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Comparison between the 2008 Financial Crisis and the Covid-19 Crisis in the financial markets

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Introduction

The two financial market crises analyzed in this thesis are those that occurred in the first two decades of the 2000s and are, respectively, the crisis linked to the collapse of the housing market that began in mid-2007, the so-called subprime crisis or Great Recession and the crisis caused by the Covid-19 pandemic, the 2020 Covid crisis. In the initial part of the thesis, there is a summary of the main events and the main causes that led to these two crises. In the second part, the indices considered are the most important for the American, European and Asian spheres. For the American market, the Nasdaq Composite Index (IXIC), the Dow Jones Industrial Average (DJI) and the S&P 500 Index (SPX) were analyzed. The European indices analyzed are the Dax Performance Index (GDAXI), the FTSE MIB (FTMIB) and the CAC 40 (FCHI) while the Asian indices are the Nikkei 225 (N225), the Hang Seng (SHI), the CSI 300 (CSI300) and the SSE Composite (SSEC). For each index, a description of their composition and significance was provided and an analysis was made of the years preceding each crisis, the years in which the crises took place and the years that followed. This analysis includes the socio-political dynamics of each country with the main macroeconomic indicators of the period analyzed and a description of the index's performance over that period, detailing phenomena of strong variation in the price. The third chapter analyses the impact of the two crises on developing countries and the aid provided to combat poverty and malnutrition. The indexes analyzed at this stage belong to the three poorest countries in South Asia and are the Nifty 50 (NSEI), the Dhaka Stock Exchange Broad Index (DSEX) and the Karachi 100 (KSE) representative of the Indian, Bangladeshi and Pakistani markets. In the fourth chapter there is a summary of the main data used to carry out the descriptive analysis conducted in this thesis work for each crisis and the main considerations. The final chapter of the thesis summarizes the conclusions to which the analysis has led.

1. Financial crisis: main events

1.1 Subprime Financial Crisis (2007-2009)

The financial crisis that erupted in the United States from 2007 to 2009 and had very serious repercussions on the world economy will be referred to in this thesis as the ***'Subprime Crisis'*** because it was caused by a structural crisis in the housing market due to the *subprime mortgage crisis.* Since 2000, house prices in the United States have risen significantly, creating a real estate bubble. The Federal Reserve (FED), with its monetary policy, indirectly favoured this mechanism by keeping interest rates at historically low values until 2004 in response to the internet bubble and the attack of 11 September 2001.

The actors involved in the exchange of these mortgages are: the American families that demanded the subprime; the intermediaries that originated the mortgages such as commercial banks, specialized financial institutions and mortgages brokers on the supply side; the Special Purpose Vehicles (SPVs) that were available to the banks as a special investment vehicle in order to off-balance sheet the mortgages originated without being put on their books. The SPVs in the exchange mechanism bought them from the banks by financing them with commercial paper and transformed them into subprime securitization at different levels of sophistication and finally complexity, sold the securitized securities to institutional investors. Other important actors were insurance companies as insurers of the securitized securities against the risk of default, and rating companies that assigned a risk class to the securities; the banks in the role of demand for liquidity on the interbank market because they were contractually committed to provide liquidity to subprime investment vehicles that they themselves had created and which as long as possible were financed with commercial paper; and finally, the central banks (FED, ECB, Bank of England) which intervened massively as lenders of last resort and rate setters for the bond markets.

To deep dive the crisis, we have to focus on the role of the subprime, mentioned above that played a leading role in the crisis, and their history. They are loans granted to a type of client at high risk of default and who would not normally be able to access loans at market interest rates. These mortgages were born around the 1990s, a period when the value of real estate was constantly rising, and began to spread because, although they were very risky, the bank was sure of a return on its investment since in case of insolvency it would regain possession of the mortgaged property.

Mortgage securitization is the possibility to transfer credit risk (TRC) using different vehicles, through financial innovation. With securitization, the risk is transferred together with the credit in the sense that it is to all intents and purposes an assignment of the credit. The securities are generically defined as Asset Backed Securities (ABS) are guaranteed by collateral consisting of a pool of reference assets. They can be classified as follows: Mortgage-Backed Securities (MBS, securities backed by mortgages), Collateralized Debt Obligations (CDO, securities with a portfolio of other securities), other ABS (securities backed by a portfolio of other securities and other different types of credit, typically consumer credit (e.g. credit cards, student, car loans).

CDOs are ABSs that have as collateral a limited number of homogeneous limited number of homogeneous asset types as collateral. The issuance of CDOs is broadly similar to that of MBS. Securitization consists primarily of the "packaging" of the pool of reference assets, usually fixed income securities or ABS, into a CDO by a Special Purpose Vehicle which transfers the cash flow generated by the ABS to the buyers of the CDOs (the end investors). The SPV is set up and structured by an underwriter which is generally an investment bank. The securitized securities, MBS and CDOs, are typically organized in three tranches: senior, mezzanine and junior, characterized by increasing degrees of risk and return. Expected losses are concentrated in the junior tranche and particularly in the equity segment. The less risky tranches are aimed at less risk-averse investors while the riskier but more profitable tranches are attractive products for investors with a greater appetite for risk.

In the case of a synthetic CDO, the SVP receives periodic payments, the premiums, from the owners of the reference assets (creditors) in return for assuming the risk of default of the debtor in respect of those assets. In this contractual arrangement, the protection buyer is the creditor (i.e. the owner of the reference financial asset). The premiums are passed on by the SPV to the buyers of the CDOs, the investors, in the form of swap premiums. In the event of default by the debtor, the investor must cover at least part of the associated loss. The risk of default therefore falls not only on the SPV but also on the investor. Typically, the default risk on the equity tranche is fully covered by the investor, while on the other tranches it is limited or absent. In the case of synthetic CDOs, the creditor does not transfer the credit but only the credit risk. The SVP then securitizes the right to premiums by packaging it in a synthetic CDO.

It is to the mezzanine and equity tranches that the riskiest mortgages (subprime) are generally attached as collateral. In 2006, USD 200 billion in CDOs with BBB-rated MBS as collateral.

Rating agencies play a key role in securitization role in securitization. Generally, the senior tranche is rated triple A, the mezzanine tranche is rated AA to BB and the equity tranche is not between AA and BB and the equity tranche is not rated. The rating agencies' risk grading procedures rating have been criticized on two grounds. First, it is argued that they are based on often clearly unrealistic assumptions regarding the continuity and reliability of the flow of payments. The risk assessment is based on past performance and therefore ignores therefore ignores prospective elements by definition. In particular, it does not take into account the correlation of individual risks, which is the source of systemic risk.

These securitized mortgages, causing a sharp expansion in the supply of credit: old mortgages were turned into assets and sold to investors, providing new liquidity to banks, which they used to take out new mortgages, stimulating demand for property and fuelling the upward trend in property prices. These factors drove the growth rate of real estate to a peak of close to 15 percent in the second quarter of 2005 (Figure 1, Real estate price dynamics).

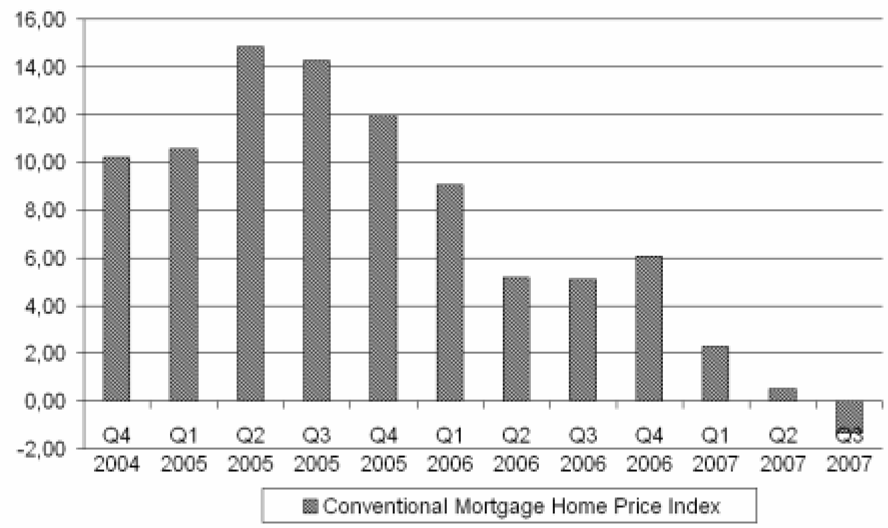

Figure 1, Real estate price dynamics 2004-2007

When the FED tightened its monetary policy, this mechanism came to an end and progressively entered into crisis. Access to finance became more expensive and the demand for real estate, like prices, began to trend downwards. As can be seen from Figure 1, since early 2006 the trend has already been downward.

In table 1, the data are related to the origin of the mutual in the period 2001-2006 and the weight of the subprime in the total. From 2001 to 2003, the mutual was growing and then at a rapid pace in 2004 due to the rise of interest rates. Subprimes are a limited share of the total (around 8%) while they explode in the second phase, passing to a share of the total of 20% on average.

	Mutui (mld $)	M.*subprime* (mld $)	Quota (%)
2001	2.215	190	8,6
2002	2.885	231	8,0
2003	3.945	335	8,5
2004	2.920	540	18,5
2005	3.120	625	20,0
2006	2.980	600	20,1
Fonte: Inside Mortgage Finance, The 2007 Mortgage Market Statistical Annual.			

Table 2, Primary Mortages and Subprime share

The first bankruptcy occurred in April 2007 at 'New Century financial', an US financial company specialized in subprime finance. Within four months ‘Bear Sterns’ closed two hedge funds, ‘American Home Mortgage’ and ‘Home bank Mortgage’ went bankrupt. The crisis officially started. The climate of pessimism and mistrust between banks (sharp rise in interbank rates) caused a debt crisis that led to a shortage of liquidity in the economic system. The bankruptcy of ‘Lehman Brothers’ was the biggest in US history and had devastating effects on the entire financial economic system. The investment bank could not access state funds and did not receive outside capital: it started bankruptcy proceedings on 15 September 2008 with debts of about 613 billion dollars due to high-risk debts and devaluations of securities due to the housing market. The world's stock exchanges saw $1.2 trillion in capitalization wiped out in a single day.

Within a few months, the subprime mortgage crisis also hit the real economy, causing recession, a fall in investments and a collapse in consumption. The most immediate response to the crisis was the massive intervention of states and central banks, which cut interest rates and injected liquidity into the economic system to stimulate investment and revive the economy. In January 2009, eight days after his presidential nomination, Barack Obama obtained the approval of the American Recovery and Reinvestment Act, an economic aid package worth $1 trillion over three years, to deal with the loss of 500,000 jobs, a jump in the unemployment rate to 6% and a 5% drop in GDP. In December 2009, the second economic manouvre was passed, after spending USD 787 billion in the first ten months. Obama announced that the banks that had been the recipients of Bush's Troubled Asset Relief Program had returned to the Treasury the government aid they had received for the purchase of "toxic assets", and that a cash surplus of $200 billion had made it possible to finance a tax break on investments of up to $250,000, the extension of unemployment benefits, because of the green economy, public spending on infrastructure (railways, bridges, roads, water networks), as well as incentives for energy efficiency and building renovations.

In the first part of 2009, the European Central Bank continued the phase of reductions in official interest rates that it had begun in October of the previous year. The central bank also continued to implement "unconventional" interventions, introduced in October 2008, aimed at facilitating the functioning of the interbank market, supporting banks' balance sheets and easing financing conditions for the private sector and promoting the further reduction of spreads in the money market and encouraging banks' lending to businesses and households. At the end of the year, the ECB decided, following improvements in real and financial conditions, to start a gradual withdrawal of non-standard measures from the beginning of 2010.

The performance of equity and bond markets showed an improvement in the economic outlook from the second quarter of 2009 onwards. In the first quarter of the year, the decline in equity prices that had begun at the end of 2007 continued. From the second quarter of 2009, however, financial market conditions improved significantly, stabilizing in the last three months of the year. In 2010, world PIL grew by 5%, although it was distributed very unevenly in the different areas of the planet (more sluggish in Europe, with the exception of Germany, and more dynamic in the US and Japan). On average, there was a sustained recovery in the developed countries, and an even stronger one in the emerging countries, where the economies showed a rapid and decisive recovery (China and India by an average of 10%).

1.2 Covid-19 financial crisis (2020-2022)

At the end of 2019, there began to be talk of a few cases of a new infection that had developed in Wuhan, China, called Covid-19. Within a few months, the first infections were recorded in Italy and then in the rest of Europe. By February, the epidemic had reached Europe. In order to limit the circulation of the virus and avoid further deaths, it was decided politely to put the population into the so-called 'lockdown', thereby confining the world economy. The Covid-19 economic crisis was not caused endogenously as in the case of the 2008 subprime crisis where finance was the cause, but exogenously downstream of the forced political decisions that states had to take. From March 2020 there was the beginning of the crisis caused by the restrictive measures to stem the circulation of the virus. The containment has forced companies in a range of directly affected sectors, from restaurants and hotels to airlines, to cease (or at least drastically reduce) their activities. Unlike other types of supply shocks, such as oil price increases, which companies can pass on in their prices in order to continue operating - many companies had no choice but to stop or reduce production. This has led the governments of the main countries, as well as international institutions, to approve huge measures to support the income of families and businesses. EU leaders agreed on a €750 billion extraordinary recovery fund, called Next Generation EU. The recovery package will prioritize investments in digital and green transition. Furthermore, the European Council agreed on a long-term EU budget for the period 2021-2027 which will stimulate growth and support citizens, businesses and our economies in the years to come. The multiannual budget and the recovery fund amount to at least €1074,3 billion. Together with the €540 billion of funds already available for the three safety nets (for workers, businesses and Member States), the overall EU recovery package amounts to €2,364.3 billion. The European Central Bank has used an additional €1,350 billion under its securities purchase program to help governments during the crisis. The last measure is the Recovery and Resilience Facility that includes most of the resources under Next Generation EU, (i.e. almost 90% of the total envelope). On 11st February 2021, the Council adopted the Regulation establishing the Facility. During 2021, Member States submitted National Recovery and Resilience Plans outlining their reform and investment agenda until 2026. They are invited to define a coherent package of projects in six areas:

- green transition
- digital transformation
- smart, sustainable and inclusive jobs and growth

- social and territorial cohesion
- health and resilience
- policies for the next generation, including education and skills

The plans will be reviewed and adapted as necessary in 2022 to take into account the final allocation of funds for 2023 according to a number of criteria, including consistency with the country-specific recommendations of the European Semester, the strengthening of the Member State's growth potential, job creation and social and economic resilience and the effective contribution to the green and digital transition (national plans should allocate at least 37% of the budget to climate and biodiversity and at least a further 20% to digital measures). The assessment of the recovery and resilience plans must then be approved by the Council within one month, by qualified majority on a proposal from the Commission.

These measures however have not prevented devastating consequences in terms of unemployment and market contractions. The cumulative loss to the world economy, compared to the growth forecasts if there had been no pandemic, amounts to USD 11 trillion in 2020-21 and will reach the sum of USD 28 trillion in 2020-25. According to the International Monetary Fund, nearly 90 million people could fall below the threshold of extreme deprivation this year, wiping out all the progress made in previous years to reduce inequality and poverty.

In early 2022, the world prepares to face the so-called fourth wave of the Covid-19 pandemic.

2. Stock exchange and market index analysis

2.1 American Indexes

2.1.1 Nasdaq Composite Index (IXIC)

2.1.1.1 Nasdaq Composite Index: Before the crisis

In the years preceding the subprime crisis, in addition to the slowdown in growth due to the worsening of the crisis in the real estate sector described in the previous chapters, there was a not so negative trend in the main macroeconomic indicators in the US, especially in 2006. In 2006, there was a 2.6% increase in GDP, a 3.2% increase in household consumption, partly due to an increase in the net wealth of households, and a 7.2% increase in productive investments, thanks to the 17.6% increase in profits of non-financial companies, which strengthened their capital position and brought the corporate debt ratio down to 40.3% and the unemployment rate down to 4.4%, thanks to favorable market conditions. In 2007, there was a drop in residential investment (by 17%) due to heightened financial market tensions caused by the real estate sector, which led to a slowdown in GDP growth to 2.2%. The growth rate of consumption fell to 2.9 % even though productive investment grew by 4.7 %. NASDAQ Composite is an acronym that stands for National Association of Securities Dealers Automated Quotation. The index consists of technology stocks such as Apple, Google, Amazon and other internet giants. The requirements for a company to be part of the Nasdaq Composite Index are as follows: it must be registered with the US Securities and Exchange Commission (SEC); it must have at least three market makers (financial firms acting as brokers or sellers); and it must meet a number of assets, capital, public stock and shareholder requirements. The American technology sector has developed steadily over the last 30 years thanks to many innovations applicable in all sectors (industry, e-commerce, etc.). However, in the years preceding the two crises, it followed two different paths: unlike the decade before the Covid crisis, in 2000-2001 there was the collapse of the speculative bubble involving the so-called Dot-Com companies. At the end of the 1990s, there was an increase in poorly capitalized, small and highly exposed Internet companies in a fast-growing sector. After an initial rapid increase in prices due to strong future expectations and the strong presence of venture capital, the bubble collapsed and many companies went bankrupt. After the collapse of the bubble, thanks to the rapid technological development characteristic of the third millennium, a period of slow and steady growth in the index began between 2007 and 2008 the Nasdaq index grew slightly in line with previous years, rising by 10%: during 2007 it started the year at 2423.16 points and closed the year at 2652.28 points.

Figure 2, Nasdaq Composite - Before 2008

The years leading up the Covid crisis, the US economy grew by 2.9% in 2018 (an increase of almost one percentage point over the previous year), driven mainly by private consumption and, in the first half of the year, by productive investment, boosted both by the tax reform that came into effect in January and by high oil prices. In 2019, US GDP growth was 2.3%, down from the previous year. During these years, as shown in figure 3, were years of growth for the technology sector thanks to innovations that revolutionized the everyday life of every citizen. An analysis of the graph shows that the index grew faster than in the period before the subprime crisis. One of the reasons for this difference lies in the fact that both the technology sector itself and the companies that make up the sector are beginning to acquire a certain maturity and thus become solid entities in which to invest. In 2018, the index rose from 7006.90 points until the end of the year, only to fall 700 basis points between November and December due to structural problems behind the stock: Apple's balance sheet imbalance, antitrust fines against Google, and investigations (Cambridge Analyica with Facebook). In 2019, on the other hand, the index rose by about 355, from 6665.94 points to 8972.60.

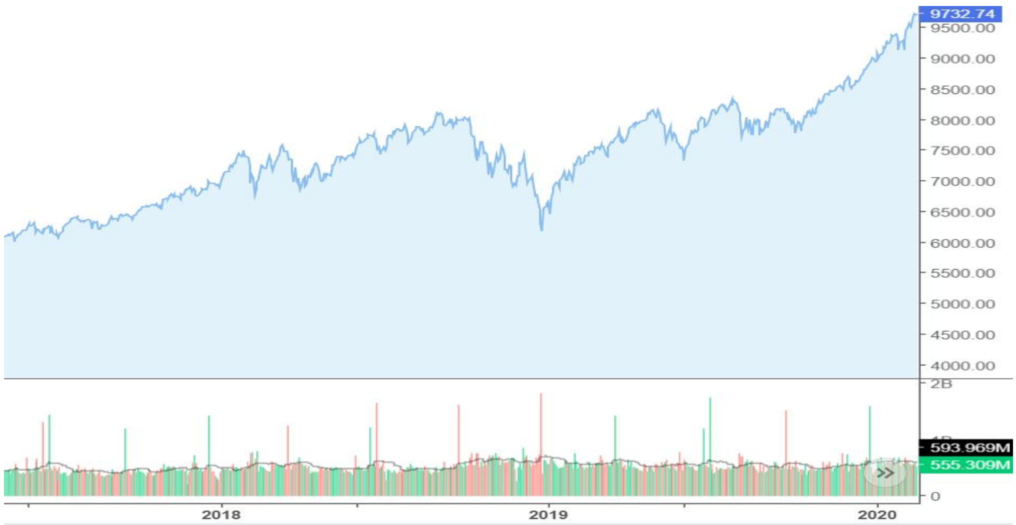

Figure 3, Nasdaq Composite - Before 2020

2.1.1.2 Nasdaq Composite Index: During the crisis

The subprime crisis hits all US sectors very hard due to the general uncertainty and chaos in the US and therefore also worldwide. The crisis led to an increase of 1.1% in the first half of 2008 and then a fall of 6.3% in the third quarter of the year. Household consumption during the year increased slightly by 0.2% due to declining net wealth. Also, the investments clearly underwent a followed this inversion of trend going from a 1.6% to a decrease of 21.7% in the quarter. Also in the first quarter of 2009, before the measures for economic recovery and liquidity injections to give breath to the strong indebtedness, there was a contraction of 6.1% per region of year and the jumping unemployment rate reaching 8.9% in April. Analyzing the performance of the index over the period from the end of 2007 to March 2009, we can see that the crisis caused the index to collapse very quickly from 15 September 2008 (bankruptcy of Lehman Brothers) after years of steady growth.

