CITY, UNIVERSITY OF LONDON

DOCTORAL THESIS

Essays on Supervisory Banking Activities and Financial Stability

---

Author
Marcello Forcellini

Supervisors
Prof. Barbara Casu Lukac
Prof. Angela Gallo

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

City, University of London
Bayes Business School
Faculty of Finance

October 2024

To my family

Table of Contents

List of Tables

Chapter 1

Chapter 2

List of Figures

Chapter 1

Chapter 2

Chapter 3

Appendices

List of Abbreviations

AEOI	Automatic Exchange of Information Group
Art.	Article
Arts.	Articles
AML	Anti-Money Laundering
APP	Asset Purchase Programme
AQR	Asset Quality Review
BCBS	Basel Committee on Banking Supervision
BCP/Pr.	Basel Core Principle
BIS	Bank for International Settlements
BVIs	British Vergin Islands
CAGR	Compounded Average Growth Rate
CBSM	Central Bank of the Republic of San Marino
CCS	Committee for Credit and Savings
CDD	Customer Due Diligence
CDS	Credit Default Swap
CET1	Common Equity Tier 1
CFT	Criminal Financing Terrorism
CLO	Central Liaison Office
COVID-19	Coronavirus Disease 2019
CP	Basel Core Principle for Effective Banking Supervision
CRD IV	Capital Requirements Directive
CRS	Common Reporting Standard
CRSM	Cassa di Risparmio della Repubblica di San Marino
CSC	Credit and Savings Committee
DAC	Directive on Administrative Cooperation in Taxation
DAR	Detailed Assessments Report

DD	Delegate Decree
DGCB	Director General of the Central Bank of San Marino
DL	Decree-Law
DTC	Double Taxation Convention
DTT	Double Taxation Treaty
EC	Essential Criteria
ECB	European Central Bank
EMU	Economic and Monetary Union
EoI	Exchange of Information
et seq.	and subsequent amendments thereto
EU	European Union
FATCA	Foreign Account Tax Compliance Act
FATF	Financial Action Task Force
FIA	Financial Intelligence Agency
FSAP	Financial Sector Assessment Program
FSSA	Financial System Stability Assessment
GARCH	Generalised Autoregressive Conditional Heteroskedasticity
GCCB	Governing Council of the Central Bank of San Marino
GDP	Gross Domestic Product
GSIB	Global Systemically Important Bank
IAS/IFRS	International Accounting Standards / International Financial Reporting Standards
IMF	International Monetary Fund
IRS	Internal Revenue Service
KPI	Key Performance Indicator
KYC	Know Your Customer
L	Law
LTRO	Longer-Term Refinancing Operations

MCAA	Multilateral Competent Authority Agreement
MoU	Memorandum of Understanding
NPL	Non-Performing Loan
OECD	Organization for Economic Cooperation and Development
PEP	Politically Exposed Person
PEPP	Pandemic Emergence Purchase Program
RoE	Return on Equity
ROSC	Report on the Observance of Standards and Codes
RSM	Republic of San Marino
SCCB	Supervision Committee of the Central Bank
SEPA	Single Euro Payment Area
SIFS	Systemically Important Financial Sector
SM	Republic of San Marino
SMCB	San Marino Central Bank
SREP	Supervisory Review and Evaluation Process
SSM	Single Supervisory Mechanism
Std. Dev.	Standard Deviation
TEU	Treaty on European Union
TIEA	Tax Information Exchange Agreement
UPECEDS	Office of Information Technology, Data and Statistics
WHO	World Health Organization

Acknowledgements

I am profoundly grateful to my supervisors Prof. Barbara Casu Lukac and Prof. Angela Gallo for their continuous and priceless guidance and comments throughout my PhD in Finance.

I want to thank Prof. Paolo Aversa, for his advice in starting this inspiring journey, and Prof. Gianfranco Antonio Vento, for his constant and precious support, especially in difficult times.

I am obliged to the Minister of Health - Prof. Mariella Mularoni - for her insights, the CEO of the Social Security Institute of San Marino - Francesco Bevere, MD - for having trained me to successfully manage multiple complex tasks, and the General Director of the Civil Service of San Marino - Manuel Canti, LLM - for his valuable advice.

Many thanks also go to my best friends - Carlo, Alessandro, and Sara - for not letting me forget the good things in life.

Finally, my family - Stefano, Lora, Davide, Jenny, Diana, and Eva - deserve my deepest gratitude for their endless affection and care. Thanks a lot!

See all of you in the next challenge.

Declaration

I, Marcello Forcellini, declare that the work presented in this doctoral thesis, "*Essays on Supervisory Banking Activities and Financial Stability*", is my own.

Where information has been derived from other sources, I confirm that this has been indicated in the thesis and properly cited.

London, July 16, 2024

Sincerely,

Abstract

This thesis comprises three essays on supervisory banking activities and financial stability. The first essay, Chapter 1, develops a qualitative assessment methodology to evaluate national levels of compliance with the Basel Core Principles for Effective Banking Supervision (CPs). These principles were issued by the Bank for International Settlements (BIS), in accordance with the process adopted by the International Monetary Fund (IMF), the so called "*Financial Sector Assessment Program*" (FSAP). It provides a concrete example of how the proposed assessment methodology can be implemented to any country, by applying the model to the case study of the Republic of San Marino, in comparison with a group of similar countries (British Virgin Islands, Switzerland, Hong Kong and Singapore). The methodology does not only appear to be critical in providing a detailed analysis of the quality and effectiveness of the local regulatory and supervisory regime, but it is also a useful tool for all national supervisory authorities who are considering the opportunity to adopt the FSAP. The second essay (Chapter 2) investigates how the Covid-19 pandemic affected the dividend payout policy of listed financial intermediaries on the Italian stock exchange. Utilising data from the 25 financial intermediaries listed on FTSE Mib, FTSE Mib Mid Cap, FTSE Mib Small Cap and FTSE Italia Star, the chapter shows that several listed banks and insurance firms in the sample decided to keep paying dividends, to provide the market with good signals during the outbreak. A logit multivariate regression model is performed to analyse the impact of some key metrics (regarding profitability, leverage, and liquidity) to dividend payout policy before and during the pandemic. The findings show that the capability to generate cash flow is significant for keeping increased dividend payouts, with respect to leverage and profitability. The third essay (Chapter 3) analyses the impact of the Covid-19 pandemic on the market volatility of the Italian banking industry, by considering the sample of Chapter 2, of 25 financial intermediaries listed on the Italian stock exchange and comparing the findings of the sample with some benchmarks (FTSE Mib, VSTOXX, and VIX). The analysis first

provides some relevant descriptive statistics and then performs hypothesis tests and a GARCH model, to investigate relevant discrepancies between the volatility of the sample and the benchmarks, focusing on the significance of Covid-19 before, during and after the pandemic. The results confirm both the significance of Covid-19 on the Italian banking sector volatility and the relevance of the extraordinary measures adopted by the supervisory banking authorities, to mitigate market volatility during the pandemic.

General Introduction

This thesis comprises three essays on supervisory banking activities and financial stability, which follow a chronological order, as developed during the PhD program at Bayes Business School (formerly Cass), City University of London (UK). The overall aim of the dissertation is to investigate the efficacy of the emergency measures implemented by the banking supervisory authorities during extraordinary times (such as the Covid-19 pandemic), in accordance with the Basel supervisory banking framework, as defined by the Bank for International Settlements.

The research starts with Chapter 1, which develops a qualitative model that national banking authorities can use to assess the compliance level of their national supervisory banking systems, with respect to the standards defined by the Bank for International Settlements in the document "*Basel Core Principles for Effective Banking Supervision*". Thus, the model returns comprehensive results to national banking authorities, as would be done by the International Monetary Fund through the Financial Sector Assessment Program. In Chapter 2, the research implements a multifactor linear regression model, in order to analyse the significance level of some selected financial variables to the dividend payout policy of a sample of listed Italian financial intermediaries, during the Covid-19 pandemic. The analysis investigates the effectiveness of the extraordinary measures adopted by the Italian banking authorities, to assure the stability of the banking industry during the outbreak. Finally, in Chapter 3, the research focuses on the study of market risk (volatility) during the pandemic, by implementing a GARCH(1,1) model on the same sample used to study the effects of the outbreak on the dividend payout policy in Chapter 2.

The results described in Chapter 2 and Chapter 3 provide a comprehensive view of some relevant aspects of the risk-return profile of the listed Italian financial intermediaries during the pandemic. This is carried out in accordance with, on the one hand, the conditions and aims of the supervisory banking framework described in

Chapter 1 and, on the other hand, in accordance with the analysis of the literature review provided in each chapter. Understanding the risk-return profiles of financial intermediaries during extraordinary times is a challenge that requires adjusted econometric models, which need the step-by-step analysis of significant variables. In this regard, the definition of the data frequency and time-windows are critical aspects of the research, as explained in the following chapters of the dissertation.

1) The first essay, Chapter 1, is "*A Simplified Assessment Model for Conducting the Financial Sector Assessment Program (FSAP): Case Study of the Republic of San Marino*", and it was written during the first and second year of the PhD program, successfully being presented at the transfer panel on November 2, 2022.

2) The second essay, Chapter 2, is "*The Impact of Covid-19 on Dividend Payout Policy: Evidence from the Italian Banking Industry*", and was written during the third year of the program, being finalised in December 2023.

3) The third essay, Chapter 3, is "*The Impact of Covid-19 on Market Volatility: A Quantitative Analysis of the Italian Banking Sector*", and was written during the fourth year of the program, being finalised in May 2024.

The first chapter of the dissertation develops an innovative qualitative assessment methodology to evaluate the compliance level of national banking systems to the Basel Core Principles for Effective Banking Supervision, as set out in the Bank for International Settlements' regulations. The need to develop the methodology arises from the recurring review of the effectiveness of national supervisory banking sectors (i.e. the Financial Sector Assessment Program), performed by the International Monetary Fund. This process appears to require countries to invest a lot of time and resources in producing a final report, which becomes publicly available, implying reputational risks. In this regard, the developed model is a simplified version of the Financial Sector Assessment Program, that allows regulators and authorities to constantly monitor the supervisory framework of national banking sectors, before undergoing the official program.

The methodology was developed in light of a literature review and analysis, and is applied to a case study of the Republic of San Marino. The target country is a small independent State, providing a broad set of publicly available data and information, which appears to be good for testing the model. The results not only point out the effectiveness and efficacy of the developed methodology, but they also show how the model allows the provision of concrete recommendations, as with the Financial Sector Assessment Program. Thus, it is a useful tool for all national supervisory authorities that need to participate in the Financial Sector Assessment Program.

The first chapter of this research allows the setting up of a general framework to evaluate the soundness of banking industries. Consequently, this allowed to move forward and focus on the banking industries' capital adequacies, which is one of the most critical aspects of the Basel supervisory framework, particularly during extraordinary events, such as the pandemic. The second chapter focuses on the dividend payout policies of the Italian banking industry, with respect to the effectiveness of Basel Core Principle n. 16[1]. The analysis adopts a logit regression model to analyse the significance of some key variables (e.g. leverage, liquidity buffers, etc.) to the banks' decisions as to whether to omit, or not, the dividend payments during the Covid-19 pandemic. In particular, using a data-set from the 25 financial intermediaries listed on FTSE Mib, FTSE Mib Mid Cap, FTSE Mib Small Cap and FTSE Italia Star, Chapter 2 describes the reasons why several listed banks and insurance firms continued to pay dividends during the outbreak. In particular, providing the market with good signals seems to be more important than protecting stakeholder value, in general. The literature review shows different results, which implies the need for further research into the dichotomies between the findings of fundamental analyses and signalling theories. The results of the dissertation show that the capability to generate cash flow is significant, with respect to keeping increasing dividend payouts, leverage, and profitability. The outcomes seem to confirm the

[1] Core Principle n. 16 (Capital Adequacy): "*The supervisor requires adequate distribution of capital* […] *according to the allocation of risks*" (Bank for International Settlements, 2012).

discussed dichotomy, considering that the regression results. The findings support the validity of both the fundamental theories, if the regressors are analysed, and signalling theories, if the investigation focuses on dividend payments during the pandemic. Within the supervisory framework described in the first chapter, Chapter 2 provides a deep analysis of the capability of financial intermediaries to grant positive returns to shareholders during extraordinary events, without increasing the risk for savers and/or the overall stability of the banking industry. In addition to the shareholders' returns and the relative capital adequacy of the banking industry, the market risk for strategic financial intermediaries is also taken into consideration, in order to integrate the analysis of the general national supervisory framework, which was put under pressure by the pandemic. In this regard, the outbreak created a unique environment to assess the banking stability and the efficacy of the safety supervisory nets, at both a national and an international level.

Therefore, the third chapter focuses on Basel Core Principle n. 22[2], which is about market risk. It performs a market risk analysis during and after the pandemic, in comparison with ordinary times (i.e. before Covid-19). In particular, the third chapter attempts to analyse the impact of the Covid-19 pandemic on the market volatility of the Italian banking industry. In doing so, the research considers the sample of 25 financial intermediaries listed on the Italian stock exchange used in Chapter 2, by comparing the findings with some key benchmarks (FTSE Mib, VSTOXX, and VIX). The analysis starts with providing some relevant descriptive statistics and then it performs hypothesis tests and a GARCH(1,1) model, to investigate any relevant discrepancies between the volatility of the sample and the benchmarks with a focus on the significance of Covid-19 (included in the model as a dummy variable) before, during and after the pandemic. The literature review does not seem to provide unique findings regarding Covid-19 effects on market volatility, considering that the Italian

[2] Core Principle n. 22 (Market Risk): "*The supervisor determines that banks have an adequate market risk management process that considers risk appetite, risk profile, market and macroeconomic conditions, and the risk of a significant deterioration in market liquidity*" (Bank for International Settlements, 2012).

stock exchange does not appear to have been analysed until now. The results of the thesis confirm both the significance of Covid-19 on the Italian banking sector volatility and the relevance of the extraordinary measures adopted by the supervisory banking authorities, when mitigating the market volatility during the pandemic. They are consistent with the bulk of the available literature.

In conclusion, the dissertation provides a series of three essays that develop and implement both qualitative and quantitative econometric methodologies in the field of prudential banking supervision, with a focus on critical market circumstances, as occurred during the Covid-19 pandemic. The approach was to create a comprehensive dissertation that includes different methods of analysis, data and frameworks that have been applied to contemporary research fields, which are still being studied and analysed by academia. Thus, the methodologies followed the findings of the available literature (which sometimes conflicted), and further analysed them, in order to define the research questions at the foundation of each chapter. Every identified model was applied by using data from publicly available databases, such as Central Bank registers (Chapter 1) and Morningstar (Chapters 2 and 3), in order to generate consistent results. Therefore, the final goals of the research are twofold: on the one hand, the research intends to provide a valuable theoretical contribution to specific “grey” fields, which are still changing and evolving in the literature; on the other hand, the findings of the dissertation intend to be a tangible contribution to banking authorities for reviewing prudential tools, which appear to be essential in keeping banking industries sound and stable in extraordinary times. The Covid-19 pandemic has shown how crucial these are.

Chapter 1

A Simplified Assessment Model for Conducting the Financial Sector Assessment Program: Case Study of the Republic of San Marino

Abstract

This chapter develops a qualitative assessment methodology to evaluate national levels of compliance with the Basel Core Principles for Effective Banking Supervision (CPs). These principles were issued by the Bank for International Settlements (BIS), in accordance with the process adopted by the International Monetary Fund (IMF), the so called "*Financial Sector Assessment Program*" (FSAP). It provides a concrete example of how the proposed assessment methodology can be implemented in any country, by applying the model to a case study of the Republic of San Marino and comparing it with a group of comparable countries (British Virgin Islands, Switzerland, Hong Kong, and Singapore). The methodology does not only appear to be critical to providing a detailed analysis of the quality and effectiveness of the local regulatory and supervisory regime, but it is also a useful tool for all national supervisory authorities considering the opportunity to adopt the FSAP.

1.1 Introduction

This chapter develops a simplified methodology to support supervisory authorities when assessing the soundness and effectiveness of banking supervisory regimes in accordance with the standards adopted by the International Monetary Fund (IMF), when participating in the Financial Sector Assessment Program (FSAP). The developed methodology is then applied to a case study of the Republic of San Marino, which explains the improvements that the San Marino banking system made to turn out to be in compliance with the 2012 Core Principles for Effective Banking Supervision (CPs), as updated by the Bank for International Settlements (BIS).

The chapter develops an innovative qualitative assessment model that allows national supervisory banking authorities to assess the compliance degree of the national supervisory banking framework with the Basel Core Principles, as the one used by the International Monetary Fund. As detailed in the next sections, the FSAP is a high resource-consuming process, it can take up to two years and it can require several human and financial resources to provide the IMF with the framed data and needed information. What is more, the final report is published on the IMF website so reputational risks can be quite relevant for national banking sectors. In this regard, the proposed methodology appears to be important, considering that the current literature does not seem to provide other methodologies to monitor the evolution of national supervisory banking frameworks, even though the significance of the CPs in keeping high banking performances is confirmed in several studies.

Thus, the proposed model allows supervisory banking authorities to become confident with the FSAP in order to reduce both reputational risks and the likelihood of financial crisis. After detailing the proposed methodology, the model is implemented to the case study of the Republic of San Marino, considering the unique features of its national banking sector.

The Republic of San Marino is a small and independent country located in Italy, which abandoned some competitive strengths (e.g. anonymous companies and banking

secrecy) by adopting numerous European directives and regulations stated in the Monetary Convention with the European Union. San Marino realised key systemic projects, which improved the working background of the national financial industry. These projects included: the implementation of a deposit insurance scheme, a deposit guarantee scheme, the implementation of a central credit register, the adoption of the automatic exchange of financial information protocols, the enclosure in the Single Euro Payment Area, and the introduction of a disclosed parent company register. In addition, it is becoming an associate member of the European Union, to allow national banks to sell financial products in the European market.

The financial sector is strictly regulated, so the negotiation aptitude to find competitive advantages for local banks to face the competition in the single European market is essential, if San Marino's economy is to be able to grow in the European market (Forcellini, 2019). In addition, European Union Declaration n. 3 to article 8[3] of the Treaty of Maastricht specifies that "*the Union will take into account the particular situation of small-sized countries which maintain specific relations of proximity with it*" (Ministry of Foreign Affairs of San Marino, 2018).

Thus, the scope of chapter 1 is twofold. On the one hand, the chapter develops an assessment methodology to perform a "simplified" Financial Sector Assessment Program (FSAP), as implemented by the IMF. The FSAP results are quite relevant, not only in strengthening the international reputation of national banking systems, but also in allowing financial authorities to implement internationalisation processes. In this regard, supervisory banking authorities tend to issue authorisations for performing cross border banking activities as a function of the quality of the most updated FSAP reports. The IMF can take up to two years to publish a final FSAP report, which can lead countries to require faster ways to evaluate their compliance level with the Core Principles, in order to allow financial intermediaries to expand their business abroad

[3] Art. 8 of the Treaty of Maastricht states that "*the Union shall develop a special relationship with neighbouring countries, aiming to establish an area of prosperity and good neighbourliness, founded on the values of the Union and characterized by close and peaceful relations based on cooperation*".

(International Monetary Fund, 2021). On the other hand, the purpose of this study is to implement the methodology to a concrete case study. The proposed methodology is applied to the supervisory banking framework of the Republic of San Marino, in order to produce a final analysis that includes a critical overview of the evolution of San Marino's legal and regulatory context. In doing so, the improvements performed by the San Marino Central Bank (SMCB) are detailed, with a focus on the alignment process of the national regulations to the international good practice principles.

In order to achieve the aforementioned goals, a comparison between the current banking legislation and the last updates is made, considering the outcomes of the 2010 FSAP. This is carried out by implementing the proposed simplified methodology. In particular, the Sammarinese banking laws and the SMCB regulations are analysed and described by considering the Financial and Banking Law (Law 165/2005) and the revised Banking Regulation (SMCB Reg. 7/2007), compared to the procedure described in the "*Core Principles for Effective Banking Supervision*" published in 2012 (i.e. revised Core Principles). A comparative analysis between San Marino and a peer group of small countries is also provided, in order to integrate the findings with a ranking based on common standards in supervisory banking regulations.

The chapter is organised as follows. Section 1.2 describes the reasons to consider the Basel Core Principles (CPs) as a key tool at international level, following the FSAP's steps used to evaluate them. Section 1.3 provides a literature review regarding CPs and FSAP. Section 1.4 details the proposed assessment methodology, which allows to compare the compliance of the San Marino supervisory financial industry with the revised Core Principles. After that, Sections 1.5 and 1.6 illustrate the peculiarities of the case study of the Republic of San Marino. Section 1.7 describes the international context of the Basel Core Principles compared to the case of the Republic of San Marino, by providing a critical overview of San Marino's banking system, including some important weaknesses that affect the target country. In Section 1.8, the compliance level of the Sammarinese banking industry is described with the FSAP's outcomes and the most important weaknesses are specified, which must be removed to

achieve a safer and more stable banking system. In addition, Section 1.8 provides a compliance level valuation of San Marino's supervisory regime for each essential criteria, while Section 1.9 summaries some recommendations to align San Marino's supervisory regime features and the revised Core Principles, including a peer group of comparable countries. Finally, Section 1.10 provides comments and conclusions about growth prospects, in order to provide a comprehensive analysis of the national supervisory framework.

1.2 The Relevance of the Core Principles for Effective Banking Supervision at the International Level

The Bank for International Settlements defines the Core Principles for Effective Banking Supervision (CPs) as "*the minimum global standards for the sound prudential regulation and supervision of banks*" (Bank for International Settlements, 2020). The BIS published the "*Core Principles for Effective Banking Supervision*" in 1997, which set out 25 principles that the Basel Committee believed to be necessary to supervise every banking industry effectively. In 2012, the BIS revised the document in order to implement a more sophisticated methodology, which extended the principles from 25 to 29 (i.e revised Core Principles) (Bank for International Settlements, 2012).

The CPs, which were published in 1997, were expanded from 25 to 29 principles in order to assure universal applicability, due to the concept of proportionality, which was introduced at that time. In such a way, CPs were developed to accommodate a "*range of banking systems and a broad spectrum of banks (from large internationally active banks to small, deposit-taking institutions)*" (Bank for International Settlements, 2020). In 2021, the IMF's Board confirmed that the 2012 methodology remained suitable with some minor adjustments (International Monetary Fund, 2021).

Thus, the prudential supervisory institutions consider the CPs as a benchmark to evaluate the effectiveness of their regulatory and supervisory regimes. In particular, the International Monetary Fund and the World Bank use the CPs to assess the quality of a country's framework of banking supervision as part of the Financial Sector Assessment Program (FSAP) (Bank for International Settlements, 2020).

The FSAP was established in 1999 and is defined as "*a comprehensive and in-depth assessment of a country's financial sector*", which assesses "*the resilience of the financial sector, the quality of the regulatory and supervisory framework, and the capacity to manage and resolve financial crises*". At the end of the mission, the IMF releases an Aide-Memoire that includes the FSAP's recommendations, which focus on "*a micro- and macro-prudential nature and on developmental needs in developing and emerging market economies, tailored to country-specific circumstances*". The FSAP ends with the Financial System Stability Assessment (FSSA), which is discussed at the IMF Executive Board together with the country's Article IV report. The publication of the FSSA is not binding, but is done so on a voluntary basis (International Monetary Fund, 2022).

Any country can request a FSAP assessment. A recent IMF survey of national supervisory authorities pointed out that several respondents consider the FSAP as a key tool in monitoring a country's financial stability. In this regard, G-20 countries have also recently made a "*commitment to undergo an assessment under the program every five years* […] *following the global financial crisis*". Until now, 157 countries have completed the FSAP, some more than once (International Monetary Fund, 2021).

The FSAP is also extremely important for countries, in order to perform an effective bilateral surveillance regarding Article IV consultation, so that the financial stability assessments - under the FSAP - are binding for IMF members with a Systemically Important Financial Sector (SIFS); while, for the other jurisdictions it is elective (International Monetary Fund, 2022). To identify countries with SIFS, the IMF has adopted common standards to rank jurisdictions as a function of the "*size of their*

financial sector and its connections with financial sectors in the rest of the world" (International Monetary Fund, 2021). At the end of December 2021, there were 30 financial intermediaries under the SIFS criteria (European Payments Council, 2019).

According to the IMF, the FSAP follows a multiple steps timeline that can take approximately two years, see Table 1.1.

Table 1.1: Financial Sector Assessment Program Process and Timeline

Time	Activity
4-6 months	• Mission timeline is set and the official mission counterpart is determined • Discussions on a precise scope of the mission are done
3-4 months	• Scope is set, questionnaire is sent to authorities, stress testing approaches are discussed, and a workplan is shared with the central bank
1-2 months	• Answers to questionnaire are sent to the mission team • Proposed schedule of meetings is sent to authorities
Mission	• 5 – 12 Fund (and Bank) staff and consultants are appointed for 2 weeks • ROSCs may be done on separate mission
1 month	• Authorities can make comments to Aide-Memoire/DARs • Technical notes/ background notes are sent to authorities
2-3 months	• Aide-Memoire, DARs, technical notes are reviewed at the headquarters and they are finalized
3-4 months	• Board documents (FSSA, ROSCs) are prepared

The table describes the general timeline implemented by the IMF to perform the FSAP. The first and the second steps take almost half of the total time required to publish the final report by the board (International Monetary Fund, 2021).

The Aide-Memoire summarises the main results and recommendations of the mission, but it is confidential. Technical notes on selected topics and Detailed Assessments Reports (DARs) of compliance with international standards and codes are also produced and their publication is voluntary. At the end of the entire process, a Financial System Stability Assessment (FSSA) report is prepared for discussion at the IMF Executive Board, then it is published (International Monetary Fund, 2021).

The FSAP is a complex process, which appears to be crucial for several countries, and assures both the internal stability and international reliability of national financial industries through the activity of the authorities that supervise and monitor "*all of the*

important risks taken by the banks" (International Monetary Fund, 2020). The information stated in FSAP reports is not only relevant for national authorities (to deepen the quality level of supervisory frameworks), but also for the impact that it can have on financial markets (reflecting updated public information). The IMF states that countries would need time to implement "*the recommended reforms and corrective measures before being subjected to assessments that are publicised*" (International Monetary Fund, 2020). The IMF continues by asserting that "*the global financial crisis and the ongoing COVID-19 pandemic demonstrated the need for an even more seamless integration*" between the FSAP and Article IV consultations. In this way, the FSAP appears to be "*a crucial part of the Fund's financial surveillance and an input to the Article IV consultations. To date, more than three-quarters of the institutions' member countries have undergone assessments*" (International Monetary Fund, 2021).

Given the importance of the process, due to the impact of its results at an international level, FSAP requires countries to invest a lot of resources for a long period of time (up to 24 months) (Caprio, 2018). In addition to some on-site visits (about three), the IMF requires a team of local experts of competent national authorities, which provides the IMF with the required information and data on a weekly basis (International Monetary Fund, 2021). Some countries, such as those with small jurisdictions or limited local resources, frequently take advantage of the support of external consultants to fully comply with the periodical technical requests, despite the additional costs. A study published by Caprio in December 2018 estimates the overall cost of the FSAP to the local national authorities (staff compensation) of 29 jurisdictions (i.e. S29), which have systemically important financial sectors, to be "*roughly on the same order of magnitude as the cost to the Fund, meaning that the total labor costs of S29 FSAPs during the 2010-17 period would have been over $100 million, with the IMF covering $53 million*" (Caprio, 2018).

The FSAP is a considerable investment for countries, especially for those with limited resources, because it requires a preliminary in-depth evaluation in order to make the process fully effective with positive markets effects. According to the IMF, some

countries require "*short visits* […] *a few months before the FSAP mission to discuss the precise scope of the FSAP*" (International Monetary Fund, 2021). Following this, countries require tools (such as the simplified model proposed here) to provide them with analytical forecasts of the FSAP results, in order to implement the adjustments needed before undergoing the official process by the IMF. In such a way, possible weaknesses can be addressed in advance, supporting countries to get used to the official process, also allowing them to reduce costs in preparing materials, data, and analysis. In addition, a model which estimates the FSAP allows countries to become more precise in predicting possible financial distresses, by reducing the "*likelihood and severity of financial crises* [which] *depends on the coverage of the reports*" (Caprio, 2018).

The FSAP appears to be a powerful tool that can raise possible risks when the final reports are publicised. Even though it allows national supervisory authorities to take actions to reduce the likelihood of financial crises, it can damage the reputation of financial markets, if the final results are not aligned with those expected.

To sum up, a simplified model can allow financial supervisory authorities to: i) become confident with the official process to maximise the quality of the results; ii) reduce the process expenses; iii) predict the results at the end of the official process, considering the high impact on markets; and iv) reduce "*the likelihood and severity of financial crises*" (Caprio, 2018).

1.3 The Literature Review

A sophisticated supervisory regime is required in order to support financial intermediaries to be sound, which embraces, among other measures, the attempt to decrease the probability of an institution's default. Given this, the vulnerabilities of a financial industry could compromise the stability of the country and so the application

of the 29 revised Core Principles would be a concrete development for national and international economic resiliency. In this regard, several studies have been conducted in order to address doubts about the validity of the Core Principles.

The existing literature has mainly focused on the validity of Core Principles for pointing out the banking industry's performance across economies. In particular, several studies have researched the existence of significant relationships between the soundness of the Core Principles and banking performance. However, the existing literature's findings highlight some relevant dichotomies.

Barth et al. (2001, 2004 and 2006) found that regulatory approaches to supervise financial intermediaries tend to improve banking performance and systemic stability. In particular, their research focused on the importance of the disclosure of reliable, comprehensive, and timely information that allowed strengthening of the quality of the banks' monitoring in financial markets. However, the survey only considered formal regulations, which were not consistently implemented, leaving the research at a conceptual level.

Following this, Das et al. (2005) referred to a broader view of regulatory governance in their research, by including both conceptual and concrete aspects of bank monitoring. Their analysis showed that countries with virtuous financial regulations can properly manage macroeconomic pressures on the level of stress in the financial and banking sector (Das, 2005).

With its in-depth examination of banking supervision, Cihák and Tieman (2008) contributed by segmenting countries into different income groups, showing that high-income countries have higher quality regulation and supervision than lower income countries. They also noted that the correlation coefficient between survey data and CPs data appears to be low (less than 50%), which suggests that the level of implementation may make a relevant difference (Cihák, 2008).

However, Podpiera (2004) found slightly different results by analysing data from 65 countries (from 1998-2002), by pointing out the positive impact of higher compliance

with CPs on banking industry performance, considering the level of development of the economy, the financial system, and macroeconomic factors (Podpiera, 2004).

On the other hand, Demirgüç-Kunt and Detragiache analysed data from approximately 3,000 banks in 86 different countries in 2010 and they found that a significant relationship between CP compliance and systemic risk, measured by a system-wide Z-score, does not exist (Demirgüç-Kunt and Detragiache, 2010). Similarly, in 2001, Marston analysed a sample of 25 different countries and found that macroeconomic and macroprudential factors mainly influence indicators of credit risk and bank soundness. In addition, the author pointed out that credit risk and bank soundness are not significant independent variables to the compliance level with Basel Core Principles (Marston, 2001).

In 2016, Ayadi et al. performed extensive research concerning the impact of the supervisory practices' compliance to bank operating efficiency. In particular, the paper focused on the implementation of international capital standards and the CPs, considering publicly listed banks. The research did not show any relevant association between the overall CP compliance and bank efficiency (Ayadi et al., 2016).

In conclusion, even though the analysed literature does not seem to provide consistently unique findings about the effectiveness of the Basel Core Principles in evaluating the soundness of financial systems across the world, they are still the most internationally recognised key standards which supervisory authorities take into consideration, when assessing the solidity of banking systems.

According to Caprio (2018), there is a clear "*potential for learning from FSAPs about the institutional detail*", considering that "*there are few articles in economics and finance journals that draw on the FSAP*" (Caprio, 2018).

1.4 Assessment Methodology Developed to Analyse the Compliance of a Country's Banking System with the Revised Core Principles

The simplified model that estimates the FSAP methodology follows the process as stated in the document "*Core Principles for Effective Banking Supervision*". The developed methodology is consistent with that implemented by the IMF during the FSAP. The proposed model tends to be as objective as possible, even though the assessment methodology "*does not eliminate the need for both parties to use their judgment in assessing compliance*", as described by the BIS (Bank for International Settlements, 2012).

Even though the BIS recommends conducting the assessment by "*suitably qualified external parties consisting of two individuals with strong supervisory backgrounds who bring varied perspectives so as to provide checks and balances*", the proposed model is to provide the national authorities with a smart assessment model that can be conducted autonomously, with low economic impacts. This allows identification of "*the nature and extent of any weaknesses in the banking supervisory system and compliance with individual Core Principles*" (Bank for International Settlements, 2012).

According to BIS, only the Essential Criteria (EC) are relevant to the process, since the additional criteria should be considered as "*suggested best practices*"; however, the proposed assessment methodology integrates both essential and additional criteria, to allow national authorities to obtain a comprehensive report. Thus, the proposed methodology intends to not only give national institutions a "*school report*", it also wants to support supervisory authorities in implementing a strategy, which can improve the banking supervisory framework, as necessary.

The proposed model includes an additional step (i.e. step 5 of the assessment methodology), which requires national authorities to perform a comparative analysis with a peer group of countries that show similar economic and financial specificities. In fact, most authorisations to perform cross border banking activities, released by

supervisory authorities, are issued as a function of the minimum standards analysed in the FSAP reports, in comparison with the host one.

The proposed assessment methodology, which includes 5 steps, is detailed as follows:

i) **Implement a comparison map between the 25 and 29 Principles.** The research considers the revised core principles framework and so a "*translation map*" is developed in order to compare the compliance level of the 25 Core Principles with the 29 revised Core Principles (Bank for International Settlements, 2012). Considering the case study, the San Marino's FSAP report was released in 2010, so the "*translation map*" is implemented to analyse the initial Core Principles with the revised Core Principles. Section 1.7 shows this map, which also points out a dummy variable to indicate whether there have been relevant variations of the Essential Criteria. If the dummy variable is "Yes", this states a relevant change of essential criteria by including new information (such as previous "additional criteria") (Bank for International Settlements, 2012). The analysis is just a descriptive valuation of Core Principles. In addition, the revised Core Principles state the new "*Corporate Governance*" Principle and, in this case, there is no comparability with the previous version.

ii) **Define the methodology implemented by the IMF in performing the FSAP analysis.** Following the approach described by the BIS in the document "*Core Principles for Effective Banking Supervision*", each single statement (so called Essential Criteria - EC) is defined. This allows us to underline each CP, in order to assign a grade to a CP as a function of the compliance level of a country's banking system regulation to the requirement of the specific EC (Bank for International Settlements, 2012). Considering the case study, Appendix C.1.2 details the EC's statement and the relatively detailed analysis of San Marino's banking regulation.

iii) **Assign a grade to the CPs, considering the compliance level of the national banking regulation to every EC.** As mentioned, the IMF performs the assessment of a country's banking system to the Core Principles, through the

Financial Sector Assessment Program. This allows to conduct an overall valuation of a national banking industry. The investigation of a financial industry's soundness, the solidity of the supervisory regime, and the valuation of skills to manage systemic risks are translated as a compliance level to the revised Core Principles. As recommended by the Basel Committee for the Detailed Assessment, the grade scale is: *compliant, largely compliant, materially non-compliant*, and *non-compliant*. A brief description of each grade is (Bank for International Settlements, 2012):

- **Compliant** (C.) – A country is compliant with a Basel Core Principle when all essential criteria are met, without any relevant shortages (Bank for International Settlements, 2012).
- **Largely Compliant** (L.C.) – A country is largely compliant with a "*Principle whenever only minor shortcomings are observed, which do not raise any concerns about the authority's ability and clear intent to achieve full compliance with the Principle within a prescribed period of time*". The valuation "*largely compliant*" is assigned when the banking industry does not satisfy all essential criteria, but the overall effectiveness is enough by excluding risks (Bank for International Settlements, 2012).
- **Materially Non-compliant** (M.N.C.) – A country is materially non-compliant with a Principle "*whenever there are severe shortcomings, despite the existence of formal rules, regulations and procedures, and there is evidence that supervision is effective*". The practical implementation either appears to be weak or the shortcomings are sufficient to raise doubts about the authority's ability to achieve compliance. It is acknowledged that the "gap" between "*largely compliant*" and "*materially non-compliant*" is wide (Bank for International Settlements, 2012).
- **Non-compliant** (N.C.) – A country is "*non-compliant with a Principle whenever there is no substantive implementation of the Principle, several*

essential criteria are not complied with, or supervision is manifestly ineffective" (Bank for International Settlements, 2012).

The grade *Compliant* is assigned when 100% ECs are satisfied, while a grade reduction happens when 10% ECs are not satisfied in a CP. In addition, where changes applied in recent years are considered to not be sufficient to meet a one-by-one evaluation of the principle's essential criteria, reference is made to the IMF, such is the case for San Marino. Considering the case study, Appendix C.1.1 shows both the 2010 IMF grades and the proposed methodology results.

iv) **Point out the main weaknesses of the national banking regulations, in order to develop the required improvements.** The developed methodology's results allow the national authorities to identify the areas of improvement. In particular, the methodology does not only show the general weaknesses of banking regulations, which are included in the FSAP, but it also points out the specific criteria, which need to be updated. For instance, if the capital adequacy appears to be critical at the end of the analysis, the revised Core Principles outline a general supervisory system for financial industries to pursue solidity, even if the "*Core Principles do not require a jurisdiction to comply with the capital adequacy regimes of Basel I, Basel II and/or Basel III*". Thus, the capital adequacy regime appears to be a specific feature, which composes the general system of the Basel Core Principles (Bank for International Settlements, 2012). Considering the case study, Appendix C.1.3 shows the main recommendations that the Sammarinese authorities should adopt to improve the final results.

v) **Make comparisons between the considered country and a peer group of comparable countries, in order to point out the strengths and weaknesses of national regulations.** International Institutions intend to develop a common level playing field, so financial markets require specific comparative analyses to find out how banking systems can become more competitive, in order to maintain reasonable profitability levels, which are becoming lower due to financial harmonisation in national regulations. Considering the case study, San

Marino's banking regulation is also analysed in a relative way, with a peer group of countries selected after defining common standards.

In conclusion, the methodology starts from the FSAP analysis, then simplifies the methodology developed by the BIS, in order to obtain an inclusive overview of the critical updated condition of the banking regulation. The process ends with a relative analysis, which allows the national authorities to find possible competitive areas to pave the way to further developments of the banking sector, by comparing the obtained findings with the FSAP results of other comparable countries.

1.5 Case Study of the Republic of San Marino

Since 2012, San Marino has followed some key phases to endorse the international standards on transparency in order to reinforce its reputation, through exchanges of financial and fiscal information with the most important international authorities. In doing that, San Marino has recently implemented some critical banking supervisory methodologies, in compliance with the Basel Core Principles. The San Marino financial industry experienced a lot of changes to move from an offshore system to an onshore system. As a consequence, the banking industry showed a relevant shrinkage from 2008 to 2021, considering, for instance, that the number of financial intermediaries reduced from around seventy in December 2008 to ten in December 2021 (San Marino Central Bank, 2020).

In particular, San Marino became compliant with several international standards on Anti-Monay Laundry (AML) and Know Your Customer (KYC) rules, which are the regulations that require to financial intermediaries to identify customers to prevent financial crimes. Regarding this, San Marino entered both the list of non-EU countries with national regulations equivalent to the AML White List (i.e. Directive 2005/60/EC) and the Italian White List (Italian Minister of Finance Decree n. 108/2015). Therefore, San Marino became compliant with international best practices about financial

transparency and tax cooperation. On April 14, 2015, the Committee of Experts on the Evaluation of Anti-Money Laundering Measures and the Financing of Terrorism of the Council of Europe exempted San Marino from periodically reporting on the reforms and AML actions. "*However, San Marino has not entered the "EU white list" concerning AML compliance jurisdictions, which adopt the so-called "Common Understanding". In addition, San Marino joined the list of States subject to the AML regulations on KYC approved by the US Internal Revenue Service (IRS) on the 18th of November 2014, allowing financial intermediaries to apply for the status of Qualified Intermediary - QI*" (Forcellini, 2015).

Analysing international financial cooperation on the information transparency, the Republic of San Marino can be considered fully compliant with both "*automatic and on request exchange of information standards, according to the OECD Global Forum on Fiscal Matters*" (Forcellini, 2015). Furthermore, the Republic of San Marino seems to be as a "*Compliant*" country by the OECD Global Forum on Fiscal Matters - Phase 1 and 2 (Organisation for Economic Co-operation and Development, 2019). "*In term of the exchange of financial information, San Marino exchanges information with 50 jurisdictions through 21 Double Tax Conventions and 29 Tax Information Exchange Agreements. San Marino also signed the Multilateral Convention on Mutual Administrative Assistance in Tax Matters".* Regarding "*the automatic exchange of information, San Marino became part of the Automatic Exchange of Information Group (AEOI) of the OECD Global Forum, also being an affiliate of the Early Adopters Group by signing the Multilateral Competent Authority Agreement (MCAA) on October 29, 2014, to adopt the Common Reporting Standard (CRS)*". In term of "*the Foreign Account Tax Compliance Act (FATCA), San Marino signed the Intergovernmental Agreement (model II) with the USA on the October 28, 2015. Furthermore, San Marino adopted the Directive 2014/107/UE (i.e. Directive on Administrative Cooperation in Taxation - DAC2)*" (Forcellini, 2015).

San Marino revised its national regulations in order "*to implement the international recommendations, not only concerning fiscal cooperation and transparency, but also*

regarding the supervisory practices and financial strength" (Forcellini, 2019). Consequently, the Sammarinese Banking and Financial Law 165/2005 and the Sammarinese Anti Money Laundering Law 92/2008 were enhanced by signing the San Marino and European Union Monetary Agreement. The Annex contains a detailed timeline for the endorsement of the European Anti Money Laundering requirements, the overall financial regulations, as well as other relevant European legal dispositions. In addition, the Delegate Decree n. 111/2011, Regulation n. 7/2011, and Regulation n. 1/2016 allowed the creation of a national insurance system on deposits through a specific fund, in order to adopt the European regulation on deposit guarantee schemes (i.e. Directive 2014/49/UE). In 2014, San Marino was accepted by the European Payments Council to be part of the SEPA, after the national Central Bank adopted the Regulation "*Entry into the Single Euro Payments Area*" (i.e. Regulation n. 5/2013). The San Marino Central Bank implemented the Central Credit Register that allows the exchange of data and information among financial intermediaries concerning clients' credit profiles. The national Central Bank also realized a public parent companies register, by issuing Regulation n. 3/2014 (Forcellini, 2019).

Considering the above-mentioned international improvements, San Marino was deleted from the Italian black list of "*tax heavens*" on February 12, 2014. Then, San Marino entered the Italian tax "*white list*" on December 30, 2015 as the Double Taxation Treaty was bilaterally ratified. After that, in 2016, the San Marino Central Bank allowed financial intermediaries to offer their clients the opportunity of opening on-line bank accounts, even though AML and KYC procedures still needed to be reviewed, in order to finalise due-diligence requirements. In addition, San Marino, Andorra and Monaco are currently finalising a bilateral treaty with the European Union, in order to become Associate Members (Forcellini and Vivoli, 2016). The change of business, from a "*tax heaven*" to a real transparent economy, appeared to be detrimental for the national economy, if some statistics are observed (Forcellini, 2019).

Funding activities, equity's stocks, and borrowing/lending activities showed a relevant contraction from 2012 to 2021. Actually, on December 31, 2021, the overall funding

activity, amounting to 5.515 billion Euros, reduced by 3.07% CAGR compared to December 31, 2012 (7.280 billion Euros). This happened due to a reduction in total deposits (which reduced by 4.00% CAGR to 3.614 billion Euros) and from a relevant reduction in wealth management deposits (-2.04% CAGR corresponding to 1.901 billion Euros). The non-performing loans ratio augmented from 2.59%, in December 2008, to 24.6% in December 2021. The loan to deposit ratio of the whole banking system showed a downward drift, from 75.18% in December 2008 to 60.2% in December 2021. The value of the overall equity stock of San Marino banks has continued its downward tendency, from 1.2 billion Euros in December 2008 to 276.7 million Euros in December 2021 (San Marino Central Bank, 2009; 2022). Table 1.2 summarises the main macroeconomic and financial indices in 2021 compared to the indices in 2008, the beginning of the financial crisis (San Marino Central Bank, 2009; 2022; UPECEDS, 2022; 2023).

Table 1.2: Main Macroeconomic and Financial Indicators of San Marino from 2008 to 2021 (31 December)

Macroeconomic Index	Year 2008 (Dec.)	Year 2021 (Dec.)	Variation (%)
GDP at Constant Prices	€2.75bln	€1.31bln	-52.36%
Unemployment	501	1,072	+113.97%
Resident Citizens	31,269	33,698	+7.77%
Number of Firms	6,464	4,957	-23.31%

Banking Industry Index	Year 2008 (Dec.)	Year 2021 (Dec.)	Variation (%)
Total Deposits	€13.8bln	€5.5bln	-60.1%
• Customer Deposits	€9.2bln	€3.6bln	-60.9%
• Wealth Management Deposits	€4.6bln	€1.9bln	-58.7%
Total Equity	€1.2bln	€0.27bln	-77.5%
Bad Loans / Total Loans and Leasing	2.6%	24.6%	+846.15%
Loans / Deposits Ratio	75.2%	60.2%	-19.95%

The first section of the table reports the key macroeconomic indices of the Republic of San Marino from 2008 and 2021. The second section of the table reports the principal financial indicators from 2008 to 2021. Both the real economy and the financial industry have experienced a relevant decline since 2008, as shown by the relevant variation in percentages.
(San Marino Central Bank, 2009, 2022; UPECEDS, 2022; 2023).

In 2010, the San Marino banking sector experienced the FSAP, conducted by the IMF that pointed out some issues about the initial Core Principles. After that, San Marino abandoned its strategic assets, such as anonymity and banking secrecy, in favour of the international exchange of financial information, which negatively impacted on its performance. This was also exacerbated by reduced possibilities to exploit economies of scale (Forcellini, 2019).

1.6 Selecting San Marino as a Case Study

San Marino appears to be a relevant and suitable case study to implement the proposed assessment methodology. In particular, San Marino experienced a FSAP process in 2010, which allowed the country to get a broad range of framed data, to have a relevant starting point. In addition, San Marino's financial industry appears to be quite small (compared with other similar countries) with several publicly available data, which is another relevant element that favours the effective application of the proposed methodology; regarding this, the BIS states that "*the assessor must have free access to a range of information and interested parties*". This allows to focus precisely on deficiencies and specific achievements (Bank for International Settlements, 2012).

Furthermore, the BIS assessment methodology states that "*the Core Principles deal specifically with banking supervision, they cannot be used for formal assessments of these non-bank financial institutions*". In this regard, San Marino's financial industry appears to be deeply suitable since it is mainly composed of financial banking intermediaries, which reduce the possibility that non-banking activities can bias the assessment. This could happen in several other small countries, where "*bank-like activities* […] *may make up a significant portion of the total financial system and may be largely unsupervised*" (Bank for International Settlements, 2012).

San Marino's financial sector also appears to be "isolated", considering the presence of a low number of financial intermediaries that perform cross border activities through subsidiaries, branches, or representative offices. There is only one public bank (i.e. Cassa di Risparmio di San Marino S.p.A.), which owns a subsidiary in Croatia. According to the BIS, "*the development of cross-border banking leads to increased complications when conducting Core Principles assessments. Improved cooperation and information sharing between home and host country supervisors is of central importance, both in normal times and in crisis situations. The assessor must therefore determine that such cooperation and information sharing actually takes place to the extent needed, bearing in mind the size and complexity of the banking links between the two countries*" (Bank for International Settlements, 2012). This aspect further simplifies the implementation of the proposed model to the considered case study.

The abovementioned peculiarities make San Marino a unique case study in which to apply the proposed model. Data quality and availability also allow implementation of the proposed model, the sensitive financial information being considered crucial to producing a high-quality analysis by the BIS. The simplicity of the considered case also allows the implementation of the proposed model, considering both the essential and the additional criteria, which generates a final comprehensive analysis, in terms of the quality and quantity of the released information.

1.7 The Compliance Level of the Sammarinese Banking Sector with the Financial Sector Assessment Program's Results

Following the methodology detailed in Section 1.4, a comparison map is used to "*translate*" the IMF results, from before 2012, to the current methodology based on 29 CPs, as in Table 1.3.

Table 1.3: Core Principles 2006 and 2012 Translation Map

2006 Framework	2012 Framework	Flag
Responsibilities, Supervisory Powers, and Functions		
(Pr.1) Objectives, independence, powers, transparency, and cooperation	(Pr.1) Responsibilities, objectives, and powers	Yes
	(Pr.2) Independence, accountability, resourcing, and legal protection for supervisors	Yes
	(Pr.3) Cooperation and collaboration	Yes
(Pr.2) Permissible activities	(Pr.4) Permissible activities	No
(Pr.3) Licensing criteria	(Pr.5) Licensing criteria	Yes
(Pr.4) Transfer of significant ownership	(Pr.6) Transfer of significant ownership	Yes
(Pr.5) Major acquisitions	(Pr.7) Major acquisitions	No
(Pr.19) Supervisory approach	(Pr.8) Supervisory approach	Yes
(Pr.20) Supervisory techniques	(Pr.9) Supervisory techniques and tools	Yes
(Pr.21) Supervisory reporting	(Pr.10) Supervisory reporting	Yes
(Pr. 23) Corrective and remedial powers of supervisors	(Pr.11) Corrective and sanctioning powers of supervisors	Yes
(Pr.24) Consolidated supervision	(Pr.12) Consolidated supervision	Yes
(Pr.25) Home-host relationships	(Pr.13) Home-host relationships	Yes
Requirements and Prudential Regulations		
	(Pr.14) Corporate governance	Yes
(Pr.7) Risk management process	(Pr.15) Risk management process	Yes
(Pr.6) Capital adequacy	(Pr.16) Capital adequacy	Yes
(Pr.8) Credit risk	(Pr.17) Credit risk	Yes
(Pr.9) Problem assets, provisions and reserves	(Pr.18) Problem assets, provisions and reserves	No
(Pr.10) Large exposure limits	(Pr.19) Concentration risk and large exposure limits	Yes
(Pr.11) Exposures to related parties	(Pr.20) Transactions with related parties	No
(Pr.12) Country and transfer risks	(Pr.21) Country and transfer risks	Yes
(Pr.13) Market risk	(Pr.22) Market risk	Yes
(Pr.16) Interest rate risk in the banking book	(Pr.23) Interest rate risk in the banking book	Yes
(Pr.14) Liquidity risk	(Pr.24) Liquidity risk	Yes
(Pr.15) Operational risk	(Pr.25) Operational risk	No
(Pr.17) Internal control and audit	(Pr.26) Internal control and audit	Yes
(Pr.22) Accounting and disclosure	(Pr.27) Financial reporting and external audit	Yes
	(Pr.28) Disclosure and transparency	Yes
(Pr.18) Abuse of financial services	(Pr.29) Abuse of financial services	Yes
Flag: “Yes” is “CP changed” vs. “No” is “CP unchanged”		

The table reports the comparison between the 2006 and 2012 Basel Core Principles. It allows transformation of the FSAP results released before 2006 to the new FSAP results, following the BIS recommendations.
(Bank for International Settlements, 2012)

Table 1.4 shows the FSAP results by implementing the comparison map (as in Table 1.3), which allows the translation of the San Marino 2010 results (i.e. 25 CPs) to the current ones (i.e. 29 CPs).

Table 1.4: San Marino Financial Sector Assessment Program Results, 2010

Basel Core Principle	IMF Score 2010
(Pr.1) Responsibilities, objectives, and powers	Compliant
(Pr.2) Independence, accountability, resourcing, and legal protection for supervisors	Materially Non-compliant
(Pr.3) Cooperation and collaboration	Compliant
(Pr.4) Permissible activities	Compliant
(Pr.5) Licensing criteria	Materially Non-compliant
(Pr.6) Transfer of significant ownership	Largely Compliant
(Pr.7) Major acquisitions	Compliant
(Pr.8) Supervisory approach	Largely Compliant
(Pr.9) Supervisory techniques and tools	Materially Non-compliant
(Pr.10) Supervisory reporting	Compliant
(Pr.11) Corrective and sanctioning powers of supervisors	Largely Compliant
(Pr.12) Consolidated supervision	Materially Non-compliant
(Pr.13) Home-host relationships	Materially Non-compliant
(Pr.14) Corporate governance	Not available
(Pr.15) Risk management process	Largely Compliant
(Pr.16) Capital adequacy	Materially Non-compliant
(Pr.17) Credit risk	Compliant
(Pr.18) Problem assets, provisions, and reserves	Compliant
(Pr.19) Concentration risk and large exposure limits	Materially Non-compliant
(Pr.20) Transactions with related parties	Materially Non-compliant
(Pr.21) Country and transfer risks	Materially Non-compliant
(Pr.22) Market risk	Materially Non-compliant
(Pr.23) Interest rate risk in the banking book	Materially Non-compliant
(Pr.24) Liquidity risk	Compliant
(Pr.25) Operational risk	Largely Compliant
(Pr.26) Internal control and audit	Largely Compliant
(Pr.27) Financial reporting and external audit	Largely Compliant
(Pr.28) Disclosure and transparency	
(Pr.29) Abuse of financial services	Materially Non-compliant

The table reports the valuation of the CBSM Supervisory Regime, considering the compliance with Core Principles performed in 2010 by applying the 2012 revised structure.
(International Monetary Fund, 2010)

Table 1.4 shows that, in 2010, there were several "weak points" that needed to be remedied, particularly concerning some supervisory areas such as: auditing, licensing authorization, and risk management. In this regard, the government had to grant the banking licence, considering a non-binding recommendation of the national supervisory authority. Then, art. 12 of Law n. 165/2005, about the government authorisation, was updated in order to delegate the SMCB the full power regarding the licensing process. As stated in the Banking Regulation n. 7/2007, supervisory methods are not detailed (Forcellini, 2019).

The San Marino financial regulation has not adopted the Capital Requirement Directive and Basel III directive yet; however, the D.D. n. 50/2019 adopted Directive

2013/36/UE, Directive 2002/87/CE, and Regulation UE 575/2013 in the national banking Law. Moreover, on March 29, 2019, the D.D. n. 61/2019 endorsed the statements of MiFID II (Directive 2014/65/UE) and MiFIR (Regulation 600/2014), as well as Directive 2014/57/UE and Regulation 596/2015 (Forcellini, 2019).

The San Marino Central Bank executes inspections and write reports with the detailed results (weaknesses), which are also periodically described in specific public reports (San Marino Central Bank, 2014).

The San Marino Central Bank has implemented a supervisory reporting framework, in order to obtain structured data from financial intermediaries. The data are also used to publish online comprehensive reports. However, consolidated supervision is not fully in place. In 2016, the parent company register was activated, with the adoption of a specific Regulation on consolidated financial statements. The San Marino Central Bank has not adopted ad-hoc regulations about risk assessment for interest rates, financial exchange markets, and transfer risk. In fact, there is only a comprehensive value of all the cited risks, which makes a higher minimum requirement for solvency ratio in comparison with the single market (Forcellini, 2019).

1.8 Improvements of the Prudential Supervisory Framework

Moving on to the fourth step of the methodology described in Section 1.4, the study gives an overview of the Principles that show the weaknesses and threats of the San Marino's legislative framework regulating the financial system. Appendix C.1.1 details the legal developments for each Core Principle and it also offers a reviewed grade (i.e. "*Score 2021*") by comparing the recent financial regulation to the prescriptions delineated in the Bank for International Settlements report: "*Core Principles for Effective Banking Supervision"*. Thus, "*Scores 2021*" are assigned by following the given methodology on the 29 Core Principles.

As shown in Appendix C.1.1, since 2010 the Republic of San Marino has implemented several legal reforms in order to reach a more compliant financial industry, considering international standards.

Firstly, the independence of the Sammarinese supervisory authority was improved by amending Law n. 165/2005, in 2010. In fact, the Sammarinese Central Bank does not require the approval of Sammarinese government for licensing financial intermediaries, as art. 12 of Law n. 165/2005 was abrogated in 2019. In addition, the supervisory authority was assigned full control of both the extraordinary administration and the liquidation procedures for all financial intermediaries. In this regard, articles 10, 12, 15, 16, and 17 of the Sammarinese Central Bank's Statute (i.e. Law n. 96/2005), were modified to avoid the government requirement that, through the Credit and Savings Committee, it had to recommend to the Sammarinese parliament both the chairman and the members of the governing council of the San Marino Central Bank, in addition to the chairman of the auditors' board. Law 165/2005 (art. 101) still allows the Credit and Savings Committee to define the systemic strategies for the San Marino Central Bank. Moreover, Regulation n. 7/2007 was enhanced, in order to define specific criteria for granting the licensing criteria. In particular, board members, CEOs and the deputy CEOs cannot have criminal records and they need to avoid conflicts of interest (Forcellini, 2019).

A transformation of the issue about the exposure of "related parties" was made and new requirements for the limits assigned to financial groups were introduced, in order to reduce risks of transactions with said related parties and conflicts of interest. Moreover, San Marino Central Bank adopted Regulation n. 1/2019, in accordance with the Capital Requirements Directive IV (art. 91), which requires a reinforced criteria ("*fit & proper*") for those to be appointed as non-executive board directors, including additional criteria for chairman, vice-chairman, and executive directors (Forcellini, 2019).

To ensure proper supervisory activities, the Central Bank receives some binding information from banks, annually. In particular, financial intermediaries need to transmit a comprehensive list of both shareholders (to conform with Art. 3 of Regulation n. 1/2006) and beneficial owners (to conform with Art. 43 of Law n. 144/2016 and Art. 3 of Regulation n. 1/2006). All the regulations are published and updated on the San Marino Central Bank's website. Regulation n. 7/2007 (Art. V.V.4) requires prompt notifications about variations in the fit and proper criteria of board members and management. Every three years, owners need to demonstrate their adequacy in order to keep their shares. Moreover, the San Marino Central Bank evaluates whether a foreign financial intermediary's application is consistent with the framework of the national market, despite the fact that the specific criteria are not publicly available (Forcellini, 2019).

