A Forecasting Model of Punjab Revenue and Spending

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Abstract

This paper develops a forecasting model of Punjab's revenues, expenditures and fiscal deficit for FY2013/14 to FY2019/20. The main purpose is to make the budget more intelligible and to develop insights into the constituents of the provincial budget for students of economics and others with an interest in public finance but who find the budgets inscrutable. The paper can be treated as a manual to accompany the online interactive forecasting-tool for Punjab budget, which will be made available online at www.ideaspak.org. The paper and its companion online app should also assist policy makers in simulating alternative scenarios by altering the assumptions that underlie the model in this paper.

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1 Introduction

Each year, around June, the budget of the federal/provincial government for the new financial year (beginning July 1) is presented before a specially-called budget-session of the national/provincial assembly. It is a highly anticipated event because it is the occasion for the government to make its most comprehensive economic statement of the year and possibly announce new tax measures. The budget session is kicked off by the finance minister's speech. Through this and related budget documents that are released around the same time, the government briefs the public about its performances in the recent past, its economic agenda in the near term and the detailed breakup of its planned expenditure and the sources of financing the expenditure in the new financial year.

In theory, governments undertake expenditure to (1) provide goods and services that the market under-provides or is unable to provide, (2) redistribute income and wealth and protect the weak and disadvantaged, (3) perform regulatory functions such as ensuring fair market competition and protection of the environment, and (4) accelerate economic growth or stabilize the economy from macroeconomic shocks. These expenditures are financed by taxes, transfers and grants (from another tier of government or from foreign governments or multilateral institutions), fees and charges, royalties, income (from past investments), sale of assets, dissaving (important for provinces, which, at times, can have sizable cash balances) or borrowing, both domestic and foreign.

Pakistan has a federal constitutional structure. The constitution assigns functional responsibilities to federal and provincial governments.[1] The constitution also assigns to these tiers of government,

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the revenues that they can raise from tax or non-tax measures and establishes institutional mechanisms for revenue sharing between the federal government and the provinces.

The federal and provincial governments announce their budgets around June and place their respective finance bills before the national/provincial assemblies. The finance bills deal with revenue-raising measures – generally tax measures, to meet government expenditure, and contains the Annual Budget Statement (ABS).[2] The ABS contains estimates of revenue and expenditure of the government for that year, as well as revised figures for the financial year that ends on June 30.[3]

Once the relevant assemblies at the federal and provincial level have discussed and/or voted on the expenditures given in the ABS and passed the finance bills, and after approval from the president (or governor in the case of provincial budget), these bills become law and give legal authority to the respective governments to raise revenues and carry out expenditure as provided in their finance bills and annual budget statements.

The constitution makes a distinction between Provincial Consolidated Fund and Public Account of the Province.[4, 5] The constitution also defines certain expenditures as 'expenditures *charged* upon the provincial consolidated fund' and requires that in the annual budget statement, distinction

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[1] The constitution also mentions local government as another tier of government and requires that each province establish a local government system and devolve political, administrative and financial responsibility and authority to the elected representatives of the local government. The extent of such devolution is to be found in the local government bills passed by the provinces.

[2] The Annual Budget Statement is treated in the constitution as part of the finance bill, e.g. Article 73, of the constitution reads "Notwithstanding anything contained in Article 70, a Money Bill shall originate in the National Assembly: Provided that simultaneously when a Money Bill, including the Finance Bill containing the Annual Budget Statement, is presented in the National Assembly, a copy thereof shall be transmitted to the Senate which may, within fourteen days, make recommendations thereon to the National Assembly."

[3] The ABS for Punjab and Sindh also contains the full year accounts for the year preceding the ongoing financial year. The federal government, and the governments of Khyber Pakhtunkhwa and Balochistan have stopped reporting the accounts for the preceding year.

[4] A similar distinction is made between federal consolidated fund and public account of the federation.

[5] Article 118 of the constitution of Pakistan defines the Provincial Consolidated Fund and Public Account of the Province as: "(1) All revenues received by the Provincial Government, all loans raised by that Government, and all moneys received by it in repayment of any loan, shall form part of a consolidated fund, to be known as the Provincial Consolidated Fund. (2) All other moneys (a) received by or on behalf of the Provincial Government; or (b) received by or deposited with the High Court or any other Court established under the authority of the Province; shall be credited to the Public Account of the Province."

be made between expenditure *charged to the provincial consolidated fund* and other expenditure.[6] Expenditure charged upon the provincial consolidated fund can be discussed but is not submitted to vote in the provincial assembly. Other expenditure is submitted to the provincial assembly in the form of demands for grants, and the assembly can approve or reject the demand or approve a reduced amount than that demanded.

The federal/provincial government, defined in the Constitution as the Prime Minister/Chief Minister and the cabinet ministers, is responsible for all governmental affairs. The national/provincial assembly can reject a revenue proposal but cannot issue a revenue proposal on its own. Similarly, an assembly is entitled to approve only cut motions on the expenditure side, ie to reduce expenditure but not increase any expenditure.

The governments can also change expenditure programs and priorities midstream and can depart from the expenditures approved by the legislative assemblies, but the government is then required to place before the relevant assemblies a supplementary budget statement, setting out the revised expenditures during the financial year. The assemblies then deal with the supplementary or excess expenditure in the same manner as they deal with expenditure categories in the annual budget statement.

This paper develops a forecasting model of Punjab government's revenues and spending. The main purpose, however, is to make the budget more intelligible and to develop insights into the constituents of the provincial budget for students of economics and others with an interest in public finance but who find the budgets inscrutable. Our paper can be treated as a manual to accompany the online interactive forecasting-tool for Punjab budget, which will be made available online at

[6] "The following expenditure shall be expenditure charged upon the provincial consolidated fund: (a) the remuneration payable to the governor and other expenditure relating to his office, and the remuneration payable to: (i) judges of the High Court, (ii) the speaker and deputy speaker of the provincial assembly; (b) the administrative expenses, including the remuneration payable to officers and servants, of the High Court and the Secretariat of the provincial assembly; (c) all debt charges for which the provincial government is liable, including interest, sinking fund charges, the repayment of amortization of capital, and other expenditure in connection with the raising of loans, and the service and redemption of debt on the security of provincial consolidated fund; (d) any sums required to satisfy any judgment, decree or award against the province by any court or tribunal; and (e) any other sums declared by the constitution or by act of the provincial assembly to be so charged." (The Constitution of the Islamic Republic of Pakistan, Article 121).

