Appendix B

Indicators used to derive Financial Sector Vulnerability Index (FSVI)

FSVI was first introduced in FSR 2016, and since then it has been modified and regularly published in the subsequent reviews. In FSR-2018, few modifications were made in terms of coverage, indicators and methodology (See Appendix A in FSR-2018).

To recall, FSVI is a composite index derived from averaging the sub-indices of macro-economy, financial markets, banking sector, Non-Banking Financial Institutions, Development Finance Institutions, Insurance Companies and Corporate Sector. The complete list of indicators used within each dimension is given in the table below:

Table 1: FSVI and FSHM: Risk Areas, Risk Dimensions and Indicators

Sr. No.	Risk Area	Risk Dimension	Risk Indicator(s)	Impact on Financial Stability
1	Macro-economy $\frac{1}{n}\sum Ex, R, F, In$ n = 4	External Sector (Ex) $Ex = \frac{1}{n}\sum_{i=1}^{n} ex_i,$ $n = 3$	ex_1 = *Total Liquid Foreign Reserve Position (with SBP) as percent of GDP* ex_2 = *Current Account Balance as Percentage of GDP* ex_3 = *Balance of Trade as Percentage of GDP*	Positive Positive Positive
		Real Sector (R)	*Real GDP Growth*	Positive
		Fiscal Sector (F)	Fiscal Deficit as Percentage of GDP	Negative
		Inflation (In)	CPI inflation	Negative
2	Financial Markets $\frac{1}{n}\sum FE, MM, CM$ n = 3	Foreign Exchange (FE)	*Mark-to-market Revaluation Exchange Rate Exponential Moving Weighted Average (EMWA) Volatility*	Negative
		Money Market (MM)	*Overnight Repo Rate Exponential Moving Weighted Average (EMWA) Volatility*	Negative
		Capital Market (CM)	*KSE-100 Index Exponential Moving Weighted Average (EMWA) Volatility*	Negative
3	Banking Sector $\frac{1}{n}\sum C, AQ, E, L, D, I$ n = 6	Capital Adequacy (C) $C = \frac{1}{n}\sum_{i=1}^{n} c_i, n = 3$	c_1= *Capital Adequacy Ratio(CAR)* c_2=*TIER 1 (CAR)* c_3=*Capital to Asset Ratio*	Positive Positive Positive
		Asset Quality (AQ) $AQ = \frac{1}{n}\sum_{i}^{n} aq_i,$ $n = 4$	aq_1 = *NPLs to Total Loans* aq_2 = *Net NPLs to Capital* aq_3 = *Provisions to NPLs* aq_4 = *Loss to NPLs*	Negative Negative Positive Negative
		Earnings (E) $E = \frac{1}{n}\sum_{i=1}^{n} e_i,$ $n = 6$	e_1= *Return on Assets Before Tax* e_2=*Return on Equity (Avg. Equity and Surplus) Before Tax*	Positive Positive Positive Positive

			e_3 = *Net Interest Margin* e_4 = *Net Interest Income/Gross Income* e_5 = *Cost to Income Ratio* e_6 = *Trading Income to Total Income*	Negative Negative
		Liquidity (L) $L = \frac{1}{n}\sum_{i=1}^{n} l_i,$ $n = 3$	l_1= *Liquid Assets/Total Assets* l_2= *Liquid Assets/Total Deposits* l_3= *Liquid Assets/Short term liabilities*	Positive Positive Positive
		Deposits (D) $D = \frac{1}{n}\sum_{i=1}^{n} d_i,$ $n = 2$	d_1= *Deposits to Assets* d_2= *Deposit growth (YoY)*	Positive Positive
		Interconnectedness (I) $I = \frac{1}{n}\sum_{i=1}^{n} i_i,$ $n = 2$	i_1= *Call lending and borrowing/Total Assets* i_2= *Financial Liabilities (SBP exclusive)/Total Assets*	Negative Negative
4	Non-Banking Financial Institutions $\frac{1}{n}\sum A, E$ n = 2	Assets (A)	*Asset Growth (YoY)*	Positive
		Earnings (E)	*Net Sales*	Positive
5	Development Finance Institutions $\frac{1}{n}\sum C, AQ, E, L$ n = 4	Capital Adequacy (C) $C = \frac{1}{n}\sum_{i=1}^{n} c_i, n = 3$	c_1= *Capital Adequacy Ratio(CAR)* c_2=*TIER 1 (CAR)* c_3=*Capital to Asset Ratio*	Positive Positive Positive
		Asset Quality (AQ) $AQ = \frac{1}{n}\sum_{i}^{n} aq_i,$ $n = 3$	aq_1 = *NPLs to Total Loans* aq_2 = *Net NPLs to Capital* aq_3 = *Net NPLs to Net Loans*	Negative Negative Negative
		Earnings (E) $E = \frac{1}{n}\sum_{i=1}^{n} e_i,$ $n = 4$	e_1= *Return on Assets Before Tax* e_2=*Return on Equity (Avg. Equity and Surplus) Before Tax* e_3 = *Net Interest Income/Gross Income*	Positive Positive Positive Negative

			e_4 = *Cost to Income Ratio*	
		Liquidity (L) $L = \frac{1}{n}\sum_{i=1}^{n} l_i,$ $n = 3$	l_1= *Liquid Assets/Total Assets* l_2= *Liquid Assets/Total Deposits* l_3= *Advances/Deposits*	Positive Positive Positive
6	Insurance Companies $\frac{1}{n}\sum Li, NL$ n = 2	Life (Li) $\mathrm{Li} = \frac{1}{\mathrm{n}}\sum_{\mathrm{i}=1}^{\mathrm{n}} \mathrm{li}_\mathrm{i},$ $\mathrm{n} = 4$	li_1= *Claims ratio* li_2= *Return on Assets before tax* li_3= *Return on Investment before tax* li_4= *Capital to Assets*	Negative Positive Positive Positive
		Non-life (NL) $\mathrm{NL} = \frac{1}{\mathrm{n}}\sum_{\mathrm{i}=1}^{\mathrm{n}} \mathrm{nli}_\mathrm{i},$ $\mathrm{n} = 5$	nli_1= *Claims ratio* nli_2= *Premium Retention* nli_3= *Return on Assets before tax* nli_4= *Return on Investment before tax* nli_5= *Capital to Assets*	Negative Negative Positive Positive Positive
7	Corporate Sector	Corporate Debt	*Debt Burden (average of asset/equity and debt/equity)*	Negative