Pakistan Prosperity Index

Methodology and Indices Calculations

Variable Transformation

The Pakistan Prosperity Index utilizes data from Pakistan Bureau of Statistics (PBS) and State Bank of Pakistan (SBP) on monthly basis. The analysis is contingent upon the growth rates of four macroeconomic indicators of prosperity i.e. Trade Volume, Consumer Price Index (CPI), Quantum Index of Large-Scale Manufacturing Industries (QIM) & Long-Term Financing Facility (LTFF).

Finding Growth

Data for Month-on-Month growth of Consumer Price Index (CPI) and Loans to Private Sector (LTFF) is extracted from SBP, while the data for Trade volume and Quantum Index of Large-scale Manufacturing is retrieved from PBS. The growth of Trade Volume and Long-Term Financing Facility (LTFF) is calculated by applying the conventional growth formula i.e.

$$\text{Trade Volume/ LTFF Growth} = \frac{\text{Current} - \text{Previous}}{\text{Previous}} * 100$$

Months	Inflation	LSMI	Trade		Loans to Private Sector (LTFF) Fixed Investment	
	CPI National MoM (%)	QIM (MoM Growth) (%)	Trade Volume	Trade Volume MoM Growth (%)	Amount (Million Rupees)	LTFF MOM Growth (%)
Jun 2019	0.5	-11.83	944,050	-9.30	157,095	2.61
Jul 2019	1.8	2.11	939,213	-0.09	163,700	4.2
Aug 2019	1.6	-2.37	884,289	-5.85	168,313	2.82
Sep 2019	0.8	1.92	867,387	-1.91	171,885	2.12
Oct 2019	1.8	4.01	950,980	9.64	174,138	1.31
Nov 2019	1.3	-3.78	924,643	-2.77	176,969	1.63
Dec 2019	-0.3	16.4	934,160	1.03	178,667	0.96
Jan 2020	2	7.09	945,558	1.22	181,996	1.86
Feb 2020	-1	-0.91	975,836	3.20	188,596	4.15
Mar 2020	0	-21.99	812,821	-16.71	194,093	2.91
Apr 2020	-0.8	-32.85	684,292	-15.81	195,676	0.82
May 2020	0.3	20.50	681,808	-0.36	203,367	3.93

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	CPI National MoM (%)	QIM (MoM Growth) (%)	Trade Volume	Trade Volume MoM Growth (%)	Amount (Million Rupees)	LTFF MOM Growth (%)
Jun 2020	0.80	16.81	872,002	28.78	220,066	8.21
Jul 2020	2.5	9.54	940,573	7.13	230,733	4.85
Aug 2020	0.6	-6.78	821,664	-12.64	246,382	6.78
Sep 2020	1.5	10.09	1,025,619	24.8	256,866	4.26
Oct 2020	1.7	3.95	975,281	-4.91	273,133	6.33
Nov 2020	0.8	1.35	1,032,412	5.86	278,610	2.01
Dec 2020	-0.7	13.51	1,179,954	14.3	287,422	3.16
Jan 2021	-0.2	5.36	1,115,551	-5.46	294,990	2.63
Feb 2021	1.8	-4.15	1,061,207	-4.87	310,666	5.31
Mar 2021	0.4	-7.66	1,247,527	17.6	324,912	4.59
Apr 2021	1	-6.99	1,141,941	-8.57	346,091	6.52
May 2021	0.1	-3.93	1,069,737	-6.56	365,296	5.55
Jun 2021	-0.3	4.36	1,421,969	32.93	390,794	6.98
Jul 2021	1.3	-5.03	1,267,390	-10.87	408,621	4.56
Aug 2021	0.6	2.09	1,450,808	14.47	426,622	4.41
Sep 2021	2.1	-0.72	1513267	4.50	451,003	5.71
Oct 2021	1.9	1.86	1,517,060	0.20	470,265	4.27

Rescaling

As the report is based on secondary data, it is obvious that growth rate for each of the variable is measured on different scales. Moreover, if a month shows zero growth, it will invalidate the whole formula of prosperity index, which is based on Geometric Mean.

Since the Trade Volume and Long-Term Fixed Financing were not available in the form of index, the variables are first converted into indices, and then all the four variables were rescaled to measure their impact on economic prosperity in same units. To avoid this discrepancy, the variables are rescaled and converted into indices, by considering the value of June 2019 = 100 as a base month.

