

Global Economic Blow:

How to navigate and model the impact of COVID-19 in the Turkish economy

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Agenda

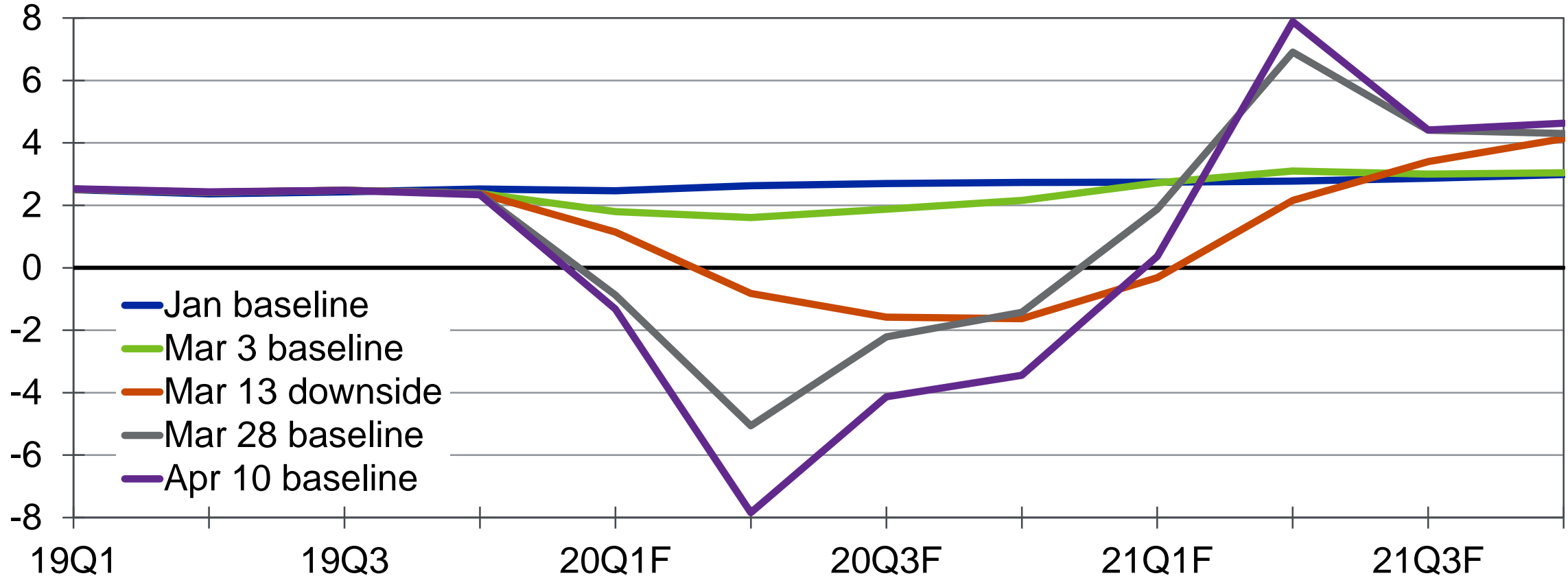
1. COVID-19: Prospects for the Turkish Economy
2. Macroeconomic Forecasting During the Epidemic
3. Taking Action to Mitigate Risk: COVID-19's Impact for Banks

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COVID-19: Prospects for the
Turkish Economy

Global Economic Outlook Worsens...

Global real GDP by forecast vintage, % change yr ago



Source: Moody's Analytics

...And Intensifying Around The Globe

Real GDP growth, annualized % change

		2020Q1	2020Q2	2020Q3	2020Q4	2019	2020
World	January base	2.7	2.9	2.7	2.6	2.5	2.6
	March base	0.7	1.6	3.5	2.8	2.4	1.9
	April Base	-10.9	-22.1	19.9	4.5	2.4	-4.2
United States	January base	1.5	2.2	1.5	1.2	2.3	1.8
	March base	1.1	-0.4	1.7	2.4	2.3	1.3
	April Base	-8.0	-30.2	16.7	1.1	2.3	-5.8
China	January base	7.2	6.6	5.5	5.8	6.1	6.2
	March base	-0.9	5.1	11.4	5.8	6.1	4.4
	April Base	-29.0	10.3	27.7	12.1	6.1	-1.0
United Kingdom	January base	1.2	1.1	1.1	1.1	1.3	1
	March base	0.6	0.5	1.2	1.1	1.4	0.7
	April Base	-3.1	-36.7	25.8	5.8	1.4	-5.7
Euro Zone	January base	1.4	1.5	1.8	1.4	1.2	1.3
	March base	0.7	0.8	1.2	1.3	1.2	0.8
	April Base	-14.8	-40	59.3	1.6	1.2	-7.0
Turkey	January base	3.2	3.1	3.2	3.4	0.3	3.7
	March base	-0.9	2.3	3.4	2.8	0.9	2.9
	April Base	-11.8	-48.2	80.5	5.6	0.9	-5.3

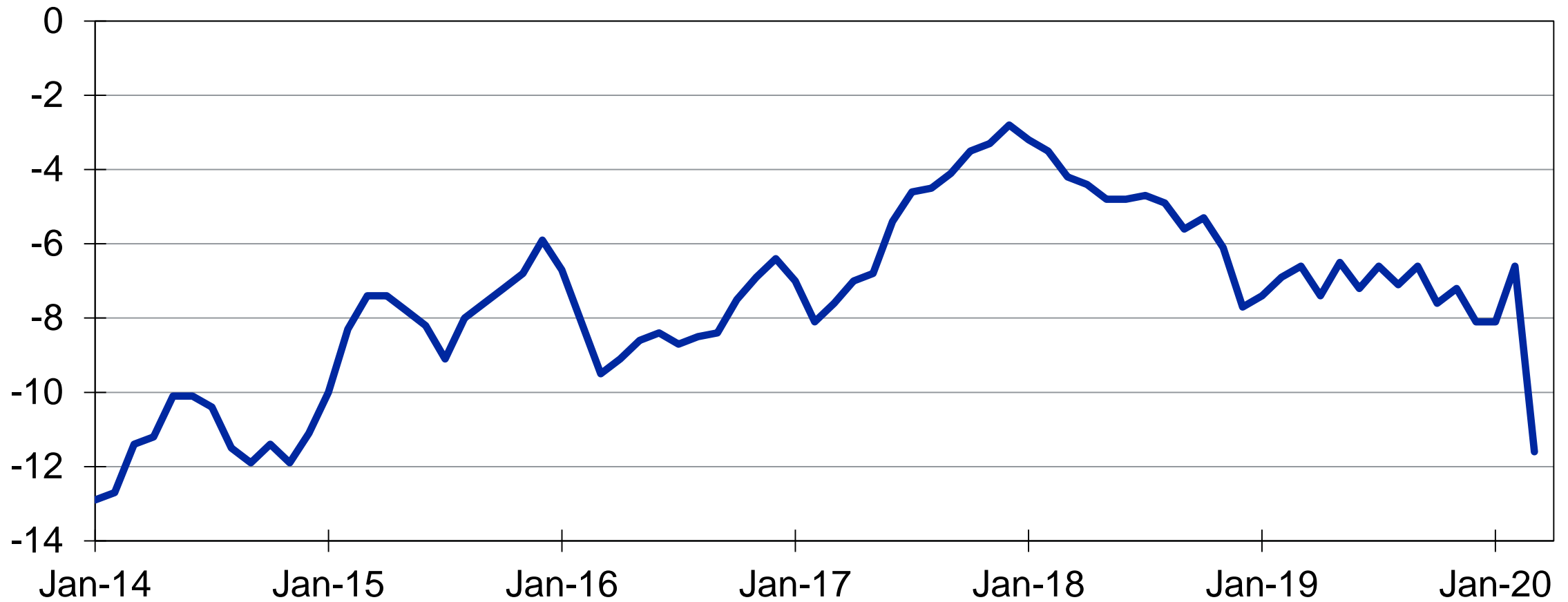
Source: Moody's Analytics

Policymakers Have Responded...

COUNTRY	FISCAL POLICY	MONETARY POLICY
Italy	€25 bn (1.4% of GDP) emergency package and €750 bn (41% of GDP) loan guarantees	ECB: €750 bn (7% of GDP) Pandemic Emergency Asset Purchase Program; additional €120 bn (1% of GDP) for existing APP
France	€110 bn (4% of GDP) fiscal package and €300 bn (13% of GDP) loan guarantees	ECB
Spain	€8.9 bn (1% of GDP) aid package and €200 bn (16% of GDP) loan guarantees	ECB
Germany	€50 bn (2% of GDP) direct transfers to SMEs; €20 bn (1% of GDP) social spending; €550 bn (22% of GDP) loan guarantees; €200 bn (8% of GDP) Economic Stabilization Fund	ECB
UK	£72 billion (3% of GDP) fiscal spending and £330 billion (15% of GDP) loan guarantees	Rate cuts in March (65 bps overall); expanding UK government bond holdings by £200 (9% of GDP)
Turkey	\$15.4 bn (2% of GDP) fiscal measures	Cut key rate by 100 bps to 9.75%. Stepped up purchases of government securities. Loosened reserve requirements; 60 bn lira worth of rediscount credits to exporters and other services that earn foreign exchange.
Russia	\$4 bn (0.2% of GDP) amount of funds allocated to help businesses and citizens	No rate change. New \$7 bn (0.5% of GDP) lending facility for SMEs and reduced interest rate on existing facility

