

Fair value pricing for Turkish securities during Borsa Istanbul trading halt

February 2023

Fair Value Event: Turkey Exchange Halt on 8 February 2023

On Monday 6 February, a 7.8 magnitude earthquake followed by a 7.5 magnitude earthquake nine hours later, rocked parts of southern Turkey and northern Syria, claiming more than 47,000 lives. These earthquakes led to a huge selloff over the next two days resulting in a loss of US\$35 billion from the value of Borsa Istanbul (BIST) 100 Index. On Wednesday 8 February, Turkey's stock exchange suspended trading for five days for the first time in 24 years and cancelled all trades made that day after two market-wide circuit breakers were hit.

S&P Global provided fair value prices for Turkish securities to enable investors, primarily mutual funds with Turkish exposure, to accurately calculate their end of day net asset values (NAV). Fair Value ensures that long-term investors in the fund benefit from the most accurate share price possible.

S&P Global Fair Value Results

Throughout the Turkish halt, S&P Global continued to provide fair value prices for over 190 unique Turkish securities. The fair value prices were calculated using a stepwise multi-factor methodology. Global, regional and sector, and entity-specific factors were used to indicate macro and micro level risks. The most common input factors selected by S&P Global's methodology for Turkish equities include:

- iShares MSCI Turkey ETF
- S&P Futures
- Turkish ADRs
- Currency TRY.USD
- Sector ETFs

Table 1 highlights average directional correctness and closer to open across 194 Turkish securities that opened on 15 February and are fair valued by S&P Global.

Table 1. Average Accuracy Statistics for Turkish securities (14 February)

Exchange	Equity Count	Directional Correctness	Closer to Open
IST	194	75.64%	53.88%

Table 2 shows the accuracy of the top 30 Turkish securities by market cap grouped into NAV format for the final valuation point at 4:00 p.m. ET on 14 February. S&P Global Fair Value clients often gauge performance with weighted statistics to replicate their fund movements. We treat the Turkish securities as the fund with weights by market cap. Our country level fair value service works in the same way.

Table 2. Top 30 Turkish Securities Fund Level Stats (14 February)

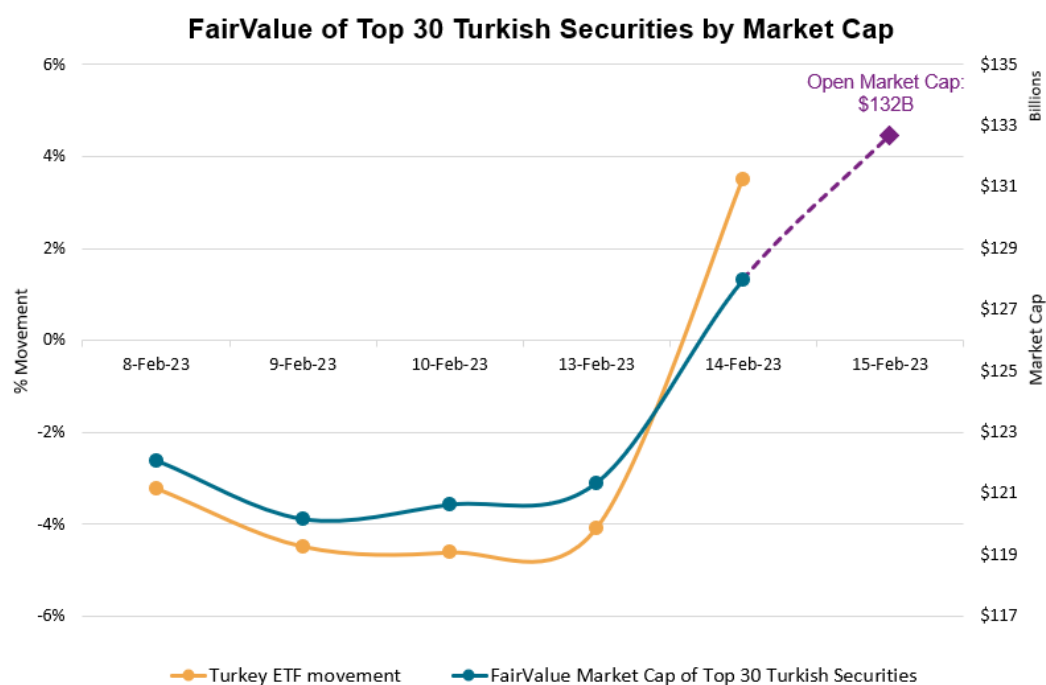
Date	Weighted Close	Weighted FV	Weighted Open	AOR	FV Adj	Arbitrage Reduction
14-Feb-23	\$124B	\$127B	\$132B	679 bps	298 bps	43.93%

Note: Dollar amounts in table above are in USD.

Turkish Equity Fair Value

Before the Turkish markets reopened on Wednesday 15 February, the Turkish government updated regulations to increase pension fund market exposure, aimed at propping up the stock markets and mitigating losses suffered in the aftermath of the deadly earthquakes. The updated regulations reflected in the +8% movement in the Turkey ETF during US hours on Tuesday 14 February. Country and security specific factors are the most important for fair value tools during halts.