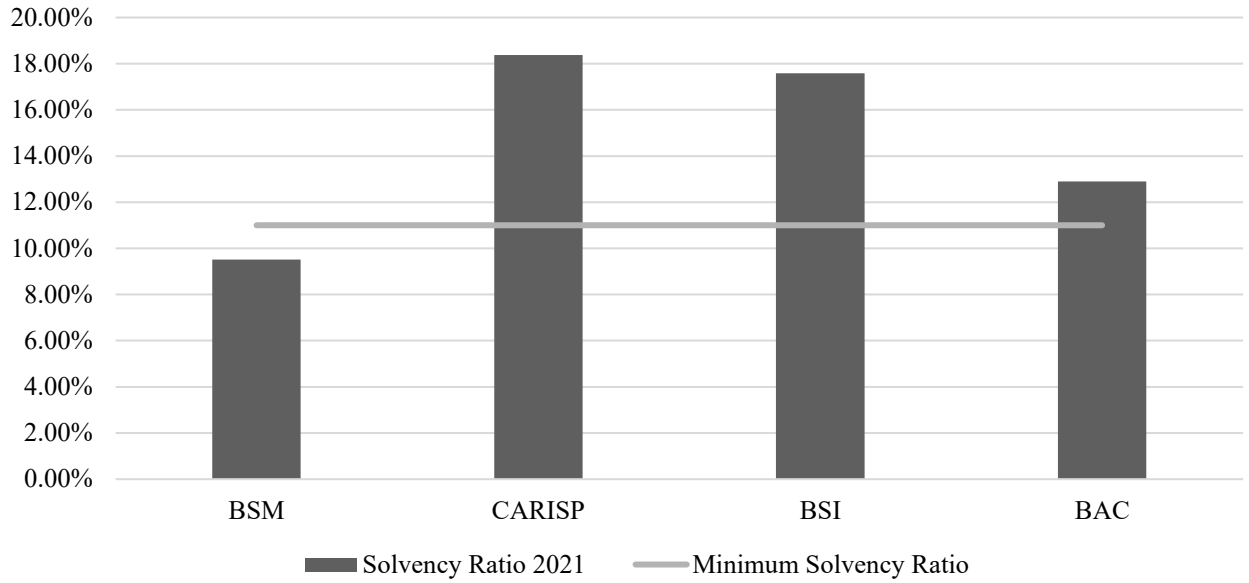
The San Marino Central Bank does not follow defined procedures in implementing the activities about the consolidated supervision, even if Regulation n. 7/2007 states higher limits than individual entities, for both the regulatory capital requirements (Art. VII.II.13) and risks (Art. VII.IV.6). Home-host relationships also experienced some relevant developments, considering that Law 165/2005 (Art. 103) was emended in order allow the exchange of financial information under conditions of total reciprocity with foreign supervisory authorities. Law 165/2005 was also revised to permit foreign-owned banks to forward information and data to parent companies and home country's supervisors (Forcellini, 2019).

Furthermore, the San Marino Central Bank allows foreign supervisory authorities to conduct on-site inspections, in accordance with the rules stated in an ad-hoc Memorandum of Understanding between authorities (Forcellini, 2019).

The San Marino Central Bank does not seem to have already defined a timeline to implement the Basel III standards (as planned by the Monetary Convention's Annex). This seems to be visible when aggregate systemic data are observed, since the average capital adequacy is much higher than the minimum standard. In particular, the average

capital adequacy was 14.59% on December 31, 2021, above the minimum requirement of 11% as specified by art. VII.III.9 of Regulation n. 7/2007 (Forcellini, 2019).

Figure 1.1: San Marino Banks' Solvency Ratios (December 31, 2021)



The figure shows the solvency ratios obtained from the 2021 financial statements of the San Marino banks, in comparison with the lowest threshold required by the San Marino Central Bank (11%) to be compliant with the national Regulation n. 7/2007. The banks are: Banca di San Marino (BSM), Cassa di Risparmio della Repubblica di San Marino (CARISP), Banca Agricola Commerciale (BAC) and Banca Sammarinese d'Investimenti (BSI).
(Banks' Financial Statements, 2021)

Considering market risk, Regulation n. 7/2007 was integrated with Art. VII.IX.12-2b in order to also consider larger exposure limits. This allowed an increased diversification about asset classes, economic industries, and geographical areas. The internal audit committees must set a plan to report to the San Marino Central Bank about potential accounting issues and data disclosure. In this regard, Regulation n. 1/2015 states the standards on financial accounting reporting, by following Regulation n. 2/2008, which authorises can monitor banks' financial statements carefully. In 2016, San Marino adopted the European directives on both individual and consolidated accounting standards, as it endorsed Directive 86/635/CEE et seq. Following the FSAP's results, San Marino made the relevant improvements to correct the field of financial service abuse. In particular, in 2014, San Marino adopted specific AML and

KYC Regulations, in compliance with international standards. The regulations about preventing and combating illicit financing (i.e. Law 92/2008) were also integrated with the processes that must be respected during customer confirmation, this being considered a golden step of the KYC policy. Financial intermediaries are in charge of the customers' due-diligence so that potential relationships with third parties must be taken into consideration, particularly for politically exposed persons. In this regard, articles 27-bis and 29 of Law n. 92/2008 require the implementation of preventive measures. Law 92/2008 (art. 13) introduces an additional improvement in the monitoring step, since it asks for continuous monitoring of transactions regardless of clients' risk profiles. San Marino also strengthened the procedures when transactions are executed before the conclusion of the due-diligence process, in accordance with Law n. 92/2008 (Art. 23). An old tradition of the Sammarinese banking industry was banking secrecy, as stated by Art. 36 of Law n. 165/2005. The law was amended to transform the "dark system" into a transparent system, as banks had to periodically disclose information to the national competent authorities. Exchange of information involved both information about money laundering and terrorism financing, as well as data about financial crime. Thus, the San Marino Central Bank increased the number of on-site and off-site inspections (Forcellini, 2019).

As shown in Appendix C.1.1, San Marino endorsed several European directives and regulations, which allowed the improvement of the national banking supervisory system. However, there is still room for improvement, considering the 2010 FSAP results, especially in the field of consolidated supervision, country and transfer risk, and market and interest-rate risk.

After implementing the proposed methodology for the case study of the Republic of San Marino, which requires to analyse the current national regulation in comparison with each essential and additional criteria of the Core Principles, as detailed in Appendix C.1.2, the final grades can be calculated. In particular, Table 1.5 shows the average value of the FSAP results in comparison with the 2021 average values of the

proposed methodology; the results augmented from 1.8 (i.e. lower than "*Largely Compliant*") in 2010 to 2.3 (higher than "*Largely Compliant*") in 2021.

Table 1.5: San Marino Core Principles Compliance Evolution Map

Rating	Value	Number of Cases		Number of Cases x Value	
		2010	2021	2010	2021
M.N.C.	1	13	4	13	4
L.C.	2	8	12	16	24
C.	3	8	13	24	39
	Total	29	29	53	67
	Average score	1.80	2.30	1.8	2.3

Note: M.N.C. = N/A = 0, C.P.27 = C.P.28 = 2L.C.

The table reports the average grade of San Marino (RSM), both in 2010 (by the IMF) and in 2021. The average grade was 1.8 (almost largely compliant) in 2010, while it increased to 2.3 (upper largely compliant) in 2021.
(International Monetary Fund, 2010)

1.9 International Compliance with the Basel Core Principles

Periodically, countries ask for updated FSAP reports, in order to show improvements of the local financial sectors at an international level. A comparison of countries' reports can become relevant when evaluating the level of competitiveness of financial systems in the global market. Moving on to the last step of the methodology described in Section 1.3, the result of the San Marino FSAP is compared with the results of a peer group of countries, which were selected by considering similar financial markets.

As recommended by the IMF, the comparable countries of the peer group are selected based on similar financial and regulatory aspects with the target country, in order to conduct a "*stand-alone grouping*" since "*the group is self-contained, with all institutions outside the group treated as external to the group*" (International Monetary Fund, 2006).

In particular, the peer group is compiled following two main drivers:

i) Financial regulation: the selected comparable countries have similar banking sectors, which show consistent banking regulations with the target country, considering both business strengths (such as the banking secrecy and the anonymous societies) and business opportunities (such as sovereign supervisory banking freedom and monetary policy independence).

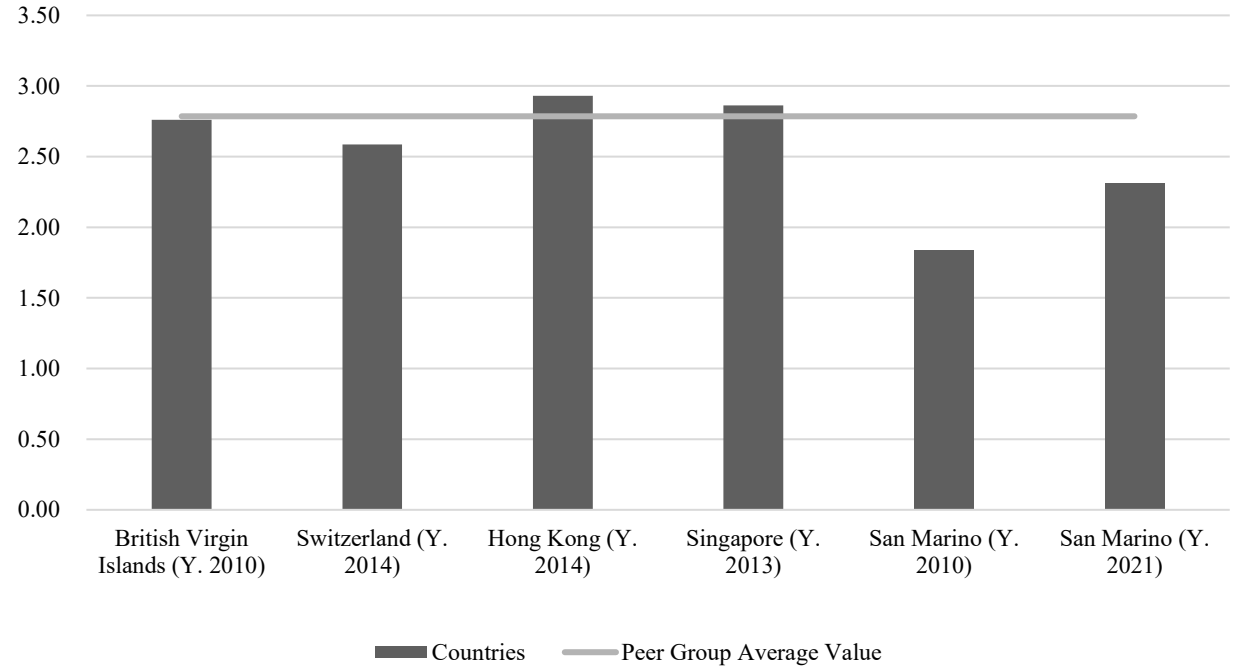
ii) Available data and information: the selected comparable countries distribute several publicly available "sector-level data" and "banking information" that allow to perform the steps of the proposed assessment model, with a focus on the required information needed to analyse the essential and additional criteria of the CPs. In doing this, countries that have already experienced the FSAP, possibly during the same period, should be favoured because precise, framed, and harmonised data would be already available. If there are not comparable countries with published FSAP reports, the simplified assessment model should also be applied to the selected comparable countries, in order to make the comparison with the target country.

After that, standardised values are assigned to all FSAP grades, to calculate a final arithmetic average. The average grades allow to rank the quality of the supervisory regimes across countries (International Monetary Fund, 2006).

Following these drivers, Small European countries (e.g. Andorra, Liechtenstein, and Monaco) would appear to be appropriate to create the peer group; however, they have never been involved in the FSAP and there are not several publicly available harmonized information, so other comparable countries are considered in the analysis.

The peer group is built by including four small countries, which were historically characterised by offshore financial markets (i.e. similar financial regulations) in the early 2000s with several publicly available countries, which have experienced the FSAP process: British Virgin Islands (BVIs), Switzerland, Hong Kong, and Singapore. The IMF performed the FSAP for the BVIs, Switzerland, Hong Kong, and Singapore in 2010, 2014, 2014 and 2013, respectively.

Figure 1.2: Peer Group Comparison



The chart shows the grade of each country included in the peer group used to make a comparison with the San Marino FSAP in 2010. The grey line shows the average value of the peer group grade, which appears to be significantly higher (i.e. 2.79) than the San Marino value in 2010 (i.e. 1.84). (International Monetary Fund, 2010, 2013, and 2014)

As revealed in Figure 1.2, Hong Kong shows an average grade of 2.93, which is the highest value in the peer group, with 27 fully compliant items over 29 (International Monetary Fund, 2014). Singapore and BVIs are competitive, showing average grades of 2.86 and 2.76, respectively (International Monetary Fund, 2010, 2014). The BVIs' result is due to CP 24 (i.e. "*Consolidated Supervision*"), which turns out to be Not-applicable (N/A) since "*banks in BVI operate as solo units without subsidiaries or cross border activities*" (International Monetary Fund, 2010). Switzerland shows an average grade of 2.59, with two CPs that are "*Materially Non-compliant*" (i.e. CP 9 "*Supervisory Techniques and Tools*" and CP 2 "*Independence, Accountability, Resourcing and Legal Protection for Supervisors*") (International Monetary Fund, 2014). Figure 1.2 shows the total average grade of the peer group (i.e. 2.79 - almost

"*Compliant*"), which is sensibly higher than the average grade of San Marino (i.e. 1.84 with 11 CPs "*Materially Non-compliant*").

Following this, Table 1.6 shows the impact of the recent San Marino reforms to the FSAP grades compared with the peer group. As said, the improvements are relevant even though it shows that the Institutions should improve the compliance level of the legislation with respect to the Basel Core Principles considering some specific aspects. It is relevant to set up a tougher background for optimizing the association process with the European Union.

Table 1.6: Core Principles Peer Group Comparison

Index		**Peer Group**					**Target Country**	**Target Country**
Rating	**Value**	**British Virgin Islands (Y. 2010)**	**Switzerland (Y. 2014)**	**Hong Kong (Y. 2014)**	**Singapore (Y. 2013)**	**Average**	**San Marino (Y. 2010)**	**San Marino (Y. 2021)**
M.N.C.	1	1	2	0	0	0.75	11	4
L.C.	2	4	8	2	4	4.50	7	12
C.	3	20	19	27	25	22.75	7	13
	Total	25	29	29	29	28	25	29
	Average score	2.76	2.59	2.93	2.86	2.79	1.84	2.31

Note: MNC = N/A

The table reports the average grade for each country that comprises the peer group. In addition, it shows the peer group's average value (i.e. 2.79), which appears significantly higher than the 2010 San Marino result (i.e. 1.84). However, the methodology gives an average grade of 2.31 for San Marino in 2021, implying that it has introduced significant reforms in the national supervisory regime.

(International Monetary Fund, 2010, 2013, and 2014)

San Marino appears to have implemented several IMF recommendations in order to improve the country's results; however, it has never asked for a review of the 2010 FSAP report, which can create uncertainty about the financial sector's reputation.

1.10 Conclusions

The methodology developed in Section 1.4 appears to be effective in evaluating the soundness of the local banking sector's compliance with the FSAP process. It highlights the strengths and weaknesses of a national banking industry, which simplifies market analysis for the key players at a national and international level. In fact, the methodology allows to obtain a framework for analysing opportunities and threats to national banking sectors. The assessment methodology provides a concrete way to obtain an updated analysis of the level of the soundness of national banking sectors, as the IMF would require in performing the FSAP, which can take up to two years for a single country.

Considering the case study, the Republic of San Marino needs to update its banking regulation to successfully enter the single market, as the Treaty of Maastricht details the requirements and the settings (artt. 49 and 6) that any country must respect, in order to become a member State. The requirements were developed by the Copenhagen European Council in 1993, strengthened by the Madrid European Council in 1995, and plan the capability of a Country to guarantee political and economic stability (European Commission, 2019).

In this regard, Appendix C.1.3 summarises some relevant interventions that San Marino should make in the financial industry, considering the current association agreement with the European Union. Update market risks' regulations (e.g. interest risk, country risk and transfer risk) seem to be urgent. Consolidated supervision (Basel Core Principle 12) and home-host relationships (Basel Core Principle 13) seem to be critical. The findings (such as in Table 1.6) point out tangible developments in the financial and legal framework that indicate the necessity to apply for a new FSAP.

The methodology results can be useful, not only to provide the supervisory authorities with an overall view before starting the periodical FSAP review, but it can also be implemented to detect periodical weakness in the banking sector. The value of obtaining a preliminary result is even higher for countries that need a FSAP update

since "*both the financial stability assessment and the financial development assessment components are identical between an initial FSAP and a FSAP update*" (International Monetary Fund, 2021).

Countries can experience financial instability following reputational deterioration due to lower results than expected. In this regard, the analysis of the financial sector of San Marino shows specific supervisory deficiencies, as detailed in Appendix C.1.1, related to the required corrective actions illustrated in Appendix C.1.3, which should be adopted *ex-ante* the next IMF review. The analysis points out relevant aspects that are useful to "*gauge the stability and soundness of the financial sector and to assess its potential contribution to growth and development",* as broadly required by the FSAP assessment, even though it does not take into consideration some other information, such as the data collected by the IMF during the on-site visits (International Monetary Fund, 2021). However, the limit of the performed analysis tends to produce conservative results, which should be adjusted following information provided by supervisory authorities during specific interviews.

In conclusion, the analysis of FSAP results is relevant when analysing the quality level of bank regulation and supervision, which can impact on the banking risk in accordance with the IMF, even though the literature does not seem consistent in analysing the real effects of regulations on the financial sector since "*only a limited number of studies have examined the impact of bank regulation and supervision on bank fragility*". However, the literature broadly agrees with the fact that "*banking regulation and supervision has an effect on the risks of high-risk banks*", which can even endanger the stability of the banking industry when they become significant intermediaries (Klomp, 2012).

To date, the literature seems to leave room for further analysis in estimating both the effectiveness of the FSAP assessment, to assure banking stability, and the impact of forecasting the effects of regulatory improvements to the FSAP results.

Chapter 2

The Impact of Covid-19 on Dividend Payout Policy: Evidence from the Italian Banking Industry

Abstract

This chapter investigates how the Covid-19 pandemic affected the dividend payout policy of listed financial intermediaries on the Italian stock exchange. Utilising data from the 25 financial intermediaries listed on FTSE Mib, FTSE Mib Mid Cap, FTSE Mib Small Cap and FTSE Italia Star, this chapter shows that several listed banks and insurance firms in the sample decided to keep paying dividends to provide the market with good signals during the outbreak. A logit multivariate regression model is performed to analyse the impact of some key metrics (regarding profitability, leverage, and liquidity) to dividend payout policy, before and during the pandemic. The findings show that the capability to generate cash flow is significant when continuing to increase dividend payouts, with respect to leverage and profitability.

2.1 Introduction

This chapter intends to analyse the effects of the Covid-19 pandemic on the dividend payout policy of the listed financial intermediaries on the Italian stock exchange (FTSE Mib, FTSE Mib Mid Cap, FTSE Mib Small Cap, and FTSE Italia Star). In doing this, the research provides a detailed description of the regulations adopted by Italian banking authorities in order to protect banks' capital, regarding changes in dividend payout policies during the Covid-19 pandemic.

The Covid-19 pandemic was a serious outbreak, which was identified in the city of Wuhan, China, in December 2019. The World Health Organisation (WHO) declared the outbreak to be a "*Public Health Emergency of International Concern*" on January 30, 2020 and a "proper" pandemic on March 11, 2020 (World Health Organisation, 2020). Thus, according to the WHO, the implemented methodology assumes that the pandemic started in 2020 and ended in 2022. Covid-19 impacted on several economic areas by involving a broad range of industries, both in the real economy and in the financial markets. At that time, the EU Gross Domestic Product (i.e. GDP) decreased by 6.2%, while the euro area GDP declined by 6.6%. The inflation rate of the euro area contracted by 0.3% (it was 1.2% in 2019). In this regard, the pandemic's effects raised relevant risks to the stability of the financial and banking systems (European Central Bank, 2021). In this context, the Italian market was deeply impacted by the outbreak, even in comparison with the EU market. For instance, during the worst phase of the pandemic, FTSE Mib decreased by around 26% in the first two weeks of March 2020 and Fitch revised the Italian GDP from 0.2% to -8.0%% in 2020 (European Central Bank, 2021).

Even if extremely rare, in the past, some other outbreaks impacted on the economy, but none of them appears to have required specific restrictions as those adopted during Covid-19. Some of the most relevant pandemics were: the Black Death (1347-1351) that led to the deaths of 75-100 million people; the Bleeding Fever (1545-1548) in Mexico; the Cholera epidemic (1899-1923); the AIDS virus (started in 1908); the

severe acute respiratory syndrome (i.e. SARS) in Asia and Canada between 2002 and 2003; Ebola, Swine Flu, and others (Zeren and Hizarci, 2020).

Considering the banking industry, in 2020, the IMF required countries to adopt an "*appropriate regulatory and supervisory response to deal with the impact of the Coronavirus pandemic that* [could] *maintain the balance between preserving financial stability, maintaining banking system soundness and sustaining economic activity*" (Awad et al., 2020). In this regard, the pandemic impacted on the banking quality of assets (i.e. loan portfolios) due to the difficulties of borrowers in repaying their loans. Therefore, supervisory authorities issued ad-hoc regulations and guidelines to keep the capital buffers at a safe level, by instructing shareholders and managers to revise their operational strategies and capital distribution plans, such as dividend payout policies (Awad et al., 2020). However, as described in the following sections, the impact of the pandemic on banking profitability and liquidity is still quite controversial.

It is well known that the banking system's soundness is crucial for assuring the stability of the European Union. On the one hand, financial intermediaries provide most of the credit to businesses and households, to develop the real economy but, on the other hand, they are the deposit-takers from savers. According to Quaglia et al. (2023), the pandemic not only created tensions for the economic governance of the EU, "*in particular,* [for] *Economic and Monetary Union (EMU), but it is was also a major challenge for Banking Union, which* [was] *established in the euro area in various steps between 2010 and 2015*" (Quaglia and Verdun, 2023). Thus, at the European level, national banking supervisory authorities tried to coordinate their strategies to support financial intermediaries in preserving capital and liquidity, even at the expense of short-term profitability, to face the pandemic's effects. However, the effectiveness of the financial intermediaries' responses during the pandemic needs to be properly analysed, especially for the Italian banking industry, which was particularly affected by Covid-19. In this regard, the research focuses on the Italian market, since there are no specific contributions about the pandemic's effects on shareholders' profitability, specifically to the dividend payout policy. Most of the literature about the impact of

the pandemic to the dividend payout policies mainly focused on American, Asian, and European markets, which also provides controversial points of view about it. Thus, the analysis of the Italian market intends to answer the research question, which arises precisely from the dichotomy between keeping paying dividends to provide the markets with positive signals and omitting dividends to protect liquidity buffers and capital reserves. In this regard, the analysis of the Italian market, by focusing on the banking industry, appears to be relevant in realising the typology of responses to a severely affected area, such as the Italian one; it can also support the research into understanding non-obvious market behaviours of financial intermediaries with respect to shareholder profitability during crisis, such as environmental disasters, further outbreaks, economic crises, etc.

The response of the Italian banking industry appears to be surprising because financial intermediaries seem to pay more attention to market perceptions than fundamental analysis. In this regard, the research question appears to be relevant, not only to clarify what happened during the pandemic in the Italian stock market for the banking industry, but also to provide the literature with further evidence of the level of suitably of the unusual measures adopted by supervisory authorities, in order to support financial intermediaries during systemic crisis.

Section 2.2 conducts a specific analysis of the impact of the pandemic on the Italian banking sector by focusing on the dividend payout policies. In particular, the first sections analyse the impact of the pandemic on the Italian economy and the banking industry by describing the trend of some key indicators. In particular, the research focuses on both macroeconomic metrics, such as GDP, unemployment, public debt to GDP, and some key performance indicators, such as equity, loans, deposits, and number of banks.

Then, Section 2.3 describes the regulatory measures implemented by the Italian competent authorities, in comparison with some other European countries.

An empirical approach was implemented, in order to quantify the measures' effectiveness on the Italian financial market, since the pandemic spurred financial intermediaries on to face new challenges in adjusting profitability and preserving shareholders' capital.

Following this, the research contributes to the analysis of the pandemic's effects on dividend payout policies, by analysing the significance of some key metrics, which reflect changes in profitability, leverage, liquidity, and market value, before and during the pandemic. In particular, return on equity, return on assets and asset turnover have been considered to reflect the consequences of profitability on dividend payout policies, while free cash flow per share has been included, to analyse liquidity effects. Debt to equity and price to fair value have also been used to evaluate leverage and market valuation effects on dividend decisions, respectively.

A logit multivariate regression model was performed to understand the empirical efficacy of the adopted measures, following the market's responses. In developing this, the time-window before the Covid-19 pandemic has been considered to be 2013-2019, while the time-window during the Covid-19 pandemic has been considered to be 2020-2022.

Thus, Chapter 2 is organised as follows: Section 2.1 provides the introduction, then Sections 2.2 and 2.3 provide a description of the impact of the pandemic on the Italian economy with a focus on the banking industry, while Section 2.4 details the extraordinary measures implemented to face Covid-19 by the European and Italian supervisory authorities. Section 2.5 provides an extensive analysis of the existing literature, in order to develop the research question, which finds answers in Section 2.6, by implementing the regression model to evaluate the impact of key metrics to dividend payouts, before and during the pandemic. Finally, Section 2.7 provides the conclusions to the present research, by explaining the main limitations of the current research and suggesting further research opportunities in the field.

2.2 The Impact of the Pandemic in an Italian Economic Context

This section provides an overview of the main changes of the Italian macroeconomic background caused by the Covid-19 pandemic.

The outbreak cannot be considered as a self-regulating phenomenon, but the effects follow societies' lifestyles, which also impact on investors' decisions, such as the asset allocation process (World Health Organisation, 2019).

The analysis of the macroeconomic context allows to understand risks, banking supervisory safety-nets and effects, which impacted on the Italian banking sector. Thus, this section details the trends of the following key macroeconomic dimensions: i) Gross Domestic Product; ii) Unemployment; and iii) Public debt to GDP ratio.

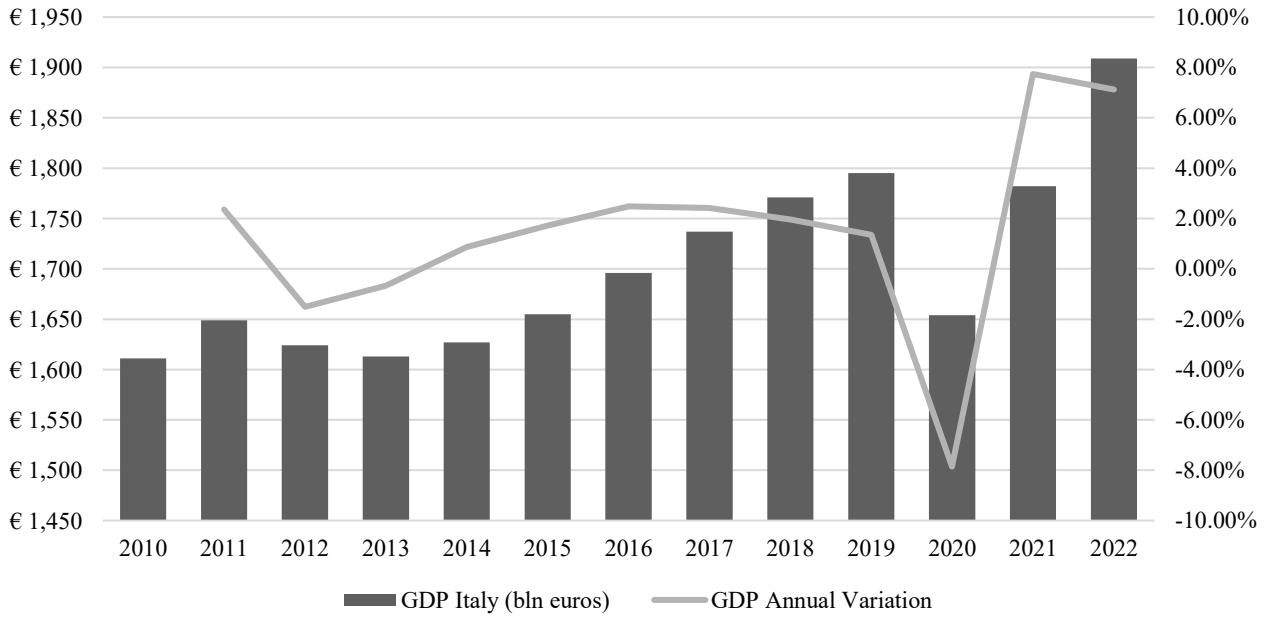
Italy is a member country of the European Union and it takes part in the most important international organisations, including the Group of Eight (G-8), the World Bank Group, the International Monetary Fund, etc. It is the eighth largest economy in the world and the fourth largest economy in Europe (Statista, 2020a).

Before the beginning of the pandemic, the Italian Gross Domestic Product (GDP) was approximately €1.79 trillion in 2019, which dropped to €1.65 trillion in 2020, which is what it was in 2015 (Statista, 2020b). The consequences of the pandemic on the Italian economy were also relevant due to the fact that they worsened the regional disparities between northern and southern Italian regions (Lombardy, Emilia-Romagna, Veneto, and Piemonte contribute 48.2% of Italy's GDP) (Sanfelici, 2020; Statista, 2020b).

The Italian economy is rooted in producing and manufacturing goods, primarily by small and medium-sized firms, which generate around "*66.9% of overall value added in the national non-financial business economy, exceeding the EU average of 56.4%*". (Organisation for Economic Co-operation and Development, 2020).

In this regard, Figure 2.1 shows the trend of the Italian GDP (current price) from 2010 onward.

Figure 2.1: Trend of the Italian Gross Domestic Product (in billions of Euros) from 2010-2022



The figure shows the trend of Italian GDP, expressed in billions of euros from 2010-2022. The reduction in both GDP and consumption was due to the short-term pandemic effects and led to several companies being in financial distress.
(Statista, 2020b)

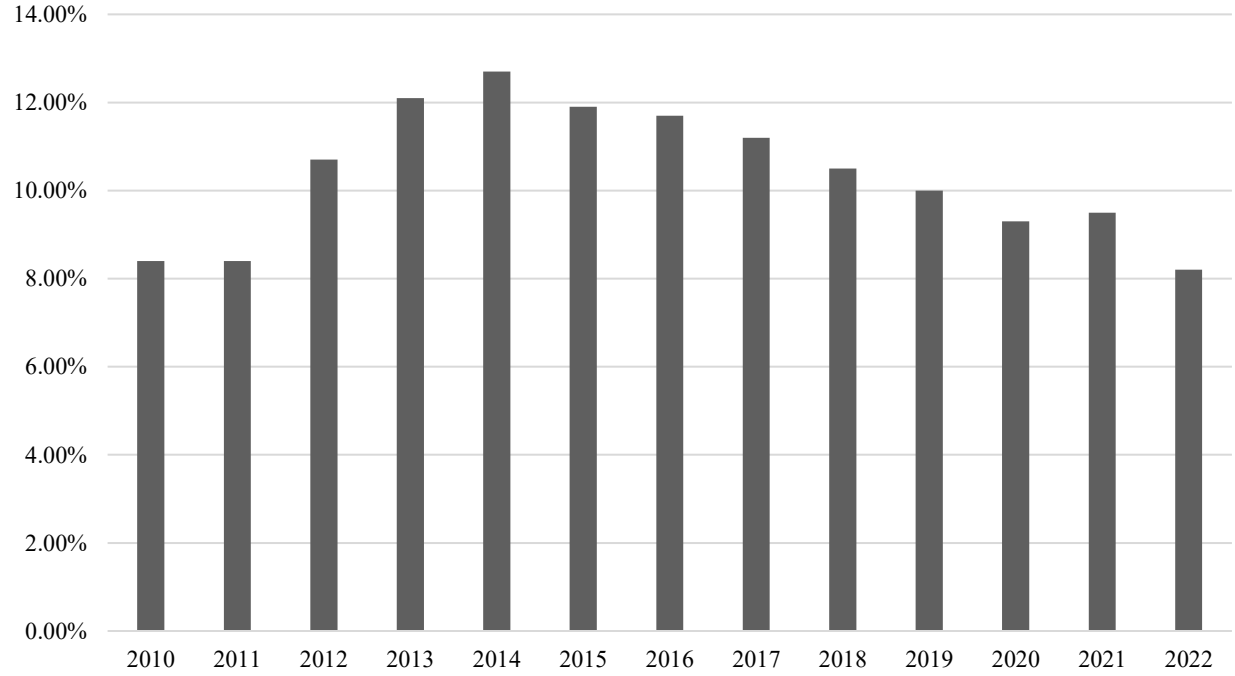
A direct consequence of the reduction in GDP in 2020 was a decrease in consumption, which also resulted in an increase in the cost of credit. The reduction in both consumption and GDP, which characterised the pandemic, led several companies to fall into distress, due to low demand in the economy. Therefore, companies started reducing both production and prices, in order to try to boost the market demand. As a consequence, undercapitalised and weak companies, which did not implement conservative strategies in 2020, had to reduce their workforce levels, and this contributed to an increased unemployment rate of 9.50% in 2021.

This effect also worsened disparities between regions in the south and north of Italy (Sicily, Campania, and Calabria registered unemployment rates from 16.5-17.8%) (Statista, 2020c). In this regard, Italy showed the largest regional disparities among OECD countries (Organisation for Economic Co-operation and Development, 2020). Moreover, "*youth unemployment rates above 50 per cent* [were] *observed in the South*

of Italy, while the province of Bolzano in the North shw[ed] *the lowest rate in the country (10% in 2017)*" (Sanfelici, 2020).

Figure 2.2 shows the trend of Italian unemployment rate from 2010-2022.

Figure 2.2: Trend of the Italian Unemployment Rate from 2010-2022

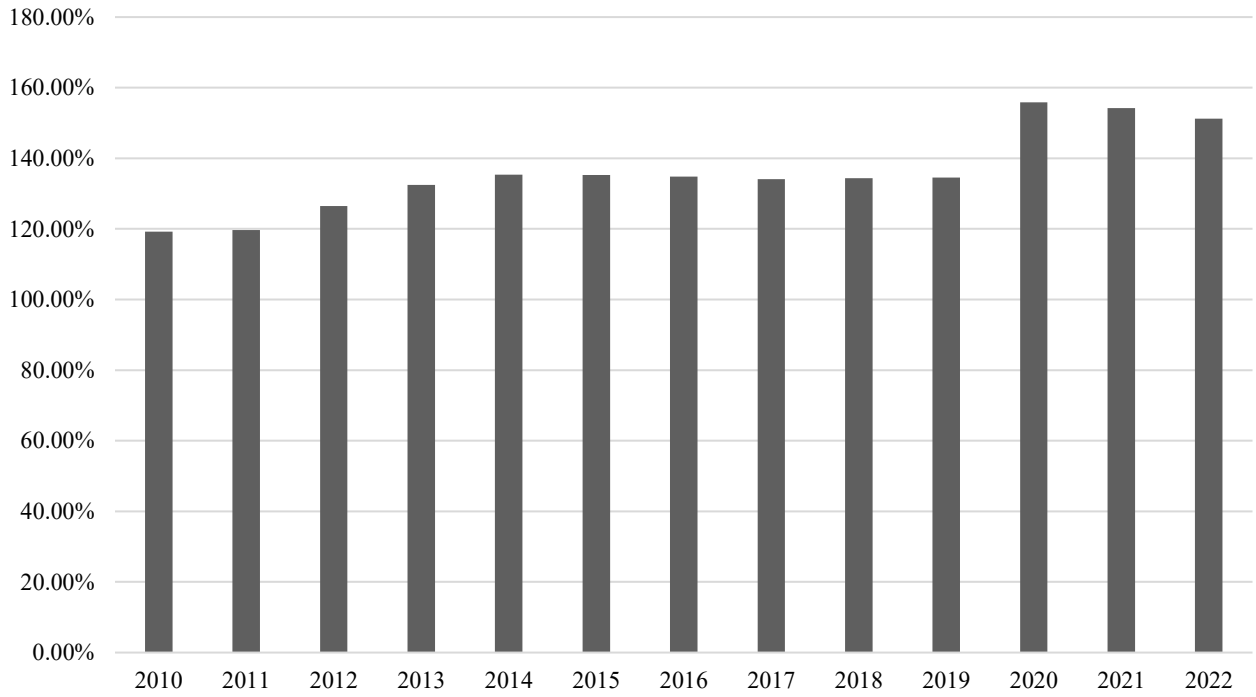


The figure shows the trend of the unemployment rate in Italy from 2010 to 2022. The increase in 2021 was due to the pandemic effects.
(Statista, 2020c)

Concerning public debt, the government debt to GDP ratio increased by 21.25%: from 134.56% in 2019 to 155.81% in 2020. As analysed before, half of the growth was caused by the fall in GDP (Statista 2020d). According to Sanfelici (2020), high debt levels created "*serious constraints on government public spending and on the implementation of expansionary fiscal reforms. The number of families and people living below the poverty line grew*" (Sanfelici, 2020).

Figure 2.3 shows the trend of the Italian public debt to GDP ratio from 2010-2022.

Figure 2.3: Trend of the Italian Public Debt to Gross Domestic Product from 2010-2022



The figure shows the trend of the public debt to GDP ratio in Italy from 2010-2022. The level increased considerably in 2020 due to the pandemic.
(Statista 2020d)

The impact of Covid-19 is relevant to the economy, considering that GDP decreased by around 4.8% during the first quarter of 2020, compared with the first quarter of 2019. In Italy, the economic context is characterised by small and medium enterprises that "*may have less resilience and flexibility in dealing with the costs these crisis shocks entail*", since they have fewer resources and less opportunities to access capital. Even the institutional health measures, which were adopted to avoid the spread of Covid-19, impacted on "*all non-core or strategic production activities, an estimated 7.8 million workers became temporarily unemployed*" (Sanfelici, 2020). The trend analysis shows how negative the pandemic was for the Italian economy during the Covid-19 outbreak. However, it also raises concerns for the long-term sustainability of the economy, considering how the population and birth rate have been weakening over time.

2.3 The Impact of the Pandemic on the Italian Banking Industry

It is known that banks play a crucial role in the economy by borrowing financial resources from families in order to fund enterprises, which can employ resources to boost the real economy.

According to traditional banking theory, financial crises start when financial intermediaries are not able to systematically perform the described function due to either management's weaknesses or systemic deficiencies. Over time, there have been several financial crises that have produced notable consequences on the global economy, including: the 1930 Great Depression; the 1980 Latin American debt crisis; the 1997 Asian financial crisis; and the 2008 global financial crisis (Paul, 2010).

The Covid-19 outbreak caused widespread concern and economic hardship for consumers, businesses, and communities across the world. In particular, the Italian banking industry was highly exposed to the pandemic through the wide support provided to families (Mersha and Worku, 2020).

Based on data published by the Bank of Italy, this section describes the effects of the pandemic on Italian banking's core business, analysing six economic dimensions from 2020-2022: i) Number of banks; ii) Loans; iii) Customer deposits; iv) Wealth management deposits; v) Profitability; and vi) Equity (Mersha and Worku, 2020).

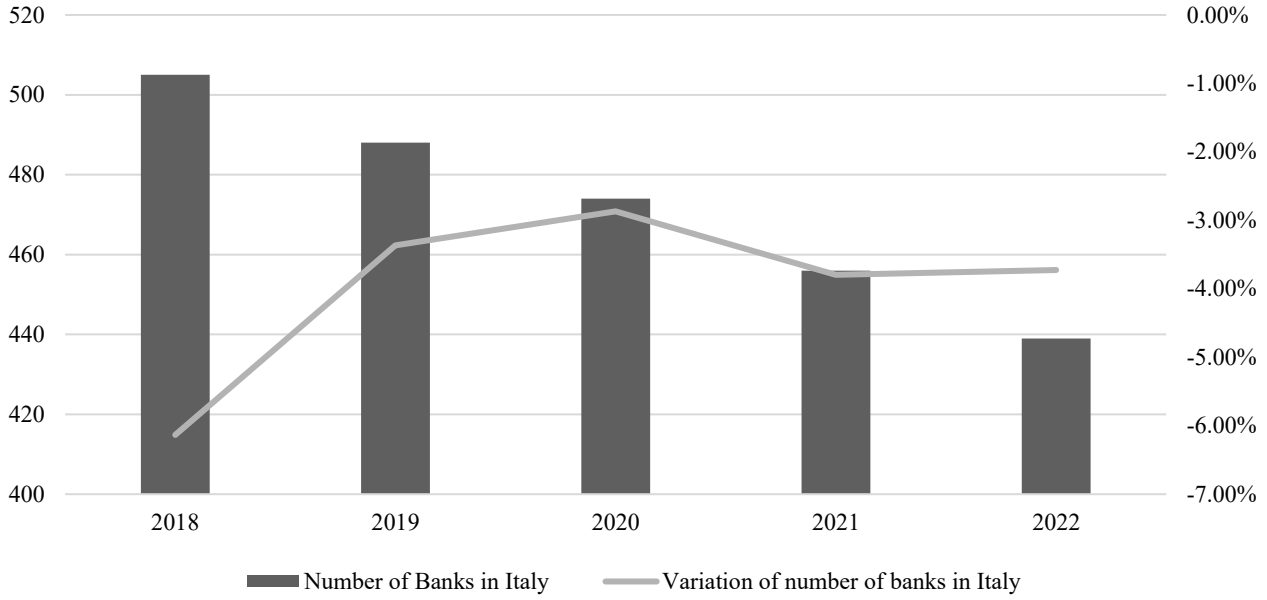
i) Number of Banks

The financial crisis in 2007 started a concentration process in the banking sector, which spurred on the reduction of the number of financial intermediaries; this worsened during the pandemic. In Italy, the number of banks decreased from 505 to 439, between 2018 and 2021. In this regard, higher competition and online banking services caused the decline of traditional banking activities (Bank of Italy, 2023).

Figure 2.4 shows the trend of both the number of banks (including all credit institutions) and the variation in percentage of the number of financial intermediaries,

from 2018-2022. During the pandemic (2020-2021), the number of banks decreased by 3.8%, which was higher than the previous year (-2.87%) (Bank of Italy, 2023).

Figure 2.4: Trend of the Number of Banks in Italy from 2018-2022

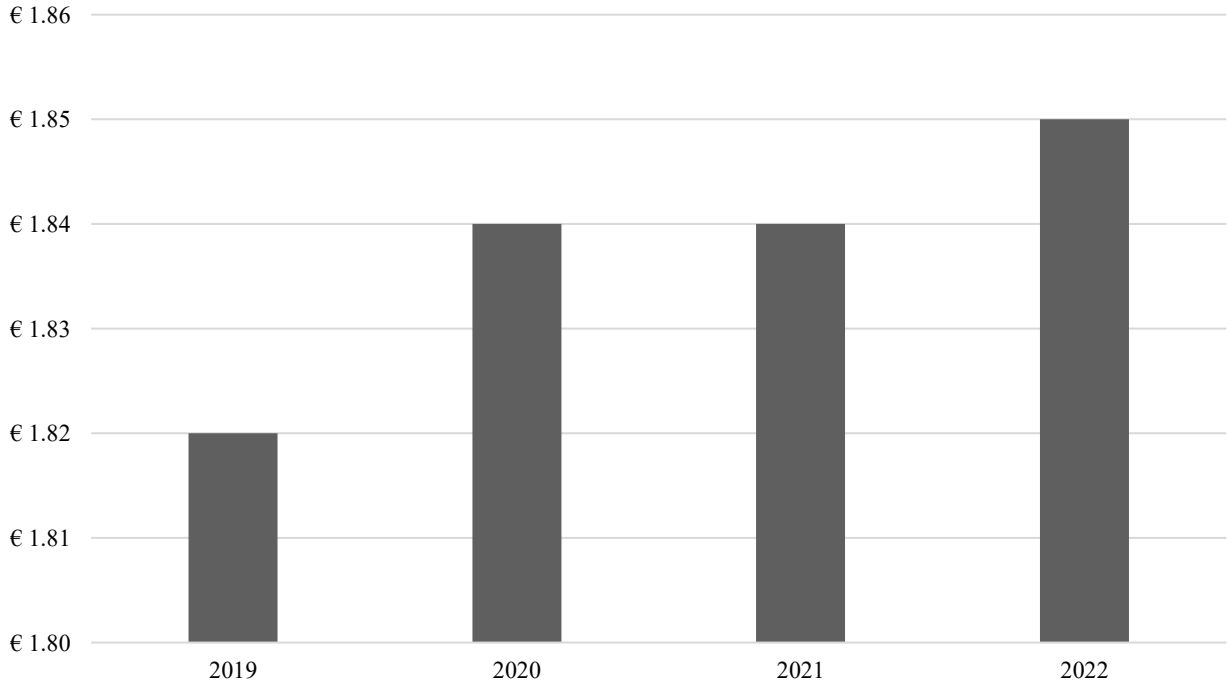


The figure shows the trend of the number of banks and the relative annual percentage variation in Italy, from 2018-2022. The pandemic spurred on the concentration process across financial intermediaries, which started with the 2007 financial crisis.
(Bank of Italy, 2023)

ii) Loans

During Covid-19, loans increased by around 1.65%, from €1.82 trillion in 2019 to €1.85 trillion in 2022. Figure 2.5 shows the trend of the amount of granted loans on an annual basis for the Italian market, considering that the overall amount was stable at €1.84 trillion from 2020-2021, due to the reduction in economic activity following the pandemic. However, policymakers adopted measures to "*strengthen banks' lending capacity by preserving their capital and encouraging flexibility in loss accounting*". Policymakers encouraged financial intermediaries to use liquidity buffers to increase lending activities, by setting up specific supporting programs, such as state-backed loan guarantees and funding for lending programs (Casanova, Hardy, and Onen, 2021). These aspects are further analysed in the following sections.

Figure 2.5: Trend of the Amount of Loans Granted in Italy from 2019-2022



The figure shows the trend of the amount of loans, in trillion of Euros, in Italy from 2019-2022. The pandemic increased the volume due to the augmented economy's needs.
(Bank of Italy, 2023)

iii) Customer Deposits

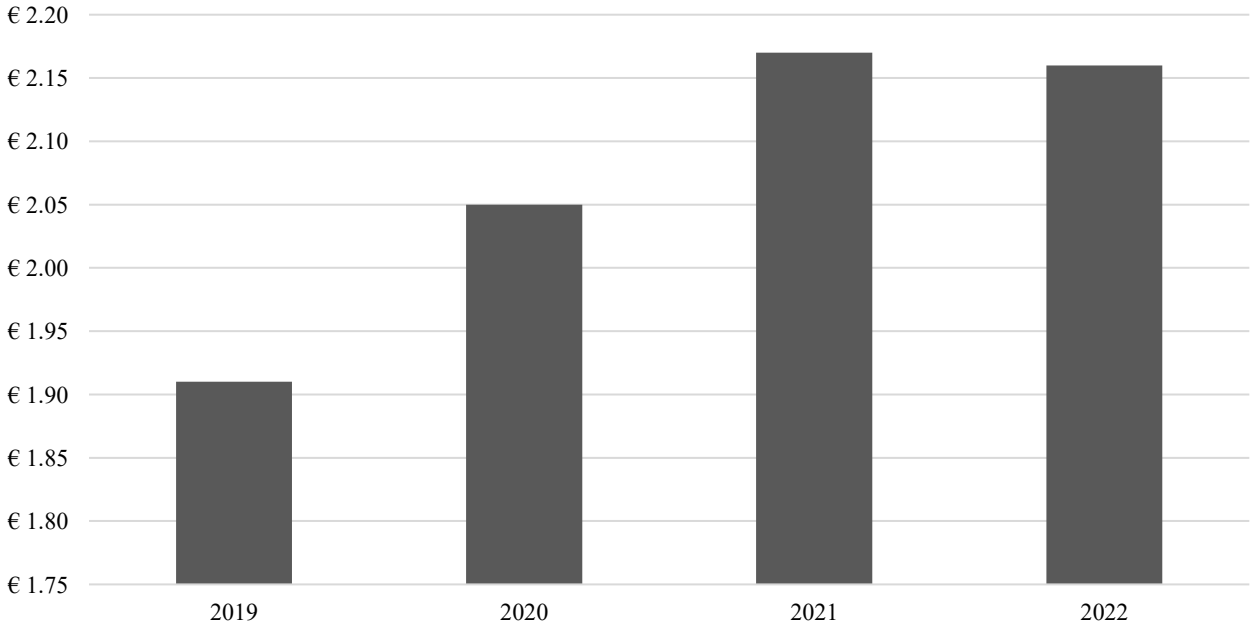
Total deposits increased by around 13.09%, from €1.91 trillion in 2019 to €2.16 trillion in 2022.

Figure 2.6 shows the trend of customer deposits, which increased by around 13.61% from 2019-2021 and followed a reduction of around 0.5% in 2022.

The reduction in deposits and increase in loans reveals the need for economic resources to support growth.

Even if it provides the real economy with positive signals, it creates pressure on margins for financial intermediaries, which experience minor resources being intermediated.

Figure 2.6: Trend of the Amount of Customer Deposits in Italy from 2019-2022



The figure shows the trend of customer deposits, in trillions of Euros, in Italy from 2019-2022. The pandemic pushed customers to increase liquidity due to high uncertainty in the markets.
(Bank of Italy, 2023)

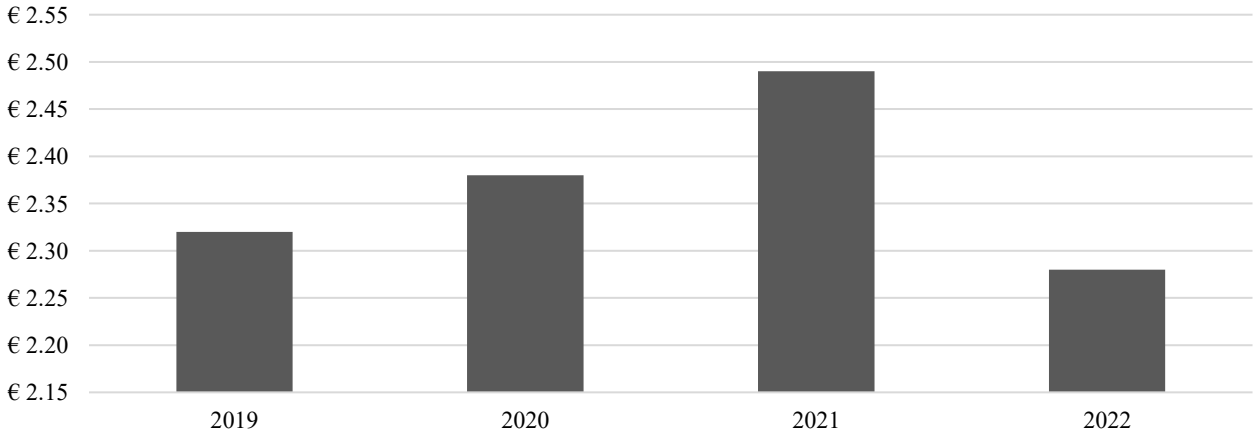
iv) Wealth Management Deposits

Wealth management deposits decreased by around 1.72%, from €2.32 trillion in 2019 to €2.28 trillion in 2022.

Figure 2.7 shows the trend of wealth management deposits, which increased by around 7.33% from 2019-2021 and followed a reduction of around 8.43% in 2022. The reduction in both wealth management deposits and customer deposits signals the economic rebound after the pandemic period, which is confirmed by the increase in the amount of granted loans.

According to the Bank of Italy, at the beginning of 2020, investors opted to reduce investments in shares in favour of bonds, which are relatively less risky; however, at the end of 2020, the increase in the amount of wealth management deposits counterbalanced the first quarter of 2020, due to the actions adopted by the authorities at that time (Angelini and Gobbi, 2020).

Figure 2.7: Trend of the Wealth Management Deposits in Italy from 2019-2022

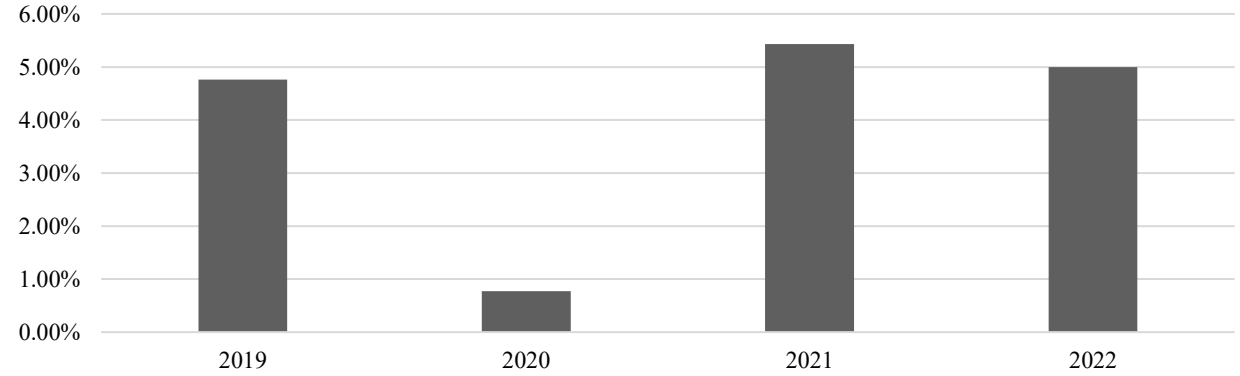


The figure shows the trend of the amount of the wealth management deposits in Italy from 2019-2022. The pandemic pushed an increase in this amount.
(Bank of Italy, 2023)

v) Profitability

Return on equity (RoE) is considered to be a profitability indicator for the Italian banking sector from 2019-2022. As shown in Figure 2.8, RoE dropped in 2020, due to Covid-19, even though the decrease was not as severe as that during the 2008 financial crisis. In 2021 and 2022, Italy recovered from the shock by experiencing a RoE increase of around 5.04% and 5.00% in 2021 and 2022, respectively (Statista, 2023).

Figure 2.8: Trend of the Return on Equity of the Banking Industry in Italy from 2019-2022



The figure shows the trend of the Return on Equity (RoE) of the banking industry in Italy from 2019-2022. The profitability fell in 2020, due to the Covid-19 outbreak.
(Bank of Italy, 2023)

vi) Equity

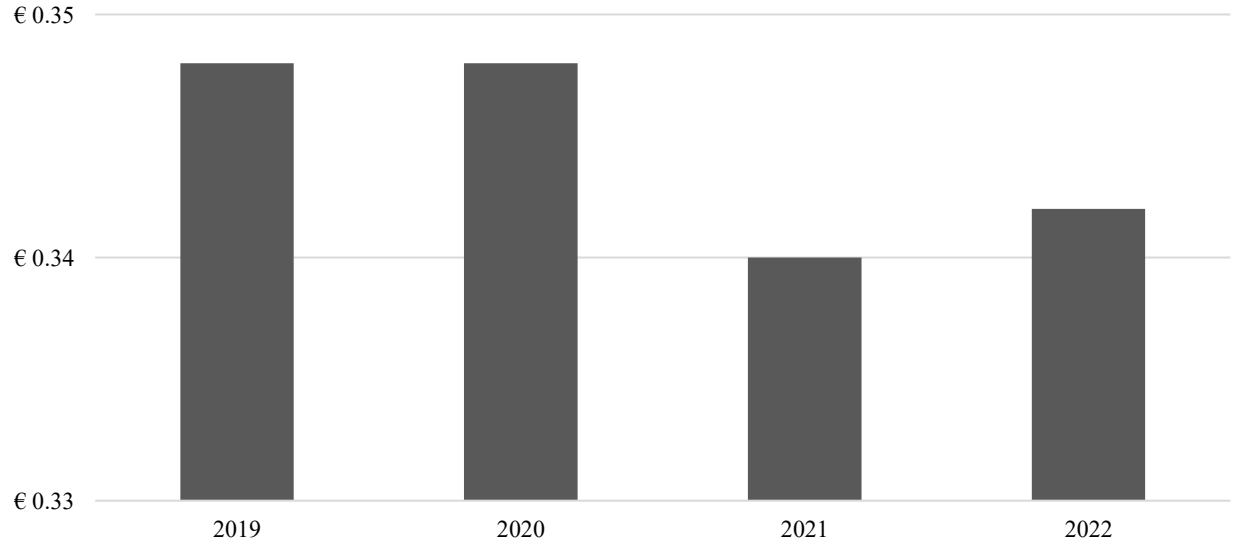
Equity decreased by around 1.72%, from €0.348 trillion in 2019 to €0.342 trillion in 2022.

Figure 2.9 shows the trend of the stock of equity, which decreased by around €2.30% from 2019-2021 and followed an increase of around 0.59% in 2022. The reduction in equity follows the consequences of the Covid-19 pandemic, considering that it was stable at €0.348 trillion just before it began.

As a consequence, according to Blank et al. of Harvard University (2020), the pandemic showed that policymakers needed to adopt strategies to promote early recapitalisation of the banking industry, "*by stopping dividends and by encouraging new equity issues*" (Blank et al., 2020).

Regarding this, the next section provides a full analysis of the impact of dividend policies on the banks' equity in Italy, compared with the European Union.

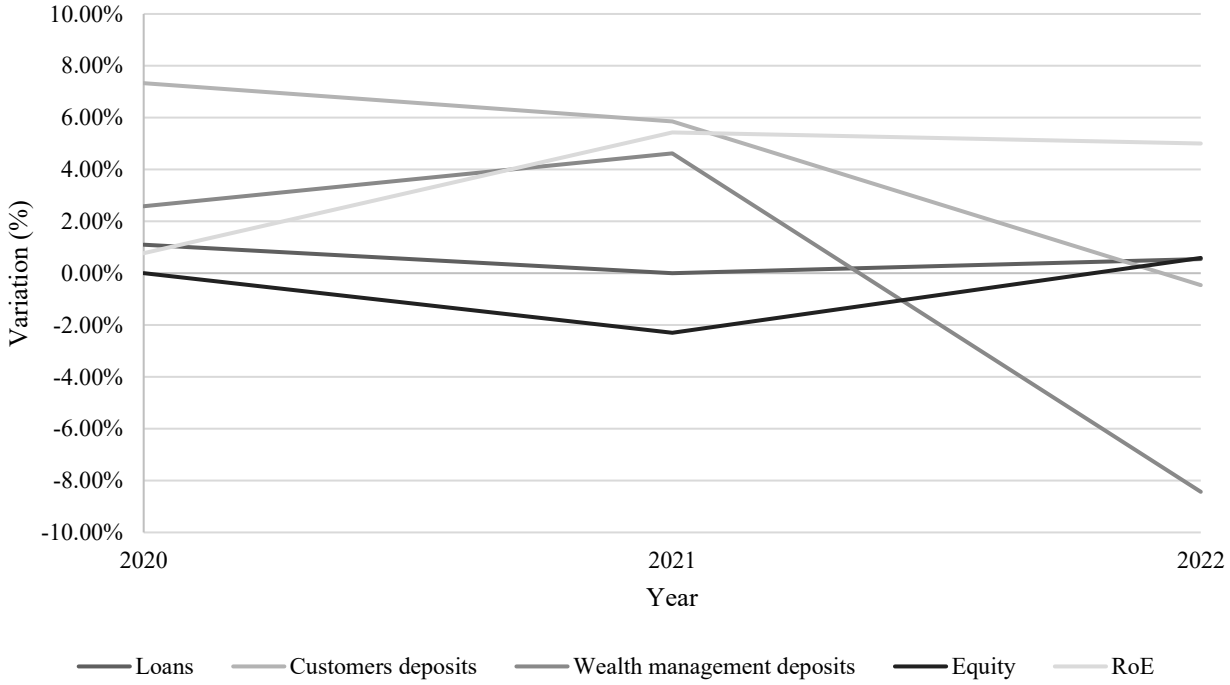
Figure 2.9: Trend of the Equity of the Banking Industry in Italy from 2019-2022



The figure shows the trend of the stock of equity, in trillion of Euros, of the banking industry in Italy from 2019-2022. The pandemic does not seem to have negatively impacted this in 2020, but the effects are observed from 2021 onwards.
(Bank of Italy, 2023)

In conclusion, the pandemic impacted on all the analysed indicators, showing a break in the core business growth of financial intermediaries. As shown in Figure 2.10, loans did not increase from 2020-2021, being stable at €1.84 trillion, while equity experienced a reduction of 2.30%, absorbing losses due to the extraordinary event at that time. Overall deposits increased by 5.85% and 4.62%, from 2020 to 2021, respectively, due to the slowing down of the economy.

