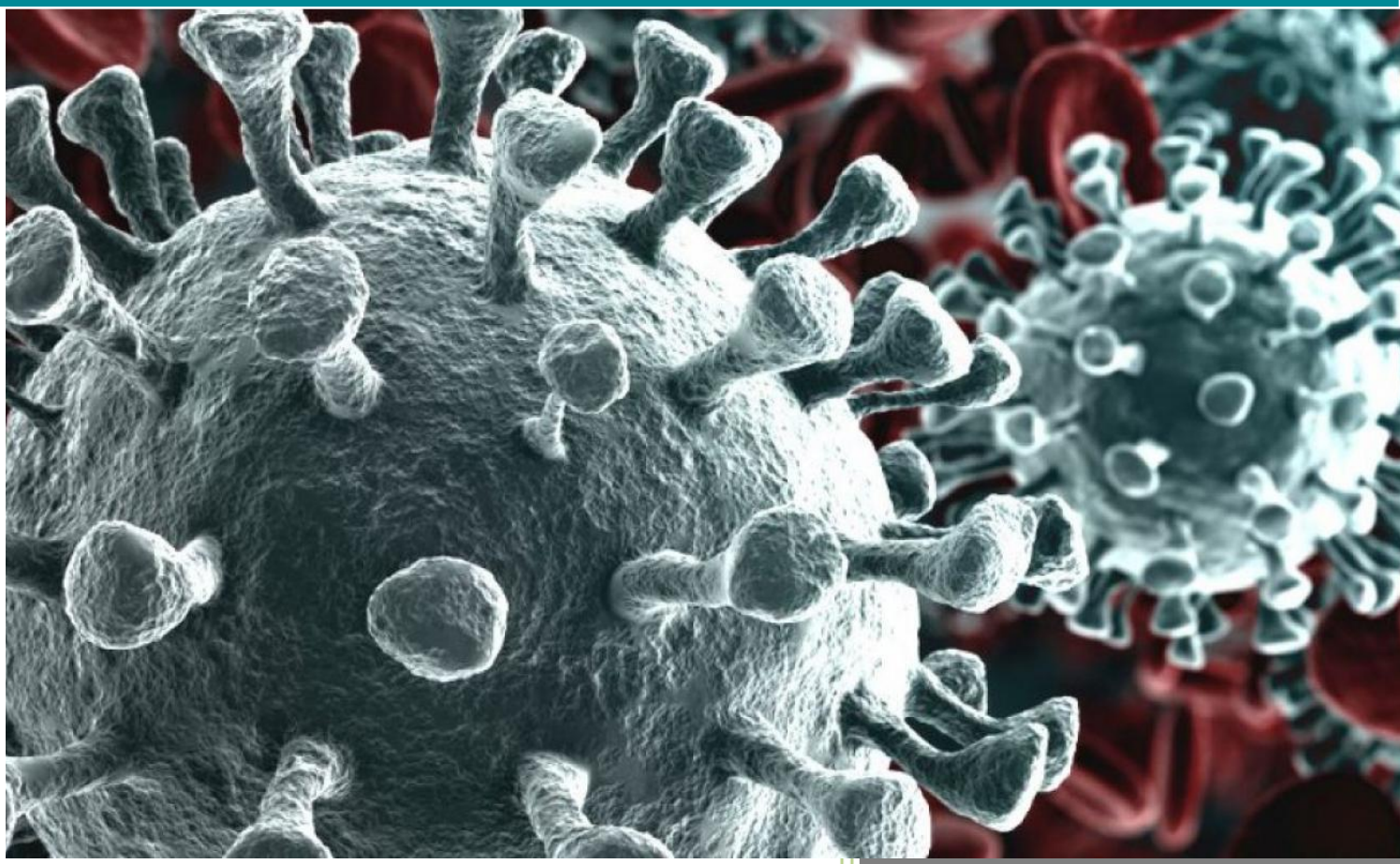
Cerved Rating Agency

Research study

The impact of Coronavirus on Italian non-financial corporates



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Our rating

The rating of Cerved Rating Agency is an opinion, issued by Cerved Rating Agency, on the creditworthiness of a company; it therefore assesses the capability of the company to generate sufficient cash flows for a prompt debt repayment in a given time horizon.

INTRODUCTION

The World Health Organization's declaration of the global emergency of the Coronavirus (hereinafter also called "**COVID-19**") leads, among others, to relevant implications for the world economy, considering in particular the companies having significant commercial relationships with China. In the last weeks this aspect has contributed to increase the interest and awareness of the stakeholders about the expected evolutions of the health emergency, which is already causing dangerous effects in terms of human lives and other heavy discomforts.

The widespread of the disease is unfortunately following an exponential road: starting from China, several outbreaks have recently emerged in Italy, South Korea and Iran, and other countries in and out of Europe are putting in place hard countermeasures to tackle the situation.

Although at the moment the future development of the emergency is not predictable, a series of hypotheses and related impacts can be figured out with the purpose of expressing opinions on the potential impacts in particular on the domestic economy.

Cerved Rating Agency (hereinafter also called "**CRA**"), leveraging on its experience on the domestic market, submits this research paper aimed at estimating short and medium-long term impact of Coronavirus emergency on the Italian non-financial corporates.

It is worth to highlight that this research paper represents a preliminary analysis on the early effects of the disease on the Italian corporates that, at the time of writing, were experiencing a sensible daily increase of the cases verified, thus even more directly affecting the Italian economic fabric. For this reason, Cerved Rating Agency will monitor the situation and will consider the option to dedicate in the next months a specific study on the impacted companies and related connections.

PREFACE

The projections in this study reflect CRA's opinion on the expected economic and financial trend of the Italian non-financial companies and their overall creditworthiness in case of occurrence of a range of hypothesised scenarios related to the Coronavirus emergency.

The document presents four distinct sections. The first section illustrates the historical series and trend of the main macroeconomic indicators showing the Global, European, Chinese and Italian economic conjuncture.

The second section focuses on commercial relationships of China with the rest of the World, evidencing the related supposed impact for Italian non-financial corporates. In this context, a specific focus is dedicated in the third section to the occurrence of the Coronavirus emergency and its direct and indirect consequences on the Italian economy.

The fourth section contains an estimate of the impact of the selected scenarios on the simulation portfolio[1] represented by Italian non-financial companies; the final output is obtained through the application of quantitative and qualitative analyses which considered a set of underlying assumptions. The analysis evidences, *inter alia*, the most impacted sectors and their individual level of expected riskiness, according to the hypothesised scenarios. This section also shows an estimate of the expected evolutions (on average) of the most representative financial indicators, stressing the potential impact on the profitability and financial structure of the Italian non-financial companies following the application of the scenarios.

[1] The simulation portfolio consists of around 25.000 Italian non-financial corporates having an outstanding rating as of 31st December 2018 including empirical default events occurred in 2019.

EXECUTIVE SUMMARY

Following the evolution of the main macroeconomic indicators, CRA expects that Italy's GDP low growing trend, already initiated in the last periods, will continue also in 2020. These green shots of overall economic recovery would result in a slight reduction of the expected default rate of Italian non-financial companies, also taking into account their resilience in the financial structure.

Nevertheless, CRA has assessed the possibility of occurrence of different and more severe conditions based on the impact of Coronavirus global emergency on the world economy. The hypothesised most severe scenario is the "*hard*" case, where the financial indicators considered in this study may suffer up to one year a relevant stress denoting extremely risky conditions for Italy. Moreover, for simulation purposes, CRA has also assumed the "*soft*" case, in which the global emergency is likely expected to fade within a semester. In synthesis, the following two scenarios have been considered and addressed:

Exhibit 1 – Summary of the adopted scenarios

Probability to happen	*Soft case scenario: high*	*Hard case scenario: low*
Severity	*Medium*	*High*
Scenario	Short term end of the global emergency	Medium-long term end of the global emergency, which can be classified as pandemic crisis
Time of exhaustion of the effects of the global emergency	From 3 to 6 months, up to 30th June 2020	From 6 to 12 months, up to 31st December 2020
Classification of the global emergency	Epidemic crisis	Pandemic crisis

Both scenarios were applied to the simulation portfolio by using a qualitative and quantitative approach, in light of a series of assumptions. The simulation portfolio can be retained as highly representative of the Italian non-financial companies; it currently shows an average probability of default[2] ("**PD**") of 4.9%. The above-mentioned scenarios led to the following outcomes:

- in the **soft case**, where the global emergency is expected to last until mid-2020, a resulting PD over the scenario time horizon **equal to 6.8%** and ranging from 2.7% to 10.6% based on the specific sector. This is due to the fact that the scenario presents a slight worsening with respect to the current conditions and the behaviour of the portfolio follows this expected mild increase of the riskiness;
- in the **hard case**, where the global emergency is expected be classified as pandemic crisis and last until the end of 2020, a resulting PD over the scenario time horizon **equal to 10.4%** and ranging from 7.5% to 15.4% based on the specific sector. This is due to the fact that the scenario is very severe and the behaviour of the portfolio follows this expected very significant increase of the riskiness.

The application of the negative scenarios generally determines a migration of the rated entities towards the worst rating classes, hence resulting in a reduction of the number of ratings in the investment grade and an increase of those in the speculative grade. The hypothesised deterioration in the creditworthiness would strongly affect particularly risky sectors such as tourism and segments of manufacturing corporates, which are more exposed to China.

[2] The Cerved Rating Agency native default definition adopted for rating models development purposes considers the following events: 1) bankruptcy and other legal proceedings (legal default); 2) debt restructuring (legal default); 3) missed or delayed disbursement of a contractually required interest or principal payment, whenever this information is available in a public register (e.g. relevant protests on trade bill or check) or other prejudicial actions (e.g. judicial mortgages, distrait of property). Starting from this definition, Cerved Rating Agency probability of default for each rating class is then calibrated on average aggregated default rates by geographical area and industry provided by Bank of Italy on the segment of non-financial Corporates.