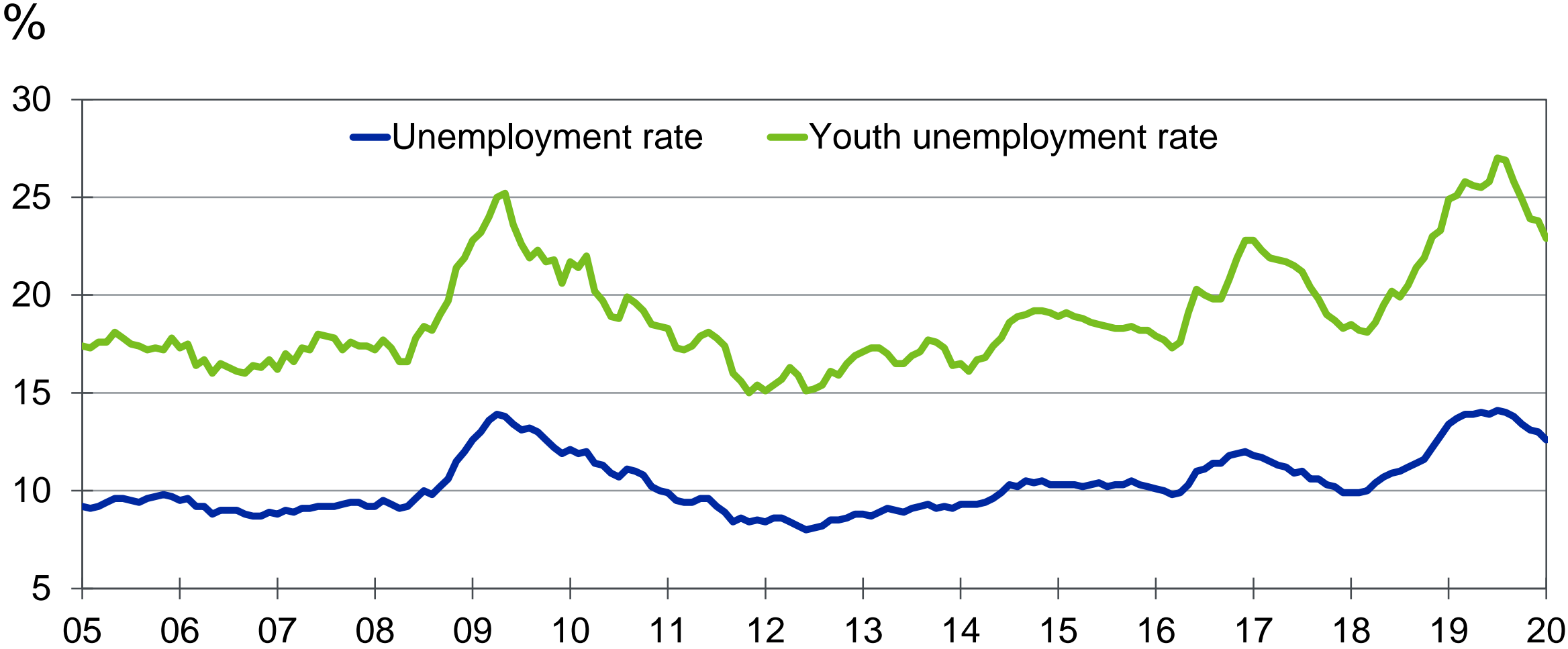
... But Consumer Sentiment Nosedives

Euro zone consumer confidence index



Sources: European Commission, Moody's Analytics

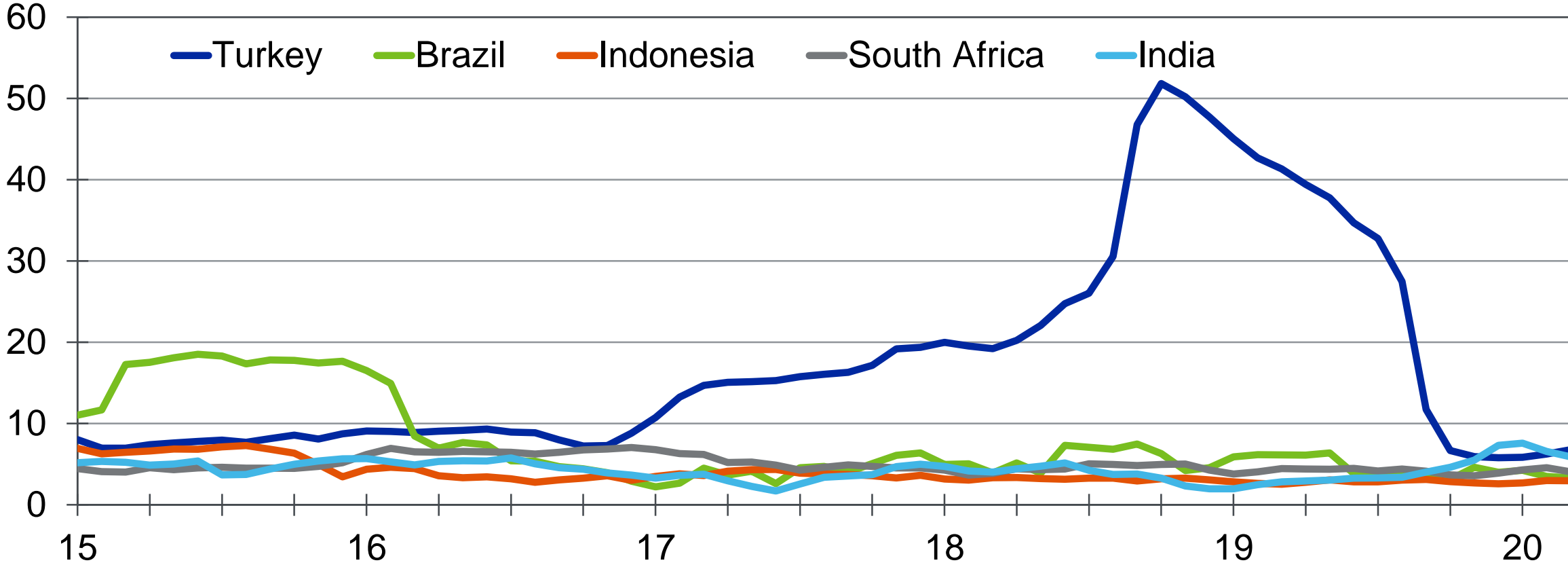
Turkey Faces COVID-19 With a High Jobless Rate



Sources: Turkstat, Moody's Analytics

Turkey's Inflation Has Been Tamed...

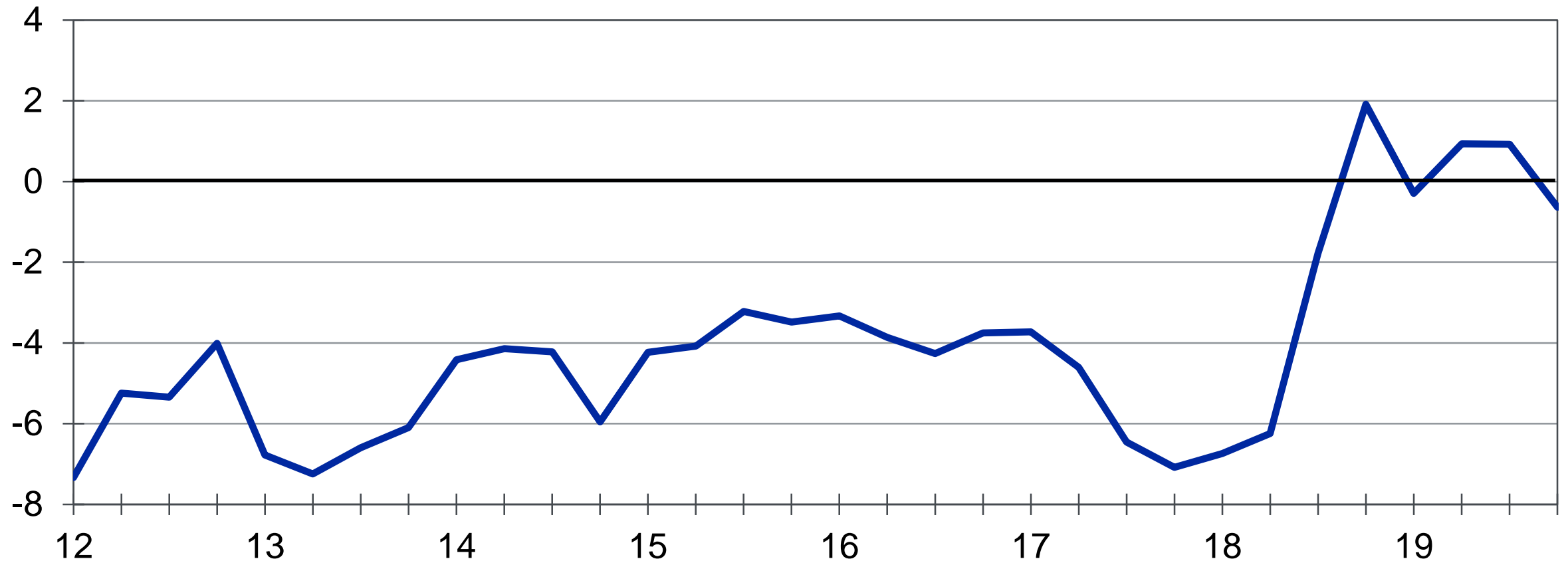
Consumer price index, all items, % change yr go



Sources: National statistical offices, Moody's Analytics

...And the Current Account Has Improved...