Below is the chart showing how S&P Global fair valued top 30 Turkish securities over the duration of the halt, from the close on 7 February until valuation point at 4:00 p.m. ET on 14 February. As fair value factors, the Turkey ETF and S&P futures allowed for the capture of significant overnight movement during the Turkish exchange halt.



Fair Value Performance for BIST 30 Index Constituents

The BIST 30 Index is a capitalization weighted index for Turkish securities. The multi-factor model from S&P Global effectively captured significant movements for all 30 constituents using the iShares MSCI Turkey ETF (+3.5%) along with Turkey ADRs and sector ETFs to fair value these securities.

Table 3 highlights adjustments made on 14 February for 30 constituents of the BIST Index. All 30 constituents were directionally correct.

Table 3. Highlights Fair Value Adjustments for BIST Constituents

Date	Name	Ticker	Adjustment	Arbitrage Reduction	Factors Used
14-Feb-23	Koc Holding AS	KCHOL.E	341.92 bps	46.68%	Turkey ETF, S&P, Sector ETF
14-Feb-23	Koza Anadolu Metal Madencilik Isletmeleri AS	KOZAA.E	326.77 bps	111.61%	Turkey ETF, S&P

Date	Name	Ticker	Adjustment	Arbitrage Reduction	Factors Used
14-Feb-23	Akbank TAS	AKBNK.E	324.63 bps	59.65%	Turkey ETF, S&P, ADR
14-Feb-23	Yapi ve Kredi Bankasi AS	YKBNK.E	321.71 bps	60.83%	Turkey ETF, S&P
14-Feb-23	Turkiye Is Bankasi AS	ISCTR.E	316.13 bps	35.00%	Turkey ETF, S&P
14-Feb-23	Emlak Konut Gayrimenkul Yatirim Ortakligi AS	EKGYO.E	316.04 bps	46.00%	Turkey ETF, S&P
14-Feb-23	Alarko Holding AS	ALARK.E	312.47 bps	82.04%	Turkey ETF, S&P
14-Feb-23	Turk Hava Yollari AO	THYAO.E	310.76 bps	44.92%	Turkey ETF, S&P, ADR
14-Feb-23	Koza Altin Isletmeleri AS	KOZAL.E	310.03 bps	225.32%	Turkey ETF, S&P, TRY.USD
14-Feb-23	Turkcell Iletisim Hizmetleri AS	TCELL.E	309.91 bps	64.69%	Turkey ETF, S&P
14-Feb-23	ODAS Elektrik Uretim Sanayi Ticaret AS	ODAS.E	309.55 bps	146.68%	Turkey ETF, S&P
14-Feb-23	Pegasus Hava Tasimaciligi AS	PGSUS.E	307.5 bps	32.58%	Turkey ETF, S&P
14-Feb-23	Tofas Turk Otomobil Fabrikasi AS	TOASO.E	306.89 bps	103.25%	Turkey ETF, S&P
14-Feb-23	Aselsan Elektronik Sanayi ve Ticaret AS	ASELS.E	306.22 bps	79.09%	Turkey ETF, S&P
14-Feb-23	Turkiye Petrol Rafinerileri AS	TUPRS.E	305.98 bps	30.64%	Turkey ETF, S&P
14-Feb-23	Kardemir Karabuk Demir Celik Sanayi ve Ticaret AS	KRDMD.E	305.92 bps	30.59%	Turkey ETF, S&P
14-Feb-23	Petkim Petrokimya Holding AS	PETKM.E	304.73 bps	60.47%	Turkey ETF, S&P
14-Feb-23	Haci Omer Sabanci Holding AS	SAHOLE	304.71 bps	53.89%	Turkey ETF, S&P
14-Feb-23	Turkiye Sise ve Cam Fabrikalari AS	SISE.E	300.22 bps	48.97%	Turkey ETF, S&P
14-Feb-23	Aksa Enerji Uretim AS	AKSEN.E	296.8 bps	72.39%	Turkey ETF, S&P
14-Feb-23	Turkiye Garanti Bankasi AS	GARAN.E	295.68 bps	43.24%	Turkey ETF, S&P, ADR
14-Feb-23	Eregli Demir ve Celik Fabrikalari TAS	EREGL.E	293.74 bps	45.61%	Turkey ETF, S&P, ADR
14-Feb-23	Ford Otomotiv Sanayi AS	FROTO.E	293.3 bps	31.01%	Turkey ETF, S&P, ADR
14-Feb-23	Arcelik AS	ARCLK.E	293.01 bps	38.87%	Turkey ETF, S&P, ADR
14-Feb-23	Gubre Fabrikalari TAS	GUBRF.E	287.24 bps	2519.10%	Turkey ETF, S&P
14-Feb-23	Tekfen Holding AS	TKFEN.E	284.56 bps	119.66%	Turkey ETF, S&P
14-Feb-23	BIM Birlesik Magazalar AS	BIMAS.E	280.52 bps	37.40%	Turkey ETF, S&P, TRY.USD
14-Feb-23	Hektas Ticaret TAS	HEKTS.E	271.05 bps	27.12%	Turkey ETF, S&P
14-Feb-23	SASA Polyester Sanayi AS	SASA.E	250.07 bps	25.09%	Turkey ETF, S&P
14-Feb-23	TAV Havalimanlari Holding AS	TAVHL.E	157.1 bps	22.74%	Turkey ETF, S&P, ADR

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