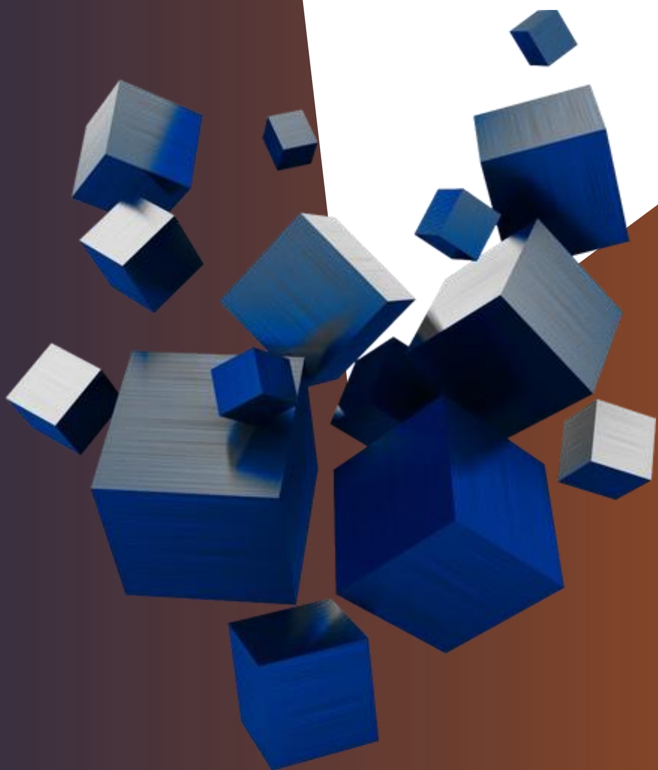
ICAP CRIF S.A.

MACROECONOMICS IMPACT ON DEFAULT RATES

July 2022



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EXECUTIVE SUMMARY

In the underlying report, ICAP CRIF proceeded with the monitoring of the default rate estimates for Greek companies, based on the latest macroeconomic data, for each ICAP CRIF credit risk model. Its purpose is to identify, whether the calculated default rate estimate in each category, presents significant deviation from the default rate used in each ICAP CRIF model (macroeconomic adjustment) and proceed with the necessary actions.

The main conclusions and findings are:

- Regarding the credit risk model of companies with published Balance Sheets in the Industry sector, the analysis indicated that the current macroeconomic adjustment exceeds by 6.17% the upper limit of the 95% Confidence Interval of the estimated default rate estimation and the macroeconomic adjustment of the specific model.
- Similarly, the risk model of companies with published Balance Sheets in the Trade sector indicated that the current macroeconomic adjustment exceeds by 6.9% the upper limit of the 95% Confidence Interval of the estimated default rate estimation.
- The analysis of the credit risk model of companies with published Balance Sheets in the Services sector, indicated deviation of 3.38% from the upper limit of the 95% Confidence Interval of the estimated default rate estimation and the macroeconomic adjustment of the specific model.
- The credit risk model of companies without published Balance Sheets in all sectors, indicated a mild deviation of 2.5% from the upper limit of the 95% Confidence Interval of the estimated default rate estimation and the macroeconomic adjustment of the specific model.
- Finally, the analysis of the credit risk models of companies that are not obliged to publish Balance Sheets, in all sectors model presents a deviation of 6.57% from the upper limit of the 95% Confidence Interval of the estimated default rate estimation and the macroeconomic adjustment of the specific model

The abovementioned conclusions suggest that the current default rates included in ICAP CRIF's credit risk models, which are used on Credit Ratings assignment, are deliberately conservative, due to the overall uncertainty prevailing the economy and the continuing impact of Covid-19 pandemic.

INTRODUCTION

ICAP CRIF has developed different credit risk models for companies based on legal status, size, availability of financial data and the activity sector that evaluate companies' financial and commercial data.

ICAP CRIF's Credit Models are classified in the following categories:

1. Assessment of companies with published Balance Sheets in the Industry sector,
2. Assessment of companies with published Balance Sheets in the Trade sector,
3. Assessment of companies with published Balance Sheets in the Services sector,
4. Assessment of companies that are obliged to, but have not published Balance Sheet, in all Sectors,
5. Assessment of companies that are not obliged to publish Balance Sheets, in all sectors.

The main sources for the macroeconomic data are the following:

- Eurostat
- Hellenic Statistical Authority
- Bank of Greece
- Organisation for Economic Co-operation and Development
- European Commission
- ECB
- World Bank

Several macroeconomic indicators were analyzed in order to assess their relationship with the default rate, separately in each one of ICAP CRIF's model.

Their analysis included both univariate and multivariate analysis:

During the stage of the univariate analysis the relationship between each macroeconomic indicator and the companies default rate was examined.

During the stage of the multivariate analysis, the stepwise variable selection method was employed, in order to select the optimal combination of two or more macroeconomic indicators that explain the variation in the default rate.

The macroeconomic indicators that were found significant in all ICAP CRIF models, for the default rate prediction in the next 12 months, are the:

- Unemployment,
- Gross National Disposable Income and
- Consumer Confidence

MACROECONOMIC INDICATORS

The values of macroeconomic indicators that were available in July 2022 are presented in the table below.