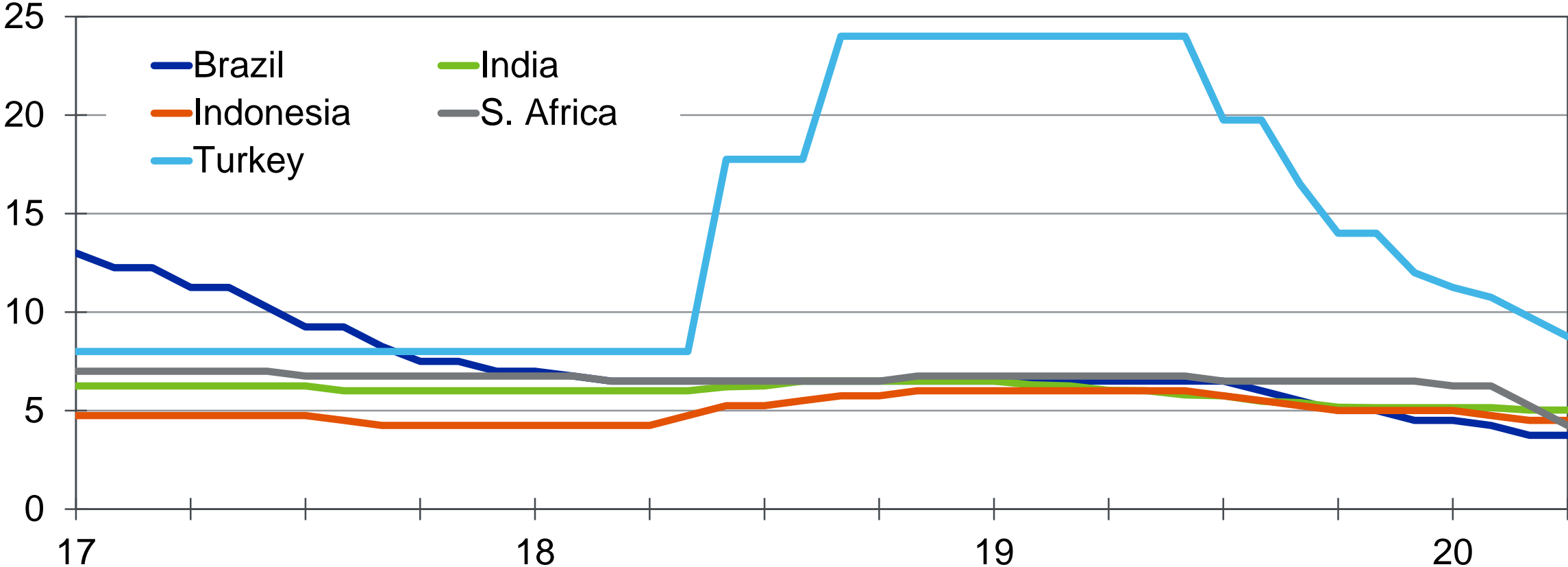
Current account balance as % of GDP



Sources: Central Bank of the Republic of Turkey, Moody's Analytics

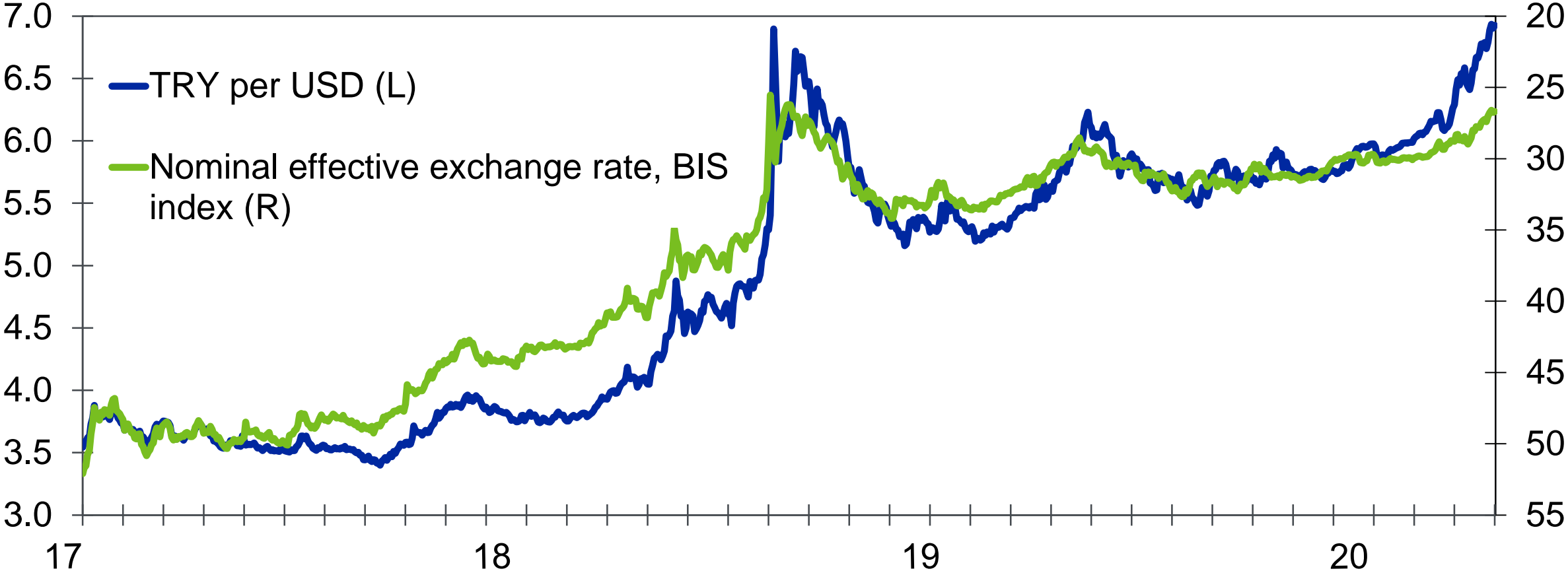
Giving Central Bank Room to Cut

Monetary policy rate, ppts



Sources: Central Banks, Moody's Analytics

But the Turkish Lira Has Weakened Again...

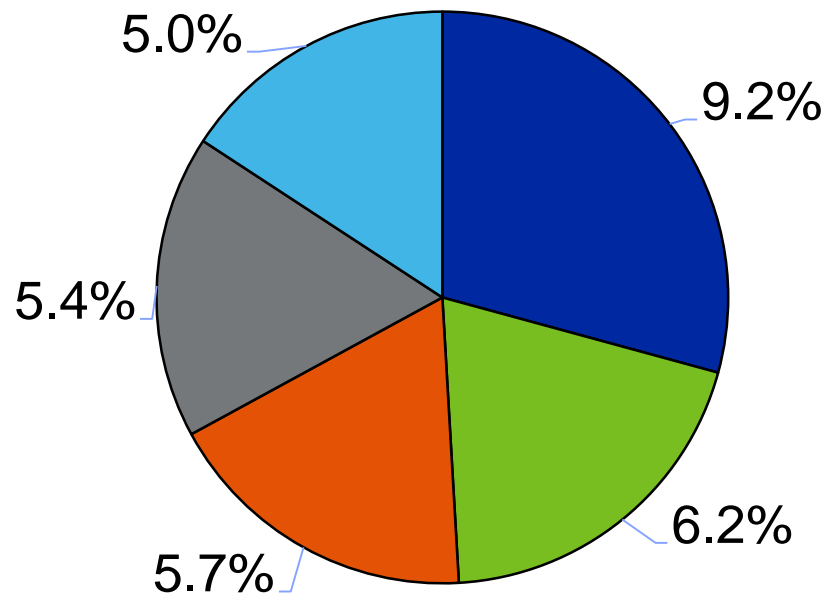


Sources: BIS, Central Bank of the Republic of Turkey, Moody's Analytics

Turkey's Export Markets Are Weak

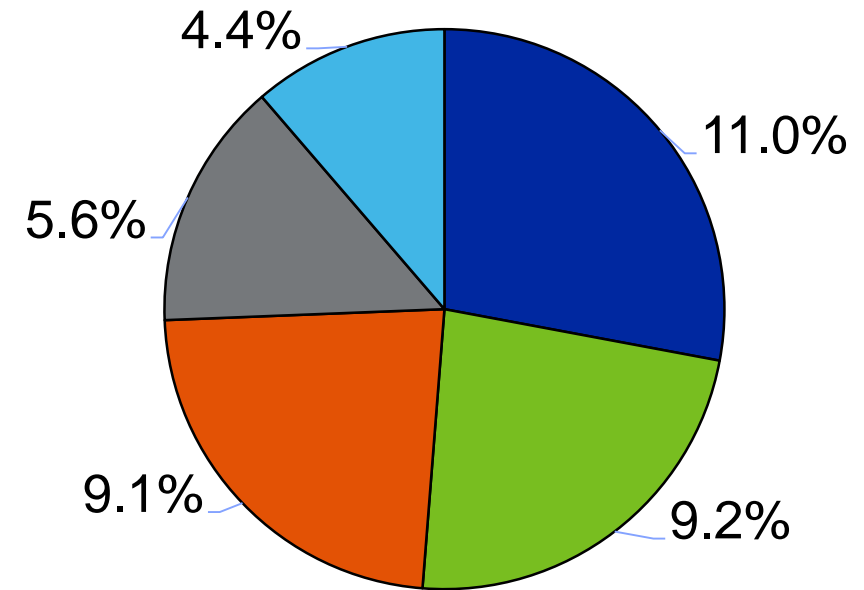
% of total exports, 2019

Export Partners



■ Germany ■ United Kingdom ■ Iraq ■ Italy ■ U.S.