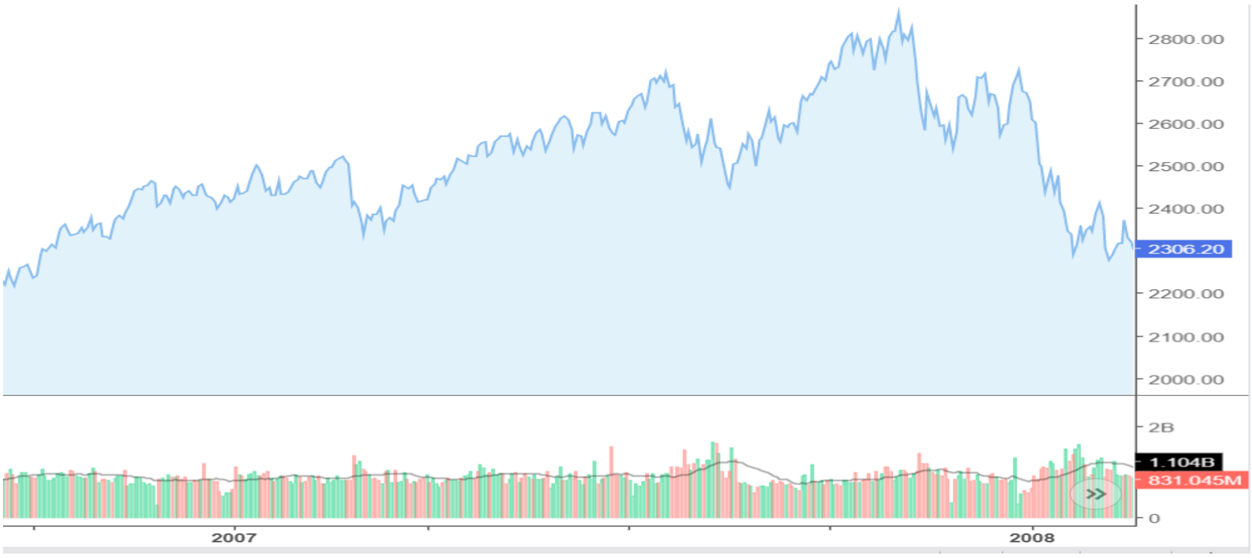

Figure 4, Nasdaq Composite - During 2008 crisis

During the Covid crisis, as Sole24Ore reported in an October 2020 article, the deficit caused by the pandemic tripled to \$3.1 trillion, causing 8 million more poor people in the US. The deficit-to-GDP ratio has risen to 16% (10% during the subprime crisis) and federal spending has risen by 47.3% in fiscal year 2020 due to unemployment benefits and corporate aid of more than \$2200 billion. Unemployment also rose sharply during the crisis. Government figures show that one family in four is unable to make ends meet, and if this poor segment of the population is taken into account, it can be seen that the crisis has generated more than twice as many poor people among African Americans and Latinos as among white Americans, revealing the great American social inequality.

The US technology sector, during the Covid crisis, after an initial fall (from February 2020 to March 2020) caused by the initial phase of the crisis characterized by national lockdowns and business closures, had a sudden upswing which, to date, has not yet stopped.

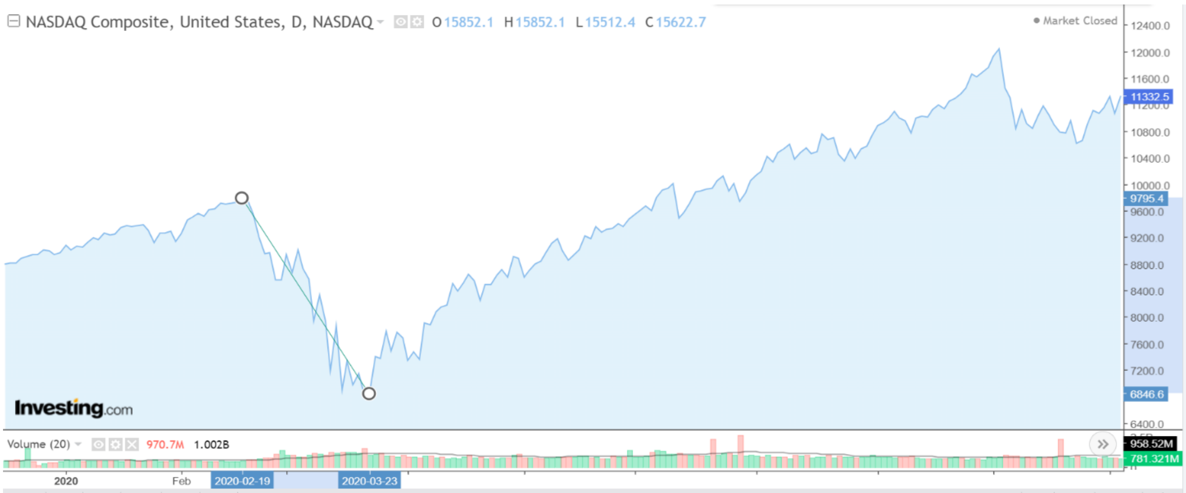

Figure 5, Nasdaq Composite - During Covid crisis

The index's performance during the two crises differed in that, as the subprime crisis was a systemic crisis, it had considerable repercussions on most sectors of the US market. The Covid crisis immediately forced states into lockdowns. Technology has become even more part of everyday life through the use of new services, portals and, more generally, through a significant increase in the use of connectivity. Just think of the PC at home, perhaps used occasionally or completely unknown and now transformed into an everyday object. Globally, there has been a 1.8% annual growth in the number of people using mobile phones between 2020 and 2021. That is to say, 93 million people worldwide had access to a mobile phone for the first time in 2020. As far as the internet is concerned, compared to January 2020, there has been an increase of 7.3%, or 316 million people. Going into more detail, however, as far as our population is concerned, more than one million people have connected to the internet for the first time during 2020, an increase of 2.2%, exceeding the 50 million marks.

Smartphones reach 97% usage, while 3 out of 4 people use desktops and laptops, a result of the increase in smart-working. There has also been significant growth in consoles and smart home: the ownership of gaming consoles and smart home devices has almost doubled. This explains how the index rose already during the Covid crisis, while during the subprime crisis it took longer to recover. The technology sector is currently valued at an average Price/Fair value of 1.22, the highest since 2007. Through 2020 and 2021, high-tech stocks have served as a safe sector during a long market period of great uncertainty. But analysts expect that as the market returns to normal, other sectors such as airlines and hotels will begin to recover and attract the capital that has been invested in the technology sector over the past 12 months.

2.1.1.3 Nasdaq Composite Index: Post crisis

Figure 6, Nasdaq Composite - Post 2008

In the years following the US crisis, the economy grew by 2.9%, in 2010, in a situation where the critical condition of the housing market counteracted the growth support of monetary and fiscal policy. Consumption increased by 1.7% while trying to reduce debt. Productive investment grew by 5.7% and the unemployment rate fell by 0.5% to 9.4%. In 2011, however, employment continued to recover, especially in the non-agricultural sector, further reducing the unemployment rate to 9%. During the recovery, the Federal Reserve took action to counter deflationary trends by means of an expansive monetary policy and by keeping the reference rate between 0.0 and 0.25 % and by purchasing securities issued by the US Treasury. How the Nasdaq managed to grow despite the difficult world situation, confirming the strong development that the whole technology sector had during the first twenty years of the new millennium. Taking Apple and IBM, two leading companies in the sector, as an example, at the beginning of 2009 the "Sole 24 Ore" reported in its article "Apple stronger than the crisis" the unexpectedly good results on Wall Street: "Positive results and forecasts for 2009 for both Apple and IBM. Yesterday, the iPod and iPhone company beat analysts' estimates for profits and turnover in the fourth quarter of 2008 (the first of fiscal 2009), leaving Wall Street stunned for the second day running. On Tuesday, it was IBM that stunned investors with such an optimistic outlook for 2009 that its shares rose by almost 10 per cent and dragged the stock market up 279 points yesterday. Apple's profit rose from $1.58 billion to $1.61 billion, the equivalent of $1.78 per share; Wall Street had forecast $1.76 per share. Revenues rose 5.8% to $10.2 billion thanks to increased sales of Mac computers (up 9%), iPhones (up 88%) and iPods, whose sales rose 3%, more than expected. Apple's stock had closed up 5.9 per cent before the earnings announcement, and jumped another 10 per cent to $90.92 in after-hours trading [...]. Analysts and investors had expected that the avalanche of bankruptcies among large banks and financial institutions, and the liquidity crisis of many companies, large and small, would cut into IBM's profits. In fact, the corporate world spent less on IT during the fourth quarter, but Sam Palmisano's company managed to boost profits with a mix of cost-cutting and shifting resources into services and software, which have higher profit margins. For the full year 2008, revenues grew 5% to $103.6 billion and profits 18% to $12.3 billion. For 2009, the company now expects earnings at $9.20 per share, 27 cents more than in 2008 and 45 cents more than the average analyst forecast."

In 2021, the US economy grew the most since Ronald Reagan's presidency, reaching 5.7% growth in foreign exchange GDP while sales compared to 2020 remained almost flat at - 0.1% and prices grew by 5.3%. Household consumption grew by 1.7%. Uncertainties related to Covid have, however, put a strain on the supply chain due to labour shortages caused by the return of contagions despite vaccinations. As for the unemployment rate, requests for unemployment benefits fell to the lowest level since 1969, a sign of a healthy labour market despite the pandemic. The Nasdaq Index, during 2021, was on an upward trend, hitting a low of 12397.05 on 5 March and ending the year at 15644.97 basis points with an overall increase of 21.39%. US technology sector therefore remains healthy after the crisis. Others the events that gave the index a boost were Joe Biden's rise to power and, on 9 November 2020, and the announcement of the success of the Pfizer-BioNTech COVID-19 vaccine in Phase III clinical trials.

Figure 7, Nasdaq Composite – Post 2020

2.1.2 Dow Jones Industrial Average (DJI)

2.1.2.1 Dow Jones Industrial Average: Before the crisis

The Dow Jones Industrial Average is a price-weighted equity index that represents the performance of the top 30 stocks on the NYSE (New York Stock Exchange). The index is not tied to any specific sector; its basket, in fact, includes securities belonging to various manufacturing sectors, both traditional and new economy. Some of the indices that make up the Dow Jones are: The Dow Jones Industrial Average known as the Dow Jones Industrial Average (DJIA) is the most important of all and reflects the share price behaviour of the 30 most important and representative industrial companies in the United States. The Dow Jones Transportation Average known as the Dow Jones Transportation Average (DJTA), which contains the 20 largest transportation and distribution companies. The Dow Jones Composite Average known as the Dow Jones Composite Average (DJCA) is the index that measures the stock performance of 65 companies that are members of one of the three main indices above. The Dow Jones Utility Average (DJUA) reflects the shares of the 15 largest companies in markets such as gas or electricity. The Dow Jones Sustainability Index, or DJSI, is a collection of different sustainability indices that integrate high-performing companies in various sectors such as economic, social and environmental. For the year 2022, some of the companies that make up the Dow Jones are as follows: American Express Co, Amgen Inc, Apple Inc, Boeing Co, Caterpillar Inc, Cisco Systems, Inc, Chevron Corp, Goldman Sachs Group Inc, Home Depot Inc, Honeywell International Inc, International Business Machines Corp, Intel Corp, Johnson & Johnson, Coca-Cola Co, JPMorgan Chase & Co, McDonald's Corp, 3M Co, Merck & Co Inc, Microsoft Corp, Nike Inc, Procter & Gamble Co, Travelers Companies Inc, UnitedHealth Group Inc, Salesforce. com Inc, Verizon Communications Inc, Visa Inc, Walgreens Boots Alliance Inc, Walmart Inc, Walt Disney Co and Dow Inc. The index therefore represents the best companies in the United States in terms of performance and health. Among them we can find companies operating in very different sectors such as McDonald's Corp, Apple Inc and JPMorgan. We can therefore assume that the performance of this index fully represents the global situation of the US market.

Figure 8, Dow Jones - Before 2008

In the years before the subprime crisis, the index grew steadily. The only moments of uncertainty came between the end of 2001 and the end of 2002 due to the terrorist attack on the Twin Towers on 11 September 2001 and the subsequent decisions of US President G. W. Bush, including declaring war on Al Qaeda. The bursting of the dotcom bubble in the sector in those months also had an impact on the index. During this period, the performance of the index was variable and not always positive. The Dow Jones index between 2006 and 2008 grew by 3000 points from 10847.5 basis points to 13264.82 points.

Figure 9, Dow Jones – 2008-2009

The years leading up to the Covid crisis were of steady growth. The US market at this stage proved to be healthy and, together with the emerging China, one of the world leaders in all sectors as well as an economic and political superpower. The index's growth in 2016 came to a halt (although it was still growing) due to Donald J. Trump's rise to power as US president. After an uncertain period of adjustment, it resumes its growth at the end of 2016, which will continue until the beginning of the crisis in 2020. The Dow Jones index prior to the Covid crisis experienced two years of growth ranging from a decline at the end of 2019, which, like the Nasdaq index, was due to investigations and financial problems of some major companies included in the title.

Figure 10, Dow Jones – 2014-2020

2.1.2.2 Dow Jones Industrial Average: During the crisis

During the subprime crisis, the Dow Jones index fell by around 5,000 points, with an initial dizzying collapse (September and October 2008) and then a steady decline over the months. In fact, the trend is similar to that of the Nasdaq index, since it fully represents the companies most present on the American market, and it can be seen that the crisis hit all the relevant sectors. It was not until early 2009, with Barack Obama's rise to power and the Federal Reserve's recovery measures such as the Emergency Economic Stabilization Act of 2008, proposed and implemented by the Federal Reserve and the US Treasury Department, that the index began to rise again.

During the Covid crisis, the fall of the index was much more pronounced. Between February and March 2020 (the initial and most acute phase of the crisis), the index lost 11,000 points. As in the case of the Nasdaq, it is clear that this crisis did not affect all sectors indiscriminately, as it did in the systemic crisis of 2008. In fact, as early as the end of March 2020, while the whole world was still in lockdown and no efficient solution to stop the pandemic was in sight, the index began to grow steadily again.

Figure 11, Dow Jones - 2020

2.1.2.3 Dow Jones Industrial Average: Post crisis

As reported above, both crises were followed by periods of steady index growth. The health of the US market from the strong innovations in all sectors allowed large multinational companies to emerge from crises by driving it efficiently. This was despite significant volatility due to growing global concerns such as the European sovereign debt crisis of 2010, the Dubai World debt freeze of 2009, and the US debt ceiling crisis of 2011 after the subprime crisis. The Dow Jones index in this phase followed an upward trend which, starting in the second quarter of 2009, saw the index rise from just under 7000 basis points to 10583.96 points at the beginning of 2010 and then arrive at the end of 2011 with an annual growth of 11%, reaching 11577.51 points. During 2010, the index hit a low of 9614.32 points on 2 June 2010 and a high of 11625 points on 29 December 2010.

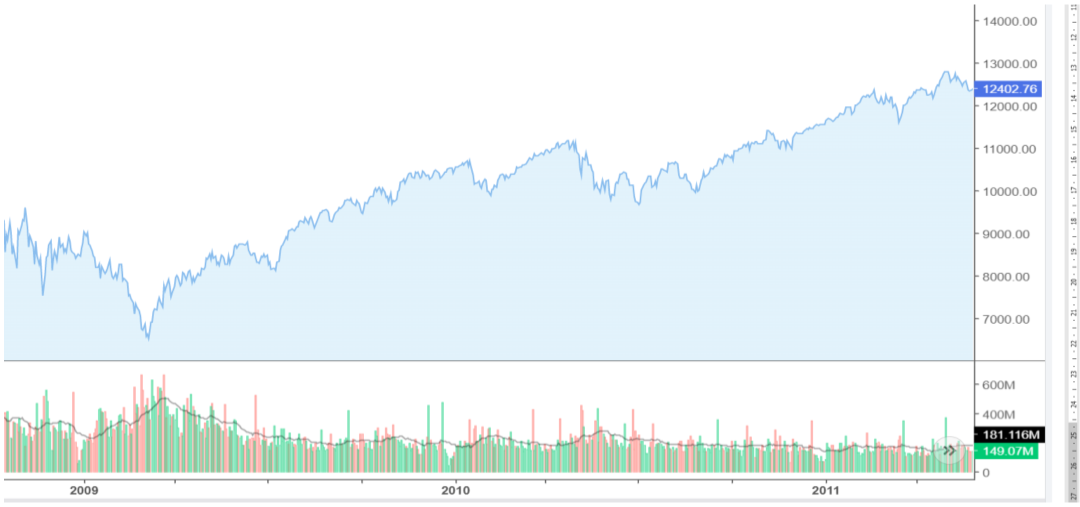

Figure 12, Dow Jones – 2009-2011

After the Covid crisis, the Dow Jones index had an upward trend in line with the other chapters and representing how much the US market in the technology sector was less affected than the other states in the world. In fact, the index grew by 19% in 2021, rising without major fluctuations from its initial quotation of 30223.89 to 36388.30 at the end of the year.

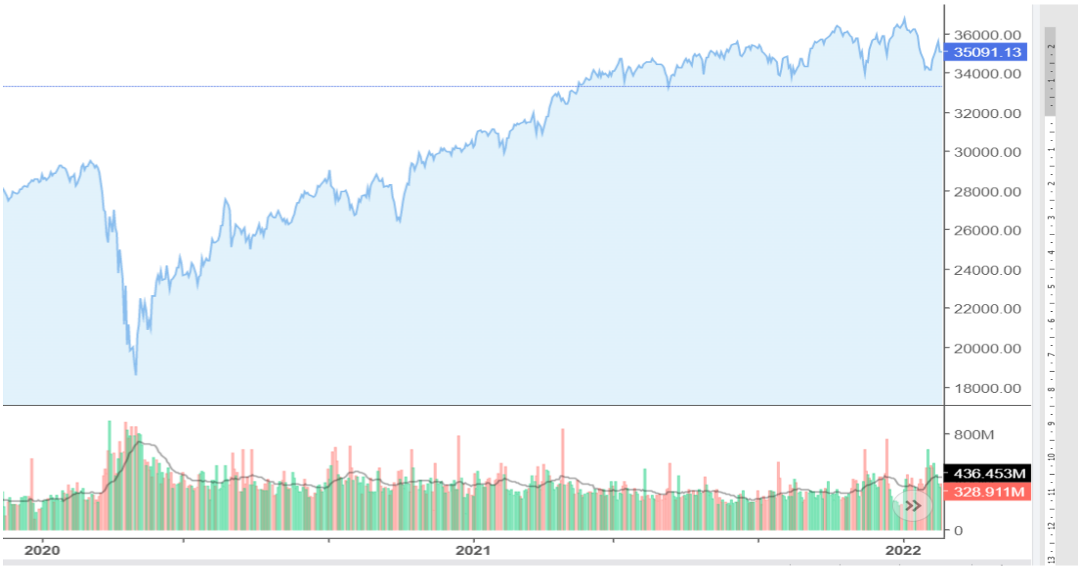

Figure 13, Dow Jones - Post 2020

2.1.3 S&P 500 Index (SPX)

2.1.3.1 S&P 500 Index: Before the crisis

The S&P 500 refers to the index designed and created by Standard & Poor's in 1957 to monitor the performance of the shares of the group of the 500 largest US companies by capitalization through a system of price redirection. This large and prestigious group includes the shares of companies traded on the NYSE, the Amex and the Nasdaq.

One of the basic criteria of the S&P 500 is to assign each company an importance directly proportional to its market value, and over the years it has become the main reference point within the American market, to the extent that it has surpassed the Dow Jones. In assessing the eligibility of a new addition, the committee evaluates the company's merits using eight primary criteria: market capitalization, liquidity, domicile, public float, sectoral classification, financial viability and length of time the company has been trading and listed. Each of these primary criteria has specific requirements that must be met. Indeed:

- Market capitalization must be greater than or equal to $6.1 billion
- Annual dollar value traded with free float-adjusted market capitalization is greater than 1.0
- Minimum monthly trading volume of 250,000 shares in each of the six months preceding the valuation date

The 28.1% of the market capitalization of the index is represented by these nine companies and they are: Apple, Microsoft, Alphabet, Amazon.com, Facebook, Tesla, Nvidia, Berkshire Hathaway and JPMorgan Chase. We therefore expect a similar trend to the other two indices analyzed.