Figure 2.10: Key Performance Indicators: Growth Rate of the Italian Banking Industry from 2020-2022



The figure shows the growth rates of the analysed key performance indicators (KPIs) of the Italian banking industry from 2020-2022. The pandemic impacted negatively on almost all of them. (Bank of Italy, 2023)

The pandemic put pressure on margins, which resulted in a considerable decrease in equity stocks; however, it did not push financial intermediaries in financial distress due to liquidity leakages. Thus, the pandemic slowed down Italian production, but it did not weaken confidence in the banking industry. This could have mainly been due to the fact that several governments adopted provisional credit guarantees, in order to

provide financial intermediaries with the liquidity required by companies, and cash flow took time to change by indirectly supporting banks in avoiding liquidity shocks (Bénassy-Quéré and Di Mauro, 2020). Clearly, during the pandemic, liquidity was one of the most relevant indicators, which was constantly monitored by national banking authorities that required governments to adopt liquidity support initiatives to reduce "*the liquidity premium*[…]". In this regard, "b*anks with less liquid assets respond*[ed] *more strongly to* [the] *announcements*" (Demirgüç-Kunt, Pedraza, and Ruiz-Ortega, 2021). Credit, however, was relevant because it showed financial institutions' robustness to the market; in fact, "*credit default swap (CDS) spreads rose the most for those banks that had entered the crisis with the highest level of credit risk*". However, after the outbreak, CDS spreads started stabilising, even though "*CDS spreads of the riskiest banks continued increasing even through the stabilisation phase*". In this regard, government policy supported banks "*with higher profitability and healthier balance sheets*" (Aldasoro et al., 2020).

On the other hand, pandemic effects can impact equity in the long run, considering that "*losses from loan defaults and increases in risk-weighted assets*" can deplete banks' capital. However, according to Buehler et al., the extent of it seems to be limited, since the effectiveness of the public-health response and mitigating interventions appeared to be appropriate. Regarding this, data during the beginning of 2023 indicate that financial recovery of the banking sector has started again, so that the "*banking systems seem adequate to the challenge*" (Buehler et al., 2020).

To sum up, during the outbreak, banks' performances on equity and debt markets were incredibly troublesome, as it happened after the collapse of Lehman Brothers in 2008. However, "*the subsequent stabilisation, brought about by forceful policy measures,* […] *has favored banks with higher profitability and healthier balance sheets,* [while] *less profitable banks saw their long-term rating outlooks revised to negative*" (Aldasoro et al., 2020).

According to the Bank of Italy, at the start of the pandemic in 2020, the Italian economy was still experiencing the effects of the previous recessions, so it was in a stagnation phase. However, before the pandemic, households and firms were quite sound and banks strengthened their financial statements. Thus, at the beginning of the outbreak, financial institutions appeared to be stronger than they were in 2008. The leverage ratio was 10% lower than it was in 2007, the profitability margins were higher and the liquidity buffers were good (20% of GDP, compared with 13% in 2007).

The pandemic increased the risk aversion of investors (both retail and institutional), deteriorated liquidity buffers and increased the non-performing loans. In this regard, the Italian government and the Bank of Italy had to adopt extraordinary measures, in accordance with the European Institutions, in order to support households and firms to protect their income and businesses (Angelini and Gobbi, 2020).

2.4 The Extraordinary Measures Implemented by the European and Italian Authorities

As well as the economy, the banking industry was severely impacted by the Covid-19 crisis, so much so that international supervisory authorities implemented extraordinary financial measures in 2020 and 2021.

The Bank for International Settlements (BIS) published research that showed how several authorities implemented strong supervisory and financial measures to restrict dividend payouts, in order to enhance bank resilience and support lending. From 2020-2021, BIS also observed that "*bank equity prices fell with dividend restriction announcements, but credit default swap (CDS) spreads indicated that default risk either fell or was unaffected, even in the face of the economic downturn".* In addition, BIS pointed out that *"bank capitalisation rose in jurisdictions which restricted payouts, supporting institutional and system wide stability; the increased capital was*

more likely to support greater lending with restrictions present". In this regard, banks' dividend payouts decreased from $45 billion in 2019 to $30 billion in 2020 in the US, while it decreased from $30 billion in 2019 to $5 billion in 2020 in the Euro area (Hardy, 2021).

In 2020, the European Central Bank issued a recommendation to warn significant credit institutions to "*exercise extreme prudence when deciding on or paying out dividends or performing share buy-backs aimed at remunerating shareholders*" (European Central Bank, 2020a). In the same year, even the IMF publicly recommended supervisory authorities to "*take actions to preserve banks' capital resources by temporarily limiting the distribution of capital (dividends, share buybacks, and discretionary bonus payments) for all banks*" (Awad et al., 2020). On April 2, 2020, the European Insurance and Occupational Pensions Authority published a statement to require re/insurers to "*suspend all discretionary dividend distributions and share buybacks aimed at remunerating shareholders*" (Jakubik and Teleu, 2022).

At an international level, authorities aligned their strategies to support financial industries and preserve public savers. However, the strategy's results appear to be contradictory. For instance, research performed by Matyunia in 2022 showed that "*the introduction of the dividend ban caused a surge in regulatory uncertainty and undermined banks' market valuation raising the expected funding costs and contributing to the banks' reluctance to make use of the capital buffers*" (Matyunina and Ongena, 2022).

Regarding this, analysis of the relevance of metrics, which impacted on the strategies' results, was conducted across several industries, especially focusing on shareholders' remuneration. In this regard, several financial features appeared to be significant when setting up the dividend payout policies during the pandemic, considering that profitability and size of corporations appeared to be two key variables. In 2021, Kilincarslan and Demiralay stated that "*more profitable and larger* […] *corporations are more likely to pay cash dividends*", considering that size and profitability have

always been significant over time, before and during the pandemic (Kilincarslan and Demiralay, 2021). However, Covid-19 considerably impacted dividend payout policy, making it even more significant in avoiding severe distress (Sari et al., 2022).

The relevance of financial characteristics was linked to the actions taken by supervisory authorities, which tried to grant financial systems stability and soundness during the pandemic. Authorities tried to be as effective as possible in promoting the "*reduction of bank capital buffers, the redefinition of non-performing loans and the limitations on dividends and bonuses paid by banks*" (Quaglia and Verdun, 2023). In this regard, the European Central Bank was one of the most important authorities in proposing effective responses to the pandemic's effects which, in turn, triggered the others (Jones, 2020). However, markets did not initially perceive the ECB's intervention as being as effective as it was, due to misperceptions in the public announcements. For instance, on March 12, 2020, the ECB's President said "*we are not here to close spreads*", making the international interventions weak and uncoordinated "*that sent the Italian bond yields sharply up*" (Thomson Reuters, 2020). In fact, newspapers described the public statement by the ECB President as a way to provide weak support to some countries in financial distress, like Italy. However, after the interventions of several national authorities, the European Central Bank clarified its strategies and goals and confirmed the adoption of some relevant extraordinary measures, such as the *Pandemic Emergence Purchase Program* (PEPP) and the *Expanded Asset Purchase Programme* (APP). In addition, the ECB implemented *Longer-Term Refinancing Operations* (LTRO) to support banks' liquidity in the long-run (Quaglia and Verdun, 2023). The temporary asset purchase programs aimed to: i) provide access to liquidity to financial intermediaries at competitive interest rates; ii) monitor the member States' bond yield spreads in the euro area; and iii) create conditions for the European institutions and the member States to act.

In accordance with the European Central Banks, the Bank of Italy also implemented national programs to support the Italian banking industry in four main fields: i)

Monetary policy; ii) Prudential supervision; iii) Household information; and iv) Facing illegal economic activities (Angelini and Gobbi, 2020).

Concerning monetary policy, the European Central Bank provided the APP with €120 billion and the PEPP with €750 billion in order to buy both public and private assets. In this regard, the Bank of Italy acted in the Italian secondary markets, including the market of sovereign bonds, as part of the Euro-system repurchase programmes. The value of Italian government bonds (purchased by implementing the APP) was approximately €382 billion, of which €346 billion was purchased by the Bank of Italy in 2020. In addition, the European Central Bank allowed national central banks (e.g. the Bank of Italy) to weaken the eligibility criteria of collaterals for acceding to refinancing programmes (European Central Bank, 2020b).

The Bank of Italy was also involved in adopting some prudential supervision criteria, in order to strengthen the bank's equity. Firstly, micro and macroprudential capital buffers were authorised to be used for providing the economy with the required loans and for facing losses due to credit downgrading. In fact, moratoriums did not entail the automatic classifications of credit as non-performing loans. In 2020, the Bank of Italy recommended that financial intermediaries avoid any binding commitment to pay dividends in 2019 and 2020; it also advised to refrain from the buyback of firms' stocks, in order to remunerate shareholders. In this regard, the authorities' recommendations were directed to spur banks to implement conservative remuneration schemes, in order to preserve equity.

The request to postpone 2019 dividend payments allowed financial intermediaries to strengthen equity for around €5.5 billion in 2020, which allowed the Bank of Italy to estimate an increase of CET1 ratio of around 0.5% at that time (Angelini and Gobbi, 2020). Regarding this, the Bank of Italy allowed banks to postpone the transfer of supervisory data to competent authorities, in order to ensure financial intermediaries continue with their ordinary activities (Bank of Italy, 2020).

Moreover, the Bank of Italy adopted strategies oriented to inform households through ad-hoc "*listening channels*". Firstly, the Bank of Italy implemented a channel to systematically analyse "*private complaints*" and customers' requests, which banks received at that time. It also activated a system to control customers' feedback related to the banking branches' activities and it started a daily communication strategy by social media (e.g. Twitter and Facebook). Specific e-mail addresses were also created to answer questions about the effects of the special regulations adopted to protect savings and businesses. The Bank of Italy then implemented strategies to coordinate financial intermediaries, in order to assure cash withdrawal even when branches were closed due to intense Covid-19 infections. In particular, the Bank of Italy assured the cash withdrawal activities and payments through strengthening on-line platforms and supporting smart-working (Angelini and Gobbi, 2020).

On April 10, 2020, the Bank of Italy recommended that financial intermediaries apply all of the anti-money laundering procedures. With regard to state-guaranteed loans to companies, banks had to assess whether the funds were actually used to meet operating costs or to carry out industrial restructuring plans. Bank of Italy was also in charge of monitoring banks as they granted loans to high-risk individuals. The implemented measures intended to facilitate ex-post checks in order to speed up effective responses to the economy and financial markets during the Covid-19 pandemic (Angelini and Gobbi, 2020).

In conclusion, on March, 29, 2020, the Italian Ministry of Economy and Finance announced the establishment of a Task Force (with representatives of the Ministry of Economy and Finance, Bank of Italy, Italian Banking Association, and Mediocredito Centrale) to ensure an efficient and rapid use of the financial support measures to households and companies, by following the Legislative Decree n. 18. The Task Force oversaw the exchange of information between participants, in order to identify the most appropriate solutions to problems. The Task Force allowed the coordination, collection and communication of useful information provided by the specific Covid-19

legislation. Then, the Ministry for Economic Development and SACE joined the Task Force with the Legislative Decree n. 23.

Simplification and accountability were the two main drivers that characterised the measures adopted during the pandemic. The measures were intended to enhance the responsibility of individuals, in order to speed up the lending procedures (relying on self-declarations), as well as strengthen the monitoring tools to prevent illegal activities (in the event of mendaciousness, both for moratoriums and for the issue of guarantees). In this regard, banking activity was included in the list of "*essential services*" by the Italian government (Gualtieri, 2020).

2.5 The Literature Review

The European Union adopted extraordinary fiscal and monetary measures in order to support member States in response to the economic crisis caused by the pandemic. As described in the previous sections, the impact of these measures was tremendously important for the national economy, considering that it suffered a dramatic decline in GDP and a further rise in the government debt to GDP ratio. There is still an ongoing debate about the effectiveness of the described actions, which Italy adopted to support its economy on a path of sustainable growth and to support the recovery (Canelli et al., 2021).

Following the expected profitability and sustainability, in terms of future economic prospects during the pandemic, corporations experienced different payout policies, which allowed analysis of the effects of the pandemic on the reduction in dividend payouts against opposite strategies, across different markets. Regarding this, the literature does not seem to have completely analysed the effects on the Italian economy, as happened with some other countries. The available literature focuses on the effects of both traditional and behavioural sides of the outbreak on dividend payout policies for the major European countries, even though the effects on the Italian market were

even worse. In 2020, around 41% of the listed financial firms on the Italian market stopped paying dividends, compared with a European average of 35% (Affinito, 2020).

According to Krieger et al. (2021), the pandemic impacted deeply on the payout dividend policies across all industries. Considering a sample of 1,400 dividend paying firms in the USA, 213 reduced their dividends and 93 did not pay dividends at all, in the second quarter of 2020. The authors specified that the comparison between financial firms that reduced and omitted to pay dividends was three to five times higher than any other quarter since 2015 (Krieger, Mauck, and Pruitt, 2021). Similarly, in 2022, Ali implemented a logit regression model to show that dividend cuts and omissions were relevant during the pandemic, considering a sample of 8,889 firms, even if many corporations preserved or raised dividends to assure good signals to the market (Ali, 2022). Even Mazur et al. (2023) pointed out that many S&P 1,500 firms either maintained or increased the level of dividends (82%) during the pandemic. In addition, they found a negative relationship between dividend payout and reported earnings during the outbreak (Mazur, Dang, and Vo, 2023). Following this broad analysis of a critical stock exchange, in 2022, Tinungki et al. focused on Indonesia, revealing that IDX-listed firms maintained high dividend distribution policies to provide markets with positive signals in both 2020 and 2021 (Tinungki et al., 2022).

From a first analysis, the literature shows contradictory views between choices of increasing or reducing dividend payouts to preserve market perceptions, which do not appear to be aligned with the fundamental financial metrics that should drive financial decisions, particularly in financial distress. Additional confirmation was provided in the research by Cejnek in 2021, who pointed out that the percentage of index values, for the major of equity markets, referred to the first 5 years of dividends, but decreased sharply in the first quarter of 2020; the fall was not recovered by the end of 2020 (Cejnek, Randl, and Zechner, 2021). This was proved in some countries: Kluzek and Schmidt-Jessa (2020) analysed the dividend payout levels of a sample of companies (457 observations) incorporated in Poland that received state aids as anti-crisis support. They showed that the likelihood of paying dividends was lower for corporations, which

received State aid. Regarding this, the variable of the regression model used by authors was statistically significant and the impact was considerable (Kluzek and Schmidt-Jessa, 2022). Similar research was also performed in Finland, by Lindén et al. (2020), who pointed out that the pandemic impacted the level of dividend payout policies, especially considering different typologies of ownership. In this regard, companies in the sample (i.e. 152 companies listed on the OMX Helsinki in 2017-2020) with concentrated shareholder structures appeared to pay lower dividends in uncertain situations, such as during the outbreak (Lindén et al., 2022).

The relevance of investors' behaviour is confirmed in the current literature, even in countries outside of the European Union. In particular, a second study performed by Georgina et al. (2022) confirmed their previous research, which considered that, in Indonesia, SRI-KEHATI indexed companies (for a sample of 1,484 observations) tended to distribute dividends during the crisis, in order to give positive signals to markets, supporting high trading activity (Georgina, Robiyanto, and Powell, 2022). A study performed by Ataullah et al. (2022), on a sample of 330 listed companies on the LSE, showed that the likelihood of reducing payouts was related to the holdings and types of institutions during Covid-19. In particular, institutional investors, which look for short-term value, tended to reduce the probability of cuts in dividends during the outbreak. They found that firms which focus on regular income (e.g. pension funds), seemed to avoid dividend cuts. However, companies which dynamically involve managers, resulted in a reduction in shareholders' payouts, to allow institutions to deal with increased uncertainty during the pandemic (Ataullah, Le, and Wood, 2022). Husain et al. (2020) analysed how dividend payout policies of a sample of 43 Bahraini firms (data from 2017-2020) were influenced by the pandemic. They found that non-financial intermediaries had a "*higher percentage of dividends payers and smooth dividends compared to financial firms during the pre-COVID-19 period*" (Husain and Abdulla, 2020). A study was performed by Xixiong in 2023, on data from Chinese listed companies. The sample included 5,768 firm observations listed on the Shanghai and Shenzhen Stock Exchange for the period 2018-2019; however, the sample did not

consider firms from the financial industry because their financial ratios were not comparable with firms from other industries. In addition, firms that had been listed for less than one year were not included, and a negative relationship was found between the effects of the pandemic and cash dividend payments. In particular, the relationship appeared to be more significant for large-scale firms and state-owned enterprises (Xixiong, Cuiliang, and Youliang, 2023).

Even though the effects of the pandemic on dividend payout policies (either increasing or decreasing dividends) appear to be contradictory, the available literature seems to be unanimous in recognising the tremendous impact of the outbreak on dividend payout decisions, which provides different insights, according to the chosen analytical models. Regarding this, in 2022, Ntantamis and Zhou analysed the impact of the outbreak on the adjustment of dividends and share repurchase of listed companies in the G7 countries (i.e. Japan, Germany, France, Italy, the United Kingdom, Canada, and the United States), considering annual data ending between April 2015 and March 2021. In this way, the authors showed that firms reduced dividends in the UK, Germany, France, and Italy, while companies in the USA and Canada experienced a cut payout through share repurchases (Ntantamis and Zhou, 2022). In 2020, Jebran and Chen researched a sample of Chinese firms (i.e. data from "A-share" non-financial firms listed on the Shenzhen and Shanghai Stock Exchange for the first three quarters of 2020 - 31st March, 30th June, and 30th September), pointing out that the pandemic considerably impacted corporate policies, such as the dividend payout policies. In particular, they focused on the impact of managerial skills on corporate policies. In this regard, they found that corporations with more capable managers increased the dividend payouts during the outbreak, due to higher performances (Jebran and Chen, 2022).

As mentioned, the available literature mainly focuses on the magnitude or the effects of the pandemic on dividends; however, it would be relevant to research the change in the significance of key metrics on dividend payout policies, before and during the pandemic. In this regard, Ali analysed the effects of the pandemic in Pakistan in 2022,

confirming the findings in the US, Poland, and Finland. In particular, the authors pointed out that the considered corporations (i.e. annual data from 360 companies from the Pakistan Stock Exchange over the period 2015-2020) either omitted or reduced to pay dividends during the pandemic, in comparison with the trends during the years 2015-2019 (pre-Covid-19). In the second section of their study, Ali also analysed the relevance of some key metrics, in order to show that firms with higher profitability, asset turnover, and size were less likely to choose a reduction in paying dividends at that time (Ali et al., 2022). However, Pettenuzzo et al. (2020) performed a similar analysis, which found that companies did not pay dividends in an unprecedented number of cases, due to the Covid-19 pandemic, by applying a multivariate dynamic econometric model (Pettenuzzo, Sabbatucci, and Timmermann, 2020). In addition to the research carried out by Jebran and Chen in 2022, who analysed the impact of managerial skills on dividend payouts during the outbreak, Lindén et al. (2022) researched the significance of the type of ownership on the dividend payout strategies during the pandemic. The research identified that corporations (analysing quarterly data from 152 companies listed on OMX Helsinki in 2017-2020), which were dominantly held by individual owners, showed relevant effects on dividend payout policies during the pandemic (Lindén et al., 2022).

From the literature review, the impact of the pandemic on dividend payout policies seems to be contradictory, even if confirmed in some specific cases. A reduction or an increase in dividend payouts depends on the company decision to follow fundamental or behavioural financial drivers, which allows the classification of the current scientific literature into two main categories: i) Negative impact on dividend payout policy; and ii) Positive impact on dividend payout policy.

Table 2.1 provides a summary of the literature review, in addition to the relevant aspects of each cited paper (i.e. authors, main findings, model/methodology, market and geographic area, and publication year).

Table 2.1: Summary of the Literature Review

N.	Authors	Main Findings	Model	Market and Geo. Area	Pub. Year
Negative Impact on Dividend Payout Policy					
1	Husain and Abdulla	Non-financial firms have a higher percentage of dividends payers and smooth dividends compared to financial firms during the pre-Covid-19 period.	Descriptive Analysis	Bahrain market (listed companies on Bahrain Bourse)	2020
2	Pettenuzzo, Sabbatucci and Timmermann	Companies did not pay dividends due to Covid-19 pandemic.	Multivariate Dynamic Econometric Regression Model	US market (listed companies on the NYSE, NASDAQ, or AMEX exchanges)	2020
3	Krieger, Mauck and Pruitt	Pandemic impacted on the payout dividend policy across all industries.	Ordinary Least Squares Regression Model	US market (listed companies)	2021
4	Cejnek, Randl and Zechner	Major of equity markets, referred to dividends, decreased sharply in the first quarter of 2020.	Ordinary Least Squares Regression Model	International market (exchange-listed index dividend futures on the Euro Stoxx 50, the FTSE 100, and the S&P 500).	2021
5	Ali	Dividend cuts and omissions were relevant during pandemic.	Logit Regression Model	G-12 market (listed companies)	2022
	Ali, Muhammad, Badar, and Falik	Corporations omitted or reduced to pay dividends during the pandemic.	Logit Regression Model and Descriptive Analysis	Pakistan market (listed companies)	2022
6	Jebran and Chen	Skilled managers increased the dividend payouts during the outbreak, even if the pandemic's impact was relevant.	Ordinary Least Squares Regression Model	Chinese market (A-share non-financial firms listed on the Shenzhen and Shanghai Stock Exchange)	2022
7	Kluzek and Schmidt-Jessa	Probability of paying dividend was lower for companies that were granted state aid.	Logit Regression Model	Polish market (listed companies)	2022
8	Lindén, Lehner, Losbichler and Martikainen	Pandemic impacted on the level of dividend payout policies in 2020, under different ownership type.	Analysis of Covariance Model (ANCOVA)	Finnish market (OMX Helsinki listed companies)	2022

9	Ntantamis and Zhou	G-7 firms reduced dividends, even by shares repurchasing	Logit Regression Model	G-7 market (listed companies)	2022
10	Xixiong, Cuiliang and Youliang	Negative significant relationship between the effects of the pandemic and cash dividend payment.	Ordinary Least Squares Regression Model	Chinese market (listed companies on Shanghai and Shenzhen Stock Exchange)	2023
11	Mücke	Negative relationship between payout restriction announcement cumulative abnormal returns and the percentage of fund owners per bank.	Event Study Analysis	Eurozone market (listed financial intermediaries)	2023
Positive Impact on Dividend Payout Policy					
1	Husain and Abdulla	Higher percentage of dividends payers and smooth dividends compared to financial firms during the pre-Covid-19 period.	Descriptive Analysis	Bahrain market (listed companies on Bahrain Bourse)	2020
2	Ataullah, Le and Wood	Institutions that focus on regular income (e.g. pension funds) seem to resist cuts dividends during the pandemic.	Logit Regression Model	UK market (listed companies on the London Stock Exchange - LSE)	2022
3	Tinungki, Powell, Agus, and Lydia	The Covid-19 crisis led to higher dividend distribution.	Ordinary Least Squares Regression Model	Indonesian market (listed companies on the Indonesia Stock Exchange - IDX)	2022
4	Tinungki, Robiyanto and Powell	Companies kept the dividends payment as a positive signal for investors during Covid-19 pandemic.	Ordinary Least Squares Regression Model	Indonesian market (listed companies on the Indonesia Stock Exchange - IDX)	2022
5	Mazur, Dang and Vo	Great majority of companies either kept or augmented the level of dividends during the crisis.	Logit Regression Model and Descriptive Analysis	US market (listed companies on S&P 1500)	2023

The table summarises the available literature classified by author, main findings, model/methodology, market and geographic area, and publication year.

Following the analysis of the literature review, the main findings were that restrictions on dividend payout policy followed the need to preserve capital, in order to prepare for the greater possibility that adverse unforeseen events could occur during the pandemic.

However, the relevance of paying dividends to shareholders followed the need to issue positive signals to markets, to keep the confidence of stakeholders high at that time.

The literature review shows that further analysis is required, to research the significance of key variables (such as profitability, leverage, firm type, market value, etc.) for dividend payouts during Covid-19. Most of the researchers found that Covid-19 significantly impacted on firms' dividend payout policies, by drastically reducing the amount of dividend payouts during 2019-2021, compared with 2015-2018.

However, there are no specific studies focusing on the banking industry, especially the Italian market, with a complete view of the pandemic time-window (i.e. 2020-2022). As described in the previous sections, the management of Italian banking activities, particularly the dividend payout policy, experienced fast and relevant changes during the pandemic, due to institutional ad-hoc regulations, which impacted on banking resilience and shareholders' profitability. In this regard, "*the Covid-19 pandemic exerted a profound adverse influence on corporate dividend policy*". Thus, this Chapter provides an analysis of the relevance of variables on changing the dividend payout policy, through a logit regression model (Ali, 2022).

2.6 The Impact of Key Metrics on Italian Dividend Payout Policies

This section explores the determinants of the change in dividends by analysing the features of the different dividend-change groups of financial intermediaries listed on the Italian stock exchange. In particular, all of the listed firms classified as Financial Services, Banks and Insurance, are extracted from the respective four indexes: i) FTSE Mib; ii) FTSE Mib Mid Cap Italia; iii) FTSE Small Cap Italia; and iv) FTSE Italia Star.

These indices were selected because each one showed specific market responses to the pandemic so the sample provides a view of what happened at the Italian banking sector, before and during the pandemic. In particular, the index FTSE Mib is the main

benchmark index of the Italian stock markets. This index, which captures approximately 80% of the internal market capitalisation, is composed of 40 leading and highly liquid companies in various industries, while FTSE Mib Mid Cap Italia is made up of the top 60 stocks in the company capitalisation ranking (i.e. before the application of any weightings outside the FTSE Mib Index), which qualifies after the application of the liquidity and free float screening. Foreign companies and branches are not eligible for inclusion. FTSE Italia Mib Small Cap captures the performance of all other small shares, outside the FTSE Mib index and the FTSE Mid Cap Italia index, which are qualified after the application of the liquidity and free float schemes. Even this index cannot include foreign companies and branches. FTSE Italia Star is an index of the Star segment (that is an acronym for a securities segment with high requirements), which includes medium-sized joint-stock companies (with capitalisation of up to one billion euros) (FTSE Mib, 2023).

The analysis considers the four main indexes, in order to study the effects of the pandemic on the dividend payout policies as a function of the market capitalisation and the size of primary Italian corporations in the financial industry. In fact, as stated by the World Bank Group in 2020, "*firm size matters for the intensity of the different channels of transmission and firms' responses. Small and medium enterprise sales shrink by more and their cash drains faster than large firms in the same sector and country*" (Ikmal et al., 2020).

As described in Section 2.4, at the beginning of the pandemic, international and national supervisory banking authorities recommended to financial firms not to pay out dividends from March 27, 2020 to October 1, 2020, in order to save liquidity and capital for facing future risks. Regarding this, according to the European Central Bank (2023) "*complying banks' lending was around 2.2 percentage points stronger than lending by banks not affected by the recommendation*" (Dautović, Gambacorta, and Reghezza, 2023). This effect could have affected the analysed sample, however, no considered financial intermediaries paid dividends before the ECB announcement on March 27, 2020. Based on the sample dataset, the 2020 paying dividend financial firms

(Azimut, Generali and Poste Italiane listed on the FTSE Mib, Unipol listed on the FTSE Mid Cap, Equita Group listed on the FTSE Mib Small Cap, and Mutuionline listed on FTSE Star) started paying dividends from May 2020.

2.6.1 Data and Methodology

Following the methodology of Krieger et al. (2020), the sample period was extended from 2013 to 2022 and data were extracted from Morningstar. According to the study by Heba Ali (2022), the sample period was divided into two distinct time-windows, before and during the pandemic (2013-2019 and 2020-2022).

Considering the components of the FTSE Mib index (40), 27 non-financial firms were eliminated from the considered sample. After cleaning out incomplete and missing values, there were 115 observations from 2013-2022; of these, there was only one firm that did not pay dividends in 2022. Considering the FTSE Mib Mid Cap Italia, the sample comprised 7 firms, yielding 55 final observations from 2013-2022, of which there was one firm that did not pay dividends in 2022. Considering the FTSE Small Cap Italia's components, four financial firms were taken into consideration, which gave 27 final observations from 2013-2022, of which zero firms did not pay dividends in 2022. Finally, for FTSE Italia Star's components, five financial firms were taken into consideration, giving 27 final observations from 2013-2022, of which there were two firms that did not pay dividends in 2022. Thus, the final sample, with data from 2013-2022, was reduced to 224 observations.

Table 2.2 summarises some key statistics of the sample, classified for each index. In particular, total assets and average assets are expressed in millions of euros. Considering total assets, FTSE Mib dominated the sample by including the big financial firms (93.54%), followed by Mid Cap financial firms (6.28%), Small Cap financial firms (0.16%), and Stars financial firms (0.01%). The same pattern was confirmed by analysing total revenues, even though profitability (as Basic EPS) appeared to be higher for medium and small segments than the others. According to

Mansikkamäk, this is due to the earlier life and size configurations of a business' evolution over time (Mansikkamäki, 2023).

Table 2.2: Sample Summary Statistics

Sample Category	Financial Services, Banks and Insurance					
Sample Categories	**Number of Companies**	**Total Revenue (Mil EUR)**	**Total Basic EPS**	**Total Assets (Mil EUR)**	**Total Liabilities (Mil EUR)**	**Total Equity (Mil EUR)**
		Avg. Revenue (Mil EUR)	**Avg. Basic EPS**	**Avg. Assets (Mil EUR)**	**Avg. Liabilities (Mil EUR)**	**Avg. Equity (Mil EUR)**
FTSE Mib	13	180696.00	8.08	3378147.00	3171636.00	206512.00
		13899.69	0.62	259857.46	243972.00	15885.54
FTSE Mid Cap Italia	7	17885.00	7.78	226955.00	211074.00	15881.00
		2555.00	1.11	32422.14	30153.43	2268.71
FTSE Small Cap Italia	4	838.00	0.83	5925.89	7109.00	703.00
		209.50	0.21	1481.47	1777.25	175.75
FTSE Italia Star	5	1312.00	5.37	25319.00	22136.00	3183.00
		262.40	1.07	5063.80	4427.20	636.60
Total	25	199481.00	16.93	3611443.89	3390018.00	223313.00

Description of the sample using key statistics. There are 224 observations for 25 financial intermediaries. The overall time window is 2013-2022, where 2013-2019 is the pre-Covid period and 2020-2022 represents the Covid period.
(Morningstar, 2023)

After analysing each index, the composition of the sample includes all the financial intermediaries listed on the Italian stock exchange as shown in Table 2.3. The market capitalization and Earning per Share (EPS - Trailing Twelve Months) are also provided for each financial firm on March 31, 2024. The sample intends to well represent the Italian banking sector in order to study the impact of the Covid-19 pandemic on the dividend payout policy of the industry.

The needs to include the listed financial firms is due to the available data on Morningstar, which allow to make a harmonized and consistent dataset. This simplifies the implementation and improves the precision of the econometric model as done in the next section of chapter 2. The same sample is also used in chapter 3 to analyse the changes in the market risk of the Italian banking sector as observed during the outbreak.

Chapter 2 and chapter 3 provide a comprehensive risk-return analysis of the Italian banking sector, with a focus on the main changes experienced before and during the

pandemic in accordance with the extraordinary measures implemented by the international and national supervisory banking authorities. In this regard, through the quantitative econometric analysis, the sample described in Table 2.3 intends to provide a comprehensive overview of what happened in the overall Italian banking sector, during that extraordinary time.

Table 2.3: The Sample Composition

1	**Azimut AZM.MI** Market Cap: €3.671B EPS (TTM): €3.05	6	**BPER Banca BPE.MI** Market Cap: €5.314B EPS (TTM): €1.07	11	**Unicredit UCG.MI** Market Cap: €52.161B EPS (TTM): €4.71	16	**Illimity Bank ILTY.MI** Market Cap: €388.123M EPS (TTM): €1.25	21	**Banca Sistema BST.MI** Market Cap: €95.367M EPS (TTM): €0.21
2	**Banca Generali BGN.MI** Market Cap: €3.915B EPS (TTM): €2.86	7	**Finecobank FBK.MI** Market Cap: €7.842B EPS (TTM): €0.45	12	**Unipol UNI.MI** Market Cap: €5.344B EPS (TTM): €1.02	17	**Bff Bank BFF.MI** Market Cap: €2.031B EPS (TTM): €1.29	22	**Bca Profilo PRO.MI** Market Cap: €137.075M EPS (TTM): €0.02
3	**Banca Mediolanum BMED.MI** Market Cap: €7.378B EPS (TTM): €0.96	8	**Generali Ass G.MI** Market Cap: €33.855B EPS (TTM): €2.99	13	**Poste Italiane PST.MI** Market Cap: €14.619B EPS (TTM): €1.22	18	**Credem CE.MI** Market Cap: €3.004B EPS (TTM): €1.66	23	**Dovalue DOV.MI** Market Cap: €163.595M EPS (TTM): -€0.22
4	**Banca Monte Paschi Siena BMPS.MI** Market Cap: €4.878B EPS (TTM): €1.63	9	**Intesa Sanpaolo ISP.MI** Market Cap: €54.853B EPS (TTM): €0.39	14	**Banca Ifis IF.MI** Market Cap: €888.81M EPS (TTM): €3.06	19	**Mutuionline MOL.MI** Market Cap: €1.271B EPS (TTM): €1.01	24	**Equita Group EQUI.MI** Market Cap: €178.05M EPS (TTM): €0.25
5	**Banco BPM BAMI.MI** Market Cap: €8.226B EPS (TTM): €0.84	10	**Mediobanca MB.MI** Market Cap: €10.611B EPS (TTM): €1.28	15	**Banca Pop Sondrio BPSO.MI** Market Cap: €3.184B EPS (TTM): €0.55	20	**Unipolsai US.MI** Market Cap: €7.552B EPS (TTM): €0.25	25	**Revo Insurance REVO.MI** Market Cap: €212.48M EPS (TTM): €0.20

The sample is composed of 25 financial intermediaries listed on the Italian stock exchange, with a market capitalisation and Earning per Share (EPS) shown in the table, to show the dimension of the market size and profitability of each company on March 31, 2024. Further details are provided in Chapter 3, as the sample composition is the same.
(Morningstar, 2023)

In line with the cited literature in Section 2.5, and with a specific focus on Mazur et al. (2023), Krieger et al. (2020), Ali (2022), and Pettenuzzo (2020), explanatory variables that hypothetically influence financial firms' dividend payout policies covered the technical, fundamental, regulatory, and market characteristics.

Accordingly, the following variables were taken into consideration: i) Debt/Equity Ratio; ii) Return on Assets; iii) Return on Equity; iv) Asset Turnover; v) Price/Fair Value Ratio; and vi) Average Free Cash Flow per Share, in addition to dummy variables for Covid-19 effects.

Consistent with the dependent variable, data were collected from Morningstar for the mentioned time-windows. A detailed description of the variables used in the regression models is provided in Table 2.4.

Table 2.4: Description of Regression Model Variables

Description of Variables		
Variable	**Definition**	**Description**
DIV	Dividend (%)	Annual variation of paid dividends on annual basis
DER	Debt/Equity Ratio (%)	Annual variation of the ratio of liabilities to shareholder equity to estimate the financial leverage
ROA	Return on Asset (%)	Annual variation of the ratio of net income to total assets
ROE	Return on Equity (%)	Annual variation of the ratio of net income to equity
AT	Asset Turnover (%)	Annual variation of the ratio of revenues' value to total assets
PFV	Price/Fair Value Ratio (%)	Annual variation of the ratio of stock's price to fair value to estimate the intrinsic worth
AFCF	Average Free Cash Flow/Share (%)	Annual variation of the free cash flow per share
SE	Size Effect	A dummy variable that equals 1 if the firm is a FTSE Mib component, and 0 otherwise
DOM	Dividend Omission	A dummy variable that equals 1 for dividend omissions, and 0 otherwise
DDC	Dividend Decrease	A dummy variable that equals 1 for dividend decreases, and 0 otherwise
DNC	Dividend No-Change	A dummy variable that equals 1 for dividend no-changes, and 0 otherwise
DIC	Dividend Increase	A dummy variable that equals 1 for dividend increases, and 0 otherwise

The table provides the definition and description of the dependent and independent variables included in the logit regression model to clarify the dividend payout policy decisions, before and during the outbreak.

Table 2.5 shows the main descriptive statistics for the regressors that have been used to implement the logit multivariate regression model in the next sections, as described in Table 2.4. In particular, for each variable, the table points out mean, median, minimum value, maximum value, standard deviation, skewness, and Kurtosis for the observations from 2014 to 2022. The table describes the main statistics, which represent the profitability (i.e. ROE, ROA and AT), leverage (i.e. DER), market value (i.e. PFV), and liquidity (i.e. AFCF) dimensions, used in the next analytical sections to estimate the regression coefficients.

Table 2.5: Summary Statistics of the Regressors

Variable	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Ex. kurtosis
DER	0.79972	0.0020239	-0.10801	6.6892	2.2148	2.4483	4.0488
ROA	0.00074173	0.00079048	-0.0064273	0.0061762	0.0041357	-0.17579	-0.89618
ROE	0.0089005	0.013004	-0.029783	0.053445	0.026098	0.15695	-0.88680
AT	-0.0055886	-0.00028734	-0.091318	0.076280	0.071669	-0.034093	-1.8081
PFV	-0.032427	0.0033179	-0.21010	0.14417	0.12831	-0.21280	-1.2884
AFCF	-0.44907	0.087257	-4.3916	1.4727	1.9946	-0.97745	-0.29539

The table provides the main summary statistics of the regressors described in Table 2.4, using 224 observations from 2014 - 2022.
(Morningstar, 2023)

To examine dividend changes, annual data were used to consider the presence "*of potential seasonality in the dividend growth patterns. Thus, at the beginning of every year t, the dividend change rate is defined as the percentage difference between the dividends in fiscal year t, and the previous fiscal year t-1*"[4] (Ali, 2022). Then, logit regressions were implemented in order to explain dividend policy decisions before (2013-2019) and during the pandemic (2020-2022), by clustering corporations' data into: i) increased dividends; and ii) decreased/no-change/omitted dividends. In particular, the binary dependent variable was a dummy variable showing a firm's decision relating to the change in dividends. The dependent dummy variable equals 1 if dividends increase and 0 if dividends decrease (or are omitted/no-change).

[4] $\Delta DIV_{i,t} = \frac{\Delta DIV_{i,t} - \Delta DIV_{i,t-1}}{\Delta DIV_{i,t-1}}$ (2.1)

Accordingly, the collected data allowed to analyse the periods before and during Covid-19 and then the logit regression was implemented to explore what mainly drives the change (Ali, 2022). Considering the analysed sample, Table 2.6 shows the dividend change groups, as a percentage of the four index samples. In 2020, most of the firms, across the groups, did not pay any dividends to shareholders, even though they started paying again from 2021, at a higher rate than the prior periods. On average, 69% of financial firms increased dividends in 2021, compared with 28% in 2019. This shows that, on the one hand, what happened to the financial and insurance industry samples was comparable with the findings of the second section of Table 2.1 (i.e. Positive impact on dividend payout policy). On the other hand, small and mid-capitalisation segments showed the highest rates altogether, considering the dividend variation the very next year (before and during the pandemic). This appeared to be consistent with the research by Mansikkamäk (2023).

Table 2.6: Breakdown of Firms in the Sample by Dividend Policy over Time

Breakdown of Firms in the Sample by Dividend Policy over Time																
	Dividend Increase (in perc.)				Dividend Decrease (in perc.)				Dividend No-Change (in perc.)				Dividend Omitted (in perc.)			
Year	FM	MC	SC	IS	FM	MC	SC	IS	FM	MC	SC	IS	FM	MC	SC	IS
2013	31	29	25	20	15	14	0	0	0	14	0	20	54	43	75	60
2014	46	43	0	20	0	0	0	0	8	29	25	20	46	29	75	60
2015	69	43	25	20	0	14	0	0	0	14	0	20	31	29	75	60
2016	77	43	25	60	0	14	25	0	8	14	0	0	15	29	50	40
2017	46	29	25	60	31	29	0	0	0	14	25	0	23	29	50	40
2018	62	71	100	40	8	0	0	0	15	14	0	20	15	14	0	40
2019	38	29	25	20	15	14	25	0	31	43	50	40	15	14	0	40
2020	0	14	0	0	23	14	25	20	0	0	0	0	77	71	75	80
2021	77	86	75	40	0	0	0	0	8	0	0	0	15	14	25	60
2022	54	43	75	20	38	14	0	20	0	29	25	20	8	14	0	40
FTSE Mib (FM); FTSE Mib Mid Cap (MC); FTSE Mib Small Cap (SC); FTSE Italia Star (IS)																

The financial intermediaries of the sample have been clustered in four groups in function of the change in the dividend payout policy from the previous year, from 2013 to 2022. Thus, the breakdown shows the number of firms (expressed in percentage) of the sample sorted by group of dividend policy, over time. In 2020, at the beginning of the pandemic, 77% of financial intermediaries listed on the FTSE Mib (FM) did not pay dividends (Dividend Omitted), while, 23% of financial intermediaries listed on the FTSE Mib (FM) decreased dividends from the previous year (Dividend Decrease). The very next year, in 2021, 77% of financial intermediaries listed on the FTSE Mib (FM) increased dividends, while 15% of financial intermediaries did not pay dividends (Dividend Omitted). (Morningstar, 2023)

Table 2.6 shows that the beginning of the pandemic (2020) severely impacted the analysed industries' profitability, considering that 77% of the financial firms of the FTSE Mib sample omitted to pay dividends and 23% decreased dividends. A punctual analysis of 2020 confirmed the results of the first section of Table 2.1 in the literature review section. However, the result changes if the analysis focuses on the overall pandemic time-window. In this regard, the findings appear to be consistent with the results of Mazur et al. (2023) and Tinungki et al. (2022), who focused their research on the US and Indonesian markets, respectively. Regarding this, the analysis of the overall pandemic period confirmed that the majority of firms either maintained or increased dividends during the Covid-19 pandemic, see the second section of Table 2.1. This was also confirmed for the four analysed indices, supporting the idea that dividend omissions are perceived as a more negative signal than dividend reductions. The average of the dividend change rate of FTSE Mib and FTSE Mid Cap was 27%, which is higher than the 23% average of dividend change rate of FTSE Mib Small Cap and FTSE Italia Star 2020-2022. Firms appear to be in favour of reducing dividends, rather than avoiding bad market signals regarding future revenues and earnings.

2.6.2 Descriptive Statistics and Trends

To inspect if and how the outbreak influenced dividend payments, the sample is described on a yearly basis over time, as shown in Table 2.7.

As expected, all financial firms in the analysed indices show a higher mean and standard deviation of the dividend change rate during the pandemic than the period before, except FTSE Mib Small Cap, which experiences a high turnover to enter and exit the index (around 80% of financial firms entered in 2017).

Financial intermediaries, included in the FTSE Mib, do not appear to be the most influenced by the pandemic. The standard deviation increased twice, from the pre-Covid-19 period (2013-2019) to during Covid-19 (2020-2022), while the mean increased around six times during the analysed time-windows.

The same effect appears to be stronger in the other samples. These statistics were particularly affected by dividend omissions, which occurred in 2020, since it was "*perceived as more profoundly negative signal*" even if strongly advised by the supervisory authorities. In this regard, financial intermediaries were "*not only reluctant to decrease dividends to avoid signalling bad news about future earnings, but they* [were] *also especially reluctant to cease dividends*" (Ali, 2022).

The pandemic did not only reduce the stock of dividends paid, but it also increased the uncertainty about the stock of dividends, as shown by the sharp increase in the volatility from 2020 to 2022.

Moreover, the pattern seems to be more incisive for small and young financial intermediaries (Small and Mid Cap) than for the well-established ones. In this regard, the findings are similar to those found for US corporations, as described by Krieger et al. (2020), who found that the dividend reductions accounted for 17% of the dividend changes and an increase in uncertainty of dividends paid, during the second quarter of 2020 (Krieger et al., 2020).

Table 2.7: Preliminary Sample Description by Mean and Standard Deviation

FTSE Mib Dividend Change Rate		**FTSE Mib Mid Cap Dividend Change Rate**		**FTSE Mib Small Cap Dividend Change Rate**		**FTSE Italia Star Mib Dividend Change Rate**	
Pre Covid-19		Pre Covid-19		Pre Covid-19		Pre Covid-19	
Mean (M)	20.79%	Mean (M)	25.54%	Mean (M)	294.57%	Mean (M)	20.18%
Std. Dev. (S)	22.20%	Std. Dev. (S)	25.61%	Std. Dev. (S)	399.11%	Std. Dev. (S)	12.60%
M/S Ratio	93.65%	M/S Ratio	99.75%	M/S Ratio	73.80%	M/S Ratio	160.10%
During Covid-19		During Covid-19		During Covid-19		During Covid-19	
Mean (M)	54.16%	Mean (M)	331.68%	Mean (M)	57.49%	Mean (M)	474.07%
Std. Dev. (S)	144.50%	Std. Dev. (S)	657.99%	Std. Dev. (S)	118.50%	Std. Dev. (S)	925.12%
M/S Ratio	37.48%	M/S Ratio	50.41%	M/S Ratio	48.51%	M/S Ratio	51.24%

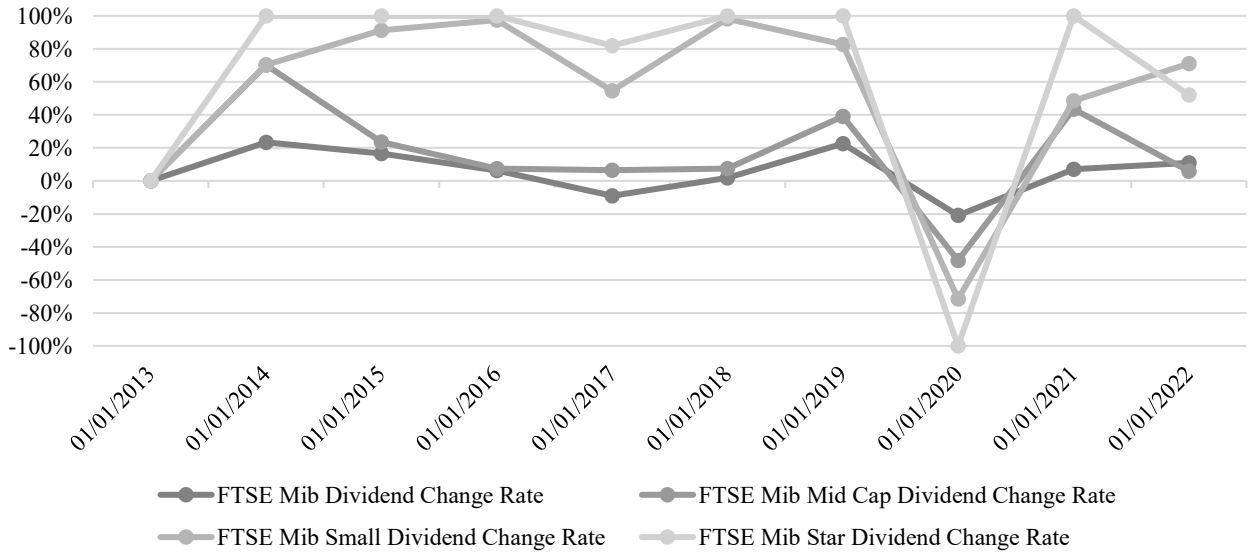
The table shows the description of the sample by considering the mean and the standard deviation, before and during the outbreak. The M/S Ratio is the proportion between the mean and the standard deviation.
(Morningstar, 2023)

Considering the fact that the trend in dividends changed over time, the pattern is similar among all indices, as shown in Figure 2.11, which points out the trend of the annual change rate of the dividend payout for the four considered indices, constrained between -100% to +100%.

The annual increase in paying dividends appears to be sensibly higher for financial firms in the Small Cap and Star groups, instead of the well-established firms in the FTSE Mib and Mid Cap groups. The main cause appears to be related to the higher level of riskiness of smaller and younger firms than the others, which is also consistent with the results in Table 2.6.

The ratio between the mean and the standard deviation (i.e. the M/S Ratio) shows that, on the one hand, well-established firms provide a lower shareholder return per unit of risk in comparison with smaller firms but, on the other hand, the shareholder return per unit of risk during the pandemic appears to be lower than before. Thus, the pandemic has increased uncertainty, which is reflected in higher volatility rates.

Figure 2.11: Trend of the Change Rate of Dividend Payout for the Four Indices



The figure shows the trend of the change rate of the dividend payout for the four indices, from 2013-2022. The pandemic impacted negatively on all the considered indices in 2020. Data are constrained between -100% to +100%.
(Morningstar, 2023)

Following the similarities in trends shown in Figure 2.11, analysis of the correlation in Table 2.8 provides additional confirmation of the parallels between FTSE Mib and FTSE Mib Mid Cap (92.95%), compared with the correlation between Small Cap and Star financial firms (-4.20%).

However, the correlation between Mid Cap and Star (99.85%) is not significant because 95% of firms are listed in both indices.

Thus, Figure 2.11 shows similar trends across the analysed indices, as confirmed by high correlations in Table 2.8, which aggregate the financial intermediaries into an overall sample.

The aggregation (cleaned by multi-listing financial firms) allows increased numbers of observations (224), when performing the regression analysis.

Table 2.8: Correlation Matrix of the Indices

	FTSE Mib Dividend Change Rate	FTSE Mib Mid Cap Dividend Change Rate	FTSE Mib Small Dividend Change Rate	FTSE Mib Star Dividend Change Rate
FTSE Mib Dividend Change Rate	100.00%	92.95%	17.64%	92.09%
FTSE Mib Mid Cap Dividend Change Rate		100.00%	-2.39%	99.85%
FTSE Mib Small Dividend Change Rate			100.00%	-4.20%
FTSE Mib Star Dividend Change Rate				100.00%

The table shows the correlation matrix of dividend changes for the four indices. FTSE Mib Star and FTSE Mib show a high correlation coefficient (92.09%) and the coefficient of FTSE Mib Star and FSTE Mib Mid Cap is 99.85%.

To gain insights into the features of the different dividend-change samples, Appendix C.2.1 provides the average of the explanatory variables to better understand the effects of the pandemic on dividends. In particular, it compares the average statistics as a function of dividend paying policies, before and during the pandemic.

Overall, dividend-paying firms, compared to the other groups, have better profitability (RoE) and liquidity (cash flow) growth rates per year. For instance, the free cash flow per share growth rate of the dividend increase group is 25.59%, compared to -13.29% for the dividend decrease group, before the pandemic.

Considering the dividend omission group, the free cash flow is -60.12%, compared to -153.36% of the dividend omission group.

Comparing the growth rate of profitability and liquidity ratio in Appendix C.2.1, it is evident that financial intermediaries follow financial circumstances, instead of economic ones, to define dividend policies over time.

As expected, the financial intermediaries that omitted dividends exhibited poor performance. For example, the FTSE Mib dividend omission group showed a RoE growth rate of 2.53%, compared to -266.80% before and during the pandemic.

Table 2.8 shows the correlation matrices of the variables considered in the analysis, after merging the four groups into a single sample, cleaned of any multi-listing firms. The matrix shows that dividends are positively correlated to the return on equity at 5%, while they are negatively correlated to Return on Assets at 5%, from 2014-2022.

This is due to multicollinearity, as confirmed by the following tables, focusing on the situation before the pandemic and during the pandemic.

The Table 2.9 shows the correlation matrix of the sample considering the overall sample observations (i.e. 224), with significance levels at 1% and 5%.

Table 2.9: Correlation Matrix of the Sample

Correlation Coefficients, using the observations 2014 - 2022

Two-tailed critical values for: 5% 0.6664 (*), 1% 0.7977 (**)

	DIV	DER	ROA	ROE	AT	PFV	AFCF
DIV	1	0.4896	-0.717*	0.7131*	0.1562	0.4706	-0.264
DER		1	-0.34	0.6405	-0.386	0.3321	-0.089
ROA			1	-0.551	-0.016	-0.162	0.6594
ROE				1	0.377	0.3734	-0.289
AT					1	0.3082	0.0718
PFV						1	0.3289
AFCF							1

The table shows the correlation coefficients for the overall sample, with significance levels at 1% and 5%, after merging the four indices into a sample, cleaned of any multi-listing firms. The number of observations used to estimate the correlation matrix is 224.

Table 2.10 explodes the correlation coefficient matrix of the overall period in Panel A (before Covid-19) and Panel B (during Covid-19). In this regard, the findings show that profitability (ROE and AT) leads the dividend decisions, considering that they are distributed if financial firms are profitable.

However, the correlation matrix does not indicate a significant correlation with liquidity (AFCF), either before or during the pandemic, at a 5% significance level.

Thus, Table 2.10 shows the correlation matrix of the sample (224 observations) clustered in two panels: Panel A shows the correlation coefficients before the Covid-19 pandemic by using observations from 2014 to 2019 (152 observations), while Panel B shows the correlation coefficients during the Covid-19 pandemic by using observations from 2020 to 2022 (72 observations).

Table 2.10: Correlation Matrix of the Sample Before and During the Pandemic

Panel A: Correlation coefficients before Covid, using the observations 2014 - 2019
Two-tailed critical values for 5% 0.8114 (*), 1% 0.9172 (**)

	DIV	DER	ROA	ROE	AT	PFV	AFCF
DIV	1	0.5017	-0.8734*	0.6895	-0.1182	0.4315	-0.115
DER		1	-0.5888	0.7929	-0.6079	0.3256	-0.2233
ROA			1	-0.5441	0.5555	-0.213	0.4637
ROE				1	-0.1297	0.2987	-0.0298
AT					1	0.1948	0.7238
PFV						1	0.7108
AFCF							1

Panel B: Correlation coefficients during Covid, using the observations 2020 - 2022
Two-tailed critical values for 5% 0.9969 (*), 1% 0.9999 (**)

	DIV	DER	ROA	ROE	AT	PFV	AFCF
DIV	1	0.4478	-0.922	0.9977*	0.9986*	0.7201	-0.9589
DER		1	-0.7591	0.5072	0.3995	-0.2979	-0.1759
ROA			1	-0.946	-0.9	-0.3952	0.7743
ROE				1	0.9927	0.6716	-0.9376
AT					1	0.7561	-0.9727
PFV						1	-0.8873
AFCF							1

The table shows the correlation coefficients for the overall sample, with significance levels at 1% and 5%, before and during the pandemic. The findings show that profitability (ROE and AT) leads the dividend decisions, instead of liquidity (AFCF). The total number of observations used to estimate the correlation matrices is 224 (Panel A: 152 and Panel B: 72).

Considering how relevant the subset of dividend omission is to the research, Table 2.11 shows the correlation matrices of the explanatory variables limited to the group of financial intermediaries, which omitted dividends, exploded to reflect the situation before and during the pandemic period. The results show that dividend omissions are consistently negatively correlated to the liquidity, particularly during the pandemic. A comparison between Table 2.10 and Table 2.11 shows that profitability becomes less relevant than liquidity when the dividend omission group is taken into consideration during the pandemic. It is clear that financial intermediaries care a lot more about

having a proper liquidity buffer than generating earnings, especially when they are in financial distress (Bhattacharya and Hrishikes, 2012).

Table 2.11: Correlation Matrix of the Sample for the Dividend Omission Group

Panel A: Correlation Coefficients before Covid, using the observations 2014 - 2019
Two-tailed critical values for: 5% 0.8114 (*), 1% 0.9172 (**)

	DIV	DER	ROA	ROE	AT	PFV	AFCF
DIV	1	0.0111	0.1893	0.2348	-0.0571	0.2756	0.2673
DER		1	0.5455	0.3837	0.0545	0.3874	0.4031
ROA			1	0.9825**	0.7526	-0.1478	-0.0298
ROE				1	0.8142*	-0.2516	-0.0895
AT					1	-0.3728	-0.0665
PFV						1	0.1172
AFCF							1

Panel B: Correlation Coefficients during Covid, using the observations 2020 - 2022
Two-tailed critical values for: 5% 0.9969 (*), 1% 0.9999 (**)

	DIV	DER	ROA	ROE	AT	PFV	AFCF
DIV	1	-0.815	0.1639	0.3731	0.3589	0.3711	-0.9943
DER		1	0.438	0.2334	-0.8333	0.2356	0.7489
ROA			1	0.9764	-0.8619	0.9769	-0.2677
ROE				1	-0.732	0.9999**	-0.4696
AT					1	-0.7335	-0.2578
PFV						1	-0.4676
AFCF							1

The table shows the correlation coefficients for the dividend omission group, with significance levels at 1% and 5%. Profitability becomes less relevant than liquidity when the dividend omission group is considered. The total number of observations used to estimate the correlation matrices is 75 (Panel A: 42 and Panel B: 33).

Next, the research focused on the relevance of the considered explanatory variables to the overall sample, through the implementation of a multivariate logit regression model. The analysis allows a better comprehension of the impact of dividend payout policy to the changes before and during the pandemic, as well as the way that firms' variables drive their dividend change policies (e.g. omissions). As widely described in

the literature review section, the Covid-19 outbreak exerted a deeply contradictory influence on corporate dividend policy, so the following analysis clarifies the impact on the dividend payout policies for financial intermediaries in the Italian market.

2.6.3 Multivariate Analysis

Table 2.12 shows the coefficients of a series of logit regression models. In particular, the dependent variables (DIC, DDC, DNC and DOM) are shown as functions of the coefficients of the selected explanatory variables (Const., DER, ROE, AT, AFCF and TE). The logit model equation is:

$$\ln \frac{p}{1-p} = a + b_1 X_1 + b_2 X_2 + \cdots + b_N X_N \qquad (2.1)$$

where "ln" is the natural logarithm, p is the probability that the dependent variable (Y) for cases equals 1, p (Y=1), and "1-p" is the probability that Y for cases equals 0, 1 - p(Y=1). So, ln[p/1-p] is the log odds, or "logit". The sequence of X_N are the selected explanatory variables, b_N are the estimated slope coefficients, and "a" is the estimated intercept.

The Chi-Square test shows the p-value, considering the 1%, 5% and 10% significance levels, in order to evaluate the quality of the model in terms of predictions. If the slope coefficient is significant and positive, a unit change in the regressor increases the odds of the considered event (i.e. Y=DIC, Y=DDC, Y=DNC, or Y=DOM), *ceteris paribus*.

In order to understand the impact of the explanatory variables and the relative significance levels, a series of regressions are performed to find the best set of explanatory variables, which maximise the Chi-Square test. In this regard, ROA and PFV were not considered due to the multicollinearity effect with ROE.

