

Evidence-Based Revenue Forecasting FY 2021-22 (FBR Taxes)

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¹ Revenue Forecasting Report has been prepared in consultation with team of experts from Fiscal Policy Center, Pakistan Institute Development Economics (PIDE), Islamabad

List of Acronyms


CD	Customs Duty
CFY	Current Fiscal Year
EBRF	Evidence-Based Revenue Forecasting
FBR	Federal Board of Revenue
FED	Federal Excise Duty
FY	Fiscal Year
GDP	Gross Domestic Product
LSM	Large Scale Manufacturing
PFY	Previous Fiscal Year
ST(D)	Sales Tax (Domestic)
ST(M)	Sales Tax (Imports)

Preface

Federal Board of Revenue (FBR) being a major revenue organization in the country, plays pivotal role in revenue mobilization efforts. It contributes nearly ninety percent of the total tax revenues to the national exchequer. Healthy revenue collections help enable the Government to enhance efforts for economic growth and development, fight poverty and get rid of debt burden and budget deficits. To achieve these goals, the top management and field formations of the revenue organization put in their maximum energies to achieve the assigned revenue targets each year.

The “Evidence-Based Revenue Forecasting” (EBRF) is the first ever study, prepared by Strategic Planning, Reforms and Statistics (SPR&S) team in collaboration with Pakistan Institute of Development Economics (PIDE), to fulfill the World Bank’s requirement under Pakistan Raises Revenue (PRR) Project DLI-2. In this study, tax-wise buoyancy estimates have been used to forecast the revenues for FY 2021-22. The tax buoyancy is an indicator to measure efficiency and responsiveness of revenue mobilization in response to growth in the GDP. A buoyant tax means the tax revenues increase more than proportionately in response to a rise in the base. This implies further, that healthy macroeconomic indicators enable the revenue organization to fetch healthy revenues.

I appreciate the efforts put in by the SPR&S and PIDE teams under the able guidance of Member FATE, in producing the maiden Evidence-Based Revenue Forecasting Report. I hope the technique used for revenue forecasting in this model would be useful for estimating the real revenue targets close to the existing potential based on the given economic performance parameters.


(ASIM AHMAD)
Chairman Federal Board of Revenue
/ Secretary Revenue Division

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1. FBR Collection Profile

Major part of government tax revenues is collected by FBR. A substantial increase in the tax collections has been witnessed during last two decades. FBR tax collection was just around Rs.392 billion in 2000-01 which has jumped to around Rs.4 trillion in 2019-20. The average growth till FY 2017-18 remained 14.1%, however, due to Covid-19 pandemic the yearly growth has plummeted, thus affecting slightly the average annual growth for the period 2001-2020 as well (13.9%).

1.1 Five Years FBR Collection Trend

The last five years' collection trend is shown in the following table. The 5 years average growth was 9.3%, however, by excluding the last two years, average growth for normal years i.e. FY 2013-14 to FY 2017-18 stands at 14.6% (Table 1).

