

Malta's Growth-at-Risk: Exploring the Effects of Macro-Financial Factors on Growth

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ABSTRACT: This paper employs a Growth-at-Risk (GaR) framework to assess the impact of macro-financial variables on the growth rate distribution of Malta over a one-to-two-year horizon. The analysis suggests that while the baseline outlook is positive, large tail risks are associated with the domestic risk factors related to residential housing prices and household credit. Conversely, external factors from the Euro Area are likely to have a smaller direct impact on the growth rate distribution, transmitted through financial conditions in the bloc.

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SELECTED ISSUES PAPERS

Malta's Growth-at-Risk: Exploring the Effects of Macro-Financial Factors on Growth

Prepared by Fuad Hasanov

GROWTH-AT-RISK: EXPLORING THE EFFECTS OF MACRO-FINANCIAL FACTORS ON GROWTH¹

This paper employs a Growth-at-Risk (GaR) framework to assess the impact of macro-financial variables on the growth rate distribution over a one-to-two-year horizon. The analysis suggests that while the baseline outlook is positive, large tail risks are associated with the domestic risk factors related to residential housing prices and household credit. Conversely, external factors from the Euro Area are likely to have a smaller direct impact on the growth rate distribution, transmitted through financial conditions in the bloc.

A. Introduction

1. A Growth-at-Risk (GaR) framework is helpful to analyze the vulnerability of Malta's economic growth to financial and macroeconomic shocks. Traditional macroeconomic forecasts typically provide a "point estimate," a single number (or path of single numbers) predicting the most likely outcome for GDP growth (the baseline projection). These point forecasts often fail to capture uncertainty surrounding the economic outlook, particularly "tail risks" that arise during periods of financial stress or external shocks. GaR addresses this limitation by linking current financial and economic conditions to a probability distribution of future real GDP growth. In addition, the likelihood of extreme negative growth scenarios, specifically, how much growth is "at risk" at the 5th or 10th percentile of the distribution, may be estimated. In other words, instead of only forecasting the most likely (average) growth rate, GaR evaluates the probability distribution of future growth outcomes. The key GaR metric – "growth-at-risk" – shows the lowest GDP growth rate with only a 5 percent chance of being even lower. For example, if GaR is 2 percent, it means that there is a 5 percent probability that growth will fall below 2 percent over the specified horizon, generally one or two years.