Import Partners



■ Russia ■ Germany ■ China ■ U.S. ■ Italy

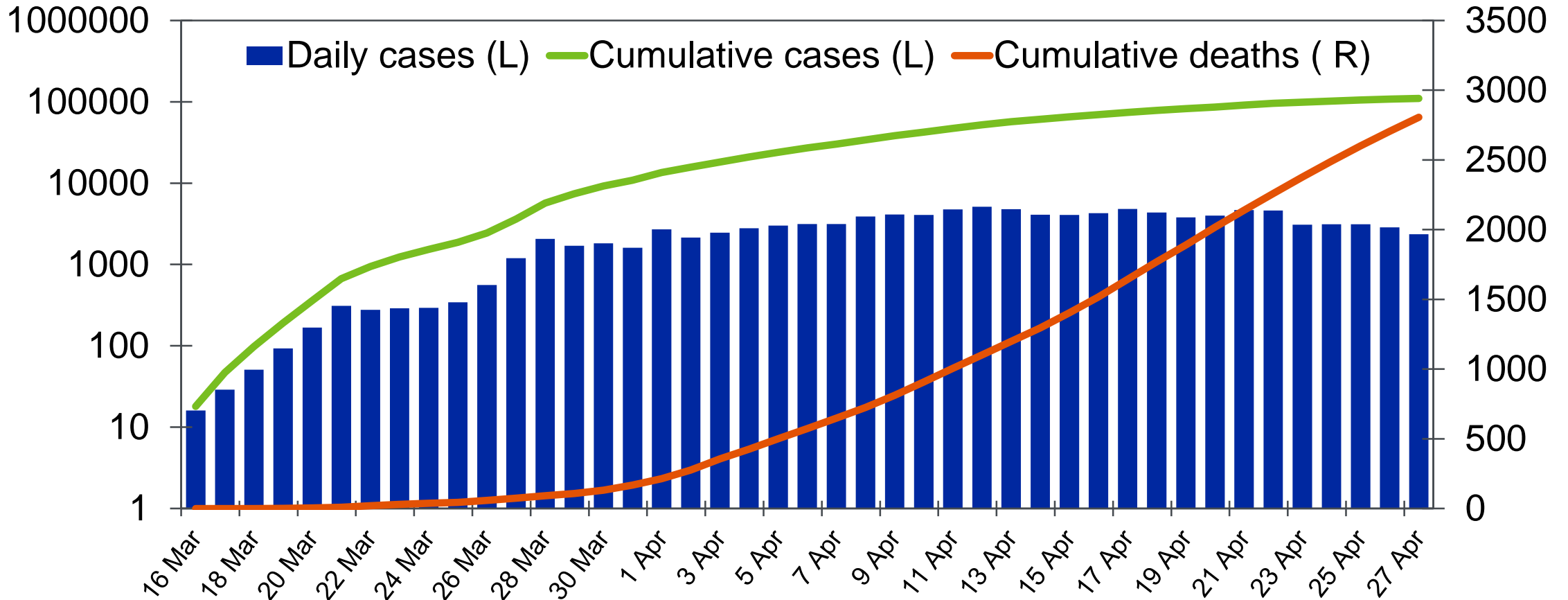
Sources: Turkstat, Moody's Analytics

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Macroeconomic Forecasting During the Epidemic

COVID-19 Epidemic Peaking In Turkey

Turkey, ADF(p-value, infections)=1%, ADF(p-value, deaths)=57%



Source: World Health Organization, Moody's Analytics

Global Epidemiological Assumptions

COVID-19: Upside **S1 Scenario**

- 5-10 mil confirmed global infections
- New infections peak in April
- 1.0% case fatality rate
- 8% hospitalization rate
- Infections abate by June

COVID-19 **Baseline Forecast**

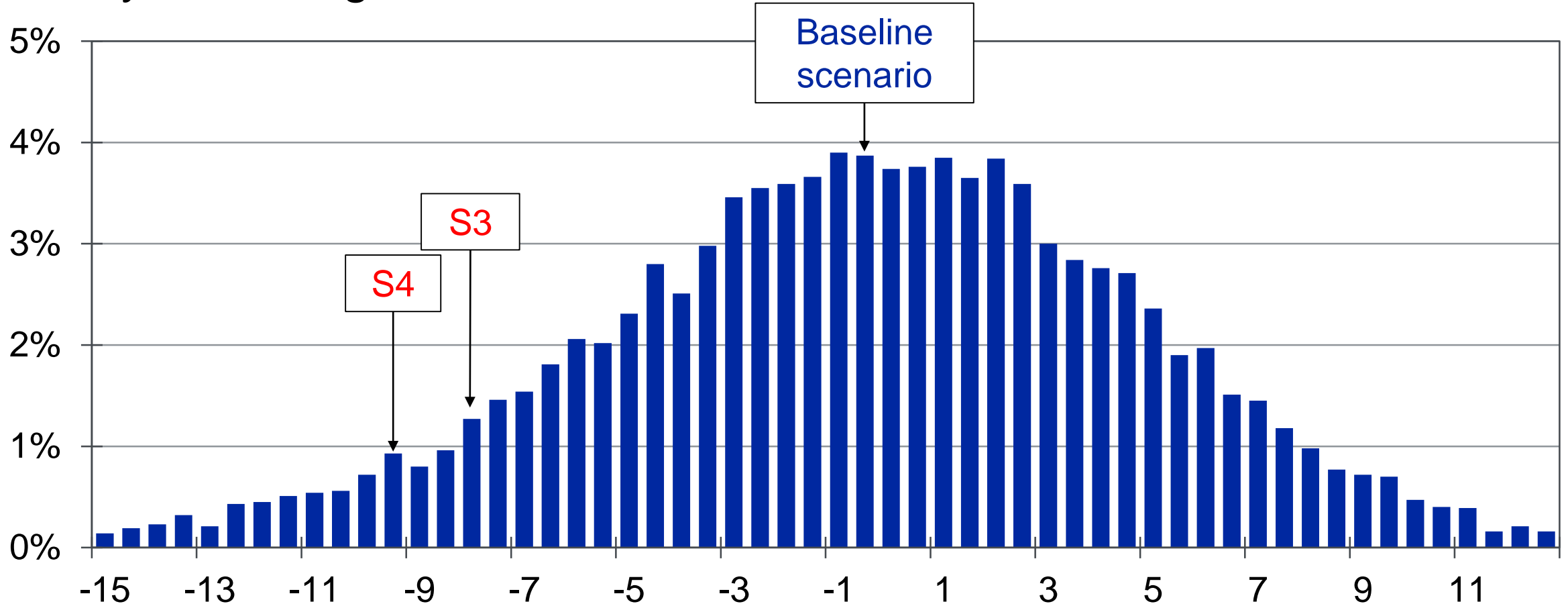
- 10-15 mil confirmed global infections
- New infections peak in May
- 1.5% case fatality rate
- 10% hospitalization rate
- Infections abate by July

COVID-19: Downside **S3 Scenario**

- 15-20 mil confirmed global infections
- New infections peak in June
- 4.5% case fatality rate
- 20% hospitalization rate
- Infections abate by September

Severity with Respect to the Updated Baseline Forecast

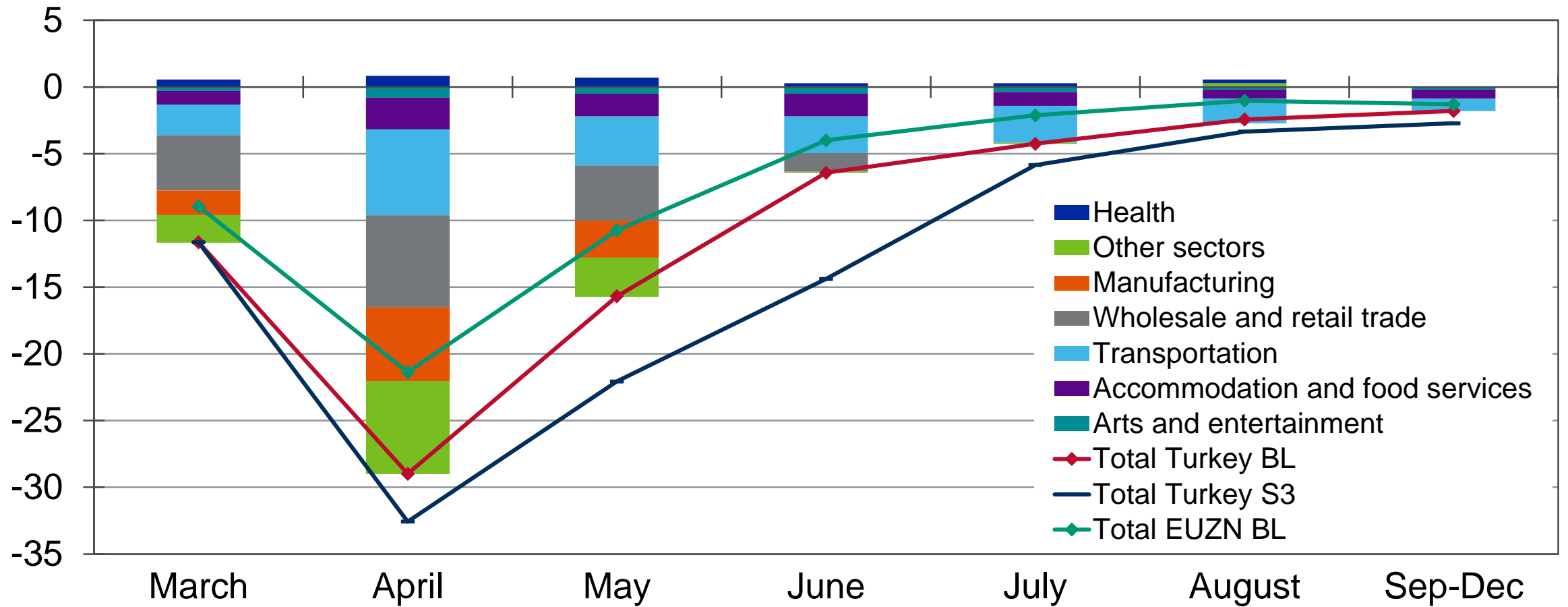
Turkey GDP, avg deviations from baseline, %



Source: Moody's Analytics

GDP Path Calibartion

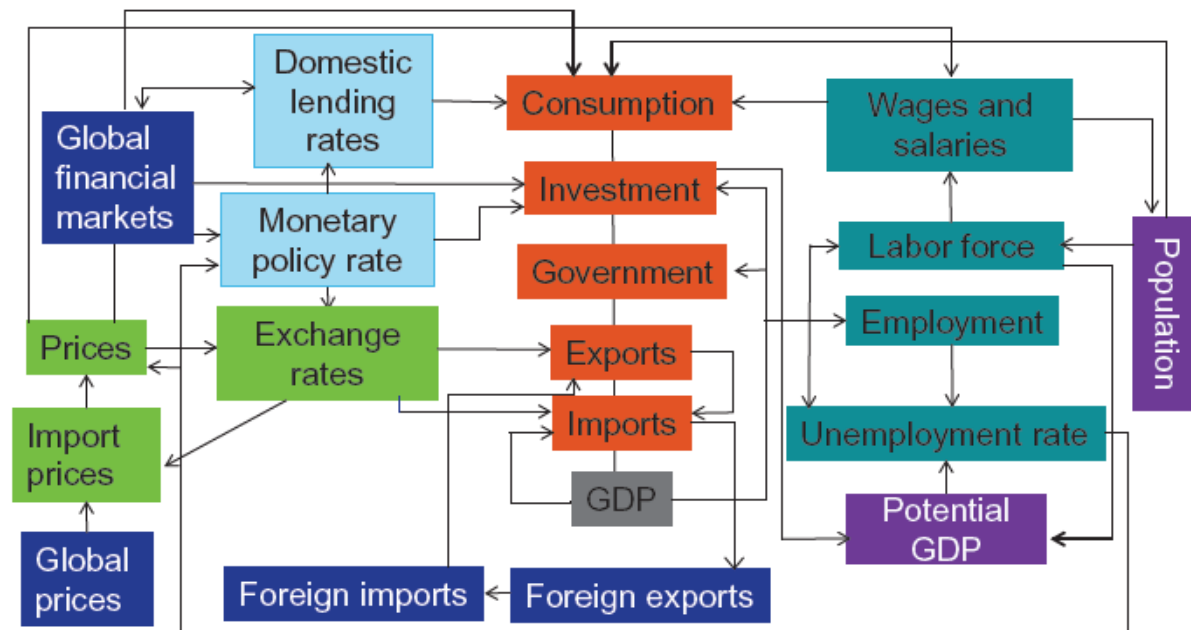
Contributions to deviation from normal level of activity, ppts, Turkey