Table 1: FBR Collection Trend

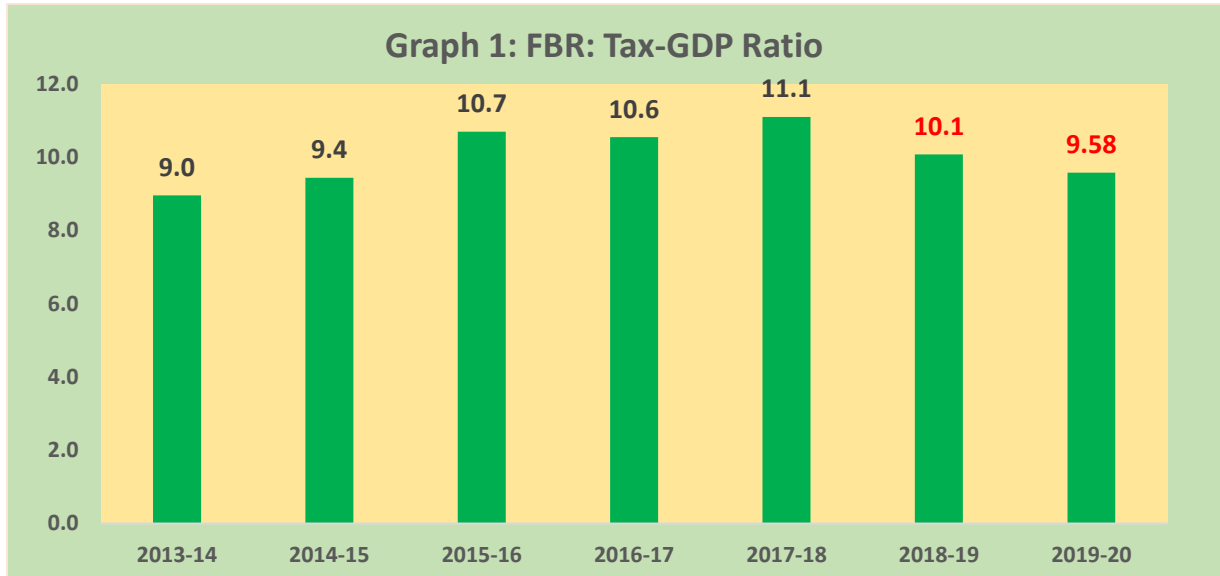
Tax Heads	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	5 Years Avg. Growth (%) *
DT	877,255	1,033,720	1,217,474	1,344,226	1,536,583	1,445,508	1,523,445	15.7
ST	996382	1087790	1,302,371	1,328,965	1,485,306	1,459,213	1,596,877	12.2
FED	138084	162248	188,055	197,911	213,493	238,186	250,474	12.1
CD	242810	306220	404,572	496,772	608,373	685,575	626,612	21.0
Total	2,254,531	2,589,978	3,112,472	3,367,874	3,843,755	3,828,482	3,997,408	14.6

(*) for the Years 2013-14 to 2017-18

Tax-GDP Ratio

Similarly, in the tax-GDP ratio, similar trend has been noticed and it kept on rising till FY 2017-18 and reached 11.2 (Graph 1), but later on this healthy trend couldn't continue

during FY 2018-19 and FY 2019-20, which is mainly attributed to Covid-19 pandemic related economic challenges.



1.2 CFY Collection: July-March 2020-21

After a slow growth in previous two years now the collection is picking up, which is evident from table 2. This performance is very encouraging as compared to previous couple of years. The nine months target has been achieved to the extent **103.4%**.

Table 2: CFY Collection: July-March 2020-21

			Rs. Million
Tax Heads	2020-21	2019-20	Growth (%)
DT	1,246,379	1,142,286	9.1
ST	1,415,770	1,250,222	13.2
FED	191,686	186,472	2.8
CD	541,049	481,478	12.4
TOTAL	3,394,885	3,060,458	10.9

With the recovery of economy the revenue collection is also improving, and with further improvements in coming months hope the tax collection shall also increase, thus enabling FBR to achieve its revenue FY 2021-22 target.

2. Evidence-Based Revenue Forecasting (EBRF) FY 2021-22

FBR collects Direct Taxes (DT), Sales Tax (Domestic & Imports), Federal Excise Duty (FED) and Customs Duties (CD). In this study tax-wise buoyancy estimates have been used to forecast the FBR head-wise revenues for FY 2021-22. The tax buoyancy is an indicator to measure efficiency and responsiveness of revenue mobilization in response to growth in the GDP or national income. A buoyant tax means the tax revenues increase more than proportionately in response to a rise in national income/GDP/base.

2.1 Methodology

The SPRS Wing before budget, projects the head-wise revenue estimates based on buoyancy estimates² from previous years on rolling basis. Tax-wise buoyancy estimates are calculated by using historical collection and respective bases data. The current tax-wise buoyancy estimates are estimated from data for the years 1999-2000 to 2019-20 in respect of economic indicators i.e. GDP, Non-agri GDP, LSM and Imports.³

The respective proxy bases of head-wise FBR taxes are as under:

Direct Taxes (DT)	Non-agri GDP
Sales Tax Domestic (STD)	Large Scale Manufacturing (LSM)
Sales Tax Imports (STM)	Import Value
Customs Duties (CD)	Dutiable Import Value
Federal Excise Duty (FED)	LSM

² Buoyancy is relationship between changes in actual revenues and changes in proxy tax base from National Accounts data.