Table 2.12: Significance of Explanatory Variable Coefficients

	DIC	DDC	DNC	DOM
Const	−1.4031***	−0.7523	−1.0508**	−1.7875***
DER	0.3090*	−4.6658**	−0.0833	−0.8748
ROE	0.0381	0.9973***	0.0462	−0.7174***
AT	4.9936	−18.2626**	−0.8743	7.4322*
AFCF	0.2533	0.4838***	−0.0786	−0.4196***
CE	0.3094	−6.5244***	−0.1573	1.7455
Chi-Square test (P-value)	0.1822	0.0119**	0.9775	0.0421**
R^2	0.1867	0.3624	0.0196	0.2844
N.Obs.	224	224	224	224
N. Obs. Control	36	36	36	36

The asterisks ***, **, and * indicate significance at 1%, 5%, and 10% respectively

*The table shows the explanatory variable coefficients of the logit regression model, where the asterisks ***, **, and * indicate the significance level at 1%, 5%, and 10%, respectively. In particular, the regression appears to be good at predicting the dividend decrease (DDC) and dividend omission (DOM) probability. The total number of observations (N. Obs) used for determining the average values of the regressions is 224. The R^2 of DDC and DOM do not appear to be high as they are 36.24% and 28.44%; so, the fraction of the variation in the data is not very well explained by the model. However, the p-values appear to be significant at 5% level, making it appearing as a good model for the population. The number of observations (N. Obs. Control) is just a control index added by the author to verify that all the observations have been included in the dataset before estimating the regressions' coefficients; if all observations are included to estimate the model, the value is 36 as all observations from 2014 to 2022 (9 observations) are considered for the 4 regressions.*

Table 2.12 shows that the regression is good at predicting the dividend decrease (DDC) and dividend omission (DOM). Overall, consistent with prior evidence (Hauser in 2013, Mazur et al. in 2023, Krieger et al. in 2020, and Ali in 2022), the findings show a strong impact of profitability (ROE) and the ability to generate cash flow (liquidity) on dividend reduction and omission. However, the dummy variable CE, which shows if Covid-19 is significant to dividend policy (i.e. the dummy equals 1 in 2020), does not seem to be significant at 5%. The regression to dividend omission (DOM) shows

that as cash flow (AFCF) increases, the probability of omitting dividends decreases by 0.41, *ceteris paribus*. In addition, the probability of omitting dividends increases as profitability (ROE) decreases. Similarly, the regression to dividend decrease (DDC) shows that with increasing cash flow and profitability, the probability of dividend reduction is higher.

Table 2.13 considers the explanatory variable AFCF and PFV, in view of the Chi-Square test significant at 10%. The relationship between the dividend increase group and free cash flow is positive (i.e. 0.264) since dividend payout becomes more probable as cash flows are more available to the financial intermediaries. However, the other dependent variables do not seem to find significant regression models.

Table 2.13: Explanatory Variable Coefficients Significance for Regressors

	DIC	DDC	DNC	DOM
Const	−1.2676***	−1.0941***	−1.1050***	−1.3085***
AFCF	0.2640*	−0.0007	−0.0928	−0.4226**
PFV	−4.4589	1.4306	0.9046	1.7963
Chi-Square test (P-value)	0.0940*	0.9018	0.7847	0.1405
R^2	0.1168	0.0051	0.0120	0.0969
N.Obs.	224	224	224	224
N. Obs. Control	36	36	36	36

The asterisks ***, **, and * indicate significance at 1%, 5%, and 10% respectively

*The table shows the explanatory variable coefficients of the logit regression model, where the asterisks ***, **, and * indicate significance levels at 1%, 5%, and 10%, respectively. The total number of observations (N. Obs) used for determining the average values of the regressions is 224. The R^2 of DIC does not appear to be high, as it is 11.68%; so, the fraction of the variation in the data is not very well explained by the model. However, the p-value appears to be significant at 10% level, making it appearing as a good model for the population. The number of observations (N. Obs. Control) is just a control index added by the author to verify that all the observations have been included in the dataset before estimating the regressions' coefficients; if all observations are included to estimate the model, the value is 36 as all observations from 2014 to 2022 (9 observations) are considered for the 4 regressions.*

However, Table 2.12 and Table 2.13 show some controversial results: how can higher profitability (ROE) and liquidity (AFCF) boost a higher probability to decrease dividends? Similar findings were described by Ali in 2022. In particular, her research showed that "*firms that have higher leverage and are smaller in size are also found to be more likely to have large dividend increases*". According to Ali's findings, these results can appear surprising since higher liquidity and profitability should induce dividend increase, as higher leverage and size should induce dividend decrease. However, Table 2.1 designates several studies as having a "*Positive Impact on Dividend Payout Policy*", by following the behavioural finance principles (Signalling Theory), which can provide support in explaining these results. According to Ali, firms "*that are more leveraged and relatively smaller in size, tend to announce large dividend increases in order to reduce the asymmetric information and adverse selections costs associated with having more leverage and being smaller*". Similarly, financial intermediaries which are more profitable and liquid tend to be more conservative in announcing dividend increases, in order to avoid bad signals to market, which can impact on the market value. On the other hand, debt to equity ratio appears to be negatively correlated with dividend decreases for financial intermediaries. In fact, while high leverage levels can be a critical aspect for firms, it is part of the physiological core business for banks. Regarding this, increasing debt can boost returns (even for shareholders) since more financial resources are used in performing the business (Ali, 2022). Similar results were found and explained by Tinungki et al. (2022), where Indonesian listed firms showed that "*the crisis due to the pandemic led to higher dividend distribution* […]" since it can be considered as "*a positive signal for investors which lifted the sluggish trade condition in the capital market*". They pointed out that profitability, leverage and size have a robust and positive effect on dividend distribution, while size has an adverse effect on dividend policy; this appears to be consistent with both Ali's findings and this one (Tinungki et al., 2022). Similar findings were also provided by Mazur et al. (2023), who pointed out that 82% of firms on the S&P 1500, during the Covid-19 pandemic, increased dividends despite bad earnings

and a deterioration of equity. Their research hypothesises that the "*relation holds for other types of payouts, including share repurchases and special dividends*" to keep good signals to the market. This finding appears seems unlikely in the banking industry due to the strong regulation and the continued actions of supervisory authorities (Mazur et al., 2023). The research confirms the findings in favour of behavioural finance theory, even for financial intermediaries on the Italian stock exchange, which integrates the available literature that mainly focuses on the preliminary pandemic time. In addition, it reveals some phenomena, which seem to be peculiar to the financial industry, such as the Covid-19 effect (CE), which does not seem to be significant in predicting dividend omissions, while it is significant in predicting dividend reductions. Even profitability (ROE) seems to be contradictory, even when it is aligned with the other cited research. However, liquidity appears to be the really critical indicator for banks and insurance firms influencing dividend policies, through a significant negative relationship with dividend omission.

2.7 Conclusions

This chapter contributes to the analysis of corporate dividend payout policies during the outbreak, particularly the research analysing how dividend changes were impacted by the Covid-19 pandemic, utilising a sample of 25 financial intermediaries listed on the Italian stock exchange. The initial sections of the research describe the macroeconomic effects of the pandemic on the financial industry. They show a significant impact by considering that, from 2019-2020, return on equity and stock of equity decreased by around 4% and 2%, respectively. In this regard, European and national supervisory authorities had to implement specific programs - such as the *Pandemic Emergence Purchase Program* (PEPP) and the *Expanded Asset Purchase Programme* (APP) - to support the banking industry by providing financial resources and fiscal incentives. Following the described macroeconomic scenario, the analysis

of the sample shows that several financial intermediaries omitted dividends in 2020. 77% of the financial firms of the FTSE Mib sample omitted to pay dividends, while 23% decreased dividends. The same pattern was confirmed by the other indices in 2020, where firms in the FTSE Mib Mid Cap, FTSE Mib Small Cap and FTSE Italia Star omitted dividends for 71%, 75% and 80% of firms, respectively. However, the phenomenon appears to be limited at the beginning of the pandemic, and considering the fact that, in 2021, the majority of financial firms started paying dividends again (77% FTSE Mib, 86% FTSE Mib Mid Cap, 75% FTSE Mib Small Cap, and 40% FTSE Italia Star). The chapter shows that, even if several financial intermediaries reduced or omitted dividends at the beginning of the pandemic, the analysis shows that banks kept dividend payouts high during the outbreak, in order to provide the market with positive signals of stability and resilience in response to the pandemic.

The result is quite consistent with the view that financial firms and managers are "*reluctant to decrease or omit dividends to either avoid signalling bad news about future earnings, as posited by the signalling models* […] *or to maintain their personal benefits, as proposed by the agency models*" (Ali, 2022). Following the multivariate logit regression model, the results show that dividends were significantly influenced by profitability (ROE) and liquidity (average free cash flow per share) during the Covid-19 pandemic. Similarly, the dividend decrease group appears to experience a significant influence from liquidity and profitability, in addition to leverage ratio, which does not appear to follow the expected trend. Regarding this, the dummy variable, which signals the Covid-19 effect, is significant at 5%, probably due to a blended need to equilibrate dividend payout market signals and protect equity, during severe crises.

Following the available literature, around 71% of the cited papers showed that decisions on omitting dividend payouts followed the need to preserve capital in order to face higher risks during the pandemic. However, recent analysis, which also considered overall pandemic data, showed that signalling theory appears to better explain the results, as happened in this specific case. This research is intended to

contribute to the decisions of academics, supervisory authorities, and practitioners, with a focus on investors and shareholders, who need to pay attention to market perceptions and influencing factors, which support remuneration decisions, especially during extraordinary times, such as the Covid-19 crisis. In fact, following the analysis, financial intermediaries should consider dividend policies as a positive signal to market investors, by effectively distributing dividends to increase the market share price, as stated by Tinungki et al. (2022). There are also some limitations in the performed research, which need to be taken into consideration, even for further research opportunities. Firstly, the available data are not extensive, being circumscribed to the Italian financial industry. Even if the research addresses some relevant research biases that emerge from the available literature, which mainly focused on data sorted before the end of the pandemic in 2022, further analysis should be undertaken to analyse the effects related to subsequent periods, post-crisis. In addition, the regression models should also analyse the marginal effects of key metric growth rates, by avoiding focusing only on the probability to omit dividends or not. In fact, the analysis of effects caused by extraordinary crises, such as the Covid-19 pandemic, can help supervisory authorities to better understand which financial supervisory sectors should be regulated, with further savings protection schemes. Finally, the results show "optimism" on the part of managers in proposing dividend distribution regarding the market consequences, instead of adjusting "*dividend payouts to realised earnings as well as future earnings potential*", which should be anchored in the fundamental analysis (Mazur et al., 2023).

In conclusion, the relationship between shareholders' needs and managers' needs appears to be even more critical during extreme situations, which should induce both players to preserve liquidity, in order to maximise the probability of allowing financial firms to survive even at the expense of profitability in the short-run. In this regard, further research opportunities could focus on the liquidity-profitability trade-off and market volatility in the banking industry during extraordinary times.

Chapter 3

The Impact of Covid-19 on Market Volatility: A Quantitative Analysis of the Italian Banking Sector

Abstract

This chapter analyses the impact of the Covid-19 pandemic on the market volatility of the Italian banking industry. In doing so, the research considers a sample of 25 financial intermediaries listed on the Italian stock exchange, by comparing the findings of the sample with some benchmarks (FTSE Mib, VSTOXX, and VIX). The analysis starts by providing some relevant descriptive statistics, then it performs hypothesis tests and a GARCH model to investigate relevant discrepancies between the volatility of the sample and the benchmarks, with a focus on the significance of Covid-19 before, during and after the pandemic. The results confirm both the significance of Covid-19 on the Italian banking sector volatility and the relevance of the extraordinary measures adopted by the supervisory banking authorities in mitigating market volatility during the pandemic.

3.1 Introduction

The purpose of this research is to investigate the impact of the Covid-19 pandemic on the volatility of the Italian banking sector, through the analysis of a sample of 25 financial intermediaries, which are currently listed on the Italian stock exchange (FTSE Mib, FTSE Mib Mid Cap Italia, FTSE Small Cap Italia, and FTSE Italia Star). The sample of this chapter reflects the composition of the one used in chapter 2; however, the overall timeseries is integrated with an ex-post pandemic time-window (2022-2024) in order to get further information about the evolution of the Italian banking industry, post-outbreak.

The research also analyses the effectiveness of the extraordinary measures implemented by the supervisory banking authorities (such as the ECB, Bank of Italy, etc.) to mitigate the market risk during the Covid-19 pandemic. In this regard, the analysis starts examining changes in the volatility of the Italian banking sector caused by the Covid-19 infection, then hypothesis tests and a GARCH model are implemented to evaluate the significance of Covid-19 in varying the sample volatility, even in comparison with some benchmarks (FTSE Mib, VSTOXX, and VIX) before, during, and after the pandemic.

There is extensive literature on how Covid-19 impacted stock exchanges across the world, including Eastern and Middle Eastern Areas; however, most research focused purely on market returns analysis, especially at the beginning of the pandemic, without providing comparative analysis for the banking sector's market volatility. Hence, this chapter intends to provide a specific contribution to the field of market risk research since, as is known, volatility is the other side of the return in setting up profitable portfolios (Suryadi et al., 2021).

After the beginning of the Covid-19 pandemic (in late 2019 in Wuhan - China - and the consequent declaration of the pandemic on March 11, 2020 by the WHO), international markets started experiencing serious reactions, requiring governments and authorities to intervene with extraordinary measures to protect investors, savers,

firms, and markets in general. At that time, the poor financial performance of the economy led to a bearish stock market, that was mainly driven by a deterioration in investor confidence. In this regard, in 2020, Chaudhary et al. pointed out that investors experienced a quick transformation of a "*feel-good factor*" into a "*fear factor*", even though the fundamentals of financial firms were still sound. Thus, during the pandemic, quantitative and qualitative analysis of exchange markets were not properly reliable, due to the fact that "*fundamentals of security* [were] *diluted by macroeconomic factors*" (Chaudhary et al., 2020).

Recent studies have confirmed that the market volatility was deeply affected by the outbreak in 2020, across all industries. The analysis of the volatility of the main stock market indices of the top ten countries, based on GDP, pointed out that the volatility remained "*higher than in normal periods, signalling a bearish tendency in the market*" (Chaudhary et al., 2020). Related to this, the uncertainty in exchange markets led to a confirmation of strong causality between "*the fear index of infectious disease and* […] *stock market volatility*". Moreover, interconnections between countries made the consequences of Covid-19 infection even worse, on a global level, since the "spillover effect" exacerbated risks and concerns in granting stock markets stability, especially for some financial markets, such as the banking and the insurance sectors (Fernandes, 2020).

Unlike other industries, governments and supervisory banking authorities implemented extraordinary measures to protect the soundness and the stability of the banking sector, to keep the market's confidence as high as possible. For instance, as detailed in Section 2.4, the European Central Bank implemented the *Pandemic Emergence Purchase Program* (PEPP), the *Expanded Asset Purchase Program* (APP), and the *Longer-Term Refinancing Operations Program* (LTRO) to ensure that there were enough capital and liquidity buffers to financial intermediaries and investors. These programs were not only aimed at providing financial intermediaries with liquidity at competitive interest rates, but they also supported the supervisory banking authorities in monitoring the member States' bond yield spreads and setting up clear conditions for the European

Institutions and the member States to coordinate at a national level (Quaglia and Verdun, 2023). At the same time, the interventions were intended to support investors' confidence and to mitigate wide volatility variations in stock exchanges, particularly avoiding extreme spikes in financial market trends.

Somehow, the pandemic has changed the general idea around the banking industry that was historically linked to the concept of speculation in highly volatile markets. Banking industry has shifted to an innovative awareness of assuring savers' safety, which was reflected by the adoption of a relevant number of extraordinary policy interventions to avoid defaults. In this regard, the literature shows a dichotomy between the studies that are in favour of or against the efficacy of the extraordinary measures implemented by the supervisory banking authorities. For instance, in 2023, Batten et al. found market volatility to be higher during the 2020 pandemic than during the 2008 global financial crisis, which appears to be inclined to raise uncertainties about the efficacy of the extraordinary measures implemented by the supervisory banking authorities (Batten et al., 2023). However, the research conducted by Fousekis in 2020, showed the significant relationship between stock returns and risk perception changes in the Chinese and European markets (Fousekis, 2020). According to Batten et al. (2023), there are several studies about the significance of the correlation between volatility indices and European financial markets, while very few studies have investigated the "spillover effect" between the indices (such as VIX, VSTOXX, etc.) and the European banking sector.

For the purpose of this research, the sample comprised the listed financial intermediaries on the Italian stock exchanges used in chapter 2, considering daily closing prices, sorted into three time-windows: i) before Covid-19 (from January 1, 2016 to December, 31 2019); ii) during Covid-19 (from January 1, 2020 to March 31, 2022); and iii) after Covid-19 (from April 1, 2022 to February 29, 2024).

The aim of the research is twofold: on the one hand, it examines whether the effect of the pandemic was significant on the volatility of the Italian banking industry, compared

with some selected benchmarks (i.e. FTSE Mib, VSTOXX, and VIX) and, on the other hand, it investigates the degree of efficacy of the extraordinary measures put in place to "stabilise" market risk, as implemented by the supervisory banking authorities during the pandemic. The Covid-19 pandemic allows to investigate the market reactions to unforeseen crises and evaluates the market's behaviour. The research wants to support investors and supervisory banking authorities in making better decisions through being well-informed.

The chapter is organised as follows. Section 3.2 provides a description of the extraordinary measures, which were adopted by the supervisory banking authorities to mitigate high market volatility during the pandemic. Section 3.3 summarises the available literature by gathering the studies into similar groups, with a focus on the dichotomies that emerge from them. Section 3.4 details the research question and explains the contribution to the literature, based on the analysis of the previous section. Section 3.5 describes the data and the methodology, in order to perform the hypothesis tests and the GARCH model to produce empirical results. Finally, Section 3.6 provides an extensive discussion about the findings and the conclusion, by including research limitations and further research opportunities.

3.2 The Market Volatility Reactions during the Pandemic

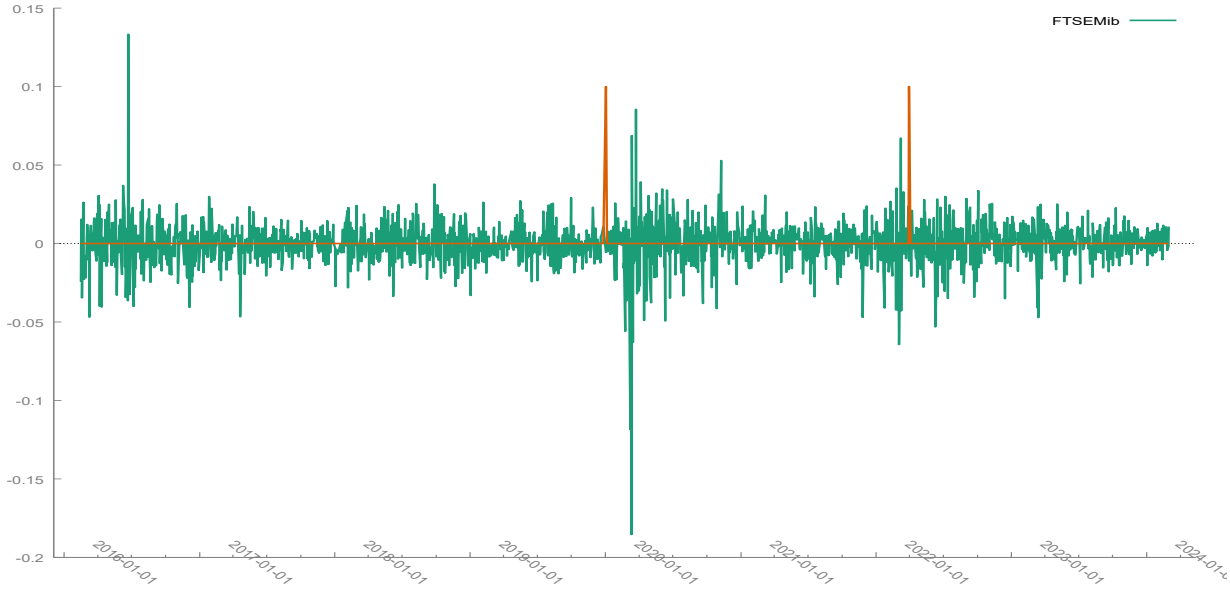
The Bank for International Settlements (BIS) defines market risk as "*the risk of losses arising from movements in market prices*" and it includes *"(1) default risk, interest rate risk, credit spread risk, equity risk, foreign exchange (FX) risk and commodities risk for trading book instruments; and (2) FX risk and commodities risk for banking book instruments*" (Bank for International Settlements, 2019).

As the most common approach to estimate market risk follows the Value-at-Risk (VaR) models, the conditional volatility is generally derived from Generalised Autoregressive Conditional Heteroskedasticity models (GARCH). In this regard, some

studies analysed how the pandemic impacted on financial markets. In particular, they point out that some of the effects of Covid-19 (such as a reduction in liquidity buffers, erosion of equity due to losses, etc.) mostly contributed to increase the market uncertainty, at the time of the pandemic. Consequently, supervisory banking authorities, complying with the primary function to assure financial market stability, had to set up continuous market monitoring systems and implemented extraordinary measures to mitigate extreme variations in market volatility to avoid financial intermediaries recording excessive portfolio losses. Rout et al. (2021) analysed the impact of the outbreak "*on the downside stock market risk in the G-20 nations using Vaue-at-Risk models*" and they pointed out that Italy was one of the worst affected countries in Europe (Rout et al., 2021). In this regard, according to the European Central Bank's statements about the "*supervisory measures in reaction to the Coronavirus*", monitoring and forecasting market volatility became a priority for supervisory banking authorities at a national and international level, during the pandemic. At that time, the ECB provided specific guidance to "*mitigate volatility in banks' regulatory capital and financial statements stemming from IFRS 9 accounting practices, including on the use of forecasts to avoid excessively procyclical assumptions in expected credit loss (ECL) estimations*" (European Central Bank, 2022). In 2017, Smolović et al. listed several papers dealing with the "*appropriate estimation and forecast*" of market volatility. They claimed that GARCH models were effective in doing that, considering the common normal distribution of residuals for developed economies, which is not always observed in developing countries because of their lower liquidity and "*the greater influence of internal trade and high volatility*" (Smolović et al., 2017). The analysis of the Italian stock market (FTSE Mib) showed the relevant losses experienced during the pandemic. In particular, Figure 3.1 (green line) shows the index trend from 2020-2022, while the two orange steps show the beginning and the end of the pandemic. At first sight, the time-series plot shows a sensible increase in the volatility during the pandemic, with an evident fall (around 16.92%) on March 12, 2020, which was the worst loss during the outbreak. The

research by Mauro et al. (2023), confirmed the relevance the first Italian Covid-19 case (discovered in Lombardy-Codogno on February 21, 2020) on FTSE Mib, by focusing on two sensible segments: Star and Mib 30. These segments decreased by around 7.08% and 0.1%, in the first 47 days of the outbreak. Also, the second wave, that lasted from August 1, 2020 to October 30, 2020, brought out negative returns in both segments: -0.71% for the Mib 30 segment and -7.06% for the Star segment (Mauro et al., 2023). Firstly, this situation spurred investors to look for safe assets, such as US and German long-term government bonds. At that time, "*the yield on 30-year US treasuries decreased by almost 1%, driving prices on 30-year bonds up by approximately 30%*". Secondly, the supervisory banking authorities adopted proper measures in order to positively impact market stability, as in Figure 3.1. In fact, the European Central Bank adopted some specific programs from March 19, 2020 to April 3, 2020, such as the PEPP, APP, and LTRO. After that, FTSE Mib showed positive returns of around 1.27% over this period, while Star and the Mib 30 segments, increased by around 1.44% and 3.37%, respectively (Mauro et al., 2023).

Figure 3.1: Trend of Daily Returns of FTSE Mib from 2016-2024



The figure shows the trend of daily returns of FTSE Mib from 2016- 2024. The orange line marks the beginning (January 1, 2020) and the end (March 31, 2022) of the pandemic.
(Morningstar, 2024)

The market appears to be quite sensitive to new information at the time of the pandemic, assuming that the extraordinary measures adopted by the supervisory banking authorities were effective in "stabilising" the market volatility, at least in the short-run. However, the banking sector recorded abnormal returns in some periods of the pandemic, which cannot be easily explained. For instance, while several industries (such as home products, industrial products, consumer services, etc.) recorded negative returns, banking industry returns increased by around 15.97%, from January 22, 2020 to February 21, 2020. In this regard, further analysis is provided in the next sections, considering the fact that "*the effects of the shock become symmetrical among all sectors*", especially in the Italian banking industry (Mauro at al., 2023).

3.3 The Literature Review

Several studies in the literature analysed the relevance of GARCH models in estimating and assessing the volatility of stock exchange markets, as well as the "spillover effect" on stock returns. This section provides a comprehensive review of the scientific literature about the impact of Covid-19 on the volatility of financial markets, with a focus on the banking industry across the world, in order to explore the efficacy of the extraordinary measures adopted by the banking supervisory authorities during the pandemic.

The very first step of this field of research starts with the pandemic in 2020 and focuses on the analysis of the reactions of stock market returns to the evolving pandemic (e.g. the number of people proving positive to the infection, the number of daily deaths, etc.) in order to deepen the empirical evidence for the theories about market efficiency and market signalling. The preliminary findings about the market efficiency of asset values (when reflecting information about Covid-19) were also tested with several methodologies afterwards. In this regard, Khatatbeh et al. (2020) illustrated the empirical evidence of Covid-19 effects on eleven global stock market indices. In

particular, the paper pointed out that the announcements of cases of Covid-19 had a significantly negative impact on market returns, by capturing "*investors' expectations over potential adverse economic consequences of Covid-19*" (Khatatbeh et al., 2020). Similarly, Khan et al. (2020) demonstrated that the growth rate of newly infected people (on a weekly basis) was statistically significant for stock market returns, by analysing a sample of sixteen countries. In 2020, He et al. found consistent results for financial markets in China, Italy, South Korea, France, Spain, Germany, Japan and the United States. They also found the empirical absence of "*evidence that Covid-19 negatively affect*[ed] *these countries' stock markets more than it* [did] *the global average*" (He et al., 2020). In 2020, Topcu and Gulal confirmed these results for a sample of financial markets in developing economies as well. They stated that "*official response time and the size of stimulus package provided by the governments matter*[ed] *in offsetting the effects of the pandemic*" (Topcu and Gulal, 2020). Their results also appeared to be important in the discussion of the degree of efficacy of the extraordinary measures adopted by institutions during the outbreak.

The preliminary findings on the effects of Covid-19 on the financial markets appeared to be consistent, even though some of them did not support the hypothesis that the pandemic was the most life-threatening event in the last century, as argued by He et al. (2020). Following the initial results about expected returns and market efficiency, the researchers started focusing on models to predict future returns, since they varied dramatically from the usual patterns, in more than one direction. Thus, the research focused on looking for explanations about the long-term effects of the pandemic, across industries and markets.

In order to summarise the available literature about the pandemic, this section gathers the papers into four groups:

- Group A: Analysis of the financial markets' volatility in European countries;
- Group B: Analysis of the financial markets' volatility in Eastern and Middle Eastern countries;

- Group C: Comparative volatility analyses between European and Asian countries;
- Group D: Analysis of the volatility of alternative investments in international financial markets.

Regarding the key literature in Group A (market volatility analysis of European countries), Engelhardt et al. (2020) illustrated that the stock price volatility of a sample of 47 national stock markets reacted to Covid-19, considering that lower volatility occurs in more confident countries. The research showed that both "*trust in fellow citizens as well as in the countries' governments* [were] *of significant importance*" (Engelhardt et al., 2020). Similar findings were also described by John and Li in 2021, who stated that the positive spikes in the VIX index were positively correlated with the Covid-19 index, market index, lockdown index, and banking index. In addition, they illustrated how the government relief efforts index decreased the number of spikes in volatility (i.e. the jump component). Basically, they pointed out that the lockdown index reduced the jump volatility in the S&P 500 index, with a delay of five days (John and Li, 2021). These findings were partially confirmed by Baker et al. in 2020, who found that stock price volatility increased in the US market, after the Covid-19 infections began. In particular, they pointed out that international restrictions on the economy and social distancing were the key drivers of the US stock market volatility to Covid-19, in comparison with previous illness outbreaks (1918-1919, 1957-1958, and 1968) (Baker et al., 2020). Similar results were obtained by Albulescu (2021), who demonstrated that Covid-19 (i.e. new cases of infection and fatality ratio) enhanced the S&P 500 volatility so that "*the prolongation of the coronavirus pandemic* [was] *an important source of financial volatility*" (Albulescu, 2021). Gherghina et al. (2021) implemented a GARCH model to investigate the volatility of daily returns in the Romanian stock market between January 2020 and April 2021. They found that the volatility shifted over the period, by increasing "*to a level very close to that recorded during the global financial crisis of 2007-2009*" (Gherghina et al., 2021). In 2022, further analysis, conducted by Foglia et al., demonstrated that, Covid-19 not only

strongly impacted the volatility of the thirty major Eurozone banks, but there was also a strong interconnection in the Eurozone banking system, mainly due to the small-medium financial intermediaries' network (Foglia et al., 2022). These results were also confirmed by Batten et al. (2023), for the European Global Systemically Important Banks (GSIBs); they provided an analysis of the volatility transmission between the GSIBs and the implied stock market volatility (VIX), through a Dynamic Conditional Correlation Generalised Autoregressive Conditional Heteroskedasticity model. The findings showed a negative correlation between VIX and GSIBs returns during the pandemic, in comparison with the global financial crisis (Batten et al., 2023). Finally, in 2023, Mamilla et al. analysed "*the impact of volatility on the returns of nine National Stock Exchange indices before, during, and after the Covid-19 pandemic*". They found that the Covid-19 outbreak outperformed the pre-Covid-19 time. They stated that the "*volatility forecasting techniques* [could] *help investors to understand index volatility and mitigate risk, while navigating these dynamic indices*" (Mamilla et al., 2023).

Another wide literature group (B) focused on the financial markets in the East and Middle East, which seems to indicate consistent findings with group A. However, some relevant idiosyncrasies have emerged over time. In particular, in 2021, Mallikarjuna implemented a TGARCH(1,1) model to show that the effects of announcements on the Indian stock market were impactful during the pandemic (Mallikarjuna, 2021). In this regard, Sharma (2020) implemented a GARCH model to analyse the change in volatility for five Asian economies (Hong Kong, Japan, Russia, Singapore, and South Korea). The research found that only Singapore showed a more prominent change in volatility than the other four countries (Sharma, 2020). In 2021, Fakhfekh et al. demonstrated the appropriateness of using GARCH models in performing return volatility analysis during the outbreak, in order to include the dynamics of a persistent and asymmetric volatility. The analysis focused on the Tunisian sectorial stock market indices during the pandemic. The findings showed that volatility was more persistent during Covid-19 for the "*banks sector return volatilities* [that had] *relatively high positive and significant asymmetric effect compared with those during the pre-Covid-*

19 period", which supported the need to use GARCH models (Fakhfekh et al., 2021). Regarding this, Yong et al. (2021) focused on the Malaysian and Singapore stock exchanges. They applied some GARCH models to test return volatility on daily closing values of stock market indices between July 1, 2019 and August 31, 2020. The sample was divided into two subsamples, before and during the Covid-19 pandemic, to show that GARCH models performed well for both of them. In addition, the analysis pointed out that the stock market returns in both subsamples were "*quite persistent and the persistence decreased for both stock market returns during the pandemic*" (Yong et al., 2021). In 2021, Nurdany et al. tried to identify the existence of asymmetric volatility in the Islamic capital market (Indonesia Sharia Stock Index - ISSI) in Indonesia, during the pandemic. In particular, they showed that the asymmetric parameter coefficient was positive and statistically significant, by implementing a TGARCH model (Nurdany et al., 2021). In 2022, Apergis et al. implemented a GARCH model to confirm that infectious diseases and daily deaths impacted on the market returns and volatility in the Chinese stock markets (Apergis et al., 2022). In 2021, Bora and Basistha illustrated the impact of Covid-19 on the volatility of stock prices in India, by implementing a GARCH model. In particular, they stated that the stock market experienced a period of high volatility during the pandemic (Bora and Basistha, 2021). In 2022, Adenomon et al. conducted a study about the Nigerian market that confirmed high volatility during the Covid-19 period, by implementing a GARCH model (Adenomon et al., 2022).

Group C concerns the comparison of the volatility studies between the European and the Asian financial markets. In 2021, Setiawan et al. examined the effect of "*the Covid-19 pandemic on stock market returns and volatility in an emerging economy (Indonesia) versus a developed country (Hungary), using an event-study methodology with a GARCH(1,1) model*". Compared to the global financial crisis, the results revealed that the outbreak had a negative impact on the expected returns and volatility of the stock markets, in both emerging and developed economies (Setiawan et al., 2021). A study performed by Onali (2020) on the Chinese and the US markets, showed

that the variation in the number of infected people and deaths did not seem to have an impact on the US stock market returns, but the number of cases did have an impact in China (Onali, 2020). In 2021, Birău et al. researched changes in the volatility of stock markets in Spain and Hong Kong. They found that the magnitude of the volatility in the selected markets was more relevant during the pandemic than before. However, GARCH models show some biases that have to be corrected ex-ante, in order to perform the analysis of conditional variance of the selected stock markets (Birău et al., 2021).

Finally, literature group (D) focused on the analysis of the pandemic to the volatility reactions of alternative investments (bitcoin, oil, gold, etc.). Regarding this, in 2023, Khan et al. performed a comprehensive analysis of the market volatility and asymmetric behaviour of Bitcoin, Euro, S&P 500 index, Gold, Crude Oil, and Sugar, during the outbreak. They applied a GARCH model to the daily time series returns data, ranging from November 27, 2018 to June 15, 2021, to show both "*a high level of volatility persistence in all the financial markets during the Covid-19 pandemic*" and significant positive asymmetric behaviour for the Crude Oil and S&P 500 index (Khan et al., 2023). In 2022, Yildirim et al. contributed to the analysis of the risk transmission between oil and precious metal markets induced by the Covid-19 pandemic, by using a GARCH model. "*The findings reveal*[ed] *evidence of a significant risk transmission between oil prices and precious metal prices, particularly during the* […] *pandemic*" (Yıldırım et al., 2022). In 2021, Ghorbel and Jeribi investigated the time-frequency co-movement between the recent Covid-19 pandemic, G7 stock markets, gold, crude oil price (i.e. WTI) and cryptocurrency markets (i.e. Bitcoin) using multivariate MSGARCH models. The findings revealed that all variables displayed a "*strong volatility concentrated in the first four months of Covid-19 outbreak*". In particular, during the pandemic, "*the correlations for the couples oil-gold and oil-bitcoin peaked. Contrary to gold, Bitcoin* [could not] *be considered as a safe haven during the global pandemic*" (Ghorbel and Jeribi, 2021). In 2020, Yousaf and Ali researched the returns spillover and the volatility transmission between Bitcoin, Ethereum, and Litecoin, for

the pre-Covid-19 and during-Covid-19 periods. They showed that the "*return spillovers differ*[ed] *across both periods for the Bitcoin-Ethereum, Bitcoin-Litecoin, and Ethereum-Litecoin pairs* [while] *the volatility transmission was not significant between cryptocurrencies during the pre-Covid-19 period*" (Yousaf and Ali, 2020). In 2020, Hongsakulvasu and Liammukda analysed the dynamic risk-return movements in four oil markets: Brent, West Texas Intermediate, Dubai, and Singapore Exchange, during the pandemic and the 2020 oil price war. The findings confirmed positive risk-return relationships in all considered markets (Hongsakulvasu and Liammukda, 2020).

Therefore, during the pandemic, a wide group of literature focused on the field of market efficiency and investors' behaviour, following the theories of E. Fama developed in 1970.

The findings, obtained by analysing pandemic data, do not always seem to be consistent with each other, leaving space for further research. However, as described previously, the general theory about market efficiency appears to be supported by almost every study. In this regard, dichotomies appear to be more evident when analysis enters the field of the banking sector.

Covid-19 was a rare event, so financial markets took time to resume their traditional patterns, making the preliminary findings heterogeneous. For instance, recalling the cited literature, Gherghina et al. argued that markets reacted almost as things transpired during the 2008 global financial crisis, while some others (e.g. Setiawan et al.) claimed that stock markets overreacted in comparison with the results recorded in the 2008 global financial crisis. Furthermore, Batten et al. found a very negative correlation between VIX and GSIBs returns, which does not make the extraordinary measures (e.g. PEPP, APP, and LTRO) appear to be effective during the pandemic. The available literature concerning Covid-19 focuses on analysing the reactions of economies to the outbreak, diversifying financial markets, asset classes, geographic areas, and industries.

Table 3.1 displays the analysed literature for each defined group.

Table 3.1: Summary of the Literature Review

N.	Authors	Content/Findings	Model	Year
Group A: Analysis of the financial markets' volatility in European countries				
1	Baker et al.	The paper analyses the relationship between stock price volatility and Covid-19 infection in the US market.	Text-based methods	2020
2	Engelhardt et al.	The paper investigates if trust affects global stock market standard deviation, during the outbreak. It shows that the stock markets' standard deviation is significantly lower in high-trust countries.	Ordinary Least Squares (OLS) regression model	2020
3	Albulescu	The paper illustrates that Covid-19, in particular the number of new cases of infection and the fatality ratio, enhanced S&P 500 (US market) volatility during the pandemic.	Ordinary Least Squares (OLS) regression model	2021
4	Gherghina et al.	The paper illustrates that the volatility during the pandemic shifted by increasing to a level very close to that observed during the global financial crisis of 2007-2009 in the Romanian market.	GARCH model	2021
5	John and Li	The paper points out positive correlations between VIX and Covid-19 indices, as well as a negative correlation between the government relief efforts index and the number of spikes in volatility.	Correlation models	2021
6	Foglia et al.	The paper investigates the daily stock return volatilities of 30 major Eurozone banks to quantify the "risk spillover effects" and to estimate the Covid-19 pandemic's impact on financial stability.	Diebold-Yilmaz Connectedness Index model	2022
7	Batten et al.	The paper provides an analysis of the volatility transmission between the European Global Systemically Important Banks (GSIBs) and implied stock market volatility (VIX).	GARCH model	2023
8	Mamilla et al.	The paper shows that the Covid-19 time outperformed the pre-Covid-19, by pointing out higher volatility.	GARCH model	2023
Group B: Analysis of the financial markets' volatility in East and Middle East countries				
9	Sharma	The paper provides a note on commonality in volatility for five developed Asian economies (i.e. Hong Kong, Japan, Russia, Singapore, and South Korea). It shows that commonality in volatility during the Covid-19 time is more prominent in the case of Singapore compared to other four economies.	GARCH model	2020
10	Bora and Basistha	The paper states that the stock market in India experienced high volatility during the Covid-19 outbreak.	GARCH model	2021
11	Fakhfekh et al.	The paper shows that volatility is more persistent during Covid-19, and the banking	GARCH model	2021

		sector return volatilities have relatively high positive and significant asymmetric effect compared with those during the pre-Covid-19 period.		
12	Mallikarjuna	The paper shows the relevance and the significance of the Covid-19 to the Indian stock markets returns and volatility.	GARCH model	2021
13	Nurdany et al.	The paper shows that the asymmetric parameter coefficient was positive and statistically significant by implementing TGARCH model in the Indonesia Sharia Stock Index (ISSI).	GARCH model	2021
14	Yong et al.	The paper performs an analysis of the volatility on the Malaysian and Singapore stock exchanges during Covid-19.	GARCH model	2021
15	Adenomon et al.	The paper shows a loss in stock returns and high volatility in stock returns under the Covid-19 period in Nigeria as against the normal period under study.	GARCH model	2022
16	Apergis et al.	The paper shows how infectious diseases and daily deaths impacted on the market returns and volatility in the Chinese stock markets, during the outbreak.	GARCH model	2022
Group C: Comparative volatility analyses between European and Asian countries				
17	Onali	The paper suggests that variations in the number of cases and deaths in the US and six other countries majorly affected by the Covid-19 crisis do not have an impact on the US stock market returns, apart from the number of reported cases for China.	GARCH model	2020
18	Birău et al.	The paper shows the magnitude of Covid-19 on the standard deviation of stock markets of Spain and Hong Kong.	GARCH model	2021
19	Setiawan et al.	The paper examines the effect of Covid-19 outbreak on stock market returns and volatility in both an emerging economy (Indonesia), and a developed country (Hungary).	Event study and GARCH model	2021
Group D: Analysis of the volatility of alternative investments in international financial markets				
20	Hongsakulvasu and Liammukda	The paper shows a positive risk-return relationship in all considered oil markets.	GARCH-in-Mean model	2020
21	Yousaf and Ali	The paper shows that the return spillovers differ across both periods for the Bitcoin-Ethereum, Bitcoin-Litecoin, and Ethereum-Litecoin pairs and the volatility transmission was not significant between cryptocurrencies during the pre-Covid-19 period.	VAR-DCC-GARCH model	2020
22	Ghorbel and Jeribi	The paper illustrates a strong volatility concentrated in the first four months of Covid-19 outbreak.	MSGARCH model	2021

23	Yıldırım et al.	The paper reveals evidence of a significant risk transmission between oil prices and precious metal prices, particularly during the onset of the Covid-19 pandemic.	DCC-GARCH model	2022
24	Khan et al.	The paper shows a high level of std. dev. persistence in all the financial markets during the Covid-19 outbreak as well as a significant positive asymmetric behaviour for the Crude Oil and S&P 500 index.	GARCH model	2023

The table summarises the available literature by author, main findings, model, and publication year. The studies are sorted into four groups as a function of the considered market and analysed assets.

Finally, the literature results seem to confirm that the economy overreacted to the pandemic, by implicitly corroborating the irrational theory of investors in financial markets. However, there are no specific studies into the effect of the outbreak on the Italian banking sector that also focus on the degree of efficacy of the extraordinary measures implemented by governments and supervisory banking authorities.

3.4 The Research Question and the Contribution to the Literature

Following the analysis of the available literature, it appears that the consequences of high market volatility can be quite relevant, since securities are spread out over a larger range of values, which can cause unexpected losses for both investors and financial intermediaries that can destabilise financial markets due to insufficient equity and liquidity buffers. As explained, this requires that supervisory banking authorities constantly monitor financial markets, as well as periodically updating regulations, to induce market players to ensure they have adequate capital and financial supervisory requirements, in order to ensure market stability.

The analysis appears to be quite relevant for both investors and supervisory authorities, at a national and international level. Supervisory authorities need to collect information and elaborate it, through specific qualitative and quantitative models, to monitor market risk, particularly during financial crises. In this regard, the BIS (in Core

Principle n. 22) states that the "*the supervisor determines that banks have an adequate market risk management process that takes into account their risk appetite, risk profile, and market and macroeconomic conditions and the risk of a significant deterioration in market liquidity. This includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate market risks on a timely basis*" (Bank for International Settlements, 2012). The volatility analysis of markets and the level of efficacy of the governmental extraordinary measures become even more relevant for the banking industry, where the trust of savers and investors across markets is the key factor in granting market stability over time. Regarding this, the pandemic highlighted the need to improve measures to protect markets, by researching the impact of that event on the expected returns and volatility of financial markets, in order to implement effective measures. It is also relevant to focus on the efficacy of the extraordinary supervisory measures adopted during the pandemic, by comparing the volatility of a sample of financial intermediaries with volatility benchmarks (such as FTSE Mib, VIX, VSTOXX, etc.). It is apparent that, during the early phase of any future crisis, such as another pandemic, sector analysis such as this "*can help policymakers evaluate the benefits and harms of their interventions*" (Mauro at al., 2023). This also reveals gaps in the research and identifies a need to perform an analysis of the volatility reactions of the banking sector, compared to the overall market during the pandemic. It is also relevant for professionals (such as risk managers and asset managers), who are setting up proper asset allocations during critical times, and supervisory entities (such as central banks and regulators), in preventing and/or neutralising future financial crises (Batten et al., 2023). Following the literature review section, which gathers the main studies in four groups, this research mainly focuses on the first group of papers about European areas (i.e. Group A), by providing an extensive analysis of the financial markets' volatility in European countries. However, Group A's findings appear to be heterogeneous, which may require further research in order to clarify the real impact of the effects of the pandemic and the savers' protecting actions. Several studies have found positive correlations between the number of infections and market values, as

well as a higher severity of the pandemic in comparison with the 2008 global financial crisis; however, there are no clearly specific findings on how the banking industry risk reacted to the pandemic, including the degree of significance of Covid-19 to market volatility. A considerable number of impactful studies, which focused on volatility analysis in the Covid-19 context, included papers about the Eastern or Middle Eastern markets (Group B).

Thus, the comparison between the stock returns of financial firms included in the sample and the returns of volatility indexes, such as VIX or VSTOXX, appears to be relevant since it allows to understand how the financial industry's volatility has changed since the pandemic. Following the literature review, they are considered to be both global fear indexes and global risk benchmarks, being "*dominant measure*[s] *of risk volatility in the financial world*". As a consequence, Chapter 2 adopts both indexes to make comparisons with the sample. In this regard, the previous section summarizes some studies (i.e. Foglia et al., 2022 and Yousaf and Ali, 2020) that investigate some relevant effects on financial markets of the "*spillover between the VIX and the European banking sector*". However, the literature sustains that "*jumps in VIX* [are considered] *more important to investors than jumps in VSTOXX*", since VIX has historically been considered as the volatility "golden indicator" by both investors and risk managers, across the world (Batten et al., 2023). Even if the VSTOXX has not been frequently used by researches and practitioners, Chapter 3 also includes this index in the analysis, since it can be considered as the "European VIX", by being the S&P 500 volatility index. Some studies (Badshah, 2009 and Briere et al., 2012) have shown that some differences between the trends of VIX and VSTOXX have emerged, which have supported the need to refer to the index based on the target market of the analysis.

The comparison between the volatility of the sample and the benchmarks, allows to focus on the significance of the pandemic to the conditional volatility, as previously described. In particular, following the findings in Group B, this study contributes by verifying the presence of significant deviations from market volatility in the sample, by including exogenous variables in autoregressive models (such as GARCH). This

also appears to be relevant in forecasting the evolution of the market risk "*captured on a timely basis and that the valuation process uses consistent and prudent practices*" (Bank for International Settlements, 2012) due to the difficulties in forecasting "*the long-term economic impact of Covid-19, especially, since there is no comparable historical benchmark on which to base such predictions*" (Chaudhary et al., 2020).

Thus, the goal of this chapter is to answer a twofold research question: was the effect of the pandemic significant on the volatility of the Italian banking sector compared to certain benchmarks (such as the FTSE Mib, VSTOXX, and VIX) and what was the degree of efficacy of the extraordinary measures to stabilise market risk, as implemented by the supervisory banking authorities during the pandemic. In this regard, Covid-19 made the condition unique by nature, which allows the exploration of the reactions of markets to extreme crises and assesses the trends and behaviour of the markets. Thus, this research wants to support investors and supervisory banking authorities in making better decisions in well-informed contexts.

3.5 Data, Methodology and Empirical Results

The pandemic's effects cannot be easily compared with any previous crisis, since the environment created by the pandemic appears to be totally different from any event in the past. This is mainly due to the wide interconnection between markets and societies, which magnified the size and speed of the spread of the economic impacts (interest rates, inflation, etc.) (Cheuathonghua et al., 2019). The outcome of the pandemic was a severe slowdown of economic and financial growth "*either due to lockdowns or due to fear resulting in a significantly negative outlook*" (Chaudhary et al, 2020). In this regard, Gagnon et al. (2023) stated that the pandemic caused the sharpest recession in the world economy "*since the Great Depression, with global GDP declining 3.0 percent in 2020 compared to a rise of 2.8 percent in 2019*", by providing a deep

analysis of the impact of the pandemic on real GDP from 2020-2021 (Gagnon et al., 2023).

The pandemic, which deeply impacted the real economy (e.g. an average GDP reduction of around 5.8% in two years), turned out to be reflected in stock market values. Financial markets showed not only poor economic performances but, also, periods of high volatility (Batten et al., 2023).

Volatility follows the level of uncertainty in financial markets and so it is a highly relevant parameter when forecasting expected returns and making portfolio management decisions. Volatility is the key risk metric in all processes of asset allocation. This is also due to the fact that interpreting volatility is quite intuitive: a "*greater volatility indicates a significant variation in stock price in the short run. With an increase in volatility, risk increases.* […] *The most commonly used measures of volatility are standard deviation, skewness and kurtosis*". When standard deviation is used to measure volatility, the analysis assumes that returns are normally distributed, which can be confirmed by both the skewness and the kurtosis analysis, which work on extreme observations. The Jarque-Bera test is also required as "*a tool to test goodness-of-fit. If its value is far-off from zero, this indicates that the sample does not possess a normal distribution*" (Chaudhary et al, 2020).

However, during extreme situations, such as a financial crisis, return volatility could not be exhibited by normal means, as it would not be for time-varying volatility models. In this regard, generalised autoregressive conditional heteroscedasticity (GARCH) processes, which include the variation of volatility over time, allow the correction of the bias (Rastogi, 2014).

The research provides an analysis of the performance volatility of the banking industry's stocks by using GARCH models, in accordance with the findings of Fakhfekh (2021), as described in the literature review.

In conclusion, the methodology implemented in this chapter follows three main steps: i) the collected data are clustered in three time-windows (before, during and after the

outbreak) and key descriptive statistics are provided in order to mainly investigate the volatility changes over time, in accordance with the main findings described in the literature review section; ii) then, the volatility is further analysed by implementing hypothesis tests (F-tests) on the variance between the sample and the considered benchmarks (FTSE Mib, VIX, and VSTOXX) in order to explore the presence of significant differences between the variances, especially, considering the standard deviation's trend, before and during the pandemic; iii) finally, the relevant discrepancies pointed out by the hypothesis tests are deeply analysed in order to investigate the significance of the pandemic on the sample and benchmark volatility, by implementing a GARCH model.

3.5.1 Data Collection and Sample Definition

The analysis was performed by collecting the daily closing prices ($P_{i,t}$) from Morningstar for the sample, which included the financial intermediaries listed on the FTSE Mib, FTSE Mib Mid Cap Italia, FTSE Small Cap Italia, and FTSE Italia Star, classified as financial intermediaries and insurance firms.

Table 3.2 shows the composition of the sample, by detailing the market capitalisation and the Earning per Share (EPS - Trailing Twelve Months) for each company on March 31, 2024.

The sample used in this chapter has the same composition of the one used in chapter 2. In such a way, the analysis of the Italian banking sector tends to be comprehensive, by including the study of both equity returns (dividend payout policy) and equity risk (market volatility), in a comparable way.

However, the timeseries used in this chapter is more extensive than the timeseries used in chapter 2, because the overall period is integrated with an ex-post Covid-19 pandemic time-window (2022-2024). This is due to the fact that the chapters of the thesis reflect the evolution of the overall research in a chronological order, as explained in the general introduction.

Table 3.2: The Sample Composition

1	**Azimut AZM.MI** Market Cap: €3.671B EPS (TTM): €3.05	6	**BPER Banca BPE.MI** Market Cap: €5.314B EPS (TTM): €1.07	11	**Unicredit UCG.MI** Market Cap: €52.161B EPS (TTM): €4.71	16	**Illimity Bank ILTY.MI** Market Cap: €388.123M EPS (TTM): €1.25	21	**Banca Sistema BST.MI** Market Cap: €95.367M EPS (TTM): €0.21
2	**Banca Generali BGN.MI** Market Cap: €3.915B EPS (TTM): €2.86	7	**Finecobank FBK.MI** Market Cap: €7.842B EPS (TTM): €0.45	12	**Unipol UNI.MI** Market Cap: €5.344B EPS (TTM): €1.02	17	**Bff Bank BFF.MI** Market Cap: €2.031B EPS (TTM): €1.29	22	**Bca Profilo PRO.MI** Market Cap: €137.075M EPS (TTM): €0.02
3	**Banca Mediolanum BMED.MI** Market Cap: €7.378B EPS (TTM): €0.96	8	**Generali Ass G.MI** Market Cap: €33.855B EPS (TTM): €2.99	13	**Poste Italiane PST.MI** Market Cap: €14.619B EPS (TTM): €1.22	18	**Credem CE.MI** Market Cap: €3.004B EPS (TTM): €1.66	23	**Dovalue DOV.MI** Market Cap: €163.595M EPS (TTM): -€0.22
4	**Banca Monte Paschi Siena BMPS.MI** Market Cap: €4.878B EPS (TTM): €1.63	9	**Intesa Sanpaolo ISP.MI** Market Cap: €54.853B EPS (TTM): €0.39	14	**Banca Ifis IF.MI** Market Cap: €888.81M EPS (TTM): €3.06	19	**Mutuionline MOL.MI** Market Cap: €1.271B EPS (TTM): €1.01	24	**Equita Group EQUI.MI** Market Cap: €178.05M EPS (TTM): €0.25
5	**Banco BPM BAMI.MI** Market Cap: €8.226B EPS (TTM): €0.84	10	**Mediobanca MB.MI** Market Cap: €10.611B EPS (TTM): €1.28	15	**Banca Pop Sondrio BPSO.MI** Market Cap: €3.184B EPS (TTM): €0.55	20	**Unipolsai US.MI** Market Cap: €7.552B EPS (TTM): €0.25	25	**Revo Insurance REVO.MI** Market Cap: €212.48M EPS (TTM): €0.20

The sample is composed of 25 financial intermediaries listed on the Italian stock exchange, with a market capitalisation and Earning per Share (EPS) shown in the table, to point out the dimension of the market size and profitability of each company on March 31, 2024. The sample composition is the same of Chapter 2.
(Morningstar, 2023)

Data were collected from January 1, 2016 to February 29, 2024, and segmented into three time-windows:

i) Pre-Covid-19 period from January 1, 2016 to December 31, 2019;

ii) During-Covid-19 period from January 1, 2020 to March 31, 2022;

iii) Post-Covid-19 period from April 1, 2022 to February 29, 2024.

The sample also includes five financial intermediaries that were not listed in 2016, so data were collected from the end of the month of the listing year (i.e. ILTY.MI from April 2019, BFF.MI from January 2018, DOV.MI from December 2017, EQUI.MI from January 2018, and REVO.MI from January 2023).

3.5.2 Descriptive Statistics of the Sample and the Market

Table 3.3 presents the key descriptive statistics of the sample, sorted for the above-mentioned time-windows (i.e. pre, during, and post-pandemic) and it reports the mean, standard deviation, minimum, maximum, skewness, Kurtosis, Jarque-Bera normality test and the relative P-value. The key descriptive statistics use the daily continuously compounded returns[5].

Table C.3.1 in Appendix C.3.1 details all the key metrics of the sample and shows that all stock returns display kurtosis and the Jarque-Bera test (and P-value), rejecting the null hypothesis of normality at the 1% and 5% levels for all return series, except for the Illimity Bank before Covid-19.

Since the Jarque-Bera test measures how well the sample data's skewness and kurtosis match a normal distribution, the pandemic does not seem to have severally impacted on the distribution features of the returns.

Even though almost all financial intermediaries show a negative skewness in all three time-windows, which indicates a higher probability of extreme negative returns, the sample's average value of skewness appears to be higher before Covid-19 (-0.7553) than during Covid-19 (-0.4807), and becomes a bit higher again after Covid-19 (-0.5109). These results could indicate that banking supervisory authorities implemented effective extraordinary measures and specific programmes during the pandemic, which allowed the market to mitigate the probability of extreme negative returns.

[5] $R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right)$ (3.1)

This appears to be in contrast to the findings of Batten et al. (2023) for the European Global Systemically Important Banks (GSIBs), since they argued that negative skewness "*indicates a higher probability of extreme negative returns arising from the stock price collapse due to Covid-19.* […] *Therefore, negative skewness is a characteristic feature of the Covid-19 sample*" (Batten et al., 2023).

As extensively described, the economy experienced a collapse during the pandemic, which does not seem to be fully reflected in what happened to the Italian banking industry. Regarding this, the mean and the standard deviation of the sample display a peculiar evolution since both descriptive statistics showed a substantial stability before and during the pandemic: the mean of -0.0295% and the volatility of 2.2081% before Covid-19, increased to 0.0044% and 2.4388% during Covid-19, respectively.

Thus, the results displayed in Table 3.3 appear to be in favour of the efficacy of the extraordinary measures adopted by the Italian banking authorities to stabilise the banking sector and protect the stakeholders. The theory appears to be confirmed after Covid-19 too, since the sample shows an increase of the returns' mean of 0.0093% and a decrease in the volatility of 1.8597%, due to economic rebound, as the gradual market limitations started to be abrogated after the pandemic.

Even the average of the extreme events ("min" and "max") before, during and post pandemic appear to be in favour of the efficacy of the extraordinary measures. The average minimum value before, during and post Covid-19 increased from -19.5154% to -16.0725% and then to -11.0993%, respectively. The average maximum value increased from 11.9813% to 12.3669% and then to 8.0297%, respectively.

The analysis appears to be even more consistent with the efficacy of the extraordinary measures implemented by the Italian banking authorities when comparing the sample volatility with the jump in the volatility of the indices, such as VSTOXX and VIX; as described in Section 3.4, these are the common metrics of the stock market's expectation of volatility based on listed options. FTSE Mib has also been considered

to provide a comprehensive analysis by implementing both absolute and relative analysis.

Table 3.3 summarises the descriptive statistics for the sample returns, FTSE Mib, VIX and VSTOXX indices.

In particular, Table 3.3 shows that VIX experienced a difference in the mean and volatility values before and during the Covid-19 pandemic of 0.13% and 0.71%, respectively, while VSTOXX experienced a difference in mean and volatility values of 0.19% and 1.60%, respectively. Even the difference of FTSE Mib's mean and standard deviation before and during Covid-19 appeared to be substantially consistent with the analysis of the considered volatility indices (i.e. 0.00% and 0.48%, respectively).

However, the analysis of the sample shows unexpected results, since the descriptive statistics should reflect higher mean and volatility than market indices due to its smaller size and the "diversification effect". Instead, the differences in mean values and in volatility values, before and during Covid-19, are 0.0339% and 0.2307%, respectively, which make them lower than VIX, VSTOXX and FTSE Mib returns.

Therefore, the volatility of the sample seems to be more stable than the indices, without showing frequent sharp variations during the pandemic. This is the opposite of the "*rapid increase in the implied volatility* [of] *index, reflecting market uncertainty about the impact of the pandemic on stock valuations*" (Batten et al., 2023).

The analysis of the indices in Table 3.3 shows a higher increase in VIX and VSTOXX values during the pandemic than before.

A similar pattern can be observed for the sample and FTSE Mib. This is probably due to the fact that the indices are quicker to reflect the market uncertainty about the effects of the outbreak on financial asset valuations. However, the analysed indices reacted differently to the pandemic, due to their idiosyncrasies, which are also shown by the correlation matrices in Table 3.4.

Table 3.3: Descriptive Statistics of the Sample and Benchmarks

Panel A: Before Covid-19 (January 1, 2016 - December 31, 2019)

Statistics	Sample	FTSE Mib	VIX	VSTOXX
Mean	-0.0003	0.0001	-0.0004	-0.0006
Min	-0.1952	-0.1333	-0.2998	-0.4344
Max	0.1198	0.0491	0.7683	0.4701
Std. Dev.	0.0221	0.0130	0.0810	0.0708
Skewness	-0.7553	-1.0875	1.5030	0.4043
Kurtosis	16.8855	12.2060	10.5980	5.4271
Jarque-Bera	96158.3809	6488.3800	5081.4500	1277.0700
P-value	0.0174	0.0000	0.0000	0.0000

Panel B: During Covid-19 (January 1, 2020 - March 31, 2022)

Statistics	Sample	FTSE Mib	VIX	VSTOXX
Mean	0.0000	0.0001	0.0009	0.0013
Min	-0.1607	-0.1854	-0.2662	-0.2042
Max	0.1237	0.0855	0.4802	0.4857
Std. Dev.	0.0244	0.0177	0.0881	0.0867
Skewness	-0.4807	-2.5180	1.2665	1.0633
Kurtosis	8.4345	25.4400	4.5484	2.8141
Jarque-Bera	2506.7885	16113.1000	639.2130	298.6100
P-value	0.0000	0.0000	0.0000	0.0000

Panel C: After Covid-19 (April 1, 2022 - February 29, 2024)

Statistics	Sample	FTSE Mib	VIX	VSTOXX
Mean	0.0001	0.0006	-0.0008	-0.0015
Min	-0.1110	-0.0531	-0.1559	-0.1836
Max	0.0803	0.0337	0.2182	0.3414
Std. Dev.	0.0186	0.0114	0.0575	0.0560
Skewness	-0.5109	-0.5921	0.7471	0.9005
Kurtosis	8.2898	2.0053	1.2405	3.7166
Jarque-Bera	4282.3589	110.9560	75.4267	351.8020
P-value	0.0002	0.0000	0.0000	0.0000

The table shows the descriptive statistics of the sample, FSTE Mib, VIX, and VSTOXX before (Panel A), during (Panel B), and after (Panel C) the pandemic. It provides insights about the impact of Covid-19 on the sample, in comparison with the considered benchmarks.
(Morningstar, 2023)

Table 3.4 reports the correlation matrices of data pre, during and post pandemic for the sample, FTSE Mib, VIX, and VSTOXX. In this regard, both implied volatility indices (VIX and VSTOXX) appear to be highly correlated at a 1% significance level, for the three time-windows, which is consistent with the findings in Akyildirim et al. (2020) and Clements et al. (2019).