EXECUTIVE SUMMARY

The tables below depict the impacts of the soft and hard scenarios on the distributions of the simulation portfolio by risk areas[3], compared to the current situation:

Exhibit 2 – Summary of the impact on the distributions of the portfolio by risk area (current versus soft scenario)

Risk area	Current distribution	Soft scenario distribution	Change current versus soft
Safety	12.57%	8.37%	-4.20%
Solvency	41.81%	36.13%	-5.69%
Vulnerability	38.09%	40.34%	+2.25%
Risk	7.53%	15.16%	+7.63%

Exhibit 3 – Summary of the impact on the distributions of the portfolio by risk area (current versus hard scenario)

Risk area	Current distribution	Hard scenario distribution	Change current versus hard
Safety	12.57%	0.96%	-11.61%
Solvency	41.81%	31.01%	-10.80%
Vulnerability	38.09%	34.48%	-3.61%
Risk	7.53%	33.56%	+26.02%

This general deterioration of the risk profiles is a direct consequence of a lower profitability and of a worsening of the financial structure of the companies, as detailed in the study.

The spread of Coronavirus in Italy is expected to put further pressure on the national economy that already shows signs of weakening in terms of GDP growth and industrial production. As the Chinese economy is expected to slow down following the virus outbreak, the consequences in terms of reduced demand for the Italian product and services will be material. Disruption is already being observed along the chain value with a combined effect of reduced export to China and difficulties in procurement of raw materials and finished goods from China.

In the recent weeks the contagion has reached Italy as the number of positive cases of Coronavirus are increasing rapidly; some sectors like tourism, Fashion&Luxury and the manufacture industry are seen to be more exposed to this downside risk because of the direct connection with China. On the flip side, some positive spill-over are expected for the whole pharmaceutical sector due to the increase in demand for medicines and protection remedies.

Moreover, the downside risks are also internal as the measures adopted to limit the contagion of Coronavirus are expected to have negative consequences on the business activities of the Italian non-financial corporates.

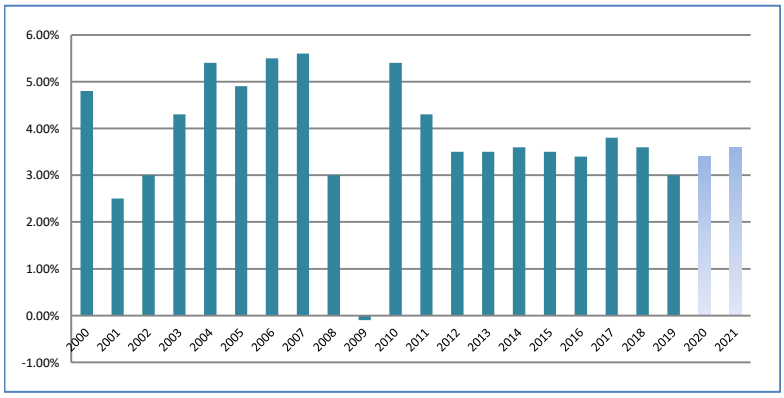
[3] Risk areas defined according to Cerved Rating Agency rating scale, available in the Annex of this paper.

ECONOMY FACT SHEET (BEGINNING OF 2020)

TREND OF THE WORLD ECONOMY

After the pick-up in output growth recorded in 2017, the World economy has experienced a slowdown in 2018 with a growth at 3.6% and a further downgrading for 2019 to 3%, its slowest pace since the global financial crisis. Major trade and geopolitical headwinds continue to weigh on the overall economic activity. In advanced economies, low inflation environment and stagnating demographic growth poses further downside risks. Moreover the impact of Coronavirus is expected to weigh on 2020 GDP forecasts: IMF estimated a 3.4% in 2020 and 3.6% for 2021 but the consequences of the virus pose serious downside risks with many analysts estimating at least 0.2%-0.3% range of GDP growth reduction.

Exhibit 4 – Real World GDP growth (Y-o-Y % change)



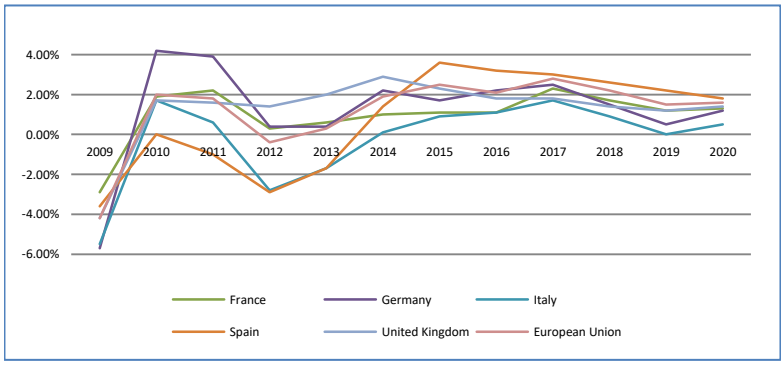
Source: IMF

DETAILS ON EUROPEAN ECONOMY

Recent data confirm a declining trend of growth all across the European Union. Germany in particular under-performed the other major Countries in recent years as the automotive industry experienced challenging times and the rigid approach in terms of fiscal spending adopted by German Government poses serious constraints to the European largest economy. Spain showed a brilliant recovery after the sovereign debt crisis and consistently outperformed other EU members; however, weaker investments and private consumption are weighing on its economy.

The 2020 will be characterised by the post-Brexit negotiations between UK and EU; many points are yet to be agreed in terms of trade, travel and regulatory framework as the PM Boris Johnson is determined not to extend the transition period beyond 31st December 2020.

Exhibit 5 – EU, France, Germany, Spain, Italy, UK GDP growth (Y-o-Y % change)

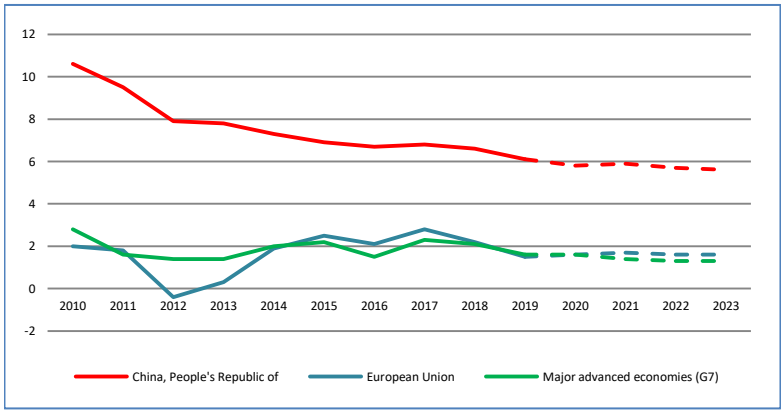


Source: OECD

DETAILS ON CHINESE ECONOMY

Chinese economy is experiencing a clear deceleration: in 2019 the GDP growth approached 6.2%, the slowest path in more than 25 years. Trade war, a slowing domestic demand and a less effective monetary policy by the PBOC cooled down the second world biggest economy with consequences particularly relevant for EU. The growing path remains in any case firmly stronger than EU and G-7 but many analysts are cutting their GDP forecasts amid Coronavirus emergency (IMF sees a lower China's growth to 5.6% and a 0.1% cut on World GDP this year).

Exhibit 6 – Chinese, EU, G-7 GDP growth (Y-o-Y % change)



Source: OECD

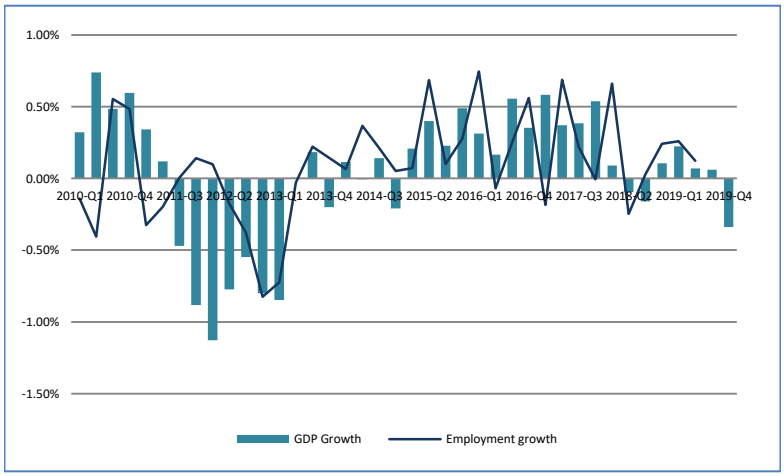
ECONOMY FACT SHEET (BEGINNING OF 2020)

ITALIAN GDP DROP ON 4Q 2019; UNEMPLOYMENT RATE STEADY

Italy's GDP shrank by 0.3% in the fourth quarter of 2019, compared to a 0.1% growth in the previous quarter and missing market expectations of a 0.1% expansion. In December 2019 the seasonally adjusted industrial production index decreased by 2.7% compared with the previous month.

Employment is expected to grow broadly in line with economic activity; over the last two quarters unemployment rate consolidated below 10%, but is still remaining the third highest after Spain and Greece. The ISTAT first estimates of YoY GDP growth for 2019 records an increase of 0.2%, a marked slowdown compared to 0.8% of 2018 and a slight increase by 0.6% in 2020.

Exhibit 7 – Italian GDP and employment growth (Q-o-Q % change)

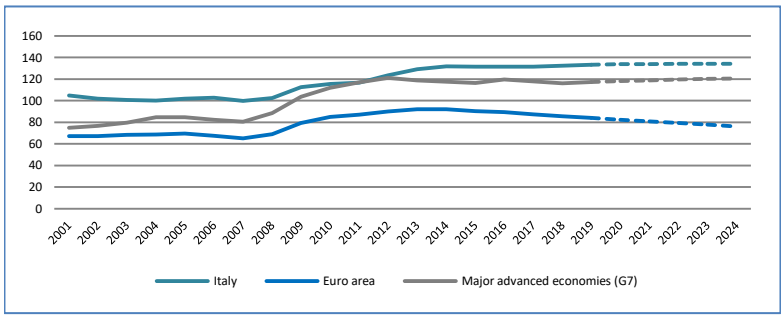


Source: OECD

GOVERNMENT DEBT TO GDP RATIO STILL VERY HIGH

At the end of 2019 the Government debt amounted to 133.2% of the country's gross domestic product. At the current level, Italian public debt to GDP ratio is the fifth largest worldwide and the fourth in terms of absolute values. The public debt-to-GDP ratio is seen to keep growing topping 134% over the next two years mainly due to the forecasted weak national GDP growth, and then to stabilise. The debt burden poses serious constraints on Government public spending and on the implementation of expansionary fiscal reforms in Italy.