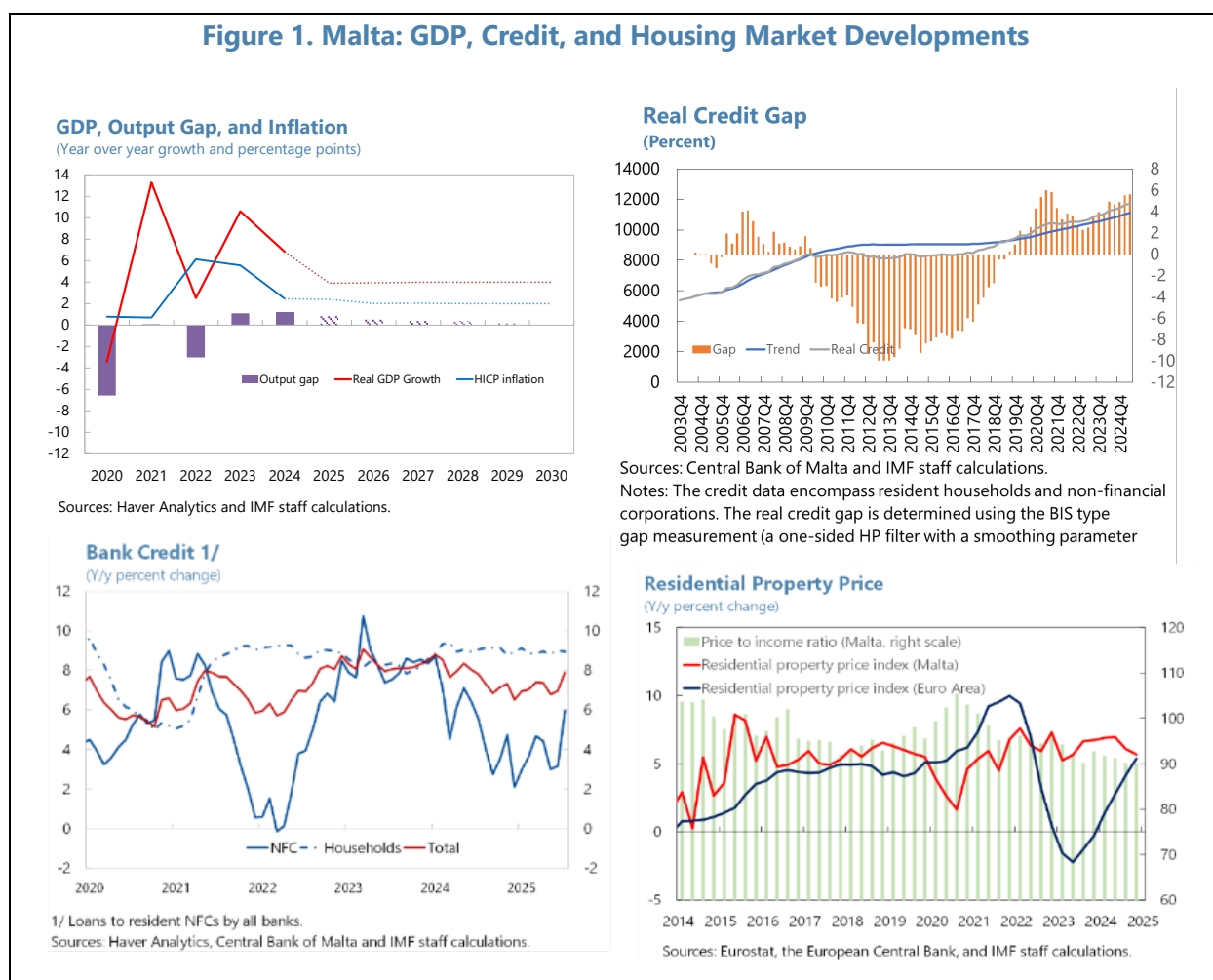
B. Strong Growth in Credit and Housing Markets

2. Malta's economy has been one of the fastest growing in Europe over the past decade. Real GDP growth averaged close to 7 percent per year from 2013 to 2019 and remained above 5 percent in 2020-2024, propelled by labor-intensive services sectors like tourism, gaming, and professional services, alongside a strong influx of foreign workers that expanded capacity. Growth in 2025 moderated to its estimated potential rate of about 4 percent, still significantly higher than the EU average. Unemployment is at historic lows of about 2.9 percent, and inflation has receded to around 2–3 percent, underscoring the favorable macroeconomic environment (Figure 1).

¹ Prepared by Fuad Hasanov, with comments and suggestions from the IMF Malta team and seminar participants at Malta's Ministry of Finance and the Central Bank of Malta.

3. Malta is a highly open economy, making it sensitive to external macroeconomic factors. With total exports of goods and services at about 120 percent of GDP and service exports (tourism, remote gaming, finance, etc.) dominating trade, Malta's economy is sensitive to European and global economic conditions. Risks include a sharp Euro Area slowdown, which would affect tourism and business services demand, and global financial market volatility such as a sudden risk-off event causing a Euro-wide credit crunch. Additionally, higher energy prices or geopolitical tensions could impact Malta directly and indirectly. Malta's current account surplus of around 6-7 percent of GDP and a strong international investment position provide significant cushions. The government's fiscal position has also improved with the budget deficit declining to about 3.5 percent of GDP in 2024 and public debt falling to below 50 percent of GDP, giving additional policy space.

Figure 1. Malta: GDP, Credit, and Housing Market Developments



4. Economic activity is further underpinned by an expanding credit market. Household credit is experiencing stronger growth compared to credit to non-financial corporations (NFCs). Bank lending is increasingly concentrated in mortgages and construction loans, which at end-2024 accounted for 72 percent of banks' private-sector loan portfolios, up from 60 percent a decade ago. Household credit grew by 8–9 percent annually in recent years, supported by low borrowing costs

(mortgage interest rates of around 3 percent) and steady house price appreciation. Household debt is moderate at approximately 60 percent of GDP, predominantly consisting of variable rate mortgages.