³ Annex-I and Annex II

Buoyancy estimates are derived as =

% Change in Actual Revenues
% Change in Respective Base

Since these tax bases have a dynamic relationship with GDP, in the second step we have calculated the buoyancies of these tax bases with GDP =.

% Change in Respective Base
% Change in GDP

Finally these two are multiplied to arrive at respective tax to GDP buoyancies=

% Change in Actual Revenues	×	% Change in Respective Base
% Change in Respective Base		% Change in GDP

Using these buoyancy estimates autonomous growth for each tax is estimated by using the projections provided by Finance Division for each proxy base.⁴ It provides for the GDP Growth and inflation forecast for upcoming year. GDP value used for this projection of growth is Gross Value Addition of Sectors at Constant Factor Costs. Using the inflation forecasts these GDP growth estimates are converted into GDP growth estimates at Current Factor Cost. Further, GDP-Gross value addition at Current Factor Cost is used for measuring the Buoyancy estimates to be used for revenue forecasts.

In respect of Direct Taxes (DT) Non-Agri GDP has been taken as its proxy base. The buoyancy of direct taxes has been estimated in two steps: in the first step Direct Tax to Non-Agri GDP and in second step Non-Agri-GDP to GDP (Gross Value Addition-Current Factor Cost) is estimated. Then two buoyancy estimates have been multiplied to estimate the Direct Taxes to GDP Buoyancy estimates.

⁴ Finance Division provides the macroeconomic framework for the next fiscal year along with rolling estimates for next two years in their Medium Term Budget Strategy Paper (2021-22 to 2023-24).

Direct taxes to Non-Agri GDP Buoyancy (B1) =		<table border="1"><tr><td>% Change in Direct Taxes</td></tr><tr><td>% Change in Non-Agri GDP</td></tr></table>	% Change in Direct Taxes	% Change in Non-Agri GDP
% Change in Direct Taxes				
% Change in Non-Agri GDP				
Non-Agri GDP to GDP Buoyancy (B2) =		<table border="1"><tr><td>% Change in Non-Agri GDP</td></tr><tr><td>% Change in GDP</td></tr></table>	% Change in Non-Agri GDP	% Change in GDP
% Change in Non-Agri GDP				
% Change in GDP				
Direct taxes to GDP Buoyancy =		B1 * B2		

Similarly for Customs (CD) the proxy base is dutiable imports, whereas the projections as provided by Finance Division are for the total imports. Therefore, the buoyancy has been estimated in two steps: first Customs to dutiable imports and in second step Dutiable Imports to total Imports and then these two have been multiplied to get the CD buoyancy estimates.

For Federal Excise (FED) and Sales Tax (Domestic) the base is Large Scale Manufacturing (LSM) and for Sales Tax (Imports) the base is imports. Therefore, for these taxes the buoyancy values are directly estimated from proxy bases. Following table reflects the respective buoyancies which are estimated using simple log-log regression method in excel sheet by using log values of actual data for taxes.⁵

Table 3: Buoyancy Results

Direct Tax (DT)	DT to Non-Agri GDP	Non-Agri-GDP to GDP	DT to GDP
	1.1	0.99	1.13
Sale Tax-Domestic (STD)			1.11
Sales Tax-Imports (STM)			0.92
Customs (CD)	Custom-Dutiable Imports	Dutiable Imports to Imports	Customs to Imports
	0.95	0.95	0.90
FED			0.77

⁵ Source: FBR Annual Reports and Economic Survey of Pakistan

Calculating Autonomous Growth

In the second step autonomous growth has been estimated by multiplying buoyancy estimates (Table 3) to projected growths of respective bases (Table 4):⁶