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It needs to be stressed that forecasting provincial government's revenues and expenditures is a perilous exercise as over 80 percent of Punjab government's revenue in FY2012/13 (the base year of the forecasting model) depended on fiscal transfers from the federal government,[7] which makes provincial revenues heavily dependent on federal tax policy as well as the ability of the Federal Board of Revenue (FBR) to collect those taxes. The shortfall from revenue targets by the FBR then affects the expenditure targets of the provincial government. Midstream changes in programs and priorities by provincial governments can also make budget forecasting quite hazardous.

It should also be recognized that budget making is an iterative process and that if, in the first cut, the government finds that its borrowing requirement is unsustainably large, it may curtail its expenditure or increase its revenue raising effort; and similarly if it finds itself in the happy position of a large surplus, the government may choose to expand its expenditure or reduce revenue raising effort rather than retire its debt or build its financial assets and cash reserves. In fact, under the assumptions of our model, the Punjab government will raise fiscal surpluses that exceed Rs90 billion (0.32% of GDP) in FY2015/16 and go up to over Rs370 billion (0.84% of GDP) by FY2019/20, with interest income on accumulated cash reserves being a contributory factor in generating fairly large fiscal surpluses.[8] Fiscal surpluses of this order may tempt the government to scale up its expenditures, especially because of the likely political dividends from certain types of public spending. Our simple forecasting model does not address how public spending may respond to fiscal surpluses and accumulation of cash reserves.

Our revenue forecasts are the outcome of several assumptions mostly about GDP growth and tax-to-GDP ratios in the forecast period that are consistent with medium to long term targets as given in the IMF 7th Review of the Extended Fund Facility (EFF) for Pakistan (see IMF Country Report

[7] As part of the revenue sharing arrangement under article 160 of the constitution (see Section 4.1)
[8] As part of the commitment made to the IMF (see Pakistan: Article IV Consultation and Request for an Extended Arrangement Under the Extended Fund Facility, IMF Country Report No. 13/287, September 2013), the provincial governments are expected to run fiscal surpluses of 1.4 percent of GDP in FY2015/16. Comparing this forecast of fiscal surplus agreed with IMF in FY2015/16, our forecast of fiscal surplus of 0.84% of GDP for Punjab in FY2019/20, which implies an overall fiscal surplus of about 1.6% by all provinces by FY2019/20, is not unreasonably large.

15/162 June 2015, hereinafter referred to as IMF 7th review).[9] On the expenditure side we rely on policy targets and historical trends. Revenue targets can be compromised under political economy compulsions, and historical trends of expenditure calculated from periods of low growth or of stringent borrowing constraint, may be poor indicators of these expenditures when the economy is performing strongly or when the borrowing constraints are relaxed.

Our forecasting approach differs from that followed in the Medium Term Fiscal Framework 2013-14 to 2016-17 (MTFF) of the Punjab government. As in the White Paper that accompanies the provincial budget, the balancing item in MTFF is the development expenditure. The MTFF forecasting framework involves: (1) forecasting resource envelope of the provincial government, which involves forecasting and adding: (i) tax revenue and non-tax revenue, (ii) transfers, (iii) grants, and (iv) net capital receipts (net borrowing/lending); (2) forecasting the level of current expenditures, and (3) determining development expenditure as a residual by subtracting current revenue expenditure from the resource envelope. In our forecasting framework, the balancing item is borrowing/lending of the government rather than development expenditure.[10] The approach involves forecasting *revenue* as well as *expenditure* together with policy lending in order to determine *overall fiscal balance* (OFB). The OFB can be positive or negative and can lead to accumulation of cash reserves by the provincial government or build-up of domestic and foreign debt. The interest income on accumulated cash reserves is part of government revenue, and the interest payment on accumulated debt is part of government expenditure. The interest income and interest expense, together with non-interest revenue and expenditure, determine OFB in period t. This sets in motion the next round of accumulation of cash reserves or of debt.

In the following, we first outline how the Punjab government categorizes various revenues and expenditures in presenting its budget. We then develop our methodology for forecasting Punjab government's revenue, expenditure, operating surplus/deficit and OFB (Section 3). This is followed by forecasts of these variables under a set of baseline assumptions (Section 4 to 7), and

[9] The tax-to-GDP ratios used from the IMF 7th Review assume that this ratio would increase from 9.9% in FY2012/13 to 14.7% in FY2019/20. The tax buoyancy factor is thus greater than 1, which is to say that the growth of tax revenue would be greater than the growth in nominal GDP. With agriculture and services very lightly taxed, the growth in these sectors do not lead to much increase in revenue, whereas growth in manufacturing leads to much higher growth in revenue. Thus the tax buoyancy depends very much on the source of the growth in the economy.

[10] Our forecasting approach in which borrowing/lending is the balancing item is also mentioned in MTFF as a possible forecasting approach (see MTFF, p. 56).

then a comparison of the forecasts with actual revenues and expenditures in FY2013/14 and FY2014/15 (Section 8). The last section contains some concluding remarks.

2 Punjab Budget Presentation: An overview

The Punjab government publishes, a White Paper on the budget that accompanies other budget documents. The White Paper presentation of the budget is organized into receipts and expenditure. It first presents 'General Abstract of Revenues and Expenditures' as in Table 2-1.[11] The definitions of the variables in Table 2-1 are given in Appendix A but briefly provided below.

- General Revenue Receipts (GRR) consists of federal transfers from the federal divisible pool (under article 160 of the constitution), transfer of provincial share of federal excise on natural gas, provincial own tax and provincial non-tax revenues.
- General Capital Receipts (GCR) consist of provincial government loans, recovery of loans extended to provincial bodies and provincial employees, commercial bank loans for commodity operations (wheat/food)[12], program loans from foreign governments and multilateral agencies (used to finance development and non-development expenditure) and project aid/loans for specific projects from foreign governments and multilateral agencies (e.g., irrigation, road and infrastructure).
- Development receipts (DR) consist of: (i) foreign project assistance (FPA), and (ii) that part of the Public Sector Development Program (PSDP) of the federal government that is routed through the provincial government. The latter is not included as part of receipts at the time the budget is presented but included in the revised budget as grants.