5. Credit expansion has boosted domestic demand but also led to higher vulnerability.

High exposure of banks and households to the property market suggests that adverse shocks to house prices or interest rates could weaken balance sheets and reduce spending, lowering growth and potentially affecting financial stability.

6. Malta's housing prices have seen a sustained increase. Drivers of the housing boom include robust income growth, population growth (Malta's population rose by 25 percent over a decade, largely due to immigration), and low interest rates. Residential property prices rose by 6.7 percent in 2024 and cooled slightly in early 2025. The price-to-income ratio has stabilized at about 90 percent since the early 2020s after climbing in the late 2010s. The price-to-rent ratio is elevated as rental yields have edged up to about 6 percent, reflecting strong rental demand from foreign workers and tourists. While current data do not suggest overvaluation (price increases have been in line with income growth in recent years) and the probability of a sharp correction in house prices appears to be low, such an event could negatively affect construction and wealth and strain banks via rising loan delinquencies and weaker consumer confidence. This is the type of macro-financial risk that the growth-at-risk analysis considers (domestic risk factor).

7. Domestic financial conditions in Malta remained accommodative through 2024-25.

Mortgage interest rates remain relatively low, liquidity is ample, and sovereign bond yields for Malta have stayed moderate. Public debt at about 47 percent of GDP and an A+ sovereign rating have kept borrowing costs contained. The Central Bank's stress tests indicate that banks are resilient with strong capital (Tier 1 ratio of 21 percent) and liquidity (LCR more than 350 percent) buffers. Local markets show no signs of financial stress, such as sudden jumps in spreads or funding pressures. However, Maltese financial conditions are correlated with euro-area conditions due to euro membership and open capital flows. The Euro Area financial conditions index (FCI) tightened in 2022-2023 as the ECB raised rates, leading to somewhat higher loan rates and slower credit growth in Malta. This linkage suggests that Malta's domestic FCI and the Euro Area FCI are both relevant: a deterioration in global financial sentiment (e.g., a spike in risk premia) could tighten financial conditions in Malta even in absence of domestic triggers.

8. In summary, Malta's baseline projections exhibit strong fundamentals, but there are pockets of vulnerability. These are mostly related to credit and housing markets and dependence on external conditions. These are the factors that the GaR model incorporates via risk indicators and FCI variables.

C. Growth-at-Risk Framework: Assessing Effects of Macro-Financial Factors on Growth

- **Methodology: Variables and Estimation**

9. **GaR modeling requires choosing relevant predictors for growth risks.** Standard composite indicators or factors to summarize broad sets of information are as follows:

- **Domestic Financial Conditions:** A Malta-specific FCI captures overall financing conditions in the local economy such as interest rates, spreads, and equity performance, tracking the ease/tightness of financing. This factor also includes sovereign spreads and 10-year sovereign bond yields.
- **Domestic Risk Indicators:** These variables capture vulnerabilities related to credit and housing markets and include real house price growth, house price-to-income and house price-to-rent ratios, real credit growth, and credit to GDP.
- **Domestic Macroeconomic Fundamentals:** This is proxied by indicators of Malta's current economic conditions such as recent trend (4-quarter moving average) real GDP growth and inflation.
- **External (Euro Area) Financial Conditions:** A Euro Area-wide FCI is included to capture the external financial environment and global/regional financial shocks that could spill over to Malta (e.g., changes in European credit spreads or volatility, investor sentiment, or capital flows).
- **External (Euro Area) Macroeconomic Indicators:** These include Euro Area GDP growth and inflation, summarizing the external demand environment (e.g., strong vs. weak growth in trading partners) and policy stance (e.g., associated ECB policy stance).

10. **To reduce dimensionality and multicollinearity, principal component analysis (PCA) is used within each of the above five groups of variables.** The first principal component of each group (which typically explains a large share of that group's variance, around 60 percent in our analysis) is then used as the representative factor. By using these composite factors, Malta's future growth distribution is effectively modeled as a function of five variables: local financial conditions ("domestic FCI"), local financial vulnerabilities ("domestic risk"), local current macro conditions ("domestic macro"), external financial conditions ("euro area FCI"), and external macro conditions ("euro area macro").

