Should You Add TOP-20 To Your Asset Mix?

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Overview

Is it a good strategy, from a risk-return standpoint, to invest in Mongolian equities? We set up a portfolio mimicking TOP-20 Index, Mongolia's main stock market indicator, to find out. Buying shares of TOP-20 constituents, in proportions equal to those implied by the index, is generally preferable to picking single stocks, for at least two reasons:

1. the availability of a consistent stream of daily price data on the index, facilitating performance assessment and risk monitoring; and
2. the relative inexpensiveness, despite frequent rebalancing, of the strategy, as only twenty securities are involved, and these are among the most actively traded on the MSE (Table 1).

We give our prediction on the distribution of returns for a one-month position opened today, January 29, together with the amount of resources to set apart in order to face potential losses. The predicted returns must be considered:

- *price returns* (not total returns): they will only reflect capital appreciation, the gain or loss resulting from a variation in the index close price, and will not include dividends;
- *gross returns* (not net returns): they will be before fees, expenses, and taxes.

Table 1: Current TOP-20 constituents

Company	Ticker	Industry
Apu	APU	Beverages
Tavan Tolgoi	TTL	Mining
Gobi	GOV	Cashmere
Talkh Chikher	TCK	Bakery products
Darkhan Nekhii	NEH	Apparel
Mongol Post	MNP	Postal service
Bayangol Hotel	BNG	Hotel
Suu	SUU	Dairy products
Hermes Center	HRM	Building materials
Sharin Gol	SHG	Mining
Arig Gal	EER	Cashmere
Makhimpex	MMX	Meat products
Aduun Chuluun	ADL	Mining
Ulsiin Ikh Delguur	UID	Shopping center
Baganuur	BAN	Mining
Materialimpex	MIE	Building materials
Remicon	RMC	Concrete
Merex	MRX	Concrete
Khukh Gan	HGN	Metal products
UB-Buk	BUK	Concrete

Source: mse.mn

We then assess the overall quality of the investment using the Sharpe ratio, a measure of the excess return per unit of risk that eases comparison across assets.

Procedure

For an accurate and well-balanced forecast we blend the results of two complementary algorithms:

- *filtered historical simulation*, a backward-looking model that randomly draws from existing data to compute future returns; and

- *Monte Carlo simulation*, a forward-looking model that generates new returns from a distribution calibrated on past data.

To improve the accuracy and stability of the results, we simulate 100,000 returns per day, 21 trading days. We also bet on a small increase in volatility (a proxy for market risk).

One-month ahead forecast

We believe the average return from the strategy to be small and slightly negative (between –0.5% and 0%). However, the actual return will generally differ from this value due to the significant uncertainty (volatility ~5.5-5.7%) (Table 2). Losses should be more frequent than gains (about 55% of the times), but many of them should be very small: one-third smaller than 2%, 60% smaller than 4%, and 80% smaller than 6% (Figure 1). The average loss should be ~4.2%, slightly higher than the average gain, ~4.05%.
The frequency of extreme returns should be close to 6.7%, with extreme negative events more frequent (~3.7%) than extreme positive ones (~3%). The average payoff in case of extreme event should be ~±14%.

Value at Risk and Expected Shorfall

To quantify the amount of resources to set apart in order to face potential losses, we introduce two measures:

- *Value at Risk*, the maximum potential loss likely to be surpassed only very few times (1%) during the investment period, and
- *Expected Shortfall*, the average loss in case the actual return is worse than Value at Risk.

Table 2: Predicted investment statistics, %	
Average return	Between –0.5 and 0
Volatility (Risk)	~5.5-5.7
Neg./pos. return freq.	~55; ~45
Average if neg./pos.	~–4.2; ~4.05
Freq. ret. beyond ±10%	~6.7
Average beyond ±10%	~±14

Figure 1: One-Month Ahead Forecast of the Distribution of Returns

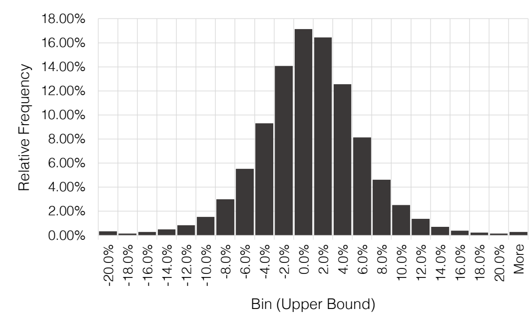
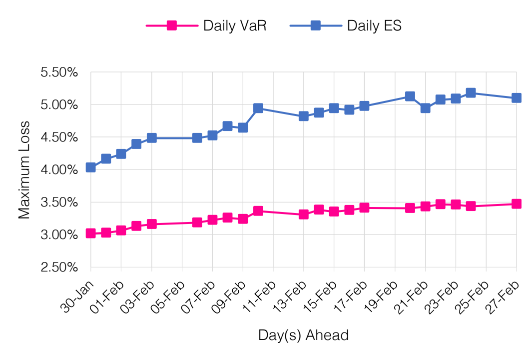