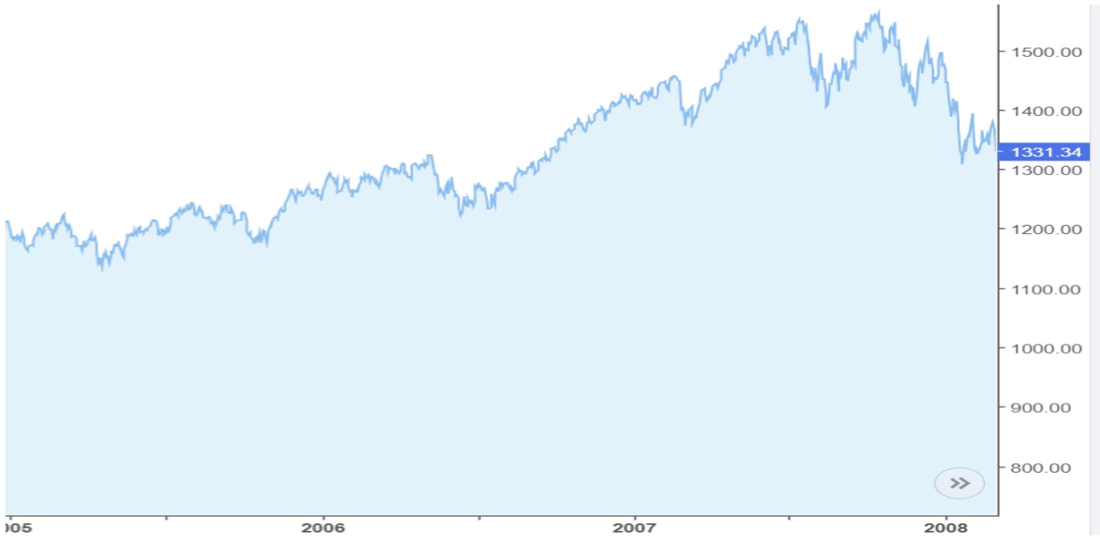

Figure 14, S&P - Before 2008

In the years preceding the sub-prime crisis, the index had an increasing trend only after 2003. As analyzed in the previous chapters, the dot-com bubble and the events linked to the terrorist attacks and the subsequent US entry into the war explain the downward phase before 2003. The S&P index followed a slightly growing trend between 2006 and 2008 with growth of 17.63% from 1268.80 points to 1468.36 points.

The years following the European debt crisis, like the other indices, were years of growth. In fact, until the outbreak of the Covid crisis, the US market grew steadily thanks to the main sectors. The USA, at least until the election of Donald Trump, had the undisputed role of leading country in trade and economic relations in the entire Asia-Pacific area. Since the end of 2017, with the decision to cancel the 'Trans-Pacific Partnership', a free trade treaty promoted by Barack Obama, which involved twelve countries bordering the Pacific Ocean, with the exclusion of China, world trade changed radically. The S&P 500 index, however, continued its steady growth even as a new leader began to appear in world trade: China (whose role as the new world trade leader will be analysed in the following chapters).

Figure 15, S&P - Before 2020

2.1.3.2 S&P 500 Index: During the crisis

Figure 16, S&P 500 - During 2008 crisis

The S&P 500 index fully represents the American market in its leading sectors and most influential companies and has a similar trend to the Dow Jones. Even during the sub-prime crisis, as can be seen in the figure above, they performed almost identically to each other (the Dow Jones DJI in fucsia and the S&P 500 in blue). Here again, it can be seen that it was only after the end of the crisis and the first measures aimed at reviving the world economy (early 2009) that the index began to grow again and the US sector began the growth already analyzed for the other two indices.

Figure 17, S&P - During Covid crisis

During the Covid crisis the performance of the two indices was very similar during the critical part of the early 2020s. On March 15th 2020, the S&P 500 index suffered its worst daily decline since 1987's Black Monday, falling 9.5 percent, as a result of anxiety about the coronavirus pandemic. The decline of more than 20% since its peak, only 16 trading days earlier, signaled the start of a bear market closing at 2,480.64. As expected, the Covid crisis had a very strong impact on the world economy and then saw the technology and e-commerce sectors emerge. In this case we can see that the S&P index, in the regrowth phase of the indices has a better performance than the Dow Jones. It can therefore be said that, on the whole, the American market composed of the five hundred companies of the New York Stock Exchange performed better than the top thirty companies of the same exchange.

2.1.3.3 S&P 500 Index: Post crisis

After the crises, the index grew in line with the growth of the other indices analyzed. It is amazing to note that, even in this case, the growth of the index after the Covid crisis was much more pronounced than the difficult growth that the US market had to face after the Subprime crisis. This result is in line with the objective of this thesis, which once again shows that the 2008 crisis was a general systemic crisis that started in the world of finance and then affected the world economy, in many sectors and for many months; the Covid crisis was a crisis caused by a pandemic that after the first two months of total uncertainty saw the sectors described in this chapter and, therefore, the American stock exchange grow decisively.

Figure 18, S&P 500 - Post 2020

Figure 19, S&P 500 - Post 2008

2.2 European Index

2.2.1 Dax Performance Index (GDAXI)

2.2.1.1 Dax Performance Index (GDAXI): Before the crisis

Germany has one of the most developed economies in the world, ranking first in Europe in terms of gross domestic product and purchasing power. The prevailing sector is that of the services (above all the automotive sector) with some of the most famous brands in the world have their seat in the German state. Germany is also one of the most active import/export countries with strong trade with France, the US, the Netherlands, Italy and the UK.

The DAX measures the performance of forty German equities and the competent bodies reserve the right to modify its composition periodically in order to obtain an index that adequately reflects the structure of the market. It represents approximately 80% of the market capitalization of listed companies in Germany. Until September 2021, the Dax index consisted of the 30 largest capitalized and most liquid German stocks listed on the Frankfurt Stock Exchange's Prime Standard Segment and traded continuously on the electronic Xetra system, which is operated by Deutsche Borse.

On 3 September 2021, the enlargement of the DAX to forty securities was launched - as part of a deeper reform. The criteria of capitalization, free float, high liquidity and accurate representation of the main business sectors are taken into account in its construction. The index value is calculated in real time every second from 9 a.m. until 5.30 p.m. based of the change in the free float-weighted prices. Dividends that are paid out are also included in the calculation, as are the proceeds from subscription rights. In the years leading up to the subprime crisis, Germany experienced exponential economic growth. The number of unemployed fell between 2005 and 2008 and trade grew exponentially, especially in world exports. The measures that allowed the country to improve its performance markedly coincided with a decentralization of labour bargaining leading to a considerable reduction in labour costs. The German system of industrial relations is not based on legislation, but instead on contracts and agreements of three main actors: national trade unions, industrial associations and employee representatives in medium-sized and large companies.

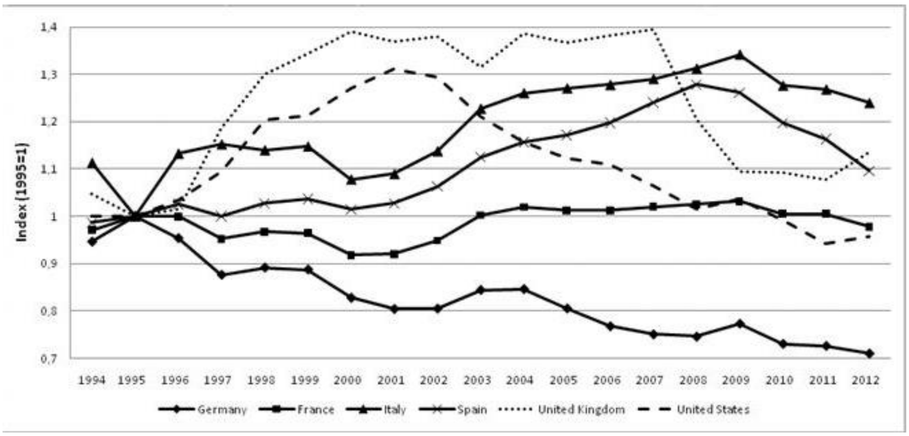

Figure 20, Unit labour cost index

Analyzing the key to this economic recovery, we can see that since 1995, Germany's competitiveness has grown much faster than that of its European trading partners. In the graph above it can be seen that the relative unit labour costs of some countries added to the changing composition of the markets in which they compete are the lowest of all.

Figure 21, Dax Index - Before 2008

The result of these winning policies can be seen in the index's winning performance in the years before the subprime crisis.

In the years leading up to the Covid crisis, Germany was the leader of the Eurozone, internally guaranteeing political stability and growth prospects in all innovative sectors (such as the 'green' sector). The sovereign debt crisis has put the stability of the European system at serious risk and, therefore, of Germany itself which, as leader, represents the guarantor of most loans.

The austerity measures imposed on over-indebted countries saved the Eurozone and confirmed Germany as the leading state of the union. The Dax Index did not grow steadily in the years leading up to 2020 until it peaked at 13825 points on 18 February 2020. The Brexit and its impact on the banks explain the volatility of 2016.

Figure 22, Dax index - Before 2020

2.2.1.2 Dax Performance Index (GDAXI): During the crisis

During the subprime crisis, European banks were kept under liquidity control by financial support from governments, which meant that they did not have to rely heavily on BCE refinancing. On 6 October 2008, the impact of the crisis was felt most strongly in stock market indices, with the DAX index falling by 7%. In this phase of strong economic activity, to counter the recession, the BCE's monetary policy became strongly expansionary and fiscal support measures were introduced in almost all EU countries. There was a 4% reduction in German GDP with immediate effects on unemployment and output in line with other European countries. Germany, which did not have a high public debt, was able to react immediately and more effectively than countries like Italy and France.

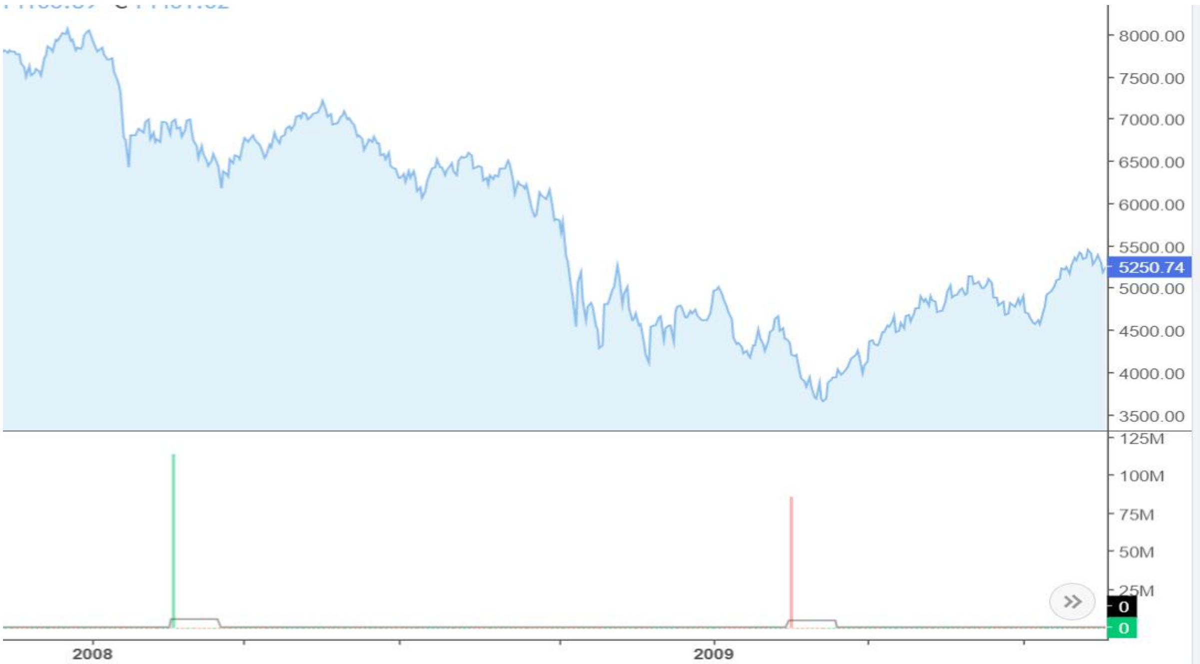

Figure 23, Dax Index during 2008 crisis

In 2009, the index also experienced an initial phase of losses (around 45% since the start of the crisis in September 2008), partly as a result of the biggest quarterly loss in history suffered by the company that insured the subprime: AIG and only from March 2009 did the index start to rise.

During the Covid crisis, Germany, like the whole of Europe, faced several waves in the number of contagions: from the outbreak of the pandemic at the end of February and the consequent lockdown, which lasted until the end of April when it was decided to gradually reopen commercial activities to revive the sectors most affected by the closures and the reduction in demand. In November, as the cold season approached, contagions began to rise again, forcing the government to take containment measures and close down businesses again. During the initial phase of the crisis, the federal government provided two budgets to support the recovery for a total of 380 billion (9% of GDP) to be allocated to healthcare and to support the incomes of jobs affected by closures and lockdowns, and other measures to facilitate loan applications and reduce taxes: temporary VAT reduction and credit guarantees for banks granting credit for digitalization and green initiatives. Subsequently, the German government increased the volume of business subsidies, loan guarantees and guaranteeing a basic income for workers by another 200 billion.

Figure 24, Dax index during Covid crisis

As can be seen from the trend, the index had an upward trend before the outbreak of the pandemic, which ended by collapsing within a few weeks from February 2020: the Dax reached its lowest point on 18 March 2020 with 8441.71 points and another trend reversal in October 2020, but overall it returned to a steady upward trend until the end of 2020 (equalling the points at the end of 2019).

2.2.1.3 Dax Performance Index (GDAXI): Post the crisis

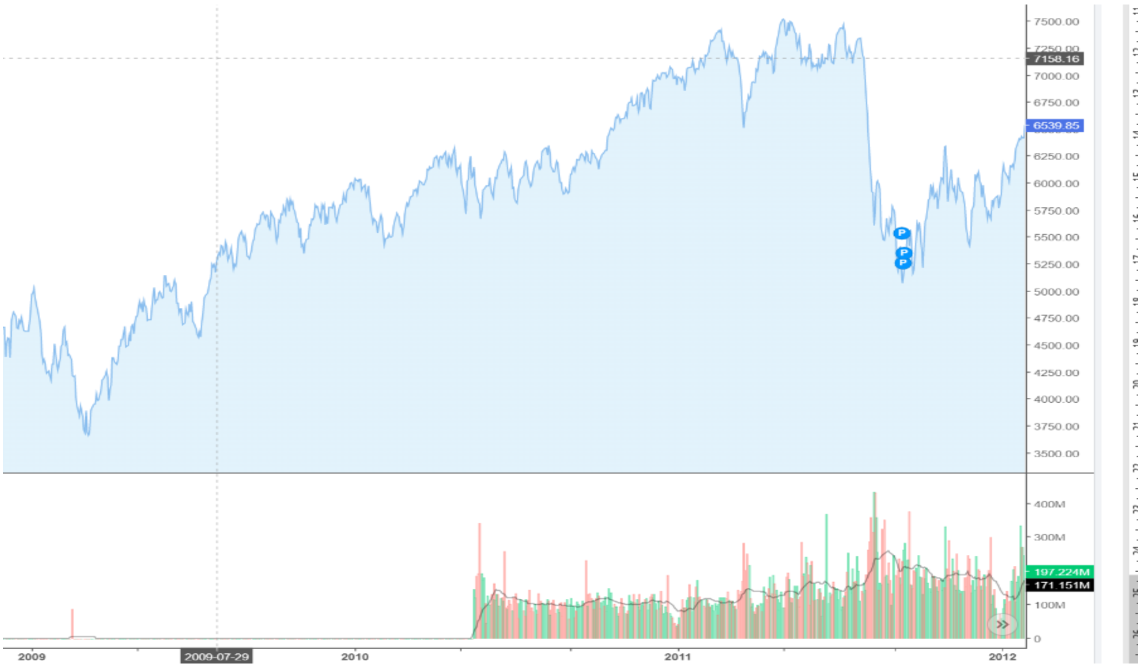

Figure 25, DAX Index - Post 2008

After the crisis of 2008, the Dax Index grew in a variable manner but followed an upward trend that took it from 3588.89 in the first quarter of 2009 to 25 July 2011 with 7344.54 points, only to collapse due to the debt problems of European countries that soon led the Eurozone into the crisis described in the previous chapters and made the Dax Index close 2011 at 5898.35 points.

As with the other indices, the 2020 crisis was a crisis that had the greatest repercussions at the financial market level in the first part of 2020 and, as the chart shows, the price trend for the German Dax also returned to pre-pandemic levels. Already by the end of 2020 the German index had managed to even out the loss caused by the Covid; in 2021 there was also a rise that took the price from 13726.74 to 15885.84 at the end of the year. The annual high was 16290.19 points in November 2021.

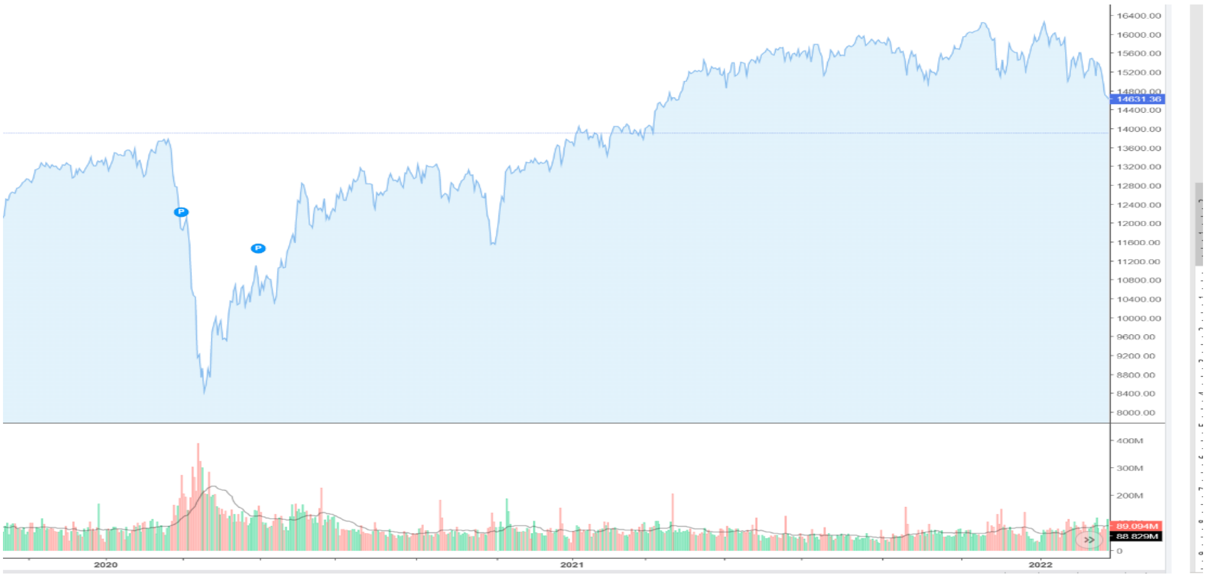

Figure 26, Dax Index - Post 2020

2.3.1 FTSE MIB Index (FTMIB)

2.3.1.1 FTSE MIB Index (FTMIB): Before the crisis

The FTSE MIB is the reference stock index in Italy. It consists of a basket of 40 stocks on the Euronext Milan and Euronext MIV Milan markets, selected on the basis of capitalization, trading volume and sector. Most of these stocks are issued by companies active in the banking, insurance and industrial sectors. The FTSE MIB index in Italy represents the strongest listed companies and accounts for the majority of daily trading. The components are reviewed quarterly. The FTSE MIB Index is a weighted index; it assigns specific weights to its constituents based on their respective capitalization, adjusted for the free float factor. The most important components have the greatest impact on the value of the index, but they cannot exceed 15% of the basket. It is also a price index that does not take into account the value of dividends paid by companies. The calculation of the FTSE MIB Index is based on the volume of buying and selling transactions, liquidity and the size of the securities aggregated in the basket. Its value is calculated and published during trading and at the close of trading sessions. Since joining the Euro, Italy has shown a declining GDP growth rate in the period 2000-2006. Over the last 20 years, the growth rate gap between Italy and the eurozone has been more than 1%, while the gap with the eurozone has been over 1%. A low growth rate obviously has several negative side effects. First of all, low growth certainly makes it more difficult for Italy to adjust its public accounts, as required by the European Union, thus risking triggering a vicious circle. Secondly, low growth does not foster a culture of innovation, which is a fundamental driver of competitiveness and growth. Third, low GDP growth has an impact on per capita income and thus Thirdly, low GDP growth has an impact on per capita income and thus leads to a decrease in citizens' well-being.