11. **GaR is estimated using a quantile regression in a local projections framework.**

Specifically, the GaR model is based on quantile regressions forecasting GDP growth h quarters ahead (with $h=4$ for one-year, $h=8$ for two-year) at different quantiles (e.g. 50th percentile for median, 5th for tail risk). Quarterly data cover the period from the early 2000s (as available) through the latest available quarter (early 2025). The general form of the one-year GaR regression is:

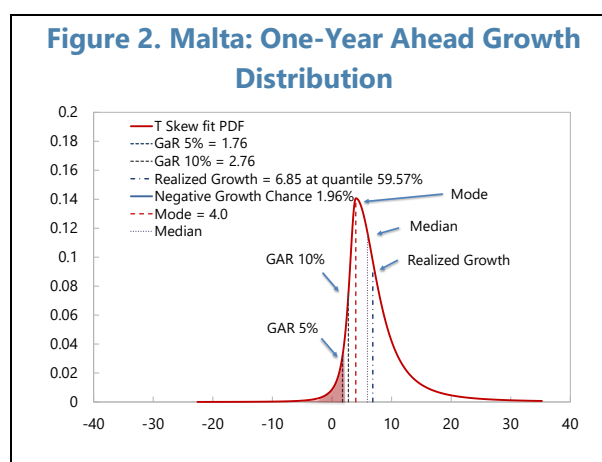
$$g_{t+4, \tau} = \alpha_{\tau} + \beta_{\tau} \cdot FCI_t + \gamma_{\tau} \cdot X_t + \varepsilon_{t+4, \tau},$$

where $g_{t+4, \tau}$ is annual GDP growth four quarters ahead at quantile τ , FCI is a domestic FCI at time t , and X_t is a vector of other macro-financial variables at time t (the remaining four factors in our model). The coefficients $\beta_{\tau}, \gamma_{\tau}$ vary by quantile τ . This allows the model to capture nonlinear effects. For example, financial stress might have little impact on the median growth forecast but a large impact on lower-tail outcomes. By estimating separate regressions for $\tau = 0.05$ (5th percentile) and $\tau = 0.5$ (median), we can piece together an implied distribution of future growth. The quantile local projection approach is flexible and does not impose a particular parametric distribution ex ante.

12. The model allows obtaining the entire forecast distribution for GDP growth. A skewed T-distribution is used to fit the estimated quantile data. The usual focus is on the GaR 5th percentile (or 10th percentile) as a summary of downside risk. A lower GaR indicates more severe downside risks.

D. Baseline Results: GaR and Historical Assessment

13. The GaR model indicates that the distribution of possible outcomes is skewed toward positive growth rates. Malta's projected GDP growth one year ahead (by mid-2026) has a baseline central estimate around 4 percent (close to potential). The 5th percentile of the one-year-ahead growth forecast is about 1.75 percent. In other words, there is a 5 percent chance that growth will fall below 1.75 percent in one year under prevailing conditions (shaded area in Figure 2). The 10th percentile is higher at about 2.75 percent. This GaR is below the median (4 percent), but still a positive growth rate, implying a very low probability of contraction over the next year. Indeed, the model suggests the probability of negative growth in the next four quarters is about 2 percent.² This reflects Malta's strong starting point and momentum.³



14. Despite global uncertainties, Malta's near-term recession risk appears low. Compared to the GaR based on 2024 economic conditions, the downside risk has increased slightly. The one-year GaR was higher (around 2.5 percent), indicating that vulnerabilities have

² Using the growth rate of tourist overnight stays for the Domestic Macro factor increases GaR to about 2.5 percent for the one-year ahead horizon but reduces it to about -4.6 percent for the two-year ahead horizon. The shock scenario to Domestic Macro does not affect the growth distribution much. Adding the growth rates of tourist overnight stays and real exports to the original variables in the Domestic Macro partition in fact results in higher GaR.

³ A similar model ran for Ireland with the mode growth of 2 percent results in GaR of about 1 percent for the one-year horizon and about 0.4 percent for the two-year horizon (which for the two-year horizon is a more positive forecast outlook than that for Malta).