Table 01 Macroeconomics – July 2022

Macroeconomic Indicators – July 2022	Value	Date of Latest Available Data
Gross National Disposable Income (in millions €)[1]	47,645	2021 Q3
Unemployment (%)[2]	12.4	June 2022
Consumer Confidence Index[3]	-39.500	February 2022

Sources:

[1] Eurostat, Q3 2021

[2] Hellenic Statistical Authority, Dec 2021

[3] Eurostat, Feb 2022

PREDICTED DEFAULT RATE IN THE NEXT 12 MONTHS

As already stated, ICAP CRIF analysis[1] verifies a high correlation between macroeconomics and credit risk, especially with the Unemployment Rate, the Gross National Disposable Income (GNDI) and Consumer Confidence.

[1] Further details are presented in document: "Macroeconomics Impact on Default Rates Model Development – November 2014"

Given the differences in ICAP CRIF models, the relation between default rate and macroeconomics is presented separately in each one.

ICAP CRIF Model: Companies with published Balance Sheets in the Industry sector

The parameter estimates of the macroeconomic indicators that were found statistically significant are: Unemployment, Gross National Disposable Income and the Consumer Confidence

The Unemployment indicator is positively associated with the default rate, while GNDI and Consumer Confidence are negatively associated.

Considering the latest available data of the macroeconomic indicators in July 2022, the predicted default rate and the 95% confidence levels are:

Table 2 Default Rate Estimates

Model	July 2022 Default Rate Estimate	95% Confidence Interval	
		Lower Limit	Upper Limit
Industry with published Balance Sheets	15.36%	13.35%	17.38%

The Macroeconomic adjustment currently used in "Industry with published Balance Sheets" model is 23.55%, which exceeds the upper limit of the 95% Confidence Interval formulated from the January's 2022 Default Rate estimate.

This evidence may suggest that the 12-month default rate for companies operating in Industry is lower than 23.55%.

ICAP CRIF Model: Companies with published Balance Sheets in the Trade sector

The parameter estimates of the macroeconomic indicators that were found statistically significant are Unemployment, the Gross National Disposable Income and the Consumer Confidence.

The Unemployment indicator is positively associated with the default rate, while GNDI and Consumer Confidence are negatively associated.

Considering the latest available data of the macroeconomic indicators in July 2022, the predicted default rate and the 95% confidence levels are:

Table 3 Default Rate Estimates

Model	July 2022 Default Rate Estimate	95% Confidence Interval	
		Lower Limit	Upper Limit
Trade with published Balance Sheets	7.91%	6.21%	9.60%

The Macroeconomic adjustment currently used in the model is 16.50%, which exceeds the upper limit of the 95% Confidence Interval formulated July's 2022 Default Rate estimate.

This evidence may suggest that the 12-month default rate for companies operating in Trade is lower than 16.50%.

ICAP CRIF Model: Companies with published Balance Sheets in the Services sector

The parameter estimates of the macroeconomic indicators that were found statistically significant are Unemployment and the Gross National Disposable Income.

The Unemployment indicator is positively associated with the default rate while GNDI is negatively associated.

Considering the latest available data of the macroeconomic indicators in July 2022, the predicted default rate and the 95% confidence levels are:

Table 4 Default Rate Estimates

Model	July 2022 Default Rate Estimate	95% Confidence Interval	
		Lower Limit	Upper Limit
Services with published Balance Sheets	8.75%	7.18%	10.32%

The Macroeconomic adjustment currently used in the model reflecting the 12-month default rate, prediction is 13.70%, which exceeds the upper limit of the 95%

Confidence Interval formulated from the July's 2022 Default Rate estimate. This evidence may suggest that the 12-month default rate for companies operating in Services is lower than 13.70%.

ICAP CRIF Model: Companies without published Balance Sheet in all sectors

The parameter estimates of the macroeconomic indicators that were found significant are Unemployment and the Gross National Disposable Income.

The Unemployment indicator is positively associated with the default rate, while GNDI is negatively associated.

Considering the latest available data of the macroeconomic indicators in July 2022, the predicted default rate and the 95% confidence levels are:

Table 5 Default Rate Estimates

Model	July 2022 Default Rate Estimate	95% Confidence Interval	
		Lower Limit	Upper Limit
Companies without published Balance Sheets in all sectors	20.29%	15.84%	24.74%

The Macroeconomic adjustment currently used in the model reflecting the 12-month default rate, prediction is 27.24%, which exceeds the upper limit of the 95% Confidence Interval formulated from the July's 2022 Default Rate estimate. This evidence may suggest that the 12-month default rate for companies operating without published balance sheets in all sectors is lower than 27.24%.

ICAP CRIF Model: Companies that are not obliged to publish Balance Sheets in all sectors

The parameter estimates of the macroeconomic indicators that were found statistically significant are Unemployment, the Gross National Disposable Income and the Consumer Confidence.

The Unemployment indicator is positively associated with the default rate, while GNDI and Consumer Confidence are negatively associated.

Taking into account the latest available data of the macroeconomic indicators in January's 2022, the predicted default rate and the 95% confidence levels are:

Table 6 Default Rate Estimates

Model	July 2022 Default Rate Estimate	95% Confidence Interval	
		Lower Limit	Upper Limit
Companies with no obligation for published Balance Sheets in all sectors	10.70%	8.21%	13.19%

The Macroeconomic adjustment currently used in the model is 19.76%, which exceeds the upper limit of the 95% Confidence Interval formulated from the July's 2021 Default Rate estimate.

This evidence may suggest that the 12-month default rate for Small Businesses is lower than 19.76%.