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[11]The Table refers to revenues and expenditures from Account # 1 and Account # 2. These are accounts that the provincial governments maintains with the State Bank of Pakistan. The provincial governments undertakes commodity trading in food (particularly wheat) to provide price support to farmers or sell it at a subsidized price to consumers or to stabilize prices. For this it borrows from commercial banks and returns the loans on realizations of sale proceeds. The receipts from and payments to commercial banks related to such trading are part of Account # 2. The budget estimates always show the receipts to equal expenditures in Account # 2. Other receipts and expenditures are handled out of Account #1.

[12] In the past, Punjab has borrowed from commercial banks (especially Bank of Punjab) to finance budgetary expenditures; not just commodity operations. Technically it requires permission of the federal government, but it is not a problem if the same political party is in power at the federal level and in the province, as is the case at present with PML(N) in power at the federal level and in Punjab. Another form of loans that the provincial governments have received in the past is Cash Development Loans (CDLs). "The CDLs were raised by the Federal Government to cover its foreign currency deficits on very high mark up rates in most of the cases and transferred to provincial governments from time to time." (Punjab White Paper 2014-15, p. 105). Although CDLs are a thing of the past, its footprint continues in the sense that that for the last several years the provincial governments have been paying interest on CDLs and repaying principal. The stock of CDL at the end of June 2013 was Rs30.3 billion out of the total domestic debt of the Punjab government of Rs41.8 billion.

- FPA are project specific loans, and like other loans this category of receipts is a component of GCR (but shown separately in the budget documents as DR because these are earmarked for development projects).

- Program loans are used to finance both development and non-development expenditure. That part of the program loan that is utilized for development projects should also be treated as development receipt but the White Paper only treats FPA as a development receipt. Program loans are part of 'debt' under the heading of GCR.

▪ Current Revenue Expenditure (CRE) includes the expenditures on the regulatory functions of the government and on the provision of social and economic services of the provincial governments.

▪ Current capital expenditures consist of payment of principal portion of domestic/foreign debt, investments by the provincial government in various enterprises, and repayment of commercial loans through resale of wheat/food stocks.

▪ Development expenditure (DE) has two components, (1) development revenue expenditure and (2) development capital expenditure. The latter is investment expenditure on 'brick and mortar' and the former is mostly investment expenditure other than brick and mortar and includes purchase of transport and machinery, operating expenses, research and training expenses provided under the projects and wages/salaries of employee hired temporarily for the projects.

Table 2-1: General Abstract of Revenues and Expenditures

Receipts	Expenditures
General Revenue Receipts (GRR) • Federal transfers (including excise duty on natural gas) • Provincial tax revenue • Provincial non-tax revenue	**Current Revenue Expenditure (CRE)** • General public services • Defense (not a provincial subject) • Public order and safety affairs • Economic affairs • Environment protection • Housing and community amenities • Health • Recreation, culture and religion • Education affairs and services • Social protection
General Capital Receipts (GCR) Excluding Foreign Project Assistance • Recoveries, loans and advances (A/C – I) • Debt (A/C – I) • Recoveries of investment – state trading schemes (A/C – II) • Cash credit accommodation (A/C – II)	**Current Capital Expenditure (CCE)** • Public debt (Permanent debt (market loans)) (A/C – I) • Repayment of principal (CDL, foreign loans etc)(A/C – I) • Investments (including capitalization of pension fund) (A/C – I) • Loans and advances (principal) (A/C – I) • State trading in medical stores (A/C – I) • State trading in wheat (A/C – II) • Repayment of commercial bank loans (A/C – II)
Development Receipts • Foreign project assistance (FPA)	**Development Expenditure (DE)** • Annual Development Programme • Core ADP • Other development initiatives • Special initiatives

Source: Adapted from the White Paper: Budget 2014-15, Finance Department, Government of Punjab

Notes: The White Paper lists FPA under the heading of 'development receipt' in the General Abstract of Revenues and Expenditures (GAoRE) (White Paper 2014-15, p. IV). GAoRE does not show 'development receipt' as a component of GCR. However, later in the White Paper it is treated as a component of GCR (see White Paper 2014-15, Table 1.1 p. 2). We have modified the headings of GAoRE, and replaced the heading 'GCR' with 'GCR excluding FPA'.

The White Paper then presents 'Budget at a Glance' in which it calculates the surpluses and deficits on revenue account and capital account and the surplus for development expenditure/resources available for development, defined as[13]:

[13] We have departed slightly from the White Paper 2014-15 in the representation of *surplus for development* and *resources available for development*. We do not make a distinction between the two but the White Paper does. In the White Paper 2014-15 *surplus for development* is obtained as the sum of A and B (as in 2.1) but FPA is *implicitly* excluded from GCR. It then defines *resources available for development* by adding FPA to (A + B). We do not make the distinction between *surplus for development* and *resources available for development* because, unlike the White Paper, we are consistent in defining GCR to include FPA (see notes at the end of Table 2-1).

$$\text{Surplus/Resources Available for Development Expenditure} = (\text{GRR} + \text{GCR}) - (\text{CRE} + \text{CCE})$$

$$= (\text{GRR} - \text{CRE}) + (\text{GCR} - \text{CCE})$$

$$= (\text{Net revenue account surplus/deficit}) + (\text{Net capital account surplus/deficit})$$

or

(2-1) $Surplus/Resources\ Available\ for\ Development\ Expenditure = A + B$

Development expenditure (DE) is then matched with the available resources (A + B).[14]

In addition to these accounts, the coverage of the White Paper includes the Public Accounts of the province and its debt and contingent liabilities.[15] "The practice of using Public Account funds for financing budgetary expenditures has been abandoned since FY2008/09."[16] In this paper we will not concern ourselves with the Public Accounts of the provincial budget.