Tasso di disoccupazione nei principali paesi dell'Unione europea e negli Stati Uniti - Anni 2000-2009 *(valori percentuali)*										
PAESI	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Ue27	**8,7**	**8,5**	**8,9**	**9,0**	**9,1**	**8,9**	**8,2**	**7,1**	**7,0**	**8,9**
Francia	**9,0**	**8,3**	**8,6**	**9,0**	**9,3**	**9,3**	**9,2**	**8,4**	**7,8**	**9,5**
Germania	**7,5**	**7,6**	**8,4**	**9,3**	**9,8**	**10,7**	**9,8**	**8,4**	**7,3**	**7,5**
Italia	**10,1**	**9,1**	**8,6**	**8,4**	**8,0**	**7,7**	**6,8**	**6,1**	**6,7**	**7,8**
UK	**5,4**	**5,0**	**5,1**	**5,0**	**4,7**	**4,8**	**5,4**	**5,3**	**5,6**	**7,6**
Spagna	**11,1**	**10,3**	**11,1**	**11,1**	**10,6**	**9,2**	**8,5**	**8,3**	**11,3**	**18,0**
Stati Uniti	**4,0**	**4,8**	**5,8**	**6,0**	**5,5**	**5,1**	**4,6**	**4,6**	**5,8**	**9,3**
***Fonte:* Eurostat**										

Figure 27, UE Unemployement rate,

The figure above shows that, compared to the United States and the other Eurozone countries, Italy remains a country with one of the highest unemployment rates even though it had reduced its rate just before the global crisis and in 2007 it stood at 6.1%.

But the most serious issue of unemployment in Italy is undoubtedly the problem of youth unemployment. Given the poor functioning of the labour market and the crisis, the youth unemployment rate in Italy in 2010 was 29.3%. This means that in the age group between 15 and 24 years, one in three young people is out of work. This figure is clearly above the EU average (21%), a negative confirmation for Italy, which thus proves to be not a country for young people, but increasingly a country of the elderly. Italy is also showing signs of decline in the education sector. Italy already cut expenditure on education and research. In fact, it spends 0.7% of GDP on universities, about half of what other countries spend on education.

Figure 28, FTES MIB - Before 2008

Analyzing the FTSE MIB index in the pre-crisis phase of 2008, it can be seen that growth since 2004 has been slow, which is in line with previous considerations of underperforming growth compared to other European countries. Between January 2004 and October 2007, the index went from 26400 points to 45000 points and then fell suddenly during the crisis, as we will analyze in the next paragraphs.

In the period leading up to the Covid crisis, these were years characterized by policies aimed at relieving the national accounts of the deficit, which stood at 132% at the end of 2016. Between 2015 and 2017 there was an increase in national wealth of 6.7 billion in 2015 and 8 billion in 2016. From the graphs below, it can be seen that the total (and youth) unemployment rate in these years, while remaining much higher than the European average, followed a downward trend.

Figure 29, unemployment rate Italy and Eu

Figure 30, youth unemployment rate

In this phase, the FTSE MIB had much more pronounced ups and downs than the Dax index. In fact, taking into consideration 2016, which was characterized by Brexit and the impact it had on banks, it can be seen that the German index fell by around 20% basis points, while the Italian index fell by around 37.5%, from around 24000 basis points at the end of 2015 to 14875.5 points on 24 June 2016. "Brexit can be the new Lehman" says Vincenzo Longo, analyst at Ig Markets.

Figure 31, FTSE MIB - Before the 2020

Another difficult year for the Italian stock exchange was 2018. After an optimistic 2017, the slowdown in growth and concerns about international trade conflicts (US vs. China) and the ever-closer Brexit made 2018 a black year for the performance of the main world stock exchanges (-16.1% for Milan).

2.3.1.2 FTSE MIB Index (FTMIB): During the crisis

Figure 32, FTSE MIB - During 2008 crisis

The Italian economy, although apparently less affected by the direct (financial) consequences of the crisis, recorded a lower income dynamic than that of Europe and the eurozone. In fact, in 2007 Italy had a GDP growth rate of +1.5% in 2008 the growth rate dropped to -1.3%, while in 2009 GDP fell heavily by -5.0%. High public debt did not allow Italy to introduce measures to stimulate the economy as in other countries. The only possible measure was to increase support for unemployed workers. On 6 October 2008, the FTSE MIB fell by 8.24%, surpassing the fall of 11 September 2001 (-7.57%). From May 2007 to March 2009, the Italian index collapsed by 45% due to the crisis, marking one of the most significant stock market losses in history, but unfortunately the real crisis only hit the eurozone three years later. During 2008, net financial investments declined and were mainly directed towards instruments issued by banks; the outflow of resources from mutual funds increased. Households' net financial wealth declined due to losses in the value of shares and participations. The expansion of bank lending to households slowed markedly. Lower demand for loans was accompanied by a moderate tightening of supply conditions, partly caused by a worsening of the financial situation of indebted households, reflected in an increase in payment delays. However, the default rate increased only marginally. Analyses conducted on commercial securities sold by companies to the financial system show a strong acceleration of credit flows that remain unpaid for more than one more than one month after maturity: the 12-month rates of change have risen from around 2% in early 2008 to just over 20%.

Italian ten-year government bond yields stood at 4.3% at the end of 2008, slightly down from a year earlier. Between September 2008 and January 2009, the yield spread between the ten-year BTP and the corresponding German Bund widened considerably reflecting investors' marked preference for less risky assets. Net placements of securities of large Italian non-financial companies were significantly reduced; those of smaller companies were almost smaller companies. The marked increase in net bond issuance observed in 2008 was almost entirely attributable to banks and special purpose vehicles used in bank securitization transactions.

Italian banks were only moderately affected by the turmoil in the first nine months of 2008, due to their low exposure to structured financial products, their specialization in traditional banking activities and the prudent banking environment.

However, the supply of funds in wholesale markets became scarce during this phase, and Italian banks, especially the largest ones, also found it difficult to raise funds abroad. The increase in domestic funding, albeit at increasing unit costs, made it possible to maintain the growth of financing to the economy at sustained levels, albeit at a gradually slowing pace. The ability of Italian intermediaries to absorb the effects of the crisis was reflected in the market valuations of their insolvency risk, expressed by premiums on credit default swaps (CDS), which were lower than those of the main European banks. By September 2008, the financial crisis had become systemic; its direct effects were compounded by the

the consequences of the economic crisis. The main international banking groups, especially those most exposed to structured financial products, recorded huge losses. losses. The partial blockage of interbank markets made it difficult to refinance maturing positions, and liquidity The partial blockage of the interbank markets made it difficult to refinance maturing positions, and liquidity reserves were rapidly depleted. In order to encourage the recapitalization of banks, in Italy the Ministry of Economy and Finance was authorized by Decree Law No 185 of 29 November 2008 to underwrite special bank bonds issued by credit companies; in the following months, the Ministry also made public guarantees available to the latter for the issuance of bonds.

During the Covid crisis, Italian GDP fell by -8.9%. The effects of the Covid-19 pandemic can be seen in the fall in global activity, exports and tourist inflows; the reduction in mobility and consumption; the repercussions of uncertainty on business investment. The debt-to-product ratio increased to 156% due to a sharp contraction in GDP as a result of the lockdown and production freeze. Consumption during the 2020s fell by 10.7% causing a 9.1% freeze in GFCF by businesses. The pandemic had very different impacts among households as it widened the inequality of labour income distribution and increased the propensity to save to the highest levels in 20 years. Industry and services, like households, have been affected in very different ways, causing households to lose jobs: fixed-term employment and self-employment have fallen sharply; employment in the services sector, especially in tourism, has fallen. Job opportunities for young people, often employed on fixed-term contracts, and for women, whose incidence in the most affected sectors is above average, have been particularly reduced. The number of employees working remotely has grown rapidly.

The banking sector effectively met the demand for corporate financing as it was able to take advantage of public loan guarantees and Euro system interventions at the level of fiscal and European authorities (NGEU agreement). Confidence among Eurozone states increased in the autumn with news of the effectiveness of vaccines to combat the virus and the end of uncertainty over the US presidential election. In the first quarter of 2020, with the exponential increase in Covid-19 infections, the capitalization of the 25 industrial companies comprising the FTSE MIB fell by -22.4%. A historic date for Italy on 12 March 2020 when, during a speech to the nation, Prime Minister Giuseppe Conte decreed the closure of all non-essential activities and a ban on all citizens leaving their homes (unless for valid reasons), initiating the first national lockdown. The FTSE MIB fell by 16.92%. Subsequently, as some preventive measures dissolved in spring, the index started to grow again.

However, as mentioned above, the pandemic has also speeded up the process of digital transformation of the production system: the use of agile working and the use of new digital technologies have increased significantly; half of the companies expect to continue using them in the future.

Figure 33, FTSE MIB - During Covid crisis

2.3.1.3 FTSE MIB Index (FTMIB): Post the crisis

The period following the 2008 crisis, as mentioned in the previous chapters, was characterized by the Eurozone debt crisis, which hit the most exposed European countries in terms of public debt in a very dangerous way, including Italy. Italy, in fact, with a primary surplus that makes it unnecessary to contract new debts to cover those already in existence and long-term debt to residents for the most part, was considered a country highly resistant to financial crises. In 2010, however, despite the massive measures introduced by the ECB to inject liquidity into the euro system, a period of financial speculation and political tensions began, causing the spread to soar in Italy. The spread peaked at 575 basis points between Italian government bonds (with interest rates above 7%) and German bonds, bringing the state to the threshold of total default.

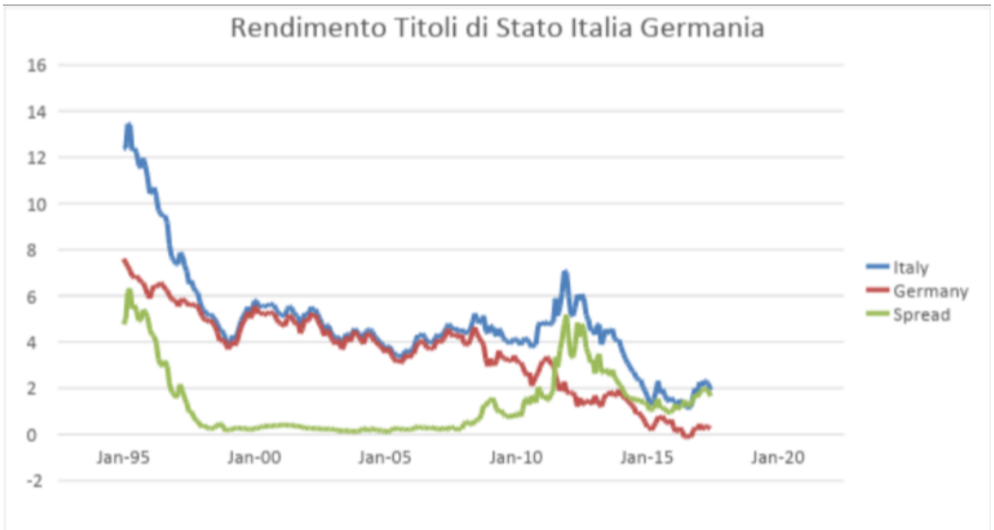

Figure 34, yield on government bonds Italy Germany

After the resignation of the Berlusconi government and the introduction of the second technical government in the Italian history of Mario Monti on 16 November 2011, the situation came back under control as very strict measures of 'Austerity' were introduced, which gave breath to the Italian economy and introduced confidence in investors and Europe in general.

Figure 35, FTSE MIB - Post 2008

The FTSE MIB subsequently from 2009 had a first phase of growth passing from the lowest point of the 2008 covid crisis with 12500 points up to about 25000 points. Until mid-2011, as can be seen from the image above, it remained between 25,000 and 20,000 and then collapsed to levels of the subprime crisis. The FTSE MIB index did not resume growth until the end of 2013.

Figure 36, FTSE MIB - Post 2020

The situation following the Covid crisis is characterized by the uncertainty relating to the variants of the virus that periodically cause large waves of infections. Overall, the FTSE MIB index, following the Covid crisis, took on an increasing trend with periodic contractions caused precisely by the increase in infections (es. During October 2020 the index passes from 19200 points to 17840 points caused from lockdown variability).

2.2.3 Cac 40 Index Index (FCHI)

2.2.3.1 Cac 40 Index (FCHI): Before the crisis

The CAC 40 is the index of the 40 French and foreign stocks with the largest capitalization and represents the evolution of the Euronext Paris market. The index is based on free float and the companies included in it must necessarily have their securities managed in Paris and cannot be holding companies or Pennystocks. The French economic system is characterized by the massive intervention of nationalizations, which in the course of history have led to the transfer of large industrial and financial enterprises to the public sector. Overall, France has developed sectors in all areas of industry. The productive system of the France places it to the fourth like world exporter of goods: they are French some between the automotive brands more known in the world (Peugeot, Citroen, Renault, Michelin), possesses of the pharmaceutical groups (Institute Pasteur, Sanofi Aventis), of the groups of the sector of the luxury and of the industry of the constructions beyond being the first tourist destination to the world). The tertiary sector is prevalent, being a country that offers mainly services. The years leading up to the subprime crisis were difficult years for the French state's finances: general government debt exceeded the 60% of GDP threshold imposed by the Maastricht criteria by 6 percentage points, the unemployment rate reached 9% of the active population in mid-2006, making it one of the highest in Europe. The years leading up to the subprime crisis were difficult years for the French state's finances: general government debt exceeded the 60% of GDP threshold imposed by the Maastricht criteria by 6 percentage points, the unemployment rate reached 9% of the active population in mid-2006, making it one of the highest in Europe.

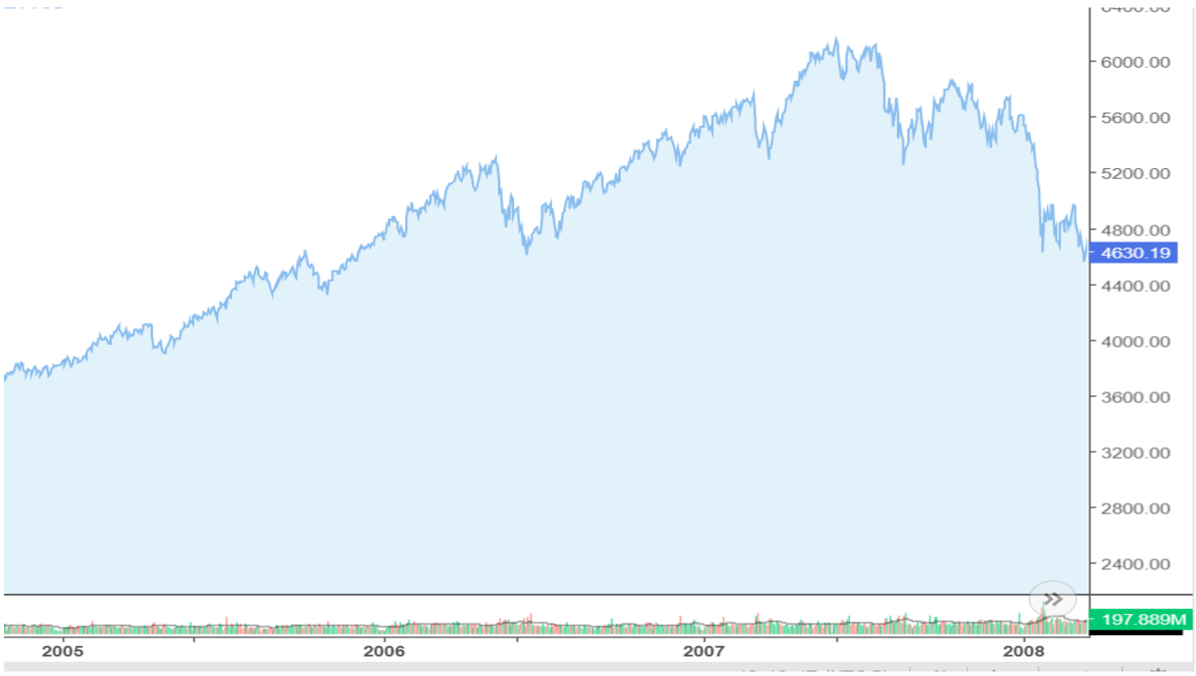

Figure 37, CAC 40 - Before 2008

The years leading up to the Covid crisis for France are characterized by the presidency of Emmanuel Macron, who has been in office since 14 May 2017, and the strong protests led by the so-called Gilets Jaunes over rising fuel prices and the high cost of living that would have a major impact on the middle-class workers. The well-known symbol of the demonstrations are the yellow reflective waistcoats worn by all the protesters and involved around three million people as well as having a worldwide media resonance also because of many cases of violent actions passed to the news. The abolition of the Impot sur la fortune, a wealth tax replaced by a tax on property wealth to encourage investment, was not well received by the French. Overall, France's employment rate rose sharply during these years, with 500,000 more jobs created (source: Eurostat) and with it, hourly productivity, which was among the best in Europe. Another factor that has improved is the trade balance (in terms of volume), which has historically had a large deficit compared to Germany and Italy, as companies do not invest in research and development but prefer outsourcing as an internationalization strategy. It is also reported that corporate lending rates fell by 1.5% between mid-2015 and the end of 2018 (source: ECB) and government bond yields by half a percentage point (source: Eurostat).

The CAC 40 index between 2017 and 2019 had a rather constant trend with rises and falls. The collapse of the index at the end of 2019 coincided with the rise in fuel prices and the start of the Yellow Vest demonstrations.

Figure 38, CAC 40 - Before 2020

2.2.3.2 Cac 40 Index (FCHI): During the crisis

The 2008 crisis hit France with an impact in line with that of other European countries thanks to the intervention of the BCE to help banks in terms of guarantees and liquidity as a percentage (18% for France). GDP contracted by 2.5% and public debt rose from 68% to 97% leading to a deficient ratio of 78.1% to GDP. The balance of the trade during the crisis also worsened between 2008 and 2009 from -1.907% to -1.931%. The CAC 40 index fell by 4% on 15 September 2008 with the bankruptcy of Lehman Brothers, but even for the French index the biggest drop came on 6 October 2008 with a loss of 9%. In aggregate, the index lost 43% in 2008 as a result of the crisis, making it one of the worst years ever for all the stocks in the index.

Figure 39, CAC 40 - During 2008 crisis

France was affected by the Covid crisis in a similar way to European countries in terms of the numbers of contagions and the subsequent lockdowns imposed on the population over several phases. At a fiscal level, the government, as described for Germany and Italy in the previous chapters, included in the budget aid of about 6% of GDP with the aim of strengthening the health sector with protective medical equipment and facilities suitable for hospitalization, providing financial support to companies and workers belonging to "fragile" sectors (extension of unemployment benefits), accelerated tax credit refunds, nationalization of ailing companies and renegotiation of loans to small and medium-sized companies. In the second quarter, GDP fell by 13.8% due to lockdown, following a fall in tax revenues of 8.8%. The CAC 40 index, in line with what happened for other countries, had a vertical collapse between February and March 2020 and reached its minimum on 18 March 2020 at 4397 points. The evolution of the title until November 2020, with the relaxation of the measures of detachment and the reopening followed a growing trend until the reversal of the end of 2020 caused by the resumption of the infections and the new lockdown.

Figure 40, CAC 40 - During Covid crisis

2.2.3.3 Cac 40 Index (FCHI): Post crisis

France, like the other eurozone countries, had to deal with the sovereign debt crisis in the years following the subprime crisis. The macroeconomic framework in France at the end of 2012 sees an unemployment rate of 9.7%, a stagnating GDP growth rate and a deficit-to-GDP ratio worsening by 1% between 2010 and 2013. While the interest rates on French (and German) government bonds were strongly negative, they did not remain at much lower levels, even negative in real terms, taking into account Fisher's inflation. This occurred as a demonstration of the fact that international investors withheld the bonds of those countries as activity refuge. The CAC 40 index at this stage had an uncertain trend until mid-2012 and then began to follow a steady and growing trend in subsequent years thanks precisely to the ECB's interventions and austerity measures put in place by the default risk countries (Greece, Ireland, Portugal; Italy, Spain).