Both VIX and VSTOXX appear to be highly correlated with each other, as in Table 3.4, reflecting the same market information; however, VSTOXX shows a lower average standard deviation than VIX in all three time-windows, which make it more appropriate (also considering the target market) for forecasting purposes, as is developed in the next section.

The correlation matrix indicates a significant negative correlation between implied volatility indices and FTSE Mib during Covid-19, which is consistent with the fact that volatility is lower during bull markets but increases in downturns. In negative market phases, panic comes into play by accelerating and increasing the intensity of sales, which suggests higher implied volatility indices (Sarwar, 2012).

Table 3.4 also shows higher correlation coefficients between VSTOXX and FTSE Mib than VIX and FTSE Mib, as both VSTOXX and FTSE Mib refer to the European market.

Concerning the sample, the correlation does not appear to be significant at a 1% level in the pre-Covid-19 matrix, while it becomes highly significant during and post Covid-19.

The pandemic has probably contributed to align investors' expectations of the banking industry with the market index (i.e. FTSE Mib), considering that the "*economic integration has led to portfolio managers diversifying across the globe, which has also led to the spreading of risk from one economy to others*", the so called "contagion effect" (Chaudhary et al., 2020).

Table 3.4: Correlation Matrix of the Sample and the Benchmarks

Panel A: Correlation Coefficients Pre-Covid-19

VSTOXX	VIX	FTSE Mib	Sample	
1.0000	0.5015**	-0.0318	-0.5020**	VSTOXX
	1.0000	0.0784*	-0.3284**	VIX
		1.0000	0.0245	FTSE Mib
			1.0000	Sample

Two-tailed critical values for n = 958: 5% 0.0633 (*), 1% 0.0832 (**)

Panel B: Correlation Coefficients *During-Covid-19*

VSTOXX	VIX	FTSE Mib	Sample	
1.0000	0.5757**	-0.6954**	-0.6269**	VSTOXX
	1.0000	-0.4831**	-0.4492**	VIX
		1.0000	0.9247**	FTSE Mib
			1.0000	Sample

Two-tailed critical values for n = 560: 5% 0.0829 (**), 1% 0.1088 (*)

Panel C: Correlation Coefficients Post-Covid-19

VSTOXX	VIX	FTSE Mib	Sample	
1.0000	0.5897**	-0.7404**	-0.6514**	VSTOXX
	1.0000	-0.4638**	-0.4253**	VIX
		1.0000	0.8871**	FTSE Mib
			1.0000	Sample

Two-tailed critical values for n = 474: 5% 0.0901 (**), 1% 0.1182 (*)

The table shows the correlation matrix of the sample, FSTE Mib, VIX, and VSTOXX before, during, and after the pandemic. Both implied volatility indices (VIX and VSTOXX) appear to be highly correlated at a 1% significance level, for all three time-windows.

Appendix C.3.2 shows the scatterplots of the average returns of the sample and the returns of FTSE Mib, with the OLS line formulas.

Following the descriptive analysis, a hypothesis test was performed to investigate if the sample volatility is not different from the market volatility (FSTE Mib), which could indicate the efficacy of the extraordinary measures performed by the banking supervisory authorities in comparison with the market.

Then, an empirical investigation of a dummy variable (Covid-19) in GARCH modelling was performed, in order to investigate the impact of the pandemic on market volatility, for the Italian banking sector.

This was carried out in parallel with a discussion about the efficacy of the extraordinary measures adopted by the supervisory banking authorities in mitigating market risk.

3.5.3 Hypothesis Test Analysis

The descriptive analysis shows that the volatility experienced a significant variation during the pandemic, which is also observed in the charts of Figure 3.2. In particular, Figure 3.2 shows the daily returns of the sample, FTSE Mib, VSTOXX and VIX for the three time-windows.

Figure 3.2 provides insights into the high volatility returns during Covid-19, compared to pre and post pandemic periods that will be statistically analysed in this section by implementing hypothesis tests on variances.

In particular, the hypothesis tests will allow to investigate possible significant changes of the sample volatility with the changes of the FTSE Mib, VSTOXX and VIX, for each time-window (i.e. before, during and after the Covid-19 pandemic).

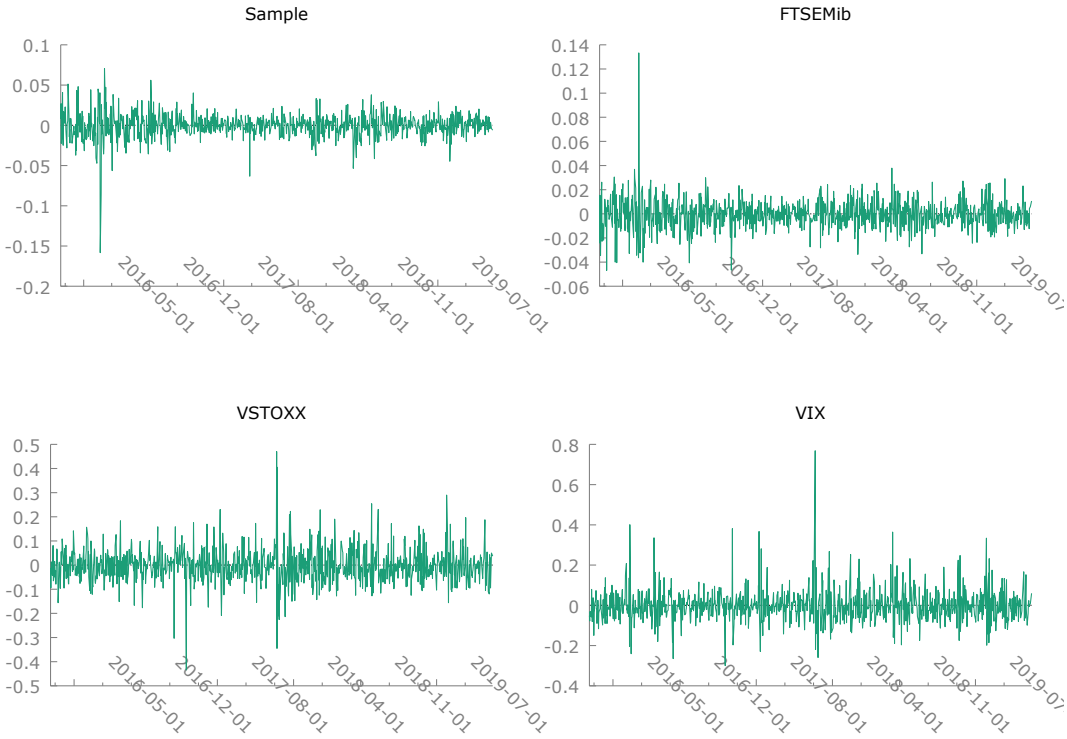
Furthermore, all the graphs seem to exhibit volatility clustering, "*so volatility in the current period will affect future periods of volatility, and all return series seem to be mean reverting, which signifies stationarity*" (Chaudhary et al., 2020).

In this regard, the GARCH(1,1) model, which will be implemented in the next section of this chapter, will allow to investigate this effect, by analysing the significance of the ARCH and GARCH parameters on the conditional volatility.

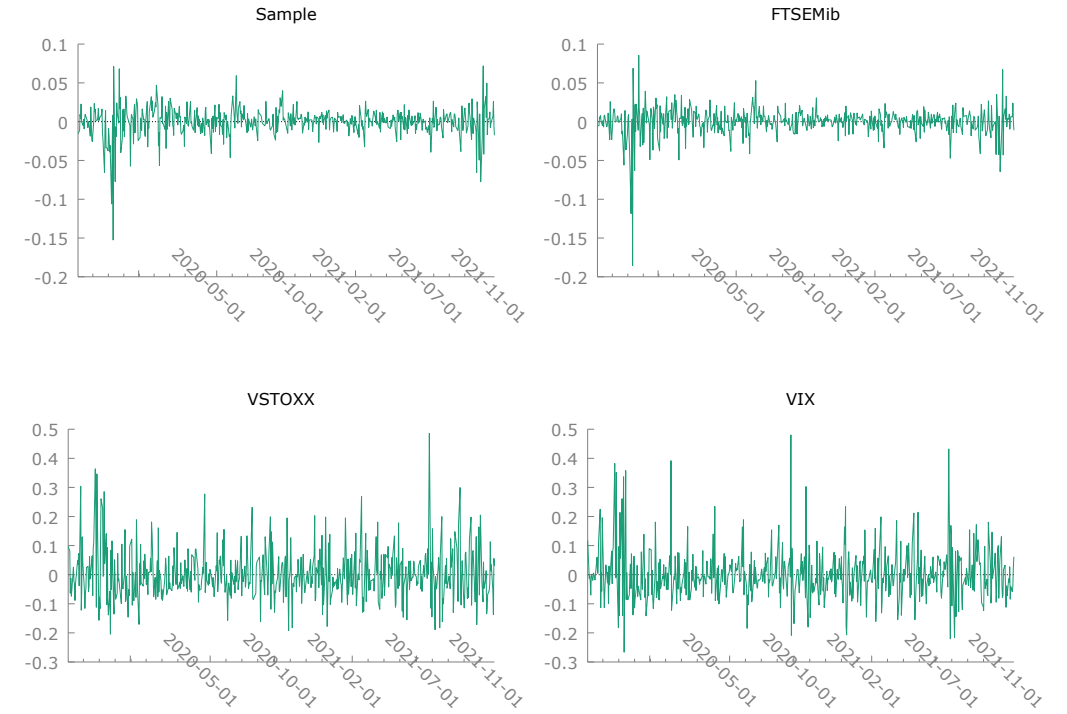
The findings will be discussed in a comparative way (the sample with the benchmarks), in order to better understand the efficacy of the extraordinary measures adopted by the international and national supervisory banking authorities, during the Covid-19 pandemic to stabilize the market volatility.

Figure 3.2: Time Plots of Daily Returns of the Sample and the Benchmarks

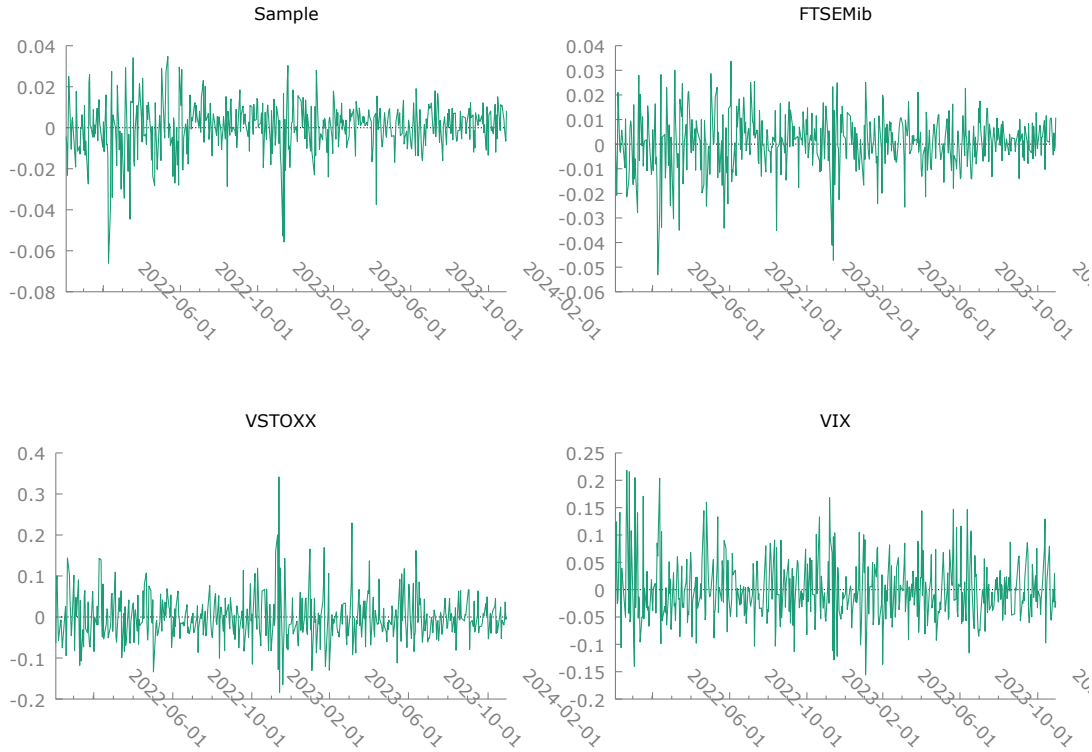
Panel A: Daily Returns Pre-Covid-19



Panel B: Daily Returns During-Covid-19



Panel C: Daily Returns Post-Covid-19



The figures show the time plots of daily returns of the sample and the benchmarks before, during, and after the pandemic. The charts point out that the volatility experienced a significant variation during the pandemic.
(Morningstar, 2023)

In order to analyse the differences between the sample and the benchmarks (FTSE Mib, VSTOXX and VIX), hypothesis testing of the variances was performed. The analysis of the sample variance (σ^2_S) against the variance of FTSE Mib (σ^2_F), VSTOXX (σ^2_X) and VIX (σ^2_V) was undertaken by using a F-test. The variance test (i.e. H_0: $\sigma^2_1/\sigma^2_2=1$) is shown, as follows:

A) Sample vs. FTSE Mib H_0: $\sigma^2_S= \sigma^2_F$ vs. H1: $\sigma^2_S\neq \sigma^2_F$

B) Sample vs. VSTOXX H_0: $\sigma^2_S= \sigma^2_X$ vs. H1: $\sigma^2_S\neq \sigma^2_X$

C) Sample vs. VIX H_0: $\sigma^2_S= \sigma^2_V$ vs. H1: $\sigma^2_S\neq \sigma^2_V$

The results of the hypothesis testing of the three examined time-windows are presented in Table 3.5.

Table 3.5: Hypothesis Test Analysis

Time-window: Pre-Covid-19
Null hypothesis: The variances are equal

	Case (A)	**Case (B)**	**Case (C)**
Sample	FTSE MIB	VSTOXX	VIX
n_S= 958	n_F= 958	n_X= 958	n_V= 958
σ^2_S = 0.000225538	σ^2_F= 0.000148	σ^2_X= 0.005049	σ^2_V= 0.006503
	Test statistic: F(957, 957) = 1.5250	Test statistic: F(957, 957) = 22.3850	Test statistic: F(957, 957) = 28.8314
	Two-tailed p-value = 0	Two-tailed p-value = 0	Two-tailed p-value = 0

Time-window: During-Covid-19
Null hypothesis: The variances are equal

	Case (A)	**Case (B)**	**Case (C)**
Sample	FTSE MIB	VSTOXX	VIX
n_S= 560	n_F= 560	n_X= 560	n_V= 560
σ^2_S = 0.00034173	σ^2_F= 0.000320	σ^2_X= 0.007603	σ^2_V= 0.007820
	Test statistic: F(559, 559) = 1.0675	Test statistic: F(559, 559) = 22.2490	Test statistic: F(559, 559) = 22.8842
	Two-tailed p-value = 0.44	Two-tailed p-value = 0	Two-tailed p-value = 0

Time-window: Post-Covid-19
Null hypothesis: The variances are equal

	Case (A)	**Case (B)**	**Case (C)**
Sample	FTSE MIB	VSTOXX	VIX
n_S= 474	n_F= 474	n_X= 474	n_V= 474
σ^2_S = 0.000152323	σ^2_F= 0.000132	σ^2_X= 0.003197	σ^2_V= 0.003316
	Test statistic: F(473, 473) = 1.1551	Test statistic: F(473, 473) = 20.9869	Test statistic: F(473, 473) = 21.7716
	Two-tailed p-value = 0.1172	Two-tailed p-value = 0	Two-tailed p-value = 0

The table presents the results of the hypothesis tests for the three time-windows of the sample (pre-pandemic 2016-2019, during-pandemic 2020-2022, and post-pandemic 2022-2024). In pre Covid-19 times, the hypothesis test shows that the null hypothesis is rejected in all three cases (i.e. A, B, and C) at a 1% significance level. However, in the other two time-windows (during and post Covid-19) the null hypothesis is not rejected in case A, while it is rejected in cases B and C, considering a significance level of 1%. The sample volatility increases from the pre-Covid-19 pandemic time-window to the during-Covid-19 pandemic time-window. The benchmarks show similar trends, even if the increase appears to be more relevant than the sample.

In the period pre Covid-19, the hypothesis test shows that the null hypothesis is rejected in all three cases (i.e. A, B, and C) since the p-values are zero, considering a

significance level of 1%. Thus, the variance ratio between the sample and the benchmarks (FTSE Mib, VSTOXX and VIX) are not, significantly, considered to be equal to one. However, in the other two time-windows (during and post Covid-19) the null hypothesis is not rejected in case A, while is rejected in cases B and C, considering a significance level of 1%.

The results show that the variance of the listed Italian financial intermediaries before the pandemic was not significantly equal at the variance of the FTSE Mib, VSTOXX and VIX. The results seem to support the fact that market risk in the banking industry is not consistent with the market index. However, the pandemic did not significantly impact on the banking industry, by making the variance ratio between the sample and the FTSE Mib equal to one (p-value of 0.44%). The result shows that Covid-19 impacted the market index more significantly than the banking industry. The pandemic created panic amongst investors in the financial markets, due to the "spillover effect" and the "*negative economic growth and* […] *declining revenues and profits*", so that "*many investors* [took] *the decision to sell due to high uncertainty in the future*"; this increased the market risk by around 51% (i.e. the sample variance before and during the pandemic increased from 0.000226 to 0.000342) (Endri et al., 2021).

The analysis of the sample variance before and during Covid-19 (compared to the VSTOXX and VIX) confirmed the relevance of the pandemic. However, during the pandemic, the sample variance (0.000342) appeared to be significantly equal to FTSE Mib (0.000320), which seems to confirm the efficacy of the extraordinary measures taken by the supervisory banking authorities to stabilise market volatility.

The sample variance decreased from the time of the pandemic to the post pandemic period, since financial markets started becoming more stable; the variance ratio between the sample and FTSE Mib appeared to be equal to one again, at a 1% confidence level. The after Covid-19 results should have been similar to the before Covid-19 results, by expecting that the sample variance would have been significantly higher than the FTSE Mib variance. Thus, the results of the hypothesis tests seem to

confirm a dichotomy that should be further analysed: on the one hand, the pandemic has impacted on the financial markets volatility by observing higher values of VIX and VSTOXX standard deviations, on the other hand, the pandemic does not seem to have been significant in predicting the sample volatility, being consistent with the market volatility (FTSE Mib) due to the probable effectiveness of the extraordinary measures, adopted by the supervisory banking authorities.

Following this, further analysis is required to investigate whether the pandemic also impacted on the sample variance compared with FTSE Mib. In this regard, a GARCH(1,1) model was implemented with an exogenous variable: a dummy variable, $COVID_t$, which assumes a value of one during Covid-19 and zero otherwise.

3.5.4 GARCH Model Analysis

The analysis focused on the impact of Covid-19 on the volatility process, so the GARCH(1,1) model was integrated with a dummy variable, $COVID_t$, which assumed a value of zero for returns in the pre and post Covid-19 time-windows. The dummy variable assumed a value of one for returns during the Covid-19 time-window, in order to get the Covid-19 effect on the sample variance. Other regressors (such as VSTOXX and VIX) were not included, to avoid multicollinearity due to the presence of high correlations, as shown in Table 3.4.

The analysis was performed considering both the volatility of the sample and the volatility of FTSE Mib, considering the two peculiar cases (A) during and post Covid-19 pandemic shown in Table 3.5. In order to do this, the unit root test (i.e. Augmented Dickey-Fuller Test with H_0: existence of a unit root) was implemented to verify the stationarity condition of the analysed time-series, as the shift in time does not imply alterations in the distribution's shape, so the mean, variance and auto-correlation framework do not change over-time.

After testing the data, the GARCH(1,1) model (p = 1 and q = 1) was integrated with the exogenous volatility regressor (i.e. $COVID_t$). The model equations are: the conditional mean equation (3.1) and the conditional variance equation (3.2), as follows:

$$y_t = \mu + \lambda_1 \, \mathrm{COVID_t} + \lambda_2 \, y_{t-1} + \mathrm{t} \qquad (3.1)$$

$$\sigma_t^2 = \omega + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2 + \delta_1 \mathrm{COVID_t} \qquad (3.2)$$

where y_t and σ^2_t are the conditional mean and the conditional variance, respectively. ω and μ are the constant terms, t is the mean equation's error term, and y_{t-1} is a first order autoregressive factor (i.e. AR lag 1). In equation (3.2), the q and p terms are the lag of the residual term and conditional variance terms. Considering equation (3.1), a negative and statistically significant coefficient for $COVID_t$ indicates a correlation between coronavirus and a reduction in the mean returns, although a positive and statistically significant coefficient for $COVID_t$ indicates a correlation between coronavirus and an increase in the mean returns. Considering equation (3.2), a negative and statistically significant coefficient for $COVID_t$ indicates a correlation between coronavirus and a reduction in the volatility, although a positive and statistically significant coefficient for $COVID_t$ indicates a correlation between coronavirus and an increase in the standard deviation (Chaudhary, 2020).

Considering equation (3.2) once more, α_1 and β_1 are the coefficients of the ARCH and GARCH terms, and the first coefficient estimates the response to shock, while the second coefficient quantifies the time needed to "absorb" the change (Chaudhary, 2020).

Table 3.6 shows the results of the Augmented Dickey-Fuller test and the p-value in brackets, for the sample and the indices.

Table 3.6: Augmented Dickey–Fuller Test

	Pre-Covid-19	During-Covid-19	Post-Covid-19
Sample	-7.75 (0.00)***	-5.67 (0.00)***	-6.92 (0.00)***
FTSE MiB	-7.83 (0.00)***	-5.64 (0.00)***	-4.72 (0.00)***
VSTOXX	-11.72 (0.00)***	-24.24 (0.00)***	-7.34 (0.00)***
VIX	-8.17 (0.00)***	-8.92 (0.00)***	-6.34 (0.00)***

*** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level

The table shows the Augmented Dickey-Fuller Test Results. The sample and indices appear to be stationary at the 1% significance level.

Table 3.6 shows that the sample and the indices have a higher test statistic than critical value, so that the null hypothesis (i.e. the presence of a unit root) is rejected. The sample and indices are stationary in their level form at 1%. Table 3.7 displays the results of GARCH(1,1) with the exogenous regressor, $COVID_t$, for FTSE Mib, and it shows the coefficients, Z-statistics, and the relative P-value for both the conditional mean equation (3.1) and the conditional variance equation (3.2), as described previously.

Table 3.7: GARCH(1,1) Results for FTSE Mib

Particulars	Coefficient	Z-statistics (P-value)
	Conditional Mean	
μ	-6.25310e-05	-0.2294 (0.8185)
λ_1(COVID)	0.000783	1.3400 (0.1804)
λ_2 (y_{t-1})	0.033953	1.3680 (0.1712)
	Conditional Variance	
ω	7.70437e-06	3.8830 (0.0001)***
α_1	0.142858	6.6740 (0.0000)***
β_1	0.811221	29.1100 (0.0000)***
δ_1(COVID)	3.86388e-06	2.0820 (0.0373)**
$\alpha_1 + \beta_1$	0.9530	
Log likelihood	6000.45	

*** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level
Model: GARCH(1,1) [Bollerslev] (Normal)*

The table shows the results of the GARCH(1,1) model with the dummy variable $COVID_t$, for the FTSE Mib, which assumes a value of zero for returns pre and post Covid-19 time-windows, and one for returns during the Covid-19 time-window. In the variance equation, the dummy variable appears to be positive and significant at a 5% level.

The conditional mean equation coefficients of y_{t-1} and $COVID_t$ are positive, but they are not statistically significant at a 10% level, even though they become significant at 20%. This suggests that the FTSE Mib average returns do not seem to be explained by its lagged 1 value and the dummy variable.

In the variance equation for FTSE Mib, the constant variance term, and the ARCH (α) and GARCH (β) parameters are positive and statistically significant at a 1% level. Even the dummy variable, $COVID_t$, appears to be positive and significant at 5% level. In this regard, α embodies recent news and its value appears to be statistically significant, which implies that recent "news" has impacted on the FTSE Mib volatility. In addition, "*β represents old news and the evidence that its value is also statistically significant at 1% level, indicates that old news has also impacted on FTSE Mib volatility*" (Chaudhary, 2020).

The sum of the ARCH and the GARCH coefficients (i.e. $\alpha + \beta$) appears to be almost one, so there is a "long-memory", which suggests that any shock could lead to a future perpetual alteration of σ^2_t. At the same time, the results display a "mean-reverting process", since $\alpha + \beta < 1$ (Chaudhary, 2020).

The findings show a positive and statistically significant impact of Covid-19 on the conditional variance for FTSE Mib, demonstrating that the pandemic augmented market standard deviation.

These findings are consistent with the results of Chaudhary et al. (2020) and Yousef (2020), who found that Covid-19 did not have a significant impact on the mean returns, but was positively and significantly related to the volatility of index returns.

Applying the same methodology used for the index FTSE Mib to the sample, which is considered in this chapter, Table 3.8 shows the coefficients of GARCH(1,1) with the exogenous regressor $COVID_t$ and the relative significance levels (1%, 5%, and 10%), as follows:

Table 3.8: GARCH(1,1) Results for the Sample

Particulars	Coefficient	Z-statistics (P-value)
	Conditional Mean	
μ	0.000558	1.8400 (0.0658)*
λ_1(COVID)	-1.95355e-05	-0.03161 (0.9748)
λ_2 (y_{t-1})	0.075259	1.6480 (0.0993)*
	Conditional Variance	
ω	9.14459e-06	4.5660 (0.0000)***
α_1	0.148142	6.9100 (0.0000)***
β_1	0.813368	33.0500 (0.0000)***
δ_1(COVID)	2.01919e-06	1.0120 (0.3115)
$\alpha_1 + \beta_1$	0.9610	
Log likelihood	5782.31	

*** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level
Model: GARCH(1,1) [Bollerslev] (Normal)*

The table shows the result of GARCH(1,1) with the dummy variable, $COVID_t$, for the sample, which assumes a value of zero for returns pre and post Covid-19 time-windows, and one for returns during the Covid-19 time-window. In the variance equation, the dummy variable does not appear to be significant at 10% level.

The conditional mean equation coefficients of y_{t-1} and the constant appear to be positive and statistically significant at a 10% level; however, $COVID_t$ is not statistically significant at a 10% level. Comparing the results of the sample to FTSE Mib, the sample's first order auto-regressor appears to be significant by making the past behaviour helpful in predicting the future, instead of FTSE Mib. This is due to the fact that the exchange market index seems to show a higher level of efficiency than the sole financial banking sector.

In the conditional variance equation of the sample, the constant variance term, and the ARCH (α) and GARCH (β) parameters are positive and statistically significant at a 1% level. Even in this case, the sum of the ARCH and the GARCH coefficients appears to be almost one, by showing a "long-memory". However, the dummy variable, $COVID_t$, appears to be positive, but it is not significant at a 10% level, which is different from the results of the FTSE Mib analysis. The analysis of the impact of the dummy variable, $COVID_t$, on the sample appears to confirm the general theory of the negative impact of the pandemic on the average returns and its positive impact of the pandemic on the volatility, even if a lower significant level is considered, as shown in Table 3.8.

The pandemic caused market turmoil and economic disruption, which naturally induced an increase in market volatility and uncertainty with lower asset valuations. In order to mitigate these effects, banking supervisory authorities adopted extraordinary measures, which have never been taken before. The GARCH analysis shows that findings can be substantially in favour of the efficacy of the extraordinary measures, even if some dichotomies still emerge, and these need to be further discussed in the next section.

3.6 Conclusions

The study analyses the impact of the pandemic (Covid-19) on the Italian banking sector, by considering all the listed financial intermediaries (25) on the Italian stock exchange (FTSE Mib, FTSE Mib Mid Cap Italia, FTSE Small Cap Italia, and FTSE Italia Star).

The study also discusses the role of the supervisory banking authorities, particularly the extraordinary measures adopted to mitigate the market uncertainty with a focus on the sample's effects. The sample composition, being quite wide, can be considered representative of the overall Italian banking industry and the results of the analysis are compared with three benchmarks (FTSE Mib, VSTOXX and VIX). In addition, the analysis was also performed for three time-windows: before, during and after the pandemic, in order to provide a comprehensive analysis of the evolution of the pandemic's effects. Thus, the sample composition is the same of Chapter 2, even if the timeseries is extended to the post Covid-19 pandemic.

For the sample and benchmarks, all returns show an increase in volatility and a relevant Kurtosis and skewness during the Covid-19 pandemic. The "fat-tails effect" and the "asymmetry effect" are two persistent features. However, the comparison of the statistical results shows that the variation in the sample's value is lower than the values of the benchmarks, which provides the sign of the relevance of the activities performed

to mitigate the market uncertainty during the pandemic. Sample volatility increased by 10.41%, while FTSE Mib increased by 36.15%, from period before to during the Covid-19 pandemic. Similar results are observed for Kurtosis and skewness, which varied for the sample by -50.09%% and -36.84%, and for FTSE Mib by 108.35% and 129.09%, respectively. In this way, the correlation analysis performed in Section 3.5.2 confirmed that the sample and the benchmarks are statistically correlated at a 5% level.

Following this, the analysis performed in Section 3.5.3 also confirmed that the collected data are stationary at a 1% level, and so hypothesis tests and a GARCH(1,1) model with exogenous variables, were performed to investigate the effects of Covid-19 on the Italian banking sector, compared with FTSE Mib. In this regard, the quantitative analysis performed in Section 3.5.3 (i.e. the hypothesis test) and in Section 3.5.4 (i.e. the GARCH model) showed the relevance of the impact of Covid-19 to the market volatility, and the relevance of the extraordinary measures adopted to stabilize the banking industry. The hypothesis test shows that, during Covid-19, the ratio between the sample variance and the FTSE Mib variance appeared to be significantly equal to one. The results could be foreseen, as the pandemic was an extraordinary shock that caused a significant reduction in both economic activities and the production of goods and services, but the extraordinary measures implemented by the supervisory banking authorities turned to be quite effective. Even if the outbreak's impact appears evident from the analysis, the results highlight some idiosyncrasies, which need to be discussed.

Firstly, in Section 3.5.3, the hypothesis test of the sample during Covid-19 unexpectedly shows that FTSE Mib variance (i.e. 0.000342) is significantly equal to the sample variance (i.e. 0.000320).

Even if the hypothesis tests' findings confirm the relevance of the shock to the Italian financial market and the stability of the market volatility, it raises the need to perform further research into the efficacy of the extraordinary measures adopted by the

supervisory banking authorities, in mitigating the market uncertainty during the outbreak.

Thus, the GARCH(1,1) model analysis, integrated with the dummy variable $COVID_t$, in Section 3.5.4 provides further insights into the impact of Covid-19 on the banking sector and the exchange markets, as well as the efficacy of the role performed by the supervisory banking authorities, at that time.

The GARCH analysis confirms the results of the hypothesis tests, in the sense that Covid-19 (as a dummy variable) appears to be statistically significant in increasing the conditional volatility of FTSE Mib, at a 5% level. However, it does not appear statistically significant when the same analysis is performed for the sample, where $COVID_t$ does not appear to be statistically significant, either in the conditional mean equation or in the conditional variance equation, at a 10% level, by supporting the hypothesis of the efficacy of the extraordinary measures.

However, ARCH and GARCH parameters appear to be quite significant in both the analyses, which implies the presence of a "long memory effect", making the changes in volatility during the Covid-19 pandemic continue for a long period of time. This seems to explain the result of the hypothesis test (case A in post Covid-19 pandemic time-window), due to the time needed, to adjust the conditional volatility after the shock. Essentially, in the short run, the analysis makes Covid-19 statistically significant, in its impact on the FTSE Mib volatility, but not for the sample volatility. This is also observed in the long-run, since the sum of the ARCH and GARCH coefficients (i.e. $\alpha+\beta$) is almost one.

The fact that the dummy variable $COVID_t$ does not appear to be significant in the sample, with respect to FTSE Mib, seems to support the suspicion that the extraordinary measures adopted by the supervisory banking authorities during the outbreak, contributed effectively to mitigate the market risk at that time; this is further supported by the results of the hypothesis tests. This agrees with some of the available

literature analysed in Section 3.4, where several studies of Groups A and B confirmed the impact of the Covid-19 infection and the need for institutional interventions.

This research contributes to the verification of the findings pointed out in several previously published papers, which were written during the pandemic (i.e. in 2020, 2021 and 2022), that also tried to forecast some long-term pandemic effects. This study confirms the hypothesis and findings of the presence of a long-memory, as explained by Yousef in 2020, the significant correlation between VIX and government relief efforts index (found by John and Li in 2021), and the significant effect of Covid-19 on stock markets, as illustrated by Mallikarjuna in 2021.

With respect to the research contributions of this study, these findings can lead investors and banking authorities to pay attention to future expectations of extreme market shocks to the Italian banking industry and the effective role that institutions need to play in those circumstances. However, it is difficult to forecast long-term effects, due to the absence of comparable historical benchmarks on which to base predictions. In this regard, Gherghina et al. (2021), in explaining the findings about the similarities of volatility trends between the 2020 pandemic and the 2008 global financial crisis for the Romanian market through a GARCH analysis, admitted that "*no causal association was noticed between the Covid-19 variables and the BET* [Bucharest Exchange Trading] *index*" in the short and long term (Gherghina et al., 2021).

However, this study provides an analysis of a significant post Covid-19 infection both at the descriptive level and at the inference level, which can support the key market players "*to set in motion the steps necessary to mitigate any potential economic fallout from the virus. To their credit, most Central Banks have already cut interest rates aggressively, but the benefit of this policy remains uncertain, since these rates were already sitting at historic lows*" (Yousef, 2020). In this regard, the descriptive statistical analysis shows that the volatility of FTSE Mib decreased by 35.59% between

the period during Covid-19 to post Covid-19, which is higher than the reduction of sample variance (23.77%).

Even the hypothesis test shows a reduction in the sample volatility (0.000152) in comparison with FTSE Mib variance (0.000132) in the post Covid-19 time-window, which appears almost aligned with the pre-Covid-19 levels.

In conclusion, after the pandemic, the economy recovered well, but institutions still need to take time to reduce the fiscal and monetary stimuli, which were adopted during the pandemic.

The extraordinary measures assumed by the institutions, to assure significant liquidity and capital buffers to financial intermediaries, to grant zero-interest bridging loans to households with long repayment periods, and to finance the real economy in the reconstruction phase, appeared, in the end, to be significant, both in mitigating the pandemic effects from 2020-2022 and in boosting the economic rebound from 2022 onwards.

General Conclusion and Further Research

This section provides the concluding remarks and limitations of the thesis, as well as reflections on further research.

The dissertation analyses some key areas of the supervisory banking activities of national authorities and the financial stability of banking industries in extraordinary times, such as during the Covid-19 pandemic. In summary, the first chapter of the research develops a qualitative model to assess the compliance level of sovereign banking systems with the 29 Basel Core Principles for Effective Banking Supervision, according to the Financial Sector Assessment Program implemented by the International Monetary Fund; the proposed model is applied to the case study of the Republic of San Marino. The findings were presented at the transfer panel on November 2, 2022. The first chapter of the research set out a general framework to evaluate the soundness of the banking industry, which allowed to move forward and focus on the banking industry's capital adequacy, which is one of the most critical aspects of the Basel supervisory framework, particularly during extraordinary times, such as the Covid-19 pandemic. The second chapter focuses on the dividend payout policies of the Italian banking industry, with respect to the effectiveness of the Basel Core Principle n. 16. The analysis adopts a logit regression model to analyse the significance of some key variables in the banks' decisions to omit (or not) dividend payments, during Covid-19. In addition to the shareholders' returns and the relative capital adequacy of the banking industry, the market volatility is also taken into consideration, in order to integrate the analysis of the Italian supervisory framework, which was challenged by the pandemic. The third chapter of the research focuses on Basel Core Principle n. 22, with respect to market risk. It performs a market risk analysis before, during and after the pandemic, by using a GARCH model, in order to point out the significance of Covid-19 on the Italian banking industry's volatility.

The essay forming Chapter 1 highlights some relevant aspects that are useful for measuring the stability and soundness of financial sectors; however, it has some limitations, including the fact that it does not consider all the detailed information, such as the data collected by the IMF during the on-site visits, and is a simplified version of the Financial Sector Assessment Program. Thus, the model tends to produce conservative results, which would need to be integrated with the information collected during specific interviews. Consequently, the results of the case study of the Republic of San Marino are partially influenced by this limitation. At the same time, the model appears to be quite flexible and straightforward and can be constantly implemented by national supervisory banking authorities. The findings are relevant to the analysis of the effectiveness and the efficiency of the banking supervisory regulation of countries, in order to monitor sovereign risk of the sector. However, according to Klomp (2012), "*only a limited number of studies have examined the impact of bank regulation and supervision on bank fragility*" by leaving room for improvements in estimating the efficacy of the FSAP assessment in both assuring banking stability and forecasting the effects of regulatory enhancements (Klomp, 2012).

The essay forming Chapter 2 contributes to better informing investors and shareholders so that they have a better understanding of the effects of decisions about remunerations in extraordinary times. However, the research is not so broad as to be extended to other countries, being focused on the Italian financial industry. The study also addresses some relevant biases, which appear in the available literature, focused on data collected before the end of the pandemic in 2022. However, this could be integrated with further analysis on the post-crisis effects. In this regard, the regression models should also analyse the marginal effects of the growth rates of key metrics, by not only focusing on the probability to omit dividends or not. In fact, the analysis of effects caused by extraordinary crises, such as the Covid-19 pandemic, can allow supervisory authorities to better understand which financial supervisory sectors shall be interested in regulations and further savings' protection schemes. Finally, the results show "optimism" on the part of managers, in proposing dividend distribution regarding the

market consequences, instead of adjusting "*dividend payouts to realised earnings as well as future earnings potential*", which should be anchored in the fundamental analysis (Mazur et al., 2023).

The essay in chapter 3 provides a concrete contribution by verifying the findings arising during the pandemic (2020, 2021 and 2022), which also tried to forecast some long-term pandemic effects. However, it is difficult to forecast long-term effects due to the absence of comparable historical benchmarks on which to base predictions. The research could also leave further space to integrate GARCH analysis with an event study, to investigate whether abnormal returns, during and after the Covid-19 pandemic, would be more significant than before. The analysis would allow the comparison of abnormal returns with higher market risk (volatility), which would, theoretically, affect several lines of risk management.

In conclusion, the research about the effects of Covid-19 on the Italian banking industry, within the Basel Core Principles framework, intends to contribute to the field of supervisory banking activity and financial stability, which is becoming more and more important over time. Thus, further research is required, not only to monitor and understand the medium and long-term market effects of the pandemic but, also, to develop more precise and effective forecasting models and tools to keep risk-return profiles within safe boundaries. The dissertation has paid tribute to the complexity and innovation of the specific topic, as it still appears to be partially unexplored, particularly in the context of market behaviour and signalling theory, as there are no recent benchmarks, even in the last century.

Bibliography

Adenomon M., Maijamaa B., and Owoicholofu D. (2022). "*The Effects of COVID-19 Outbreak on the Nigerian Stock Exchange Performance: Evidence from GARCH Models*". Journal of Statistical Modelling and Analytics (JOSMA) 4 (1). https://doi.org/10.22452/josma.vol4no1.3

Affinito D. (2020). "*Covid: Oltre Metà delle Società Mettono gli Utili in Cassa e non li Spartiscono. Ecco Quali*". Corriere della Sera. Available at : https://www.corriere.it/dataroom-milena-gabanelli/covid-oltre-meta-societa-mettono-utili-cassa-non-li-spartiscono-ecco-quali/da993934-a514-11ea-8ef6-a417ca68eeb2-va.shtml

Akyildirim, E., Corbet, S., Lucey, B., Sensoy, A., and Yarovaya, L. (2020). "*The Relationship Between Implied Volatility and Cryptocurrency Returns*". Finance Research Letters, Volume 33, 2020, 101212, ISSN 1544-6123, https://doi.org/10.1016/j.frl.2019.06.010

Albulescu I.T. (2021). "*COVID-19 and the United States Financial Markets' Volatility*". Finance Research Letters, Volume 38, 2021, 101699, ISSN 1544-6123, https://doi.org/10.1016/j.frl.2020.101699

Aldasoro I., Fender I., Hardy B., and Tarashev N. (2020). "*Effects of Covid-19 on the Banking Sector: the Market's Assessment. BIS Bulletin*". Available at: https://www.bis.org/publ/bisbull12.pdf

Ali H. (2022). "*Corporate Dividend Policy in the Time of COVID-19: Evidence from the G-12 Countries*". Finance Research Letters, Volume 46, Part B, 2022, 102493, ISSN 1544-6123, https://doi.org/10.1016/j.frl.2021.102493

Angelini P. and Gobbi G. (2020). "*Iniziative della Task Force per la Liquidità del Sistema Bancario nell'Emergenza Sanitaria*". Banca d'Italia. Available at: https://www.bancaditalia.it/focus/covid-19/comunicazioni-provvedimenti/index.html?dotcache=refresh

Apergis N. and Apergis E. (2022). "*The Role of Covid-19 for Chinese Stock Returns: Evidence from a GARCHX Model*". Asia-Pacific Journal of Accounting and Economics. 29:5. 1175-1183. https://doi.org/10.1080/16081625.2020.1816185

Ataullah A., Le H., and Wood G. (2022). "*Institutional Investor Heterogeneity and Corporate Response to the Covid-19 Pandemic*". Brit J Manage, 33: 634-656. https://doi.org/10.1111/1467-8551.12601

Awad R., Ferreira C., Gaston E., and Riedweg L. (2020). "*Banking Sector Regulatory and Supervisory Response to Deal with Coronavirus Impact".* IMF Monetary and Capital Market. Available at: https://www.imf.org/~/media/Files/Publications/covid19-special-notes/enspecial-series-on-covid19banking-sector-regulatory-and-supervisory-response-to-deal-with-coronavir.ashx

Awad R., Ferreira C., Jociene A., and Riedweg L. (2020). "*Restriction of Banks' Capital Distribution during the COVID-19 Pandemic (Dividends, Share Buybacks, and Bonuses)*". IMF Monetary and Capital Market. Special Series on COVID-19.

Ayadi R., Naceur S., Casu B., and Quinn, B. (2016). "*Does Basel Compliance Matter for Bank Performance?*". Journal of Financial Stability, Volume 23, 2016, Pages 15-32, ISSN 1572-3089, https://doi.org/10.1016/j.jfs.2015.12.007

Badshah I. U., (2009). "*Asymmetric Return-Volatility relation, Volatility Transmission and Implied Volatility Indexes*". Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1344413#:~:text=The%20purpose%20of%20this%20study%20is

Baker S. R., Bloom N., Davis S. J., Kost K. J., Sammon M. C., and Viratyosin T. (2020). "*The Unprecedented Stock Market Impact of COVID-19*". National Bureau of Economic Research. Working Paper No. 26945. doi:10.3386/w26945. Retrieved from https://www.nber.org/system/files/working_papers/w26945/w26945.pdf

Bank of Italy. (2020). "*Istruzioni Operative per la Raccolta in Modalità DPM/XBRL delle Segnalazioni sulle Esposizioni Oggetto di Misure Applicate in Risposta alla Crisi COVID-19*". Retrieved May 27, 2023, from https://www.bancaditalia.it/statistiche/raccolta-dati/segnalazioni/eba-its/Comunicazione_3_luglio_2020.pdf

Bank of Italy. (2023). "*Banche e Istituzioni Finanziarie: Articolazione Territoriale - Anno 2022*". Available at: https://www.bancaditalia.it/pubblicazioni/banche-istfin/2023-banche-istfin/index.html

Bank for International Settlements. (2012). "*Core Principles for Effective Banking Supervision*". Available at: https://www.bis.org/publ/bcbs230.pdf

Bank for International Settlements. (2019). "*Minimum Capital Requirements for Market Risk".* Available at: https://www.bis.org/bcbs/publ/d457.htm

Bank for International Settlements. (2020). "*The Basel Core Principles - Executive Summary*". Available at: https://www.bis.org/fsi/fsisummaries/bcps.htm

Batten J.A., Choudhury T., and Kinateder H. (2023). "*Volatility Impacts on the European Banking Sector: GFC and COVID-19*". Ann Oper Res 330, 335–360 (2023). https://doi.org/10.1007/s10479-022-04523-8

Bénassy-Quéré A. and Weder di Mauro B. (2020). "*Europe in the Time of Covid-19*". CEPR Press. Available at: https://cepr.org/system/files/publication-files/60042-europe_in_the_time_of_covid_19.pdf#page=115

Bhattacharya H. (2012). "*Liquidity Management and Assets-Liabilities Strategy*". Banking Strategy, Credit Appraisal, and Lending Decisions: A Risk-Return Framework, 2nd Edition (Delhi, 2011; online edn, Oxford Academic, 20 Sept. 2012), https://doi.org/10.1093/acprof:oso/9780198074106.003.0002

Birău R., Spulbăr C., Trivedi J., and Florescu I. (2021). "*Modelling Volatility in the Stock Markets of Spain and Hong Kong Using GARCH Family Models in the Context of COVID - 19 Pandemic*". Editura Universitaria Craiova. N. 72. Y. 2021 https://www.ceeol.com/search/article-detail?id=1055761

Blank M., Hanson S. G., Stein J. C., and Sunderam A. (2020). "*How Should U.S. Bank Regulators Respond to the COVID-19 Crisis?*". Available at: https://www.brookings.edu/research/how-should-u-s-bank-regulators-respond-to-the-covid-19-crisis/

Bora D. and Basistha D. (2021). "*The Outbreak Of COVID-19 Pandemic and its Impact on Stock Market Volatility: Evidence from a Worst-Affected Economy*". J Public Affairs. 21:e2623. https://doi.org/10.1002/pa.2623

Briere M., Fermanian J. D., Malongo H., and Signori O. (2011). "*Volatility Strategies for Global and Country Specific European Investors*". Available at SSRN: https://ssrn.com/abstract=1945703

Buehler K., Dietz M., Fumagalli F., Lund S., White O., and Windhagen E. (2020). "*Banking System Resilience in the Time of Covid-19*". McKinsey & Company. Available at: https://www.mckinsey.com/industries/financial-services/our-insights/banking-system-resilience-in-the-time-of-covid-19

Canelli R., Fontana G., Realfonzo R., and Veronese Passarella M. (2021). "*Are EU Policies Effective to Tackle the Covid-19 Crisis? The Case of Italy*". Review of Political Economy, 33(3), 432-461. https://doi.org/10.1080/09538259.2021.1876477

Caprio G. (2018). "*Assessing the FSAP: Quality, Relevance, and Value Added*". Background Paper BP/18-02/02, Independent Evaluation Office of the International Monetary Fund. Available at: https://ideas.repec.org/p/wil/wileco/2019-12.html

Casanova C., Hardy B., and Onen M. (2021). "*Covid-19 Policy Measures to Support Bank Lending*". Bank for International Settlements. Available at: https://www.bis.org/publ/qtrpdf/r_qt2109d.htm

Cejnek G., Randl O., and Zechner J. (2021). "*The COVID-19 Pandemic and Corporate Dividend Policy".* Journal of Financial and Quantitative Analysis, 56(7), 2389-2410. https://doi.org/10.1017/S0022109021000533

Chaudhary R., Priti B., and Hemendra G. (2020). "*Volatility in International Stock Markets: An Empirical Study during COVID-19*". Journal of Risk and Financial Management 13, no. 9: 208. https://doi.org/10.3390/jrfm13090208

Cheuathonghua M., Padungsaksawasdi C., Boonchoo P., and Tongurai J. (2019). "*Extreme Spillovers of VIX Fear Index to International Equity Markets*". Financial Markets and Portfolio Management, 33, 1-38. https://doi.org/10.1007/s11408-018-0323-6

Cihák M. (2008). *"Quality of Financial Sector Regulation and Supervision Around the World*". IMF Working Paper (1018-5941), 8 (190), p. 1. ISSN: 9781451870480/1018-5941

Clements A., Scott A., and Silvennoinen A. (2019). "*Volatility-Dependent Correlations: Further Evidence of When, Where and How*". Empirical Economics, 57, 505–540. https://doi.org/10.1007/s00181-018-1473-0

Das Udaibir S. (2005). "*Quality of Financial Policies and Financial System Stress*". IMF Working Paper (1018-5941), 5 (173), p. 1.

Dautović E., Gambacorta L., and Reghezza A. (2023). "*A new tool in the box: dividend restrictions as supervisory policy stimulus*". European Central Bank Research Bulletin no. 107. Available at: https://www.ecb.europa.eu/press/research-publications/resbull/2023/html/ecb.rb230526~685b91efd3.en.html

Demirgüç-Kunt A., and Detragiache E. (2010). "*Basel Core Principles and Bank Risk: Does Compliance Matter?*". IMF Working Papers, 10(81), p.1.

Demirgüç-Kunt A., Pedraza A., Ruiz-Ortega C., (2021). "*Banking Sector Performance During the COVID-19 Crisis*". Journal of Banking and Finance. Volume 133, 2021, 106305, ISSN 0378-4266, https://doi.org/10.1016/j.jbankfin.2021.106305.

Dividends Ranking. (2022). "*Unicredit Dividend Yield*". Available at: http://www.dividendsranking.com/Unicredit-dividend-yield.html

Emerson M. (1988). "*1992 and After: The Bicycle Theory Rides Again*". The Political Quarterly, 59: 289-299. https://doi.org/10.1111/j.1467-923X.1988.tb02400.x

Endri E., Widya A., Razak A., Sari L., and Renil S. (2021). "*Stock Price Volatility during the COVID-19 Pandemic: The GARCH Model*". Investment Management and Financial Innovations, 18(4), 12-20. doi:10.21511/imfi.18(4).2021.02

Engelhardt N., Krause M., Neukirchen D., and Posch P. N. (2021). "*Trust and Stock Market Volatility during the COVID-19 Crisis*". Finance Research Letters, 38, 101873. https://doi.org/10.1016/j.frl.2020.101873

European Central Bank. (2022). "*FAQS on ECB Supervisory Measures in Reaction to the Coronavirus*". Available at: https://www.bankingsupervision.europa.eu/press/publications/html/ssm.faq_ECB_supervisory_measures_in_reaction_to_the_coronavirus~8a631697a4.en.html

European Central Bank. (2020a). "*Recommendation of the European Central Bank of 15 December 2020 on Dividend Distributions during the COVID-19*

Pandemic and Repealing Recommendation ECB/2020/35". European Central Bank - Banking Supervision. Available at: https://www.bankingsupervision.europa.eu/

European Central Bank. (2020b). "*ECB Announces €750 Billion Pandemic Emergency Purchase Programme (PEPP)*". Available at: https://www.bancaditalia.it/media/bce-comunicati/documenti/2020/20200318_ECB_PEPP.pdf?language_id=1

European Commission. (2018). "*Decisione (UE) 2018/492 della Commissione del 22 marzo 2018 che Modifica l'Allegato della Convenzione Monetaria tra l'Unione Europea e la Repubblica di San Marino*". Available at: http://www.esteri.sm/on-line/home/affari-esteri/san-marino-e-lunione--europea/accordi/convenzione-monetaria/documento1103817.html

European Commission. (2019). "*Accession Criteria - European Neighbourhood Policy and Enlargement Negotiations*". Available at: https://ec.europa.eu/neighbourhood-enlargement/policy/glossary/terms/accession-criteria_en

European Payments Council. (2019). "*Inclusion of San Marino in the Jurisdictional Scope of the SEPA Credit Transfer and SEPA Direct Debit Schemes Effective 1 February 2014*". Available at: http://www.europeanpaymentscouncil.eu/index.cfm/about-epc/epc-news/inclusion-of-san-marino-in-the-jurisdictional-scope-of-the-sepa-credit-transfer-and-sepa-direct-debit-schemes-effective-1-february-2014/

Fakhfekh M., Jeribi A., and Salem M. B. (2021). "*Volatility Dynamics of the Tunisian Stock Market Before and during the COVID-19 Outbreak: Evidence from the GARCH Family Models*". International Journal of Finance and Economics, 1-14. https://doi.org/10.1002/ijfe.2499

Financial Stability Board. (2021). "*List of Global Systemically Important Banks (G-SIBS)*" Available at: https://www.fsb.org/wp-content/uploads/P231121.pdf

Foglia M., Addi A., and Angelini E. (2022). "*The Eurozone Banking Sector in the Time of COVID-19: Measuring Volatility Connectedness*". Global Finance Journal, Volume 51, 2022, 100677, ISSN 1044-0283, https://doi.org/10.1016/j.gfj.2021.100677

Forcellini M. (2015). "*Lo Scambio Automatico delle Informazioni FATCA e CRS e i Principi Fondamentali di Basilea: Il Profilo Costo-Opportunità*", Banche & Banchieri, 3/2015

Forcellini M. (2019). "*Business Restructuring as a Way to Improve Equity Position of Banca di San Marino*", Business Mastery Project, Cass Business School

Forcellini M. and Vivoli A. (2016). "*La Integrazione nel Mercato dell'Unione Europea dei Sistemi Bancari e Finanziari dei Piccoli Stati: Lo Scenario dopo la Brexi*t", Banche & Banchieri, 3/2016

Fousekis P. (2020). "*Sign and Size Asymmetry in the Stock Returns-Implied Volatility Relationship*", The Journal of Economic Asymmetries. Volume 21, 2020, e00162, 1703-4949, https://doi.org/10.1016/j.jeca.2020.e00162

FTSE Mib. (2023). "*Index Description*". Borsa Italiana. Available at: https://www.borsaitaliana.it/borsa/indici/indici-in-continua/dettaglio.html?indexCode=FTSEMIB&lang=it

Gagnon J., Kamin S., and Kearns J. (2023). "*The Impact of the COVID-19 Pandemic on Global GDP Growth*". Journal of the Japanese and International Economies. Volume 68, 2023, 101258, ISSN 0889-1583, https://doi.org/10.1016/j.jjie.2023.101258.