Exhibit 8 – Public debt as % of GDP



Source: IMF

COMMERCIAL RELATIONSHIPS WITH CHINA

PRELIMINARY REMARKS

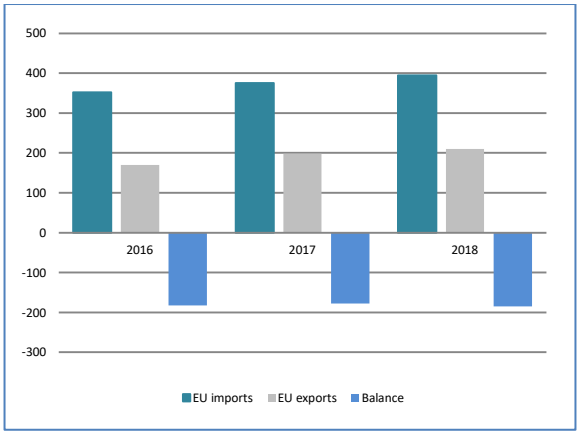
The EU is China's largest trading partner and China is the EU's second largest trade partner after the United States. The EU trade deficit with China in 2018 sums up to €185 bn.

The average volume of China and Europe trade stands over €1 billion a day in 2019 with EU's main imports from China consisting of industrial and consumer goods, machinery and equipment, footwear and clothing. On flip coin, the EU main exports to China are machinery and equipment, motor vehicles, aircraft, and chemicals. Trading of manufactured goods accounted for more than 80% of the EU export to China while trading in primary goods such as food and raw materials is experiencing a smoothed impact over the last ten years. It emerges a significant dependence of the EU members on Chinese technology items like telecommunications and computers.

Germany is by far the largest European exporter to China with almost €93.7 bn. in 2018, followed by UK, France and Italy. The contraction of the demand from China is expected to weigh on these economies already characterised by low internal growth.

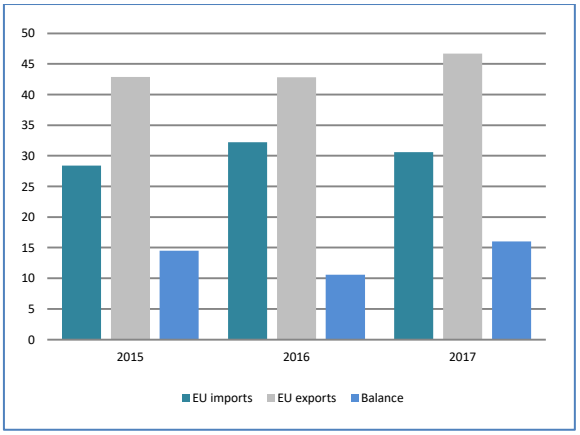
In December 2019 Chinese foreign affairs minister Wang Yi called for the launch of free trade talks with the EU. The efforts are focused on a new regulation agenda that encompasses reciprocity, improving market access opportunities and a fair competition across all areas of co-operation, a quite different approach from that applied by US.

Exhibit 9 – Trade in goods 2016-2018, € billions



Source: European Commission

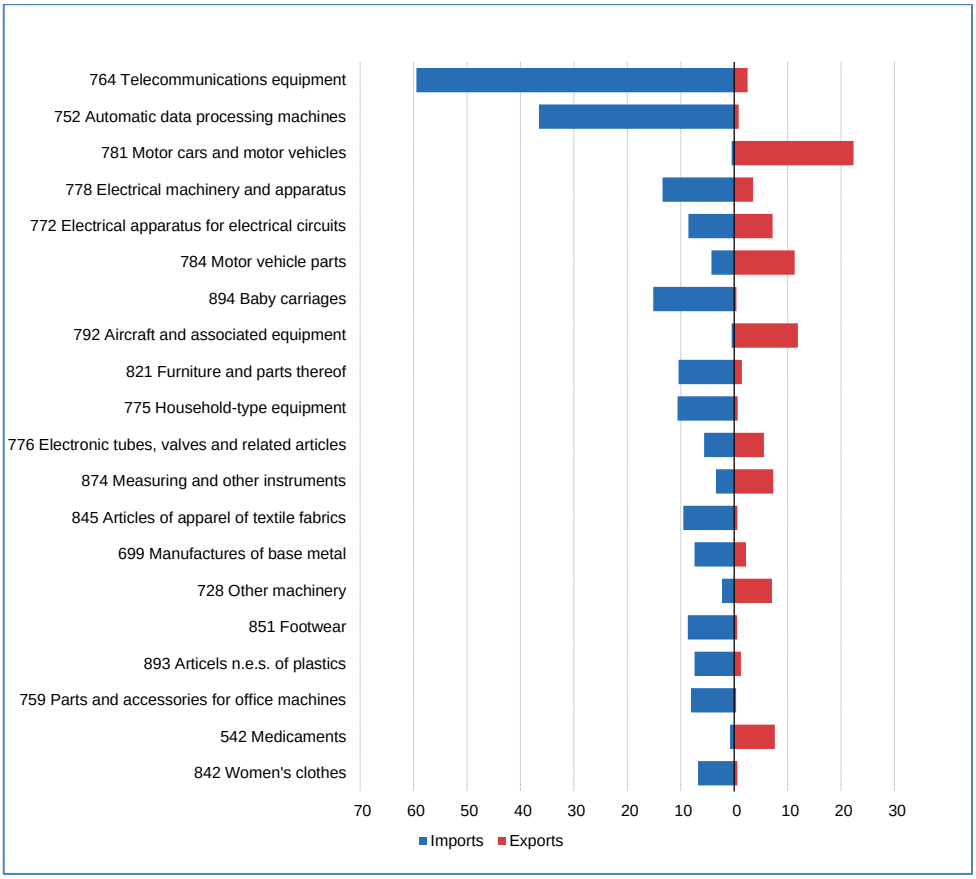
Exhibit 10 – Trade in services 2015-2017, € billions



Source: European Commission

COMMERCIAL RELATIONSHIPS WITH CHINA

Exhibit 11 – Most traded goods between EU-28 and China (€ billions)



Source: Eurostat

Exhibit 12 – Top ten EU Member States exporter to China

Country	EUR million	% of China in extra-EU-28 exports
Germany	93,715	17.3
United Kingdom	23,365	10.7
France	20,850	10.3
Italy	13,169	6.5
Netherlands	11,123	7.1
Belgium	6,989	6.5
Sweden	6,556	11.5
Spain	6,275	6.4
Ireland	4,612	6.6
Austria	4,260	9.5

Source: Eurostat

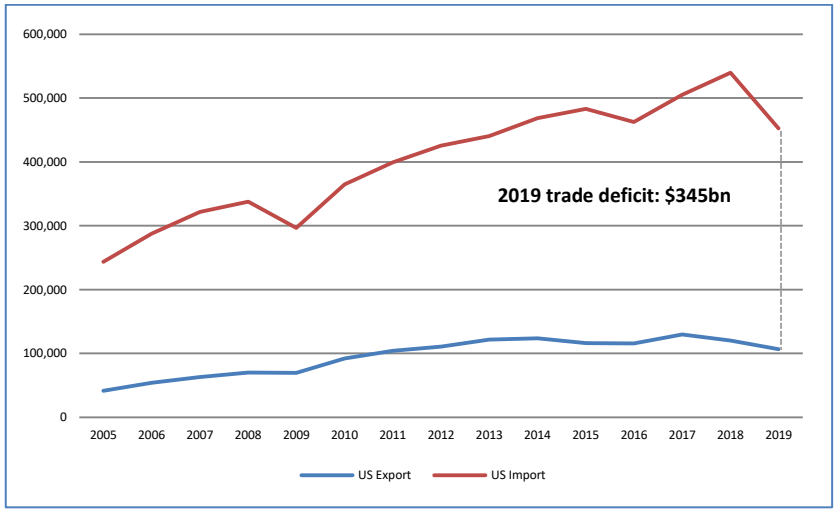
RECENT FACTS

On 15th January 2020 US President Trump and Chinese Vice Premier Liu He signed a "phase one" trade deal agreement, a significant turning point in the relationship between the world's two largest economies. The deal underpins a solid base in future discussions among the two countries and seems to pose an end to an 18-month period of severe trade war characterised by trade tariffs and retaliations.

Trade relationship between USA and China has experienced a constant growth in US trade deficit over the last 30 years. China competitive pricing and an exchange rate partially pegged to the US dollar have boasted exports over the years, making China one of the biggest exporters in the world. A key point of Trump's political agenda was reducing the trade deficit with China and in this view the imposition of tariffs on $250bn Chinese imported goods, steel and aluminium during summer 2018 marked the beginning of a severe trade war escalation. The Chinese products mostly affected were telecommunications equipment, semiconductors, machinery and automotive components.

The partial trade deal signed in January 2020 targeted some critical points for Trump administration like USA intellectual property and the increase of agricultural products purchased by China; most of the hundreds of billions of dollars in tariffs remain in place but the agreement is expected to mark a new phase of cooperation between the two countries. Negotiations are still on going and a conclusive deal is expected to be reached and signed by November 2020, before the American elections.

Exhibit 13 – US trade deficit with China



Source: U.S. Census Bureau

FOCUS ON ITALY

According to Eurostat data, in 2018 Italy stood as China's fourth supplier among European countries, with exports for €13.2 billion (-2.4% YoY); a significant drop was recorded in the automotive sector while the export of machineries and apparel remains the most significant item in terms of absolute value (€ 3.85 billion in 2018).

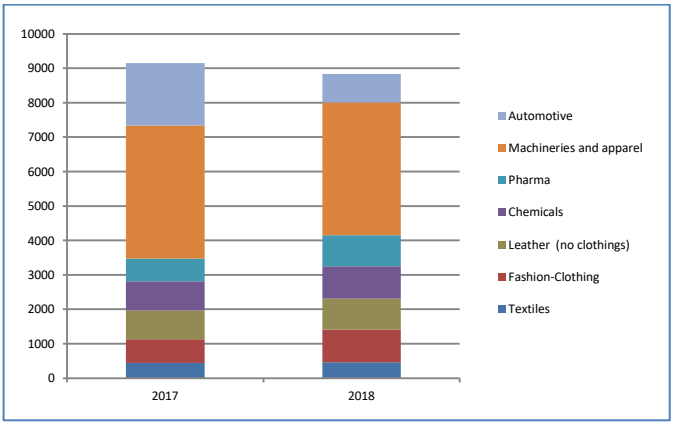
The strong relationship with the "dragon economy" was reaffirmed also by the import data with Italy that recorded a +8.1% (€30.7 billion in 2018), ranking fourth among European customers in China. The most imported goods were raw materials and electrical equipment (+ €1.2 billion).