At the end of 2020, in order to boost its economy, France is launching the plan called 'Plan de Relance' which includes EUR 100 billion over two years in favor of companies: reduction of the territorial economic contribution and reduction of the property tax for industrial installations. The deadline is extended to qualify for a bonus of up to EUR 2000 for all workers who have not received a minimum income of more than three times the minimum wage (within 12 months). Other measures foreseen in the French Recovery Plan draw directly from the European recovery funds and act in support of the ecological transformation of the economy and digitalization in order to increase the competitiveness of French companies and to reason in green terms.

2.3 Asian Index

2.3.1 Nikkei 225 Index (N225)

2.3.1.1 Nikkei 225 Index (N225): Before the crisis

The NIkkei 225 Index is the most important stock market index in Asia. It is an indicator of Japan's economic health and contains 225 companies listed on the Tokyo Stock Exchange (the world's largest in terms of capitalisation after New York). The Nikkei is one of the few indices built according to a price-weighted structure because, unlike a value-weighted index which is based on the average capitalisation of the company, it is calculated on the basis of share prices. The companies included in the index are industrial giants with a very solid branding and a highly developed foreign market. The sectors covered by these companies as an example for each are: fishing (Nippon Suisan Kaisha), mining (Inpex Corp.), construction (Kajima Corp.), food (Japan Tobacco), textiles and apparel (Toray Industries), pulp and paper (Nippon Paper Industries), chemicals (Kao Corp), pharmaceuticals (Astellas Pharma), petroleum (Eneos Holdings), rubber (Bridgestone), glass and ceramics (AGC Inc), steel (JFE Holdings), machinery (Amada Co. Ltd), electrical machinery (Alps Electric CO. Ltd), shipbuilding (Kawasaki Heavy Industries), automotive (Hino Motors), precision instruments (Citizen Watch CO), trading companies (Itochu Corp., retail (Aeon Co. Ltd), banking (The Chiba Bank), Securities (Nomura Holdings), insurance (Dai-ichi Life), real estate (Mitsubishi Estate), railway/bus (Keio Corp) and services (Konami Corp.). The Japanese economy is characterized by a very large domestic market facilitated by a high population (125 million people) and geographical proximity to China, with which it has trade links. Japan is also distinguished by its technological avant-garde and strong propensity to invest, especially in the renewable energy sector, the information and communication industry, pharmaceuticals, electronics, precision products and nanotechnologies. The years leading up to the subprime crisis were years of recovery for Japan, fifteen years after the bursting of the speculative bubble in the Japanese real estate and financial markets in 1991. The cause of the bursting of the speculative bubble was a mistake by the Bank of Japan which, in 1991, tried to adopt a restrictive policy by suddenly raising interest rates, making many customers insolvent and making it impossible for banks to recover loans. The estimated losses were about 2.4 times GDP and the unemployment rate rose to 3.2% in 1995.

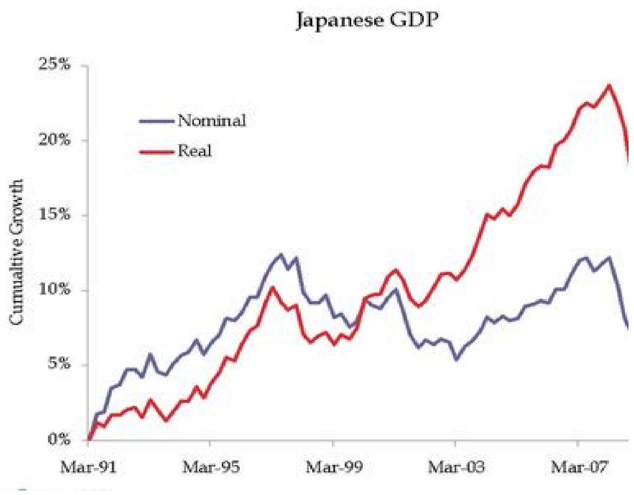

Figure 41, Japanese GDP

The next ten years were nicknamed the 'lost decade' as it was a period of deflation and GDP growth of 1.4% per year (4.1% in the 1980s). The measures taken by the Japanese government to revitalize the economy are based on quantitative easing but the situation did not improve much.

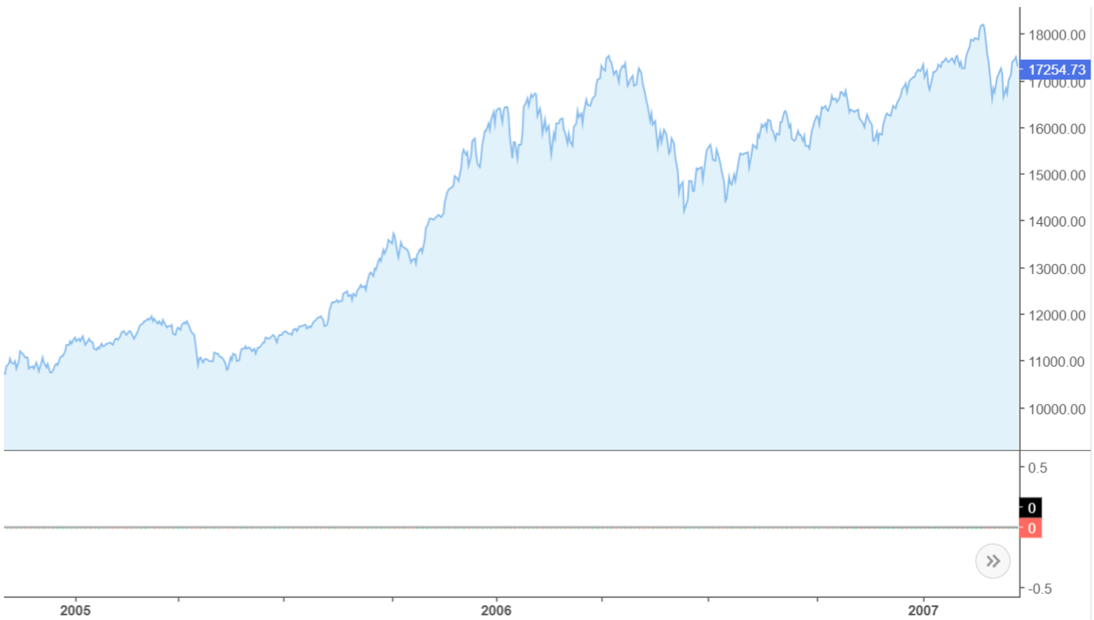

Figure 42, Nikkei 225 - Before 2008

The Nikkei 225 index, with GDP growth of 3.4% in 2006 alone, managed to boost its growth from around 11000 basis points to 16000 points. The Nikkei 225 index, with GDP growth of 3.4% in 2006 alone, managed to boost its growth from around 11000 basis points to 16000 points in a year. Between June and July 2006 there was a decrease as in the second quarter the

GDP deflator dropped by -0.8% on the corresponding period, although to a lesser extent than the previous quarter (-1.2%).

The years leading up to the Covid crisis were years of economic growth and characterized by a political situation in the country that has the support of Japanese citizens as a result of annual economic growth of 4% in GDP (similar performance in the 1980s). There was also an increasing public indebtedness and unfavorable demographic developments that began to reflect negatively on Japan's reliability assessment. Fiscal and monetary policy following the Abe government and the so-called "Abenomics" have a clear expansionary orientation, as confirmed by the 2017/18 budget, but there is a weakness in domestic demand that continues to limit its impact on economic activity, while corporate profits are increasingly linked to yen fluctuations. Other negative factors find it difficult to engage in entrepreneurial activity in Japan due to the burdens of the business and strict labour regulations.

The Nikkei 255 index between 2018 and 2019 did not assume a constant trend but, as can be seen from the trend in the figure below, had ups and downs. One of the reasons for this great uncertainty is natural disasters: in the summer of 2018 alone there was an earthquake in Osaka of magnitude 6. 1 that caused 5 deaths, in July 2018 floods in Western Japan caused 221 deaths due to river overflows, northwest of Tokyo, also in July temperatures reached 41.1°C in Kumagaya causing the death of 116 people, in September 2018 there was typhoon Jebi and a magnitude 6.7 earthquake on the island of Hokkaido.

2019 was also a year of natural disasters including Typhoon Hagibis which affected 14,000 people and 70 deaths.

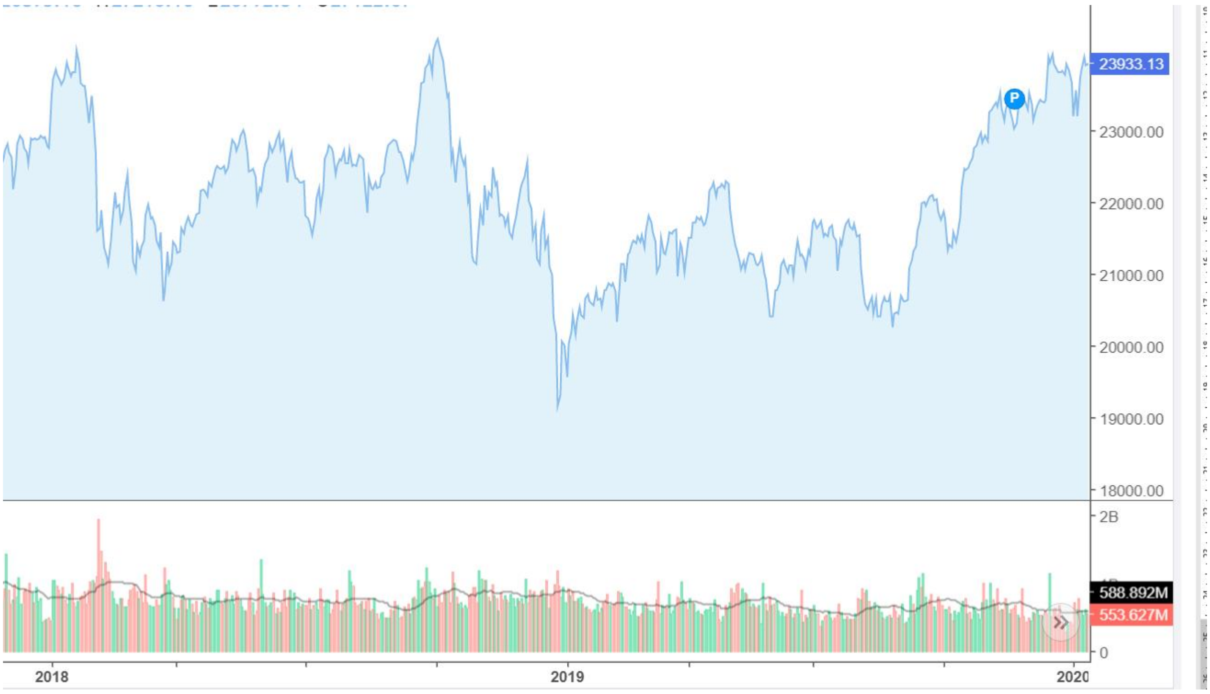

Figure 43, Nikkei 225 - Before 2020

2.3.1.1 Nikkei 225 Index (N225): During the crisis

For Japan, the subprime crisis was the worst of the post-war period in all respects. Even before 15 September 2008 (bankruptcy of Lehman Brothers), there was a 3% contraction of GDP in the second quarter and a 3.3% contraction in the third quarter, which had not occurred since the oil crisis of 1974. In the last quarter of 2008, the contraction was 12.7%. Industrial production also contracted significantly by 20.8% (especially in the electronics and automotive sectors). In 2009, the debt-to-GDP ratio became the highest among advanced countries at 228%, plunging Japan once again into the deflationary, zero-growth situation that characterized the 'lost decade' that seemed to have ended just three years earlier.

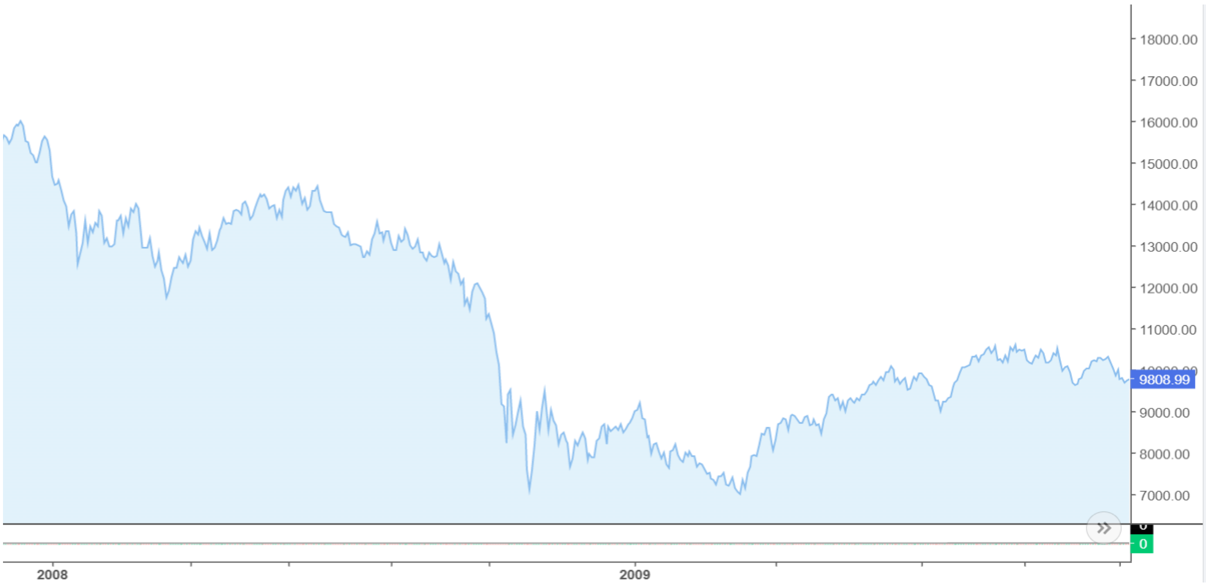

Figure 44, Nikkei 225 - During 2008 crisis

The Nikkei 225 index during the subprime crisis had already been on a downward trend since early 2008 due to the GDP contractions mentioned above. As for the other indices, in September 2008 there was the shock caused by the bankruptcy of Lehman Brothers. The index analyzed lost about 41% of its value in less than a month. On 10 March 2009, it reached its lowest point at 7054.98 points and then started to rise again following the Japanese government's economic recovery efforts.

Due to the large number of inhabitants in Japan, the Covid crisis was very difficult to manage logistically. The supply of masks and the management of sanitary facilities during the pandemic was stepped up in order to cope with the demand from citizens. However, Japan managed to limit the pandemic: out of 125 million inhabitants, by the end of 2020, there were about half a million infected and 7,000 deaths after the first wave (in Italy, 91,000 deaths with half the population). As in other countries, lockdowns led to a drop in demand in the retail and tourism sectors. Japanese GDP during the crisis fell by 2.1% in the first quarter of 2020, 10.7% in the second quarter, 5.5% in the third quarter and 0.9% in the fourth quarter. It was only in the third quarter of 2021 that Japanese GDP returned to positive growth of 7.6 %. In correspondence with the crisis, the unemployment rate also rose again from 2.25% to 3% within a year (2020) and the productivity rate fell by 15%.

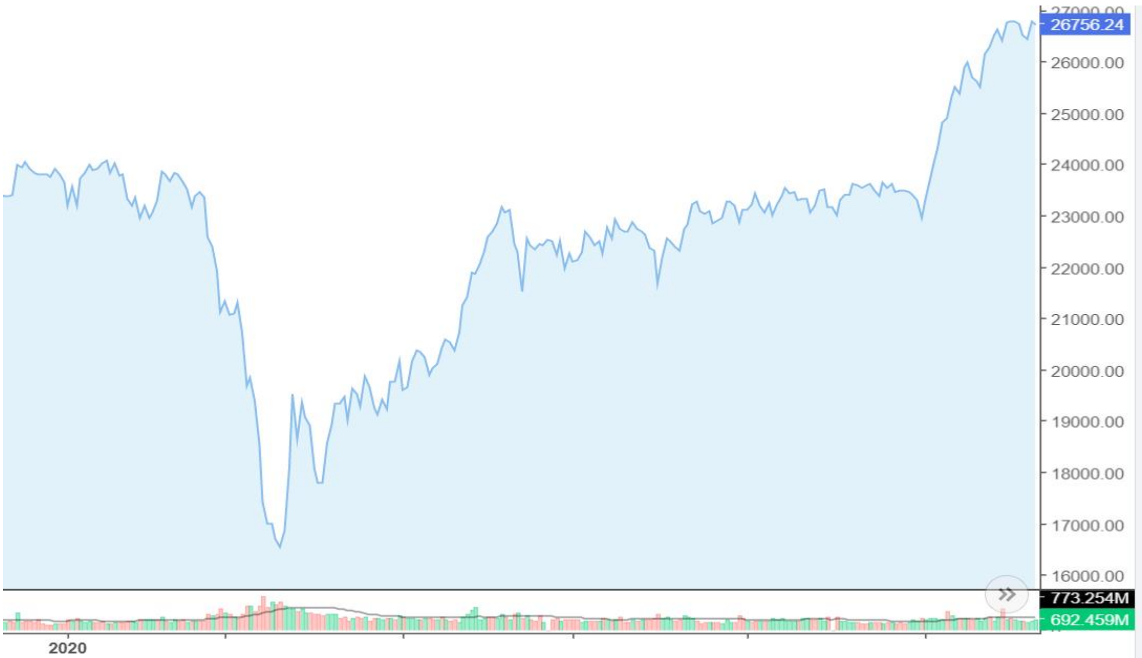

Figure 45, Nikkei 225 - During Covid crisis

The Nikkei 225 index after the first case of Covid in Japan on 16 January 2020 plummeted 29% to 17002.04 on 16 March 2020. In April 2020, in order to combat the pandemic and shake up the economic system, Japan's Prime Minister Shinzo Abe launched a EUR 910bn maximal cash package for individuals and businesses in difficulty. Financial support for businesses, in various forms, will amount to some 45 trillion yen, while families in difficulty due to the crisis will receive 2,526 euro in cash. For small enterprises, up to almost 17,000 euro will be allocated for each SME in difficulty. Those receiving child benefit will receive an extra 10,000 yen per child. Facilities are provided for companies that bring back to Japan productions concentrated abroad. After the aid provided by institutions and the slowdown of the pandemic, the Nikkei 225 rose by 40% to reach 27444.17 points at the end of 2021.child benefit will receive an extra 10,000 yen per child. Facilities are provided for companies that bring back to Japan productions concentrated abroad.

2.3.1.1 Nikkei 225 Index (N225): Post the crisis

In the years following the 2008 crisis, Japan was able to expand its economy again through trade and, above all, through foreign sales to Asian economies. In this way, from the second to the fourth quarter of 2009, it was able to recover 50% of the loss suffered between 2008 and 2009. The unemployment rate fell within six months in 2009 from 5.6% to 5%, indicating a slight improvement in market conditions, even though the deflationary conditions experienced during the crisis persisted. In 2010, GDP grew by 4 % with an increase in consumption and a further decrease in the unemployment rate to 4.9 % (December 2010). Deflationary trends faded. Excluding energy products and food, the decline in consumer prices went from 1.6 % in May 2010 to 0.7 % in December 2010. The first half of 2011 was a disastrous year due to the most powerful earthquake ever recorded in Japan: the earthquake, followed by a tsunami in Tōhoku in northern Japan on 11 March 2011 with a magnitude of 9, caused 1,747 deaths and serious damage to the production system due to the subsequent difficulty in producing electricity and the exchange of intermediate goods, which decreased foreign trade. Consumption and investment also fell sharply as a result of the social trauma, and it was not until the second half of the year and the first quarter of 2012 that market conditions improved slightly, with a 4.5 % unemployment rate and a 4.1 % increase in GDP.

Figure 46, Nikkei 225 - Post 2008 crisis

The NIkkei 225 index in the aftermath of the 2008 crisis therefore had a steady upward trend until 2011. In 2011, the difficult situation caused by the earthquake resulted in a slightly downward trend that was only reversed in 2012 with the first signs of growth. The decisive boost came when Shinzō Abe came to power, and through macroeconomic initiatives (Abenomics) he succeeded in giving a boost to the Japanese economy by acting on three fundamental dimensions: depreciation of the yen in order to enpower Japanese exports, an interest rate set at negative levels (to discourage saving); an expansive monetary policy to increase inflation so as to reach and maintain the 2% threshold and emerge from a situation of chronic deflation; and a 1.5% increase in public spending.