Table 3: Predicted one-month VaR and ES	
Value at Risk, 99%	~14.7-14.9%
Expected Shortfall, 99%	~20-20.5%
Portfolio Value, MNT	1,000,000
Value at Risk, MNT	~137,000-138,500
Expected Shortfall, MNT	~181,000-185,500

Figure 2: Term Structure of Daily VaR-ES



We predict monthly Value at Risk to be in the range 14.7-14.9% (~MNT 137,000-138,500, for each MNT 1,000,000 invested in the portfolio), and daily Value at Risk to be between 3 and 3.5% per day (~MNT 29,500-34,500). 99% of the times, actual losses will not surpass these limits (Table 3). This does not mean investors will necessarily lose on the position, just that it is very unlikely for actual returns to go beyond the ranges provided. However, in case of a particularly negative outcome (1% of the times), investors should expect to lose ~20-20.5% (~MNT 181,000-185,500) on the position, ~4.0-5.2% per day (~MNT 39,000-50,500) (Figure 2).

Investment quality

We assess the overall quality of a one-month investment in a TOP-20 portfolio by means of the Sharpe ratio, a measure of the excess return per unit of risk that allows comparison across different kinds of assets. On the numerator is the difference between the average monthly return on the strategy and the risk-free rate of equivalent maturity. On the denominator, the risk (volatility) of the investment. Assets with negative Sharpe ratios are less attractive than risk-free options, such as government bills; assets with positive ratios, more valuable.

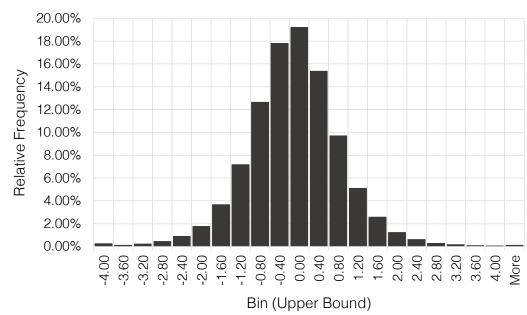
As a proxy for the one-month risk-free rate, we use the latest annualised three-month government bill rate (Table 4).

We believe the average Sharpe ratio to be slightly negative, around –0.30 (Table 5). This is not equivalent to saying that TOP-20 portfolios are bad investments, because the actual outcome may be considerably different. The ratio should be negative two-thirds of the times (average –0.85), and positive one-third (average 0.66). Also, one-third of the out-comes should stay in the ±0.4 band, two-thirds in ±0.8, and 80% in ±1.2. The chance to end up with unusually large ratios (beyond ±2) should be ~5.5%, approximately 2:1 in favour of negative values due to the negative average. Yet, extreme positive ratios should be ~0.1 larger in size (Figure 3).

Table 4: Risk-free rate, %	
Annualised risk-free rate, 3m	17.00
Risk-free rate, 1m	1.42

Table 5: Predicted Sharpe ratio statistics	
Average ratio	~–0.30
Neg./pos. ratio frequency	~2/3; ~1/3
Average if neg./pos.	~–0.85; ~0.66
Freq. of ratios beyond ±2	~5.5% (2:1)
Average if beyond ±2	~–2.7; ~2.8

Figure 3: One-Month Ahead Forecast of the Distribution of Sharpe Ratios



Should you invest now?

Lately, we have witnessed a rapid growth in the trading of shares of TOP-20 constituents. Thanks to the rise in coal and copper prices, mining companies have been the best performers, followed by Mongol Post, the first of a series of state-owned enterprises to be sold to the public in 2017, and Gobi.

Frequent trading led to a 15-50% increase in share price for these firms (~25-50% for mining companies, ~22-22.5% for Mongol Post, and 15-17.5% for Gobi), and contributed to a spike in volatility that has yet to fully cool down, especially in view of possible future privatisations. The combined effect of strong prices – we believe index level to either stay close to MNT 12,000 or to go up – and significant volatility may be good news for the investors, as it raises the chance of ending up with a large gain on the position.

For this reason, we believe that, within the context of a well-diversified portfolio, TOP-20 Index makes a good investment opportunity at this moment.

The report is made for Standard Investment LLC by Federico M. Massari, a long distant volunteer risk analyst, using the sources provided.

The full version of this report is available on: *standardinvestment.mn/en*

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