as a token to represent qualities of another object. This school of thought originated from Adam Smith himself and was recorded in the infamous book "The Wealth of Nations". More recently, concepts such as the "Veil of Money" have been popularized in mainstream economics by prominent economists such as Milton Friedman. In this notion, money is treated similarly to commodities such as oil or gold, and has real effects in the short run. On the other hand, changes in the supply of money are seen as ineffective; not having any underlying effects in the long run other than affecting nominal variables in the economy. This is referred to as the "Neutrality of Money" and it "goes back to early concepts of the quantity theory, such as the classic statement by David Hume in his 1752 essays 'Of Money', 'Of Interest' and 'Of the Balance of Trade'."[3] Following such ideas, money and monetary supply are often ignored in Keynesian models and DSGE models, via either the assumption of fully flexible prices or the implementation of a priceless economy such as a barter system.

[3] (Don and Steiger, "In Search", 131–46)

One of the major proponents of Quantum Economics, economist David Orrell argues that "models which did not include money or credit could not predict, or even understand, the effects of a credit crunch." Being overly dependent on mathematical approaches, it can be argued that neoclassical models lack empirical science, which makes them ineffective in correctly portraying certain real world situations. Consequently, Orrell blames the inability of economic models to predict certain events on the downplay of the significance of money in an economic system by neoclassical economists. In David Orrell's presentation of Quantum Money, it "acts as a kind of measurement device, that puts a number on the concept of value" much like the observation process in a quantum system. Money takes on the role of the observer in a quantum system, after which the value of a certain good collapses and is determined as a fixed nominal value[4]. However, in almost all mainstream quantum theories such as the Copenhagen Interpretation and the Many-Worlds Interpretation, collapse is an irreversible process; whether in the form of an observation or decoherence[5]. It is impossible for a wavefunction, once measured to become a definite state after collapse or decoherence, to return to the original superposition. A system represented by the wave function re-enters into superposition as a result of time-evolution, triggered by the Hamiltonian; it does not revert the collapse process. This indicates that the value of an object under Quantum Economics is no longer relevant to its pre-measurement state of values, obviously untrue in the real world; random fluctuations in price would certainly destabilize any economy; such that the notion of values being superpositions and transactions of money being measurement devices would be absurd under the Copenhagen Interpretation postulate. Thus, the theories of QE can be no more than a skewed project of real quantum theory, and do not adopt the formalism of the latter. While the dualistic nature of money can be observed, it would remain scientifically inaccurate to refer to terms in quantum theory and use them directly in Quantum Economics.

[4] (Orrell, "Quantum Economics")

[5] (Zurek, "Decoherence", 36–44)

By basing the study of economics on money-based transactions, the theory also fails to take into account the role of nonmonetary transactions, such as payment-in-kind, similar to its neoclassical counterpart. With the example of PIK, it uses items such as bonds or stock in order to complete a transaction, which is common in the real world in situations such as leveraged buyouts, and is a crucial part of modern economies. It remains ambiguous in Quantum Economics whether such economic activity does determine and play a role in the valuation of the object. Similarly, it understates the role of barter in economies, which as William Stanley Jevons recognized has three limitations, being "Want of Coincidence", "Want of a measure of Value", and "Want of Means of Subdivision". Despite the belief by Jevons that barter is being phased out of formal transactions, he still recognized that "commerce begins with barter"[6]. By neglecting these factors as potential drives behind economic activity, the same argument can be made against QE as it makes against neoclassical economics, a case of ignorance.

[6] (Jevons, "Money")

Other Things Quantum

Various other concepts from quantum mechanics are also imported into Quantum Economics, and this article would agree with some of their implementation in the field of economics; one such example would be entanglement. In the aforementioned paper by Qadir, money acts as a medium for entanglement, similar to how particles in the quantum world interact and create the "spooky" link. In an economic system, people would become entangled such that individuals, mapped as particles, host an intangible relationship between them. Once the measurement on one end is made certain, the other will also effectively exhibit the correlated behaviour. Common economic contracts such as stock options, loans and government-issued bonds are instances in which an entanglement is created; an example can be made where if a measurement on the debtor of a loan shows the loan being defaulted, the observer can be certain of the outcome of a measurement on the creditor, likewise showing a defaulted loan. This works nicely in tandem with the credit

theory of money, and as Mitchell Innes puts it: "Credit is the purchasing power so often mentioned in economic works as being one of the principal attributes of money…credit and credit alone is money."[7] By asserting the essential nature of money as credit, it better represents the realities of the quantum world and to an extent the complexities of a real-world economy. Since a transaction of fiat money is seen as "an acknowledgment of debt from the purchaser", an entanglement between the parties is produced each time a money-based transaction is made, similar to the constant entanglement of the observer with the quantum system. The credit theory as one might argue is also better suited to the modern economy, which mostly uses fiat money or even digital currencies instead of commodity money as the main method of exchange.

[7] (Innes, "What Is" 419)

More practical applications of quantum physics within Finance are discussed in detail in Belal E. Baaquie's "Quantum Finance: Path Integrals and Hamiltonians for Options and Interest Rates". Baaquie uses path integrals and Hamiltonians in order to construct models for stock options and stochastic interest rates. For example, option pricing is expressed as a Feynmann path integral, and Baaquie subsequently uses path integrals to model linear and non-linear theories of interest rates. This is not achievable using stochastic calculus, the more traditional mathematical method for modeling financial options[8]. Such models prove to be accurate in the instance of eurodollar futures given by Baaquie, showing the possibility of incorporating previous theoretical concepts into practical financial modeling.