The period following the Covid crisis in Japan is characterised by continuous 'stop and go' in which, as in many other countries, household consumption depends on waves of coronavirus. This continuous volatility, a function of the number of infections and virus variants, has meant that the Japanese economy has only partially recovered from the economic trauma of 2020. During 2021, there was a 0.7% drop in GDP in the third quarter before suddenly growing by 1.3% in the fourth quarter due to the lower number of infections. Overall, while GDP lost 4.5% year-on-year in 2020, it grew by 1.7% in 2021. The Nikkei 225 recovered the losses suffered in the most acute phase and trend shows that since the beginning of 2021 it has taken on the constant pattern described above as a function of the infections.

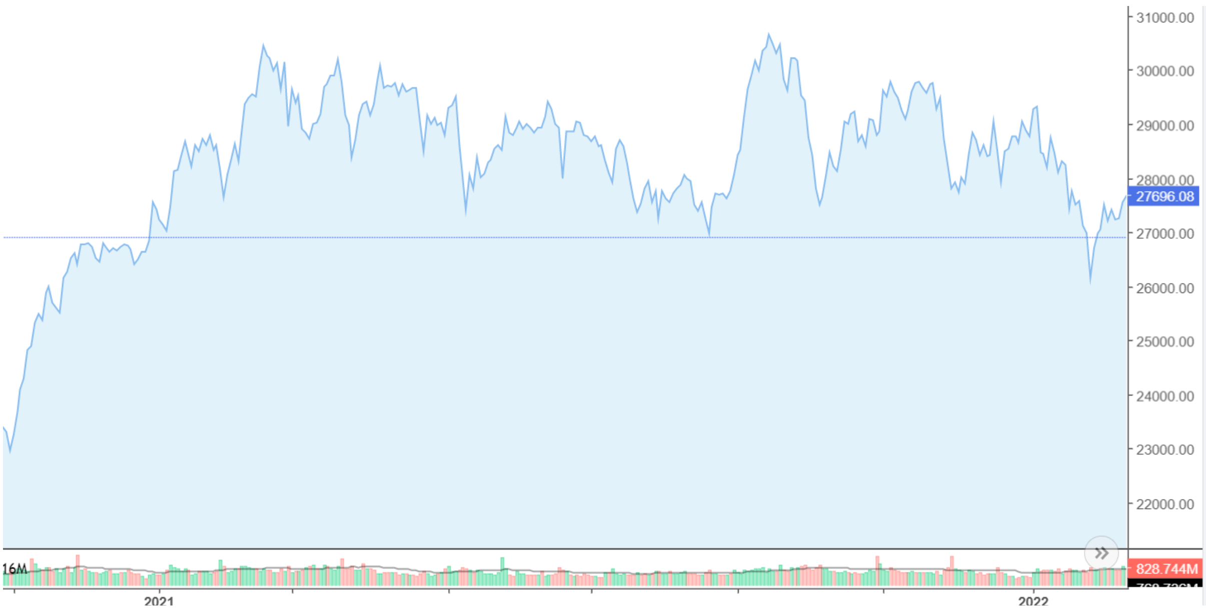

Figure 47, Nikkei 225 - Post 2020 crisis

2.3.2 Chinese Indexes:

In the years leading up to the 2008 crisis, the Chinese government sought to lower unemployment to 10% in the poorest areas by balancing social inequality. The decline in absolute poverty between 1981 and 2014 (less than $1.40 a day) was constant and by 2014 it had fallen to zero. At the same time the government changed its approach to capitalism and realized that in order for China to develop it would be important to give an active role to the middle class and entrepreneurs. In the years leading up to the 2008 crisis, the Chinese economy was already on the upswing with an annual GDP growth rate that in some years reached 40% (10% on average). Between 2001 and 2004, the number of enterprises fell by 48% and there were major reductions that allowed Chinese trade and the market economy to open up. The main architect of this political and social transformation was Deng Xiaoping. Thanks to this transformation, which continued steadily throughout the period, China became the world's second largest economic power after the United States. Foreign investment increased from 40 to 70 billion a year and investment in research and development reached 136 billion in 2006. Chinese research and universities through these huge investments led China to overtake Germany in the number of patents in 2007. Another example of China's technological superpower came on 11 January 2007, when it destroyed its own weather satellite at a height of 800 km with a missile.

In the years leading up to the Covid-19 crisis, China became one of the driving forces behind global economic growth, according to a 2018 report by the International Monetary Fund (IMF). In 2017, China's GDP growth rate was 6.9% in line with the target, but in 2018, with the beginning of the trade dispute with the United States, the growth rate of 6.6% was the lowest since 2000. In the first half of 2019 GDP growth was the lowest recorded in the last thirty years with a further decline in consumption and exports (1.22% in the third quarter against 1.3% in the previous quarter) and then improved after the second half of the year with the announcement of an agreement with the United States after years of negotiations: reduction of US export duties against an increase in Chinese acquisitions of US products of US $200 billion until 2021 and protection and openness to US companies in the chinese marketplace. In November 2019, consumption growth improved by six percentage points from the previous month (4.8% vs 3.8% in October) while the unemployment rate stood at 3.61%. Chinese performance is dictated in most of the exports record in fact, China is the first country by export value ahead of the USA, Germany and Japan and the sectors that have the largest number of exported products are the electronics and manufacturing sector. During 2019, prior to the trade agreement with the United States (the main Chinese export market) there was a decrease in exports of more than 11% and an increase in European exports of more than 15% mainly in the market of telephony and computers. In imports, to South Korea (main source of products for China) there was a decline in purchases of 17.7% while the United States decreased sales by 25% compared to 2018 (data source: Chinese customs).

2.3.2.1 *HANG SENG Index (SHI):* Before the crisis

Figure 48, Hang Seng - Before 2008

The Hang Seng Index is a stock index of the Hong Kong Stock Exchange and is considered to be the most important index of the Hong Kong and Chinese Stock Exchange. It contains the 50 most capitalized companies on the Hong Kong Stock Exchange and is an accurate indicator of overall stock market performance. The index is currently indexed indirectly by Hang Seng Bank, one of the largest and most capitalized banks in Hong Kong. The sectors to which the companies in the index belong operate within the Energy, Materials, Industrial Goods, Consumer Goods, Services, Telecommunications, Utilities, Financials, Properties & Constructions, Information Technology and Conglomerates sectors. In order to be selected as part of the index, a company must meet the following requirements: it must belong to the top 90% of the total market value of all ordinary shares and be among those comprising the top 90% of total turnover on the Stock Exchange of Hong Kong Limited "SEHK" and have been listed for at least two years. In the run-up to the 2008 crisis, the Hang Seng index was in a strictly upward trend. Between 2006 and 2007, the index rose from 20,000 points to 30,000 points, confirming that the Hong Kong stock market also benefited from the Chinese economy's welcome period of momentum.

In the years leading up to the Covid crisis, it can be seen that the index had a variable trend with its highest point on 29 January 2018 at 33484.08 points and its lowest on 30 October 2018 at 24540.63 points. In 2018, the index overall lost 12% with a difference of 8934.45 points from the beginning of the year. At the beginning of 2019, the index had a growth that, from its annual minimum touched at the beginning of the year with 24896.87 points (January 3, 2019), touched its maximum on April 15, 2019 at 30280.12 points and then began to have a variable trend but tending to decline that with faith record a delta of annual quotation of -12%.

Figure 49, Hang Seng - Before 2020

2.3.2.2 CSI 300 *Index (CSI300)* and SSE Composite Index: Before the crisis

The CSI 300 Index is a capitalization-weighted stock market (blue chip) index containing the top 300 companies on the Shanghai and Shenzhen stock exchanges. The companies within it feature Chinese stocks that are available to local traders and foreign traders with Qualified Foreign Institutional Investors status and are traded in the local currency. it is the responsibility of the China Security Index to select the stocks that make up the index. The sectors to which the companies listed in the index belong operate in sectors that are fundamental to the Chinese economy: finance, energy, real estate, information technology, materials, and health care are some of the most important.

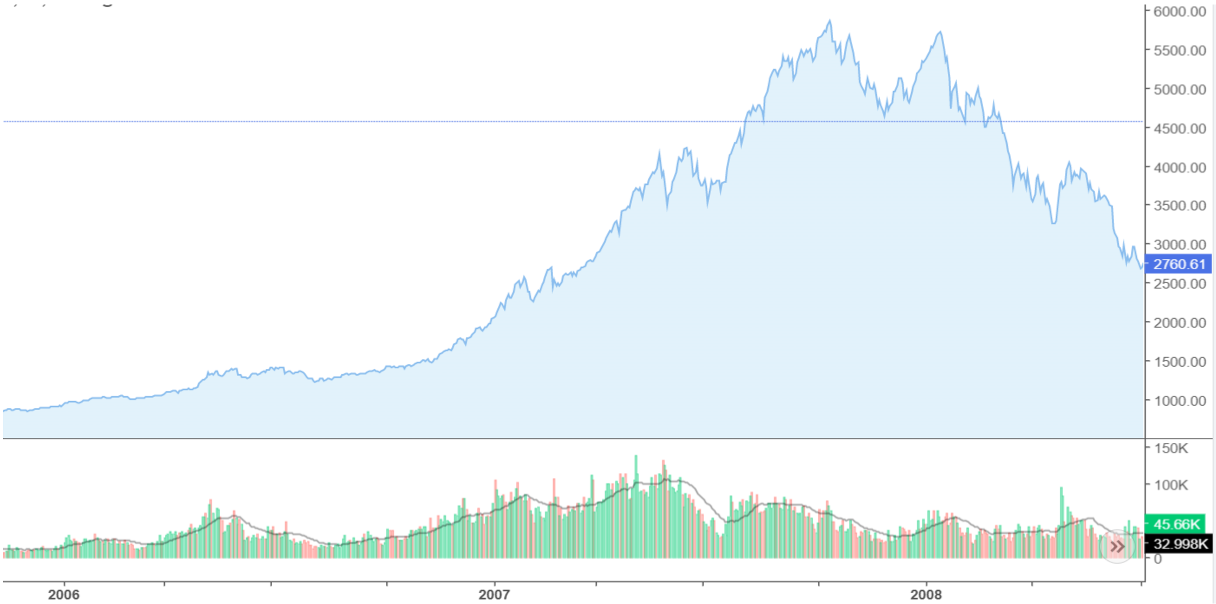

Figure 50, CSI 300 - Before 2008 crisis

Also in the case of the CSI 300, as can be seen from the figure below, the trend of the index in the years preceding the crisis of 2008 is significant: in fact, we can see a markedly increasing trend from 2006 until the beginning of 2008. In two years, the index rose from about 1000 basis points to its highest point of 5,731.76 points on 14 January 2008.

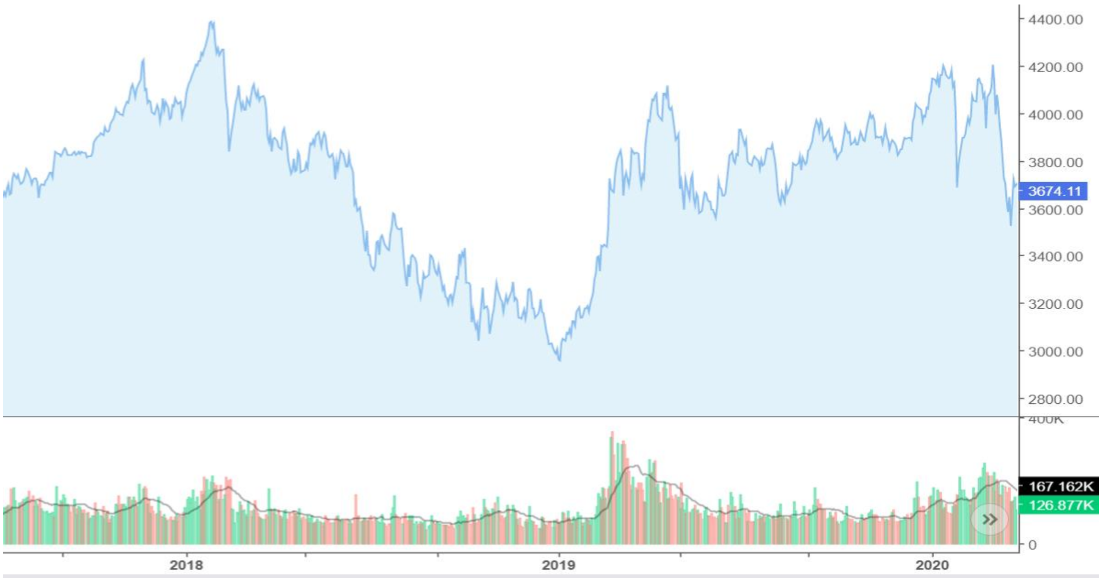

Figure 51, CSI 300 - Before 2020

In a trend very similar to that of the Hong Kong index, the CSI 300 index took a sharp downward turn at the beginning of 2018, losing 25.31% of its starting price. In 2019, the index had a growth that touched its high of 4126.09 on April 22, 2019 before resuming its volatile trend that brought it to 4096.58 points at the end of 2019 without recovering the losses suffered since early 2018 due to the trade instability caused by the dispute with the United States

Another very important Chinese index that we will describe to complete the picture is the SSE Composite index (SSEC). The SSE Composite stock index contains stocks of Chinese companies with Qualified Foreign Institutional Investors status traded in the local currency as in the case of the CSI 300, as well as stocks of Chinese companies traded in U.S. dollars in Shanghai or Hong Kong dollars in Shenzhen. The most important companies in this index include: Industrial and Commercial Bank of China, Bank of China, PetroChina, China Life and Sinopec (China Petroleum and Chemical).

Figure 52, SSE Composite - Before 2008

Also in the case of the SSE Composite index, it can be seen from the index performance that the index grew particularly fast in the two years before the 2008 crisis. As for the CSI 300 index, the index grew by more than 400%, reaching 403% between 2006 and 2008, rising from 1161.91 points at the beginning of 2006 to 6092.06 on 17 October 2007 (the peak point before the subprime crisis).

Figure 53, SSE Composite - Before 2020

The SSE Composite Index has been on a strictly downward trend in 2018, in line with the other Chinese indices, falling 24.59% to a low of 2449.20 points. In 2019 the trend, as expected from the previous analyses the rising trend of the index quote again touched a high in April 2019 at

3288.45 and then fell and subsequently rose again to 3050.12 points. Again, the overall growth in 2019 of 22.30% failed to compensate for the losses in 2018.

2.3.2.3 *HANG SENG Index (SHI):* During the crisis

2008 was an extremely bad year for China due to both the subprime crisis and the devastating weather events in May of that year. On 12 May 2008, a 9.0 magnitude earthquake caused $150 billion worth of damage and 87587 deaths, making it the 18th deadliest earthquake in history. In the second half of 2008, the crisis had repercussions that were certainly milder than in the United States and Europe. In detail, the repercussions were: a slowdown in consumption and trade flows of imports and exports, a drastic drop in the growth rate of the Chinese GDP, which fell by five percentage points over the year (from 14% per year to 9%). As early as 2009, the flow of capital began to grow again, thanks in part to the government's program, which extended subsidies and made financing more accessible to businesses, and increased investment, thereby fostering development. Thanks to these measures, China achieved a GDP growth of 9.2%, while the other major economic powers suffered a major contraction. Thanks to these measures, China achieved GDP growth of 9.2% in 2009, while the other major economic powers suffered a major contraction and a resurgence of inflation from a situation of deflation.

The Covid-19 began in 2019 in the Chinese city of Wuhan of Hubei province and it was here that on 1 December 2019 there was the first diagnosed case of the disease but it was not until 31 December 2019 that expert virologists were sent to study the origin of these pneumonia cases. At the end of January, one and a half months ahead of the rest of the world, the first measures to contain the contagion were introduced. According to the National Bureau of Statistics, the pandemic already caused a slowdown in the GDP growth rate of 6.8% in the first quarter of 2020 compared to the previous quarter at the end of 2019, as well as a 15% drop in industrial production and a drop in retail sales of more than 40% compared to the previous year. The deficit in the balance of services stood at 1% in 2002 and the balance of payments had a deficit of 0.5%.

Figure 54, Hang Seng - During 2008 crisis

The Hang Seng Index during 2008 had a significantly decreasing trend due to events described above. On January 2, 2008, the index quoted its annual peak at 27853.60 (before the start of the subprime crisis) and then dropped to 48% of the points until October 27, 2008 (one month after the failure of Lehman Brothers) where it reached a minimum of 10676.29. It can be noted that from October to mid-March, the index averaged about 13592 points without deviating in breadth and then began to grow once the government put in place the recovery measures in support of the economy.

The Hang Seng index during the crisis 2020 had a first collapse that went from January 2020 until March 2020 going from 29174.92 points to 21139.26 (19 March 2020) and then reversing the trend with the easing of measures caused by the braking of the spring contagion. In this phase the index went up to 25975.66 (July 2020) and then rewrite in a variable way until the end of October due to the growth of the contagions and then go up until the end of the year touching quota 27231.13

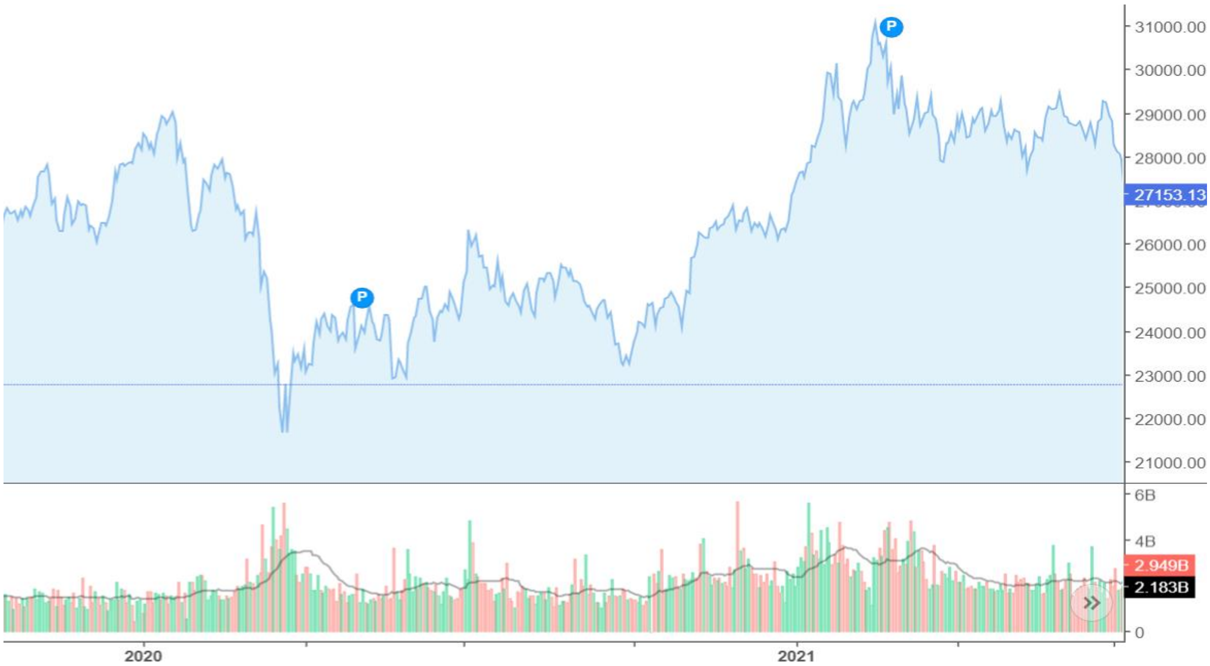

Figure 55, Hang Seng - During Covid crisis

2.3.2.4 CSI 300 *Index (CSI300)* and SSE Composite Index: During the crisis

Figure 56, CSI 300 - During 2008 crisis

Figure 57, SSE Composite - During 2008 crisis

During the subprime crisis, the trend of the CSI 300 (graph on the left) and SSE Composite (graph on the right) was very similar as can be seen from the charts with a decisive decline recorded during 2008 as expected and a more gradual recovery that began from the second quarter of 2009. During 2008, the CSI 300 index went from 5756.92 points in January to 16006.73 points in November, with a loss of 66%, and then closed the year at 1817.72, resuming an upward trend that it maintained throughout the first part of 2009, reaching a high of 3803.06 points on 4 August 2009. The SSE Composite Index had a very similar trend: in 2008 it lost 65.39%, going from 5522.78 points to 1664.92 in October 2008, but then returned to growth and closed the year at 1820.81 points, in a growth trend that continued until August 2009, when it lost 5.79% due to the collapse of foreign investments and the doubt that the recovery after the 2008 crisis was nothing more than a speculative bubble fuelled by low interest rates and the large amount of aid introduced by the Chinese Central Bank.