Georgina M.T., Powell G.H, Robiyanto R., Agus B.H., Jakaria J., and Lydia R.S. (2022). "*The COVID-19 Pandemic Impact on Corporate Dividend Policy of Sustainable and Responsible Investment in Indonesia: Static and Dynamic Panel Data Model Comparison",* Sustainability 14, no. 10: 6152. https://doi.org/10.3390/su14106152

Georgina M.T., Robiyanto R., and Powell G.H. (2022). "*The Effect of COVID-19 Pandemic on Corporate Dividend Policy in Indonesia: The Static and Dynamic Panel Data Approaches*". Economies 10: 11. https://doi.org/10.3390/economies10010011

Gherghina Ș., Armeanu D., and Joldeș C. (2021). "*COVID-19 Pandemic and Romanian Stock Market Volatility: A GARCH Approach*". Journal of Risk and Financial Management. 2021; 14(8):341. https://doi.org/10.3390/jrfm14080341

Ghorbel A. and Jeribi A. (2021). "*Contagion of COVID-19 Pandemic Between Oil and Financial Assets: The Evidence of Multivariate Markov Switching GARCH Models*". Journal of Investment Compliance. Vol. 22 No. 2, pp. 151-169. https://doi.org/10.1108/JOIC-01-2021-0001

Gualtieri R. (2020). "*L'Applicazione delle Misure Riguardanti il Settore Bancario Contenute nei Decreti Legge n. 18 E 23 Del 2020, per il Sostegno alle Aziende ed Imprese Colpite dalla Crisi Conseguente alla Pandemia Sanitaria*". Ministero dell'Economia e delle Finanze. https://www.mef.gov.it/ufficio-stampa/articoli/2019_2023-Roberto_Gualtieri/documenti/article_00032.pdf

Hardy B. (2021). "*Covid-19 Bank Dividend Payout Restrictions: Effects and Trade-Offs*". BIS Bulletin n. 38. Available at: https://www.bis.org/publ/bisbull38.pdf

He Q., Liu J., Wang S., and Yu J. (2020). "*The Impact of COVID-19 on Stock Markets*". Economic and Political Studies, 8(3), 275-288. https://doi.org/10.1080/20954816.2020.1757570

Hongsakulvasu N. and Liammukda A. (2020). "*The Risk-Return Relationship in Crude Oil Markets during COVID-19 Pandemic: Evidence from Time-Varying Coefficient GARCH-in-Mean Model*". Journal of Asian Finance, Economics and Business, 7, 63-71. https://doi.org/10.13106/jafeb.2020.vol7.no10.063

Husain A. and Abdulla Y. (2020). "*Payout Decision pre- and during COVID-19: Evidence from Bahrain*", 2020 International Conference on Decision Aid Sciences and Application (DASA), Sakheer, Bahrain, pp. 1261-1264, doi: 10.1109/DASA51403.2020.9317115

lbulescu C. T. (2020). "*COVID-19 and the United States Financial Markets' Volatility*". Finance Research Letters. Volume 38, 2021, 101699, ISSN 1544-6123, https://doi.org/10.1016/j.frl.2020.101699

Ikmal A., Djeneba D., Neil G., Ragoussis, A., Reddy, Aarti R., and Timmis, J. (2020). "*Small and Medium Enterprises in the Pandemic: Impact, Responses and the Role of Development Finance*". Policy Research Working Paper; No. 9414. World Bank, Washington, DC. License: CC BY 3.0 IGO. http://hdl.handle.net/10986/34552

International Monetary Fund. (2020). "*Experience with Basel Core Principle Assessments*". Available at: https://www.imf.org/external/np/mae/bcore/exp.htm#:~:text=The%20two%20

main%20objectives%20of%20Basel%20Core%20Principles,of%20the%20important%20risks%20taken%20by%20the%20banks

International Monetary Fund. (2006). "*Peer Group Analysis and Descriptive Statistics*". IMF e-Library. Available at: https://www.elibrary.imf.org/display/book/9781589063853/ch015.xml

International Monetary Fund. (2010). "*San Marino: Financial Sector Assessment Program-Detailed Assessment of Basel Core Principles for Effective Banking Supervision*". Available at: https://www.imf.org/~/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2010/_cr10319.ashx

International Monetary Fund. (2013). "*Singapore: Detailed Assessment of Compliance-Basel Core Principles for Effective Banking Supervision*". Available at: <https://www.imf.org/-/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2013/_cr13342.ashx>

International Monetary Fund. (2014). "*Switzerland: Detailed Assessment of Compliance-Basel Core Principles for Effective Banking Supervision*". Available at: <https://www.imf.org/-/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2014/_cr14264.ashx>

International Monetary Fund. (2021). "*Financial Sector Assessment Program Updates*". Available at: <https://www.imf.org/external/np/fsap/faq/index.htm#q20>

International Monetary Fund. (2010). "*British Virgin Islands: Financial Sector Assessment Program Update: Detailed Assessment of Basel Core Principles for Effective Banking Supervision*". Available at: <https://www.imf.org/-/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2010/_cr10324.ashx>

International Monetary Fund. (2014). "*People's Republic of China-Hong Kong Special Administrative Region: Financial Sector Assessment Program-Basel Core Principles for Effective Banking Supervision-Detailed Assessment of Observance*". Available at: <https://www.imf.org/-/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/scr/2014/_cr14207.ashx>

International Monetary Fund. (2021). "*Financial Sector Assessment Program (FSAP)"*. Available at: https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/16/14/Financial-Sector-Assessment-Program

International Monetary Fund. (2022). "*Financial Sector Assessment Program (FSAP)*". Available at: https://www.imf.org/en/Publications/fssa

Jakubik P. and Teleu, S. (2022). "*Suspension of Insurers' Dividends as a Response to the COVID-19 Crisis: Evidence from the European Insurance Equity Market*". Geneva Pap Risk Insur Issues Pract 47, 785–816. https://doi.org/10.1057/s41288-021-00243-5

John K. and Li J. (2021). "*COVID-19, Volatility Dynamics, and Sentiment Trading*". Journal of Banking and Finance. Volume 133, 2021, 106162, 0378-4266, https://doi.org/10.1016/j.jbankfin.2021.106162

Jones C. (2020). "*Will the ECB Deliver?*". Financial Times. Available at: https://www.ft.com/content/718632a0-a494-4662-89f2-aea474a1036a

Khalil J. and Shihua C. (2022). "*Corporate Policies and Outcomes During the COVID-19 Crisis: Does Managerial Ability Matter?*". Pacific-Basin Finance Journal. Volume 73, 0927-538X, https://doi.org/10.1016/j.pacfin.2022.101743

Khan K., Zhao H., Zhang H., Yang H., Shah M. H., and Jahanger A. (2020). "*The Impact of COVID-19 Pandemic on Stock Markets: An Empirical Analysis of World Major Stock Indices*". Journal of Asian Finance, Economics and Business, 7(7), 463-474. https://doi.org/10.13106/jafeb.2020.vol7.no7.463

Khan M., Kayani U.N., Khan M., Mughal K.S., and Haseeb M. (2023). "*COVID-19 Pandemic and Financial Market Volatility; Evidence from GARCH Models*". Journal of Risk and Financial Management. 16(1):50. https://doi.org/10.3390/jrfm1601005

Khatatbeh I. N., Hani M. B., and Abu-Alfoul M. N. (2020). "*The Impact of COVID-19 Pandemic on Global Stock Markets: An Event Study*". International Journal of Economics and Business Administration Volume, 8(4), 505-514. https://doi.org/10.35808/ijeba/602

Kilincarslan E. and Demiralay S. (2021). "*Dividend Policies of Travel and Leisure Firms in the UK*", International Journal of Accounting and Information

Management. Vol. 29 No. 2, pp. 324-344. https://doi.org/10.1108/IJAIM-09-2020-0144

Klomp J G. (2012). "*Banking Risk and Regulation: Does One Size Fit All?*". Journal of Banking and Finance. Volume 36, Issue 12, 2012, Pages 3197-3212, ISSN 0378-4266, https://doi.org/10.1016/j.jbankfin.2011.10.006

Kluzek M. and Schmidt-Jessa K. (2022). "*Special State Aid Measures during COVID-19 and Corporate Dividend Policy: Early Evidence from Polish Public Companies*". Economics and Business Review. Vol. 8 (22), No. 1, 2022:72-89. https://doi.org/10.18559/ebr.2022.1.5

Krieger K., Mauck N., and Pruitt S. (2021). "*The Impact of the COVID-19 Pandemic on Dividends*", Finance Research Letters. Volume 42, 1544-6123, https://doi.org/10.1016/j.frl.2020.101910

Li W., Chien F., Kamran H. W., Aldeehani T. M., Sadiq M., Nguyen V.C., and Taghizadeh-Hesary F. (2022). "*The Nexus Between COVID-19 Fear and Stock Market Volatility*". Economic Research-Ekonomska Istraživanja, 35(1), 1765–1785. https://doi.org/10.1080/1331677X.2021.1914125

Lindén A., Lehner O.M., Losbichler H., and Martikainen M. (2022), "*Dividend Payout Decisions Under Uncertainty: The Ownership Influence in the Early Days of the COVID-19 Pandemic in Finland*". Journal of Applied Accounting Research. 0967-5426. https://doi.org/10.1108/JAAR-10-2021-0274

Mallikarjuna R. (2021). "*Assessing Volatility in the Banking Stocks in Indian Stock Market during the Covid-19 Pandemic: Using ARCH/GARCH Models*". Asian Journal of Research in Banking and Finance. Volume: 11, Issue: 9, Pages 29-40. https://doi.org/10.51705/AIJBSR.2021.v13i01.008

Mamilla R., Kathiravan C., Salamzadeh A., Dana P., and Elheddad M. (2023). "*COVID-19 Pandemic and Indices Volatility: Evidence from GARCH Models*". Journal of Risk and Financial Management. 16(10):447. https://doi.org/10.3390/jrfm16100447

Mansikkamäki S. (2023). "*Firm Growth and Profitability: The Role of Age and Size in Shifts between Growth-Profitability Configurations*", Journal of Business Venturing Insights. Volume 19, 2352-6734, https://doi.org/10.1016/j.jbvi.2023.e00372

Marston D. (2001). "*Financial System Standards and Financial Stability: The Case of Basel Core Principles*". IMF Working Paper (1018-5941), 1 (62), p. 1.

Matyunina A. and Ongena S. (2022). "*Bank Capital Buffer Releases, Public Guarantee Programs, and Dividend Bans in COVID-19 Europe: An Appraisal*". Eur. J. Law Econ. 54, 127-152. https://doi.org/10.1007/s10657-022-09734-9

Mauro M., Giancotti M., Pipitone V., and Tiscini R. (2023). "*Covid-19 on Stock Market Performance: Evidence from Italy*". Economic Research-Ekonomska Istraživanja, 36(3). https://doi.org/10.1080/1331677X.2023.2264369

Mazur M., Dang M., and Vo T. T. A. (2023). "*Dividends and Share Repurchases during the COVID-19 Economic Crisis*". Journal of Financial Research, 1-24. https://doi.org/10.1111/jfir.12324

Mersha D. and Worku A. (2020). "*Effect of Covid -19 on the Banking Sector in Ethiopia*". Horn of Africa Journal of Business and Economics. http://dx.doi.org/10.2139/ssrn.3624944

Ministry of Foreign Affairs of San Marino. (2018). "*A History of the Relations between San Marino and the European Union*". Available at: http://www.esteri.sm/on-line/en/home/foreign-affairs/san-marino-and-the-eu/history-of-relations/documento1103834.html

Mücke C. (2023). "*Bank Dividend Restrictions and Banks' Institutional Investors*". SAFE Working Paper No. 392. http://dx.doi.org/10.2139/ssrn.4498119

Nasir A., Zia Ur Rehman M., Nadeem Ashraf B., and Shear F. (2022). "*Corporate Dividend Policies during the COVID-19 Pandemic*". Economies 10, no. 11: 263. https://doi.org/10.3390/economies10110263

Ntantamis C. and Zhou J. (2022). "*Corporate Payout, Cash Holdings, and the COVID-19 Crisis: Evidence from the G-7 Countries*", Finance Research Letters. Volume 50, 103275, 1544-6123, https://doi.org/10.1016/j.frl.2022.103275.

Nuno F. (2020). "*Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy*". IESE Business School Working Paper No. WP-1240-E. http://dx.doi.org/10.2139/ssrn.3557504

Nurdany A., Ibrahim M., and Romadoni M., (2021). "*The Asymmetric Volatility of the Islamic Capital Market during the Covid-19 Pandemic*". Journal of Islamic Monetary Economics and Finance, 7, 185 - 202. https://doi.org/10.21098/jimf.v7i0.1312

Organisation for Economic Co-operation and Development. (2020). "*Italian Regional SME Policy Responses*". Trento Centre for Local Development. Available at: https://www.oecd.org/cfe/leed/COVID-19-Italian-regions-SME-policy-responses.pdf

Organisation for Economic Co-operation and Development. (2019). "*Global Forum on Transparency and Exchange of Information for Tax Purposes*". Available at: http://www.oecd.org/tax/transparency/

Organisation for Economic Co-operation and Development. (2019). "*Global Forum on Transparency and Exchange of Information for Tax Purposes: San Marino 2018 (Second Round) - Peer Review Report on the Exchange of Information on Request - en - OECD"*. Available at: https://www.oecd.org/countries/sanmarino/global-forum-on-transparency-and-exchange-of-information-for-tax-purposes-san-marino-2018-second-round-9789264302839-en.htm

Onali E. (2020). "*COVID-19 and Stock Market Volatility*". Available at: http://dx.doi.org/10.2139/ssrn.3571453

Paul A. (2010). "*The Global Financial Crisis: Origin, Contagion and Impacts on Ethiopia*", JBAS, Vol 2, No. 1. Available at: https://www.ajol.info/index.php/jbas/article/view/63515

Pettenuzzo D., Sabbatucci R., and Timmermann A. (2020). "*Dividend Suspensions and Cash Flows during the COVID-19 Pandemic: A Dynamic Econometric Model*". Swedish House of Finance Research Paper No. 20-18. Available at: https://ssrn.com/abstract=3628608 or http://dx.doi.org/10.2139/ssrn.3628608

Podpiera R. (2004). "*Does Compliance with Basel Core Principles Bring any Measurable Benefits?*". IMF Working Paper (1018-5941), 4 (204), p. 1

Prakash N. and Yogesh L. (2021). "*Market Reaction to Dividend Announcements during Pandemic: An Event Study*". Vision, The Journal of Business Perspective. https://doi.org/10.1177/09722629211066288

Quaglia L. and Verdun A. (2023). "*The European Central Bank, the Single Supervisory Mechanism and the COVID-19 Related Economic Crisis: A Neo-Functionalist Analysis*". Journal of European Integration, 45(1), 139–156. https://doi.org/10.1080/07036337.2022.2155640

Rastogi S. (2014). "*The Financial Crisis of 2008 and Stock Market Volatility–Analysis and Impact on Emerging Economies Pre and Post Crisis*". Afro-Asian Journal of Finance and Accounting 4: 443–59. https://doi.org/10.1504/AAJFA.2014.067017

Rechtsanwälte S. (2020). "*The Effects of COVID-19 on Distribution of Dividends in Selected CEE Countries*". Available at: https://www.schoenherr.eu/content/the-effects-of-covid-19-on-distribution-of-dividends-in-selected-cee-countries/

Rout B.S., Das N.M., and Inamdar M.M. (2021). "*COVID-19 and Market Risk: An Assessment of the G-20 Nations*". Journal of Public Affairs. 21:e2590. https://doi.org/10.1002/pa.2590

San Marino Central Bank. (2009). "*Financial System and Banking Statistics, December 2008*". Available at: https://www.bcsm.sm/site/home/pubblicazioni-e-statistiche/sistema-finanziario-e-dati-statistici/documento741.html

San Marino Central Bank. (2014). "*Relazione Consuntiva sull'Attività Svolta e sull'Andamento del Sistema Finanziario 2014*". Available at: https://www.bcsm.sm/site/home/pubblicazioni-e-statistiche/relazioni-consuntive/documento1412.html

San Marino Central Bank. (2018). "*Relazione Consuntiva sull'attività Svolta e sull'Andamento del Sistema Finanziario 2018*". Available at: https://www.bcsm.sm/site/home/pubblicazioni-e-statistiche/relazioni-consuntive/documento62722.html

San Marino Central Bank. (2020). "*Relazione Consuntiva sull'Attività Svolta e sull'Andamento del Sistema Finanziario 2020*". Available at: <https://www.bcsm.sm/site/home/pubblicazioni-e-statistiche/relazioni-consuntive/documento63327.html>

San Marino Central Bank. (2022). "*Financial System and Banking Statistics, December 2021*". Available at:

https://www.bcsm.sm/site/home/pubblicazioni-e-statistiche/sistema-finanziario-e-dati-statistici/documento63554.html

San Marino Central Bank. (2020). "*Soggetti Autorizzati - Banca Centrale della Repubblica di San Marino*". Public Register. Available at: https://www.bcsm.sm/site/home/funzioni/registri-e-albi/soggetti-autorizzati.html

Sanfelici M. (2020). "*The Italian Response to the COVID-19 Crisis: Lessons Learned and Future Direction in Social Development*". The International Journal of Community and Social Development. Volume 2, Issue 2 https://journals.sagepub.com/doi/full/10.1177/2516602620936037

Sari S., Ratna M., and Komaruddin M. (2022). "*The Effect of Company Size, Dividend Policy and Profitability on Company Value: Comparative Analysis before and during the Coronavirus Disease-19 Pandemic*". Asian Journal of Economics, Business and Accounting, 22 (18). pp. 60-70. ISSN 2456-639X

Sarwar G. (2012). "*Intertemporal Relations between the Market Volatility Index and Stock Index Returns*". Applied Financial Economics, 22(11), 899–909. https://doi.org/10.1080/09603107.2011.629980

Setiawan B, Ben Abdallah M, Fekete-Farkas M, Nathan RJ, and Zeman Z. (2021). "*GARCH (1,1) Models and Analysis of Stock Market Turmoil during COVID-19 Outbreak in an Emerging and Developed Economy*". Journal of Risk and Financial Management, 14(12):576. https://doi.org/10.3390/jrfm14120576

Sharma S.S. (2020). "*A Note on the Asian Market Volatility during the COVID-19 Pandemic*". Asian Economic Letters. Vol. 1, Issue 2, 2020. https://doi.org/10.46557/001c.17661

Smolović J. C., Lipovina-Božović M., and Vujošević S. (2017). "*GARCH Models in Value at Risk Estimation: Empirical Evidence from the Montenegrin Stock Exchange*". Economic Research-Ekonomska Istraživanja, 30(1), 477–498. https://doi.org/10.1080/1331677X.2017.1305773

Statista. (2020a). "*Key Indicators of Italy's Economy*". Available at: https://www.statista.com/topics/5964/key-indicators-of-italy-s-economy/

Statista. (2020b). "*Italy: GDP at Current Prices 2020*". Available at: https://www.statista.com/statistics/1201202/gdp-italy-current-prices/

Statista. (2020c). "*Italy: Unemployment Rate 2008-2020*". Available at: https://www.statista.com/statistics/531010/unemployment-rate-italy/

Statista. (2020d). "*Italy: Government Debt to GDP Ratio 2003-2020*". Available at: https://www.statista.com/statistics/582803/government-debt-to-gdp-ratio-italy/

Statista. (2020e). "*Italy: Resident Population 2012-2023*". Available at: https://www.statista.com/statistics/617477/resident-population-italy/

Statista. (2023). "*Roe of Banks in Leading European Countries 2007-2021*". Available at: https://www.statista.com/statistics/1314500/roe-banking-industry-europe-by-country/

Suryadi S., Endri E., and Yasid M. (2021). "*Risk and Return of Islamic and Conventional Indices on the Indonesia Stock Exchange*". The Journal of Asian Finance, Economics and Business, 8(3), 23-30. https://doi:10.13106/jafeb.2021.vol8.no3.0023

Thomson Reuters. (2020). "*Italy Furious at ECB's Lagarde "Not Here to Close Spreads" Comment*". Available at: https://www.reuters.com/article/us-ecb-policy-italy-minister-idUSKBN20Z3DW

Topcu M. and Gulal O. S. (2020). "*The Impact of COVID-19 on Emerging Stock Markets*". Finance Research Letters, 36, 101691. https://doi.org/10.1016/j.frl.2020.101691

UPECEDS. (2022). "*Statistical Bulletin, 2021*". Available at: https://www.statistica.sm/on-line/home/pubblicazioni/bollettino-di-statistica/documento14128087.html

UPECEDS. (2023). "*Macroeconomic and Financial Data*". Available at: https://www.statistica.sm/pub1/StatisticaSM/e-gdds/nsdp.html

World Health Organization. (2019). "*Health Emergency and Disaster Risk Management Framework*". Available at: https://apps.who.int/iris/bitstream/handle/10665/326106/9789241516181-eng.pdf?ua=1

World Health Organization. (2020). "*WHO Director-General's Opening Remarks at The Media Briefing on COVID-19*". Available at:

<https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>

Xixiong X., Cuiliang L., and Youliang Y. (2023). "*Covid-19 Crisis and Corporate Cash Dividend Policies: Evidence from Chinese Listed Companies*". Applied Economics Letters, 30(2), 178–184. https://doi.org/10.1080/13504851.2021.1980485

Yıldırım D., Esen Ö., and Ertuğrul H. M. (2022). "*Impact of the COVID-19 Pandemic on Return and Risk Transmission Between Oil and Precious Metals: Evidence from DCC-GARCH Model*", Resources Policy. Volume 79, 2022, 102939, 0301-4207, https://doi.org/10.1016/j.resourpol.2022.102939

Yong, J. N. C., Ziaei, S. M., and Szulczyk, K. R. (2021). "*The Impact of Covid-19 Pandemic on Stock Market Return Volatility: Evidence from Malaysia and Singapore*". Asian Economic and Financial Review, 11(3), 191-204. https://doi.org/10.18488/

Yousaf I. and Ali S. (2020). "*The COVID-19 Outbreak and High Frequency Information Transmission between Major Cryptocurrencies: Evidence from the VAR-DCC-GARCH Approach*", Borsa Istanbul Review. Volume 20, Supplement 1, Pages S1-S10, ISSN 2214-8450, https://doi.org/10.1016/j.bir.2020.10.003.

Yousef I. (2020). "*The Impact of Coronavirus on Stock Market Volatility*". Available at: https://www.researchgate.net/publication/341134119_Spillover_of_COVID19_Impact_on_Stock_Market_Volatility

Zeren F. and Hizarci A. (2020). "*The Impact of Covid-19 Coronavirus on Stock Markets: Evidence from Selected Countries*". Muhasebe ve Finans İncelemeleri Dergisi 3(1). https://doi.org/10.32951/mufider.706159

Appendices

Chapter 1

Appendix C.1.1: Compliance with the 2012 Core Principles

2012 Basel Core Principle	2010 IMF Score	2021 Model Score	Explanations
(Pr.1) Responsibilities, objectives and powers	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.2) Independence, accountability, resourcing and legal protection for supervisors	Materially Non-compliant	Compliant	The San Marino Central Bank has followed the recommendations issued in 2010, by improving its level of independence.
(Pr.3) Cooperation and collaboration	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.4) Permissible activities	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.5) Licensing criteria	Materially Non-compliant	Compliant	Art. 12 of Law 165/2005 was emended in 2019 so that the licensing process is entirely managed by the San Marino Central Bank.
(Pr.6) Transfer of significant ownership	Largely Compliant	Compliant	Weaknesses about ownership requirements were corrected in 2019.
(Pr.7) Major acquisitions	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.8) Supervisory approach	Largely Compliant	Largely Compliant	Improvements were made as stated in the 2019 annual reports, published by the San Marino Central Bank, so there are not considerable misalignments with the 2010 FSAP report.
(Pr.9) Supervisory techniques and tools	Materially Non-compliant	Largely Compliant	In 2015, San Marino adopted several international standards about the exchange of fiscal information (e.g. Common Reporting Standard and Foreign Account Tax Compliance Act). In addition, the San Marino Central Bank started an Asset Quality Review process in 2017.
(Pr.10) Supervisory reporting	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.11) Corrective and sanctioning powers of supervisors	Largely Compliant	Largely Compliant	The San Marino Central Bank has sanctioning powers as stated by the D.D. n. 24/2014. In addition, the Financial Intelligence Agency was assured strengthened sanctioning and supervisory powers in 2015. However, some more procedure should be implemented to become fully compliant.
(Pr.12) Consolidated supervision	Materially Non-compliant	Materially Non-compliant	Consistent with the 2010 FSAP results. Administrative procedures have not been adopted yet.

(Pr.13) Home-host relationships	Materially Non-compliant	Largely Compliant	The banking secrecy was abrogated in 2014. The San Marino Central Bank signed some memorandum of understanding with countries and foreign authorities (Liechtenstein Financial Authority, Croatian Financial Authority, and CONSOB.) that demonstrate concrete improvements.
(Pr.14) Corporate governance	Not available	Compliant	The current legislation appears to be compliant with the 2010 FSAP recommendations.
(Pr.15) Risk management process	Largely Compliant	Largely Compliant	Consistent with the 2010 FSAP results.
(Pr.16) Capital adequacy	Materially Non-compliant	Largely Compliant	The solvency ratio requirement (11%) is higher than the Basel Core Principles' statements; however, further improvements are required regarding capital adequacy evolution.
(Pr.17) Credit risk	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.18) Problem assets, provisions and reserves	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.19) Concentration risk and large exposure limits	Materially Non-compliant	Largely Compliant	Some improvements have been made up to now; however, regulations need to be developed, with a focus on the required procedures.
(Pr.20) Transactions with related parties	Materially Non-compliant	Largely Compliant	Improvements have bee made up to now.
(Pr.21) Country and transfer risks	Materially Non-compliant	Materially Non-compliant	Consistent with the 2010 FSAP results.
(Pr.22) Market risk	Materially Non-compliant	Materially Non-compliant	Consistent with the 2010 FSAP results. Administrative procedures must be adopted soon.
(Pr.23) Interest rate risk in the banking book	Materially Non-compliant	Materially Non-compliant	Consistent with the 2010 FSAP results. Administrative procedures have not been adopted yet.
(Pr.24) Liquidity risk	Compliant	Compliant	Consistent with the 2010 FSAP results.
(Pr.25) Operational risk	Largely Compliant	Largely Compliant	Consistent with the 2010 FSAP results.
(Pr.26) Internal control and audit	Largely Compliant	Largely Compliant	Consistent with the 2010 FSAP results.
(Pr.27) Financial reporting and external audit		Largely Compliant	Consistent with the 2010 FSAP results.
(Pr.28) Disclosure and transparency	Largely Compliant	Largely Compliant	Consistent with the 2010 FSAP results.
(Pr.29) Abuse of financial services	Materially Non-compliant	Compliant	Concrete and relevant improvements can be observed in the national legislation.

Table C.1.1: *The table reports the comparison between the San Marino CPs in 2010 and in 2021. It also provides comments to explain the main differences between the IMF's grades and the developed simplified model' grades. The Core Principles 2, 5 and 29 have improved from Materially non-compliant to Compliant from 2010 to 2021. (International Monetary Fund, 2010)*

Appendix C.1.2: San Marino Detailed Assessment of Compliance 2021

Supervisory Powers, Responsibilities and Functions	
Principle 1	***Responsibilities, objectives and powers.*** "*An effective system of banking supervision has clear responsibilities and objectives for each authority involved in the supervision of banks and banking groups. A suitable legal framework for banking supervision is in place to provide each responsible authority with the necessary legal powers to authorize banks, conduct ongoing supervision, address compliance with Laws and undertake timely corrective actions to address safety and soundness concerns*".
EC1	"*The responsibilities and objectives of each of the authorities involved in banking supervision are clearly defined in legislation and publicly disclosed. Where more than one authority is responsible for supervising the banking system, a credible and publicly available framework is in place to avoid regulatory and supervisory gaps*".
Description and findings EC1	Law no. 165 defines CBSM as the only supervisory authority. The Part II of the Law clearly specifies the responsibilities and objectives of the supervisory authority. Responsibilities and objectives are also clearly set out in Law no. 96 of 2005, which constitutes the Central Bank Statute.
EC2	"*The primary objective of banking supervision is to promote the safety and soundness of banks and the banking system. If the banking supervisor is assigned broader responsibilities, these are subordinate to the primary objective and do not conflict with it*".
Description and findings EC2	Art. 37 of Law no. 165 specifies the safety and soundness of banks and banking system as the primary objective of banking supervision. No conflicting responsibilities are assigned with respect to the main objective.
EC3	"*Laws and Regulations provide a framework for the supervisor to set and enforce minimum prudential standards for banks and banking groups. The supervisor has the power to increase the prudential requirements for individual banks and banking groups based on their risk profile and systemic importance*".
Description and findings EC3	Art. 45 of Law no. 165 enables "*the supervisor to set and enforce minimum prudential standards for banks and banking groups*". Art. 44 confirms the power of the supervisor to apply specific requirements for individual parties of the banking system. (International Monetary Fund, 2010)
EC4	"*Banking laws, Regulations and prudential standards are updated as necessary to ensure that they remain effective and relevant to changing industry and regulatory practices. These are subject to public consultation, as appropriate*".
Description and findings EC4	Art. 39 of Law no. 165 grants the supervisory authority the regulatory power, the means by which CBSM can integrate/change current Regulations, circulars and supervisory provisions. Art. 38 (4) requires that the authority consider the needs of competitiveness, innovation and developments of the authorized parties when establishing supervisory recommendations. Each amendment and/or integration is available on CBSM's website.
EC5	"*The supervisor has the power to:* *(a) have full access to banks' and banking groups' boards, management, staff and records in order to review compliance with internal rules and limits as well as external Laws and Regulations;* *(b) review the overall activities of a banking group, both domestic and cross-border;*

	and (c) Supervise the activities of foreign banks incorporated in its jurisdiction".
Description and findings EC5	Arts. 41-47 of Law no. 165 gives the supervisor the power to have full access to banks' information and arts. 53-59 give access to banking groups' information and to intervene where appropriate to review compliance. The supervision of activities of foreign banks is also under the jurisdiction of CBSM.
EC6	"*When, in a supervisor's judgment, a bank is not complying with Laws or Regulations, or it is or is likely to be engaging in unsafe or unsound practices or actions that have the potential to jeopardize the bank or the banking system, the supervisor has the power to:* *(a) take (and/or require a bank to take) timely corrective action;* *(b) impose a range of sanctions;* *(c) revoke the bank's license; and* *(d) cooperate and collaborate with relevant authorities to achieve an orderly resolution of the bank, including triggering resolution where appropriate*".
Description and findings EC6	According to arts. 78-79 and art. 85, CBSM has the power to take corrective actions when a bank is not complying with Laws or Regulations. According to Law no. 165, CBSM has the power to impose a range of sanctions, cooperate with relevant authorities and revoke a bank's license in case of grave irregularities.
EC7	"*The supervisor has the power to review the activities of parent companies and of companies affiliated with parent companies to determine their impact on the safety and soundness of the bank and the banking group*".
Description and findings EC7	Art. 57 gives the authority the power to supervise parent companies and the companies affiliated with parent companies as set out in art. 54.
Assessment of Principle 1	*Compliant*
Principle 2	**Independence, accountability, resourcing and legal protection for supervisors**. "*The supervisor possesses operational independence, transparent processes, sound governance, budgetary processes that do not undermine autonomy and adequate resources, and is accountable for the discharge of its duties and use of its resources. The legal framework for banking supervision includes legal protection for the supervisor*".
EC1	"*The operational independence, accountability and governance of the supervisor are prescribed in legislation and publicly disclosed. There is no government or industry interference that compromises the operational independence of the supervisor. The supervisor has full discretion to take any supervisory actions or decisions on banks and banking groups under its supervision*".
Description and findings EC1	The CBSM has a large degree of operational independence on supervisory decisions, especially with respect to ordinary supervisory actions or even extraordinary administration and compulsory liquidation.

EC2	"*The process for the appointment and removal of the head(s) of the supervisory authority and members of its governing body is transparent. The head(s) of the supervisory authority is (are) appointed for a minimum term and is (are) removed from office during his/her term only for reasons specified in Law or if (s)he is not physically or mentally capable of carrying out the role or has been found guilty of misconduct. The reason(s) for removal is publicly disclosed*".
Description and findings EC2	The principal decision-making body of CBSM is GCCB, which is composed of six members, the Chairman and five consultants. The appointment process is clear and defined in art. 10 and art. 13 of the Statute. All members of GCCB are appointed for a mandate of five years, renewable only once. GCCB appoints the DGCB, to whom it may also delegate tasks. DGCB is the chairman of the SCCB, appointed for six years with the possibility of renewal. SCCB members are appointed by GCCB on the proposal of DGCB for three years with possibility of renewal. The members of SCCB can be removed by GCCB for reasons specified in the Statute or in the event of inability to work. The DGCB is removed on the decision of GCCB, only if all members of GCCB cast their vote to the case.
EC3	"*The supervisor publishes its objectives and is accountable through a transparent framework for the discharge of its duties in relation to those objectives*".
Description and findings EC3	The supervisor's objectives are set out both in Law no. 96 and Law no. 165. Art. 10-15 of Law no. 96 also sets out the powers of each of the elements of the supervisory authority, also clarifying roles and responsibilities. However, art. 48 of Law no. 96 and art. 101 of Law no. 165 specify that CBSM should respect CSS strategies and overall regulations in settling its responsibilities. The DGCB may participate in the CCS meetings without any voting rights. Progress has been shown by removing the power of CCS in the nomination process of various bodies (i.e. art. 15 Law no. 96).
EC4	"*The supervisor has effective internal governance and communication processes that enable supervisory decisions to be taken at a level appropriate to the significance of the issue and timely decisions to be taken in the case of an emergency. The governing body is structured to avoid any real or perceived conflicts of interest*".
Description and findings EC4	The Statute sets the framework of internal governance and communication processes of the supervisory authority. Art. 11 has undergone some amendments, according to which the board of directors can also discuss and decide on items that were not on the agenda. The meeting process of GCCB has changed and is not strictly subjected to the physical presence of the members. There are also explicit provisions on meetings and decisions to be taken in the event of an emergency.
EC5	"*The supervisor and its staff have credibility based on their professionalism and integrity. There are rules on how to avoid conflicts of interest and on the appropriate use of information obtained through work, with sanctions in place if these are not followed*".
Description and findings EC5	The Statute of CBSM requires the supervisor and staff to be chosen among people with skills and professionalism. Art. 43 requires the approval of a Code of Conduct that helps the supervisor and staff avoid conflicts of interest and more generally act with integrity. Sanctions are applied to whosoever breaks the rules defined by CBSM.

EC6	"*The supervisor has adequate resources for the conduct of effective supervision and oversight. It is financed in a manner that does not undermine its autonomy or operational independence. This includes:* *(a) a budget that provides for staff in sufficient numbers and with skills commensurate with the risk profile and systemic importance of the banks and banking groups supervised;* *(b) salary scales that allow it to attract and retain qualified staff;* *(c) the ability to commission external experts with the necessary professional skills and independence, and subject to necessary confidentiality restrictions to conduct supervisory tasks;* *(d) a budget and program for the regular training of staff;* *(e) a technology budget sufficient to equip its staff with the tools needed to supervise the banking industry and assess individual banks and banking groups;* *and (f) a travel budget that allows appropriate on-site work, effective cross-border cooperation and participation in domestic and international meetings of significant relevance (e.g., supervisory colleges)*".
Description and findings EC6	Art. 22 of Law no. 96 on the Remuneration Process has been amended and takes into consideration further and future activities, which by coming into existence should include remuneration and allow further amendments of the existing rules. As stated by art. 19, the assets of the Central Bank consist of the endowment fund, ordinary reserve, and any extraordinary reserve or any other unallocated funds. The majority of the shares of the endowment fund is reserved to the State and the other part to credit and financial institutions of SM. The daily operation of the bank is financed by levies from the supervised entities and contributions made by the institutions that require services from the central bank. The levies paid by supervised entities or other institutions have to cover all the direct and indirect expenses incurred by CBSM exclusively in performing the supervisory functions or the services offered in the second case. According to art. 25, CBSM has full autonomy in managing its resources and should act following the principles of prudence and good administration. Art. 26 stresses the autonomy of the central bank in defining the internal organizational structure. Art. 27 requires CBSM to establish with internal Regulations the rules to be followed for all its activities.
EC7	"*As part of their annual resource planning exercise, supervisors regularly take* *stock of existing skills and projected requirements over the short- and medium term, taking into account relevant emerging supervisory practices. Supervisors review and implement measures to bridge any gaps in numbers and/or skill-sets identified*".
Description and findings EC7	In each of its annual reports, CBSM describes the current situation of its annual resources. These reports also show that the supervisor monitors the situation of its existing resources in terms of stock and existing skills and is engaged in the process of training adequate resources for the developing context of the banking system.
EC8	"*In determining supervisory programs and allocating resources, supervisors take into account the risk profile and systemic importance of individual banks and banking groups, and the different mitigation approaches available*".
Description and findings EC8	The set of rules in the Statute and Law no. 165 emphasize the proportionality principle as a guiding principle in each supervisory program or any other

	activity relevant to the supervisory authority. This implies that the supervisory programs take into consideration many factors while allocating resources, the risk profile and systemic importance of individual banks.
EC9	"*Laws provide protection to the supervisor and its staff against lawsuits for actions taken and/or omissions made while discharging their duties in good faith. The supervisor and its staff are adequately protected against the costs of defending their actions and/or omissions made while discharging their duties in good faith*".
Description and findings EC9	The Statute of CBSM clearly establishes the rules of legal protection and offers protections to "*the supervisor and its staff against lawsuits for actions taken or omissions made while discharging duties in good faith*". Art. 28 has been properly amended in order to transpose adequate rules on legal protection (International Monetary Fund, 2010)
Assessment of Principle 2	*Compliant*
Principle 3	**Cooperation and collaboration.** "*Laws, Regulations or other arrangements provide a framework for cooperation and collaboration with relevant domestic authorities and foreign supervisors. These arrangements reflect the need to protect confidential information*".
EC1	"*Arrangements, formal or informal, are in place for cooperation, including analysis and sharing of information, and undertaking collaborative work, with all domestic authorities with responsibility for the safety and soundness of banks, other financial institutions and/or the stability of the financial system. There is evidence that these arrangements work in practice, where necessary*".
Description and findings EC1	Coordination and cooperation is promoted in the Statute of CBSM. Title VII describes the rules to be followed with regard to the relations established with domestic and foreign entities.
EC2	"*Arrangements, formal or informal, are in place for cooperation, including analysis and sharing of information, and undertaking collaborative work, with relevant foreign supervisors of banks and banking groups. There is evidence that these arrangements work in practice, where necessary*".
Description and findings EC2	Coordination and cooperation is promoted in the Statute of CBSM. Title VII describes the rules to be followed with regard to the relations established with domestic and foreign entities.
EC3	"*The supervisor may provide confidential information to another domestic authority or foreign supervisor but must take reasonable steps to determine that any confidential information so released will be used only for bank-specific or system-wide supervisory purposes and will be treated as confidential by the receiving party*".
Description and findings EC3	Banking secrecy in San Marino has previously been very restrictive. Due to some recent amendments, it now allows a more effective process of information exchange, including with foreign authorities. More detailed information on this topic and all the regulatory rules will be given in the section dedicated to Principle 13.

EC4	"*The supervisor receiving confidential information from other supervisors uses the confidential information for bank-specific or system-wide supervisory purposes only. The supervisor does not disclose confidential information received to third parties without the permission of the supervisor providing the information and is able to deny any demand (other than a court order or mandate from a legislative body) for confidential information in its possession. In the event that the supervisor is legally compelled to disclose confidential information it has received from another supervisor, the supervisor promptly notifies the originating supervisor, indicating what information it is compelled to release and the circumstances surrounding the release. Where consent to passing on confidential information is not given, the supervisor uses all reasonable means to resist such a demand or protect the confidentiality of the information*".
Description and findings EC4	Art. 103 states that the San Marino Central Bank is not allowed to provide data/information to third parties, despite the counterparty authorizes.
EC5	"*Processes are in place for the supervisor to support resolution authorities (e.g., central banks and finance ministries as appropriate) to undertake recovery and resolution planning and actions*".
Description and findings EC5	CBSM is recognized as the resolution authority in art. 78 and 85 of Law no. 165. Art. 24 of Law no. 96 points out that CBSM has to collaborate with the State Congress and CCS to propose the recovery and resolution planning and the persons acting in this capacity.
Assessment of Principle 3	*Compliant*
Principle 4	**Permissible activities.** "*The permissible activities of institutions that are licensed and subject to supervision as banks are clearly defined and the use of the word "bank" in names is controlled*".
Description and findings	All the considerations made in the IMF 2010 Report are still valid.
Assessment of Principle 4	*Compliant*
Principle 5	**Licensing criteria.** "*The licensing authority has the power to set criteria and reject applications for establishments that do not meet the criteria. At a minimum, the licensing process consists of an assessment of the ownership structure and governance (including the fitness and propriety of Board members and senior management of the bank and its wider group, and its strategic and operating plan, internal controls, risk management and projected financial condition, including capital base). Where the proposed owner or parent organization is a foreign bank, the prior consent of its home supervisor is obtained*".
EC1	"*The Law identifies the authority responsible for granting and withdrawing a banking license. The licensing authority could be the banking supervisor or another competent authority. If the licensing authority and the supervisor are not the same, the supervisor has the right to have its views on each application considered, and its concerns addressed. In addition, the licensing authority provides the supervisor with any information that may be material to the supervision of the licensed bank. The supervisor imposes prudential conditions or limitations on the newly licensed bank, where appropriate*".
Description and findings EC1	The act of granting and withdrawing a banking license, even if approved by the supervisory authority, according to art. 12 required the permission of the

	State Congress. The art. 12 of Law 165/2005 was abrogated in 2019. The CBSM has the power to impose prudential conditions or limitations on the newly licensed banks according to art. 44 of Law no. 165.
EC2	"*Laws or Regulations give the licensing authority the power to set criteria for licensing banks. If the criteria are not fulfilled or if the information provided is inadequate, the licensing authority has the power to reject an application. If the licensing authority or supervisor determines that the license was based on false information, the license can be revoked*".
Description and findings EC2	Law no. 165 specifies all the criteria for licensing banks. Art. 13 establishes requirements regarding the legal form, the initial paid up capital, requirements for business plans, and that shareholders and senior management must comply with suitability requirements. According to art. 7 the supervisory authority can reject an application specifying the shortcomings identified. If a bank has already started its activity, art. 10 specifies the criteria for withdrawing the permission.
EC3	"*The criteria for issuing licenses are consistent with those applied in ongoing supervision*".
Description and findings EC3	Licensing criteria such as capital and suitability of senior management and shareholders are consistent with ongoing supervision.
EC4	"*The licensing authority determines that the proposed legal, managerial, operational and ownership structures of the bank and its wider group will not hinder effective supervision on both a solo and a consolidated basis. The licensing authority also determines, where appropriate, that these structures will not hinder effective implementation of corrective measures in the future*".
Description and findings EC4	One of the criteria of licensing a new bank is the absence of conditions that could hinder the effective implementation of corrective measures or the supervision activities.
EC5	"*The licensing authority identifies and determines the suitability of the bank's major shareholders, including the ultimate beneficial owners, and others that may exert significant influence. It also assesses the transparency of the ownership structure, the sources of initial capital and the ability of shareholders to provide additional financial support, where needed*".
Description and findings EC5	CBSM has the duty to identify and determine the suitability criteria of the bank's major shareholders including other beneficial owners or who exercises a significant influence. These criteria are specified in Law no. 165 and Regulation 2007-07. Art. I.I.2 introduced a definition regarding ultimate beneficial owners, whose presence is also considered among the shareholders as controlling parties. CBSM requires the declaration of all shareholders, including controlling parties, and requires transparency and the presence of all identifying documents. The assessment of the ownership structure, the sources of initial capital and the ability to be financially stable and provide further financial support, where needed, are specifically required.
EC6	"*A minimum initial capital amount is stipulated for all banks*".
Description and findings EC6	A minimum initial capital is required for all banks. This minimum requirement is necessary for the commencement of the licensing procedure and the minimum amount is set in Regulation 2007-07.
EC7	"*The licensing authority, at authorization, evaluates the bank's proposed Board members and senior management as to expertise and integrity (fit and proper test), and any potential for conflicts of interest. The fit and proper criteria include: (I) skills and experience in relevant financial operations*

	commensurate with the intended activities of the bank; and (ii) no record of criminal activities or adverse regulatory judgments that make a person unfit to uphold important positions in a bank. The licensing authority determines whether the bank's Board has collective sound knowledge of the material activities the bank intends to pursue, and the associated risks".
Description and findings EC7	The approval of a banking license is subject to the fulfilment of a series of requirements by the proposed board members and senior management. Art. 15 requires that the persons performing managerial or control functions be fit and proper to satisfy the requirements of professionalism and integrity. The Regulation 2007-07 further expands such requirements to including: no record for criminal activities or adverse regulatory judgments and clauses that provide rules to avoid any potential conflicts of interest. Chapter II of Regulation 2007-07 indicates all the necessary professional requirements for the bank board members and senior management.
EC8	"*The licensing authority reviews the proposed strategic and operating plans of the bank. This includes determining that an appropriate system of corporate governance, risk management and internal controls, including those related to the detection and prevention of criminal activities, as well as the oversight of proposed outsourced functions, will be in place. The operational structure is required to reflect the scope and degree of sophistication of the proposed activities of the bank*".
Description and findings EC8	CBSM proposes an organizational structure for banks in art. VII.IX.1 giving evidence of all the characteristics of a sound and stable corporate governance, risk management and internal controls systems. Due to the complexity of the operational structures, in the specific case of internal audit, the evolution of the banking activities and the reference context is taken into consideration.
EC9	"*The licensing authority reviews pro forma financial statements and projections of the proposed bank. This includes an assessment of the adequacy of the financial strength to support the proposed strategic plan as well as financial information on the principal shareholders of the bank*".
Description and findings EC9	Art. III.III.8 of Regulation 2007-07 specifies the initial requirements of the intended activities of the new opening bank. Among the initial requirements, relative to the first three years of the new banking activity, there are the projections of financial stability and pro-forma financial statements. Such projections should be reviewed by CBSM. The adequacy of financial strength and transparency of financial sources for the principal shareholders of the bank is stated in art. V.II.6.
EC10	"*In the case of foreign banks establishing a branch or subsidiary, before issuing a license, the host supervisor establishes that no objection (or a statement of no objection) from the home supervisor has been received. For cross-border banking operations in its country, the host supervisor determines whether the home supervisor practices global consolidated supervision*".
Description and findings EC10	In art III.VI.1 of Regulation 2007-07, the requirements specified for the license of a branch or subsidiary of a foreign bank include prior consent from the home supervisor that allows the foreign bank to perform its activity in San Marino. For all banking operations in its country, thus including cross-border operations, consolidated supervision is required.

EC11	"*The licensing authority or supervisor has policies and processes to monitor the progress of new entrants in meeting their business and strategic goals, and to determine that supervisory requirements outlined in the license approval are being met*".
Description and findings EC11	In Regulation 2007-07 (art. III.V.10), CBSM is given the power to verify whether the initial requirements for the licensing are met. Furthermore, as the banking supervisor authority, CBSM can monitor the progress of new entrants and verify compliance with supervisory requirements.
Assessment of Principle 5	*Compliant*
Principle 6	**Transfer of significant ownership**. "*The supervisor has the power to review, reject and impose prudential conditions on any proposals to transfer significant ownership or controlling interests held directly or indirectly in existing banks to other parties*".
EC1	"*Laws or Regulations contain clear definitions of -significant ownership- and -controlling interest*."
Description and findings EC1	Art. I.I.2 defines as significant ownership where a person owns more than 2% of the corporate capital of another entity. The controlling interest and related notions are described broadly in art.2 of Law no. 165 specifying all the conditions that define a dominant controlling interest.
EC2	"*There are requirements to obtain supervisory approval or provide immediate notification of proposed changes that would result in a change in ownership, including beneficial ownership, or the exercise of voting rights over a particular threshold or change in controlling interest*".
Description and findings EC2	Art. 23 of Law no. 165 requires information on ownership stakes. Art. 23(1), requires banks to report the name of the natural or legal person owning a significant interest in the capital by using any kind of information at their disposal. In art. V.III.1 of Regulation 2007-07 the natural and legal persons that are willing to purchase ownership stakes surpassing certain thresholds (2%, 25%, 50%, 66%) require the permission of the supervisory authority and thus the supervisory authority should be promptly informed. Arts. 16, 17, 19 of Law no. 165 regulate the requirements on notification obligations, or the exercise of voting rights.
EC3	"*The supervisor has the power to reject any proposal for a change in significant ownership, including beneficial ownership, or controlling interest, or prevent the exercise of voting rights in respect of such investments to ensure that any change in significant ownership meets criteria comparable to those used for licensing banks. If the supervisor determines that the change in significant ownership was based on false information, the supervisor has the power to reject, modify or reverse the change in significant ownership*".
Description and findings EC3	Part V of Regulation 2007-07 establishes the power of the supervisor to reject the proposal for a change in significant ownership. If any activity subject to the authorization of the Regulator was based on false information or documents, the activity can be revoked by the Regulator itself. Any significant change and authorization of banking ownership structure meets criteria comparable to those of licensing a new bank. The reasons for rejection include the right of the supervisor to revoke the operation if it is not consistent with the market structure and needs.

EC4	"*The supervisor obtains from banks, through periodic reporting or on-site examinations, the names and holdings of all significant shareholders or those that exert controlling influence, including the identities of beneficial owners of shares being held by nominees, custodians and through vehicles that might be used to disguise ownership*".
Description and findings EC4	CBSM requires banks to periodically report information on significant shareholders or controlling entities. Regulation 2007-07, art. V.V.4 (3) requires banks to provide information on shareholders with voting rights annually, detailing the number of shareholders, the capital holding in their possession and the percentage of capital they represent. Moreover, art. 23 of Law no. 165 gives CBSM the right to request all the necessary information on the ownership structure of a bank and arts. 41 and 42 give CBSM the power to seek information on owners and controllers and demand it on regular basis.
EC5	"*The supervisor has the power to take appropriate action to modify, reverse or otherwise address a change of control that has taken place without the necessary notification to approval from the supervisor*".
Description and findings EC5	Such power is recognized to CBSM regarding the change of controls with regard to the relevant thresholds.
EC6	"*Laws or Regulations or the supervisor require banks to notify the supervisor as soon as they become aware of any material information which may negatively affect the suitability of a major shareholder or a party that has a controlling interest*".
Description and findings EC6	Art. V.V.4 (2) of Regulation 2007-07 requires timely notification of the San Marino Central Bank (CBSM) in the event there is awareness of any data that can negatively impact on the appropriateness of a major stockholder or an entity, which has majority voting power.
Assessment of Principle 6	*Compliant*
Principle 7	**Major acquisitions**. "*The supervisor has the power to approve or reject (or recommend to the responsible authority the approval or rejection of), and impose prudential conditions on, major acquisitions or investments by a bank, against prescribed criteria, including the establishment of cross-border operations, and to determine that corporate affiliations or structures do not expose the bank to undue risks or hinder effective supervision*".
Description and findings	All the considerations made in the IMF 2010 Report are still valid.
Assessment of Principle 7	*Compliant*
Principle 8	**Supervisory approach.** "*An effective system of banking supervision requires the supervisor to develop and maintain a forward-looking assessment of the risk profile of individual banks and banking groups, proportionate to their systemic importance; identify, assess and address risks emanating from banks and the banking system as a whole; have a framework in place for early intervention; and have plans in place, in partnership with other relevant authorities, to take action to resolve banks in an orderly manner if they become non-viable*".

EC1	"*The supervisor uses a methodology for determining and assessing on an ongoing basis the nature, impact and scope of the risks:* *(a) which banks or banking groups are exposed to, including risks posed by entities in the wider group; and* *(b) which banks or banking groups present to the safety and soundness of the banking system.* *The methodology addresses, among other things, business focus, group structure, risk profile, internal control environment and the resolvability of banks, and permits relevant comparisons between banks. The frequency and intensity of supervision of banks and banking groups reflect the outcome of this analysis*".
Description and findings EC1	In its annual report, CBSM claims to have adopted a risk-based methodology to assess on an ongoing basis the nature and impact of risks. The methodology applied for all banks gives the opportunity to perform relevant comparisons between banks. As the regulatory authority, CBSM has all the power to assess risks, both for banks and banking groups.
EC2	"*The supervisor has processes to understand the risk profile of banks and banking groups and employs a well-defined methodology to establish a forward-looking view of the profile. The nature of the supervisory work on each bank is based on the results of this analysis*".
Description and findings EC2	The supervisor has put in place a process to understand the risk profile of banks and banking groups, but recognized methodologies, like CAMEL or SREP, still haven't been established. In accordance with the regulatory rules, CBSM can also perform follow-up inspections, meaning it can evaluate the situation of banks on an ongoing basis.
EC3	"*The supervisor assesses banks' and banking groups' compliance with prudential Regulations and other legal requirements*".
Description and findings EC3	Prudential Regulations and other legal requirements are fully accessible to the supervisor in order to assess banks and banking groups.
EC4	"*The supervisor takes the macroeconomic environment into account in its risk assessment of banks and banking groups. The supervisor also takes into account cross - sectoral developments, for example in non-bank financial institutions, through frequent contact with their regulators*".
Description and findings EC4	In the annual report there is reference to the general macroeconomic conditions of San Marino and the repercussions in risk assessments of banks and banking groups.
EC5	"*The supervisor, in conjunction with other relevant authorities, identifies, monitors and assesses the build-up of risks, trends and concentrations within and across the banking system as a whole. This includes, among other things, banks' problem assets and sources of liquidity (such as domestic and foreign currency funding conditions, and costs). The supervisor incorporates this analysis into its assessment of banks and banking groups and proactively addresses any serious threat to the stability of the banking system. The supervisor communicates any significant trends or emerging risks identified to banks and to other relevant authorities with responsibilities for financial system stability*".
Description and findings EC5	To identify the build-up of risks and systemically relevant vulnerabilities, the CBSM has in place a process that includes: results of off-site analysis and on-site inspections, information provided by the banks, monitoring of markets, sector analysis, ad-hoc inquiries, and data obtained from other parties like the

	judicial authorities or customers through complaints. The quality of banks' assets and problems related to liquidity are investigated. The CBSM and the IMF give evidence of FSIs (Financial Stability Indicators) annually. Any threat revealed to banks/banking system is proactively addressed with the relevant parties. The annual report published by CBSM (which is publicly available) gives evidences of CBSM's studies of the system's soundness and stability.
EC6	"*Drawing on information provided by the bank and other national supervisors, the supervisor, in conjunction with the resolution authority, assesses the bank's resolvability where appropriate, having regard to the bank's risk profile and systemic importance. When bank-specific barriers to orderly resolution are identified, the supervisor requires, where necessary, banks to adopt appropriate measures, such as changes to business strategies, managerial, operational and ownership structures, and internal procedures. Any such measures take into account their effect on the soundness and stability of ongoing business*".
Description and findings EC6	As the resolution authority, CBSM has the power and the capability to assess the bank's resolvability having attention to the financial intermediary's risk profile and systemic position. In performing its supervisory activities, CBSM can require specific banks to adopt specific measures if appropriate.
EC7	"*The supervisor has a clear framework or process for handling banks in times of stress, such that any decisions to require or undertake recovery or resolution actions are made in a timely manner*".
Description and findings EC7	As deteriorating trends are recognised or worries arise as to the level of risk, the supervisor can undertake corrective actions and perform on-site inspections in a timely manner.
EC8	"*Where the supervisor becomes aware of bank-like activities being performed fully or partially outside the regulatory perimeter, the supervisor takes appropriate steps to draw the matter to the attention of the responsible authority. Where the supervisor becomes aware of banks restructuring their activities to avoid the regulatory perimeter, the supervisor takes appropriate steps to address this*".
Description and findings EC8	Art. 133, which amends art. 321 of the criminal code, states that unauthorized banking activities are prohibited and violators are punished with criminal penalties.
Assessment of Principle 8	*Largely Compliant*
Principle 9	**Supervisory techniques and tools.** "*The supervisor uses an appropriate range of techniques and tools to implement the supervisory approach and deploys supervisory resources on a proportionate basis, taking into account the risk profile and systemic importance of banks*".
EC1	"*The supervisor employs an appropriate mix of on-site and off-site supervision to evaluate the condition of banks and banking groups, their risk profile, internal control environment and the corrective measures necessary to address supervisory concerns. The specific mix between on-site and off-site supervision may be determined by the particular conditions and circumstances of the country and the bank. The supervisor regularly assesses the quality, effectiveness and integration of its on-site and off-site functions, and amends its approach, as needed*".

Description and findings EC1	CBSM employs both on-site and off-site inspections to evaluate the conditions of banks and banking groups. The off-site inspections are performed by analysing the data and information that CBSM periodically requires from the banks. The possible interventions during off-site inspections may relate to informative, preventive or corrective inspections. Connected to the off-site supervisory activity is the process of communication with the various banks on specific and important topics during daily banking activity. During the off-site inspections, the findings may relate to the overall business situation ("general inspection"), specific business segments and/or compliance with industry Regulations ("targeted") as well as the compliance of corrective actions implemented by the bank ("follow up/specific").
EC2	"*The supervisor has a coherent process for planning and executing on-site and off-site activities. There are policies and processes to ensure that such activities are conducted on a thorough and consistent basis with clear responsibilities, objectives and outputs, and that there is effective coordination and information sharing between the on-site and off-site functions*".
Description and findings EC2	There are elements in the annual report of CBSM that implicitly provide for the existence of a proper planning and executing of on-site and off-site activities. On the basis of the annual reports of CBSM, the supervisory inspections of recent years have improved in terms of resources and tools.
EC3	"*The supervisor uses a variety of information to regularly review and assess the safety and soundness of banks, the evaluation of material risks, and the identification of necessary corrective actions and supervisory actions. This includes information, such as prudential reports, statistical returns, information on a bank's related entities, and publicly available information. The supervisor determines that information provided by banks is reliable and obtains, as necessary, additional information on the banks and their related entities*".
Description and findings EC3	The supervisor can use a variety of information from periodic reporting of banks, information on related entities and publicly available information, including financial statements information and other evidence. Information contained in the CBSM's annual reports and on its website indicates that the assessment of banks is made by using a wide range of necessary information.
EC4	"*The supervisor uses a variety of tools to regularly review and assess the safety and soundness of banks and the banking system, such as:* *(a) analysis of financial statements and accounts;* *(b) business model analysis;* *(c) horizontal peer reviews;* *(d) review of the outcome of stress tests undertaken by the bank; and* *(e) analysis of corporate governance, including risk management and internal control systems. The supervisor communicates its findings to the bank as appropriate and requires the bank to take action to mitigate any particular vulnerabilities that have the potential to affect its safety and soundness. The supervisor uses its analysis to determine follow-up work required, if any*".
Description and findings EC4	According to the annual report, CBSM uses a variety of tools and a risk-based methodology to perform the planned supervisory inspections. The listed tools include: a) analysis of corporate governance, including risk management and internal control systems;

	b) financial statements; c) business model and information on board members. Now, the legal framework does not show the needs of stress test for financial intermediaries. The only stress tests required are those on liquidity risk.
EC5	"*The supervisor, in conjunction with other relevant authorities, seeks to identify, assess and mitigate any emerging risks across banks and to the banking system as a whole, potentially including conducting supervisory stress tests (on individual banks or system-wide). The supervisor communicates its findings as appropriate to either banks or the industry and requires banks to take action to mitigate any particular vulnerabilities that have the potential to affect the stability of the banking system, where appropriate. The supervisor uses its analysis to determine follow-up work required, if any*".
Description and findings EC5	During its daily activities, the supervisor seeks to identify all potential emerging risks and vulnerabilities across banks and the banking system. CBSM has performed some systemic stress tests to evaluate the adequacy level of the liquidity within the banking system. The cooperation with FIA is crucial in avoiding vulnerabilities related to financial abuses that could negatively affect the system
EC6	"*The supervisor evaluates the work of the bank's internal audit function, and determines whether, and to what extent, it may rely on the internal auditors' work to identify areas of potential risk*".
Description and findings EC6	The head of Internal auditing within a bank structure is required to inform CBSM periodically on significant findings arising during its ongoing activity. To assess internal audit, the CBSM examines the internal audit Regulations within the bank and uses the on-site inspection program.
EC7	"*The supervisor maintains sufficiently frequent contacts as appropriate with the bank's Board, non-executive Board members and senior and middle management (including heads of individual business units and control functions) to develop an understanding of and assess matters such as strategy, group structure, corporate governance, performance, capital adequacy, liquidity, asset quality, risk management systems and internal controls. Where necessary, the supervisor challenges the bank's Board and senior management on the assumptions made in setting strategies and business models*".
Description and findings EC7	There is some valuable evidence suggesting that CBSM maintains frequent contacts with bank's members in order to better understand and assess the elements that comprise sound and prudent supervisory practices. CBSM is continuously committed to on-site and off-site inspections that provide for adequate contact with executive and non-executive members of various authorized entities.
EC8	"*The supervisor communicates to the bank the findings of its on-site and off-site supervisory analyses in a timely manner by means of written reports or through discussions or meetings with the bank's management. The supervisor meets with the bank's senior management and the Board to discuss the results of supervisory examinations and the external audits, as appropriate. The supervisor also meets separately with the bank's independent Board members, as necessary*".

Description and findings EC8	Art. VIII.III.2 of Regulation 2007-07 states that CBSM communicates the findings of its supervisory analysis to the bank by means of written reports; meetings with the bank's management are not excluded.
EC9	"*The supervisor undertakes appropriate and timely follow-up to check that banks have addressed supervisory concerns or implemented requirements communicated to them. This includes early escalation to the appropriate level of the supervisory authority and to the bank's Board if action points are not addressed in an adequate or timely manner*".
Description and findings EC9	As stated in art. VIII.III.2, banks are obliged to communicate to the CBSM within a fixed period of time how the supervisory concerns have been addressed. If necessary, the CBSM undertakes follow-up inspections to evaluate the correct implementation of requirements. Art. VIII.III.1 provides for the existence of a special cycle of on-site inspections that are precisely related to follow-up, in order to check that banks have addressed supervisory concerns.
EC10	"*The supervisor requires banks to notify it in advance of any substantive changes in their activities, structure and overall condition, or as soon as they become aware of any material adverse developments, including breach of legal or prudential requirements*".
Description and findings EC10	Banks are required to notify CBSM as soon as they become aware of any substantive changes in their activities, structure and overall conditions that could compromise the fulfillment of supervisory requirements. The board of statutory auditors of each bank is required, as stated in art. VII.IX.9 of Regulation 2007-07, to inform immediately and without any hesitation the CBSM on any condition that could compromise the banking activity, including breach of legal or prudential requirements.
EC11	"*The supervisor may make use of independent third parties, such as auditors, provided there is a clear and detailed mandate for the work. However, the supervisor cannot outsource its prudential responsibilities to third parties. When using third parties, the supervisor assesses whether the output can be relied upon to the degree intended and takes into consideration the biases that may influence third parties*".
Description and findings EC11	The CBSM requires that it gets informed by auditors of all information and facts that have arisen during the auditing activity and that could (possibly) compromise the continuity of the banking activity or the auditor's opinion on the financial statements. Art. VII.IX.10 of Regulation 2007-07 provides for such a requirement.
EC12	"*The supervisor has an adequate information system which facilitates the processing, monitoring and analysis of prudential information. The system aids the identification of areas requiring follow-up action*".
Description and findings EC12	In the CBSM's 2013 annual Report, there is evidence that a project to develop an information system to facilitate the processing, monitoring and analysis of prudential information had been commenced. All the information gathered via supervisory reporting is a valuable asset that helps the CBSM to perform off-site inspections and identify areas of potential follow-up actions.
Additional Criteria	"*The supervisor has a framework for periodic independent review, for example, by an internal audit function or third party assessor, of the adequacy and effectiveness of the range of its available supervisory tools and their use, and makes changes as appropriate*".

