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CORPORATE FINANCING AND THE PANDEMIC CRISIS: STRATEGIC RESPONSES AND PUBLIC SUBSIDIES

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Outline

- The effects of the pandemic in Italy
- Economic literature
- Aim of the paper and empirical strategy
- Data sources and descriptive statistics
- Regression results
- Discussion and conclusions

The effects of the pandemic in Italy: from crisis to recovery

- The slump recorded in 2020 risked becoming Italy's third recession in 12 years, with substantial consequences in terms of government policy. At the core of the Italian recovery was a combination of firms' reaction strategies, government intervention, and structural factors characterising the business sector at the onset of the pandemic.

- The pandemic caused an operational breakdown of economic activities and severe losses in turnover, which varied greatly across sectors (Istat, 2020a, 2020b). At the same time, the government granted a series of financial aids, including a **moratorium** on the payment of existing debt and credit **guarantees on new debt** to firms facing liquidity shortages and difficulties in accessing credit more generally, regardless of their financial health or size.

- However, **generous liquidity support in the form of debt increased firms' leverage**, thereby raising their default risk and leaving them vulnerable and with little room to invest and grow. This, in turn, triggered *concerns about solvency* (among others, Schivardi et al., 2020) and has prompted calls for government equity injections, not just liquidity, into viable firms (Boot et al., 2020).

Three main strands of literature (1/2)

- **Firm resilience to the pandemic**: exposure and recovery are impacted not only by both *sectoral specialisation* and *firm-specific characteristics* but also by *organisational capabilities*, innovation propensity, and adoption of digital technologies (e.g. Criscuolo, 2021; Belitski et al., 2022).

  For Italy:

  - Industrial composition (SMEs); pre-existing financial solidity & initial level of leverage (Guerini et al. 2020; Carletti et al. 2020)

  - *ex-ante* organisational capabilities, including the ability to design and implement complex strategies -> adaptability in the face of uncertainty is a key driver of resilience (Costa et al., 2022; Istat, 2022)

- **Financial impact: zombie lending and liquidity constraints**: the limits of "zombie lending" narratives (Schivardi et al., 2020; Schivardi and Romano, 2020) -> zombie lending was unlikely to be a major problem in the COVID-19 context, as the highest liquidity needs were concentrated among firms that were financially sound before the crisis, and the shock hit firms regardless of pre-existing financial conditions.

  Change (worsening) in access to credit: Ughi et al. (2024) find that smaller and less productive firms, especially in Southern Italy, faced higher credit constraints, while stronger financial conditions were associated with lower perceived constraints.

Three main strands of literature (2/2)

- **The role, effects, and beneficiaries of financial aid**:

  - Financial aid during the pandemic acted as a *stabiliser* (Gourinchas et al., 2021). In Italy, SMEs were the main recipients of liquidity and grant-based aid but *distributional asymmetries* arose: *larger firms*, with better access to information, established banking relationships, and more sophisticated administrative capacities, often captured a disproportionate share of available support (De Vito and Gómez, 2020; Bighelli et al., 2023).

  - The effectiveness of these interventions in sustaining firm resilience: *(i) Government support significantly mitigated downgrades in financial stability*, particularly for small firms. Compared with the 2011–2012 sovereign debt crisis, *resilience in 2020 was stronger*, due both to improved pre-crisis fundamentals and to more effective policy design and targeting (Boselli et al., 2023); *(ii) Policy impacts were uneven*: while aid reduced the negative effects of COVID-19 on profitability and growth, *supported firms still underperformed* relative to those that did not require aid. This reflects structural vulnerabilities that policy could alleviate but not fully eliminate (Fasano et al., 2022).

Aims and empirical strategy

- Provide empirical evidence on:
  - how Italian firms' economic and financial profiles shaped their response strategies during the pandemic;
  - how government financial aid interacted with these strategies, taking into account the strong sectoral dimension of the crisis.
- We use cluster firms' strategies of response to the crisis according to their behaviour during the pandemic.
- Subsequently, we identify significant factors associated with leverage in order to understand the complex interaction between firms' characteristics and their use of financial resources and finally include the government subsidies granted during the pandemic
- We model the relationship in two periods, before and during the pandemic, in order to test whether and how the COVID-19 shock affected corporate financing patterns, and deepen the 2020 in order to detect the role of Government aid.