Source: Moody's Analytics

Turkey Is a Part of the Global Macroeconomic Model

Detailed Quantitative & Qualitative Testing



Specification choice

- » Theoretical reasoning versus statistical properties

In-sample equation fit

- » R-squared, RMSE, information criteria
- » Fitted values and residuals

Forecasting performance

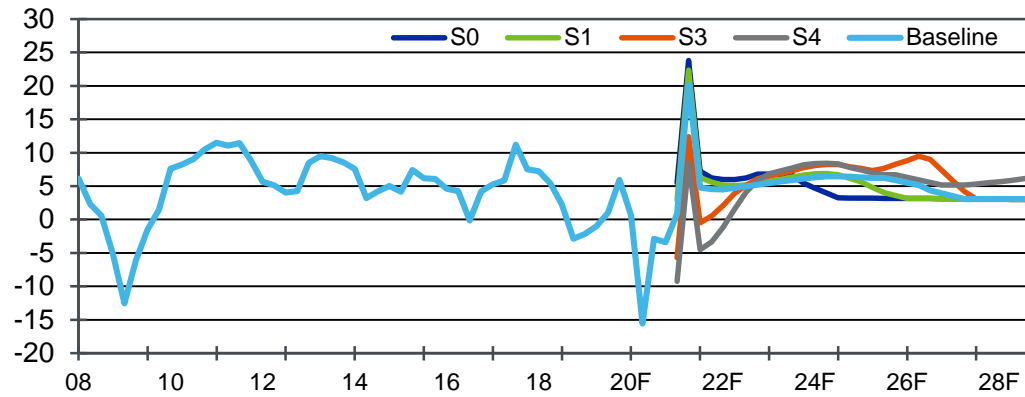
- » Back-testing: conditional and unconditional evaluation
- » Benchmarking during important past episodes

Sensitivity to shocks

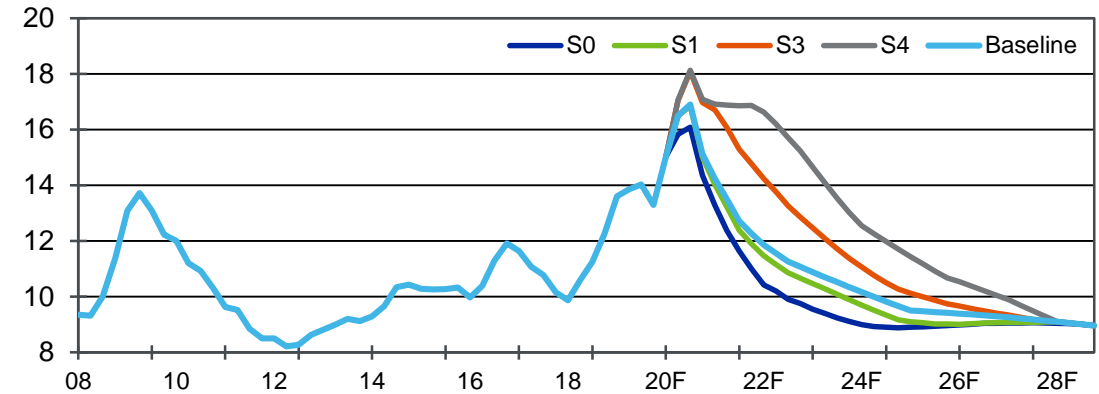
- » Forecasts across scenarios
- » Response to individual shocks

Turkey Scenario Forecasting

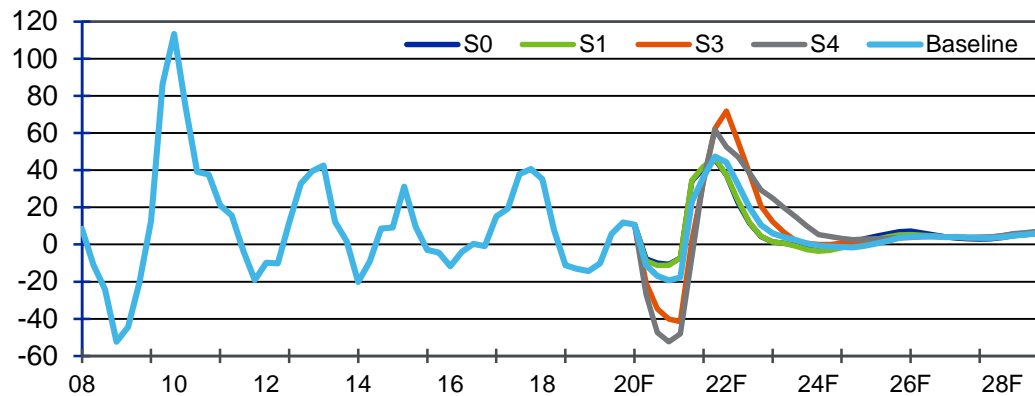
Real GDP, % change yr ago



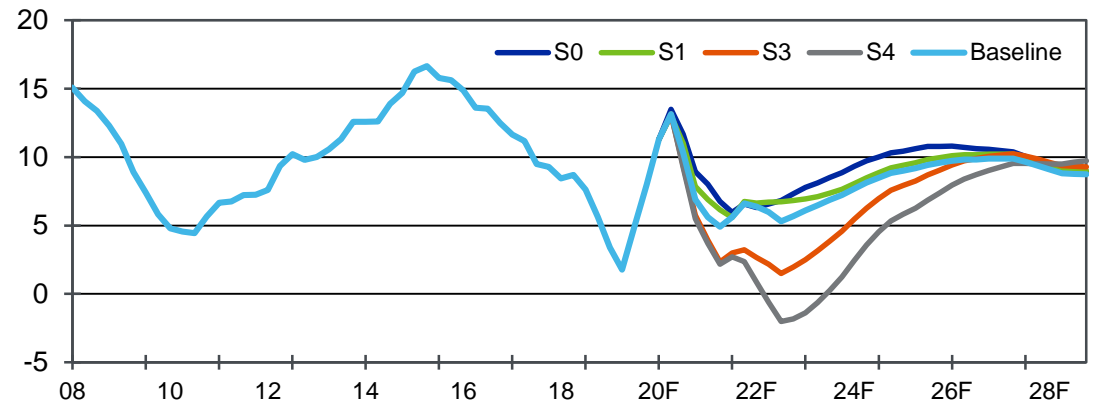
Unemployment Rate, %



Stock Market: IMKB National 100 Index, % change yr ago



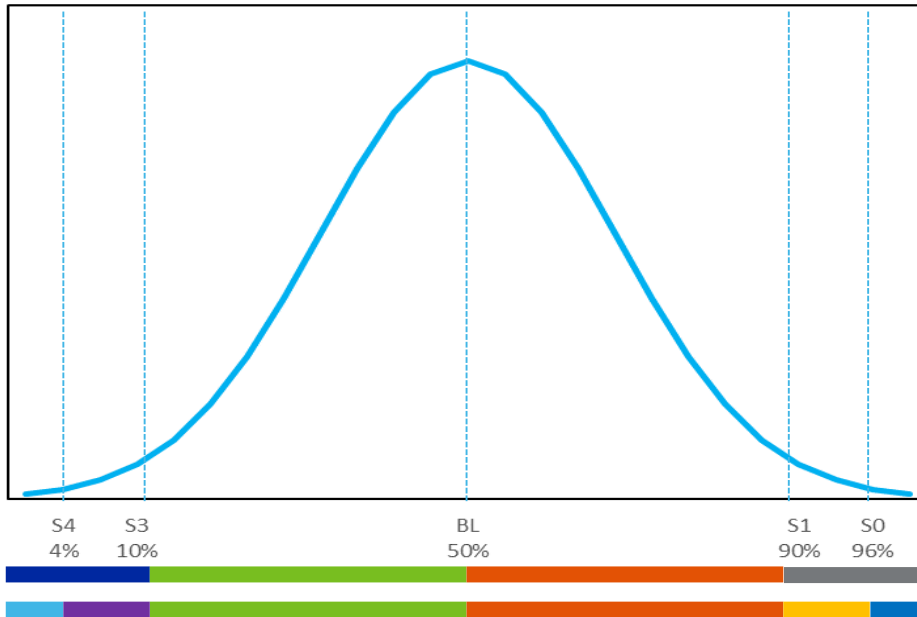
House Prices, % change yr ago



Sources: Turkish Statistical Institute, Moody's Analytics

How to Compute IFRS 9 Weights? – ‘Mid-point Approach’

Schematic – GDP growth %, 10k simulations over a 5-yr period



3 scenarios:

$$P(S1) = \text{grey} + \text{orange} / 2 = 30\%$$

$$P(S3) = \text{blue} + \text{green} / 2 = 30\%$$

$$P(BL) = 100\% - P(S1) - P(S3) = 40\%$$

5 scenarios:

$$P(S0) = \text{yellow} + \text{dark blue} / 2 = 7\%$$

$$P(S1) = \text{orange} / 2 + \text{yellow} / 2 = 23\%$$

$$P(S3) = \text{purple} / 2 + \text{green} / 2 = 23\%$$

$$P(S4) = \text{light blue} / 2 + \text{purple} = 7\%$$

$$P(BL) = 100\% - P(S0) - P(S1) - P(S3) - P(S4) = 40\%$$

Scenario	Description	Percentiles
Scenario 0 (S0)	Very Strong Near-Term Growth	4%
Scenario 1 (S1)	Stronger Near-Term Growth	10%
Baseline (BL)	Baseline	50%
Scenario 2 (S2)	Slower Near-Term Growth	75%
Scenario 3 (S3)	Moderate Recession	90%
Scenario 4 (S4)	Protracted Slump	96%

3

Taking Action to Mitigate
Risk: COVID-19's Impact
for Banks

What Should the Banks Do?