[14]Available resources for development may include other items as well. The 'budget at a glance' for FY2010/11 for instance included sale proceeds from privatization as revenue. Such proceeds from assets are shown generally in the budget documents under the heading of 'extraordinary receipts'. For definitional reasons (see footnote 19) we do not treat most of 'extraordinary receipts' as revenue. Another entry in the 'budget at a glance' is 'operational shortfall' (see e.g. White Paper 2013-14), which is shown as a component of 'resources available for development'.

[15] These liabilities are in effect pension and General Provident Fund liabilities and therefore actual liabilities. It is not clear why the White Paper refers to these as contingent liabilities.

[16] Punjab White Paper 2014-15, Department of Finance, Government of Punjab, p. 43.

3 Forecasting methodology

In this section we explain the methodology adopted to forecast Punjab government's revenue, spending, and fiscal balance.

3.1 Revenue, Expense, Expenditure, Gross Operating Balance and Overall Fiscal Balance

Revenue is defined as an increase in net worth (the difference between the total value of all assets and the total value of all liabilities) resulting from a transaction.[17] There are four types of revenue:[18] (1) taxes and certain types of social contributions, (2) property income from ownership of assets, (3) sales of goods and services, and (4) other transfers receivable from other units. Revenue, as defined here, does not include proceeds from disposal of non-financial assets and privatization.[19] However, provincial budget documents include such disposal of non-financial assets as part of general revenue receipts (GRR). Disposal of non-financial assets are listed mostly under 'extraordinary receipts'.[20] In this paper we will follow the definition of revenue in GFSM 2014, and subtract such proceeds from GRR to obtain revenue:

(3-1) $Revenue = GRR - disposal\ of\ nonfinancial\ assets$

Expense is defined as a decrease in net worth resulting from a transaction.[21] The major types of expense are:[22] (1) compensation of employees, (2) use of goods and services, (3) consumption of fixed capital, (4) interest, (5) subsidies, (6) grants, (7) social benefits, and (8) other expense.

[17] See GFSM 2014, Chapter 4.
[18] See GFSM 2014, Chapter 5.
[19] "Some transactions are exchanges in assets and/or liabilities and should not be recorded as revenue. The disposal of a nonfinancial asset, other than inventories, by sale or barter does not affect net worth and these transactions are not revenue" (GFSM 2014 p.85).
[20] Extraordinary receipts are mostly "receipts [that] accrue from privatization / disinvestment of government owned assets, and sale of land etc." (Punjab White Paper, 2014-15, p. 106). In obtaining an estimate of disposal of non-financial assets, we excluded certain items that did not seems to fit the category of disposal of nonfinancial assets (revenue categories coded as: C03703, C03722, C03724 in Annual Budget Statement 2014-15) and added those that did fit into the description of disposal of nonfinancial assets but listed under 'Others' (revenue categories coded as: C03802, 03803 in Annual Budget Statement).
[21] See GFSM 2014, Chapter 4.
[22] See GFSM 2014, p. 71.

Except for consumption of fixed capital, the other constituents of *expense* also constitute '*current revenue expenditure*' as given in the budget documents.

Expense and '*current revenue expenditure'* can also be classified according to the functions of government (for functional classification of 'current revenue expenditure' see Table 2-1).

GFSM 2014 also makes a distinction between *expense* and *expenditure*. *Expenditure* comprises expense plus net investment in nonfinancial assets. *Nonfinancial assets* consist of fixed assets (buildings and structures, machinery and equipment etc.), inventories, valuables and non-produced assets (land, mineral and energy resources etc.).

Expenditure is defined as:

$$Expenditure = expense + net\ investment\ in\ nonfinancial\ assets$$

$$= expense + (acquisition\ of\ nonfinancial\ assets - disposal\ of\ nonfinancial\ assets$$

$$- consumption\ of\ fixed\ capital)$$

$$= (expense - consumption\ of\ fixed\ capital) + (acquisition\ of\ nonfinancial\ assets - disposal\ of\ nonfinancial\ assets)$$

or

(3-2) $$Expenditure = current\ revenue\ expenditure + (acquisition\ of\ nonfinancial\ assets - disposal\ of\ nonfinancial\ assets)$$

We identify acquisition of nonfinancial assets in (3-2) with *development expenditure* of the budget documents and disposal of nonfinancial assets in (3-2) with a modified form of *extraordinary receipts* of the budget documents (see footnote 20). Using this correspondence, we can express (3-2) as:

(3-3) $$Expenditure = current\ revenue\ expenditure + development\ expenditure - disposal\ of\ nonfinancial\ assets$$

Net lending/borrowing (NLB) is then defined as:

(3-4) $NLB = Revenue - Expenditure$

Substituting (3-3) in (3-4) and using (3-1) we can write NLB as:

(3-5) $NLB = GRR - current\ revenue\ expenditure - development\ expenditure$

There are several useful fiscal indicators that can be constructed.[23] One is the gross operating balance (GoB):

$GoB\ =\ Revenue - \ expense\ other\ than\ consumption\ of\ fixed\ capital$

or

(3-6) $GoB\ =\ Revenue - \ current\ revenue\ expenditure$

Another fiscal indicator is the overall fiscal balance (OFB), which is the net lending/borrowing in (3-4) after adjusting for transactions in assets and liabilities that are deemed to be for public policy purposes.[24] OFB is defined as[25]:

(3-7) $OFB\ =\ Revenue - \ Expenditure - (\ policy\ lending - repayments\ on\ policy\ lending)$

or

(3-8) $OFB = Revenue - (current\ revenue\ expenditure\ + development\ expenditure - \ disposal\ of\ nonfinancial\ assets) - policy\ lending + repayment\ on\ policy\ lending$

or

[23] See GFSM 2014, Chapter 4.
[24] "Public policy-related assets or liabilities (also called policy lending […]) may be acquired for a variety of reasons, such as fostering new industries, assisting ailing government corporations, or helping particular businesses suffering economic adversity. Such transactions can take a variety of forms, including loans, equity securities, and debt securities. Given that there is often a concessional element to such transactions, it is useful to identify them in a separate category so that for some analyses the fiscal impact of these policy-related transactions in assets could be assessed separately." (GFSM 2014, pp. 72-73). Also see GFSM 2014, p. 78, para.4.57.
[25] We follow the definition of federal deficit/surplus as given in the Budget in Brief, p. 51, Federal Budget 2016-17, Government of Pakistan, Finance Division, Islamabad.