Figure 58, CSI 300 - During Covid crisis

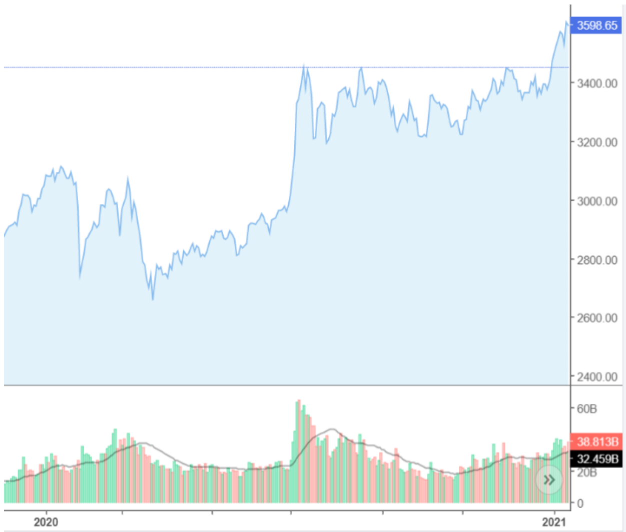

Figure 59, SSE Composite - During Covid crisis

During the Covid crisis, the indexes were very similar. The CSI 300 index had a first drop in January with the awareness that the situation was about to worsen very quickly and then suffered the main drop with the beginning of the global crisis in March 2009, going from 4206.73 points at the beginning of March 2020 to 3505.19 points on 19 March 2020. The positive trend continued until July 2020 thanks to the slowdown of the pandemic reaching 4744.47 and then embarking on a steady and volatile trend that lasted until the end of 2020 with 5211.28 points. The SSE Composite index also declined in March 2020 from 3071.68 to 2646.80 basis points before rising again in July 2020 to 3474.92 and closing the year at 3473.07 points.

2.3.2.5 *HANG SENG Index (SHI):* Post crisis

The years following the 2008 crisis for China were years of revival through expansionary fiscal policies aimed at universal welfare in the face of a restrictive monetary policy to prevent an inflationary effect from the Japanese Quantitative Easing American. There was an increase in foreign investment and the beginning of a process of urbanization of the population through, for example, the reform of the hukou that gave right to the citizens who moved from the countryside to the urban areas to be able to enjoy the same services (school system, health insurance) through urban registration. The 'China Security Journal' reports that China's economy grew by 10% in 2010 (especially in the fourth quarter with 9.8%), while in 2011 it grew by 9.7% to become the world's second largest economy, surpassing Japan: Industrial production in the course of 2010 also increased by 15,7%, fixed capital investments increased from 30.5% in 2009 to 24,5% and the consumer price index rose by 3,3% also due to the prices of the real estate sector which increased due to the large volume of liquidity put in circulation.

Figure 60, Hang Seng - Post 2008 crisis

The Hang Seng index from March 2009 had a closely growing trend that continued until early 2009 from 11344.58 to 21872.50 points and then kept steady in 2010 and 2011 with an average of 21444.96 points and a maximum of 24989 touched on November 8, 2010. At the end of 2011 there was a decline of 3000 basis points due to low confidence in the stability of the Chinese financial market caused by the method by which loans for public investments were made. The uncertainty of this phase led to close 2011 to 18434.39 points.

The 'National Bureau of Statistics' reports that 2021 was a year that saw a higher-than-expected GDP growth of 8.1% (6% forecast by the Chinese authorities). In terms of indicators, industrial production and exports increased, while fixed investments and sales decreased. The unemployment rate stands at 5.1% in urban areas (5.5% was the target) with an improvement in real incomes of 8.1% and a consequent growth in per capita consumption. Foreign exports, driven by the economic recovery, also increased by more than 29%, while imports increased by 30.1% compared to 2020, even though there was a sharp increase in prices due to the prices of raw materials. The public debt-to-GDP ratio increased by six percentage points over 2020 to 101.6% in 2021.

Figure 61, Hang Seng - Post Covid crisis

The Hang Seng index during 2021 initially rose in value from 27472.81 (at the start of the year) to 31084.94 on 17 February 2021, before embarking on a trend characterized by strong fluctuations, but falling due to the stock of the Chinese giant Evergrande, which lost more than 36% of sales and 10% of its value as it failed to honour the repayment of bonds due to its high indebtedness. The index ended the year on a downward trend with a share price of 23397.67 points, down 14% from the start of 2021.

2.3.2.6 CSI 300 *Index (CSI300)* and SSE Composite Index: Post crisis

Figure 62, CSI 300 - Post 2008

Figure 63, SSE Composite - Post 2020

The CSI 300 and SSE Composite indices, following the 2008 crisis, performed strictly positively in 2009 and then settled into a constant flat trend over the next two years due to a management of the real estate sector focused on growth and performance and little on the stability of loans in terms of guarantees. At the end of 2009, the CSI 300 index reached 3575.68, an increase of more than 90% in one year. During 2010 it maintained an average of 3082.97 points with a very variable trend and ended the year about 400 points lower than in January 2010. Similar to the CSI 300, the SSE Composite index during the course of 2009 had an increasing trend up to August 2009 and then closed 2009 at 3277.14 points with an increase of about 1400 basis points compared to the beginning of 2009. During 2010 the trend was variable and followed a flat trend with an average of 2830.99 closing the year with a loss of 14% at 2808.08 points. In 2011 the index still marks a loss of 21% closing the year to share 2199.42.

The CSI 300 index in 2021, similar to the Hang Seng index, assumes a decreasing trend ending the year at 4913.49. losing about 5% compared to the start of the year quotation and touching the maximum quotation on 18 February 2021. The SSE Composite Index during 2021 maintained a steady trend without major changes. At the beginning of the year the index scored 3502.96 points, and with an annual average of 3539 points closes 2021 at 3639.78 points with the maximum quotation and 3731.69 touched, as in the case of the CSI 300, on 18 February 2021

Figure 64, CSI 300 - Post 2020

Figure 65, SSE Composite - Post 2020

3. Analysis on the social and political impacts of the crisis in the world

On 8 October 2009, the "European Parliament resolution on the effects of the global financial and economic crisis on developing countries and on development cooperation" discussed the effects of the crisis on the poorest countries. In the world, the countries where there are more than 65% of people without sufficient daily food (1.4 billion people) are: India, China, Democratic Republic of Congo, Bangladesh, Indonesia, Pakistan and Ethiopia. The crisis in these countries led to a rise in the price of raw materials that favored exports, making it even more difficult to obtain the food needed to combat chronic hunger. This led to a drastic fall in growth and employment, a negative impact on the balance of trade and the balance of payments, a significant reduction in net private capital flows, and a reduction in the number of jobs.

The result was a dramatic decline in growth and employment, a negative impact on the balance of trade and the balance of payments, a significant reduction in net private capital inflows and foreign direct investment, reduced access to credit and trade finance, declining remittances, widely fluctuating and volatile exchange rates, collapsing reserves, more volatile and falling commodity prices, and lower tourism revenues. In July 2009, 82% of the liquidity lent by the International Monetary Fund was destined for European countries, while only 1.6% was destined for African countries, probably because, as European countries are high-income countries, they are almost guaranteed to be repaid, unlike poorer countries. During the "2012 United Nations Report on the Millennium Development Goals", which took place on 2 July 2012 in New York, a document was presented on which eight goals were set on the subject of poverty and social inequality. Goal number one places at the top of the list of priorities the issue of work that can guarantee a basic income sufficient to live a healthy life. Goal two seeks to address the issue of illiteracy, which in 2012 was in the order of 120 million people, by including the need to enrol and complete the primary school cycle regardless of social bracket and closing the gap between men and women (gender parity), which in these countries is disproportionate with an overwhelming prevalence of men (goal four). Targets five and six deal with infant mortality and the sanitary conditions in which assisted deliveries take place, the quality of skilled personnel (only 45% of deliveries are assisted) and diseases for which there are insufficient resources to combat such as HIV and malaria. Objective seven focuses on environmental sustainability and the repercussions of industrial pollution in these countries, such as the contamination of drinking water used by the population. In the years following the crisis, funding for the poorest countries peaked in 2010 at $58.75 billion, and reached $31.55 billion in 2013.

The Covid crisis caused major damage to developing countries by destroying years of fighting poverty. The difference between the 2008 financial crisis and the Covid crisis is that these countries do not have the tools, either logistically or in terms of economic possessiveness, to burn a virus sufficiently and it affects many sectors by blocking production. Developing countries such as Bangladesh point to outsourcing or exports of raw materials and the import of food such as Venezuela or Nigeria are among the worst affected. For these countries The World Bank has estimated a 2.5% contraction in wealth in 2020. In Syria, where the war is taking place, there has been a disruption of food chains, leaving 32% of Syrians at the mercy of hunger, in addition to those who were already in poverty. Aid to help developing countries in the Covid crisis, as reported by the Italian Ministry of Economies, sees 2021 countries in the G20 committed to allocating 45 billion in Prelievo's Special Rights (GSP) to meet the overall target of USD 100 billion for the IMF Poverty Reduction and Growth Trust. This aid will be added to the USD 650 billion allocated in August 2020 and to the definition of the Relience and Sustainability Trust to provide finance under particularly affordable conditions to remedy the economic consequences of the Covid crisis. Two other initiatives are the "Debt Service Suspension" and the "Debt Treatment Beyond the DSSI" to approach on a case-by-case basis any funding issued and make it easy and optimal to manage reimbursements.

In the next sub-chapters will analyze the trend of three representative indices of one of the poorest areas of the world located in South Asia: the Nifty 50 indices (NSEI), the Dhaka Stock Exchage Broad (DSEX) and the Karachi 100 (KSE); representative of the market performance of India, Bangladesh and Pakistan respectively.

3.1 India – *Nifty 50 Index (NSEI)*

According to the Tendulkar Commission, India belongs to the low-development group with two-fifths of the population living below the poverty line. Social inequality in India is very marked at regional level as productivity depends on the type of subsoil and the variability of climatic conditions. During the 2008 crisis, the GOI decided to intervene with three interventions between December 2008 and February 2009 with aid amounting to 3.5% of Indian GDP. The Indian deficit reached 6% of GDP (2.7% of GDP in the previous year) and then worsened between 2009 and 2010, reaching 6.4% of GDP because of these measures to inject unorthodox liquidity.

The Covid crisis in India caused a 7% contraction in the economy and an increase in the unemployment rate due to the total blockade imposed by the government to ease cases. The Central Bank to support the economy has sharply lowered the interest rate by up to 4% (May 2020) and a $266 billion package including corporate tax breaks, household subsidies and public health spending.

The Nifty 50 index is the benchmark stock market index of the Indian stock market owned by India Index Services and Products (IISL). It represents the weighted average of 50 securities belonging to the most profitable Indian companies operating in twelve different sectors including banking and financial services, Oil & Gas, consumer goods, information technology (IT), and Infrastructures. The development of international markets directly influences the index as there is a correlation between the global indices and the Nifty 50 so, if we consider the example of the Nasdaq index, we note that if it has positive performance then also the Nifty 50 index will improve its rating.

The Nifty 50 index from early 2008 followed a downward trend and, as one might expect, had the most decided collapse with the failure of Lehman Brother and the beginning of the crisis itself. On September 15, 2008, the index quoted 4072.90 points while a month and a half later (end of October 2008) the index lost about 38% to 2524.20 points. In the following months the trend of the index did not have major deviations as the trend remained almost flat around 2600 points. In March 2009, with measures taken by governments to revive the economy and recover global indices, the Nifty index rose again.

Figure 66, Nifty 50 index - Crisis 2008

During 2020, the Nifty 50 index rose from 12282.20 starting points in the year to a collapse caused by the viral pandemic in March 2020 with a 30% collapse, reaching the minimum (annual) of 7511.10 points on March 24, 2020. As analyzed in the other indices, the index's listing from the end of the second quarter again grew sharply recovering losses caused by the closures of the crisis and closing 2020 at 14049.85 points.

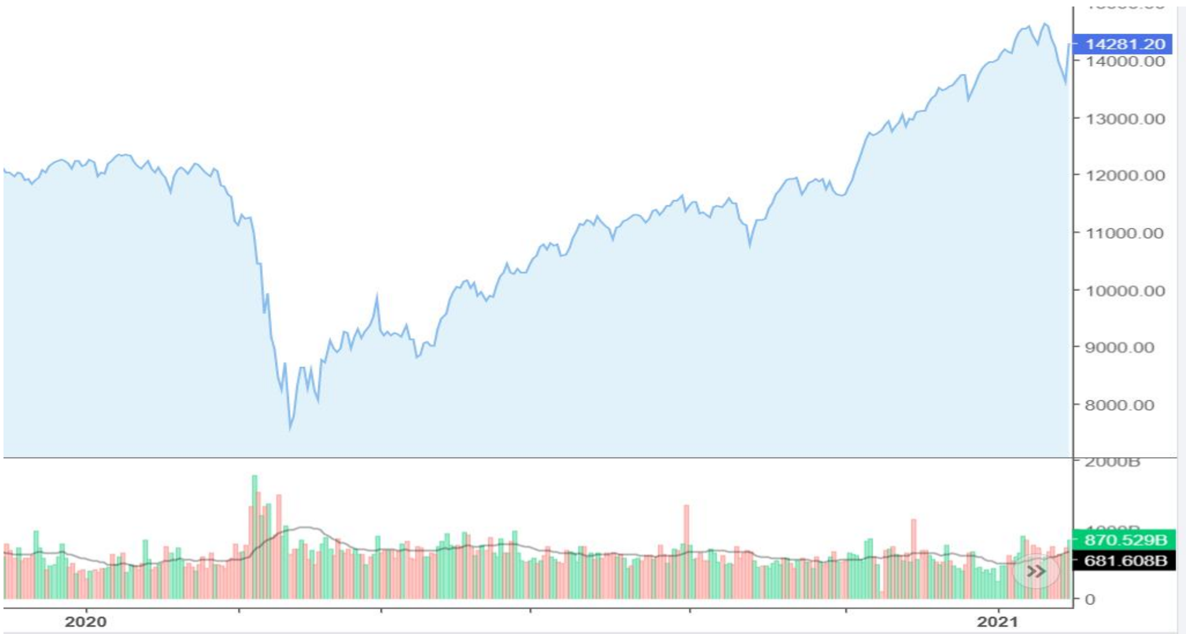

Figure 67, Nifty 50 index - Covid crisis

3.2 Bangladesh - *Dhaka Stock Exchange Broad index (DSEX)*

Bangladesh is another of the countries where the strong social disparity between rich families and families who are in total poverty emerges. The extreme poverty of some areas makes it one of the countries in Asia with one of the lowest per capita values. The main activity is agriculture and the main activities are the production of rice, cotton, jute, sugar and tobacco and the clothing sector (second in the world with 11% of GDP). The strong meteorological variability does not, however, satisfy internal demand. The wealthier areas have seen a consistent development of the service sector over the years, which contributes to half of Bangladesh's GDP. In 2005, Goldman Sachs included Bangladesh among the group of eleven countries (Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Turkey, South Korea and Vietnam) which, according to forecasts of future investment and growth, identifies the country as having one of the largest economies in the world. The announcement led to a substantial increase in foreign investment, raising the GDP growth rate to 5.5%. The GDP growth rate between 2000 and 2010 remained stable at around 6%, then exceeded 8% just before the pandemic and fell back sharply to 5.5% today. In Bangladesh, more than 35% (about 50 million people) of the population live in extreme poverty. The inefficiency of the country's management and the continual growth of a workforce that cannot find employment, as well as the heavy flooding, are one of the causes as they affect one third of the country and destroy villages and entire crops as well as bringing disease and infection. The population has no access to education and there is a strong problem of child exploitation. During the 2008 crisis, Bangladesh suffered a reduction in its primary source of income: exports to Europe and the US of products such as tea and textiles. Exports account for 20% of Bangladesh's GDP and fell to 10% in 2008 because of the US crisis. It was only after February 2009 that the export rate began to fall again, to -8.7%.

Covid-19, on the other hand, has contributed to increasing inequality by driving back into total poverty millions of people who had managed to escape from it during the last decade, raising the poverty rate to 40%. Companies, with production halted, suffered heavily from the crisis due to a sharp drop in demand, including from abroad (especially in the textile sector). During the crisis the European Union provided 113 million Euros to guarantee a minimum wage of (3000 taka, about 30 Euros) to every citizen who lost his job because of the crisis selected by employers' associations such as Bangladesh Garment Manufacturers and Exporters Association (BGMEA), Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA), Leathergoods and Footwear Manufacturers & Exporters Association of Bangladesh (LFMEAB) and Bangladesh Finished Leather, Leathergoods and Footwear' Association (BFLLFEA). Since 2014, EU funding to Bangladesh in terms of human capital development, nutrition and democratic governance has amounted to €655 million.

The DSE Broad index (DSEX) contains 263 companies that meet precise listing and balance sheet criteria (Debt /Market value of Equity with 36 month average < 33%) representing 97% of the companies listed in the Bangladeshi stock market is considered the benchmark index of the Dhaka Stock Exchange.

The DSE Broad index had a constant trend during 2008, remaining in the range between 2700 and 3100 points until September 2008. With the outbreak of the crisis, the index fell, losing about 300 basis points, to end the year at around 2,700 points and only recovering after the end of the first quarter of 2009.

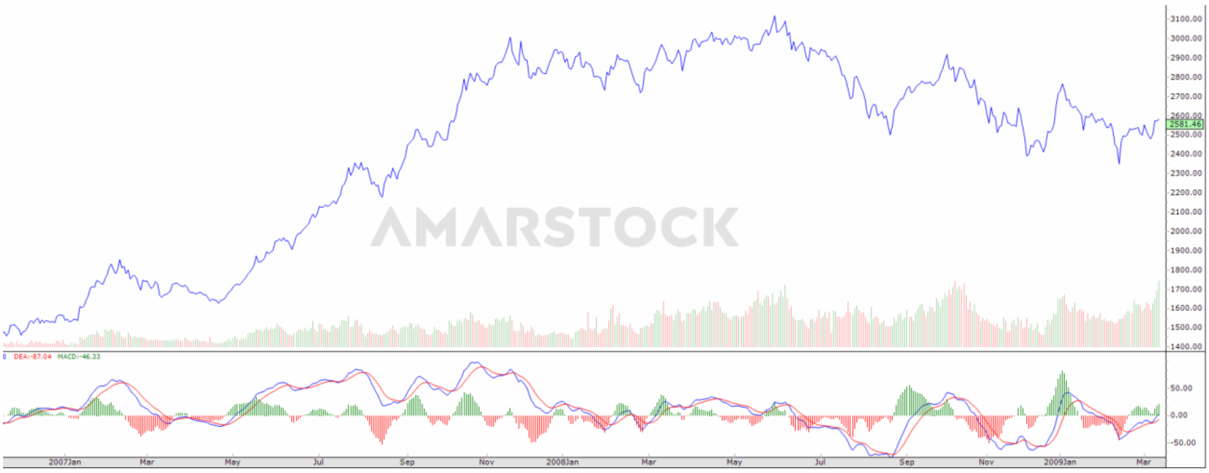

Figure 68, DSE Broad index - During crisis 2008

The DSE Broad index during the 2020s had an initial phase in which it grew from 4453.29 basis points to a high reached before the pandemic and the onset of the global crisis at 4758 points. On 18 March 2020 the index hit its annual low at 3593.15 points at the heart of the crisis. The subsequent rise, in line with the high indices, indicates that by August the index had already reached pre-crisis levels. The index closed 2020 at 5402.06 points.