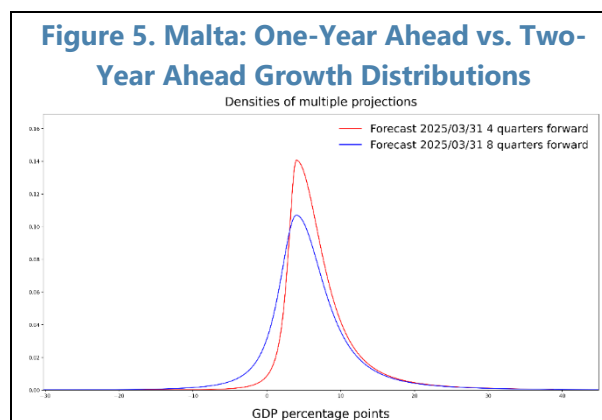
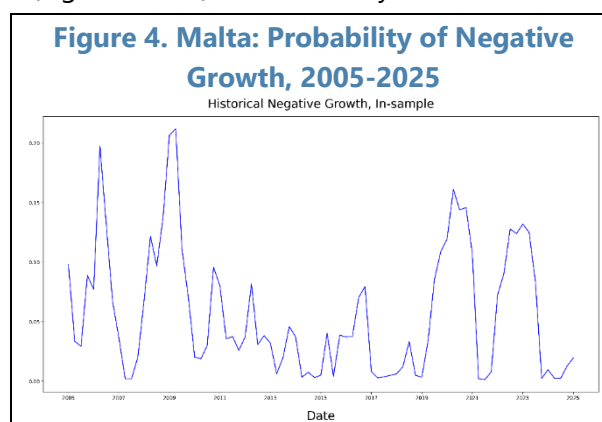
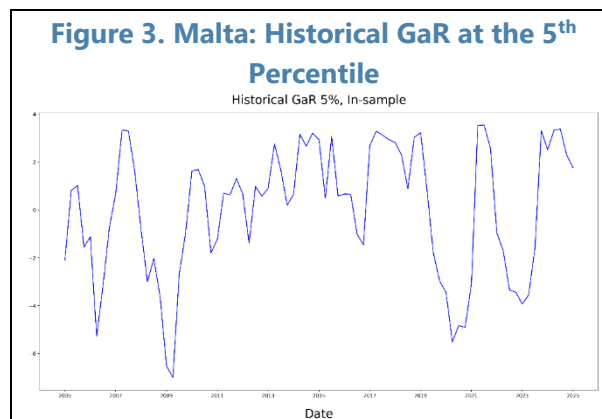
grown since last year (Figure 3). The main contributor to this slight worsening of GaR is the continued strong growth of credit and housing markets as well as the somewhat less favorable external environment. The growth rate in 2024 was 6.85 percent, which is at the 60th percentile of the historical distribution, indicating that the recent economic performance has been slightly above average but not statistically extreme.

15. Malta's growth-at-risk has varied

substantially in recent years. During boom periods (e.g., 2015–19), Malta's one-year GaR was in the 2–3 percent range, reflecting limited downside as the economy had strong buffers and few signs of stress. During the COVID-19 shock, GaR plunged into negative territory (in early 2020, the model would have indicated a very high probability of negative growth), and indeed Malta experienced a large contraction (Figure 3). By 2022–2023, GaR recovered dramatically, underscoring the improved outlook. The current GaR at 1.75 percent is still higher than during the euro crisis of 2012 or the 2008 financial crisis, suggesting moderate but manageable risk (Figures 3-4).

16. When extending the forecast horizon,

uncertainties compound. For the two-year-ahead period (through mid-2027), the GaR model predicts a wider distribution of growth outcomes and a larger downside risk. Comparing the one-year and two-year growth distributions (Figure 5) shows that the two-year distribution is flatter and more spread out with its left tail reaching notably negative growth rates. The baseline two-year-ahead median growth might still be around 4 percent (assuming the economy converges to that potential growth). However, the GaR at the 5th percentile for two years ahead is estimated at about –2.2 percent (about zero at the 10th percentile). That is, there is a 5 percent chance that the average annual growth over the next two years could be -2 percent or worse. This lower GaR (compared to +1.75 percent at one year) reflects higher forecast uncertainty and the term structure of risk. Financial shocks can have delayed effects and vulnerabilities can build over a longer horizon. The two-year GaR of about -2 percent indicates a small but non-negligible risk of a