[8] (Baaquie, "Quantum Finance")

Many-Minds Interpretation

Both Fiat and Commodity money also have no intrinsic "values" attached to them, requiring the value to be ascertained; which leads to the case of a circular proof under QE where the transaction of money itself is required to determine the value of money, and thus it cannot assign a value to itself when the value is not certain. One might make for a case where a value for a certain currency may be determined under the QE postulate through commodities with intrinsic value, such as gold. However, this would largely deviate from the interpretation's original goal and lead back to neoclassical economics, where Karl Menger suggested "men have led, each by his own economic interests, to exchange goods destined for exchange (their 'wares') for other goods equally destined for exchange, but more saleable." This process of exchange grants a value to that commodity which is greater than its intrinsic value, and in such cases becomes resistant to fluctuations in effective demand, causing reduced values for said commodity. Using Menger's words, money is the "unpremeditated resultant of particular, individual efforts of the members of a society, who have little by little worked their way to a discrimination of the different degrees of saleableness in commodities."[9]

[9] (Menger, "On the Origin")

Consequently, value assignment in Quantum Economics is unsound when under its own postulates, and can only be delineated when using concepts originating from neoclassical economics, which the theory tries to avoid. A much more coherent theory with the same broad ideas could be built upon an altogether different interpretation of quantum mechanics, however; being the Many-Minds Interpretation, a cousin of the Many-Worlds Interpretation. It dictates that every possibility is real, albeit some of them inaccessible. Instead of the universe branching, the observer's mind branches and responds to each individual possible outcome: ultimately only one being experienced by the observer[10]. Instead of value determination through money-based transactions, value determination is achieved through the experience of the single outcome, whose probability is correlated by the mass of minds in which the outcome is true. Adhering to common sense, the intrinsic value of an object does not change if its state remains constant: it is only the experience by sentient beings that affects the subjective rendition of the value of an object. This follows the quantum notion of probabilistic measurements, and avoids the necessity of having to treat money as a separate and as a measurement device: it can be treated similarly to any

[10] (Lockwood, "Many Minds' Interpretations")

other commodity while at the same time acting as a common metric for values assigned by individuals. It is unnecessary to stress the importance of money: value does not have a universal metric and can only be quantified when an object is subjectively compared with another, using human perceptions to create it. Implementation of this interpretation into the social science field of economics also negates the need to define the exact constitution of a sentient being, an obvious blockade in any scientific theory involving individual minds as a part of the construct. Individuals are mapped to sentient beings, and other possible sentient beings will not affect the economic system by their own observation and experience of reality, so they can be omitted.

Most of the other quantum phenomena translated into Quantum Economics still apply in the Many-Minds Interpretation, such as the concepts of superposition, uncertainty, etc. They are principally uniform across most schools of thought in the quantum field, and aforementioned concepts certainly do provide a fresh alternative viewpoint to traditional views on concepts such as debt. Taking into account the length constraints and intentions of the piece, this article will skip any formalism in this process and does not deem further translation and discussion of minute differences between these interpretations necessary.

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The Effects of Social Capitalism on Economy

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The rise of social capitalism over the past decade has had significant impacts on the global economy. Social capitalism incorporates elements of traditional economic capitalism with increased social welfare programs, worker protections, and environmental regulations. This form of liberal capitalist system values all forms of capital, and focuses on maximising profits for society, as opposed to maximising profits for the 1%.

The impact of this shift on economic growth stays a subject of debate. Proponents claim that the strengthened social safety net and worker protections improve productivity and innovation by affording employees greater financial security and autonomy to undertake calculated risks. However, critics argue that the requisite tax increases and regulatory measures to fund social programs dampen business investment and dynamism.

Social capitalism, however enticing it may sound "maximising profits for all of society", like all social systems, doesn't guarantee desired outcomes in every case. Certain countries under social capitalist models maintain robust growth rates. Meanwhile, other economies which have assumed social capitalist policies, such as France and Italy, have struggled with low productivity and GDP growth in recent years.

One of the fundamental intents of social capitalism is to reduce income inequality and alleviate poverty. By providing a stronger social safety network and more progressive taxation, these policies have been successful in decreasing wealth gaps in many countries. Nations with robust social capitalist systems are able to maintain relatively equal wealth distribution, like Denmark and Norway, and consistently rank among the most economically equal in the world.

Despite this, a minority of skeptics posit that such social programs may cultivate disincentives to labour force participation and entrepreneurship, constraining the overall economic growth necessary for further poverty reduction. Debates also persist regarding the optimal targeting and efficiency of universal versus means-tested social benefits.

A core tenet of social capitalism is the emphasis on sustainability and environmental protection. Strict emissions regulations, green energy incentives, and other pro-environment policies have helped drive down carbon output in countries with social capitalist models. This has positively impacted public health and mitigated climate change. At the same time, the additional costs of environmental regulations are often referred to by businesses as hampering economic competitiveness, and there are concerns that overly burdensome green policies could hinder economic growth and innovation if not carefully balanced.

Ultimately, the rise of social capitalism had complex effects on economies around the world which can't be categorised as simply "positive" or "negative". While it has helped reduce economic inequality, improve security and minimise environmental damage in some cases, the impact on industrial development, productivity, and competitiveness remains in different nations are mixed and debated among economists. As society continues to experiment with integrating capitalist and social welfare policies, the long-term economic implications are still unfolding.

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