Descriptions and findings of AC1	The board of statutory auditors is the body within the CBSM that could assess the adequacy and effectiveness of the range of CBSM's available supervisory tools.
Assessment of Principle 9	*Largely compliant*
Principle 10	**Supervisory reporting.** "*The supervisor collects, reviews and analyses prudential reports and statistical returns from banks on both a solo and a consolidated basis, and independently verifies these reports through either on-site examinations or use of external experts*".
EC1	"*The supervisor has the power to require banks to submit information, on both a solo and a consolidated basis, on their financial condition, performance, and risks, on demand and at regular intervals. These reports provide information such as on- and off-balance sheet assets and liabilities, profit and loss, capital adequacy, liquidity, large exposures, risk concentrations (including by economic sector, geography and currency), asset quality, loan loss provisioning, related party transactions, interest rate risk, and market risk*".
Description and findings EC1	The supervisor has the power to require banks to periodically submit information, as stated in art. 41. Art. VIII.II.1 of Regulation 2007-07 imposes the requirement of periodical reporting to the CBSM. In the Circular 2012-03 and its further amendments, banks are required to provide information on capital adequacy, on and off-balance sheet assets and liabilities, profit and loss, liquidity, large exposures, asset quality etc. According to art. 58 of Law no. 165, the CBSM is empowered to request information on a consolidated concern from different entities that are part of a banking group.
EC2	"*The supervisor provides reporting Instructions that clearly describe the accounting standards to be used in preparing supervisory reports. Such standards are based on accounting principles and rules that are widely accepted internationally*".
Description and findings EC2	Regulation 2008-02 and its latest amendments give Instructions that clearly describe the accounting standards. Such standards are compliant with international standards as they prepare the banking system for a full migration to International Financial Reporting Standards.
EC3	"*The supervisor requires banks to have sound governance structures and control processes for methodologies that produce valuations. The measurement of fair values maximizes the use of relevant and reliable inputs and are consistently applied for risk management and reporting purposes. The valuation framework and control procedures are subject to adequate independent validation and verification, either internally or by an external expert. The supervisor assesses whether the valuation used for regulatory purposes is reliable and prudent. Where the supervisor determines that valuations are not sufficiently prudent, the supervisor requires the bank to make adjustments to its reporting for capital adequacy or regulatory reporting purposes*".
Description and findings EC3	The Regulation 2012-03 requires banks to report on securities and other financial instruments giving clear Instructions on how to perform the fair value calculation.
EC4	"*The supervisor collects and analyses information from banks at a frequency commensurate with the nature of the information requested, and the risk profile and systemic importance of the bank*".

Description and findings EC4	The Regulation 2012-03 gives Instruction to banks on how to compile reports. The frequency of reports is consistent with the nature of the information requested.
EC5	"*In order to make meaningful comparisons between banks and banking groups, the supervisor collects data from all banks and all relevant entities covered by consolidated supervision on a comparable basis and related to the same dates (stock data) and periods (flow data)*".
Description and findings EC5	The process of data reporting is well formalized. The information gathered as stock or flow data from various entities enables the performance of comparisons between data coming from different banks.
EC6	"*The supervisor has the power to request and receive any relevant information from banks, as well as any entities in the wider group, irrespective of their activities where the supervisor believes that it is material to the condition of the bank or banking group, or to the assessment of the risks of the bank or banking group or is needed to support resolution planning. This includes internal management information*".
Description and findings EC6	Art. 41 and art. 42 of Law no. 165 detail the powers of the supervisor on data gathering. The supervisor has the power to request any information considered to be relevant for its supervisory activity from the bank and various external parties involved in the banking activities, such as independent auditors.
EC7	"*The supervisor has the power to access all bank records for the furtherance of supervisory work. The supervisor also has similar access to the bank's Board, management and staff, when required".*
Description and findings EC7	Art. 42 of Law no. 165 explains the above-mentioned power of the supervisor in a comprehensive way.
EC8	"*The supervisor has a means of enforcing compliance with the requirement that the information be submitted on a timely and accurate basis. The supervisor determines the appropriate level of the bank's senior management is responsible for the accuracy of supervisory returns, imposes sanctions for misreporting and persistent errors, and requires that inaccurate information be amended*".
Description and findings EC8	The supervisor has all means of enforcing compliance and the accurateness and immediacy of information. In the event of false information or misreporting, sanctions may be imposed. According to art. 140 anybody involved in the banking activity and reporting false information or omitting facts is subject to punishment.
EC9	"*The supervisor utilizes policies and procedures to determine the validity and integrity of supervisory information. This includes a program for the periodic verification of supervisory returns by means either of the supervisor's own staff or of external experts*".
Description and findings EC9	The information transmitted to the supervisor should follow reporting templates and Regulation 2012-03 specifies the rules to follow in order to pass on information. The supervisor can verify the validity of information by mean of independent auditors or other experts.
EC10	"*The supervisor clearly defines and documents the roles and responsibilities of external experts, including the scope of the work, when they are appointed to conduct supervisory tasks. The supervisor assesses the suitability of experts for the designated task(s) and the quality of the work and takes into consideration conflicts of interest that could influence the*

	output/recommendations by external experts. External experts may be utilized for routine validation or to examine specific aspects of banks' operations".
Description and findings EC10	Art. 42 of Law no. 165 allows the CBSM to insist on external auditors but specific Regulations do not yet exist on this topic.
EC11	"*The supervisor requires that external experts bring to its attention promptly any material shortcomings identified during the course of any work undertaken by them for supervisory purposes*".
Description and findings EC11	Art. 41 (4) of Law no. 165 imposes on external experts the duty to promptly communicate to CBSM any material shortcomings identified during the course of any work undertaken by them.
EC12	"*The supervisor has a process in place to review periodically the information collected to determine that it satisfies a supervisory need*".
Description and findings EC12	The CBSM checks, both manually and using automated methods, for internal inconsistencies in reports. External auditors are expected to check accounts. On-site inspections are intended to verify information.
Assessment of Principle 10	*Compliant*
Principle 11	**Corrective and sanctioning powers of supervisors.** "*The supervisor acts at an early stage to address unsafe and unsound practices or activities that could pose risks to banks or to the banking system. The supervisor has at its disposal an adequate range of supervisory tools to bring about timely corrective actions. This includes the ability to revoke the banking license or to recommend its revocation*".
EC1	"*The supervisor raises supervisory concerns with the bank's management or, where appropriate, the bank's Board, at an early stage, and requires that these concerns be addressed in a timely manner. Where the supervisor requires the bank to take significant corrective actions, these are addressed in a written document to the bank's Board. The supervisor requires the bank to submit regular written progress reports and checks that corrective actions are completed satisfactorily. The supervisor follows through conclusively and in a timely manner on matters that are identified*".
Description and findings EC1	Art. 46 empowers the CBSM to rely on banks' management and banks' boards to implement and perform supervisory tasks. Banks' management and staff are required during supervisory concerns and inspections to supply all the necessary material in a timely manner. The corrective actions, as stated in Principle 20, when required, are addressed in writing to the bank's board.
EC2	"*The supervisor has available an appropriate range of supervisory tools for use when, in the supervisor's judgment, a bank is not complying with Laws, Regulations or supervisory actions, is engaged in unsafe or unsound practices or in activities that could pose risks to the bank or the banking system, or when the interests of depositors are otherwise threatened*".
Description and findings EC2	Art. 44 entitles the CBSM to act in the event a bank is not complying with laws not only in terms of capital adequacy, but also in relation to risk management, shareholdings and participation, and corporate adequacy. The CBSM has a series of tools at its disposal to address situations of non-compliance. The range of regulatory tools that the CBSM can use to address the issues varies from drawing breaches to the board of directors' attention, to convening meeting with banking authorities. Specific measures or penalties may be established, or even revocations.

EC3	"*The supervisor has the power to act where a bank falls below established regulatory threshold requirements, including prescribed regulatory ratios or measurements. The supervisor also has the power to intervene at an early stage to require a bank to take action to prevent it from reaching its regulatory threshold requirements. The supervisor has a range of options to address such scenarios*".
Description and findings EC3	CBSM has the power to act if a bank falls below established regulatory requirements or to intervene at an early stage. The actions undertaken could be various and similar to those described in EC4.
EC4	"*The supervisor has available a broad range of possible measures to address, at an early stage, such scenarios as described in EC2 above. These measures include the ability to require a bank to take timely corrective action or to impose sanctions expeditiously. In practice, the range of measures is applied in accordance with the gravity of a situation. The supervisor provides clear prudential objectives or sets out the actions to be taken, which may include restricting the current activities of the bank, imposing more stringent prudential limits and requirements, withholding approval of new activities or acquisitions, restricting or suspending payments to shareholders or share repurchases, restricting asset transfers, barring individuals from the banking sector, replacing or restricting the powers of managers, Board members or controlling owners, facilitating a takeover by or merger with a healthier institution, providing for the interim management of the bank, and revoking or recommending the revocation of the banking license*".
Description and findings EC4	As already stated in EC2, the CBSM has a range of regulatory tools. In case a bank opts for an extraordinary operation (e.g. spin-offs, acquisition, etc.), Art. 52 requires the permission of CBSM. Arts. 78, 84 and 85 provide powers to take extraordinary measures to address troubled banks (suspension of the bank's administrative bodies, extraordinary administration and compulsory administrative winding-up). This can happen for a number of reasons, including the loss of capital or liquidity. Arts. 85–96 provides for the compulsory winding up of a bank. Except where the extraordinary administration procedure is involved, the removal of officers is a matter for the board of directors. Under art. 15, the CBSM can remove officers who do not meet good repute requirements only if the board does not take action. It should be clarified that what has been stated in art. 46 that CBSM can convene a meeting of the bank's authorities and can propose (but not require) actions to be taken does not interfere with the removal of officers. Art. IV.IV.3 states that the CBSM can require the dismissal of members of the company in the event no action is taken by the board. Art. 44 provides for specific measures which could include restricting the activities of the bank. Art. IV.IV.7 provides for the CBSM to require the temporary suspension of corporate officers. Art. VII.IX.6 requires a bank to obtain CBSM approval for certain acquisitions. Under art. 4 of Law no. 165 CBSM can define and approve any additional activities performed by banks.
EC5	"*The supervisor applies sanctions not only to the bank but, when and if necessary, also to management and/or the Board, or individuals thereof*".
Description and findings EC5	Art. 31 of Law no. 96 describes all the kind of administrative sanctions applied to whoever violates laws and Regulations of CBSM, including management, board members or even individuals. Art. 140 of Law no. 165 states that anybody in charge of functions, such as board members, attorneys,

	auditors, commissioners or liquidators at authorized entities is punishable if they violate supervisory rules or prevents them taking place.
EC6	"*The supervisor has the power to take corrective actions, including ring-fencing of the bank from the actions of parent companies, subsidiaries, parallel-owned banking structures and other related entities in matters that could impair the safety and soundness of the bank or the banking system*".
Description and findings EC6	Ring-fencing has gained particular prominence in recent years as a strategy for limiting the systemic risk of large financial conglomerates and CBSM is vested with the power to take corrective and supervisory measures for the sake of a sound and prudent banking environment in relation to financial conglomerates and single entities within the conglomerate. The reference for such power is art. 60 of Law no. 165.
EC7	"*The supervisor cooperates and collaborates with relevant authorities in deciding when and how to effect the orderly resolution of a problem bank situation (which could include closure, or assisting in restructuring, or merger with a stronger institution)*".
Description and findings EC7	In situations of particular irregularity, the CBSM cooperates with relevant authorities and communicates its findings thereto. Art. 35 of the Statute empowers CBSM to take such action.
Additional Criteria 1	"*Laws or Regulations guard against the supervisor unduly delaying appropriate corrective actions*".
Description and findings AC1	Art. 38 guards against the undue delay of the corrective actions taken by the supervisor.
Additional Criteria 2	"*When taking formal corrective action in relation to a bank, the supervisor informs the supervisor of non-bank related financial entities of its actions and, where appropriate, coordinates its actions with them*".
Description and findings AC2	According to art. 2 of the Delegated Decree no. 192 of 2010, all the actions taken by the supervisor in relation to banks are published in the Official Bulletin, including issuance of Regulations, supervisory provisions and information on corrective actions undertaken.
Assessment of Principle 11	*Largely compliant*
Principle 12	**Consolidated supervision.** "*An essential element of banking supervision is that the supervisor supervises the banking group on a consolidated basis, adequately monitoring and, as appropriate, applying prudential standards to all aspects of the business conducted by the banking group worldwide*".
EC1	"*The supervisor understands the overall structure of the banking group and is familiar with all the material activities (including non-banking activities) conducted by entities in the wider group, both domestic and cross-border. The supervisor understands and assesses how group-wide risks are managed and takes action when risks arising from the banking group and other entities in the wider group, in particular contagion and reputation risks, may jeopardize the safety and soundness of the bank and the banking system*".
Description and findings EC1	Part II of Law no. 165 regulates the powers of CBSM to engage in consolidated supervision. It is the supervisory authority itself that determines the group definition necessary for the activities of consolidated supervision. Arts. 57-59 give CBSM the powers to assess banking groups and take actions when appropriate. The supervisor has also issued a Regulation on the register of the parent companies, Regulation 2014-03.

EC2	"*The supervisor imposes prudential standards and collects and analyses financial and other information on a consolidated basis for the banking group, covering areas such as capital adequacy, liquidity, large exposures, exposures to related parties, lending limits and group structure*".
Description and findings EC2	Pending the consolidated supervision Regulation, Circular 2012-03 requires banks to consider their consolidated structure in calculating the adjusted regulatory capital and areas covering large exposure.
EC3	"*The supervisor reviews whether the oversight of a bank's foreign operations by management (of the parent bank or head office and, where relevant, the holding company) is adequate having regard to their risk profile and systemic importance and there is no hindrance in host countries for the parent bank to have access to all the material information from their foreign branches and subsidiaries. The supervisor also determines that banks' policies and processes require the local management of any cross-border operations to have the necessary expertise to manage those operations in a safe and sound manner and in compliance with supervisory and regulatory requirements. The home supervisor takes into account the effectiveness of supervision conducted in the host countries in which its banks have material operations*".
Description and findings EC3	Part IX of Regulation 2007-07 requires a group leader to manage the overall risks of the group. Art. IX.IV.1 lists all rules that should be followed to exchange information with a foreign group leader in order to allow an appropriate control of risks within the group structure.
EC4	"*The home supervisor visits the foreign offices periodically, the location and frequency being determined by the risk profile and systemic importance of the foreign operation. The supervisor meets the host supervisors during these visits. The supervisor has a policy for assessing whether it needs to conduct on-site examinations of a bank's foreign operations, or require additional reporting, and has the power and resources to take those steps as and when appropriate*".
Description and findings EC4	Detailed requirements on consolidated supervision including supervision of foreign offices have yet to be introduced. However, Law no. 165 enables CBSM to conduct on-site examinations or request additional reporting on a banking group and its operations.
EC5	"*The supervisor reviews the main activities of parent companies, and of companies affiliated with the parent companies, that have a material impact on the safety and soundness of the bank and the banking group, and takes appropriate supervisory action*".
Description and findings EC5	Detailed requirements on consolidated supervision including supervision of foreign offices have yet to be introduced.
EC6	"*The supervisor limits the range of activities the consolidated group may conduct and the locations in which activities can be conducted (including the closing of foreign offices) if it determines that:* *(a) the safety and soundness of the bank and banking group is compromised because the activities expose the bank or banking group to excessive risk and/or are not properly managed;* *(b) the supervision by other supervisors is not adequate relative to the risks the activities present; and/or* *(c) the exercise of effective supervision on a consolidated basis is hindered*".
Description and findings EC6	Detailed requirements on consolidated supervision including supervision of foreign offices have yet to be introduced.

EC7	"*In addition to supervising on a consolidated basis, the responsible supervisor supervises individual banks in the group. The responsible supervisor supervises each bank on a stand-alone basis and understands its relationship with other members of the group*".
Description and findings EC7	The supervisor, according to art. 58 and 59, can both request information from or perform on-site inspections of individual banks in the banking group. The supervisor is also empowered to perform on-site inspections of those components of the group that do not necessarily perform activities subject to prior authorization by the supervisor.
Additional Criteria 1	"*For countries which allow corporate ownership of banks, the supervisor has the power to establish and enforce fit and proper standards for owners and senior management of parent companies*".
Description and findings AC1	Detailed requirements on consolidated supervision including supervision of foreign offices have yet to be introduced.
Assessment of Principle 12	*Materially non compliant.*
Principle 13	**Home-host relationships.** "*Home and host supervisors of cross-border banking groups share information and cooperate for effective supervision of the group and group entities, and effective handling of crisis situations. Supervisors require the local operations of foreign banks to be conducted to the same standards as those required of domestic banks*".
EC1	"*The home supervisor establishes bank-specific supervisory colleges for banking groups with material cross-border operations to enhance its effective oversight, taking into account the risk profile and systemic importance of the banking group and the corresponding needs of its supervisors. In its broadest sense, the host supervisor who has a relevant subsidiary or a significant branch in its jurisdiction and who, therefore, has a shared interest in the effective supervisory oversight of the banking group, is included in the college. The structure of the college reflects the nature of the banking group and the needs of its supervisors*".
Description and findings EC1	Law no. 165 allows for information exchange between two supervisory institutions. CBSM considers cooperation between institutions a very important tool to increase the level of knowledge on supervisory topics and develop a more stable supervisory system. In the case of CBSM, international cooperation is possible with international institutions like the IMF and the World Bank or by stipulating agreements with central banks of other countries. Currently, there are agreements on cooperation issues with the central banks of Croatia and Lichtenstein. These arrangements are due to the relevance of the foreign countries in the Sammarinese banking system. It is in these countries that Sammarinese banks have offices and/or financial relations. The process of concluding a MoU with Bank of Italy is ongoing.
EC2	"*Home and host supervisors share appropriate information on a timely basis in line with their respective roles and responsibilities, both bilaterally and through colleges. This includes information both on the material risks and risk management practices of the banking group and on the supervisors' assessments of the safety and soundness of the relevant entity under their jurisdiction. Informal or formal arrangements (such as memoranda of understanding) are in place to enable the exchange of confidential information*".

Description and findings EC2	Art. 103 allows CBSM to exchange information with equivalent supervisors in other countries. Such an exchange is subject to a series of constraints and arrangements between the two countries. The information is exclusively related to supervisory topics. Formal arrangements like "*memoranda of understanding are in place to enable the exchange of confidential information*". As stated in EC1, the arrangements are in place with Croatia and Lichtenstein. (International Monetary Fund, 2010)
EC3	"*Home and host supervisors coordinate and plan supervisory activities or undertake collaborative work if common areas of interest are identified in order to improve the effectiveness and efficiency of supervision of cross-border banking groups*".
Description and findings EC3	Art. 103 (2.b) states that the collaboration between home and host supervisor takes place if there is the purpose to contribute to increasing the efficiency of the supervisory system. Regulation 2007-07 requires agreements between two supervisory authorities in the event of common areas of interest, such as branches of foreign banks in San Marino (Art. III.IV.1).
EC4	"*The home supervisor develops an agreed communication strategy with the relevant host supervisors. The scope and nature of the strategy reflects the risk profile and systemic importance of the cross-border operations of the bank or banking group. Home and host supervisors also agree on the communication of views and outcomes of joint activities and college meetings to banks, where appropriate, to ensure consistency of messages on group-wide issues*".
Description and findings EC4	The relevant host supervisors are Croatia and Lichtenstein. With Croatia, there is an agreement with the national bank. With Lichtenstein, the agreement is with the financial market authority. Each of the agreements reflects the various strategies and risk profiles in place. Regarding cooperation with Italy, there is an agreement in place with CONSOB (the Italian Commission for Listed Companies and the Stock Exchange) and an ongoing process to conclude a MoU with the Bank of Italy.
EC5	"*Where appropriate, due to the bank's risk profile and systemic importance, the home supervisor, working with its national resolution authorities, develops a framework for cross-border crisis cooperation and coordination among the relevant home and host authorities. The relevant authorities share information on crisis preparations from an early stage in a way that does not materially compromise the prospect of a successful resolution and subject to the application of rules on confidentiality*".
Description and findings EC5	Art. 97 claims that in the event a foreign bank has been subject to license limitations by the foreign supervisor, the branches present in San Marino could be subject to the rules of winding up resolution applied to the Sammarinese banks. Art. 103 allows the San Marino Central Bank to send data if the counterparty allows the same, even though some improvements are required in assuring collaboration between authorities. The MoU with Croatia states that the authorities share information on events that have the potential to endanger the stability and soundness of financial intermediaries with cross-border subsidiaries. The same MoU also states that the authorities should discuss any significant information that could impact the stability of financial institutions and should promptly share any information related to any imminent crisis of a supervised institution that has cross-border establishments.

EC6	"*Where appropriate, due to the bank's risk profile and systemic importance, the home supervisor, working with its national resolution authorities and relevant host authorities, develops a group resolution plan. The relevant authorities share any information necessary for the development and maintenance of a credible resolution plan. Supervisors also alert and consult relevant authorities and supervisors (both home and host) promptly when taking any recovery and resolution measures*".
Description and findings EC6	See description of EC5. Currently, there are no rules for group resolution plans, but in the event of resolution of foreign banks, the same rules could be applied to its branches in San Marino.
EC7	"*The host supervisor's national Laws or Regulations require that the cross-border operations of foreign banks are subject to prudential, inspection and regulatory reporting requirements similar to those for domestic banks*".
Description and findings EC7	Art. 103 states that co-operation activities with foreign supervisors are permissible in the event of reciprocity between the supervising rules. Art. III.IV.1 of Regulation 2007-07 requires an adequate supervisory Regulation in order to allow cross-border operations of a foreign bank, meaning that "*the cross-border operations of foreign banks should be subject to prudential, inspection and regulatory reporting requirements similar to those for domestic banks*". (Bank for International Settlements, 2012)
EC8	"*The home supervisor is given on-site access to local offices and subsidiaries of a banking group in order to facilitate their assessment of the group's safety and soundness and compliance with customer due diligence requirements. The home supervisor informs host supervisors of intended visits to local offices and subsidiaries of banking groups*".
Description and findings EC8	There are no barriers to on–site access by the home supervisor to local offices and subsidiaries of a banking group. In the MoU with Croatia, the on-site examination of cross-border establishment is allowed for both home and host supervisor. The home supervisor has to comply with a series of rules for on-site inspection and has to inform the host supervisor at least two months in advance of the fact that it intends to perform an on-site examination.
EC9	"*The host supervisor supervises booking offices in a manner consistent with internationally agreed standards. The supervisor does not permit shell banks or the continued operation of shell banks*".
Description and findings EC9	According to art. 28 of Law no. 92 any relationship with shell banks is prohibited.
EC10	"*A supervisor that takes consequential action on the basis of information received from another supervisor consults with that supervisor, to the extent possible, before taking such action*".
Description and findings EC10	No such provision exists. However, information on such actions should be generally shared in the spirit of cooperation, particularly if such actions are taken as a consequence of previous consultation between the two supervising authorities.
Assessment of Principle 13	*Largely Compliant*
PRUDENTIAL REGULATIONS AND REQUIREMENTS	
Principle 14	**Corporate governance.** "*The supervisor determines that banks and banking groups have robust corporate governance policies and processes covering, for example, strategic direction, group and organizational structure, control environment, responsibilities of the banks' Boards and senior management,*

	and compensation. These policies and processes are commensurate with the risk profile and systemic importance of the bank".
EC1	"*Laws, Regulations or the supervisor establish the responsibilities of a bank's Board and senior management with respect to corporate governance to ensure there is effective control over the bank's entire business. The supervisor provides guidance to banks and banking groups on expectations for sound corporate governance*".
Description and findings EC1	Articles VII.IX.4 and 5 of Regulation 2007-07 set out the responsibilities of the board of directors and the Head of the executive structure. The board is responsible for strategic business decisions, must allocate functions clearly and appropriately, and evaluate the effectiveness of the organizational structure and controls. The Head of the executive structure must also ensure effective management of corporate operations and verify the effectiveness of the internal controls and define responsibility for functions.
EC2	"*The supervisor regularly assesses a bank's corporate governance policies and practices, and their implementation, and determines that the bank has robust corporate governance policies and processes commensurate with its risk profile and systemic importance. The supervisor requires banks and banking groups to correct deficiencies in a timely manner*".
Description and findings EC2	Regulation 2007-07, part VII Title IX determines the governance practices and structures within a bank. The bank's board should resolve all deficiencies or shortcomings in a timely and immediate manner. CBSM is entitled to assess the adequacy of the organizational structure of the banks. The first assessment takes place during the authorization stage. Under art. 42 of Law no. 165, CBSM can assess whether the bank faces risks that stem from inadequate governance arrangements because of the power to interview every member of the bank during on-site supervision, from board members to employees.
EC3	"*The supervisor determines that governance structures and processes for nominating and appointing Board members are appropriate for the bank and across the banking group. Board membership includes experienced non-executive members, where appropriate. Commensurate with the risk profile and systemic importance, Board structures include audit, risk oversight and remuneration committees with experienced non-executive members*".
Description and findings EC3	The appointment of board members complies with the rules defined in company law. In art. VII.IX.2 of Regulation 2007-07, the supervisor establishes that each bank is required to have three distinct bodies, which include internal audit, risk management and compliance oversight. The duties and functions pursued by each body should be commensurate with the bank complexity profile. The members, including non-executive ones, should have appropriate skills.
EC4	"*Board members are suitably qualified, effective and exercise their "duty of care" and -duty of loyalty*."
Description and findings EC4	Members of each of the separate areas: internal audit, risk management and compliance, should be suitably qualified as specified in art. VII.IX.2. The board members' requirements of honour, professionalism and independence are a prerequisite of banking activity itself. Part IV, Title II of Regulation 2007-07 establishes all the requirements that board members should fulfil. Regulation 1/2019 states the "fit & proper" requirements for board directors.

EC5	"*The supervisor determines that the bank's Board approves and oversees implementation of the bank's strategic direction, risk appetite and strategy, and related policies, establishes and communicates corporate culture and values (e.g., through a code of conduct), and establishes conflicts of interest policies and a strong control environment*".
Description and findings EC5	In Regulation 2007-07, CBSM establishes all the duties and responsibilities of the bank's board. The board should determine and oversee the implementation of bank's strategic direction, risk appetite and strategy. The board is also responsible for defining an organizational architecture and distributing roles in an appropriate way, so that potential conflicts of interest can be avoided. Furthermore, the board should collaborate with management to promote corporate culture and values and build a strong control environment. The board of directors should assure a healthy operating environment within the bank by paying attention to the identification and evaluation of risks and their efficient management.
EC6	"*The supervisor determines that the bank's Board, except where required otherwise by Laws or Regulations, has established fit and proper standards in selecting senior management, maintains plans for succession, and actively and critically oversees senior management's execution of Board strategies, including monitoring senior management's performance against standards established for them*".
Description and findings EC6	Art. IV.III.2 of Regulation 2007-07 establishes that the bank's board is required to evaluate the presence of the necessary qualifications for executive officers, including in the event of their reappointment. It is the board's duty to verify the continuity of such honour and independence requirements of executive members. The responsibilities of the bank's board include the duty to periodically assess and oversee the performance of members engaged in the banking organizational system. In order to fulfil their duty, board members and executive officers should "*be knowledgeable in the field of financial markets and have previously held important managing positions*". The Head of the executive structure is responsible for implementing all board strategies and choices on organizational issues. The supervisory Instructions relating to organizational adequacy highlights as important the activation of information flows from the Head of the executive structure to all executive members, specifying their roles and duties, and to the board's members, in order to promptly report on all banking facts. (International Monetary Fund, 2010)
EC7	"*The supervisor determines that the bank's Board actively oversees the design and operation of the bank's and banking group's compensation system, and that it has appropriate incentives, which are aligned with prudent risk taking. The compensation system, and related performance standards, are consistent with long-term objectives and financial soundness of the bank and is rectified if there are deficiencies*".
Description and findings EC7	The statute of a financial intermediary would need to state the compensation scheme. According to art. 47 of Law no. 165, CBSM's authorization is required for every statute amendment, even amendments related to the remuneration system. There are no other explicit prerequisites referring to rules carried out by CBSM that define the responsibilities of each bank's board to oversee the design and operation of the bank's and banking group's remuneration system.

EC8	"*The supervisor determines that the bank's Board and senior management know and understand the bank's and banking group's operational structure and its risks, including those arising from the use of structures that impede transparency (e.g., special-purpose or related structures). The supervisor determines that risks are effectively managed and mitigated, where appropriate*".
Description and findings EC8	Art. VII.IX.1 of Regulation 2007-07 states the need to have an operational structure enclosing a series of requirements in terms of resources and processes that allow sound and stable governance of the institution. Both the board and senior management should understand the risks arising within the bank operational structure and actively react to mitigate such risks.
EC9	"*The supervisor has the power to require changes in the composition of the bank's Board if it believes that any individuals are not fulfilling their duties related to the satisfaction of these criteria*".
Description and findings EC9	If anybody, even board members, contravene laws and Regulations, or safety and soundness principles, CBSM can impose criminal and administrative sanctions under art. 140 and art. 141 of Law no. 165.
Assessment of Principle 14	*Compliant*
Additional Criteria 1	"*Laws, Regulations or the supervisor require banks to notify the supervisor as soon as they become aware of any material and bona fide information that may negatively affect the fitness and propriety of a bank's Board member or a member of the senior management*".
Description and findings AC1	The board of statutory auditors and the independent auditors are explicitly required to promptly inform "*the supervisor as soon as they become aware of any material that could negatively affect the fitness and propriety of a bank's board*". (International Monetary Fund, 2010)
Principle 15	**Risk management process.** "*The supervisor determines that banks have a comprehensive risk management process (including effective Board and senior management oversight) to identify, measure, evaluate, monitor, report and control or mitigate all material risks on a timely basis and to assess the adequacy of their capital and liquidity in relation to their risk profile and market and macroeconomic conditions. This extends to development and review of contingency arrangements (including robust and credible recovery plans where warranted) that take into account the specific circumstances of the bank. The risk management process is commensurate with the risk profile and systemic importance of the bank*".
EC1	"*The supervisor determines that banks have appropriate risk management strategies that have been approved by the banks' Boards and that the Boards set a suitable risk appetite to define the level of risk the banks are willing to assume or tolerate. The supervisor also determines that the Board ensures that:* *(a) a sound risk management culture is established throughout the bank;* *(b) policies and processes are developed for risk-taking, that are consistent with the risk management strategy and the established risk appetite;* *(c) uncertainties attached to risk measurement are recognized;* *(d) appropriate limits are established that are consistent with the bank's risk appetite, risk profile and capital strength, and that are understood by, and regularly communicated to, relevant staff; and*

	(e) senior management take the steps necessary to monitor and control all material risks consistent with the approved strategies and risk appetite".
Description and findings EC1	Art. VII.IX.2 requires a bank to have three distinct organizational structures, including the risk management structure. The board of directors defines the bank's strategies and is responsible for the risk policies and procedures. Consistent with the established risk orientation, the board needs to determine and monitor the organizational structure. Each emerging uncertainty or shortcoming should be promptly captured by the internal information system and appropriate measures brought into action each time any anomaly arises. The first responsibility required of the Head of Executive Structure is to guarantee the adequacy of risk management and define appropriate measures of control.
EC2	"*The supervisor requires banks to have comprehensive risk management policies and processes to identify, measure, evaluate, monitor, report and control or mitigate all material risks. The supervisor determines that these processes are adequate:* *(a) to provide a comprehensive "bank-wide" view of risk across all material risk types;* *(b) for the risk profile and systemic importance of the bank; and* *(c) to assess risks arising from the macroeconomic environment affecting the markets in which the bank operates and to incorporate such assessments into the bank's risk management process*".
Description and findings EC2	The supervisor requires banks to have an independent risk control function adequate to the systemic importance and size of the bank. The Head of Executive Structure is responsible for managing risks and defining the methods of control. Art. VII.IX.14 governs the requirements for the bank's information system, which should be adequate to the complexity of the bank's operating context and able to record correctly and on time all emerging data, including from a risk management perspective, at any date or time required.
EC3	"*The supervisor determines that risk management strategies, policies, processes and limits are:* *(a) properly documented;* *(b) regularly reviewed and appropriately adjusted to reflect changing risk appetites, risk profiles and market and macroeconomic conditions; and* *(c) communicated within the bank.* *The supervisor determines that exceptions to established policies, processes and limits receive the prompt attention of, and authorization by, the appropriate level of management and the bank's Board where necessary*".
Description and findings EC3	There is no direct requirement that the board of directors communicate risk management policies to the staff, although this is implicit and such communication should obviously take place when directors distribute roles and responsibilities. The responsibilities of the Head of Executive Structure includes the duty to find appropriate channels to communicate to all the staff their roles, while assuring information flows to the board to promptly report on relevant issues. This could be another time where risk management

	strategies and policies are communicated within the bank. When referring to credit risk in art. VII.IX.11 or strategic risks in art. VII.IX.12, banks are required to formalize the entire process in dedicated Regulations. Therefore, even if there is no direct requirement that the risk management strategy and risk assessment be documented, the information included in the above-mentioned articles makes such requirement implicit.
EC4	"*The supervisor determines that the bank's Board and senior management obtain sufficient information on, and understand the nature and level of risk being taken by the bank and how this risk relates to adequate levels of capital and liquidity. The supervisor also determines that the Board and senior management regularly review and understand the implications and limitations (including the risk measurement uncertainties) of the risk management information that they receive*".
Description and findings EC4	The board of directors ensures the implementation of an effective information system able to capture any relevant information regarding the general situation of the institution. The board needs to periodically evaluate the efficiency and adequacy of the internal control and take appropriate measures where required. Art. VII.IX.4 requires banks to have an information system that is able to immediately capture all necessary information. The duties of the bank's board include the implementation of a system that acquires information on the general situation of the institution (Art. VII.IX.4 of Regulation 2007-07). The board also has to periodically evaluate the efficiency and adequacy of the internal control and take appropriate measures where required.
EC5	"*The supervisor determines that banks have an appropriate internal process for assessing their overall capital and liquidity adequacy in relation to their risk appetite and risk profile. The supervisor reviews and evaluates banks' internal capital and liquidity adequacy assessments and strategies*".
Description and findings EC5	It is explicitly required that the relevant structures within the bank properly monitor their overall capital adequacy in relation to their risk profile. CBSM has the power to perform on- site inspections and evaluate the bank's overall situation.
EC6	"*Where banks use models to measure components of risk, the supervisor determines that:* *(a) banks comply with supervisory standards on their use;* *(b) the banks' Boards and senior management understand the limitations and uncertainties relating to the output of the models and the risk inherent in their use; and* *(c) banks perform regular and independent validation and testing of the models.* *The supervisor assesses whether the model outputs appear reasonable as a reflection of the risks assumed*".
Description and findings EC6	CBSM can assess the effectiveness of risk management and the tools used for this purpose by performing on-site inspections.
EC7	"*The supervisor determines that banks have information systems that are adequate (both under normal circumstances and in periods of stress) for measuring, assessing and reporting on the size, composition and quality of exposures on a bank-wide basis across all risk types, products and counterparties. The supervisor also determines that these reports reflect the bank's risk profile and capital and liquidity needs, and are provided on a*

	timely basis to the bank's Board and senior management in a form suitable for their use".
Description and findings EC7	Title II of part VIII set out all obligations related to periodic communication by banks. The requirements to have an adequate information system to allow communication with the supervisor as well as between structures within the bank is available in Regulation 2007-07.
EC8	"*The supervisor determines that banks have adequate policies and processes to ensure that the banks' Boards and senior management understand the risks inherent in new products, material modifications to existing products, and major management initiatives (such as changes in systems, processes, business model and major acquisitions). The supervisor determines that the Boards and senior management are able to monitor and manage these risks on an ongoing basis. The supervisor also determines that the bank's policies and processes require the undertaking of any major activities of this nature to be approved by their Board or a specific committee of the Board*".
Description and findings EC8	There are no explicit requirements related to the comprehension of risks related to new products and processes. Banks are required to consider the evolution of the overall system and context and its possible impacts on banking activities. It could be considered an implicit requirement to consider risks related to new products and processes.
EC9	"*The supervisor determines that banks have risk management functions covering all material risks with sufficient resources, independence, authority and access to the banks' Boards to perform their duties effectively. The supervisor determines that their duties are clearly segregated from risk-taking functions in the bank and that they report on risk exposures directly to the Board and senior management. The supervisor also determines that the risk management function is subject to regular review by the internal audit function*".
Description and findings EC9	Some of the main pillars of the organizational adequacy stated by CBSM are the availability of skilled resources both in qualitative and quantitative terms and the correct allocation of roles and responsibilities, which avoids any conflicts and provides a clear segregation of duties. According to VII.IX.8, the risk management function is subject to regular review by the internal audit function.
EC10	"*The supervisor requires larger and more complex banks to have a dedicated risk management unit overseen by a Chief Risk Officer (CRO) or equivalent function. If the CRO of a bank is removed from his/her position for any reason, this should be done with the prior approval of the Board and generally should be disclosed publicly. The bank should also discuss the reasons for such removal with its supervisor*".
Description and findings EC10	There are no such specific requirements in the Regulation. However, the fact that the organizational structure of each bank should be commensurate with its complexity and the presence of a risk management unit implicitly imposes such requirement.
EC11	"*The supervisor issues standards related to, in particular, credit risk, market risk, liquidity risk, interest rate risk in the banking book and operational risk*".
Description and findings EC11	To date, the supervisor has issued standards related to credit risk, liquidity risk and operational risk. Standards relating to market risk and interest rate risk are yet to be issued.

EC12	"*The supervisor requires banks to have appropriate contingency arrangements, as an integral part of their risk management process, to address risks that may materialize and actions to be taken in stress conditions (including those that will pose a serious risk to their viability). If warranted by its risk profile and systemic importance, the contingency arrangements include robust and credible recovery plans that take into account the specific circumstances of the bank. The supervisor, working with resolution authorities as appropriate, assesses the adequacy of banks' contingency arrangements in the light of their risk profile and systemic importance (including reviewing any recovery plans) and their likely feasibility during periods of stress. The supervisor seeks improvements if deficiencies are identified*".
Description and findings EC12	Both the board and the Head of Executive Structure are required to adopt improvements as soon as deficiencies in the ordinary banking activities and structures are identified. No specific requirements exist in relation to contingency arrangements, even though banks need to continuously evaluate risk by taking into consideration the dynamics of the general financial environment. Experience has proved that in the event of deficiencies, the supervisor, banks and relevant institutions collaborate to build a banking resolution framework and operate with sound and safe practices.
EC13	"*The supervisor requires banks to have forward-looking stress testing programs, commensurate with their risk profile and systemic importance, as an integral part of their risk management process. The supervisor regularly assesses a bank's stress testing program and determines that it captures material sources of risk and adopts plausible adverse scenarios. The supervisor also determines that the bank integrates the results into its decision-making, risk management processes (including contingency arrangements) and the assessment of its capital and liquidity levels. Where appropriate, the scope of the supervisor's assessment includes the extent to which the stress testing program:* *(a) promotes risk identification and control, on a bank-wide basis* *(b) adopts suitably rigorous assumptions and seeks to address feedback effects and system-wide interaction between risks;* *(c) benefits from the active involvement of the Board and senior management; and* *(d) is appropriately documented and regularly maintained and updated.* *The supervisor requires corrective action if material deficiencies are identified in a bank's stress testing program or if the results of stress tests are not adequately taken into consideration in the bank's decision-making process*".
Description and findings EC13	There are no requirements for stress testing, except for liquidity in exceptional conditions.
EC14	"*The supervisor assesses whether banks appropriately account for risks (including liquidity impacts) in their internal pricing, performance measurement and new product approval process for all significant business activities*".
Description and findings EC14	Again, on-site inspections are the most powerful tool that can provide CBSM with evidence on the level of banks' risk management. Information gathered via supervisory reporting is another important tool to perform checks of individual banks.

Additional Criteria 1	"*The supervisor requires banks to have appropriate policies and processes for assessing other material risks not directly addressed in the subsequent Principles, such as reputational and strategic risks*".
Description and findings AC1	The risk manager should control and monitor the level of operational and strategic risks. Of the operational risks, a specific risk to take into consideration is the reputational risk.
Assessment of Principle 15	*Largely Compliant*
Principle 16	**Capital adequacy**. "*The supervisor sets prudent and appropriate capital adequacy requirements for banks that reflect the risks undertaken by, and presented by, a bank in the context of the markets and macroeconomic conditions in which it operates. The supervisor defines the components of capital, bearing in mind their ability to absorb losses. At least for internationally active banks, capital requirements are not less than the applicable Basel standards*".
EC1	"*Laws, Regulations or the supervisor require banks to calculate and consistently observe prescribed capital requirements, including thresholds by reference to which a bank might be subject to supervisory action. Laws, Regulations or the supervisor define the qualifying components of capital, ensuring that emphasis is given to those elements of capital permanently available to absorb losses on a going concern basis*".
Description and findings EC1	Art. 45 of Law no. 165 establishes the compliance with prescribed capital calculations as a prudential requirement. Title II of Part VII of Regulation 2007-07 sets out all the necessary definitions on the subject of prudential capital.
EC2	"*At least for internationally active banks, the definition of capital, the risk coverage, the method of calculation, and thresholds for the prescribed requirements are not lower than those established in the applicable Basel standards*".
Description and findings EC2	The total capital of banks should be no less than the maximum value between: – the initial capital required for authorization purposes (€13 million); – the sum of capital coverage for default risk (11% of RWA) and capital coverage for operational risk. Defined in this way, the total capital threshold is even greater than the one established by Basel III. CBSM has defined Tier 1 as well as Tier 2. Tier 1 is composed of core capital that consists of paid-up shares, reserves and the fund for general financial risk. Tier 2 capital consists of revaluation reserves, hybrid and subordinated instruments.
EC3	"*The supervisor has the power to impose a specific capital charge and/or limits on all material risk exposures, if warranted, including in respect of risks that the supervisor considers not to have been adequately transferred or mitigated through transactions (e.g., securitization transactions) entered into by the bank. Both on-balance sheet and off-balance sheet risks are included in the calculation of prescribed capital requirements*".
Description and findings EC3	The risk weightings of different assets are established in Regulation 2007-07 (Article VII.III.4), as are the credit conversion factors for off-balance sheet items (Article VII.III.8). The risk weightings are broadly consistent with the requirements of the original Basel capital accord. They are designed to meet the risk profile of individual banks.

EC4	"*The prescribed capital requirements reflect the risk profile and systemic importance of banks in the context of the markets and macroeconomic conditions in which they operate and constrain the build-up of leverage in banks and the banking sector. Laws and Regulations in a particular jurisdiction may set higher overall capital adequacy standards than the applicable Basel requirements*".
Description and findings EC4	Art. 44 of Law no. 165 allows CBSM to set different capital adequacy standards for individual institutions if the situation requires higher capital adequacy standards.
EC5	"*The use of banks' internal assessments of risk as inputs to the calculation of regulatory capital is approved by the supervisor. If the supervisor approves such use:* *(a) such assessments adhere to rigorous qualifying standards;* *(b) any cessation of such use, or any material modification of the bank's processes and models for producing such internal assessments, are subject to the approval of the supervisor;* *(c) the supervisor has the capacity to evaluate a bank's internal assessment process in order to determine that the relevant qualifying standards are met and that the bank's internal assessments can be relied upon as a reasonable reflection of the risks undertaken;* *(d) the supervisor has the power to impose conditions on its approvals if the supervisor considers it prudent to do so; and* *(e) if a bank does not continue to meet the qualifying standards or the conditions imposed by the supervisor on an ongoing basis, the supervisor has the power to revoke its approval*".
Description and findings EC5	Internal risk valuation's procedures are still not specifically regulated by the San Marino Central Bank.
EC6	"*The supervisor has the power to require banks to adopt a forward-looking approach to capital management (including the conduct of appropriate stress testing). The supervisor has the power to require banks:* *(a) to set capital levels and manage available capital in anticipation of possible events or changes in market conditions that could have an adverse effect; and* *(b) to have in place feasible contingency arrangements to maintain or strengthen capital positions in times of stress, as appropriate in the light of the risk profile and systemic importance of the bank*".
Description and findings EC6	No such requirements are contained in the present Regulations.
Additional Criteria 1	"*For non-internationally active banks, capital requirements, including the definition of capital, the risk coverage, the method of calculation, the scope of application and the capital required, are broadly consistent with the principles of the applicable Basel standards relevant to internationally active banks*".
Description and findings of AC1	CBSM does not distinguish between internationally and non-internationally active banks. Therefore, all banks, unless approved otherwise by CBSM itself, should comply with the same requirements established by the current Regulation.
Additional Criteria 2	"*The supervisor requires adequate distribution of capital within different entities of a banking group according to the allocation of risks*".

Description and findings of AC2	The San Marino Central Bank considers the capital of both the parent company and subsidiaries in order to compute the final regulatory capital. Further details should be developed in order to become compliant with international standards.
Assessment of Principle 16	*Largely Compliant*
Principle 17	**Credit risk.** "*The supervisor determines that banks have an adequate credit risk management process that takes into account their risk appetite, risk profile and market and macroeconomic conditions. This includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate credit risk (including counterparty credit risk) on a timely basis. The full credit lifecycle is covered including credit underwriting, credit evaluation, and the ongoing management of the bank's loan and investment portfolios*".
EC1	"*Laws, Regulations or the supervisor require banks to have appropriate credit risk management processes that provide a comprehensive bank-wide view of credit risk exposures. The supervisor determines that the processes are consistent with the risk appetite, risk profile, systemic importance and capital strength of the bank, take into account market and macroeconomic conditions and result in prudent standards of credit underwriting, evaluation, administration and monitoring*".
Description and findings EC1	All banks are required to have an appropriate credit risk management process. Art. VII.IX.11 covers credit risk. The full credit lifecycle is subject to periodical review and verification. In art. VII.IX.1 the supervisor establishes that the correctness of the internal control system should be commensurate with the activity and complexity of the bank, implicitly requiring that all processes and strategies implemented by such system should follow the principle of proportionality.
EC2	"*The supervisor determines that a bank's Board approves, and regularly reviews, the credit risk management strategy and significant policies and processes for assuming, identifying, measuring, evaluating, monitoring, reporting and controlling or mitigating credit risk (including counterparty credit risk and associated potential future exposure) and that these are consistent with the risk appetite set by the Board. The supervisor also determines that senior management implements the credit risk strategy approved by the Board and develops the aforementioned policies and processes*".
Description and findings EC2	Articles VII.IX.4 gives the board of directors the responsibility for approving risk management policies. The supervisor also establishes in art. VII.IX.5 that the Head of Executive Structure should implement the risk strategies approved by the board and ensure an adequate process. The credit process, as stated in art. VII.IX.11, is periodically reviewed by the bank.
EC3	"*The supervisor requires, and regularly determines, that such policies and processes establish an appropriate and properly controlled credit risk environment, including:* *(a) a well documented and effectively implemented strategy and sound policies and processes for assuming credit risk, without undue reliance on external credit assessments;* *(b) well defined criteria and policies and processes for approving new exposures (including prudent underwriting standards) as well as for*

	renewing and refinancing existing exposures, and identifying the appropriate approval authority for the size and complexity of the exposures; *(c) effective credit administration policies and processes, including continued analysis of a borrower's ability and willingness to repay under the terms of the debt (including review of the performance of underlying assets in the case of securitization exposures); monitoring of documentation, legal covenants, contractual requirements, collateral and other forms of credit risk mitigation; and an appropriate asset grading or classification system;* *(d) effective information systems for accurate and timely identification, aggregation and reporting of credit risk exposures to the bank's Board and senior management on an ongoing basis*; *(e) prudent and appropriate credit limits, consistent with the bank's risk appetite, risk profile and capital strength, which are understood by, and regularly communicated to, relevant staff;* *(f) exception tracking and reporting processes that ensure prompt action at the appropriate level of the bank's senior management or Board where necessary; and* *(g) effective controls (including in respect of the quality, reliability and relevancy of data and in respect of validation procedures) around the use of models to identify and measure credit risk and set limits*".
Description and findings EC3	Art. VII.IX.11 requires the credit assessment policy to be properly documented. During the underwriting phase, all necessary documentation should be acquired to properly evaluate the credit risk considering the overall financial profile of the customer and consequently request suitable remuneration for the risk-taking. Effective credit administration policies and processes are required and should be properly explained in the internal Regulation of banks. The activities related to the ongoing monitoring of credit lines should be handled by a specific, competent structure. Point 8 of art. VII.IX.11 requires the existence of an effective information system for the accurate and timely identification of problems within the credit lines. There is no specific requirement for criteria for decisions on assuming credit risk, on refinancing existing exposures, or for determining the level of authority for any particular credit exposure.
EC4	"*The supervisor determines that banks have policies and processes to monitor the total indebtedness of entities to which they extend credit and any risk factors that may result in default including significant unhedged foreign exchange risk*".
Description and findings EC4	Beginning with the underwriting phase, banks are required to gather information on the risk profile of the entities to which they extend credit.
EC5	"*The supervisor requires that banks make credit decisions free of conflicts of interest and on an arm's length basis*".
Description and findings EC5	Article VII.V.1 of Regulation 2007-07 requires transactions with related parties to be undertaken at market terms and the remaining articles of the Title of this Regulation cover this matter in more detail, including a requirement for regular reporting.
EC6	"*The supervisor requires that the credit policy prescribes that major credit risk exposures exceeding a certain amount or percentage of the bank's capital are to be decided by the bank's Board or senior management. The same applies to credit risk exposures that are especially risky or otherwise not in line with the mainstream of the bank's activities*".

Description and findings EC6	The credit supply process is subject to mandate by the bank's board. It is not specifically required but it is implicit, as the bank's board has a key role in periodically determining the estimated realizable value of non-performing loans. This entails a constant update of the board on the situation of the "questionable" credit lines, requires the involvement of the bank's board when it comes to decisions on major credit risk exposure prescriptions.
EC7	"*The supervisor has full access to information in the credit and investment portfolios and to the bank officers involved in assuming, managing, controlling and reporting on credit risk*".
Description and findings EC7	Art. 41 and 42 of Law no. 165 give the supervisor full power to access information regarding the banking institutions.
EC8	"*The supervisor requires banks to include their credit risk exposures into their stress testing programs for risk management purposes*".
Description and findings EC8	The supervisor has not yet introduced any requirements on stress testing and as a consequence credit risk exposures are not required to be subject to stress testing programs.
Assessment of Principle 17	*Compliant*
Principle 18	**Problem assets, provisions and reserves.** "*The supervisor determines that banks have adequate policies and processes for the early identification and management of problem assets, and the maintenance of adequate provisions and reserves*".
Description and findings	All considerations made in the IMF 2010 report are still valid.
Assessment of Principle 18	*Compliant*
Principle 19	**Concentration risk and large exposure limits**. "*The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate concentrations of risk on a timely basis. Supervisors set prudential limits to restrict bank exposures to single counterparties or groups of connected counterparties*".
EC1	"*Laws, Regulations or the supervisor require banks to have policies and processes that provide a comprehensive bank-wide view of significant sources of concentration risk. Exposures arising from off-balance sheet as well as on-balance sheet items and from contingent liabilities are captured*".
Descriptions and findings EC1	Title IV of Part VII governs the concentration risk and large exposure limits. Art. I.I.2 provides a definition of particularly high risk exposures, a concept strictly connected with the concentration of risks on large exposures. This definition states that the exposure comprising to great risk includes off-balance as well as on-balance sheet items.
EC2	"*The supervisor determines that a bank's information systems identify and aggregate on a timely basis, and facilitate active management of, exposures creating risk concentrations and large exposure to single counterparties or groups of connected counterparties*".
Descriptions and findings EC2	Regarding large exposures to single counterparties or groups of connected counterparties and any concentrations of large exposures, Circular 2012-03 establishes that banks should identify and gather information on a timely basis and report to the supervisor. As soon as the Regulation on consolidated supervision will be introduced, there should be improvements in the requirements related to large exposure to groups or connected counterparties.

EC3	"*The supervisor determines that a bank's risk management policies and processes establish thresholds for acceptable concentrations of risk, reflecting the bank's risk appetite, risk profile and capital strength, which are understood by, and regularly communicated to, relevant staff. The supervisor also determines that the bank's policies and processes require all material concentrations to be regularly reviewed and reported to the bank's board*".
Descriptions and findings EC3	The only provision related to limits on concentration risk is currently the one provided in art. VII.IX.12. To date, SM has not issued rules for the process of reviewing and reporting concentration risk to the bank's board, except in the context of large exposures.
EC4	"*The supervisor regularly obtains information that enables concentrations within a bank's portfolio, including sectorial, geographical and currency exposures, to be reviewed*".
Descriptions and findings EC4	Art. VII.IX.12 (2.b) establishes that banks have to impose limits on their portfolio of activities considering also sectorial, geographical and currency exposures. There is no explicit reference indicating that the supervisor regularly obtains information on sectorial, geographical and currency exposures. However, the supervisor has all means to obtain and request such information and evidence suggests that such information is implicit in the weighting factors used for the large exposures.
EC5	"*In respect of credit exposure to single counterparties or groups of connected counterparties, Laws or Regulations explicitly define, or the supervisor has the power to define, a "group of connected counterparties" to reflect actual risk exposure. The supervisor may exercise discretion in applying this definition on a case-by-case basis*".
Description and findings EC5	Art. I.I.2 (38) provides a definition of connected counterparties. The definition gives broad criteria for defining connected counterparties and CBSM states that it can exercise discretion in applying the definition on a case-by-case basis.
EC6	"*Laws, Regulations or the supervisor set prudent and appropriate requirements to control and constrain large credit exposures to a single counterparty or a group of connected counterparties. "Exposures" for this purpose include all claims and transactions (including those giving rise to counterparty credit risk exposure), on-balance sheet as well as off-balance sheet. The supervisor determines that senior management monitors these limits and that they are not exceeded on a solo or consolidated basis*".
Description and findings EC6	The limits to large exposures are prudent and in line with the international requirements of BCP. The considerations made in 2010 by the IMF are still valid with respect to this essential criteria: "*The weight of each exposure shall be adjusted by the same factors that are used to calculate the risk weighted solvency ratio. This calculation excludes certain securities held for trading purposes and also excludes exposures to other San Marino banks (or banks in foreign countries where there is a supervisory agreement in place).*" (IMF, 2010)
EC7	"*The supervisor requires banks to include the impact of significant risk concentrations into their stress testing programs for risk management purposes*".
Description and findings EC7	No stress-testing requirements are currently in place.

Additional Criteria 1	"*In respect of credit exposure to single counterparties or groups of connected counterparties,* *banks are required to adhere to the following:* *(a) 10 percent or more of a bank's capital is defined as a large exposure; and* *(b) 25 percent of a bank's capital is the limit for an individual large exposure to a private sector non-bank counterparty or a group of connected counterparties. Minor deviations from these limits may be acceptable, especially if explicitly temporary or related to very small or specialized banks*".
Description and findings AC1	CBSM currently adheres to both limits. Art. VII.IV.1 sets the limit from which an exposure is considered a large exposure at 10% of a bank's capital. Art. VII.IV.2 sets the upper threshold allowed for an individual or group large exposure at 25% of a bank's capital.
Assessment of Principle 19	*Largely compliant*
Principle 20	**Transactions with related parties.** "*In order to prevent abuses arising in transactions with related parties and to address the risk of conflict of interest, the supervisor requires banks to enter into any transactions with related parties on an arm's length basis; to monitor these transactions; to take appropriate steps to control or mitigate the risks; and to write off exposures to related parties in accordance with standard policies and processes*".
Description and findings	The considerations made in the IMF 2010 report are still valid and due to the fact that the transitional period is over the principle is to be defined as largely compliant.
Assessment of Principle 20	*Largely Compliant*
Principle 21	**Country and transfer risks.** "*The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate country risk and transfer risk in their international lending and investment activities on a timely basis*".
Description and findings	All the considerations made in the IMF 2010 Report are still valid.
Assessment of Principle 21	*Materially non compliant*
Principle 22	**Market risk.** "*The supervisor determines that banks have an adequate market risk management process that takes into account their risk appetite, risk profile, and market and macroeconomic conditions and the risk of a significant deterioration in market liquidity. This includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate market risks on a timely basis*".
Description and findings	All the considerations made in the IMF 2010 Report are still valid.
Assessment of Principle 22	*Materially non compliant*
Principle 23	**Interest rate risk in the banking book.** "*The supervisor determines that banks have adequate systems to identify, measure, evaluate, monitor, report and control or mitigate interest rate risk in the banking book on a timely basis. These systems take into account the bank's risk appetite, risk profile and market and macroeconomic conditions*".

Description and findings	All the considerations made in the IMF 2010 Report are valid.
Assessment of Principle 23	*Materially non compliant*
Principle 24	**Liquidity risk.** "*The supervisor sets prudent and appropriate liquidity requirements (which can include either quantitative or qualitative requirements or both) for banks that reflect the liquidity needs of the bank. The supervisor determines that banks have a strategy that enables prudent management of liquidity risk and compliance with liquidity requirements. The strategy takes into account the bank's risk profile as well as market and macroeconomic conditions and includes prudent policies and processes, consistent with the bank's risk appetite, to identify, measure, evaluate, monitor, report and control or mitigate liquidity risk over an appropriate set of time horizons. At least for internationally active banks, liquidity requirements are not lower than the applicable Basel standards*".
EC1	"*Laws, Regulations or the supervisor require banks to consistently observe prescribed liquidity requirements including thresholds by reference to which a bank is subject to supervisory action. At least for internationally active banks, the prescribed requirements are not lower than, and the supervisor uses a range of liquidity monitoring tools no less extensive than, those prescribed in the applicable Basel standards*".
Description and findings EC1	In art. VII.IX.12, the CBSM requires banks to possess all necessary tools and processes to regularly record, measure, monitor and manage liquidity risk. CBSM's annual reports include further indications stating that banks are constantly required to identify, measure, evaluate, monitor, report and control liquidity risk.
EC2	"*The prescribed liquidity requirements reflect the liquidity risk profile of banks (including on and off-balance sheet risks) in the context of the markets and macroeconomic conditions in which they operate*".
Description and findings EC2	The principle of proportionality is one of the core principles on which the CBSM supervisory Regulation is based (art. 38 of Law no. 165). Accordingly, requirements on each risk have to reflect the bank's risk profile and operating dimensions.
EC3	"*The supervisor determines that banks have a robust liquidity management framework that requires the banks to maintain sufficient liquidity to withstand a range of stress events, and includes appropriate policies and processes for managing liquidity risk that have been approved by the banks' Boards. The supervisor also determines that these policies and processes provide a comprehensive bank-wide view of liquidity risk and are consistent with the banks' risk profile and systemic importance*".
Description and findings EC3	CBSM has a deep concern about liquidity risk and since 2009, when a first circular was issued setting out guidelines on liquidity, it has constantly continued monitoring the liquidity management framework. CBSM has more than once urged banks to withstand a range of stress events. Each bank should have appropriate policies and process to provide an all-inclusive view of the banks' liquidity risk profile.
EC4	"*The supervisor determines that banks' liquidity strategy, policies and processes establish an appropriate and properly controlled liquidity risk environment including:*

	(a) clear articulation of an overall liquidity risk appetite that is appropriate for the banks' business and their role in the financial system and that is approved by the banks' Boards; *(b) sound day-to-day, and where appropriate intraday, liquidity risk management practices;* *(c) effective information systems to enable active identification, aggregation, monitoring and control of liquidity risk exposures and funding needs (including active management of collateral positions) bank-wide;* *(d) adequate oversight by the banks' Boards in ensuring that management effectively implements policies and processes for the management of liquidity risk in a manner consistent with the banks' liquidity risk appetite; and* *(e) regular review by the banks' Boards (at least annually) and appropriate adjustment of the banks' strategy, policies and processes for the management of liquidity risk in the light of the banks' changing risk profile and external developments in the markets and macroeconomic conditions in which they operate*".
Description and findings EC4	CBSM requires that banks' liquidity processes include the following (25): – identification of the key risk drivers that influence the liquidity position of each bank; – clear articulation of an overall liquidity risk rules and the level of appetite that is used as an indicator of a state of stress. In this case a report on the matter should be promptly addressed to the bank's directors; – definition of adequate methodologies for measuring liquidity risk in order to perform an effective monitoring; – regular review of audit activities on the processes connected with the management of liquidity risk.
EC5	"*The supervisor requires banks to establish, and regularly review, funding strategies and policies and processes for the ongoing measurement and monitoring of funding requirements and the effective management of funding risk. The policies and processes include consideration of how other risks (e.g., credit, market, operational and reputation risk) may impact the bank's overall liquidity strategy, and include:* *(a) an analysis of funding requirements under alternative scenarios;* *(b) the maintenance of a cushion of high quality, unencumbered, liquid assets that can be used, without impediment, to obtain funding in times of stress;* *(c) diversification in the sources (including counterparties, instruments, currencies and markets) and tenor of funding, and regular review of concentration limits;* *(d) regular efforts to establish and maintain relationships with liability holders; and* *(e) regular assessment of the capacity to sell assets*".
Description and findings EC5	In the 2014 annual Report, liquidity risk is defined as being composed of two main forms: funding risk and liquidity risk. The funding risk, or the risk that the bank is not able to cope with expected or unexpected outflows, is an important element for the CBSM. In order to enhance the liquidity risk framework, the CBSM has required banks to pay particular attention to outflows and consequently the funding risk. Regarding the liquidity outflows various stress tests have been required of banks, hypothesizing critical levels of outflows.