COMMERCIAL RELATIONSHIPS WITH CHINA

In recent years Italy and China have been focusing the trade agenda on specific sectors like green technologies, agri-food, sustainable urbanisation, health services and aerospace as identified complementary industries where the inter-connection among the two countries could result in higher efficiencies.

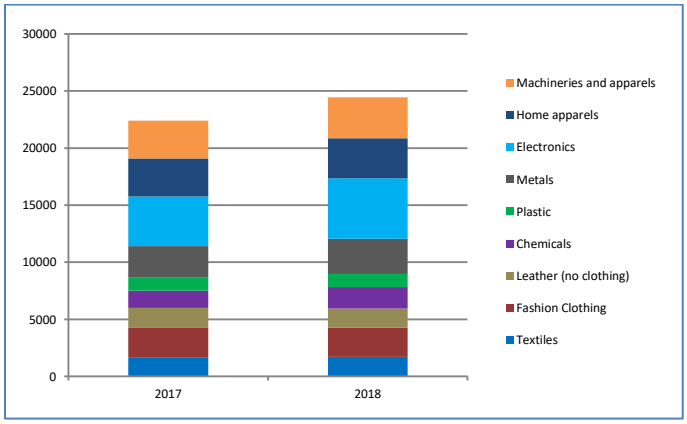
The establishment of the Italy / China Business Forum (sealed in June 2014 and reaffirmed in early 2016) reinforces the relationship between the two countries committing work on mutual exchange of information, knowledge, industrial proposals and investments, including strategic partnerships also on third markets. The last plenary meeting of the Italy / China Business Forum took place in Rome on 22nd March 2019 on the occasion of the visit of the Chinese President Xi Jinping.

Exhibit 14 – Main products exported to China (MLN €)



Source: Ministry of Foreign Affairs

Exhibit 15 – Main products imported from China (MLN €)



Source: Ministry of Foreign Affairs

In addition, the table below shows the Italy-China trade interchange in a higher degree of granularity, evidencing the last available data in terms of imports and exports of the top 5 micro-sectors (or economic activities):

Exhibit 16 – Import & Export share with China (data as of January – October 2019)

Economic activity	% of import from China
Games and toys	45.4
Lighting equipment	40.0
Other manufacturing products	38.6
Textiles	35.1
Other porcelain and ceramic products	30.6

Economic activity	% of export to China
Metal forming machines and other machine tools	6.6
Other special purpose machines	6.2
Textiles	5.2
Other chemicals	5.0
Furnishings	4.8

Source: ISTAT data on the micro-sector (3 digits "ATECO")

Specific scrutiny deserves the sector of tourism as one of the pillars in terms of business interchange between Italy and China. Italy is the second most visited European country by Chinese tourists after France with almost two million tourists in 2018. After the decrease in Chinese flows to Europe experienced over the last five years, mainly as a reaction to the terrorist attacks, in 2018 Chinese touristic flow to Italy returned to grow, as confirmed by the increase of about 15%[4] in visa applications.

Most of Chinese tourists travelling abroad come from big cities considered to be first and second tiers, the top 10 being Shanghai, Beijing, Chengdu, Guangzhou, Shenzhen, Hangzhou, Nanjing, Xi'an, Tienjin and Wuhan.

[4] Source: Ministry of Foreign Affairs.

COMMERCIAL RELATIONSHIPS WITH CHINA

As regards the preferred destinations, Lazio, Veneto and Tuscany rank at the top three in terms of number of Chinese tourists with 63.5% of the total Chinese visitors in Italy. According to ENIT (National Agency of Tourism), in 2017 Chinese tourists presence in Italy increased by 12.4% with respect to 2016, with an average expense of 117 euro per night (+23.5% in comparison to 2016). The expectations for this year are not optimistic as the spread of Coronavirus is having a material impact on travels: this topic is further discussed in the following section.

EVOLUTION OF THE CRISIS

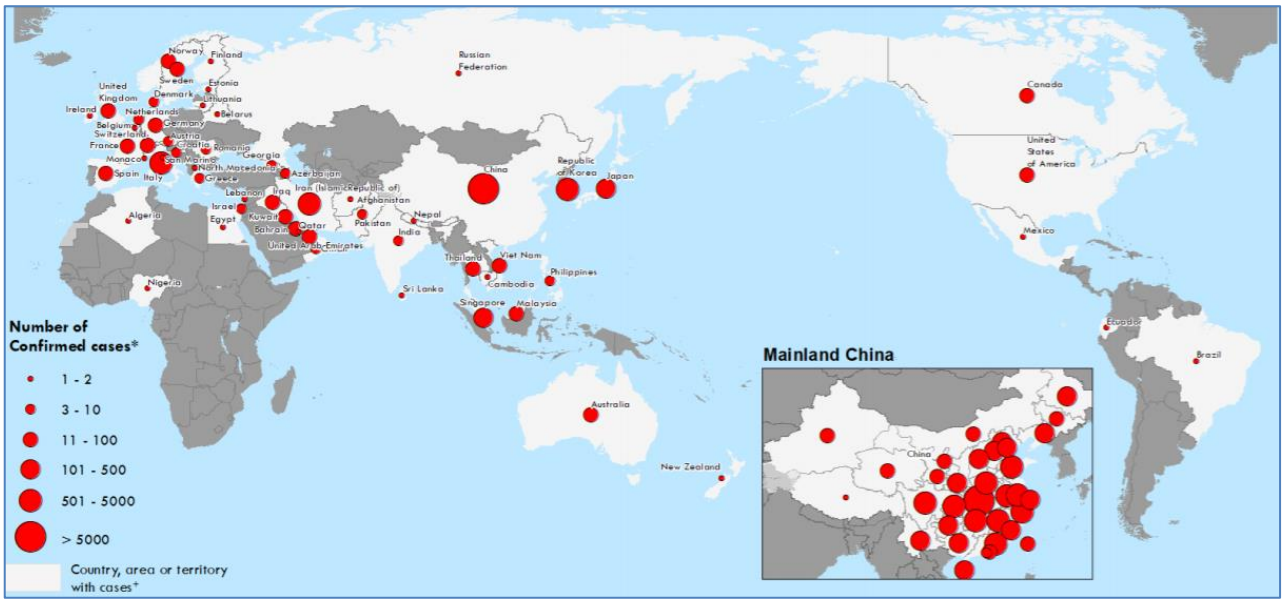
Coronaviruses are a large family of viruses found in both animals and humans. Some infect people and are known to cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

At the end of 2019 China has alerted the World Health Organization (WHO) of several flu-like cases in Wuhan, the capital of Central China's Hubei province with an 11-million population. Patients have been quarantined and health authorities have commenced to work on tracing the source of the flu.

On 7th January 2020, the virus was identified as COVID-19, a family of viruses including the common cold, SARS and MERS. After a couple of days a 61-year-old man, who had been previously admitted to hospital with suspected fever, died from the virus in Wuhan. The virus started to spread outside China, with Thailand reporting the first case of a Chinese woman, returning from a visit to Wuhan, and diagnosed with flu-like symptoms. On 21st January US confirmed its first Coronavirus case: the following day WHO officials met in Geneva to discuss the need for declaring Coronavirus as an international health emergency and decided to monitor closely all future developments. As the virus kept spreading all over the world, China implemented travel bans and cancelled Chinese New Year celebrations. Restaurant chains Starbucks and McDonald's announced the shutdown of their stores in China's Hubei province. On 26th January the World Health Organization revised its previous report on Coronavirus to "high". New cases confirmed across Europe; British Airways suspended all direct flights to and from mainland China. On 31st January WHO declared the global emergency as new cases had been detected in USA, Italy, Germany, Russia, Spain and Sweden.

According to WHO Report of 1st March, the number of confirmed cases were 87,137, with 92% of concentration in China; death toll: 2,977 fatalities[5]. The following image depicts the distribution of the illness at the beginning of March 2020.

Exhibit 17 – Distribution of COVID-19 cases as of 1st March 2020



Source: WHO

[5] These figures reported in the paper by Cerved Rating Agency refer to the public data available on the website of WHO, which is the responsible party for the contents of this information.

CORONAVIRUS IN BRIEF AND ITS EARLY EFFECTS

In Italy the situation is evolving rapidly: after an initial phase where the contagion seemed to be contained, in the recent hours the number of Coronavirus cases reported is increasing very fast. At the beginning of February only three cases of Coronavirus have been confirmed in Italy, two Chinese tourists and one Italian citizen who have been hospitalised in Rome at the Spallanzani Hospital. Moreover a group of researchers at Spallanzani have managed to successfully isolate the new virus as announced on February 2nd by the Italian Minister of Health, Roberto Speranza.

Italy has been in the front line in the fight of the emergency but, despite the implementation of several safety measures (the installation of fever scanners at Rome Fiumicino Airport and the creation of a hot-spot in Cecchignola among the others) the overall situation worsened rapidly in the recent weeks. On Saturday 22nd February the small Italian town of Codogno (Lombardy region) was labelled by the health authorities as the epicentre of a new virus outbreak; as a consequence, an exclusion zone has been put in place, imposing quarantine to a total of 11 municipalities and more than 50,000 people in the regions of Lombardy and Veneto. Local authorities responded cancelling all the public events (including the famous Carnival of Venice and few matches of the Italian football league), closing schools and public offices for a week.

At the time of writing Italy is the third country for number of Coronavirus cases behind China and South Korea; according to the data published on Italian Ministry of Health, the total number of fatalities[6] is 34.

IMPACT OF THE VIRUS ON FINANCIAL MARKETS AND REAL ECONOMY

The uncertainty related to the virus diffusion and the related countermeasures taken by national Governments spread growth concerns and many operators start to reassess Chinese GDP growth forecasts. On Monday 3rd February Shanghai Stock Exchange market dropped about 8% (the worst day since 2015), as trading resumed after the Lunar New Year holiday; Asian markets were shaken hard by the Coronavirus fears while European indexes suffered a drawdown of almost 5% over the last days of January 2020.