(3-9) $OFB = GRR - (current\ revenue\ expenditure + development\ expenditure + net\ policy\ lending)$

3.2 Forecasting Revenue

For forecasting purposes we distinguish between five types of revenue categories: (1) federal transfers from the federal divisible pool of tax revenue under the NFC award, (2) provincial tax revenue, (3) receipts under article 161 of the constitution, and clause 5 & 6 of the 7th NFC award, (4) federal/foreign grants, and (5) non-tax revenues raised by the provincial government. These are discussed in greater detail in Section 4.

One of these revenue categories (federal/foreign grants) includes interest payment on provincial government's cash reserves placed with the State Bank of Pakistan.[26] These payments are made by the federal government to the provincial government as non-development grants. The determination of cash reserves is explained in Section 3.6. Multiplying cash reserves at the end of year t-1 and interest rate in year t – see Section 3.6 for assumptions on interest rate on cash reserves – provides forecasts for interest income on cash reserves in year t.

To forecast other components of federal/foreign grants and the remaining revenue categories, we make a set of assumptions about GDP growth, tax-to-GDP ratios, federal transfers, federal and foreign grants (other than interest payment on cash reserves paid as non-development federal grant that is derived in Section 3.6), provincial own-tax and non-tax receipts, inflation rates, exchange rate depreciation and interest/profit rate on provincial cash reserves. The details of these assumptions are given in Appendix C

3.3 Forecasting Current Revenue Expenditure (CRE)

For forecasting *current revenue expenditure* (CRE) we distinguish between: (1) non-interest current revenue expenditure, and (2) interest expense on domestic and foreign debt. We base our forecast of non-interest current spending on past average and trend of such spending.We assume that the non-interest component of CRE would increase at the same real rate at which it grew

[26] The income from these cash reserves is recorded in the budget documents under non-development federal grants.

during the period FY2008/2009 to FY2012/13 or 8%. The nominal growth factor is then obtained by multiplying the real growth factor, (1.08), by the CPI inflation factor ($1 + \dot{P}$).

Interest expense on domestic and foreign debt is obtained as a product of interest rate on debt in year t and the debt outstanding at the end of year t-1. The determination of outstanding debt is explained in Section 3.6.

3.4 Forecasting Development Expenditure

Our methodology takes as a starting point the projected public investment to GDP ratio as given in the Planning Commission Vision 2025 (Discussion Draft) (see Table 5-1). These figures are interpolated for 2014 and for 2016 to 2019 to obtain Table 5-2, which is reproduced below (Table 3-1:

Table 3-1: Public Investment as percentage of GDP: FY2012/13 to FY2019/20

	Financial Year							
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Public Investment (% of GDP)	3.9	4.3	4.6	4.68	4.760	4.84	4.92	5.00

Source: Vision 2025 Planning Commission (Discussion Draft), Government of Pakistan, December 2013 and author's calculations.

We assume that if the ratio of public investment to GDP goes up from, say, 3.9 in 2013 to 4.3 in 2014, then the federal share of public investment in GDP will also go up by a factor of (4.3/3.9) = 1.09 and so will the share of public investment of Punjab, Sindh, KP and Balochistan in the GDP. We further assume that development expenditure is a constant proportion of total public sector investment in Punjab. With these assumptions we are able to show (see Section 5.1) that the forecast for nominal DE for each year can be obtained by multiplying the following three terms:

i. Ratio of development expenditure in period t (as percentage of GDP) to development expenditure in period t-1 (as percentage of GDP) – from Table 5-2 or equivalently Table 3-1.

ii. Level of development expenditure calculated for period t-1 (for FY2013/14, the level of development expenditure for period t-1 is the base year value and equals Rs134 billion); and

iii. (1+ nominal GDP growth rate) or (1 + real GDP growth rate) × (1 + GDP deflator).

Forecast values for real GDP growth rate and GDP deflator are taken from IMF 7th Review (where forecast values for GDP deflator are not available, forecast values for CPI-inflation rate are used – also taken from IMF 7th Review).

3.5 Forecasting Overall Fiscal balance

To calculate overall fiscal balance, we require forecasts for revenue, CRE, DE, disposal of nonfinancial assets and net policy lending (see (3-7) – (3-9)). The methodology for obtaining forecasts for revenue, CRE and DE was explained in Sections 3.2 – 3.4. Disposal of nonfinancial assets are taken to be approximately equal to the 'extraordinary receipts' in the budget documents (see footnote 20), and are assumed to remain unchanged in real terms at their base year level of FY2012/13.[27]

Policy lending is taken as loans extended by the provincial government to 'local governments, financial institutions and autonomous bodies under its purview for meeting their current and development expenditures'. Policy lending and repayments on policy lending are assumed to grow at the same rate as nominal GDP.

We note that in FY2012/13, after rounding, total revenue was Rs691 billion, current revenue expenditure was Rs534 billion, development expenditure was Rs134 billion, disposal of nonfinancial assets was worth Rs1 billion, policy lending was Rs7 billion and repayment on policy loans was Rs0.4 billion. Thus NLB as defined in (3-4) was about Rs23 billion and OFB, defined in (3-9), was about Rs17 billion.

[27] GFSM 2014 makes a distinction between privatization and 'disposal of nonfinancial assets' see GFSM 2014, p.239 but the Budget White Papers do not make such distinction (see footnote 20). At the federal level, privatization is a financing item and excluded from the calculation of OFB. We will assume that provinces do not have a privatization program so that any sale of assets can be categorized as disposal of nonfinancial assets, and included in the calculation of OFB.

3.6 OFB, Cash Reserves, Foreign and Domestic Debt

As mentioned in Sections 3.2 and 3.3 above, one of the components of government revenue is interest income on its cash reserves[28] and one of the components of government expense is interest on government borrowing. In Appendix D we derive an expressions for cash reserves, foreign debt and domestic debt. In this section we provide a summary of the appendix.