EC6	"*The supervisor determines that banks have robust liquidity contingency funding plans to handle liquidity problems. The supervisor determines that the bank's contingency funding plan is formally articulated, adequately documented and sets out the bank's strategy for addressing liquidity shortfalls in a range of stress environments without placing reliance on lender of last resort support. The supervisor also determines that the bank's contingency funding plan establishes clear lines of responsibility, includes clear communication plans (including communication with the supervisor) and is regularly tested and updated to ensure it is operationally robust. The supervisor assesses whether, in the light of the bank's risk profile and systemic importance, the bank's contingency funding plan is feasible and requires the bank to address any deficiencies*".
Description and findings EC6	All actions undertaken by CBSM to control and monitor liquidity problems of the banking system have the goal of determining and allowing banks to have robust liquidity contingency plans. The stress tests performed on liquidity risk were aimed at identifying possible liquidity shortfalls and planning feasible plans to manage any deficiencies.
EC7	"*The supervisor requires banks to include a variety of short-term and protracted bank-specific and market-wide liquidity stress scenarios (individually and in combination), using conservative and regularly reviewed assumptions, into their stress testing programs for risk management purposes. The supervisor determines that the results of the stress tests are used by the bank to adjust its liquidity risk management strategies, policies and positions and to develop effective contingency funding plans*".
Description and findings EC7	The requirements for stress scenarios are not publicly available but the information gathered from the annual reports and on-site meetings performed by IMF previously confirm that CBSM has satisfactory requirements regarding the liquidity stress test (International Monetary Fund, FSAP, 2010).
EC8	"*The supervisor identifies those banks carrying out significant foreign currency liquidity transformation. Where a bank's foreign currency business is significant, or the bank has significant exposure in a given currency, the supervisor requires the bank to undertake separate analysis of its strategy and monitor its liquidity needs separately for each such significant currency. This includes the use of stress testing to determine the appropriateness of mismatches in that currency and, where appropriate, the setting and regular review of limits on the size of its cash flow mismatches for foreign currencies in aggregate and for each significant currency individually. In such cases, the supervisor also monitors the bank's liquidity needs in each significant currency, and evaluates the bank's ability to transfer liquidity from one currency to another across jurisdictions and legal entities*".
Description and findings EC8	Art. VII.IX.12 requires that banks portfolios have proper limits of assets held in foreign currencies. Furthermore, the need to analyze and monitor exposures in foreign currencies is implicit in all requirements related to liquidity management. Circular 2012-01, which requires banks to regularly transmit data on payment systems, explicitly requires the currency used to be defined.
Additional Criteria 1	"*The supervisor determines that banks' levels of encumbered balance-sheet assets are managed within acceptable limits to mitigate the risks posed by excessive levels of encumbrance in terms of the impact on the banks' cost of funding and the implications for the sustainability of their long-term liquidity position. The supervisor requires banks to commit to adequate disclosure and to set appropriate limits to mitigate identified risks*".

Description and findings AC1	Banks are required to be able to readily assess the amount and quality of the liquid assets available, particularly in times of stress. In all the annual reports, the supervisor gives evidence of the liquid assets available in the system.
Assessment of Principle 24	*Compliant*
Principle 25	**Operational risk**. "*The supervisor determines that banks have an adequate operational risk management framework that takes into account their risk appetite, risk profile and market and macroeconomic conditions. This includes prudent policies and processes to identify, assess, evaluate, monitor, report and control or mitigate operational risk on a timely basis*".
EC1	"*Law, Regulations or the supervisor require banks to have appropriate operational risk management strategies, policies and processes to identify, assess, evaluate, monitor, report and control or mitigate operational risk. The supervisor determines that the bank's strategy, policies and processes are consistent with the bank's risk profile, systemic importance, risk appetite and capital strength, take into account market and macroeconomic conditions, and address all major aspects of operational risk prevalent in the businesses of the bank on a bank-wide basis (including periods when operational risk could increase)*".
Description and findings EC1	Art. VII.IX.13 of Regulation 2007-07 requires banks to have proper processes and policies to effectively manage operational risk and avoid any potential conflicts between individual and bank interests.
EC2	"*The supervisor requires banks' strategies, policies and processes for the management of operational risk (including the banks' risk appetite for operational risk) to be approved and regularly reviewed by the banks' Boards. The supervisor also requires that the Board oversees management in ensuring that these policies and processes are implemented effectively*".
Description and findings EC2	The board should approve risk strategies, policies and processes in general for all risks. It is implicitly required that the board approves strategies, procedures, policies and limits regarding operational risk.
EC3	"*The supervisor determines that the approved strategy and significant policies and processes for the management of operational risk are implemented effectively by management and fully integrated into the bank's overall risk management process*".
Description and findings EC3	The Head of Executive Structure of the bank is responsible for ensuring the effective management of a bank's operational aspects and of the various risks to which the bank is directly exposed. Operational risk should be considered implicitly included.
EC4	"*The supervisor reviews the quality and comprehensiveness of the bank's disaster recovery and business continuity plans to assess their feasibility in scenarios of severe business disruption which might plausibly affect the bank. In so doing, the supervisor determines that the bank is able to operate as a going concern and minimize losses, including those that may arise from disturbances to payment and settlement systems, in the event of severe business disruption*".
Description and findings EC4	In setting out the minimum requirements for the business authorization of a bank, art. III.V.9 states that the existence of technological resources used for data conservation and elaboration, with special regard to disaster recovery plans, is a requirement for licensing. A similar concept is included in art. VII.IX.14 related to information systems.

EC5	"*The supervisor determines that banks have established appropriate information technology policies and processes to identify, assess, monitor and manage technology risks. The supervisor also determines that banks have appropriate and sound information technology infrastructure to meet their current and projected business requirements (under normal circumstances and in periods of stress), which ensures data and system integrity, security and availability and supports integrated and comprehensive risk management*".
Description and findings EC5	Art. VII.IX.14 deals with information technology systems and states that each bank should have systems commensurate with the complexity of the bank's operations, able to assess, identify and manage the information. The information technology should allow recoveries from disasters or shortfalls.
EC6	"*The supervisor determines that banks have appropriate and effective information systems to:* *(a) monitor operational risk;* *(b) compile and analyse operational risk data; and* *(c) facilitate appropriate reporting mechanisms at the banks' Boards, senior management and business line levels that support proactive management of operational risk*".
Description and findings EC6	Circular 2012-03 includes provisions requiring the compilation of information sheets with the values of the capital charges weighing on single banks. The reporting regards the capital charge on operational risk, or 15% of gross income. Regarding the reporting mechanisms to the banks' boards, senior management, etc., there is no explicit requirement but the bank is required to have effective information systems.
EC7	"*The supervisor requires that banks have appropriate reporting mechanisms to keep the supervisor apprised of developments affecting operational risk at banks in their jurisdictions*".
Description and findings EC7	The mechanism of transmitting the statistical data on capital charges to the authority is one of the indicators of reporting mechanisms to keep the authority informed on evolutions influencing operational risk.
EC8	"*The supervisor determines that banks have established appropriate policies and processes to assess, manage and monitor outsourced activities. The outsourcing risk management program covers:* *(a) conducting appropriate due diligence for selecting potential service providers;* *(b) structuring the outsourcing arrangement;* *(c) managing and monitoring the risks associated with the outsourcing arrangement;* *(d) ensuring an effective control environment; and* *(e) establishing viable contingency planning.* *Outsourcing policies and processes require the bank to have comprehensive contracts and/or service level agreements with a clear allocation of responsibilities between the outsourcing provider and the bank*".
Description and findings EC8	Art. III.III.8 illustrates the criteria that needs to be considered when presenting the activities program during the authorization phase, explicitly requiring the presentation of activities that are intended to be assigned to outsourcers. All information on activities to be outsourced should be properly documented and transmitted to CBSM. The board of directors is directly responsible for determining the activities to be outsourced and choosing the monitoring modalities for such activities. The internal audit function has the

	duty to control outsourced activities. Art. VII.IX.16 establishes any limits to the outsourced activities. Art. VII.IX.18 establishes all the necessary criteria for outsourcing activities, ensuring that clear guidelines are set on the topic. Art. VII.IX.19 sets the standards for communicating any outsourcing operation and the rules that have to be followed in the event the activity is not subject to authorization.
Additional Criteria 1	"*The supervisor regularly identifies any common points of exposure to operational risk or potential vulnerability (e.g., outsourcing of key operations by many banks to a common service provider or disruption to outsourcing providers of payment and settlement activities)*".
Description and findings AC1	The supervisor requires that the outsourcing activity does not compromise the ability of the bank to manage risks, in particular operational risk. As specified in art. 42, CBSM can extend inspection activities and assess the outsourcers.
Assessment of Principle 25	*Largely compliant*
Principle 26	**Internal control and audit**. "*The supervisor determines that banks have adequate internal control frameworks to establish and maintain a properly controlled operating environment for the conduct of their business taking into account their risk profile. These include clear arrangements for delegating authority and responsibility; separation of the functions that involve committing the bank, paying away its funds, and accounting for its assets and liabilities; reconciliation of these processes; safeguarding the bank's assets; and appropriate independent internal audit and compliance functions to test adherence to these controls as well as applicable Laws and Regulations*".
EC1	"*Laws, Regulations or the supervisor require banks to have internal control frameworks that are adequate to establish a properly controlled operating environment for the conduct of their business, taking into account their risk profile. These controls are the responsibility of the bank's Board and/or senior management and deal with organizational structure, accounting policies and processes, checks and balances, and the safeguarding of assets and investments (including measures for the prevention and early detection and reporting of misuse such as fraud, embezzlement, unauthorized trading and computer intrusion). More specifically, these controls address:* *(a) organizational structure: definitions of duties and responsibilities, including clear delegation of authority (e.g., clear loan approval limits), decision-making policies and processes, separation of critical functions (e.g., business origination, payments, reconciliation, risk management, accounting, audit and compliance);* *(b) accounting policies and processes: reconciliation of accounts, control lists, information for management;* *(c) checks and balances (or "four eyes principle"): segregation of duties, cross-checking, dual control of assets, double signatures; and* *(d) safeguarding assets and investments: including physical control and computer access*".
Description and findings EC1	Art. VII.IX.2 stresses the necessity of an effective system of internal control. Art. VII.IX.2 requires the demarcation of three independent functions within the bank, specifically requiring an internal audit function. In defining the responsibilities of the bank's board and/or senior management, it is required to periodically evaluate the efficiency and effectiveness of the internal control system by taking into consideration any trends in the

	operating size. The board has the duty to provide for implementation of any corrective measure in case of detection of any misuse, significant gaps or anomalies. The head of the executive structure is responsible to for overseeing the effective operation of the internal control system, distributing resources within the structure and assigning duties and responsibilities. Although general requirements are given for the proper demarcation of duties and responsibilities between operational and supervisory structures, a more detailed framework addressing all the issues related with the system of internal controls should be imposed in the supervising rules.
EC2	"*The supervisor determines that there is an appropriate balance in the skills and resources of the back office, control functions and operational management relative to the business origination units. The supervisor also determines that the staff of the back office and control functions have sufficient expertise and authority within the organization (and, where appropriate, in the case of control functions, sufficient access to the bank's Board) to be an effective check and balance to the business origination units*".
Description and findings EC2	Art. VII.IX.1 requires appropriate demarcation of activities between front and back office and it is CBSM's responsibility to evaluate whether the balance between the two is appropriate. The bank's professional staff is required to have competencies and appropriate skills in relation to the duties assigned.
EC3	"*The supervisor determines that banks have an adequately staffed, permanent and independent compliance function that assists senior management in managing effectively the compliance risks faced by the bank. The supervisor determines that staff within the compliance function are suitably trained, have relevant experience and have sufficient authority within the bank to perform their role effectively. The supervisor determines that the bank's Board exercises oversight of the management of the compliance function*".
Description and findings EC3	One of the separate functions defined in art. VII.IX.2 is precisely the compliance function. CBSM gives the opportunity to banks, if properly justified, to merge the functions of compliance officer and risk manager into one structure. Art. VII.IX.7 describes the compliance officer role. The compliance officer structure is subject to internal audit examinations.
EC4	"*The supervisor determines that banks have an independent, permanent and effective internal audit function charged with:* *(a) assessing whether existing policies, processes and internal controls (including risk management, compliance and corporate governance processes) are effective, appropriate and remain sufficient for the bank's business; and* *(b) ensuring that policies and processes are complied with*".
Description and findings EC4	The supervisor explicitly requires the existence of an internal audit function and art. VII.IX.6 describes the role and responsibilities of the internal audit function. The internal audit function assesses the effectiveness of existing processes and ensures that policies and processes are complied with.
EC5	"*The supervisor determines that the internal audit function:* *(a) has sufficient resources, and staff that are suitably trained and have relevant experience to understand and evaluate the business they are auditing;* *(b) has appropriate independence with reporting lines to the bank's Board or to an audit committee of the Board, and has status within the bank to ensure that senior management reacts to and acts upon its recommendations;*

	(c) is kept informed in a timely manner of any material changes made to the bank's risk management strategy, policies or processes; *(d) has full access to and communication with any member of staff as well as full access to records, files or data of the bank and its affiliates, whenever relevant to the performance of its duties;* *(e) employs a methodology that identifies the material risks run by the bank;* *(f) prepares an audit plan, which is reviewed regularly, based on its own risk assessment and allocates its resources accordingly; and* *(g) has the authority to assess any outsourced functions*".
Description and findings EC5	According to supervisory Instructions the internal audit function must be independent and must regularly report to the board of directors, board of statutory auditors and senior management. A copy of this periodical reporting has to be sent to CBSM. The internal audit activity could be extended to the highest levels of the banking organization, including the Head of Executive Structure. In particular the internal audit function should: – have sufficient resources and skilled staff; – have full access to the flow of information within the bank; – assess also the outsourced activities; – carry out periodic tests to check the operation of procedures and processes; – prepare and allocate resources in investigations based also on irregularities found.
Assessment of Principle 26	*Largely compliant*
Principle 27	**Financial reporting and external audit**. "*The supervisor determines that banks and banking groups maintain adequate and reliable records, prepare financial statements in accordance with accounting policies and practices that are widely accepted internationally and annually publish information that fairly reflects their financial condition and performance and bears an independent external auditor's opinion. The supervisor also determines that banks and parent companies of banking groups have adequate governance and oversight of the external audit function*".
EC1	"*The supervisor holds the bank's Board and management responsible for ensuring that financial statements are prepared in accordance with accounting policies and practices that are widely accepted internationally and that these are supported by record keeping systems in order to produce adequate and reliable data*".
Description and findings EC1	Art. 29 of Law no. 165 requires a bank to prepare financial statements that give a true and fair view of the financial position of a bank. The board is directly responsible for ensuring that financial statements are compliant with accounting policies and supported by effective record keeping systems.
EC2	"*The supervisor holds the bank's Board and management responsible for ensuring that the financial statements issued annually to the public bear an independent external auditor's opinion as a result of an audit conducted in accordance with internationally accepted auditing practices and standards*".
Description and findings EC2	Article VI.II.3 of Regulation 2007-07 requires that a bank must appoint an independent auditor to carry out account controls. Financial statements must bear a certificate from the independent auditor.

EC3	"*The supervisor determines that banks use valuation practices consistent with accounting standards widely accepted internationally. The supervisor also determines that the framework, structure and processes for fair value estimation are subject to independent verification and validation, and that banks document any significant differences between the valuations used for financial reporting purposes and for regulatory purposes*".
Description and findings EC3	Art. 30 of Law no. 165 requires the supervisor to set the accounting standards for banks. Based on the powers given by art. 39, CBSM has issued Regulation 2008-02, with the aim of determining the standards and valuation principles to be followed in drafting the financial statements. The Regulation was modified in February 2015. The accounting standards applied are specifically designed for Sammarinese banks and there is no explicit provision indicating that banks should adopt internationally accepted standards.
EC4	"*Laws or Regulations set, or the supervisor has the power to establish the scope of external audits of banks and the standards to be followed in performing such audits. These require the use of a risk and materiality based approach in planning and performing the external audit*".
Description and findings EC4	Art. 33 of Law no. 165 authorizes the supervisor to establish the scope and standards to be followed by independent auditors.
EC5	"*Supervisory guidelines or local auditing standards determine that audits cover areas such as the loan portfolio, loan loss provisions, non-performing assets, asset valuations, trading and other securities activities, derivatives, asset securitizations, consolidation of and other involvement with off-balance sheet vehicles and the adequacy of internal controls over financial reporting*".
Description and findings EC5	As specified in the IMF 2010 report, the CBSM has stated that independent auditors are required to verify the loan portfolio, loan reserves, NPLs, asset estimates, derivatives, securitizations, asset backed securities, and the suitability of internal monitoring on financial reporting. CBSM has reconfirmed the same requirements for the independent auditors.
EC6	"*The supervisor has the power to reject and rescind the appointment of an external auditor who is deemed to have inadequate expertise or independence, or is not subject to or does not adhere to established professional standards*".
Description and findings EC6	Art. 33 states that the CBSM may regulate the manner in which independent auditors can be rejected or rescinded. CBSM also established a series of independence and professional requirements necessary for the appointment of independent auditors.
EC7	"*The Law on Societies determines that banks rotate their external auditors from time to time*".
Description and findings EC7	The supervisor notes that company law establishes the requirements of the independent auditors. This law states that there should be a rotation process of the independent auditors. The re-election of the same auditor is allowed only after a rotation has taken place and another company in charge of the audit in the previous term.
EC8	"*The supervisor meets periodically with external audit firms to discuss issues of common interest relating to bank operations*".
Description and findings EC8	Art. 41 of Law no. 165 states that independent auditors are required to communicate without any hesitation any fact or act that could compromise the correctness of banking activity. The second paragraph enables CBSM to

	periodically require information and/or documents from the independent auditors.
EC9	"*The supervisor requires the external auditor, directly or through the bank, to report to the supervisor matters of material significance, for example failure to comply with the licensing criteria or breaches of banking or other Laws, significant deficiencies and control weaknesses in the bank's financial reporting process or other matters that they believe are likely to be of material significance to the functions of the supervisor. Laws or Regulations provide that auditors who make any such reports in good faith cannot be held liable for breach of a duty of confidentiality*".
Description and findings EC9	In addition, art. 41, art. VII.IX.10 of Regulation 2007-07 requires the independent auditor to promptly inform the supervisory authority on matters such as significant deficiencies or violations with respect to supervisory standards. Art. 41 (5) states that auditors who make these documents in good faith cannot be considered responsible for breach of duty of privacy.
Additional Criteria 1	"*The supervisor has the power to access independent auditors' working papers, where necessary*".
Description and findings AC1	The second paragraph of art. 41 grants the banking authority the power to request and access external auditors working papers.
Assessment of Principle 27	*Largely compliant*
Principle 28	**Disclosure and transparency.** "*The supervisor determines that banks and banking groups regularly publish information on a consolidated and, where appropriate, solo basis that is easily accessible and fairly reflects their financial condition, performance, risk exposures, risk management strategies and corporate governance policies and processes*".
EC1	"*Laws, Regulations or the supervisor require periodic public disclosures of information by banks on a consolidated and, where appropriate, solo basis that adequately reflect the bank's true financial condition and performance, and adhere to standards promoting comparability, relevance, reliability and timeliness of the information disclosed*".
Description and findings EC1	CBSM requires bank to fulfil periodic reporting requirements but there is no explicit requirement for the public disclosure of information.
EC2	"*The supervisor determines that the required disclosures include both qualitative and quantitative information on a bank's financial performance, financial position, risk management strategies and practices, risk exposures, aggregate exposures to related parties, transactions with related parties, accounting policies, and basic business, management, governance and remuneration. The scope and content of information provided and the level of disaggregation and detail is commensurate with the risk profile and systemic importance of the bank*".
Description and findings EC2	Art. 29 of Law no. 165 requires banks to prepare financial statements including both qualitative and quantitative information to give a clear statement of the banks' financial performance.
EC3	"*Laws, Regulations or the supervisor require banks to disclose all material entities in the group structure*".
Description and findings EC3	There is no evidence of any specific requirement in relation to the current criteria.
EC4	"*The supervisor or another government agency effectively reviews and enforces compliance with disclosure standards*".

Description and findings EC4	There is no evidence of any specific requirements in relation to the current criteria.
EC5	"*The supervisor or other relevant bodies regularly publishes information on the banking system in aggregate to facilitate public understanding of the banking system and the exercise of market discipline. Such information includes aggregate data on balance sheet indicators and statistical parameters that reflect the principal aspects of banks' operations (balance sheet structure, capital ratios, income earning capacity, and risk profiles)*".
Description and findings EC5	CBSM regularly publishes aggregate data on the banking system that have been gathered through the system or statistical data that banks are obliged to transmit periodically to the supervisor.
Additional Criteria 1	"*The disclosure requirements imposed promote disclosure of information that will help in understanding a bank's risk exposures during a financial reporting period, for example on average exposures or turnover during the reporting period*".
Description and findings AC1	The existing disclosure requirements like statistical reporting or information comprised in the notes to financial statements will certainly support in comprehending a financial intermediary's risk exposure.
Assessment of Principle 28	*Largely compliant*
Principle 29	**Abuse of financial services.** "*The supervisor determines that banks have adequate policies and processes, including strict customer due diligence (CDD) rules to promote high ethical and professional standards in the financial sector and prevent the bank from being used, intentionally or unintentionally, for criminal activities*".
EC1	"*Laws or Regulations establish the duties, responsibilities and powers of the supervisor related to the supervision of banks' internal controls and enforcement of the relevant Laws and Regulations regarding criminal activities*".
Description and findings EC1	In respect of the legal responsibilities and powers of the supervisor, CP 1 could be a valid reference. According to the timelines set out in the monetary agreement, starting from September 2013 San Marino applies rules consistent with those of European decree 2005/60/CE. The basic law on the topic of criminal activities and money laundering is Law no. 92 *"Provisions on the Prevention and Combating of Money Laundering and Terrorist Financing"*. The last amendment transposed onto Law no. 92 is dated April 2015. Law no. 92, first issued in 2008, has since then been subject to several important upgrades and currently provides for CDD obligations to be calibrated against the material level of a customer's risk. Banks are thus required to use a risk-based approach. The institutional layout on AML/CFT of San Marino is composed of two main authorities, FIA and CBSM. FIA is an independent structure within CBSM and has the function of supervising compliance with respect to Law no. 92. Law no. 92 assigns the functions and powers of FIA and CBSM. Focusing on CBSM, as supervisor of the banking system, art. 37 of Law no. 165 states the contrast of financial criminal activities in collaboration with other specialized authorities as one of the main objectives of CBSM. Art. 14 of Law no. 92 itemizes the responsibilities of CBSM and states that CBSM and FIA should collaborate according to MoUs. Art. 4 of Law no. 92 lists all the functions of FIA in its duty of preventing and combating money laundering and terrorist financing. According to

	international standards, FIA conducts its activities alone by implementing proper financial, human, and technical assets given by the CBSM. FIA, according to art. 5 of Law no. 92, has the power to carry out on-site inspections and undertake other measure to prevent criminal activities. Art. 150 of Law no. 165 gives also great importance to the laws concerning the fight against terrorism and money laundering of illicit origin.
EC2	"*The supervisor determines that banks have adequate policies and processes that promote high ethical and professional standards and prevent the bank from being used, intentionally or unintentionally, for criminal activities. This includes the prevention and detection of criminal activity, and reporting of such suspected activities to the appropriate authorities*".
Description and findings EC2	High ethical and professional standards are required of company officers. This implies suitable behaviour towards the prevention of criminal activities and the inexistence of any violation of rules regarding financial criminal activities. Regulation 2007-07 states that under the existing rules on Money Laundering Prevention, appropriate information should be given if there are other shareholders of the bank besides the controlling parties. Banks are also required to have the function of compliance officer, in charge of second level controls to verify compliance with legal provisions, including those related to financial abuse. Banks are also required to possess an integrated information system able to capture information on money laundering.
EC3	"*In addition to reporting to the financial intelligence unit or other designated authorities, banks report to the banking supervisor suspicious activities and incidents of fraud when such activities/incidents are material to the safety, soundness or reputation of the bank*".
Description and findings EC3	The reporting of suspicious transactions to FIA is regulated by arts. 36-40 of Law no. 92 and many Instructions issued by FIA itself. Banks should promptly inform FIA of any transaction, even non-executed ones that for any known reason could be suspected as relates to operations of money laundering or terrorism financing. All information related to persons connected with suspicious transaction and other relevant facts should be reported. Art. 41 of Law no. 165 requires that the board of statutory auditors should inform CBSM as soon as it becomes aware of any fact or operation that could compromise the safety and soundness of the bank itself.
EC 4	"*If the supervisor becomes aware of any additional suspicious transactions, it informs the financial intelligence unit and, if applicable, other designated authority of such transactions. In addition, the supervisor, directly or indirectly, shares information related to suspected or actual criminal activities with relevant authorities*".
Description and findings EC4	There is cooperation between FIA and CBSM. Art. 14 of Law no. 92 requires CBSM to inform FIA in writing if it detects any violation or suspicious activity that could somehow be connected with money laundering or terrorism financing. In addition, the supervisor provides information to FIA that could be useful to investigating the nature of the operation.
EC5	"*The supervisor determines that banks establish CDD policies and processes that are well documented and communicated to all relevant staff. The supervisor also determines that such policies and processes are integrated into the bank's overall risk management and there are appropriate steps to identify, assess, monitor, manage and mitigate risks of money laundering and the financing of terrorism with respect to customers, countries and regions, as well as to products, services, transactions and delivery channels on an*

	ongoing basis. The CDD management program, on a group-wide basis, has as its essential elements: *(a) a customer acceptance policy that identifies business relationships that the bank will not accept based on identified risks;* *(b) a customer identification, verification and due diligence program on an ongoing basis; this encompasses verification of beneficial ownership, understanding the purpose and nature of the business relationship, and risk-based reviews to ensure that records are updated and relevant;* *(c) policies and processes to monitor and recognize unusual or potentially suspicious transactions;* *(d) enhanced due diligence on high-risk accounts (e.g., escalation to the bank's senior management level of decisions on entering into business relationships with these accounts or maintaining such relationships when an existing relationship becomes high-risk);* *(e) enhanced due diligence on politically exposed persons (including, among other things, escalation to the bank's senior management level of decisions on entering into business relationships with these persons);* *(f) clear rules on what records must be kept on CDD and individual transactions and their retention period. Such records have at least a five year retention period*".
Description and findings EC5	Arts. 21-27 of Law no. 92 are those that describe CDD and specify the circumstances when it should be performed. Over recent years, it has undergone several amendments in order to achieve greater level of compliance with international standards. Art. 25 provides for a risk-based approach of the CDD, implying that CDD procedures should be applied on the basis of the risks associated with the type of customer, continuous relationship, professional services, operations, products or transactions. The measures prescribed in art. 25 should be carried out with regard to all customers. Art. 23 describes all steps of the customer identification process, encompassing verification of beneficial ownership and understanding the purpose and nature of the business relationship. In regard of the customer identification process, there is an ad-hoc Instruction issued by FIA, Instruction 2008-01. Focusing on the enhanced due diligence with respect to both politically exposed or high-risk accounts, the S.M requirements are fairly aligned with the international requirements. Art. 27, 27 *bis*, of Law no. 92 provide for enhanced due diligence in the event the customer is not physically present during the identification process, is a PEP or in case of relationships with institutions or entities not in states with an equivalent regime with respect AML/CFT and many other situations that raise the risk of money laundering and terrorism financing. In all these cases a deeper due diligence analysis should be performed and broader requirements fulfilled by the customer. The authorization of the general director or equivalent members is also required for the initialization of the transaction. Two Instructions have been issued on the topic of enhanced due diligence. Further concerns about and commitment to customer due diligence were addressed by issuing a specific Instruction on critical operations: Instruction 2013-03 "Identification, verification and evaluation of critical operations". This Instruction strengthened the provisions on money laundering and terrorism financing in matters of CDD by following the latest Instructions of FATF and the EU MONEYVAL Committee.

EC6	"*The supervisor determines that banks have in addition to normal due diligence, specific policies and processes regarding correspondent banking. Such policies and processes include:* *(a) gathering sufficient information about their respondent banks to understand fully the nature of their business and customer base, and how they are supervised;* *(b) not establishing or continuing correspondent relationships with those that do not have adequate controls against criminal activities or that are not effectively supervised by the relevant authorities, or with those banks that are considered to be shell banks*".
Description and findings EC6	Paragraphs 5 and 6 of art. 27 (Law no. 92) require banks to adopt measures of enhanced customer due diligence procedures with respect to correspondent accounts with non-EU members. In particular, banks are required to ascertain that the respondent bank has verified the identity of customers having direct access to payable-through accounts, has constantly met customer due diligence requirements, is able to provide, upon request, the financial party with information obtained following the meeting of such requirements. In general, when performing operations with third parties, even when simplified due diligence could be applied, it is always the responsibility of the banks to provide for correct fulfilment of AML/CFT provisions. Art. 28 expressly prohibits the opening or maintenance of correspondent accounts with shell banks. All banks, financial institutions or professionals subject to the obligation of AML/CFT are directly responsible for verifying that foreign banks with whom they collaborate do not operate with shell banks.
EC7	"*The supervisor determines that banks have sufficient controls and systems to prevent, identify and report potential abuses of financial services, including money laundering and the financing of terrorism*".
Description and findings EC7	CBSM requires banks to have appropriate compliance officer and internal audit structures. The compliance officers may also cover the position of AML officer. The AML officer is a compliance officer whose functions and powers are described in art. 42. Such officer is in charge of receiving internal suspicious transactions reports, further analyzing such reports and forwarding them to the FIA. The AML officer is a powerful tool in controlling and reporting potential abuses of financial services. Art. 44 also provides for procedures and internal controls to prevent and identify any potential abuses of financial services.
EC8	"*The supervisor has adequate powers to take action against a bank that does not comply with its obligations related to relevant Laws and Regulations regarding criminal activities*".
Description and findings EC8	FIA and CBSM have the power to take corrective actions against banking entities that do not comply with their obligations related to laws and Regulations regarding criminal activities. Art. 42 of Law no. 165 gives CBSM investigative powers. Art. 41 gives the power to request information or impose information requirements. Art. 46 gives the power of intervention with regard to supervisory matters. Investigative powers with respect to financing terrorism of CBSM are also enforced by Law no. 92, art. 84. Art. 5 of Law no. 92 gives FIA suitable powers to contrast criminal activities.
EC9	"*The supervisor determines that banks have:* *(a) requirements for internal audit and/or external experts to independently evaluate the relevant risk management policies, processes and controls. The supervisor has access to their reports;*

	(b) established policies and processes to designate compliance officers at the banks' management level, and appoint a relevant dedicated officer to whom potential abuses of the banks' financial services (including suspicious transactions) are reported; *(c) adequate screening policies and processes to ensure high ethical and professional standards when hiring staff; or when entering into an agency or outsourcing relationship;* *(d) ongoing training programs for their staff, including on CDD and methods to monitor and detect criminal and suspicious activities*".
Description and findings EC9	Regulation 2007-07 provides for an internal audit structure that should independently evaluate the banking structures and their operations. Their periodical reporting should be sent to CBSM. The same Regulation provides for the establishment of the compliance control function, which is in charge of second level controls that every process or policy complies with the law, including those on money laundering and terrorism financing. Law no. 92 requires the existence of an AML officer at each bank, as per art. 42. Each abuse regulated by Law no. 92 should be reported to this officer and the officer is responsible for promptly informing FIA. Art.44 of Law no. 92 requires each bank to adopt a rigorous recruitment of collaborators in relation to the specific role assigned. Ongoing training of staff on the latest developments and relevant issues on how to detect criminal and suspicious activities is required by the same article. Staff is required to be continuously monitored for their skills on performances related to matters of financial abuse. Art. 13 also requires that professional associations are responsible for the staff training in financial abuse matters.
EC10	"*The supervisor determines that banks have and follow clear policies and processes for staff to report any problems related to the abuse of the banks' financial services to either local management or the relevant dedicated officer or to both. The supervisor also determines that banks have and utilize adequate management information systems to provide the banks' Boards, management and the dedicated officers with timely and appropriate information on such activities*".
Description and findings EC10	Art. 32 requires banks to promptly inform FIA on operations that represent breaches related to the rules of cash limitation. Art. 35 of Law no. 92 refers to the Anti-money laundering archive that should be managed correctly and should provide all the necessary information to FIA on whether the bank has been dealt with certain kinds of customer during the last five years. Law no. 92, art. 34, states all the obligations of banks related to the registering and conservation of the information. Art. 36 lists all the obligations of banks on promptly reporting to the agency. Art. 37 extends the faculty of reporting to every person that becomes aware of any fact worth reporting to the agency.
EC11	"*Laws provide that a member of a bank's staff who reports suspicious activity in good faith either internally or directly to the relevant authority cannot be held liable*".
Description and findings EC11	Art. 39 establishes that any communication made as part of the prevention of financial abuses regulated by Law no. 92 does not constitute any violation of any other law, or the law of banking secrecy. Any staff member that has reported suspicious activity in good faith cannot be held liable.
EC12	"*The supervisor, directly or indirectly, cooperates with the relevant domestic and foreign financial sector supervisory authorities or shares with them*

	information related to suspected or actual criminal activities where this information is for supervisory purposes".
Description and findings EC12	Cooperation with domestic and international financial sector authorities is deemed to be one of the core activities with respect to the improvement of the banking and the broader financial sector by CBSM and FIA. According to the monetary agreement, in 2013 S.M. has transposed the Decision 2000/642/GAI of the European Council related to the manner of cooperation between the units of financial intelligence of the member state as far as the exchange of information is concerned. Art. 101 of Law no. 165 describes the major objective of the collaboration with CCS. CBSM's Statute states in art. 48 that CCS has the responsibility of promoting national and international collaboration in order prevent and contrast the money laundering and terrorism financing. Art. 103 of Law no. 165 establishes the cooperation of CBSM with supervisory authorities of other countries not only for supervisory concerns like liquidity and other financial risks, but also to repress crimes of money laundering and terrorism financing. Art. 104 regulates the cooperation between CBSM and judicial authorities. The cooperation between CBSM and FIA is regulated by a specific MoU. Art. 4 of Law no. 92 requires that FIA collaborate by exchanging information with the national authorities and equivalent foreign authorities, using dedicated and protected channels of communication. FIA can also act on behalf of foreign authorities and order financial entities to continuously monitor one or more transaction. FIA can also collaborate with police authorities (art. 12), with the latter collaborating independently with the equivalent foreign authorities. Part II and III of Title II of Law no. 92 regulates national and international cooperation, respectively providing all necessary rules and powers to allow proper and fair collaboration.
EC13	"*Unless done by another authority, the supervisor has in-house resources with specialist expertise for addressing criminal activities. In this case, the supervisor regularly provides information on risks of money laundering and the financing of terrorism to the banks*".
Description and findings EC13	FIA is the authority that has the specialist expertise for addressing criminal activities and information on risks of money laundering and the financing of terrorism.
Assessment of Principle 29	*Compliant*

Table C.1.2: *The table reports the detailed results of the developed simplified methodology, applied to the case study of the Republic of San Marino, in 2021. It describes each Essential Criteria (EC) in order to obtain the final result for each Core Principle (CP) as proposed by the Bank for International Settlements (BIS) in the 2012 revised structure. The grade "Compliant" is assigned as 100% ECs are satisfied, while a grade reduction happens as 10% ECs are not satisfied in a CP. In addition, where the changes applied during recent years were considered not to be sufficient to meet a one-by-one evaluation of the Principle's Essential Criteria, reference are made to the last IMF assessment of San Marino's compliance with CP.*
(Bank for International Settlements, 2012)

Appendix C.1.3: Key Recommendations after the Implementation of the Methodology

2012 Basel Core Principle	2021 Score	Analysis
(Pr.1) Responsibilities, objectives and powers	Compliant	The San Marino Central Bank needs to set-up procedures, as recommended by the Essential Criteria n. 4.
(Pr.2) Independence, accountability, resourcing and legal protection for supervisors	Compliant	The Credit and Saving Committee needs only to define the goals. So, art. 48 of Law n. 96/2005 and art. 101 of Law n. 165/2005, have to be updated, as recommended by the Essential Criteria n. 3.
(Pr.3) Cooperation and collaboration	Compliant	/
(Pr.4) Permissible activities	Compliant	/
(Pr.5) Licensing criteria	Compliant	/
(Pr.6) Transfer of significant ownership	Compliant	/
(Pr.7) Major acquisitions	Compliant	/
(Pr.8) Supervisory approach	Largely Compliant	The San Marino Central Bank must adopt the SREP to evaluate financial risks, as recommended by the Essential Criteria n. 2. In addition, the authority must publicly disclose the Asset Quality Review rules and plans specific stress-tests.
(Pr.9) Supervisory techniques and tools	Largely Compliant	The banking regulation needs to be amended in order to consider fair capital levels. In fact, only liquidity risk (EC 4) is considered.
(Pr.10) Supervisory reporting	Compliant	/
(Pr.11) Corrective and sanctioning powers of supervisors	Largely Compliant	The San Marino Central Bank can briefly suspend employees; however, they cannot be fired. Thus, powers must be enforced in order to be able to change directors, as recommended by the Essential Criteria n. 4.
(Pr.12) Consolidated supervision	Materially Non-compliant	Regulation on consolidated supervision must be adopted.
(Pr.13) Home-host relationships	Largely Compliant	A comprehensive structure must be activated in order to grant cross-border crisis cooperation, as recommended by the Essential Criteria n. 5 and n. 6.
(Pr.14) Corporate governance	Compliant	The San Marino Central Bank should adopt regulations on remuneration schemes of directors.
(Pr.15) Risk management process	Largely Compliant	The San Marino Central Bank needs to specify risk management processes even if responsibilities are clear. Even the Essential Criteria n. 12 has to be considered in the short-run.
(Pr.16) Capital adequacy	Largely Compliant	Some analysis needs to be done because the Essential Criteria n. 5 and n. 6 show deficiencies in systems in place. In addition, ad-hoc principles must be defined in order to distribute equity among subsidiaries.
(Pr.17) Credit risk	Compliant	Additional requirements must be stated in the banking law as recommended by the Essential Criteria n. 6.
(Pr.18) Problem assets, provisions and reserves	Compliant	/
(Pr.19) Concentration risk and large exposure limits	Largely Compliant	This risk needs to be defined and regulated soon.
(Pr.20) Transactions with related parties	Largely Compliant	Some improvements need to be done in current regulations, especially, regarding limits expositions.
(Pr.21) Country and transfer risks	Materially Non-compliant	It must be regulated.

(Pr.22) Market risk	Materially Non-compliant	It must be regulated.
(Pr.23) Interest rate risk in the banking book	Materially Non-compliant	It must be regulated.
(Pr.24) Liquidity risk	Compliant	/
(Pr.25) Operational risk	Largely Compliant	The San Marino Central Bank needs to improve the current regulation.
(Pr.26) Internal control and audit	Largely Compliant	Financial intermediaries must put in place some technical mythologies about audit activities.
(Pr.27) Financial reporting and external audit	Largely Compliant	Internationally accounting standards must be endorsed by the current regulation.
(Pr.28) Disclosure and transparency	Largely Compliant	Regulations must be updated soon.
(Pr.29) Abuse of financial services	Compliant	/

Table C.1.3: *The table reports the final results for the case study of the Republic of San Marino in 2021. The table adds to the grades for each Core Principle, another column, which states the main short run recommendations that appear to be required to become fully compliant with the BIS statements.*

Chapter 2

Appendix C.2.1: Breakdown of the Change in Dividend Group

Panel 1: Dividend Increase								
	FTSE Mib		FTSE Mib Mid Cap		FTSE Mib Small Cap		FTSE Italia Star	
	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid
Average Variation Debt/Equity	-2.76%	22.26%	672.26%	-10.37%	110.78%	11.39%	711.93%	26.28%
Average Variation Return on Asset %	2.90%	-10.33%	-52.15%	5.50%	-1.50%	0.42%	-0.19%	-4.05%
Average Variation Return on Equity %	91.87%	-60.81%	-528.61%	28.02%	-2.55%	2.93%	-1.59%	-11.45%
Average Variation Asset Turnover	1.30%	1.25%	3.94%	-10.51%	2.12%	5.66%	11.90%	4.17%
Average Variation Price/fair value	-4.30%	-2.27%	-1.51%	-5.38%	0.47%	-8.98%	-2.83%	-5.77%
Average Free Cash Flow/Share	25.59%	-245.00%	105.82%	476.14%	903.51%	-207.40%	262.39%	-163.48%
Panel 2: Dividend Decrease								
	FTSE Mib		FTSE Mib Mid Cap		FTSE Mib Small Cap		FTSE Italia Star	
	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid
Average Variation Debt/Equity	0.13%	35.09%	4.03%	-10.95%	-0.97%	-6.29%	0.00%	-10.95%
Average Variation Return on Asset %	-5.47%	-2.01%	-0.08%	456.09%	0.02%	0.34%	0.00%	4.65%
Average Variation Return on Equity %	-90.01%	-14.84%	-1.11%	1094.47%	-1.45%	0.97%	0.00%	11.74%
Average Variation Asset Turnover	-11.19%	-10.11%	-8.40%	-8.33%	-1.64%	6.06%	0.00%	-8.33%
Average Variation Price/fair value	2.48%	-11.60%	2.78%	-2.03%	4.20%	6.06%	0.00%	-2.03%
Average Free Cash Flow/Share	-13.21%	159.67%	-44.95%	135.49%	10.73%	-44.67%	0.00%	135.49%
Panel 3: Dividend No-changes								
	FTSE Mib		FTSE Mib Mid Cap		FTSE Mib Small Cap		FTSE Italia Star	
	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid
Average Variation Debt/Equity	4.85%	-10.30%	44.44%	32.84%	-12.96%	-33.33%	59.97%	44.85%
Average Variation Return on Asset %	0.19%	0.67%	-5.97%	0.58%	-0.05%	-0.01%	2.14%	1.20%
Average Variation Return on Equity %	3.33%	3.93%	-25.68%	1.85%	0.10%	-0.01%	7.64%	3.65%
Average Variation Asset Turnover	-3.07%	9.09%	-4.36%	-3.88%	4.86%	0.00%	0.72%	-6.00%
Average Variation Price/fair value	0.19%	2.81%	1.49%	-5.40%	2.73%	1.78%	-2.21%	-8.64%

Average Free Cash Flow/Share	-60.12%	4.58%	18.40%	35.17%	-298.69%	11.11%	15.29%	18.25%
Panel 4: Dividend Omission								
	FTSE Mib		FTSE Mib Mid Cap		FTSE Mib Small Cap		FTSE Italia Star	
	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid	Pre-Covid	Post-Covid
Average Variation Debt/Equity	-17.39%	-16.13%	44.44%	32.84%	-6.89%	-6.36%	19.26%	4.42%
Average Variation Return on Asset %	0.08%	-12.18%	-5.97%	0.58%	3.55%	-1.03%	0.00%	0.12%
Average Variation Return on Equity %	2.53%	-266.80%	-25.68%	1.85%	9.83%	-4.78%	1.70%	0.02%
Average Variation Asset Turnover	0.87%	12.72%	-4.36%	-3.88%	4.16%	-3.65%	0.00%	4.17%
Average Variation Price/fair value	10.79%	-19.69%	1.49%	-5.40%	0.00%	-3.95%	0.00%	3.71%
Average Free Cash Flow/Share	-153.36%	-479.68%	18.40%	35.17%	0.00%	-208.81%	25.00%	-187.07%

Table C.2.1: *The table shows the percentage of the financial intermediaries of the sample sorted by increase, decrease, no-change, and omission in the adoption of the dividend payout policy, during the pandemic. The analysis id provided for the four considered indices of the Italian stock exchange. (Morningstar, 2023)*

Chapter 3

Appendix C.3.1: Descriptive Statistics of the Sample

Panel A: Before Covid-19 (January 1, 2016 - December 31, 2019)

Statistics	BMPS.MI	BAMI.MI	BPE.MI	BMED.MI	BGN.MI	AZM.MI	FBK.MI	G.MI	ISP.MI	MB.MI	UCG.MI	UNI.MI	PST.MI	IF.MI	BPSO.MI	ILTY.MI	BFF.MI	CE.MI	MOL.MI	US.MI	BST.MI	PRO.MI	DOV.MI	EQUI.MI	REVO.MI
Mean	-0.0044	-0.0015	-0.0004	0.0002	0.0000	0.0000	0.0004	0.0001	-0.0002	0.0001	-0.0006	0.0001	0.0004	-0.0007	-0.0007	0.0007	-0.0004	-0.0002	0.0009	0.0001	-0.0007	-0.0001	-0.0001	-0.0001	NA
Minimum	-1.1982	-0.2653	-0.2825	-0.1631	-0.1240	-0.1479	-0.1024	-0.1835	-0.2606	-0.2385	-0.2717	-0.2055	-0.1103	-0.1746	-0.1469	-0.0276	-0.0826	-0.1154	-0.0918	-0.1108	-0.1311	-0.0984	-0.0873	-0.0637	NA
Maximum	0.3586	0.1686	0.1501	0.0873	0.1270	0.1201	0.0787	0.0789	0.1349	0.0947	0.1478	0.1203	0.0897	0.1396	0.1273	0.0327	0.0503	0.0899	0.1135	0.1046	0.1231	0.1787	0.0983	0.0607	NA
Std. Dev.	0.0546	0.0336	0.0298	0.0179	0.0190	0.0210	0.0192	0.0160	0.0215	0.0212	0.0282	0.0219	0.0156	0.0276	0.0205	0.0110	0.0150	0.0189	0.0210	0.0169	0.0224	0.0219	0.0227	0.0123	NA
Skewness	-10.0910	-0.4396	-0.5196	-0.8767	-0.2842	-0.5421	-0.2741	-1.3531	-1.5587	-1.5328	-0.2471	-0.7458	-0.5164	-0.2587	-0.1225	0.1713	-0.8210	-0.0800	0.4094	-0.2681	0.0719	1.5381	0.3171	-0.1040	NA
Kurtosis	228.0700	5.2312	10.2730	8.9743	5.6323	6.1626	2.6831	20.9580	24.4500	18.8930	10.9390	9.9756	5.6720	4.9831	5.0361	0.3314	4.0275	3.5400	2.7171	5.7061	3.8435	11.5460	2.5224	3.0848	NA
Jarque-Bera	2,212,770.0000	1,187.7000	4,499.6500	3,529.1300	1,352.5800	1,652.6000	316.5380	18,848.0000	25,642.1000	15,462.1000	5,060.9900	4,294.1400	1,402.9500	1,059.3800	1,073.0500	1.7519	394.8890	530.0190	339.9030	1,386.4100	624.4100	6,026.4500	146.8520	199.5480	NA
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.4165	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	NA

Panel B: During Covid-19 (January 1, 2020 - March 31, 2022)

Statistics	BMPS.MI	BAMI.MI	BPE.MI	BMED.MI	BGN.MI	AZM.MI	FBK.MI	G.MI	ISP.MI	MB.MI	UCG.MI	UNI.MI	PST.MI	IF.MI	BPSO.MI	ILTY.MI	BFF.MI	CE.MI	MOL.MI	US.MI	BST.MI	PRO.MI	DOV.MI	EQUI.MI	REVO.MI
Mean	-0.0007	0.0005	-0.0012	-0.0002	0.0002	-0.0000	0.0004	0.0002	-0.0002	-0.0001	-0.0005	-0.0001	0.0000	0.0005	0.0010	0.0003	0.0004	0.0002	0.0008	0.0001	0.0001	-0.0001	-0.0009	0.0005	NA
Minimum	-0.2052	-0.1827	-0.1954	-0.1271	-0.1483	-0.1731	-0.1297	-0.1387	-0.1958	-0.2069	-0.1895	-0.1923	-0.2489	-0.1511	-0.2100	-0.1348	-0.1473	-0.0881	-0.1462	-0.0834	-0.1432	-0.1643	-0.1705	-0.0850	NA
Maximum	0.1798	0.1403	0.2022	0.1141	0.0820	0.1430	0.1121	0.1049	0.1052	0.1303	0.1286	0.1632	0.0932	0.0837	0.1175	0.1357	0.0852	0.0791	0.1050	0.0675	0.0784	0.2343	0.1516	0.1313	NA
Std. Dev.	0.0318	0.0292	0.0322	0.0237	0.0213	0.0246	0.0227	0.0170	0.0237	0.0249	0.0304	0.0247	0.0229	0.0236	0.0281	0.0218	0.0226	0.0187	0.0259	0.0160	0.0236	0.0251	0.0302	0.0203	NA
Skewness	0.5826	-0.4847	0.2245	-0.4975	-1.1073	-0.7517	-0.1927	-1.1429	-1.3119	-1.2912	-0.8430	-0.4947	-2.5577	-0.5193	-0.6200	0.0551	-0.6807	-0.2173	-0.4312	-0.2716	-0.5962	1.1579	-0.3220	0.7769	NA
Kurtosis	8.8349	5.1471	6.9520	5.4609	7.6108	9.4567	5.3301	12.6910	11.5470	13.2020	6.5359	10.6290	27.1370	4.0870	6.6158	6.6463	5.0693	3.0708	3.0763	4.4518	3.6639	20.7390	5.7747	8.6979	NA
Jarque-Bera	1,895.9700	654.9500	1,160.7300	736.9000	1,502.6800	2,192.9000	681.8320	3,977.2400	3,353.5100	4,328.0800	1,089.6500	2,725.4600	18,238.5000	425.2910	1,083.5800	1,056.7600	658.9230	230.0500	244.1270	481.0500	355.0670	10,415.1000	807.4750	1,867.1000	NA
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	NA

Panel C: After Covid-19 (April 1, 2022 - February 29, 2024)

Statistics	BMPS.MI	BAMI.MI	BPE.MI	BMED.MI	BGN.MI	AZM.MI	FBK.MI	G.MI	ISP.MI	MB.MI	UCG.MI	UNI.MI	PST.MI	IF.MI	BPSO.MI	ILTY.MI	BFF.MI	CE.MI	MOL.MI	US.MI	BST.MI	PRO.MI	DOV.MI	EQUI.MI	REVO.MI
Mean	-0.0033	0.0014	0.0017	0.0005	0.0000	0.0005	-0.0002	0.0001	0.0007	0.0006	0.0023	0.0008	0.0002	-0.0002	0.0013	-0.0019	0.0009	0.0008	0.0001	-0.0000	-0.0012	-0.0001	-0.0027	-0.0000	0.0001
Minimum	-0.5467	-0.1284	-0.1383	-0.0808	-0.0866	-0.0952	-0.1044	-0.0603	-0.0907	-0.0782	-0.0954	-0.0861	-0.0617	-0.0777	-0.1122	-0.0840	-0.1179	-0.0868	-0.0770	-0.0625	-0.0954	-0.0906	-0.2377	-0.0485	-0.0317
Maximum	0.1743	0.0975	0.0926	0.0561	0.1749	0.0743	0.0687	0.0398	0.0572	0.0572	0.1160	0.1909	0.0423	0.0560	0.0530	0.0539	0.0597	0.0496	0.0643	0.1030	0.0549	0.0710	0.1083	0.0479	0.0438
Std. Dev.	0.0459	0.0225	0.0237	0.0162	0.0180	0.0162	0.0216	0.0126	0.0172	0.0152	0.0224	0.0167	0.0146	0.0172	0.0190	0.0182	0.0172	0.0165	0.0222	0.0115	0.0166	0.0130	0.0279	0.0113	0.0115
Skewness	-4.6601	-0.5377	-0.8965	-0.7320	1.4454	-0.4795	-0.5633	-0.6825	-0.7749	-0.8307	0.1164	2.0153	-0.5400	-0.5040	-0.9796	-0.6030	-1.0459	-0.7431	-0.1693	0.6182	-0.5024	-0.3281	-1.7536	-0.2383	0.5967
Kurtosis	50.8640	3.4893	4.6028	2.9991	18.9740	4.0274	2.4721	3.5701	3.3942	4.4376	4.1385	37.5120	1.8917	1.9405	4.2598	2.2720	6.1671	3.4256	0.6386	15.1450	2.6649	11.1110	13.1930	2.3145	1.7413
Jarque-Bera	54,371.4000	271.6250	497.1570	226.9370	7,505.3000	349.2190	150.3770	297.6610	283.6710	457.4600	350.0620	29,002.2000	96.6788	97.4306	447.9310	134.8100	864.0730	284.1080	10.6464	4,704.6100	165.2670	2,524.2300	3,797.2000	113.7720	55.1469
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0049	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table C.3.1: *The table shows the key descriptive statistics for each firm of the considered sample. (Morningstar, 2023)*

Appendix C.3.2: Scatterplots of the Sample and FTSE Mib Correlation Pre, During and Post Pandemic

Figure C.3.2.1: X-Y Graph for Pre-Covid-19 Time-Window

Figure C.3.2.2: X-Y Graph for During-Covid-19 Time-Window

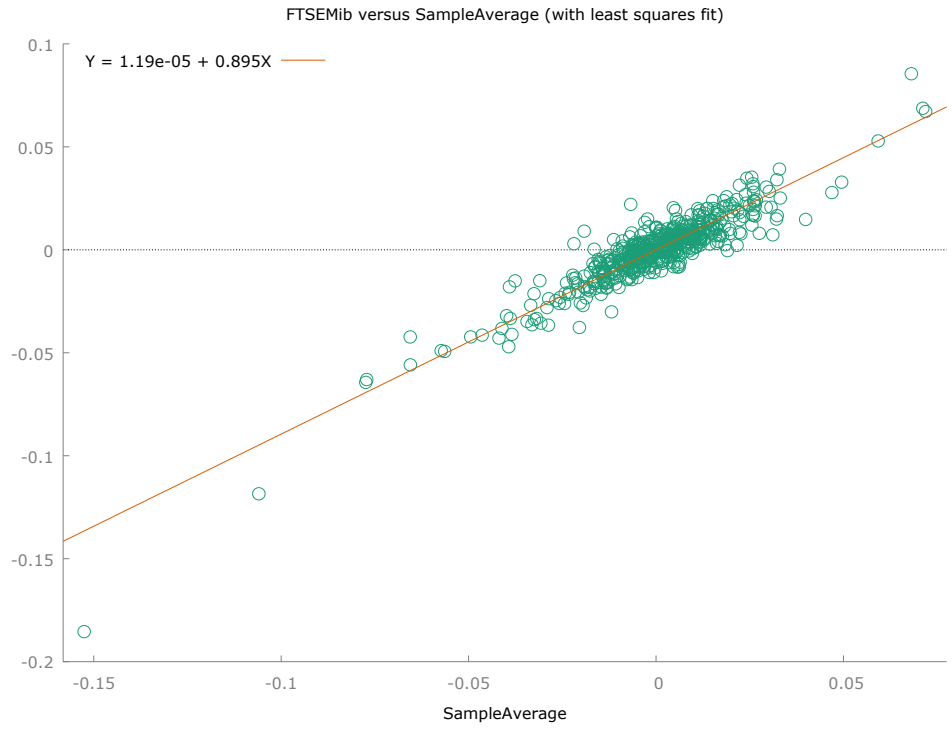
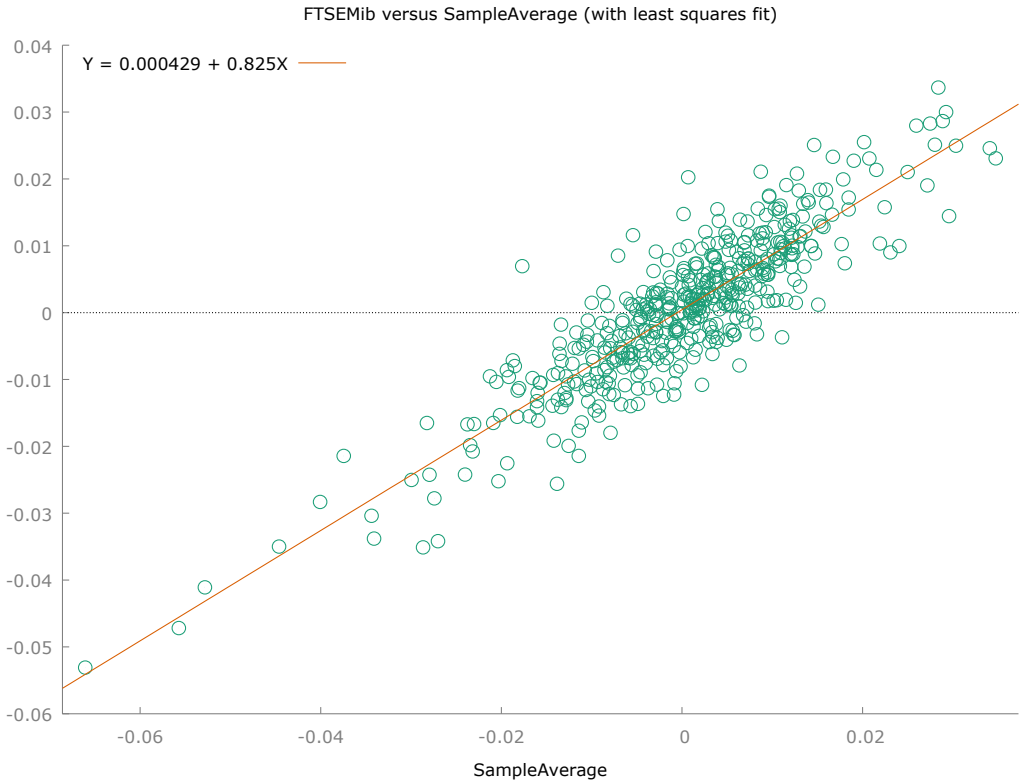


Figure C.3.2.3: X-Y Graph for Post-Covid-19 Time-Window



The figures show scatterplots of the correlation between the sample and the FTSE Mib before, during, and after the pandemic. Before the pandemic, the correlation coefficient was quite lower than during and after the outbreak.
(Morningstar, 2024)