4 Important Pillars

Understand

Identify

Measure

Act



Scenario Analysis

- ❖ Quantify what COVID-19 means for the economy
- ❖ Generate multiple future paths for the evolution of COVID-19



Credit monitoring framework

- ❖ Which part of the book I should be worried about?
- ❖ Early warning system & triggers
- ❖ Identify vulnerable industries and countries



Capital planning and stress testing

- ❖ Scenario-based analysis of capital demand and supply
- ❖ Identify capital needs and at which point in time
- ❖ Test different strategies



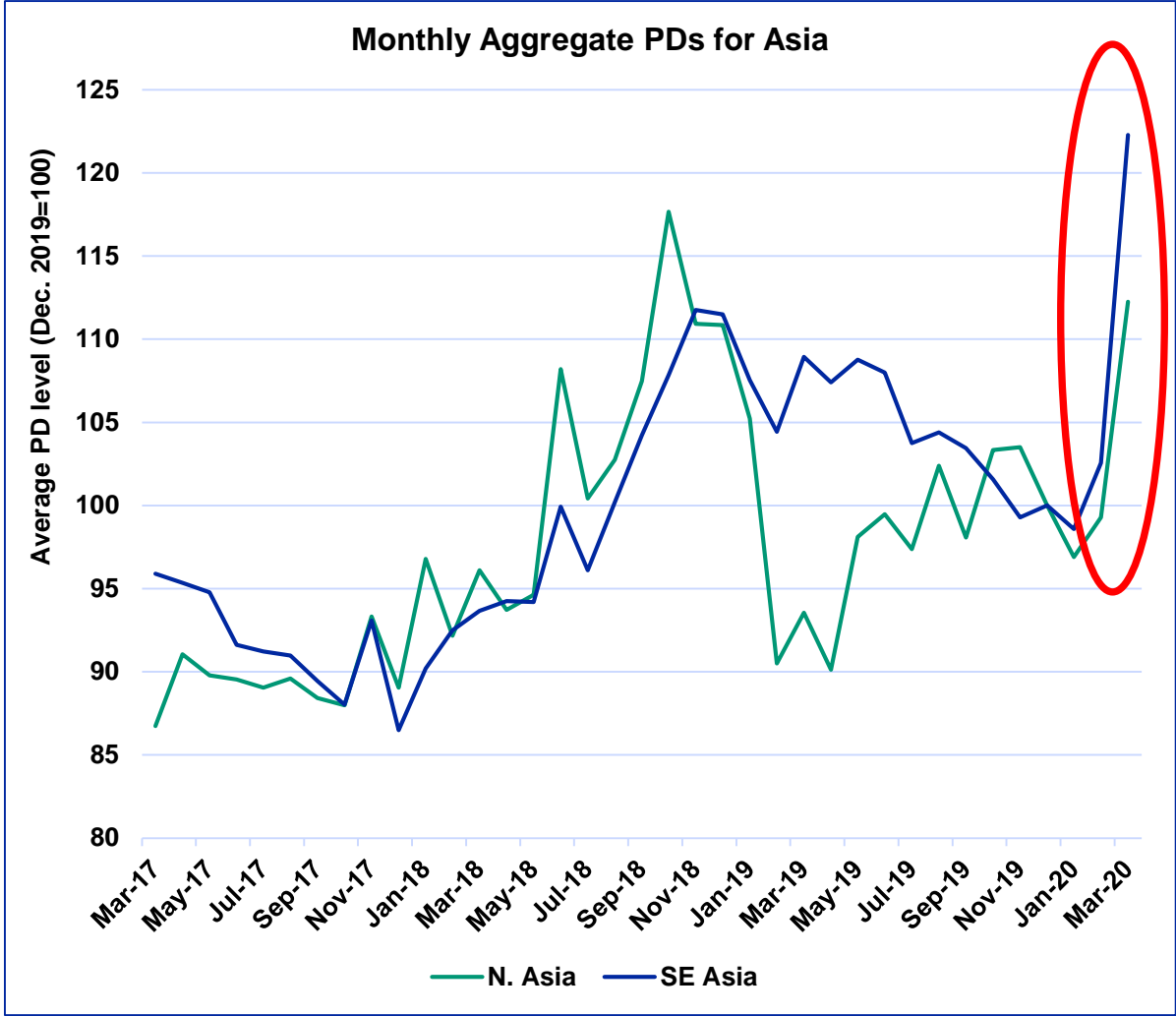
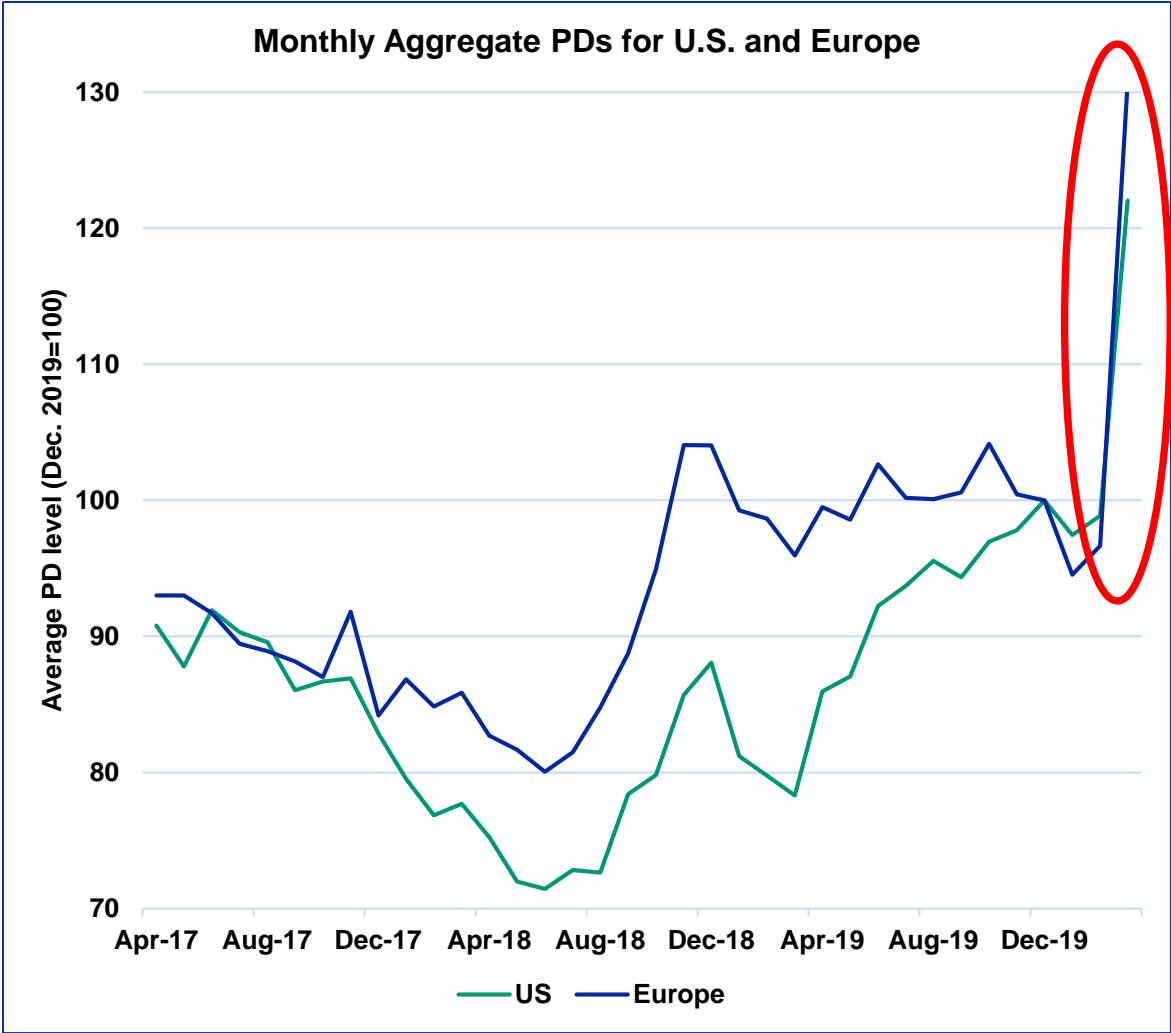
Portfolio Management and Optimization

- ❖ Identify vulnerable exposures and portfolios under stress
- ❖ Optimize capital allocation on the back of COVID-19