Data sources

- Data set integrating administrative and survey-based sources:
  - Business Register (BR) and Structural Business Statistics Frame registers (Frame SBS): structural information and main economic variables for the whole population of about 4.4 millions of Italian firms.
  - Administrative sources for financial data on income statements and balance sheet accounts of Italian corporations: information on profitability, liquidity and solvency that are employed in the analysis
  - *ad hoc* survey on enterprises 'Situation and perspectives of enterprises during the Covid-19 health emergency' (Covid survey): firm activity in terms of operative conditions, financing sources and liquidity constraint, and their prospective strategies, as well as the forms of aids granted by Government
- Retrospective 2016-2020 panel of 14k-17k firms per year
  - 2016-2020 for BR-SBS and financial data to consider economic and financial evolutionary path
  - 2020 for Covid Survey

Variables selection (1/2)

- Financial variables (on liquidity management and financing structure) based on the most important determinants found in the international literature: (Rajan and Zingales 1998; Ozkan 2001; Alworth and Arachi 2001; Brounen et al. 2005; Frank and Goyal 2009; Graham and Leary 2011).

- *Leverage:* debt to assets (Lev)
- *Profitability indexes: return on assets* (ROA)*, returns on investments* (ROI) *and returns on equity* (ROE), as more profitable firms are less leveraged, because they can redirect more internal resources to investments.
- *Financial charge on debt* ratio (ROD) as financial burden can direct the firms' choice towards equity or debt.
- *Tangibility* (TANG): the ratio of **tangible** fixed assets to persons employed as firms operating with greater tangible assets tend to have a higher debt capacity.
- *Growth opportunities* (GO): the ratio of **intangible** assets on total assets as firms with better growth opportunities tend to choose equity-financed investment instead of increasing their leverage
- *Liquidity:* liquidity ratio (current assets to current liabilities, IDL) and working capital ratio (current assets plus stocks to current liabilities, IDD).
- Nominal labour *productivity* (Prod) measured as value added per person employed.
- *Size*: measured as log of total assets, often used as an inverse proxy for *default.*

Variables selection (2/2)

- Istat (2021) classification of strategic and operative profiles:
  - 1. *Static and in crisis* (28.6% of firms with 3+ workers): firms that are suffering heavily from the impact of the pandemic but have not adopted well-defined reaction strategies.
  - 2. *Static but resilient* (35.5% of 3+ workers firms and 19.9% of v.a.): firms that have not implemented reaction strategies because they have not suffered significant negative effects.
  - 3. *Proactive but distressed* (10.7%): firms severely affected by the crisis but with structured coping strategies.
  - 4. *Proactive and expanding* (19.4% of firms and 39.6% of v.a.): mildly affected by the pandemic, these firms have not been altered in their previous development paths.
  - 5. *Advanced proactive* (5.8% of firms 3+ but 24.9% of v.a.): firms variably affected by the consequences of the crisis, but have increased their investments during 2020 compared to previous year.
- Government support: Moratoria on existing debt (**MORA**) and Government guarantees on new debt (**GUARAN**) over 2020
- Structural variables: sector, geography

Financial and economic profile by strategic response to crisis (1/2)