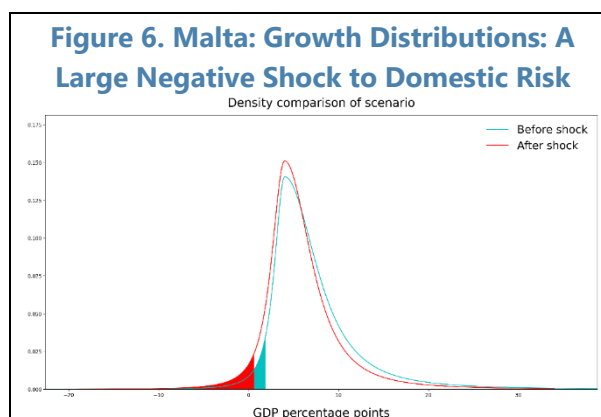


stronger downturn by mid-2027. It suggests that while the near-term risks are low, medium-term risks are more elevated, warranting close monitoring of potential build-up of financial vulnerabilities.

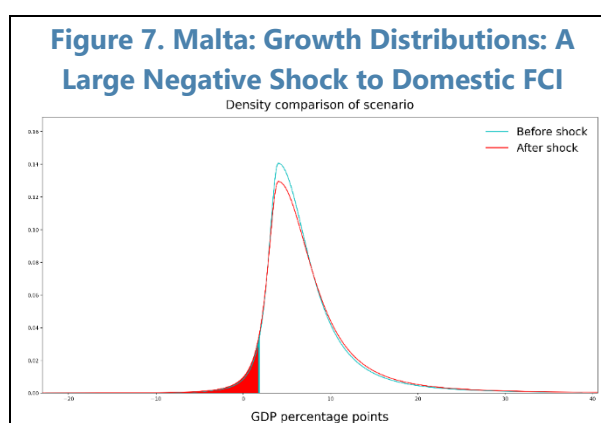
E. Scenario Analysis: Drivers of Risk

Scenario analyses are performed by shocking each of the five composite factors (in isolation) to gauge the sensitivity of the one-year GaR to various risk triggers.

17. The most severe scenario arises from shocks to domestic credit and housing markets. A 3 standard deviation adverse shock to the “domestic risk” factor approximates the impact of house prices falling sharply along with a substantial credit slowdown. The GaR model predicts that one-year-ahead GaR (5th percentile) would deteriorate from 1.75 percent to around 0.5 percent (Figure 6) implying a non-trivial likelihood of a recession in the event of a housing bust. Figure 6 shows how the entire distribution shifts left under the shock, and the left tail becomes much thicker. Even though banks have sufficient capital cushions, a housing downturn would likely curtail construction activity, hit consumer spending (via wealth effects), and potentially tighten credit availability, all combining to drag growth below baseline in a tail scenario.



18. The tightening of domestic financial conditions has a moderate effect on GaR. This is modeled by imposing stress on the domestic FCI, for example, through a sudden rise in interest rates or a widening of spreads due to a loss of confidence. The effect is a moderate worsening of GaR with the 5th percentile declining by a few tenths of a percent (Figure 7). Qualitatively, tighter domestic financial conditions reduce credit growth and raise financing costs, trimming both median and tail outcomes. In Malta’s case, thanks to strong bank buffers and the likelihood that domestic tightening might coincide with strong economy, the impact on the tail risk is noticeable but not as large as the housing shock. Nonetheless, maintaining market confidence and prudent policies would help keep domestic financial conditions benign, thereby containing downside risk.



19. A large negative shock to domestic macro fundamentals has a larger effect on GaR than the domestic FCI shock. In this scenario, Malta’s current macroeconomic fundamentals worsen, for instance, due to an idiosyncratic shock to a major industry leading to lower growth and higher inflation. The shock lowers the entire growth distribution (Figure 8), and Malta’s one-year

GaR drops closer to 1 percent. The strong current economy provides a buffer, and safeguarding the macro environment (through sound fiscal and financial policies) indirectly keeps GaR higher (better).