If OFB (defined in (3-9)) is positive, it can allow the government to build-up its cash reserves, purchase 'other financial assets' and/or reduce its domestic and foreign borrowing. If OFB is negative it can result in drawdown of cash reserves, sale of 'other financial assets' and/or greater domestic and foreign borrowing. The following equation equates OFB with the financing variables:

(3-10) $OFB_t = -\left(\Delta B_t^d + \Delta B_t^f\right) + \Delta CR_t + \Delta Other\ Financial\ Assets_t$

Where

ΔB_t^d is change in domestic debt between the end of year t and end of year t-1;

ΔB_t^f is change in foreign debt in rupee terms between the end of year t and end of year t-1;

ΔCR_t is change in cash reserves between the end of year t and end of year t-1;

$\Delta Other\ Financial\ Assets_t$ is change in other financial assets (other than cash reserves and domestic and foreign debt) between the end of year t and end of year t-1.

Given the base year (FY2012/13) values of cash reserves, domestic debt and foreign debt, we can calculate the interest component of revenue and expenditure for FY2013/14, and together with the forecast values of non-interest component of revenue and expenditure and the forecast value of net policy lending, we can calculate OFB for FY2013/14. Given the value of OFB for FY2013/14,

[28] The provincial government can place their fiscal surpluses with the State Bank of Pakistan (SBP). As part of the commitment made to the IMF (see Pakistan: Article IV Consultation and Request for an Extended Arrangement Under the Extended Fund Facility, IMF Country Report No. 13/287, September 2013), the provincial governments are expected to run fiscal surpluses of 0.5percent of GDP in FY2013/14, 1 percent of GDP in FY2014/15 and 1.4 percent of GDP in FY2015/16. Prior to 2013, provincial governments did not receive any interest on cash balances with the SBP but this has changed since 2013.

there are many ways in which the equality in (3-10) can be satisfied. Without imposing some further structure on the RHS variables in (3-10), we cannot obtain determinate values of cash reserves, domestic debt or foreign debt for FY2013/14 from which to calculate recursively future values of OFB, cash reserves, domestic debt and foreign debt. In the following we impose some structure on the RHS variables of (3-10) to obtain determinate values for cash reserves, domestic debt and foreign debt.

First we rule out transactions in 'other financial assets' including privatization as a means of financing the deficit. Thus we assume that:

Assumption # 1 $\Delta Other\ Financial\ Assets_t = 0$

Next, note that debt, at the end of year t, equals the debt at the end of year t-1 plus new loan contracted in year t minus debt repayment in year t:

(3-11) $B_t = B_{t-1} + new\ loans_t - debt\ repayment_t$

where B_t stands for debt (domestic or foreign) at the end of period t.

Substituting Assumption # 1 and (3-11) in (3-10), we can write (3-10) as:

(3-12) $OFB_t = (domestic\ debt\ repayment_t - new\ domestic\ loans_t) + (foreign\ debt\ repayment_t - new\ foreign\ loans_t) + \Delta CR_t$

We make the following assumptions:

Assumption # 2. There is no premature debt retirement and the only debt that the government must retire is the debt that it is obligated to retire under the terms of the contract.

Assumption # 3. The annual domestic nominal debt retirement, will either be the same as in FY2012/13 (Rs18 billion) or the nominal domestic debt outstanding, whichever is less.

Assumption # 4. Foreign debt retirement in each of the forecast periods will be unchanged in dollar terms from the FY2012/13 level.[29]

The provincial government obtains low cost foreign loans for development or non-development purposes, routed mostly through the federal government. Some of the loans are tied to particular projects and others are program (non-project) loans. These loans are made available at very low cost and, therefore, very attractive. We believe that the Punjab government will pitch for these project/program loans even if it runs healthy fiscal surpluses in the forecast period. We therefore make the following assumption:

Assumption # 5. To take advantage of the low cost foreign loans, the government will contract *new foreign loans* each year which will at least equal their base-year value in dollar terms. *New foreign loans* that equal the base-year level of *new foreign loans* (in dollar terms) will be referred to as *default level of new foreign loans*.

Additional assumptions are required to address the sequencing of the financing options. OFB and debt repayment obligations that become due each year, can be financed by cash reserves or new domestic and foreign loans (see (3-12)). From assumption # 5, each year the government will have a default level of foreign loans. If these *new foreign loans* are insufficient to meet the financing requirements, then we assume that the government will first tap its accumulated cash reserves. Once cash reserves are exhausted, it will switch to additional foreign loans (above the default level) or to domestic loans. Since, as of now, domestic debt is more expensive than foreign debt, we assume the government will turn to new domestic debt only when options for cheaper foreign loans are exhausted.[30] Thus, if by restricting domestic loans to zero and foreign loans to their base-year

[29] We could generalize the assumption to parallel Assumption 3 for domestic debt, to read: "Foreign debt retirement in each of the forecast periods will be unchanged in dollar terms from the FY2012/13 level or the nominal foreign debt outstanding, whichever is less". However, foreign debt in the base year is very large and under our assumption on debt repayment or any reasonable assumption, outstanding foreign debt will exceed debt retirement during the forecast period; and therefore the generalization is not necessary.

[30] The Constitution also constrains provincial government to borrowing within limits set by the National Economic Council and/or the consent of the federal government. Domestic and foreign borrowings by provinces are governed by article 167 of the constitution. Clause (3) of the article states that: "A Province may not, without the consent of the Federal Government, raise any loan if there is still outstanding any part of a loan made to the Province by the Federal Government, or in respect of which guarantee has been given by the Federal Government; and consent under this clause may be granted subject to such conditions, if any, as the Federal Government may think fit to impose." This clause can be interpreted to mean that if a provincial governments has no outstanding loan that it owes to the federal government nor has it an outstanding loan for which the federal government is a guarantor, then

value in dollar terms, the government still ends up with non-negative accumulated cash reserves, then it will keep its domestic borrowing to zero and foreign borrowing to its base-year level in dollar terms. If, however, at this level of domestic and foreign borrowing, the cash reserves that are required to play the balancing role in (3-12), turn out to be negative, then cash reserves and *new domestic loans* are restricted to be zero and *new foreign loans* play the balancing role in (3-12). Once *new foreign loans* reach an upper bound (to be specified by the user/policy maker) then the balancing role in *(3-12)* is played by domestic loans.