Fig. 1 Reaction strategy specialization index by sector

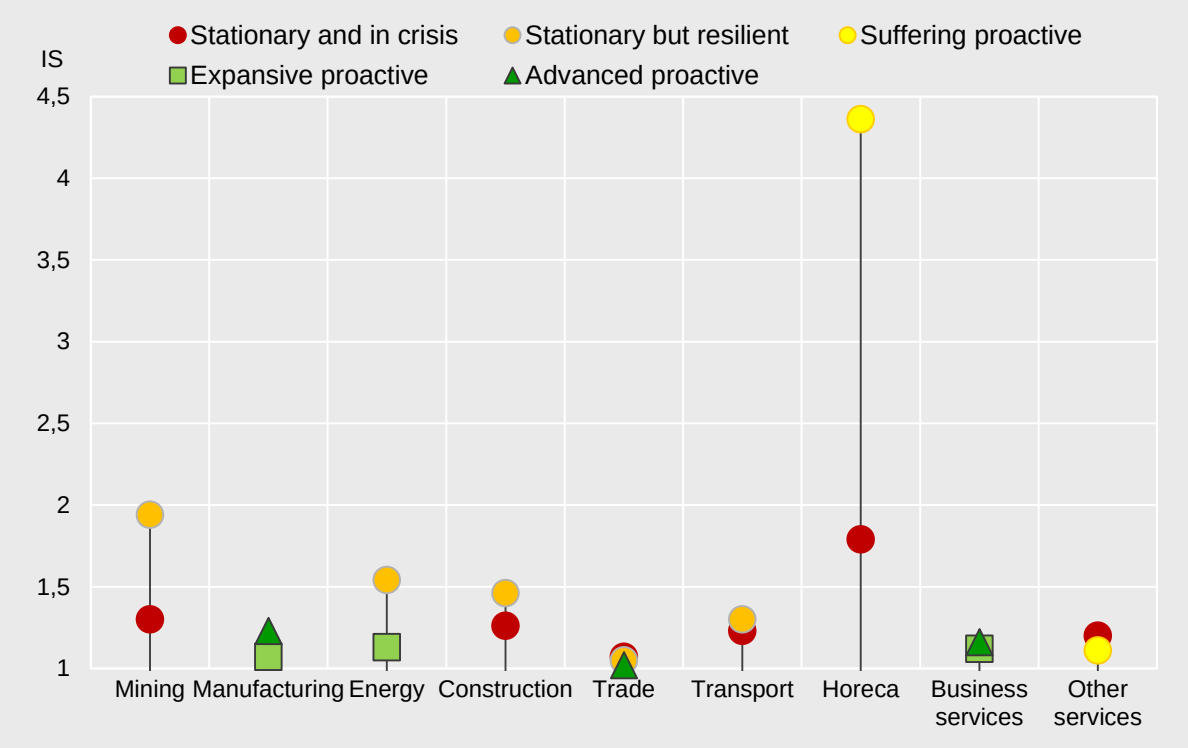


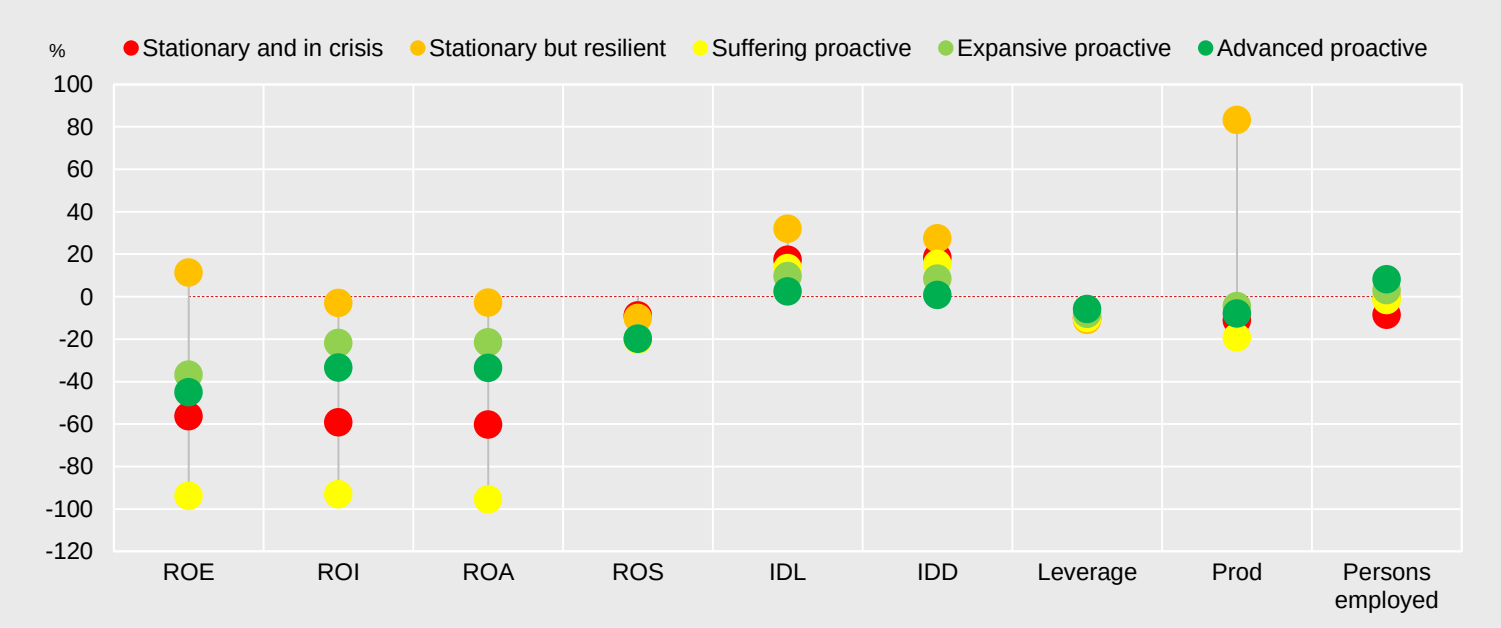
Fig.2 Firms (%) granted by Government subsidy