Table 4: Growth Assumptions for FY 2021-22

Macroeconomic Indicators	Projected Growths (%)⁷
GDP (Nominal)	13.22
LSM (Nominal)	14.70
Imports	12.00
Inflation	8.20
GDP (Real)	5.02
LSM (Real)	6.50

Table 5 provides an autonomous growth parameters for each tax head. These are based on the buoyancy estimates from the last 20 years actual revenue collection data and the macroeconomic proxy bases provided by Pakistan Bureau of Statistics/Annual Economic Surveys and the growth projections published in Budget Strategy Paper / Economic Adviser's Wing, Finance Division.

Table 5: Autonomous Growth

[Base Growth * Buoyancy]	Autonomous Growth (%)
DT (GDP non-agri * DT Buoyancy)	14.89
ST(D) (LSM * STD Buoyancy)	16.31
STM (Imports * STM Buoyancy)	11.03
CD (Imports * CD Buoyancy)	10.85
FED (LSM * FED Buoyancy)	11.30

These autonomous growths will be used to project the autonomous growth estimates of respective revenue heads. To be sure of the results robustness a small exercise was also done by using the reduced and increased nominal growths by 10%. The resulting change was insignificant.

2.2 Head-wise Revenue Projections FY 2021-22

⁶ Autonomous growth depends on macroeconomic indicators and assumption of tax structure being able to capture revenue from these as per past performance. A higher growth in base will lead towards higher independent growth in respective taxes and thus higher projected collection.

⁷ Source Medium Term Budget Strategy Paper 2021-22 to 2023-24 / Economic Adviser's Wing, Finance Division

The autonomous growth (Table 5) has been applied on base year's expected collection (i.e. 2020-21) for each respective head to project an increase of **Rs. 636 billion**. This addition has been added in the expected collection of FY 2020-21 thus, the revenue forecast for **FY 2021-22** without additional Policy/Admn measures has been obtained to the tune of **Rs. 5,336 billion**. The required growth over the expected collection of FY 2020-21 i.e. **Rs. 4,700 billion** would be 13.5% in FY 2021-22. However, with the addition of Policy/Admn measures the target for FY 2021-22 would be **Rs. 5,829 billion**, which is near to IMF suggestion i.e. requiring a growth of about 24.0%.

Table 6: Revenue Projections for FY 2021-22

(Rs. Billion)

Base Growth Assumptions		Buoyancy Estimates		Autonomous growth	
Sectors	%				%
GDP (Nominal)	13.22	DT	1.13	DT (GDPN * DTBuoy)	14.89
LSM(Nominal)	14.70	ST D	1.11	ST(D) (LSMN * STDBuoy)	16.31
Total Imports	12.00	STM	0.92	STM (Imports * STMBuoy)	11.03
Inflation	8.20	Customs	0.90	CD (Imports * CDBuoy)	10.85
GDP (Real)	5.02	FED	0.77	FED (LSMN * FEDBuoy)	11.30
LSM (Real)	6.50				

	DT	ST(D)	ST(I)	CD	FED	Total
Expected Base Figures 2020-21	1,789	934	1,002	700	275	4,700
Projection (2021-22) with Autonomous Growth	266	152	111	76	31	636
FBR Projections without measures FY 2021-22	2,055	1,086	1,113	776	306	5,336
		ST (total)	2,199			Req. Growth 13.5

(*) This excludes Policy/Admn Measures and consists of projection due to autonomous growth

Concluding Remarks

It has been found that the overall FBR taxes are buoyant (1.04 overall buoyancy) and there is a potential for increase in tax revenues provided that macroeconomic indicators are doing well. It is evident from last 20 years data that FBR revenues increased substantially with around 14% average growth. The head-wise break-up reveals that the direct taxes are most buoyant with 1.13 buoyancy value, followed by sales tax (domestic) with 1.11 buoyancy estimates. On the other hand, sales tax (imports), customs and FED have relatively lesser buoyancies. In this regard, addressing the issues of narrow base, unnecessary exemptions and valuation problems at import stage can be instrumental for making these tax heads more buoyant, thus enabling the revenue organization to fetch more tax revenues.