After a quick recovery later on with the DAX and all the American indexes reaching new highs, volatility stormed back on Monday 24th February as the sudden surge of Coronavirus cases in Italy and South Korea fuelled market fears and triggered a safe haven assets rush with Gold rising over 2%.

In a report of 3rd February Goldman Sachs sees a potential impact of as much as 0.3% contraction to the world GDP growth rate. Among the main factors that will dent the global economy in 2020, the Bank envisages the drop in exports to China and the reduction of overseas expenses by Chinese tourists.

Meanwhile many big corporations like Amazon, Google, Apple and McDonald's reportedly closed several facilities in China and restricted employee travelling. The Coronavirus outbreak is determining particularly negative impact on commodities prices: oil, copper and natural gas prices suffered the most from the outbreak of the emergency. WTI future prices, the American benchmark, are experiencing a high pressure, declining more than 20% from its January highs amid concerns that Coronavirus epidemic will reduce demand from China.

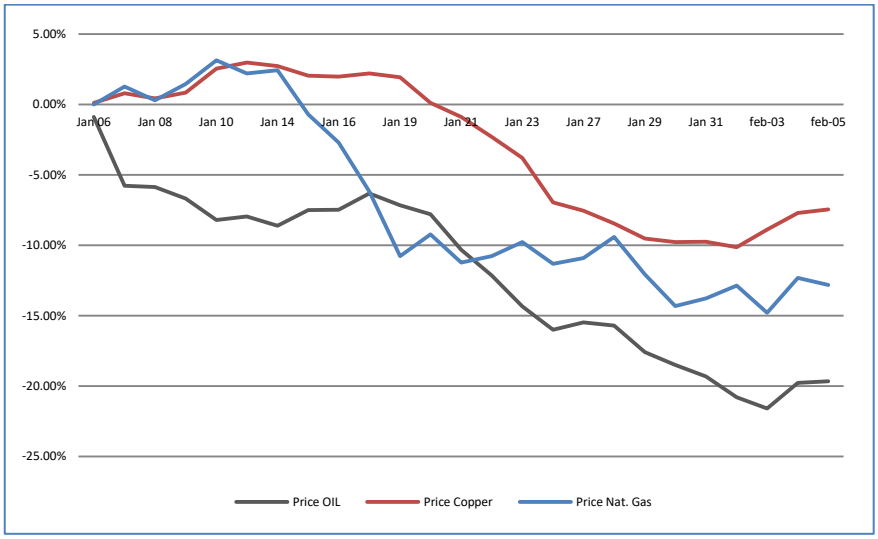
The same fear afflicts Copper quotations with Future Copper index recording 12 consecutive negative sessions with a drawdown of almost 20% in 15 days. Copper can be considered as a thermometer of the world business activity as it is used extensively in different sectors. China is the world's top consumer of copper and the disruption in China's key manufacturing regions caused by the spread of Coronavirus is likely to hit further copper price.

[6] These figures reported in the paper by Cerved Rating Agency refer to the public data available on the website of Italian Ministry of Health, which is the responsible party for the contents of this information.

CORONAVIRUS IN BRIEF AND ITS EARLY EFFECTS

Natural gas futures are down almost of 15% since the beginning of the year. This commodity, which was already experiencing some weakness amid oversupply concerns, has been hit further by Coronavirus contagion. According to Reuters Chinese biggest natural gas importer CNOOC suspended some import contracts due to expected further contraction in economic activities in China.

Exhibit 18 – Daily WTI and Copper futures prices



Source: Investing.com

As regards the real economy Cerved Rating Agency believes the Coronavirus spread will have a particularly negative impact on tourism, Fashion&Luxury, travel and car manufacturers worldwide.

The European car industry is under high pressure as the numerous non-operating factories in China are causing serious disruption within the supply chain for the reduced availability of components coming from China. FCA warned that some of its European plants might stop the production due to severe lack of components supply while the Japanese carmaker Toyota delayed the reopening of its car plant in China due to the serious uncertainty regarding the evolution of the virus.

According to travel data provider OAG worldwide airline companies have cancelled more than 25,000 flights to and within China following the collapse of ticket sales. The traditional retailers and malls will suffer too, as fears of crowded places mounts. On the other hand, some limited positive spill-over could occur in industries like telecommunication and internet services with particular focus on the e-commerce as the mobility constraints might spur on-line businesses. Pharma sector is clearly under big surveillance as many companies have already started working on potential treatments for Coronavirus. Behavioural biases are recurring more frequently as markets will probably become more and more irrational, driven by fears and uncertainty. Some healthcare and safety product makers (listed companies) from Japan, South Korea and India boasted double digit gains in stock appreciation over the last few days.

Coronavirus evolution is under big scrutiny by the Central Banks all around the world. On 2nd February PBOC announced a massive injection of liquidity for US$174 bn. into markets amid new Coronavirus outbreak as temporary cushion measure as more economic disruption is expected; most of the analysts see China GDP growth to slow to 5% this year. A more conservative view is expressed by the ECB President Christine Lagarde who warned on potential economic uncertainty but also added that the Coronavirus impact may be only a temporary phenomenon, limiting the need for ECB monetary policy action.

SCENARIOS AND IMPACTS ON ITALIAN NON-FINANCIAL COMPANIES

PREMISES AND BACKGROUND

The spread of Coronavirus might further exacerbate the difficult situation of the Italian business activity, already characterised by a poor growth environment, and pose some serious downside risks to its economy, especially due to the strong connection to Chinese economy of several sectors like machineries, tourism and luxury goods.

Some preliminary headwinds for the national economy related to the Coronavirus emergency already start to emerge; the peak of the crisis will inevitably cause a number of disruptions in the supply chain (procurement and supply of raw materials, semi-finished and finished products from China) and a drop of demand also in some industries where the Italian production contribute to the value chain (for example, Italian manufactured auto parts for German automotive companies that export to China).

The touristic sector is already showing signs of economic contraction: according to Federalberghi (the main Italian hospitality association) travel bans and constraints related to Coronavirus already caused a net loss in terms of Chinese tourist presences of almost half million with €1.6 bn. of missed revenues in 2020 for a sector that represents[7] more than 5% of the entire Italian GDP. The decision taken by the Italian Government to block flights from and to China (the one and only Country to adopt this measure) caused unpleasant reactions: the Chinese Government did not hide some concerns and irritation regarding this action, demanding for a fair management of the emergency.

Weakness is expected also for the Italian Fashion&Luxury sector where the consequences could be twofold, both in terms of missed revenues (the Chinese clientele represented almost 30% of the total purchases of Italian luxury goods in the first ten months of 2019 with a growing share of millennials) and for problems of raw material procurement for all the Italian fashion districts (textile-clothing, leather goods, goldsmiths, eyewear); strong attention deserves in particular the textile district of Prato, heavily relying on importations from China.

The full range of impacts on the Italian pharmaceutical sector is yet to be clarified: even if the demand of medicines for flu could increase also due to the high cover of the Coronavirus evolution emphasised by the mass media, there are also problems in terms of import/export to China of medical products. However, CRA expects resilience in this industry with chances of increasing business volumes and margins.

In February CRA has run an internal enquiry with a representative selection of its rated companies in several sectors aimed at better understanding the perceived impact of the Coronavirus on the company business running, including the way the companies are facing the situation: what has emerged is a general uncertainty mood and a real difficulty to perform a reliable quantitative assessment of the problem. Even if not directly affected, many operators fear a waterfall effect and indirect consequences on their businesses and are going to prudentially reassess their business plans.

ASSUMPTIONS

General aspects

For simulation purposes, according to the premises mentioned before, Cerved Rating Agency has set a number of hypotheses aimed at defining the risk drivers considered in its rating models, in order to analyse the potential impact of the disease on the Italian non-financial companies.

[7] Source Bank of Italy: "*Turismo in Italia – Numeri e potenziale di sviluppo*", Bank of Italy, December 2018.

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The starting point of the analysis is the assumption of a general decrease in companies' Revenues. The situation of uncertainty that characterise the entire country in this moment is leading to a contraction of the business activities in many sectors. The magnitude of the reduction of demand is expected to be heterogeneous depending on the industry considered: in most of the sectors it is expected a severe contraction of sales with particular emphasis on cyclical industries while the pharmaceutical sector is expected to experience a sort of positive shock in demand.

The second investigated aspect is the impact that a slowdown of the economy caused by the virus will have on the cash conversion cycle of the companies margins.

The economic rationale is based on the assumption that a decrease in business volume and consequently in revenues will have a sensible influence on operating returns. At this point Cerved Rating Agency has clustered the expected behaviour of the corporates based on the operating leverage and the impact of fixed costs: high leveraged companies that face relevant fixed costs are more exposed to the business risk measured through the volatility of cash flows. During periods of economic turmoil the volatility of cash flows tends to increase significantly; in this context companies that show particular flexibility in terms of operational leverage and that are characterised by low fixed costs can adapt the business expenses to the current cycle; the resilience to stressed economic conditions is a key factor in limiting the variance of margins and profitability.

By contrast, highly leveraged companies can perform particularly well during expansion cycles of the economy. This kind of companies exploit the benefit of the economies of scale, gearing up PP&E[8] and workforce and in this way boosting margins supported by increasing demand. When the economy reaches its peak and starts to cool down the overall demand decreases and high leveraged companies face higher downturn risk as reduced cash inflows lead to unfavourable consequences in terms of margins and profitability.

A third consideration regards the payment performance and the cash conversion cycle of the companies. A material deterioration of the payment performance of the customer portfolio has severe consequences on the company operating cash flow generation. Uncertain collection timing, disruption over the supply chain and change in the consumer demand are some of the most important factors that play a major role in assessing the net working capital efficiency.

Cerved Rating Agency hypothesis is that an external shock, arguably a "Black swan" as the Coronavirus may be considered, will have a significant impact on the net working capital of the companies. More in detail, a worsening in the net working capital leads to a sudden addition of financial need or "funding gap". The consistent absorption of cash flow by the net working capital is one of the major issues that eventually lead to a default event and for this reason it requires a relentless monitoring by the management. The consequences of the funding gap are clear: a company that faces a worsening in net working capital will need to fund it using external sources, hence it is plausible that a number of companies will increase their short term bank liabilities to fill the funding gap but adding up debt in their financial structure. CRA refers to this aspect assuming a general increase in the financial leverage as a consequence of the rise of short term financial debt.