Stationary in crisis firms: strongly represented in the **Horeca sector** + Construction, Mining and Transport.
Stationary but resilient firms: Mining and Energy sector (the less affected by pandemic).
Suffering proactive firms are strongly concentrated in **Horeca**. *Proactive* in **Manufacturing and Busin. serv**.

Government grants are more frequent in *Expansion* and *Advanced Proactive* firms.

Financial and economic profile by strategic response to crisis (2/2)

Fig. 3 Ratios and main economic indicators by Type of reaction strategy, 2016 –2020 (Panel %Δ)



Profitability crush (Δ% 2016-2019 and 2020) caused by pandemic as ROE, ROI, ROA decrease in 2020 although relatively less for Proactive and Resilient firms.

Reaction of firms: to **increase the liquidity ratios** (IDL, IDD) to compensate the income decrease and to meet commitments in terms of borrowing costs linked to liabilities. Leverage decreases in all types of firms.

Defensive approach is mainly pursued by the *Stationary* and *Suffering proactive* firms, that couple a strong decrease of profitability with a **liquidity hording** by means a decrease of leverage and an increase of liquidity.

The econometric models

- Corporate financing before and during the pandemic

$$Lev = \beta_0 + \gamma\, \boldsymbol{Ratios} + \beta_1\, prod + \beta_2\, size + \beta_3\, rip + \beta_4\, sector + \varepsilon \qquad (1)$$

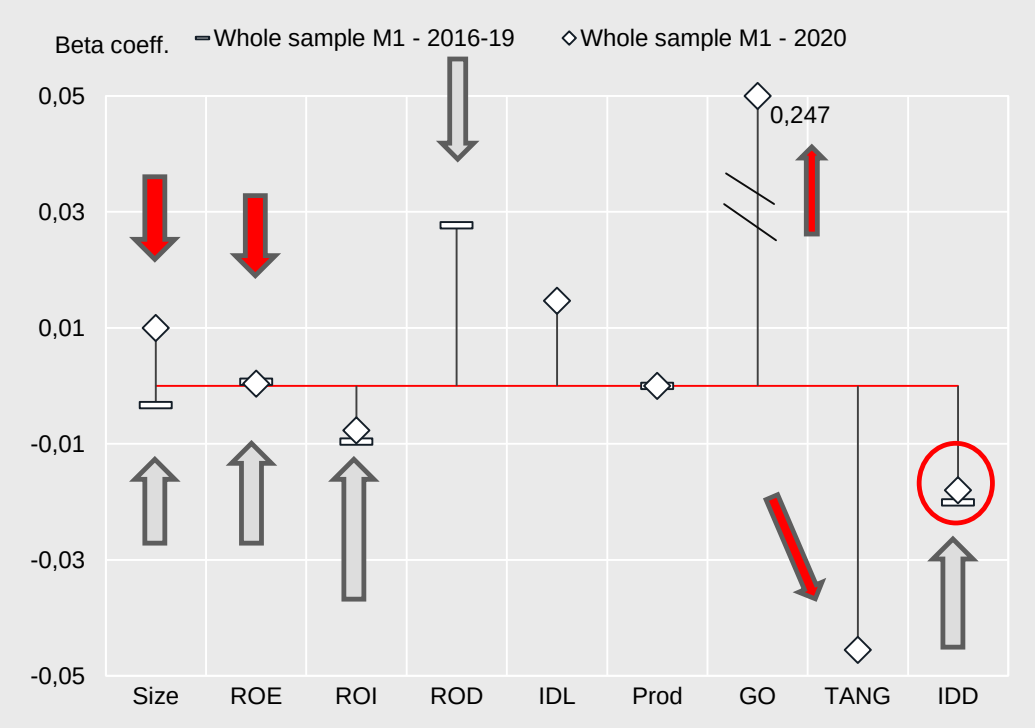
- Effect of Government policies and types of reaction strategies