20. A euro-area FCI shock has much larger effects on Malta's economy than a domestic FCI shock.

A large euro-area-wide financial stress event such as a sudden spike in global risk aversion, causing equity markets to drop and credit spreads to jump would result in the Euro Area FCI factor deteriorating sharply. For Malta, such an external financial shock would likely worsen tail risks. Credit to Maltese firms might slow as international lenders pull back, investor confidence could wane, and borrowing costs might rise for the sovereign and banks. The GaR

model suggests that external financial tightening could reduce the one-year GaR close to or slightly less than that of the housing shock. The GaR would fall to the 0.5–1 percent range in a severe case (Figure 9). In practice, the ECB might respond to mitigate stress and soften the impact. Nonetheless, the GaR analysis highlights that Malta's outlook is sensitive to global financial conditions and that even if domestic conditions are sound, a global credit crunch can feed into higher downside risk.

21. A negative external demand shock emanating from the Euro Area lowers GaR but by less than the shock to the Euro Area FCI.

A mild Euro area recession (or significantly slower growth) without major financial turmoil, would weaken tourism and export demand for Malta. The model yields a somewhat milder effect on GaR (Figure 10) with the one-year GaR falling from 1.75 percent to 1.2 percent. The external growth shock could affect Malta's baseline growth more than its extreme tail unless it triggers financial contagion. Malta's strong fundamentals and policy space could help cushion trade shocks, but prolonged external weakness would eventually feed into higher risks.

F. Conclusion

Malta's baseline growth-at-risk is 1.75 percent, indicating a 5 percent chance that growth would fall below this threshold and suggesting a limited short-term downside risk. Nevertheless, a severe correction to credit

Figure 8. Malta: Growth Distributions: A Large Negative Shock to Domestic Macro Fundamentals

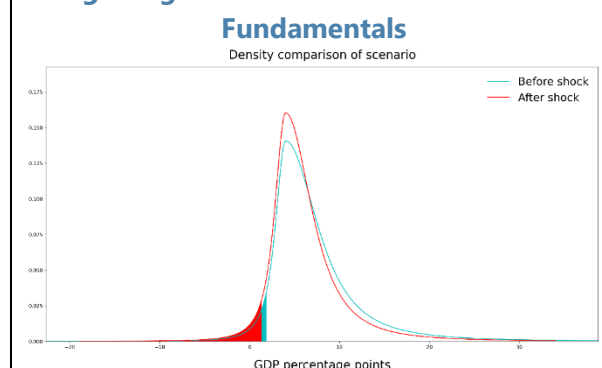


Figure 9. Malta: Growth Distributions: A Large Negative Shock to Euro Area FCI

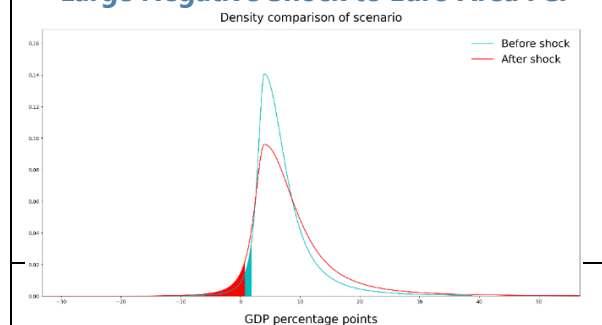
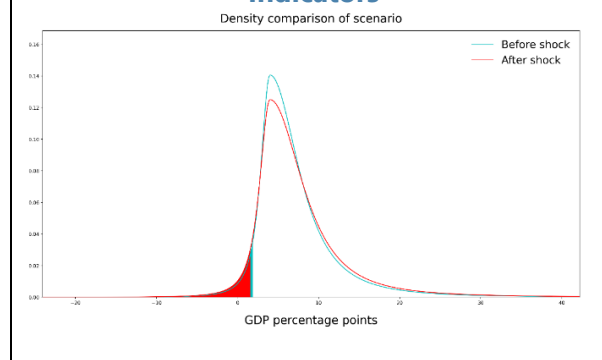


Figure 10. Malta: Growth Distributions: A Large Negative Shock to Euro Area Macro Indicators



and housing markets could push the economy close to zero growth in a tail event with low probability. External financial shocks also pose risks (given global interconnectedness), and a domestic macro shock has relatively large impact as well. In contrast, external growth slowdown or tightening of domestic conditions have more contained effects. This ranking of risks suggests that domestic macroprudential policies should focus on the housing sector, and vigilance is needed for global financial developments. Maintaining strong policy buffers would support the resilience of Malta's economy going forward.

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