As mentioned above the effects from an external shock caused by Coronavirus will be heterogeneous, depending on the size of the company and the industry in which it operates. Such differentiating factors have also been taken in consideration in this study.

[8] Property Plants & Equipment.

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The change in the revenues, margins and financial structure of the companies has been assessed by examining some of the most important financial ratios. Again, a decrease of the revenues and the operational leverage will have an impact on the operating margins of the company: ratios like EBITDA margin and EBIT interest coverage have been studied to infer the magnitude of the external shock.

Cerved Rating Agency also expects to see material changes in terms of financial structure as the companies will add more debt (mainly short term) to fund their day-by-day operations; hence the attention is set also on the evolution of the debt ratio (Net Financial Debt / Equity).

Eventually, the study estimates how the change of these key ratios will have a material impact on credit ratings and related average PDs.

Details of assumptions by sector

In synthesis, the following table summarises for each of the three main assumptions an estimation of the portion of affected companies in the simulation portfolio:

Exhibit 19 – Main assumptions, magnitude and percentage of affected companies

Impacted item	Magnitude of the impact	Percentage of companies
Revenues (reduction of demand)	High	89.8%
	Medium	9.2%
	Low	1.0%
Operating leverage (company's fixed costs as percentage of total costs)	High	63.9%
	Medium	30.9%
	Low	5.2%
Financial leverage (increase in short term financial debt)	High	59.4%
	Medium	39.6%
	Low	1.0%

According to the sector clustering applied by CRA the assumptions in terms of revenues, operating leverage and net working capital vary with the industry considered. Cerved Rating Agency is expecting that a general deterioration of the economic dynamics following the spread of Coronavirus will affect economic performance, financial structure and payment performance across all the sectors, in particular with reference to the most relevant ones described hereinafter.

Manufacturing (except textile and pharmaceutics): characterised by high operational leverage, a drop in revenues will result in the contraction of the demand with significant impact on margins arising from capital intensive structure generating high fixed costs. Disruption over the supply chain and sluggish payments will contribute to a deterioration in the net working capital which will have to be additionally funded by external finance sources, namely short term bank facilities and bank overdrafts. Companies operating in the automotive sector, machineries and electronic components are included in this category: CRA expects difficulties in procurement of Chinese raw materials, drop in the export to China and indirect negative effects for the biggest European industry players.

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Textile: depreciation of plants, machineries and equipment together with salaries have a significant relevance in the cost structure of the companies operating in this sector. CRA has differentiated this group from the manufacturing set for the importance of the fashion-clothing industry for Italian export. On the other hand, CRA expects sensible supply difficulties for all the Italian fashion districts (textile-clothing, leather goods, goldsmiths, eyewear) and in particular for the textile district of Prato, heavily relying on raw materials and semi-finished products imported from China. For this reason CRA considers a bigger contraction of revenues and a more severe decrease of operating margins as the high fixed costs weigh in. The cash conversion cycle for these companies is seen to weaken further given the already fragile environment of the industry where payment delays and bad debts are not uncommon.

Pharmaceutics industries: high expenses for R&D[9] and fairly high margins characterise the business model of these players. Producers and exporters could face difficulties in procurement and distribution of raw materials and semi-finished and finished products traded with China. Nonetheless, a general increase in the demand of medical remedies as well as the possibility to realise an effective vaccine for the Coronavirus could result in important returns for these companies.

Electricity, gas, steam and air conditioning supply: this sample is strongly affected by commodity risk. As already shown commodities have been hit hard by the spread of Coronavirus and low commodities price environment affects revenues and margins. Additionally, the sector will experience a lower consumption of energy components due to a general slowdown of the domestic economy.

Water supply, sewerage, waste management and remediation activities: considered as a non-cyclical, defensive sector, utilities are expected to show some resilience to the emergency, at least in the soft scenario. For this reason, the decrease in revenues has been smoothed.

Construction: highly cyclical sector. The emergency of Coronavirus could further weaken a sector already characterised by stagnating growth and high financial leverage. A contraction of sales is expected and the high level of fixed costs will penalise even more the operating margins.

Wholesale and retail trade (except pharmaceutics): the key factor for this group is consumer spending. Immediately after the virus appearance consumption has not been directly affected but both wholesale and retail sectors could, in fact, very soon experience a significant contraction in demand as people may tend to avoid crowded places, or more generally, to go out. Some product shortage is likely to happen in the household goods and furniture products imported from China.

Drugstores and pharmacies: as already mentioned, the pharmaceutical sector clearly assumes a big relevance when it comes to healthcare and safety matters. The Italian market structure is mainly represented by family owned retailer pharmacies, wholesalers and small laboratories. In this context, it is fair to hypothesise that small retailers could actually experience slightly increasing revenues following the rising of concerns and fears for viruses and diseases.

Transporting and storage: heterogeneous group where big players and small individual businesses coexist. Companies that have important routes to China are obviously more exposed as the travel bans to and from China are already causing some disruption. In general lower business activity directly affects transportation and logistics businesses; nonetheless, the big drop in commodity prices translates into more affordable fuel and gas that could partially mitigate the aforementioned negative effects.

[9] Research and Development.

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Accommodation and food service activities: strongly related to tourism activity, this group of companies suffer from travel bans and, more in general, a lower propensity to travel as long as the fear for potential contagion remains high. Hotels are already reporting a massive drop of Chinese guests and an overall lowering demand for accommodation solutions. A bit less severe situation is currently faced by restaurants and service activities.

Information and communication: in a context of constrained movement by people, information system and telecommunication could somehow show relative stability in business activities due to lower correlation with the virus outbreak. Based on this assumption, it has been considered a lower impact on economic and financial performance for these companies.

Tourism related supporting activities: arguably one of the most exposed sectors to Coronavirus effects. Here the magnitude of revenue contraction is emphasised as more and more companies report a significant drop of travel reservations, tour and supporting activities. This will inevitably imply highly negative consequences on the cash flow generation, financial stability and the riskiness of the companies involved.

SCENARIOS

For the sake of this study Cerved Rating Agency has considered two scenarios, varying by the severity of the impact and the probability of occurrence:

- the **soft scenario**: assumes that the global emergency will disappear in around 3-6 months with a limited impact both on the Global and the Italian economy; the probability of the event occurrence is high.
- the **hard scenario:** considers the evolution of the disease in extreme but plausible conditions, in which the global emergency is turning to pandemic crisis which is expected to be under control in not less than 6 months with a heavy and widespread impact both on the Global and the Italian economy; the probability of the event occurrence is low.

More in detail, assuming the **soft scenario**, a significant slowdown of the epidemic evolution over the next three to six months is expected. The results from the strict measures put in place by several Governments under the coordination of the WHO will be seen in the very next weeks; so far the contagion has remained concentrated in China with few cases in Europe, Oceania and USA and one case reported in Africa (in Egypt). WHO keeps monitoring the situation with daily updates and has launched the Strategic Preparedness and Response Plan (SPRP) including the implementation of priority public health measures.

The objectives of the Plan[10] are to:

- limit human-to-human transmission of the virus, particularly in countries most vulnerable if they were to face an outbreak;
- identify, isolate and cure patients promptly; communicate critical risk and event information; minimise social and economic impact;
- reduce virus spread from animal sources;
- address crucial unknowns.

Under this scenario the economic consequences are supposed to be moderate and smoothed for the Italian companies. Cerved Rating Agency assumes a main impact in terms of revenues and margins with limited change in the financial structure.

[10] This information is available at the WHO (World Health Organisation) website.

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Alternatively, under the **hard scenario**, Cerved Rating Agency expects that the countermeasures put in place will not impede the pandemic expansion of the disease (i.e. that the number of contagions will raise exponentially) and that the crisis will last more than 6 months with severe consequences worldwide in the economic, political and social fields. Many aspects of life will see significant changes; episodes of mass hysteria will be mixed up to irrational consumer behaviour. In the long term, due to extremely reduced production, a lack of the primary goods might occur, especially in the poor countries, generating additional panic among citizens. In this situation a complete isolation of states and the freeze of open borders treaties could materialise, as single Governments will exacerbate the countermeasures for safety reasons, neglecting, although temporarily, economic and political relationships.

A massive slowdown of the economic growth with the risk of global recession will further weaken the Italian economy. Big contraction of export and industrial production are likely to cause a severe GDP drop and an increase of the debt servicing costs. Sectors with significant exposure to international trade will be the first to suffer but in the end the entire economy will be seriously damaged. Sales contraction will be material. Companies with high operational leverage will report decreasing margins and negative funds from operations as the payment performance deterioration negatively impacts the cash conversion cycle. As a consequence, more and more companies are seen to issue new debt with sensible weakening of their financial structure. At this point central banks will likely step-in to restore confidence on the markets and to keep low level of interest rates.

Both scenarios are based upon a set of systemic and idiosyncratic assumptions. The systemic assumptions have been applied to all the companies of the portfolio having a direct impact on the key rating drivers (i.e. financial situation, payments, trend), with different magnitudes depending on the scenario; the idiosyncratic assumption instead is sector specific.

EVOLUTION OF KEY-FINANCIAL RATIOS

Soft scenario

For simulation purposes, Cerved Rating Agency has adopted the following scenarios on the main risk drivers built in the CRA' rating model:

Exhibit 20 – Soft scenario simulative hypotheses

Simulation hypotheses	Hypothesis type	Magnitude
Payments	Systemic	Low
Trend	Systemic	Low
Financial situation	Idiosyncratic	Low / Medium
Revenues	*Idiosyncratic*	*Low*
Cost of production	*Idiosyncratic*	*Low*
Short term financial debt	*Idiosyncratic*	*Medium*
Cash conversion cycle	*Idiosyncratic*	*Medium*

CRA has assessed the impact of the soft scenario for the main economic sectors included in the considered portfolio, forecasting the expected average values of some key financial ratios as follows:

Exhibit 21 – EBITDA margin average values by sector (current versus soft scenario)

Sector	Current EBITDA margin	Soft scenario EBITDA margin
Manufacturing (except textile and pharmaceutics)	7.2%	5.3%
Manufacturing – Textile	7.0%	4.7%
Manufacturing – Pharmaceutics industries	12.4%	13.2%
Electricity, gas, steam and air conditioning supply	13.0%	11.6%
Water supply; sewerage; waste management and remediation activities	9.6%	8.7%
Construction	7.0%	5.1%
Wholesale and retail trade (except pharmaceutics)	3.6%	1.7%
Wholesale and retail trade – Drugstores and pharmacies	6.1%	7.0%
Transporting and storage	7.1%	5.3%
Accommodation and food service activities	11.5%	8.9%
Information and communication	8.0%	7.9%
Professional, scientific and technical activities	7.7%	7.3%
Tourism related supporting activities	3.2%	0.2%
Total of the sectors	**6.1%**	**4.2%**

The average values of the **EBITDA margins** at individual level reflect the overall decrease in the operating margins due to reduced business volumes. It is worth to note that the most relevant decrease regards the textile industry and tourism, whose levels of margins may drop significantly even in case of soft scenario respectively from 7.0% to 4.7% and from 3.2% to 0.2%.