$$Lev = \beta_0 + \gamma\, \boldsymbol{Ratios} + \beta_1\, prod + \beta_2\, size + \beta_3\, rip + \beta_4\, sector + \beta_5\, mora + \beta_6\, guaran + \varepsilon \qquad (2,2a,2b,2c)$$

$$Lev = \beta_0 + \gamma\, \boldsymbol{Ratios} + \beta_1 size + \beta_2\, rip + \beta_3\, sector + \beta_4\, mora + \beta_5\, guaran + \lambda\ \boldsymbol{Clud} + mora * \boldsymbol{\psi}\ \boldsymbol{Clud} + guaran * \mu\ \boldsymbol{Clud} + \varepsilon \qquad (3)$$

Results (1/3)

- Corporate financing before and during the pandemic (Mod.1)



Pre-COVID19: smaller firms relied more on debt;

profitable firms have greater debt capacity;

the higher the operating and financial returns, the lower the need to resort to debt. ROD+

IDD negative: current liabilities increase (den), IDD decreases and leverage increases

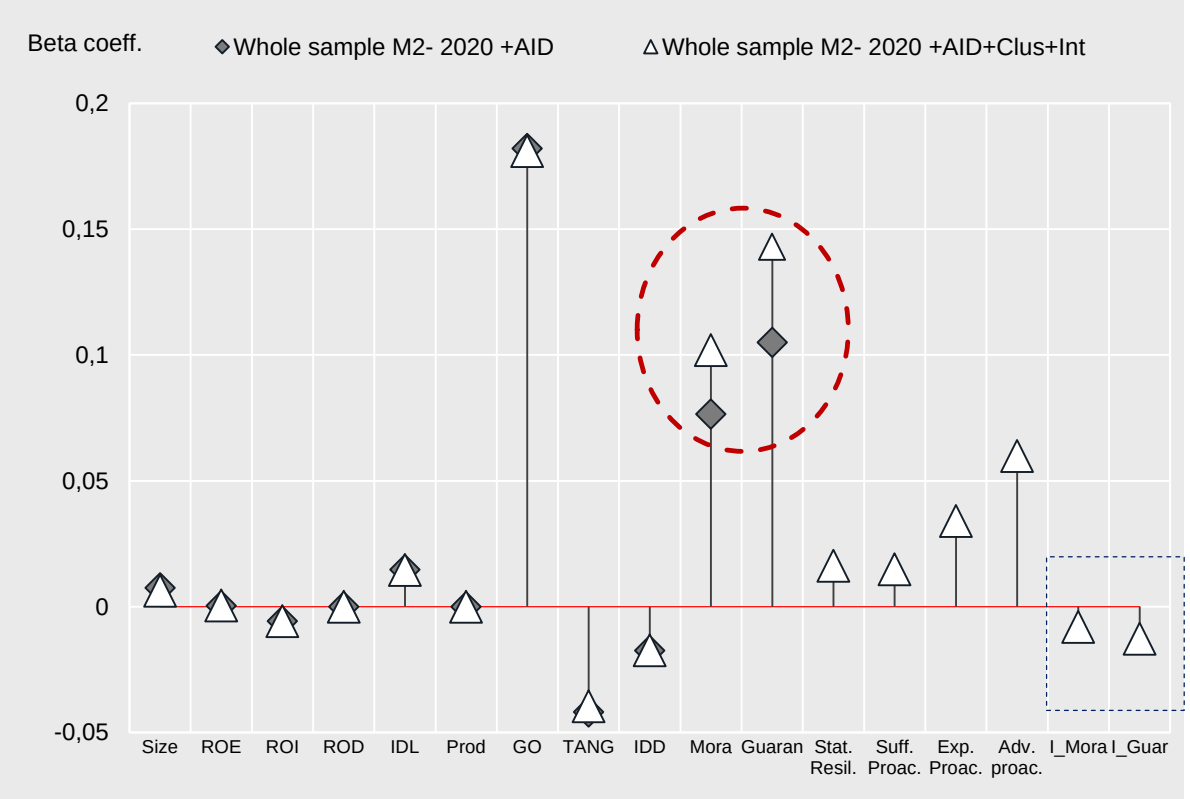
In 2020: all firms increased leverage during the pandemic