To summarize, after applying assumptions 2 – 4 on debt repayment in (3-12):

1. Replace C_t by $\mathbf{\Omega}_t$ in (3-12) and solve for $\mathbf{\Omega}_t$ with *new domestic loans* = 0 and *new foreign loans* = default level (see assumption 5). Then $C_t = \Omega_t \; if \; \Omega_t \geq 0$, and $C_t = 0 \; if \; \Omega_t < 0$. (See Appendix D for details).

   If $\Omega_t \geq 0$, domestic debt is obtained from *(3-11)* by substituting in *(3-11)* the assumption 3 on domestic debt repayment and treating *new domestic loans* to be zero. Foreign debt is obtained by substituting assumption 4 in *(3-11)* and taking *new foreign loans* to equal the default level.

2. If $\Omega_t < 0$, replace *new foreign loans* by Ψ_t in (3-12) and solve for Ψ_t with C_t =0 and *new domestic loans* = 0. Then *new foreign loans* equal Ψ_t provided $\Psi_t \leq \Gamma_t$ where Γ_t is the upper bound on *new foreign loans* to be specified by the user/policy maker.

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the provincial government can borrow without the consent of the federal government. The 18th amendment added clause (4) to article 167 of the constitution, which reads: "A Province may raise domestic or international loan, or give guarantees on the security of the Provincial Consolidated Fund within such limits and subject to such conditions as may be specified by the National Economic Council." Reading clause 4 with clause 3 can imply that even if the provincial government does not requires the consent of the federal government to borrow (because the provincial government has no outstanding loans taken from the federal government and there are no outstanding provincial loans that the federal government has guaranteed) or where the federal government has given its conditional consent to the province to borrow under clause 3, the provincial government's borrowing is subject to limits and conditions specified by the National Economic Council. To date, no province has borrowed without the permission of the federal government.

If $\Omega_t < 0$ and $\Psi_t \leq \Gamma_t$, domestic debt is obtained by substituting *new domestic loans* = 0 in (3-11) and invoking assumption 3. Foreign debt is obtained by substituting the value of *new foreign loans* in (3-11) and invoking assumption 4. (See Appendix D for details).

3. If $\Omega_t <$ and $\Psi_t > \Gamma_t$, solve (3-12) for *new domestic loans* by setting $C_t = 0$ and new foreign loans = Γ_t.

   Domestic debt is obtained by substituting the value of *new domestic loans* in (3-11) and invoking assumptions 3. Foreign debt is obtained by substituting *new foreign loans* = Γ_t in (3-11) and invoking assumption 4. (See Appendix D for details).

We have shown that under assumptions 1 – 5, and the financing sequence outlined above, determinate values of cash reserves, foreign debt and domestic debt can be obtained. This is what we set out to do in this section. Thus starting with base-year values for cash reserves, foreign debt and domestic debt, we can recursively determine OFB and cash reserves/foreign-debt/domestic-debt in each subsequent year under the assumptions and model sketched out in this section and in Section 3.1 to 3.5.

The base year values for cash reserves and foreign and domestic debt as well as interest rates and some other relevant variables used in the forecasting model are provided below.

Cash reserves

Base year values for cash reserves are not available from the budget documents, nor is the interest rate on these reserves. We work with base year value of cash reserves of Rs6.5 billion and an interest rate on cash reserves in the forecast period that ranges between 8.6% and 6.5%.[31]

[31] For FY2013/14, and FY2014/15, the interest rates were taken to be the weighted average rates of return on treasury bills when sold by the State Bank of Pakistan (SBP), which were respectively 8.57% and 7.83%. For the remaining years, we have taken the interest rate to be 6.48%, which was the weighted average rate of return on treasury bills in June 2015, the last month for which the weighted average rate of return figures are available from the annual report of SBP. The cash reserve value for the base year FY2012/13 was obtained by taking into account the 'incentive grant for maintaining provincial surpluses in terms of CCI decision for Punjab' in FY2013/14, which was Rs0.556 billion (see Federal Budget Details of Demand for Grants and Appropriations 2014-15, Demand No. 035). In our model, this payment was equivalent to the product of the interest rate (0.0857) and cash reserves at the end of FY2012/13. The implied cash reserve value is Rs6.485 billion in FY2012/13.

Foreign debt

The base year value of foreign debt in rupee terms was Rs403 billion, base year value of foreign debt retirement was Rs12.6 billion, base year value of new foreign debt contracted was Rs16.75 billion.

The interest cost on foreign debt in dollar terms can be written as:

(3-13) Interest payment on foreign debt in period t (in dollars) = $\bar{\iota}^f B_{t-1}^{f(\$)}$

where $\bar{\iota}^f$ is the interest rate on foreign debt (assumed fixed during the forecast period) and $B_{t-1}^{f(\$)}$ is the foreign debt (in dollars) outstanding at the end of year t-1.

In rupee terms the interest payment on foreign debt is obtained by multiplying the RHS in (3-13) by the exchange rate:

Interest payment on foreign debt in period t (Rs) = $E_t \bar{\iota}^f B_{t-1}^{f(\$)} = \bar{\iota}^f \left(\frac{E_t}{E_{t-1}}\right) E_{t-1} B_{t-1}^{f(\$)}$

or

(3-14) $\textit{Interest payment on foreign debt in period t (Rs)} = \bar{\iota}^f (1 + \dot{E}_{t-1,t}) B_{t-1}^f$

where $\dot{E}_{t-1,t} = (E_t - E_{t-1})/E_{t-1}$ is the exchange rate depreciation between year t and t-1 and $\mathrm{B}_{t-1}^{\mathrm{f}}$ is foreign debt (in rupees) at the end of year t-1.

In the base year, interest rate on foreign debt, $\bar{\iota}^f$, is taken to be 1.49%[32] and treated as fixed for the entire forecast period.

Obligatory foreign debt repayment in year t, which is assumed to equal the base year level of debt repayment in dollar term, is converted into rupee terms by multiplying by (1 + accumulated exchange rate depreciation between the base year and year t). The exchange rate is expected to depreciate by the difference between the domestic and foreign inflation rates. The former is obtained from IMF 7th review and the latter is assumed to equal 2%.