Actionable Output to Navigate through these Difficult Times

The impact of on credit risk is already evident

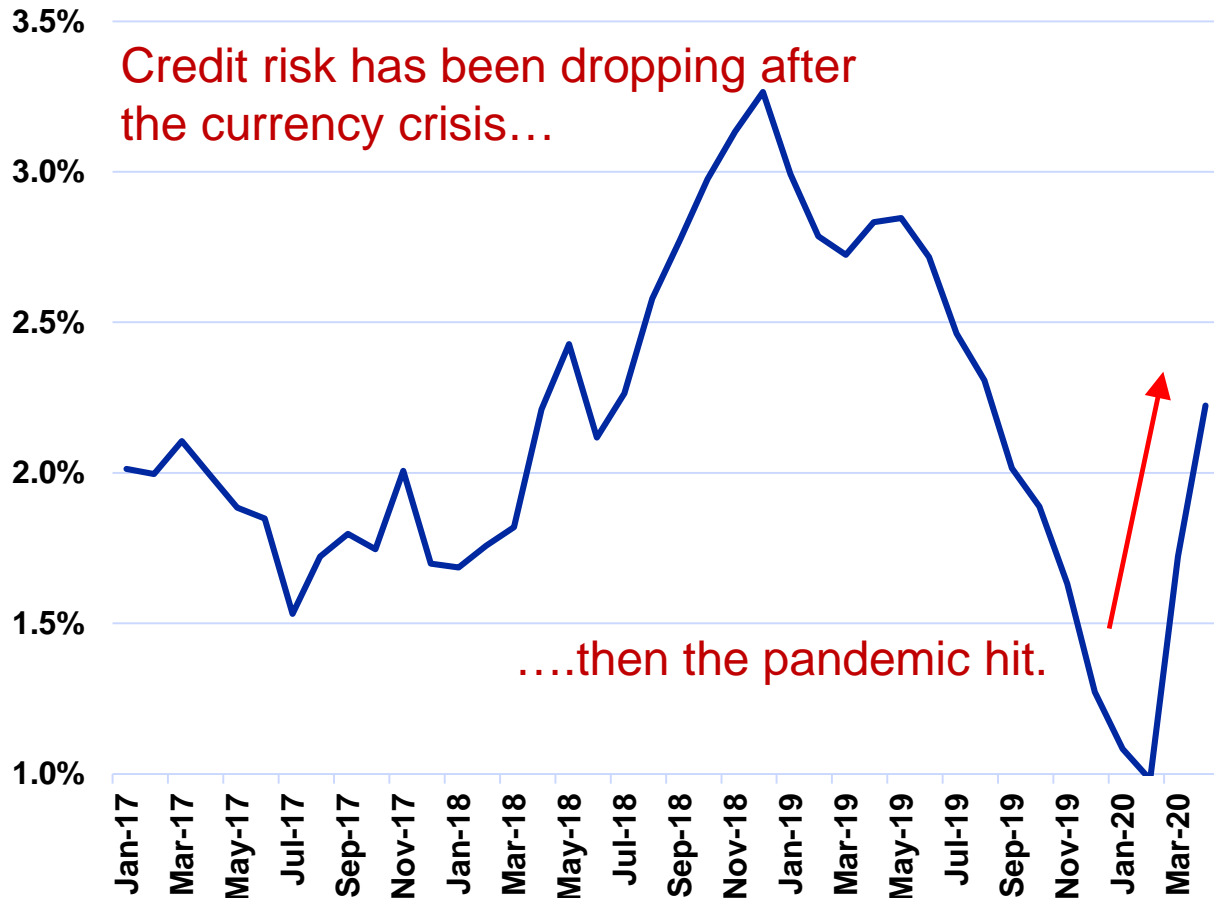
Sharp spikes in PDs across the globe



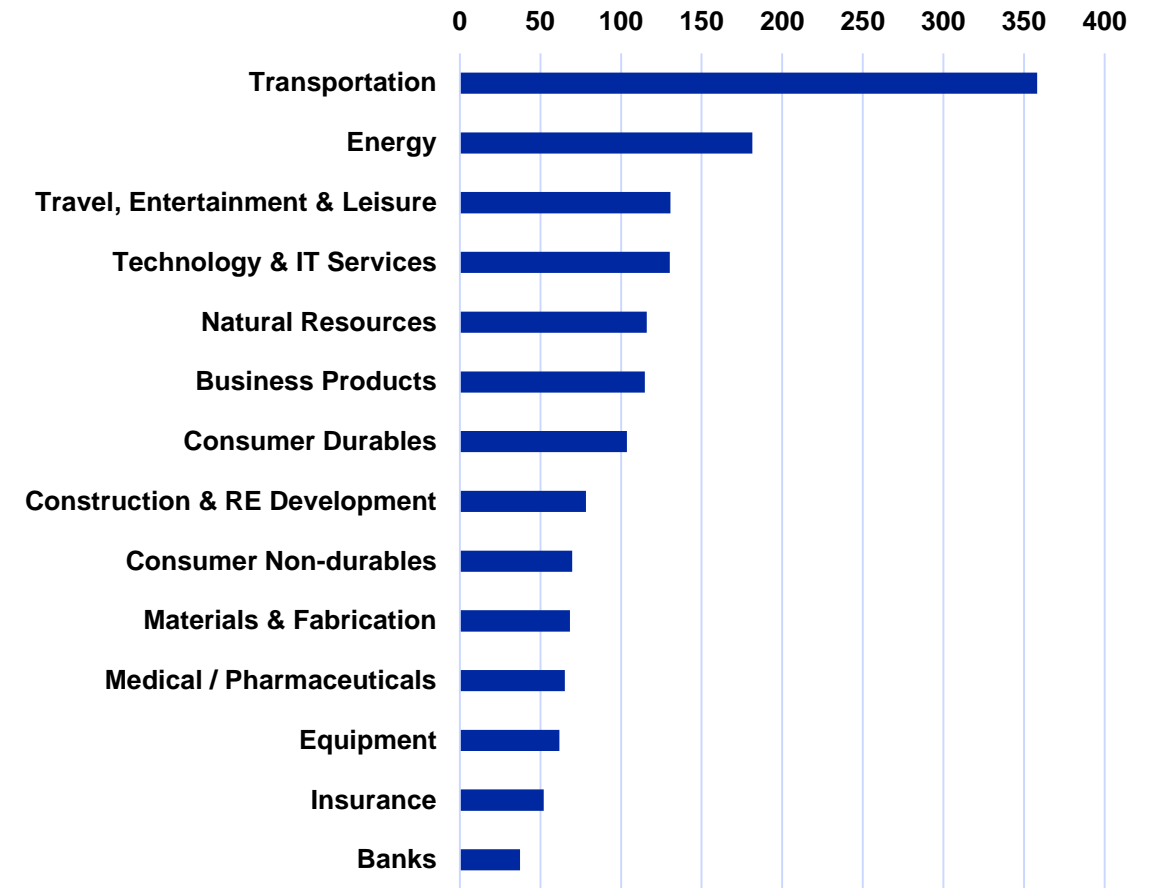
...and Turkey is no exception

PDs start to rise at a pace similar to the currency crisis in 2018-2019

Average 1-year PD for listed firms - Turkey



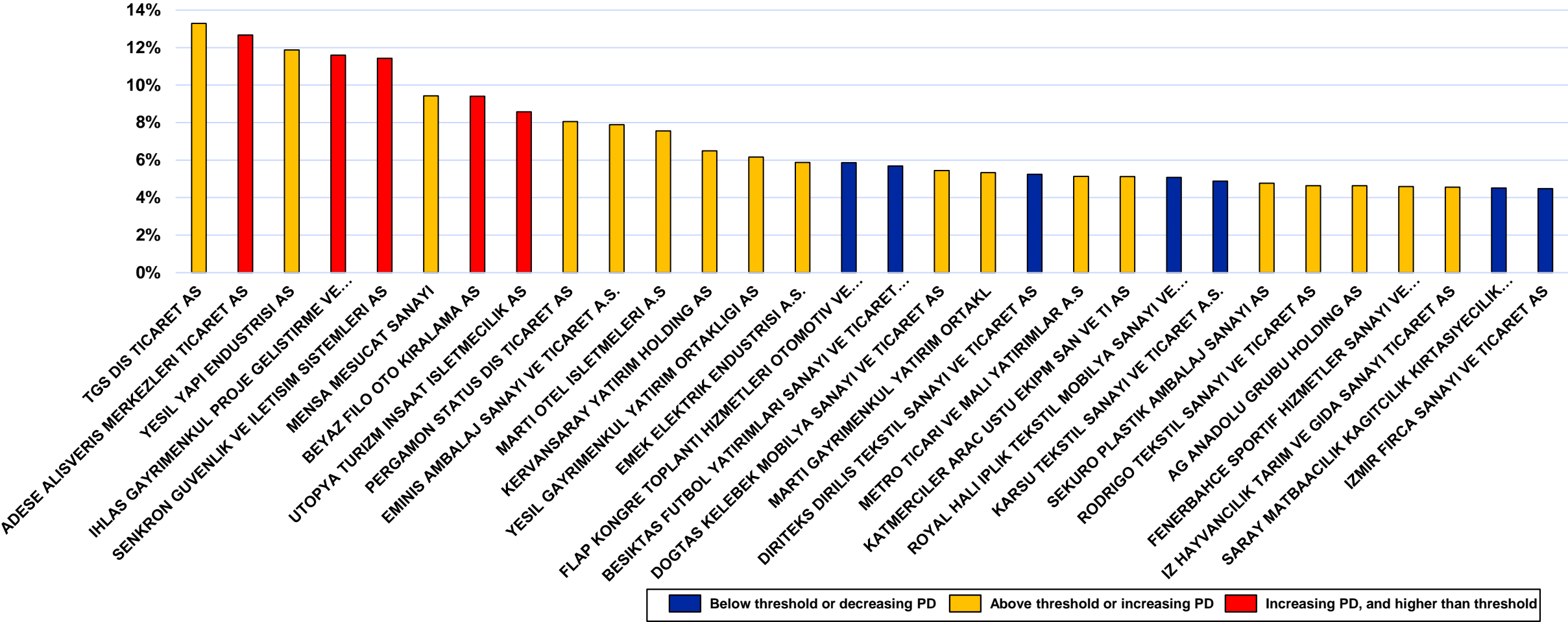
Average % Change in PDs vs Dec 2019 - Sectors



But can you spot the risky obligors?