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Less exposed sectors like *"Information and communication"* or "*Professional, scientific and technical activities*" are expected to show more robust behaviour in terms of margins, as not particularly affected in this scenario.

Finally, it is even expected a margin increase for pharma industry due to the higher demand generating additional revenues, whilst the increase in EBITDA margin for drugstores and pharmacies would reach 7.0% from current 6.1%.

Exhibit 22 – Net Financial Debt / Equity average values by sector (current versus soft scenario)

Sector	Current NFD / Equity	Soft scenario NFD / Equity
Manufacturing (except textile and pharmaceutics)	0.75	0.91
Manufacturing – Textile	0.69	1.06
Manufacturing – Pharmaceutics industries	0.24	0.21
Electricity, gas, steam and air conditioning supply	0.20	0.30
Water supply; sewerage; waste management and remediation activities	0.65	0.70
Construction	1.02	1.56
Wholesale and retail trade (except pharmaceutics)	1.01	1.42
Wholesale and retail trade – Drugstores and pharmacies	0.68	0.63
Transporting and storage	0.57	0.75
Accommodation and food service activities	0.97	1.18
Information and communication	0.29	0.35
Professional, scientific and technical activities	0.37	0.40
Tourism related supporting activities	-0.29	0.05
Total of the sectors	**0.79**	**1.01**

In terms of debt structure, expressed by **NFD[11] / Equity** ratio, the soft scenario also presents a general increase of the debt levels for the entire portfolio, as detailed in the table above.

The average values of the NFD / Equity for all the considered sectors reflect the overall increase in the short term debt. It is worth to note the increase for "*Textile*", "*Construction*" and "*Tourism related supporting activities*" sectors, whose levels of debts may rise significantly even in case of soft scenario, respectively from 0.69 to 1.06, 1.02 to 1.56 and from -0.29 to 0.05.

Furthermore, a slight decrease of the NFD / Equity ratio is expected for pharma industry, drugstores and pharmacies due to overall improvement of their economic performance.

[11] Net Financial Debt = Financial Debt – Liquidity (cash and cash equivalents).

Exhibit 23 – EBIT interest coverage average values by sector (current versus soft scenario)

Sector	Current EBIT interest coverage	Soft scenario EBIT interest coverage
Manufacturing (except textile and pharmaceutics)	4.69	3.04
Manufacturing – Textile	4.10	2.26
Manufacturing – Pharmaceutics industries	10.64	11.26
Electricity, gas, steam and air conditioning supply	3.44	2.43
Water supply; sewerage; waste management and remediation activities	4.46	4.42
Construction	2.15	1.51
Wholesale and retail trade (except pharmaceutics)	4.19	1.88
Wholesale and retail trade – Drugstores and pharmacies	7.17	7.62
Transporting and storage	5.39	3.12
Accommodation and food service activities	2.06	1.22
Information and communication	3.55	3.54
Professional, scientific and technical activities	5.76	5.73
Tourism related supporting activities	3.89	0.01
Total of the sectors	**4.12**	**2.51**

Due to a general decrease of margin levels and increase of interests, the ratio **EBIT interest coverage** generally shows companies' minor capacity to guarantee regular debt service, as detailed in the exhibit above. It may be observed that the most outstanding impact regards sectors already showing lower levels of EBIT interest coverage ratio.

Hard scenario

For simulation purposes, CRA has adopted the following hypothesis for the main risk drivers:

Exhibit 24 – Hard scenario simulative hypotheses

Simulation hypotheses	Hypothesis type	Magnitude
Payments	Systemic	High
Trend	Systemic	High
Financial situation	Idiosyncratic	High
Revenues	*Idiosyncratic*	*High*
Cost of production	*Idiosyncratic*	*High*
Short term financial debt	*Idiosyncratic*	*High*
Cash conversion cycle	*Idiosyncratic*	*High*

CRA has assessed the impact of the hard scenario for the main economic sectors included in the considered portfolio, forecasting the expected average values of some key financial ratios as follows:

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Exhibit 25 – EBITDA margin average values by sector (current versus hard scenario)

Sector	Current EBITDA margin	Hard scenario EBITDA margin
Manufacturing (except textile and pharmaceutics)	7.2%	4.4%
Manufacturing – Textile	7.0%	2.3%
Manufacturing – Pharmaceutics industries	12.4%	13.6%
Electricity, gas, steam and air conditioning supply	13.0%	10.7%
Water supply; sewerage; waste management and remediation activities	9.6%	8.3%
Construction	7.0%	3.3%
Wholesale and retail trade (except pharmaceutics)	3.6%	0.7%
Wholesale and retail trade – Drugstores and pharmacies	6.1%	7.5%
Transporting and storage	7.1%	2.9%
Accommodation and food service activities	11.5%	2.1%
Information and communication	8.0%	7.2%
Professional, scientific and technical activities	7.7%	6.6%
Tourism related supporting activities	3.2%	-1.3%
Total of the sectors	**6.1%**	**3.1%**

The average values of the **EBITDA margins** for the considered sectors reflect the general significant decrease in the operating margin (except for Pharmaceutics) due to highly depressed business volumes in this scenario. The most relevant decrease is related to textile industry and tourism, whose levels of margins may drop intensely, respectively from 7.0% to 2.3% and from 3.2% to -1.3%. Finally, in a context of severe crisis, it is expected that the pharma sector, regarding both production and commercial activities, will significantly outperform compared to the other clusters.

Exhibit 26 – Net Financial Debt / Equity average values by sector (current versus hard scenario)

Sector	Current NFD / Equity	Hard scenario NFD / Equity
Manufacturing (except textile and pharmaceutics)	0.75	1.79
Manufacturing – Textile	0.69	2.77
Manufacturing – Pharmaceutics industries	0.24	0.20
Electricity, gas, steam and air conditioning supply	0.20	0.69
Water supply; sewerage; waste management and remediation activities	0.65	1.05
Construction	1.02	3.07
Wholesale and retail trade (except pharmaceutics)	1.01	2.22
Wholesale and retail trade – Drugstores and pharmacies	0.68	0.60
Transporting and storage	0.57	1.87
Accommodation and food service activities	0.97	1.56
Information and communication	0.29	0.62
Professional, scientific and technical activities	0.37	0.52
Tourism related supporting activities	-0.29	1.66
Total of the sectors	**0.79**	**1.86**

In terms of debt structure, expressed by **NFD / Equity** ratio, the hard scenario also presents a massive increase of the debt levels for almost the entire portfolio (except Pharmaceutics), as detailed in the table above.

The downturn of the economy will push companies to arise a significant amount of debt, leveraging up the financial structure. As in the soft scenario the increase is amplified for the "*Textile*", "*Construction*" and "*Tourism related supporting activities*" sectors, whose ratio values will reach respectively 2.77, 3.07 and 1.66.

Pharmaceutical companies will continue to perform in counter tendency compared with all other clusters.

Exhibit 27 – EBIT interest coverage average values by sector (current versus hard scenario)

Sector	Current EBIT interest coverage	Hard scenario EBIT interest coverage
Manufacturing (except textile and pharmaceutics)	4.69	2.30
Manufacturing – Textile	4.10	0.51
Manufacturing – Pharmaceutics industries	10.64	11.77
Electricity, gas, steam and air conditioning supply	3.44	2.03
Water supply; sewerage; waste management and remediation activities	4.46	4.40
Construction	2.15	1.03
Wholesale and retail trade (except pharmaceutics)	4.19	1.09
Wholesale and retail trade – Drugstores and pharmacies	7.17	7.85
Transporting and storage	5.39	0.88
Accommodation and food service activities	2.06	-2.41
Information and communication	3.55	2.52
Professional, scientific and technical activities	5.76	4.78
Tourism related supporting activities	3.89	-1.71
Total of the sectors	**4.12**	**1.64**

Again, with the exception of pharmaceutical sectors, all the other industries will show a considerable decrease of EBIT / Interest coverage ratio. In some cases the EBIT turns negative, affecting profitability and posing further risk to the possibility to perform a sound business continuity and, consequently, weakening companies' debt service capacity.

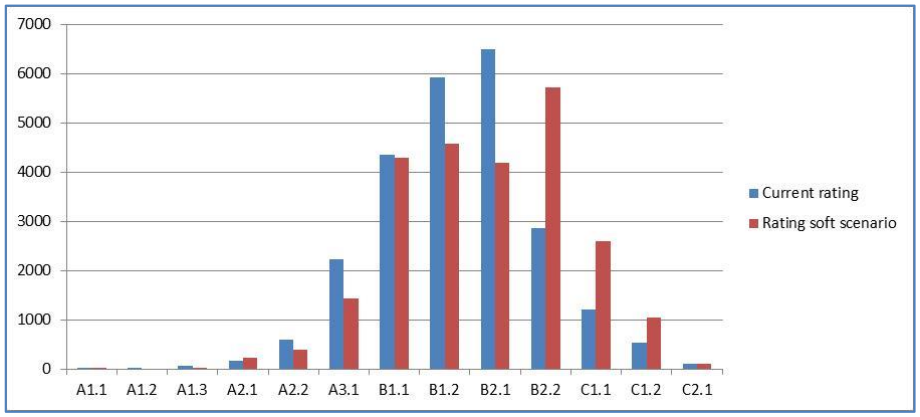
IMPACTS ON RATINGS

The simulation of the impact of the scenarios on the Cerved Rating Agency's ratings has been performed using the observed portfolio consisting of 24,592 entities having an outstanding public rating issued by CRA. The sample is sufficiently representative of the Italian non-financial companies in terms of sectors, geographical distribution, size, legal form, economic trends and financial structure as well. The magnitude of the rating migrations is naturally dependent on the applied scenario and yields to different behaviours for different sectors according to their clustering within the portfolio.