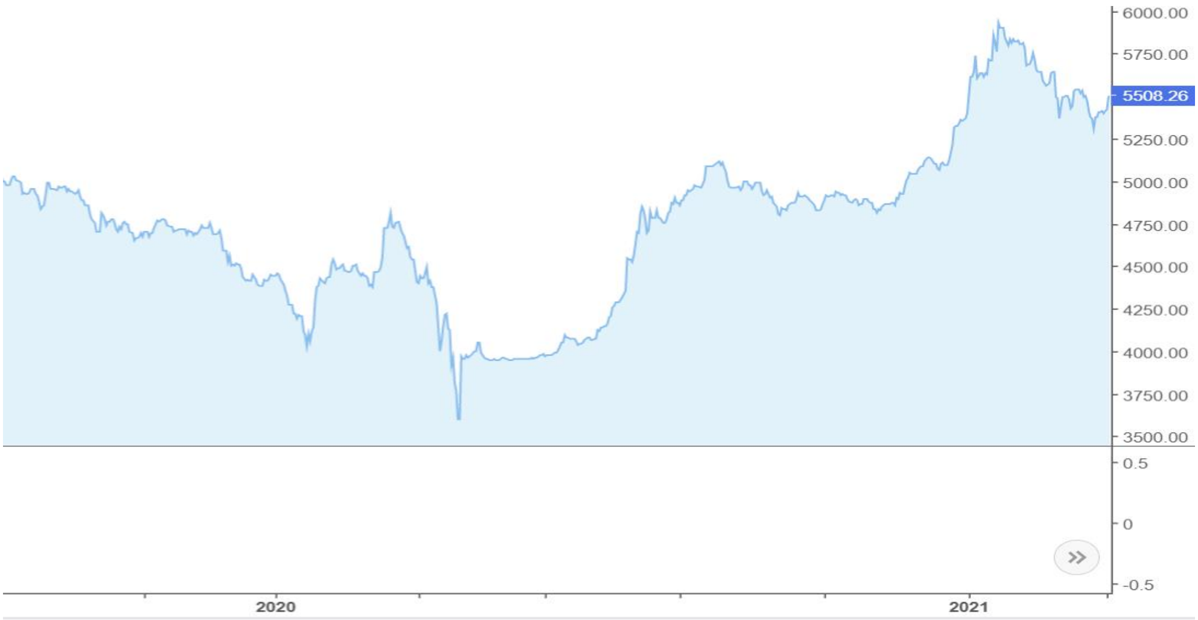

Figure 69, DSE Broad index - During Covid crisis

3.3 Pakistan – *Karachi 100 index (KSE)*

Since the 1980s, Pakistan has tried to undertake a renewal in order to achieve an economic development that in those years led it to be the country with the highest economic growth rate in South Asia (more than 6%). Inside the country, as analyzed in the previous two chapters, there is a strong disparity between rich and poor due to the control of capital investments in the hands of a few families who share the textile and chemical workshop sector, banking and printing. Pakistan is considered one of the poorest countries in the world with one third of the population (24.4%, 46 million people) of which 8% fall into the category of absolute poverty. Most young people are illiterate and because of the difficult conditions, 30% of them suffer from stunted growth, polio (an endemic disease) is not treated effectively and the literacy rate is very low. The only center in which businesses are concentrated is Karachi. The sector that employs more than half of the active population is agriculture, with 25% of the available land on Pakistani territory producing wheat, rice, legumes, etc. Because of the dry climate it is necessary to use a dense irrigation system, but this is leading to two thirds of the arable land becoming salty and soggy, thus risking becoming a desert. The average harvest is among the lowest in Asia, even on farms. The government of Pakistan is characterized by a high rate of corruption and large military expenditures in a context of high inflation and a low overall growth rate of the economy. The 2008 crisis also had repercussions in Pakistan, in fact, in 2008 inflation rose from 7% to 25%, GDP decreased by 5%, export volume decreased by 5.9%, import increased by 2.0%, loans decreased by 1.1% and there was a strong devaluation of the local currency that brought the State Bank of All these elements led to a strong imbalance in the Pakistan balance of payments. 2008 was also a year characterized by severe social unrest caused by the social discontent that the crisis caused, rising prices and interest rates on loans. During the Covid crisis, Pakistan experienced an economic impact that saw a fall in key economic indices due to lockdowns and production freezes across the trade landscape. In detail, according to the data of the Economic Observatory (Italian Ministry of Foreign Affairs and International Cooperation), Pakistan's GDP in 2020 was 236.5 billion dollars compared to 248.5 billion in 2019, marking a growth rate of 2.8% at constant prices; the unemployment rate increased by 3.8% to 13.8%; the national debt increased by 2% to 68.8% and the volume of imports and exports decreased by 3.7 billion dollars and 2.2 billion dollars respectively. In April 2020, the International Monetary Fund released $1.4 billion in economic aid to Pakistan that supported the slow economic recovery that began in the second half of the year. In the second half of the year, in fact, an increase in domestic consumption, remittances from emigrants (an important source for many families), investments in the manufacturing sector and favorable conditions imposed by the central bank for access to credit (lowering interest rates) helped to curb the recession and stop the hemorrhaging of unemployment growth throughout the country.

The KSE 100 Index contains the hundred most market capitalized companies with the highest Free-Float Capitalization in thirty-six different sectors. The index serves as a benchmark for investors as it represents the performance of the best listed companies in Pakistan.

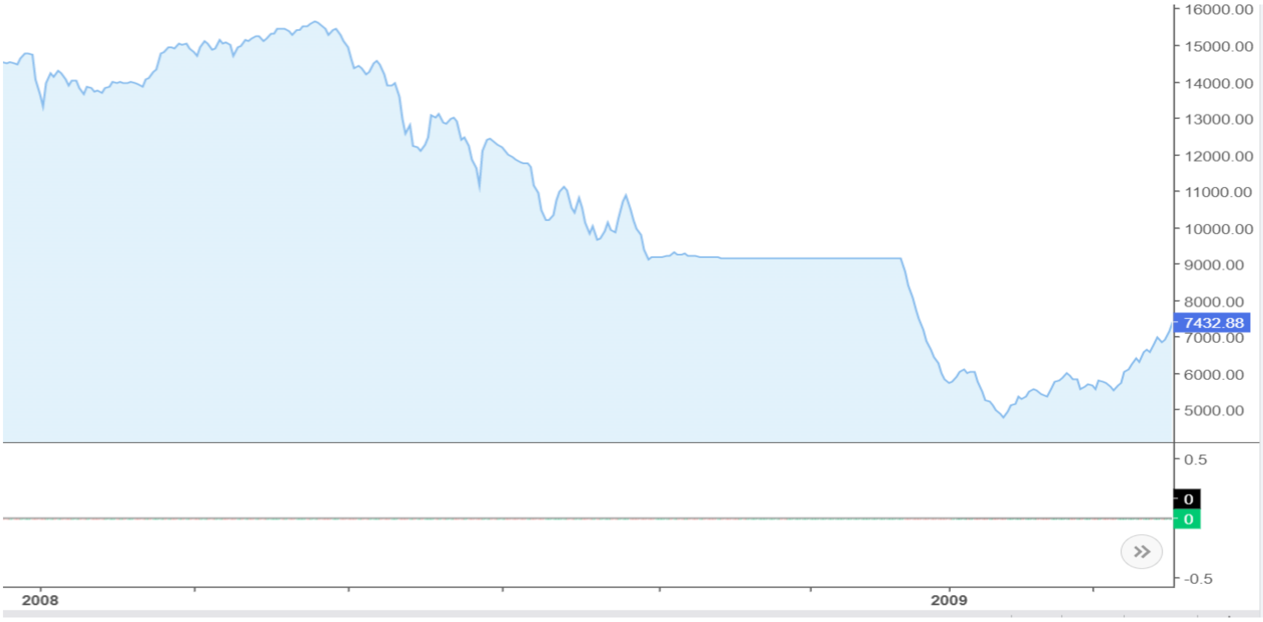

Figure 70, Karachi 100 index - 2008 crisis

The KSE index, as shown in Figure 69 above, had a slight growth during 2008 during the first and part of the second half (until 21 April 2008) which brought it from 13666.85 points to 15739.25 points to start with a downward trend that continued until early October at 9181.24. For one month trading was closed and then resumed to drop and close the year at 5753.18 points. The minimum was reached on January 27, 2009 with 4781.78 points to resume growing during the first months of the same year. At the beginning of 2020, the index followed a slightly decreasing trend in the first quarter from 41400 points to 37983.62 points in late February and then decreased to the annual minimum at 27046.71 points on 26 March 2020. In line with what happened with the other indices, from April onwards the index started to grow again ending the year to share 44434,80 points recovering fully the losses suffered during the pandemic.

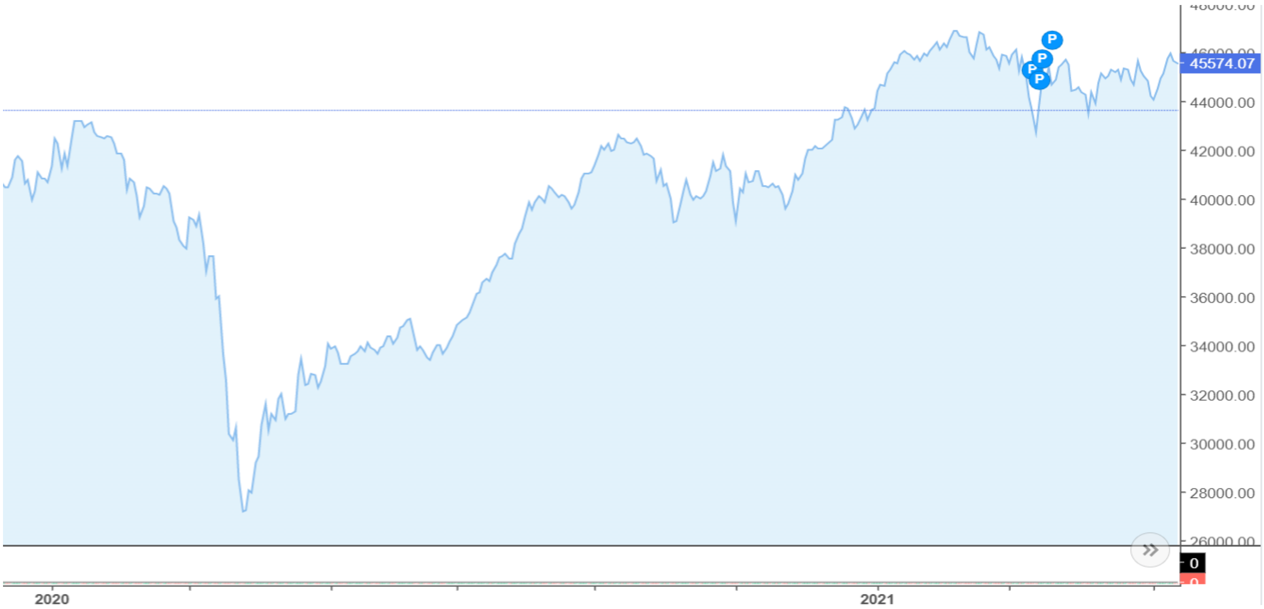

Figure 71, Karachi 100 index - Covid crisis

4. Summary of index analyses

The following chapter summarizes the main data taken into account for the descriptive analysis of this thesis work. In each sub-chapter: ***'4.1 Before the crisis', '4.2 During the crisis'*** and ***'4.3 Post crisis'*** are reported, for each index analyzed and comparing the two crises (in blue the data referring to the 2008 subprime crisis and in violation of the data referring to the crisis caused by Covid in 2020), start-period quotations, end-period quotations, percentage change between beginning and end-period ('Change%' column), the maximum at the level of quotation reached and the minimum.

In chapter ***'4.1 Before the crisis'*** the periods preceding the two crises considered are from 01 January 2007 to 15/09/2007 which is the date on which the bankruptcy of the US bank Lehman Brothers for the crisis of the subprime while for the crisis of the Covid are reported the data from 01/07/2018 to 01/03/2020 date in Taking into account the 'Change%' column, it appears that in the periods before the two crises are different: between 2007 and 2008, the overall trend in indices tended to decline due to the growing uncertainty that the financial market was beginning to see in relation to the real estate market, while the behaviour of indices prior to Covid-related closures shows a heterogeneity of developments (both positive and negative) that do not appear to be affected by the impending pandemic.

In chapter ***'4.2 During the crisis'*** the periods considered are: for the crisis of the subprime from 15/09/2008 to 15/03/2009 because in the middle of March 2009 precisely, thanks to the measures of revival announced by the governments and the central banks, there was an initial sign of confidence in the financial market that led to an initial trend of growth; for the crisis caused by Covid instead, the period considered is from 01/03/2020 to 31/12/2020 as the first vaccinations and the consequent confidence in the possibility to exit the pandemic occurred precisely at the end of 2020. Again, the benchmark for the analysis of developments is the 'Change%' which shows how the Covid crisis had a much less impact on financial markets than the 2008 crisis in fact, the even positive changes after the end of 2020 in the indices contrasted with the strongly negative changes in the end of the subprime crisis.

In chapter ***'4.3 Post crisis'*** the periods considered are: from 15/03/2009 to 31/12/2010 for the subprime crisis and from 01/01/2021 to 31/12/2021 for the Covid crisis. In this case in addition to the percentage change for each index for the mentioned periods ('Change%' column) has an additional column ('Recovery time (day)’ column) in which, for each index in the two crises, were reported how many days it took the index to recover the losses caused by each crisis (difference from the listing of 15/09/2008 and 01/03/2020). This analysis shows how, following the two crises, the trend of the indices was positive but confirming how much more impactful the subprime crisis was than that of the Covid at the level of the financial markets can be noticed by the fact that the indices gave us much more time to recover the losses during the crisis of the subprime as opposed to what happened already from the end of March 2020 where most of the indices, still in full pandemic, they began to grow again until the end of 2020.

4.1 Before the crisis

Subprime Crisis (2008)

Covid-19 Crisis (2020)

Period taken into account: 01/01/2007 - 15/09/2008 & 01/07/2018 - 01/03/2020

Index	Quotation at start of period		Quotation at end of period		Change %		Max quotation		Min quotation	
Dow Jones (DJI)	12474	24307	10917	25409	-12,40%	-4,69%	14198	29568	10827	21712
Nasdaq Composite	2423	7567	2179	8567	-9,75%	+14,07%	2861	9838	2155	6190
S&P 500 (SPX)	1416	2726	1192	2954	-15,91%	+8,68%	1576	3393	1192	2346
Dax Index (GDAXI)	6681	12795	6064	11890	-8,08%	-3,38%	8151	13795	5942	10279
FTSE MIB (FTMIB)	27333	21427	41364	21984	-34,03%	+1,66%	44364	25483	26464	17914
CAC 40 (FCHI)	5617	5276	4168	5309	-24,77%	-0,26%	6168	6111	4002	4555
Nikkei 225 (D225)	17353	21811	12214	21142	-29,09%	-5,21%	18300	24448	11691	18948
Hang Seng (HSI)	20310	28545	19352	26129	-3,06%	-9,76%	31958	30280	18659	24540
CSI 300 (CSI300)	2067	3407	2077	3940	+1,80%	+12,22%	5891	4223	2030	2935
SSE Composite	2715	2775	2079	2880	-22,27%	+1,15%	6124	3288	2064	2440
Nifty 50	4007	10657	4072	11201	+2,69%	+4,55%	6357	12430	2802	10004
DSE Broad	1523	5322	2772	4409	+45,06%	-18,42%	3122	5950	1523	4009
Karachi 100	10066	41734	9233	37983	-8,04%	-9,37%	15739	43638	8999	28670

4.2 During the crisis

Subprime Crisis (2008)

Covid-19 Crisis (2020)

Period taken into account: 15/09/2008 - 15/03/2009 & 01/03/2020 - 31/12/2020

Index	Quotation at start of period		Quotation at end of period		Change %		Max quotation		Min quotation	
	2008	2020	2008	2020	2008	2020	2008	2020	2008	2020
Dow Jones (DJI)	10917	26703	7223	30606	-36,75%	+20,45%	11483	30637	6469	18213
Nasdaq Composite	2179	8952	1431	12888	-36,69%	+50,43%	2318	12973	1265	6631
S&P 500 (SPX)	1192	3090	756	3756	-39,56%	+27,14%	1265	3760	666	2191
Dax Index (GDAXI)	6064	11857	3953	13718	-36,59%	+15,38%	6235	13903	3588	8255
FTSE MIB (FTMIB)	27333	21655	13804	22232	-51,35%	+1,13%	28372	22395	12332	14153
CAC 40 (FCHI)	4168	5333	2705	5551	-37,55%	+4,55%	4356	5625	2465	3632
Nikkei 225 (D225)	11609	21344	7569	27444	-38,03%	+29,30%	12263	27602	6994	15358
Hang Seng (HSI)	18300	26291	12525	27231	-35,28%	+4,21%	19869	27340	10676	21139
CSI 300 (CSI300)	2000	4069	2205	5211	+6,14%	+32,26%	2470	5212	1606	3503
SSE Composite	1986	2970	2128	3473	+2.36%	+20,58%	2402	3474	1664	2646
Nifty 50	4072	11132	2719	13981	-35,69%	+24,82%	4303	14024	2252	7511
DSE Broad	2772	4409	2589	5402	-6,60%	+20,58%	2916	5407	2349	3593
Karachi 100	9233	39296	5750	43755	-37,86%	+15,20%	9253	43955	4781	27046

Subprime Crisis (2008)

Covid-19 Crisis (2020)

4.3 Post crisis

Period taken into account: 15/03/2009 - 31/12/2010 & 01/01/2021 - 31/12/2021

Index	Quotation at start of period		Quotation at end of period		Change %		Max quotation		Min quotation		Recovery time (day)	
Dow Jones (DJI)	7216	30223	11577	36338	+60,26%	+18,73%	11625	36679	7172	29856	563	96
Nasdaq Composite	1404	12698	2652	15644	+85,32%	+21,39%	2675	16212	1402	12397	397	67
S&P 500 (SPX)	753	3700	1257	4766	+66,23%	+26,89%	1262	4808	749	3662	567	94
Dax Index (GDAXI)	4044	13726	6914	15884	+74,88%	+15,79%	7087	16290	3947	13310	556	93
FTSE MIB (FTMIB)	14158	22315	20173	27346	+46,14%	+23,00%	24558	27968	13804	21311	Not yet	237
CAC 40 (FCHI)	2791	5588	3804	7153	+40,62%	+28,85%	4088	7201	2719	5379	1829	225
Nikkei 225 (D225)	7704	27258	10228	28791	+35,14%	+4,91%	11408	30795	7630	26954	1632	85
Hang Seng (HSI)	12976	27472	23035	23397	+83,90%	-14,08%	24989	31183	12373	22665	260	219
CSI 300 (CSI300)	2241	5267	3128	4940	+41,84%	-5,20%	3803	5930	2180	4663	126	110
SSE Composite	2153	3502	2808	3639	+31,91%	+4,80%	3478	3731	2108	3312	126	115
Nifty 50	2777	14018	6134	17354	+125,6%	+24,12%	6338	18604	2701	13596	245	142
DSE Broad	2589	5618	7760	6765	+200%	+25,08%	7760	7410	2339	5080	280	156
Karachi 100	6062	44434	12022	44596	+109%	+1,92%	12082	48976	5763	42689	374	155

5. Conclusion

The conclusions deduced from the thesis work are set out below. The crisis of 2008, the causes of which were discussed in the first chapter, stemmed from the financial bubble that developed in the years leading up to 2008 in the real estate sector due to the large-scale and unregulated use of derivative instruments. With the bankruptcy of Lehman Brothers and the collapse of the insurance company AIG (American International Group) there was a deep banking crisis that led to a lack of confidence in the stock market, which had the repercussions analyzed worldwide. The Covid crisis is a pandemic crisis caused by a respiratory syndrome whose virus that is called SARS-CoC-2 8 (Coronavirus) which within two years, from March 2020 to March 2022, has 429 million cases worldwide and 5.97 million deaths. The repercussions of the pandemic on the world economy and from a social point of view were manifold: the lockdowns imposed by the authorities had a decisive impact on supply and demand as there was a halt to production in some sectors and only a few were unaffected. From this point of view, it can be said that the crisis linked to Covid was harder than the crisis of 2008, since in a short time many sectors found themselves without income and the support measures launched by governments were certainly decisive: in a note of the Bank of Italy in January 2020, it is reported that thanks to these interventions the number of bankruptcies and exits from the market of companies in 2020 and 2021 were even lower than in 2019. The measures taken by governments were adopted with the aim of cushioning the temporary closure and inability of companies to create goods (and services), and they did so by means of large amounts of money. The repercussions of the Covid crisis on the stock market were instead limited to the first phase of the pandemic between the end of February and April 2020 and then quickly returned to pre-crisis levels. On the contrary, the 2008 crisis had a strong impact on stock markets, which required strong central bank intervention to stimulate investment through interest rate maintenance and fiscal policies that encouraged the creation of new jobs. Nevertheless, the crisis and mistrust led, especially in Europe, to a severe liquidity crisis affecting the most indebted countries (Italy, Greece, Portugal, Spain, Ireland) and causing the debt crisis. Only after 2013 and the adoption of austerity policies by these struggling countries and the guarantees given by German banks could the eurozone slowly return to a normal situation. The last chapter clearly clarifies how the crises of developed countries are halting the progress that the least developed countries are making after years and years of attempts to improve. Bank loans for the majority of cases are granted to the states that security can more easily repay than the poorer countries that have problems from more points of view and little production useful for growth.

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