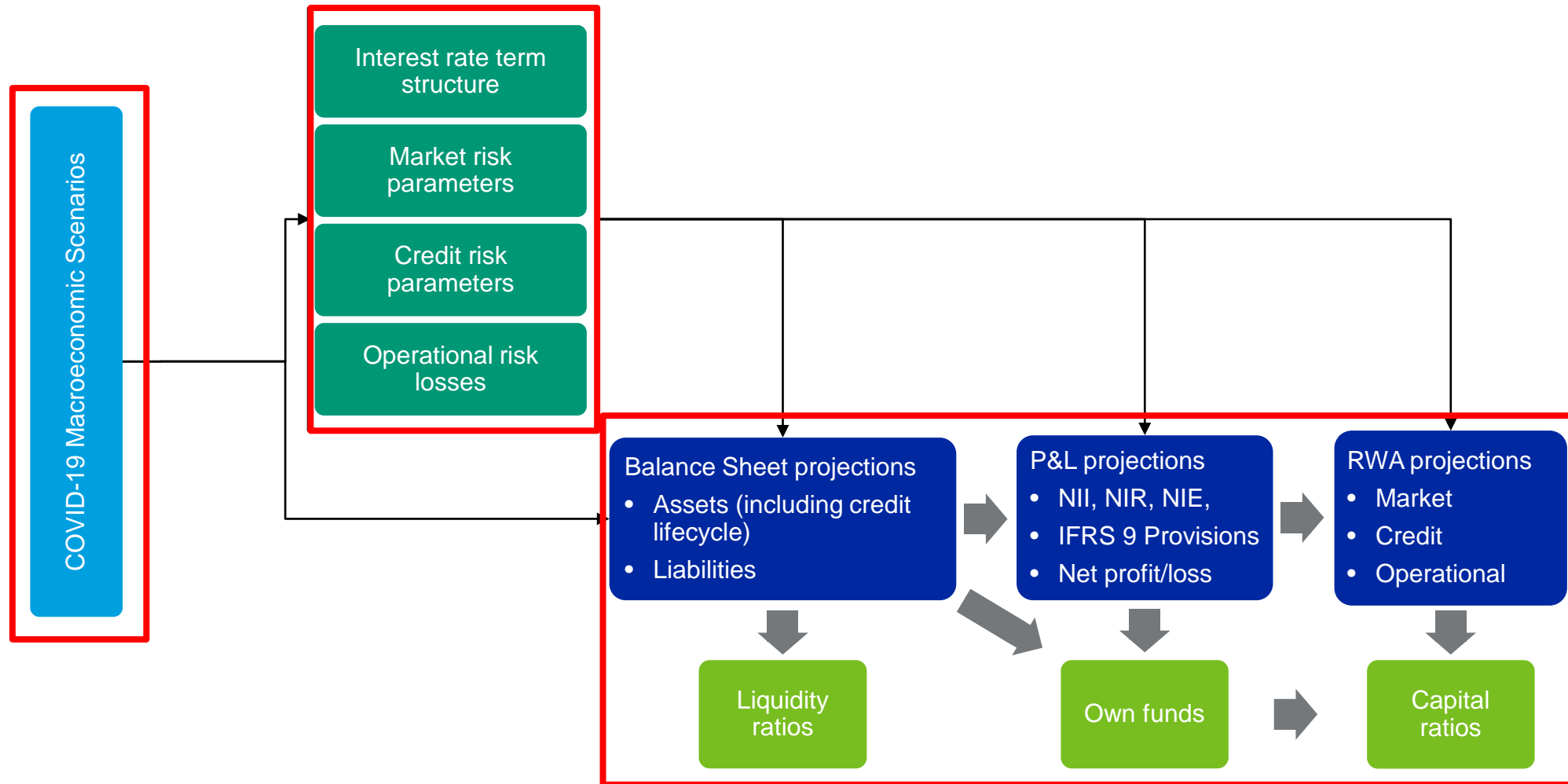
Multi-faceted Early Warning Monitor for portfolio profiling

Top 30 listed companies in Turkey with the Highest Default Probability



Focus on Forward-looking Planning

Capital and liquidity planning



Further Impact on P&L

Net Interest Income & Growth



Increase in credit losses as downturn in key economic sectors, small business failures, job losses and pay cuts will result in losses within the retail portfolios.



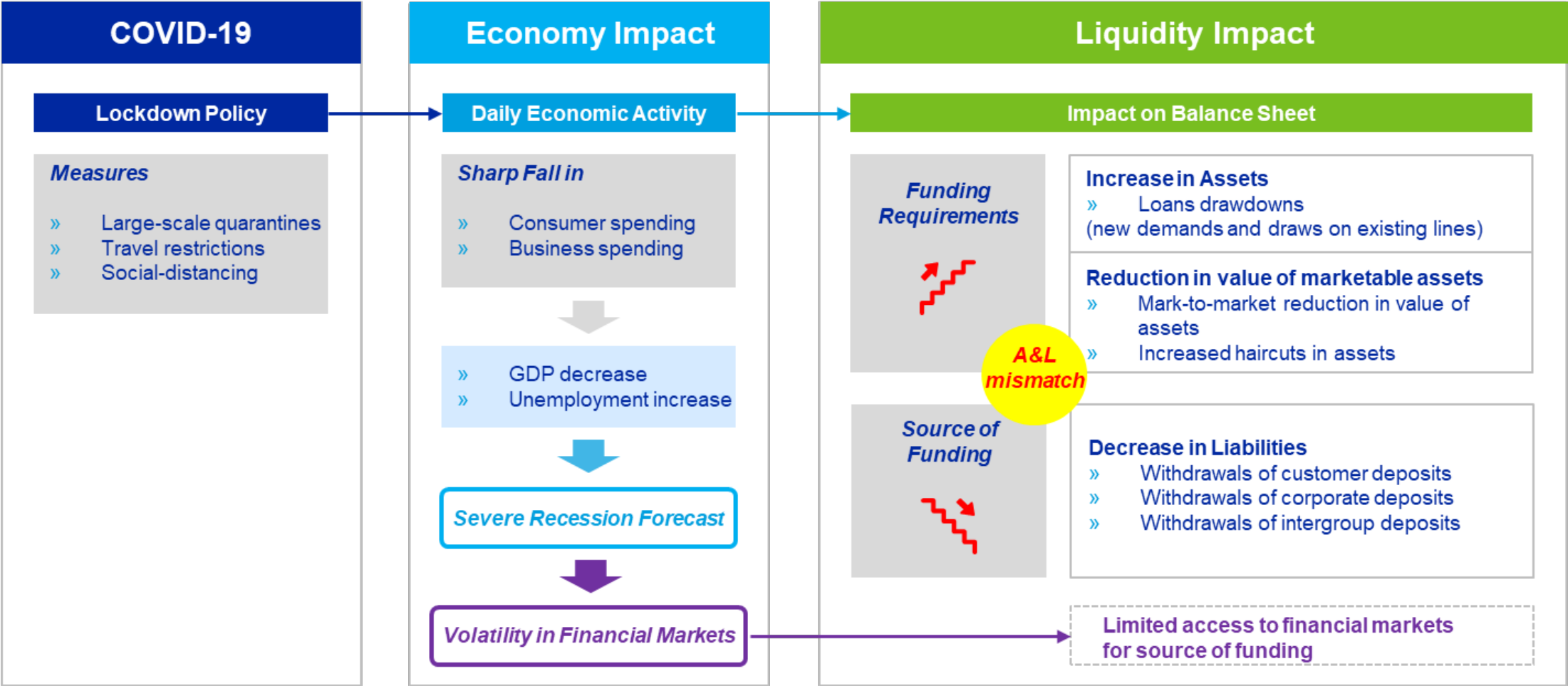
Negative impact to income due to lower fee income and interest margins. The deterioration in credit, higher NLPs will also contribute to deterioration in net interest income.



Depressed balance sheet growth due to increase in assets with drawdowns on committed credit lines and decrease source of funding with deposit withdrawals.



Added strain on liquidity

COVID-19 has the potential to foster a major liquidity crisis



Improving the liquidity management framework

Accuracy and optimization

	Reduced trade / operating activity across key economic sectors		Job losses leading to reduction in deposits inflow to banks in the retail sector
	Reduced repayment capacity due to delays in repayments & projects postponements		Increase of the overall NPL segments
	Repayment holidays set by regulators		Lower demand for credit

What can banks do?

- » Identify how much and for how long can the bank withstand the liquidity stress
- » Clearly identify sources and quantum of liquidity / funding which the bank can access
- » Robust and consistent **models of customer behavior** (assets & liabilities)
- » Conducting **scenario analysis** to assess impact of the COVID scenarios on the banks' liquidity and funding gaps is key
- » **Maximize HQLA buffer and optimize HQLA composition**

Portfolio and balance sheet re-balancing

Holistic view and actionable analytics

Business	Asset Class	Sub-Asset Class	Revenue	Pillar I	IFRS 9 P&L	Pillar II/Stress	Liquidity	
Wholesale Banking	Corporates & SMEs	Consumer Products	Yellow	Green	Green	Red	Green	
		Industrials	Green	Green	Yellow	Yellow	Red	
		Technology	Yellow	Green	Green	Red	Yellow	
		Oil & Gas	Green	Green	Green	Yellow	Red	
		Telecommunications	Green	Yellow	Yellow	Green	Green	
				Revenue	Pillar I	IFRS 9 P&L	Pillar II/Stress	Liquidity
			Strategy 1	Green Up	Green Up	Red Down	Yellow	Red Down
			Strategy 2	Yellow	Red Down	Green Up	Green	Green
	FIs & Sovereigns			Strategy 3	Green Up	Green Up	Red Down	Green
				Strategy 4	Green Up	Red Down	Green Up	Red Down
Project & Structure Finance			Strategy 5	Yellow	Yellow	Green Up	Green	
	Project Finance		Green	Red	Green	Green	Red	
		Structured Finance	Yellow	Green	Yellow	Yellow	Green	
Retail Banking	Secured Lending	Mortgages	Green	Green	Yellow	Red	Yellow	
		Auto	Yellow	Green	Yellow	Green	Green	
	Unsecured Lending	Personal Loans		Green	Yellow	Green	Yellow	Green
		Credit Cards		Green	Yellow	Yellow	Yellow	Yellow
		Overdrafts		Yellow	Green	Green	Green	Green

Q&A

Economic Questions? help@economy.com

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