Soft scenario

The soft scenario brings to a slight worsening of the rating distribution due to the factors explained in the previous paragraphs. The exhibit below shows the impact of the soft scenario on the considered rating portfolio:

Exhibit 28 – Rating distributions (current versus soft scenario)



The application of the scenario implies a general rise of the portfolio riskiness. More in detail, the shift in the distribution yields to a global increase in the worse rating classes, with a passage of more than 9% of ratings from investment to speculative grade. Also the number of the best rated companies, which are still able to preserve their original creditworthiness, will decrease, i.e. 8.4% of the counterparties would remain in the "Safety" area.

The exhibit below shows the breakdown of analysed portfolio ante and post crisis assuming soft scenario hypothesis:

Exhibit 29 – Risk area distributions (current versus soft scenario)

Risk area	Current distribution	Soft scenario distribution	Change
Safety	12.57%	8.37%	-4.20%
Solvency	41.81%	36.13%	-5.69%
Vulnerability	38.09%	40.34%	+2.25%
Risk	7.53%	15.16%	+7.63%

Cerved Rating Agency has also quantified the impact of the disease in terms of probability of default[12], inferring the expected default rates for the portfolio in case of occurrence of the soft scenario.

[12] The average default probability is calculated as mean value of the average PD assigned to each rating class.

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Exhibit 30 – PD distributions by sector (current versus soft scenario)

Sector	Current average PD	Soft scenario average PD
Manufacturing (except textile and pharmaceutics)	3.9%	5.7%
Manufacturing – Textile	4.0%	6.1%
Manufacturing – Pharmaceutics industries	3.8%	2.7%
Electricity, gas, steam and air conditioning supply	5.3%	6.0%
Water supply; sewerage; waste management and remediation activities	4.7%	8.7%
Construction	8.1%	10.6%
Wholesale and retail trade (except pharmaceutics)	4.2%	5.8%
Wholesale and retail trade – Drugstores and pharmacies	4.3%	4.0%
Transporting and storage	4.8%	7.3%
Accommodation and food service activities	7.4%	8.8%
Information and communication	5.2%	4.5%
Professional, scientific and technical activities	5.3%	7.7%
Tourism related supporting activities	5.3%	7.9%
Average value of the simulation portfolio	**4.9%**	**6.8%**

The realisation of the soft scenario would imply a slight increase in the probabilities of default and the overall expected riskiness. This effect would be particularly visible for more exposed sectors as for instance "*Tourism related supporting activities"*, for which the average estimated default probability would rise up to 7.9%.

Typically risky sectors as for instance "*Constructions*" would also be affected by the global emergency, evidencing an increase in the average PD up to almost 11%.

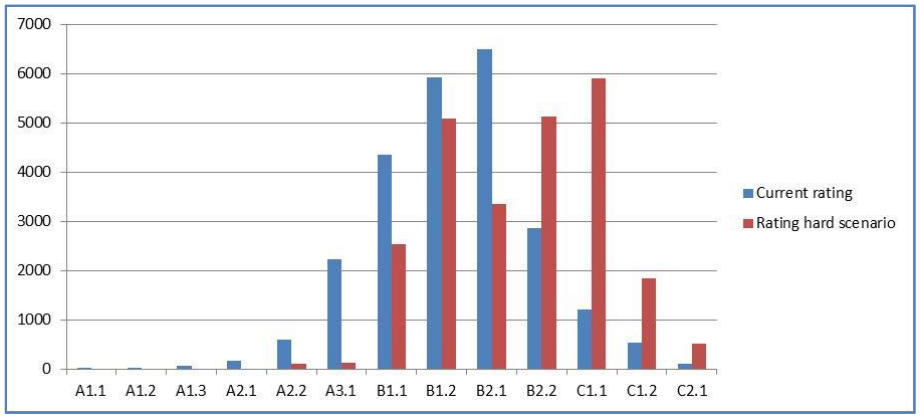
As regards the legal form of Italian operating companies it is expected that, due to their weaker financial structure and minor resilience to unpredictable external shocks, "*Sole proprietorships and unlimited partnerships*" companies will, present a particularly marked increase in their expected riskiness, i.e. in terms of PD registering 6.2% ante and 9.1% post crisis.

In this scenario a more stable behaviour for a relatively safer sectors is expected, which would also decrease their current level of riskiness. Pharma-related activities, whose empirical default rates are very low, would preserve or even reduce their levels of PD, respectively to 2.7% and 4.0%.

Hard scenario

The hard scenario sees a heavily worsening of the rating distributions. The following exhibit shows the impact of the hard scenario on the considered rating portfolio:

Exhibit 31 – Rating distributions (current versus hard scenario)



The application of the scenario implies a significant increase of the overall portfolio riskiness, due to the migration of a relevant number of rated entities towards lower rating classes. Only a marginal part of the rated companies will still be able to preserve their original creditworthiness; Cerved Rating Agency expects that more than 20% of ratings will move from investment to speculative grade and only 1% of the counterparties will remain in the "Safety" area.

Exhibit 32 – Risk area distributions (current versus hard scenario)

Risk area	Current distribution	Hard scenario distribution	Change
Safety	12.57%	0.96%	-11.61%
Solvency	41.81%	31.01%	-10.80%
Vulnerability	38.09%	34.48%	-3.61%
Risk	7.53%	33.56%	+26.02%

SCENARIOS AND IMPACTS ON ITALIAN NON-FINANCIAL COMPANIES

The exhibit below shows the impact of the hard scenario in terms of probability of default:

Exhibit 33 – PD distributions by sector (current versus hard scenario)

Sector	Current average PD	Hard scenario average PD
Manufacturing (except textile and pharmaceutics)	3.9%	8.6%
Manufacturing – Textile	4.0%	8.4%
Manufacturing – Pharmaceutics industries	3.8%	7.5%
Electricity, gas, steam and air conditioning supply	5.3%	11.0%
Water supply; sewerage; waste management and remediation activities	4.7%	13.8%
Construction	8.1%	15.4%
Wholesale and retail trade (except pharmaceutics)	4.2%	8.9%
Wholesale and retail trade – Drugstores and pharmacies	4.3%	11.0%
Transporting and storage	4.8%	11.2%
Accommodation and food service activities	7.4%	13.4%
Information and communication	5.2%	12.9%
Professional, scientific and technical activities	5.3%	12.0%
Tourism related supporting activities	5.3%	11.7%
Average value of the simulation portfolio	**4.9%**	**10.4%**

The hypothetical hard scenario implies a heavy increase in the probabilities of default, hence the significant increase of the overall expected risk level. This effect would be particularly visible for more risky sectors as for instance "*Accommodation and food service activities*", for which the average estimated default probability would rise up to more than 13%.

Other risky sectors as for instance *"Tourism related supporting activities"* would also be affected by the pandemic crisis, evidencing an increase in the average PD up to almost 12%.

As regards legal forms, for the reasons explained before, the "*Sole proprietorships and unlimited partnerships companies*" would more than double their expected riskiness, their PD rising up to almost 13% on average.

In the hard scenario the expansion of the virus would directly or indirectly have an impact on the economy as a whole, with bigger magnitude on the most exposed sectors, as for instance all the manufacturing segments for which the price of the production would be heavily affected in medium-long term.

ANNEX

CERVED RATING AGENCY RATING SCALE

The rating of Cerved Rating Agency is expressed on an alphanumeric scale of 13 degrees, sorted by 4 macro areas (safety, solvency, vulnerability and risk). The rating classes denomination allows to clearly identify risk homogeneous macro areas.

Exhibit 34 – Cerved Rating Agency rating scale for Corporate non-financial corporates

Area	Class	Description
Safety	A1.1	Large company, with excellent business and financial risk profile. Extremely strong capacity to meet financial commitments. Minimal credit risk.
	A1.2	Large / medium-sized company, with excellent business and financial risk profile. Very strong capacity to meet financial commitments. Very low credit risk.
	A1.3	Very good business and financial risk profile. Very good capacity to meet financial commitments. Very low credit risk.
	A2.1	Very good fundamentals and high capacity to meet financial commitments. Low credit risk.
	A2.2	Very good fundamentals and good capacity to meet financial commitments. Low credit risk.
	A3.1	Good fundamentals and good capacity to meet financial commitments. Low credit risk.
Solvency	B1.1	Adequate capacity to meet financial commitments. Potentially vulnerable to serious and unexpected changes in business, financial and economic conditions. Moderate credit risk.
	B1.2	Adequate capacity to meet financial commitments. Vulnerable to serious and unexpected changes in business, financial and economic conditions. Moderate credit risk.
Vulnerability	B2.1	Overall good fundamentals. Vulnerable to unexpected changes in business, financial and economic conditions. Credit risk is below average.
	B2.2	Evidence of weaknesses in business and / or financial profile. Vulnerable to changes in business, financial and economic conditions. Credit risk is substantial but not far from the average.
Risk	C1.1	Serious weaknesses in business and / or financial profile. The company could not meet financial commitments. High credit risk.
	C1.2	Very serious weaknesses in business and / or financial profile. The company could not meet financial commitments. Very high credit risk.
	C2.1	Very serious problems in economic and / or financial profile. The company could not meet financial commitments even in the short term. Maximum credit risk.

SOURCES

- World Health Organisation reports;
- International Monetary Fund data;
- Agenzia nazionale italiana del turismo (ENIT) data;
- Reuters reports;
- CNN news;
- OAG data;
- Federalberghi reports;
- Cerved Rating Agency data;
- "*Turismo in Italia – Numeri e potenziale di sviluppo*", Bank of Italy, December 2018;
- *"Global Blue – L'andamento del Tax Free Shopping in Europa*", November 2019;
- Goldman Sachs reports;
- Il Sole 24 ore reports;
- U.S. Census Bureau;
- European Commission data;
- Infostat data;
- ISTAT database;
- OECD data;
- Eurostat data;
- Italian Minister of Foreign Affairs data and reports;
- "*Infomercati esteri*" data and reports;
- https://www.pharmaceutical-technology.com;
- Investing.com;
- www.marketwatch.com.

LIST OF EXHIBITS