Tangible assets (-) and **intangible assets (+)** now play a role: preference to finance intangible investments with external debt (and tangibles with internal resources)

not significant: ROD; ROE, IDD keep same sign

Results (2/3)

- Effect of Government policies and types of reaction strategies (Mod.2, 3)



Both policy measures are associated with an increase in Lev (Guar >> Mora) (Mod.2).

By introducing **reaction strategy** and its **interaction effect** with and Aid (Mod.3), we evaluate whether the type of strategy affects leverage conditional to Aid.

-> Belonging to a higher profile type of strategy **reduces** the marginal leverage increase from subsidies. However, Advanced Proactive leverage even after accounting for interactions (cluster dummies highlight the most reactive firms and exclude 'zombies' that rely on aid to stay alive). **Mora** acted as liquidity stabilizer, **Guaran** more linked to increase in leverage (investments)

Resilient–defensive firms primarily used leverage to preserve liquidity. *Proactive firms* mobilised debt to sustain or expand investment

Results (3/3)

Model (2) by industry reveals a strong heterogeneity.

- *HORECA*: the most subsidized sector, the coefficients of size, ROD, and tangible assets are all negative, while intangible assets is positive as Mod.2. **Guaran** coefficient is larger in magnitude than the Mora's one (0.124 vs. 0.0737) and highest among sectors -> **debt here primarily stabilized liquidity and financed intangibles** rather than tangible assets.
- *Manufacturing*: size is not significant, other explanatory variables as Mod.2; **Mora** and **Guaran** positive and similar in magnitude but lowest magnitude among sectors -> **debt supported intangibles** (significant) while tangible investments (highest magnitude) remained less debt-intensive.
- *Business Services*: mirrors the aggregate model, but intangible assets non-significant, while Guaran again is larger than Mora (0.107 vs. 0.0657) and higher than Manufacturing.
- Two broad strategic responses: (i) **resilient–defensive pattern** (HORECA), where policy support protects liquidity and finance intangibles without expanding tangible capital; (ii) **proactive pattern** (Manufacturing and BS) combines strong pre-crisis profitability with policy support to sustain or expand investment, with guarantees playing the dominant role where leverage rises most.

Discussion and conclusions

- Taken together, regressions reveal two differentiated strategic responses

- **Resilient–defensive group**, concentrated in high-contact services such as HORECA, used leverage mainly to survive and maintain liquidity, often directing debt to intangible activities and avoiding tangible capital investment (*Mora*).

- **Proactive group**, more prevalent in Manufacturing and Business Services, combined strong pre-crisis profitability with access to state *Guarantees* to sustain or expand investment, including tangible assets.

This configuration aligns with evidence that resilience depends not only on size but also on pre-existing organisational capabilities, innovation propensity, and sectoral position (Criscuolo, 2021; Belitski et al., 2022; Costa et al., 2022).

Discussion and conclusions

- Our results also contribute to the discussion on potential zombification: while early contributions warned that additional debt to already-indebted firms could merely postpone insolvency (Carletti et al., 2020), our estimates are closer to the view that most pandemic-era liquidity needs arose among otherwise viable firms and that the scale of zombie lending was limited (Schivardi et al., 2020).
- From a policy standpoint, these results imply that while crisis measures successfully prevented a systemic credit crunch, their investment effects were uneven. **Policy implications**:

(i) Crisis measures should *differentiate by pre-crisis viability and strategic orientation*, rather than apply broad eligibility rules;

(ii) The *choice of instrument matters*: debt-based support can address temporary liquidity shortages, but equity or hybrid instruments are preferable when solvency risks and recovery needs are significant.

(iii) As the investment effects of guarantees disproportionately benefit already proactive firms, such instruments should be *complemented by capability-building in vulnerable segments* to prevent the deepening of structural divides;

(iv) *Closer integration between industrial and financial policy* is essential to ensure that short-term stabilisation also advances long-term structural objectives.

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