The revenue forecast for FY 2021-22 by applying the buoyancy estimates and projected respective macroeconomic indicators would be Rs.5,336 billion without Policy/Admn measures. After adding Policy/Admn measures the target would be Rs.5,829 billion. However the revenue collection and achieving of target would largely depend on the performance of the economy against the targets.

Annex-I**Net Tax collection 2000-01 to 2019-20 (Rs. Million)**

S.No	FY	Direct Taxes	ST Imports	ST Dom	FED	Customs	Total
1	2000-01	124,585	88,554	65,011	49,080	65,047	392,277
2	2001-02	142,505	92,779	73,782	47,186	47,818	404,070
3	2002-03	151,898	105,605	89,534	44,754	68,836	460,627
4	2003-04	165,079	125,875	93,292	45,552	91,045	520,843
5	2004-05	183,372	144,845	93,692	53,104	115,374	590,387
6	2005-06	224,988	171,445	123,353	55,272	138,384	713,442
7	2006-07	333,737	175,909	133,487	71,804	132,299	847,236
8	2007-08	387,861	196,034	181,396	92,137	150,663	1,008,091
9	2008-09	443,548	203,715	248,029	117,455	148,403	1,161,150
10	2009-10	525,977	247,246	269,102	124,784	160,273	1,327,382
11	2010-11	602,451	308,648	324,709	137,353	184,853	1,558,014
12	2011-12	738,424	430,399	374,500	122,464	216,906	1,882,693
13	2012-13	743,409	429,831	412,697	120,964	239,459	1,946,360
14	2013-14	877,255	495,330	501,052	138,084	242,811	2,254,532
15	2014-15	1,033,720	553,028	534,762	162,248	306,220	2,589,978
16	2015-16	1,217,474	678,313	624,058	188,055	404,572	3,112,472
17	2016-17	1,344,226	702,565	626,400	197,911	496,772	3,367,874
18	2017-18	1,536,583	824,219	661,087	213,493	608,373	3,843,755
19	2018-19	1,445,508	810,357	648,856	238,186	685,575	3,828,482
20	2019-20	1,523,064	876,333	720,471	250,470	626,378	3,997,408

Annex-II**Tax Bases Data (Rs. Million)**

S.No	FY	GDP (Gross Value Addition)	GDP-non agri	LSM	Imports	Dutiable Imports
1	2000-01	3,923,244	2,977,943	410,879	627,000	386,597
2	2001-02	4,146,167	3,177,876	424,089	634,630	404,641
3	2002-03	4,534,218	3,474,902	481,374	714,372	436,316
4	2003-04	5,250,527	4,085,776	621,899	897,825	629,159
5	2004-05	6,122,568	4,808,334	814,657	1,223,079	869,815
6	2005-06	7,715,777	5,701,305	1,003,062	1,711,158	1,052,837
7	2006-07	8,735,766	6,549,859	1,149,573	1,851,136	1,010,603
8	2007-08	10,355,255	7,961,728	1,363,068	2,512,072	1,283,696
9	2008-09	12,542,265	9,543,644	1,427,213	2,723,570	1,337,629
10	2009-10	14,248,547	12,787,274	1,644,117	2,910,975	1,333,709
11	2010-11	17,647,553	13,054,833	2,144,831	3,455,286	1,521,329
12	2011-12	19,361,511	14,608,436	2,362,410	4,009,093	1,600,186
13	2012-13	21,496,680	16,161,704	2,519,037	4,349,880	1,652,823
14	2013-14	24,028,897	18,052,680	2,824,463	4,634,974	1,778,444
15	2014-15	26,089,690	19,553,568	2,853,222	4,719,399	2,703,371
16	2015-16	27,402,295	20,652,329	2,801,169	4,721,978	3,467,318
17	2016-17	29,977,559	22,659,094	3,044,603	5,583,637	4,067,138
18	2017-18	32,383,021	24,471,242	3,331,363	6,749,678	4,662,323
19	2018-19	35,783,281	27,413,644	3,722,943	7,499,468	5,054,709
20	2019-20	38,878,480	29,409,085	3,712,779	7,057,323	4,455,140