Creating Indices

Month	Purchasing Power	LSMI Statistics	Trade Statistics	Fixed Investment
	Inverse CPI	LSMI Index	Trade Volume Index	LTFF Index
Jun 2019	100	100	100	100
Jul 2019	98.2	102.1	99.9	104.2
Aug 2019	96.6	99.7	94.1	107.1
Sep 2019	95.9	101.6	92.3	109.4
Oct 2019	94.1	105.7	101.2	110.9
Nov 2019	92.9	101.7	98.4	112.7
Dec 2019	93.2	118.4	99.4	113.7
Jan 2020	91.3	126.8	100.6	115.9
Feb 2020	92.2	125.6	103.8	120.1
Mar 2020	92.2	98	86.5	123.6
Apr 2020	93	65.8	72.8	124.6
May 2020	92.7	79.3	72.5	129.5
Jun 2020	92	92.6	93.4	140.1
Jul 2020	89.7	101.4	100.1	146.9
Aug 2020	89.1	94.6	87.4	156.8
Sep 2020	87.8	104.1	109.1	163.5
Oct 2020	86.3	108.2	103.7	173.9
Nov 2020	85.6	109.7	109.8	177.4
Dec 2020	86.2	124.5	125.5	182.9
Jan 2021	86.4	131.2	118.7	187.8
Feb 2021	84.8	125.7	113.3	197.8
Mar 2021	84.5	116.1	133.2	206.8
Apr 2021	83.6	107.9	121.8	220.3
May 2021	83.5	103.7	113.8	232.5
Jun 2021	83.8	108.3	151.3	248.8
Jul 2021	82.7	102.9	134.8	260.1
Aug 2021	82.2	104.9	154.0	271.6
Sep 2021	80.4	104.2	161.0	287.0
Oct 2021	78.9	106.1	161.4	299.3

Calculations for Prosperity Index

The Prosperity Index is calculated by using the geometric mean as employed by UNDP in calculating the Human Development Index. It is computed as follows:

$$Prosperity\ Index = \sqrt[4]{a * b * c * d} \qquad (1)$$

Where; "a" denotes inverse of Consumer Price Index (CPI), "b" represents Quantum Index of Large Scale Manufacturing Industries (QIM), "c" represents Trade Volume Index (TVI) and "d" represents the Index of Bank's lending to Private sector i.e. Long-Term Financing Facility (LTFF Index).

Since the relationship between inflation and purchasing power is negative, inverse of CPI is taken to depict that higher rate of inflation lowers purchasing power and hence prosperity. Trade volume is the sum of imports and exports, while LTFF indicates business borrowings for long-term projects particularly in large-scale manufacturing industry.

$$Prosperity\ Index = \sqrt[4]{\frac{1}{CPI} * QIM * TVI * LTFF} \qquad (2)$$

Month	Inverse CPI	QIM	TVI	PSLI	Prosperity Index (Geometric Mean)
Jun 2019	100	100	100	100	100
Jul 2019	98.2	102.1	99.9	104.2	101.1
Aug 2019	96.6	99.7	94.1	107.1	99.3
Sep 2019	95.9	101.6	92.3	109.4	99.6
Oct 2019	94.1	105.7	101.2	110.8	102.8
Nov 2019	92.9	101.7	98.4	112.7	101.1
Dec 2019	93.2	118.4	99.4	113.7	105.7
Jan 2020	91.3	126.8	100.6	115.9	107.8
Feb 2020	92.2	125.6	103.8	120.1	109.6
Mar 2020	92.2	98	86.5	123.6	99.1
Apr 2020	93	65.8	72.8	124.6	86.3
May 2020	92.7	79.3	72.5	129.5	91.1
Jun 2020	92	92.6	93.4	140.1	102.7
Jul 2020	89.7	101.4	100.1	146.9	107.5
Aug 2020	89.1	94.6	87.4	156.8	103.7
Sep 2020	87.8	104.1	109.1	163.5	113.0
Oct 2020	86.3	108.2	103.7	173.9	113.9
Nov 2020	85.6	109.7	109.8	177.4	116.3
Dec 2020	86.2	124.5	125.5	182.9	125.3
Jan 2021	86.4	131.2	118.7	187.8	126.1
Feb 2021	84.8	125.7	113.3	197.8	124.2
Mar 2021	84.5	116.1	133.2	206.8	128.1
Apr 2021	83.6	107.9	121.8	220.3	124.7
May 2021	83.5	103.7	113.8	232.5	123.1
Jun 2021	83.8	108.3	151.3	248.8	135.9
Jul 2021	82.7	102.9	134.8	260.1	130.7
Aug 2021	82.2	104.9	154.0	271.6	137.9
Sep 2021	80.4	104.2	161.0	287.0	140.3
Oct 2021	78.9	106.1	161.4	299.3	141.8