Annex-III

Log Values

S.No	FY	Tax collection						Tax bases				
		DT	STM	STD	FED	CD	TOTAL	GDP (GVA)	GDP-non agr	LSM	Total Imports	Dutiabale imports
1	2000-01	11.7	11.4	11.1	10.8	11.1	12.9	15.2	14.9	12.9	13.3	12.9
2	2001-02	11.9	11.4	11.2	10.8	10.8	12.9	15.2	15.0	13.0	13.4	12.9
3	2002-03	11.9	11.6	11.4	10.7	11.1	13.0	15.3	15.1	13.1	13.5	13.0
4	2003-04	12.0	11.7	11.4	10.7	11.4	13.2	15.5	15.2	13.3	13.7	13.4
5	2004-05	12.1	11.9	11.4	10.9	11.7	13.3	15.6	15.4	13.6	14.0	13.7
6	2005-06	12.3	12.1	11.7	10.9	11.8	13.5	15.9	15.6	13.8	14.4	13.9
7	2006-07	12.7	12.1	11.8	11.2	11.8	13.6	16.0	15.7	14.0	14.4	13.8
8	2007-08	12.9	12.2	12.1	11.4	11.9	13.8	16.2	15.9	14.1	14.7	14.1
9	2008-09	13.0	12.2	12.4	11.7	11.9	14.0	16.3	16.1	14.2	14.8	14.1
10	2009-10	13.2	12.4	12.5	11.7	12.0	14.1	16.5	16.4	14.3	14.9	14.1
11	2010-11	13.3	12.6	12.7	11.8	12.1	14.3	16.7	16.4	14.6	15.1	14.2
12	2011-12	13.5	13.0	12.8	11.7	12.3	14.4	16.8	16.5	14.7	15.2	14.3
13	2012-13	13.5	13.0	12.9	11.7	12.4	14.5	16.9	16.6	14.7	15.3	14.3
14	2013-14	13.7	13.1	13.1	11.8	12.4	14.6	17.0	16.7	14.9	15.3	14.4
15	2014-15	13.8	13.2	13.2	12.0	12.6	14.8	17.1	16.8	14.9	15.4	14.8
16	2015-16	14.0	13.4	13.3	12.1	12.9	15.0	17.1	16.8	14.8	15.4	15.1
17	2016-17	14.1	13.5	13.3	12.2	13.1	15.0	17.2	16.9	14.9	15.5	15.2
18	2017-18	14.2	13.6	13.4	12.3	13.3	15.2	17.3	17.0	15.0	15.7	15.4
19	2018-19	14.2	13.6	13.4	12.4	13.4	15.2	17.4	17.1	15.1	15.8	15.4
20	2019-20	14.2	13.7	13.5	12.4	13.3	15.2	17.5	17.2	15.1	15.8	15.3

Buoyancy Estimates based on 20 years data

DT	STM	STD	FED	CD	TOTAL
1.13	0.92	1.11	0.77	0.90	1.04

Annex-IV

Verifying Robustness of Results

(Rs. Billion)

	DT	ST(D)	ST(I)	Customs	FED	Total
Expected Base Figures 2020-21	1,789	925	1,002	700	275	4,691
Projected addition with Autonomous Growth	246	127	88	61	26	548
FBR Projections without Measures FY2021-22	2,035	1,052	1,090	761	301	5,239
Projected addition with Autonomous Growth 1 [10% Reduction]	222.0	130.3	86.6	54.4	23.6	517.0
FBR Projections without Measures FY2021-221	2,011	1,055	1,089	754	299	5208.0
Projected addition with Autonomous Growth 2 [10% Increase]	271.3	140.0	97.3	66.5	28.9	604.1
FBR Projections without Measures FY2021-22.2	2,060	1,065	1,099	767	304	5295.1