[32] See White Paper, Budget 2013-14, p. 77 and Table 6.2, Finance Department, Government of Punjab.

The choice of the upper bound on foreign loans, Γ_t, is a matter of policy judgement and is to be specified by the user/policy maker. In the forecasts, presented in this paper, we take this to be 25% more than the base-year level of *new foreign loans* in dollar terms.

Domestic debt

The base year value of domestic debt was Rs42 billion. The interest rate on domestic debt is assumed to remain unchanged at its FY2013/14 level of 13.11% in all forecast years.[33]

The annual domestic nominal debt retirement, is assumed to be either the same as in FY2012/13 (Rs18 billion) or the nominal debt outstanding, whichever is less.

4 Forecast of revenue receipts (RR)

The federal government collects a number of taxes, some of which are shared with the provincial government. The Constitution under article 160 provides a mechanism for determining this revenue sharing. It requires the setting up of a National Finance Commission (NFC), every five years, whose duties include making recommendations of revenue sharing from taxes, collected by the federal government on income, sales and purchase of goods and exports, and certain excises.[34, 35] In FY2012/13, Punjab received Rs560 billion as federal transfers from the divisible pool and its other receipts were Rs131 billion.

We categorize the revenue receipts of the provincial government as: (1) federal transfers from the federal divisible pool of tax revenue under the NFC award, and (2) other provincial receipts. The latter consist of: 2(a) provincial tax revenue, 2(b) receipts under article 161 of the constitution, and clause 5 & 6 of the 7th NFC award,[36] 2(c) federal/foreign grants, and 2(d) non-tax revenues raised by the provincial government.

[33] As given in Table 6.2. p.80 of the White Paper, Budget 2014-15, Finance Department, Government of Punjab.
[34] The full set of taxes mentioned in the constitution are as follows: (i) taxes on income, including corporation tax, but not including taxes on income consisting of remuneration paid out of the Federal Consolidated Fund; (ii) taxes on the sales and purchases of goods imported, exported, produced, manufactured or consumed; (iii) export duties on cotton, and such other export duties as may be specified by the President; (iv) such duties of excise as may be specified by the President; and (v) such other taxes as may be specified by the President.
[35] The duties of the NFC consist of recommendations on the following: (1) the distribution between the federation and the provinces of the net proceeds of the taxes mentioned in the previous footnote; (2) the making of grants-in-aid by the federal government to the provincial governments; (3) the exercise by the federal government and the provincial governments of the borrowing powers conferred by the Constitution; and (4) any other matter relating to finance referred to the Commission by the president.
[36] The transfers under clause 5 of the 7th NFC award pertain to payment of net proceeds of royalty on crude oil and clause 6 of the award pertains to payment of net proceeds of development surcharge on natural gas to the provinces. Transfers under these heads date back to earlier NFC awards and the 7th NFC award has followed the practices established in previous awards, e.g., provinces' right to development surcharge on natural gas, besides profits on net

The sum of our revenue categories 2(b) to (2(d) can be equated to the budgetary category of non-tax revenue if we were to subtract from the latter, proceeds from disposal of assets, and add excise duty on natural gas. Our revenue categories 2(b) to 2(d) allow a distinction between non-tax revenue that is raised by the provincial government (ie 2(d)) and non-tax revenue received by the provincial government from the federal government (ie 2(b) + 2(c)). For forecasting purposes, the latter category is sub-divided into revenue that the provincial government is constitutionally entitled to receive (ie 2(b)) and revenue that the provincial government receives as grants from the federal government or foreign governments (ie 2(c)).

In Box 4-1, we explain how the two revenue categorizations differ. We show in Appendix C, Box_Apx C-1 how the revenue categories in the provincial budget are related to the revenue categories defined in this paper.

Figure 4-1 shows the break-up of the sources of revenue and Table 4-1 below provides their share as a percentage of total revenue receipts in FY2012/13.

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hydel profit, and excise duty on crude oil was first implemented under the 4th NFC award in 1991 (see Usman Mustafa, PIDE Working Papers 2011:73, p. 4, Pakistan Institute of Development Economics, Islamabad, 2011).

Box 4-1: Revenue Categories – comparison with Punjab budget

The White Paper of the Punjab government categorizes general revenue receipts (GRR) into: (a) federal transfers from the divisible pool plus excise duty on natural gas, (b) provincial tax revenues, and (c) provincial non-tax revenues. Our category of revenue receipts (RR) consists of: (1) federal transfers from the federal divisible pool of tax revenue under the NFC award, (2) provincial tax revenue, (3) receipts under article 161 of the constitution, and clause 5 & 6 of the 7thNFC award, (4) federal/foreign grants, and (5) non-tax revenues raised by the provincial government.

The main differences/similarities between the revenue categorization in the White Paper and ours are the following: (i) In the White Paper, the receipts from excise duty on natural gas is added to the receipts from federal divisible pool of tax revenue (see Table 2-1). We treat, excise duty as part of a revenue category that is termed: 'federal transfers under article 161 of the constitution and clause 5 & 6 of the 7th NFC award'. (ii) In the White Paper, proceeds from disposal of non-financial assets is included as part of GRR but we do not treat these receipts as revenue (following the definition of revenue and expenditure in GFSM 2014). (iii) The revenue reported in the White paper under the category of provincial non-tax revenue equals the sum of the revenue under the sub-categories numbered (3) to (5) above, plus proceeds from disposal of nonfinancial assets and minus revenue from excise duty on natural gas. (iv) Our category *receipts under article 161 of the constitution, and clause 5 & 6 of the 7thNFC award* includes what the White Paper refers to as 'straight transfers'[37] as a subcategory of non-tax revenue, but also includes excise duty on natural gas[38] and profits on hydro-electricity generation.

[37] "The expression Straight Transfers used in the White Paper means the transfers on account of surcharge and royalties on oil and gas made by the Federal Government in pursuance of the relevant constitutional provisions." (Punjab White Paper 2014-15, p. 109). In the Punjab budget documents, straight transfers are part of the category of 'non-tax revenues' but as straight transfers include surcharges these are not strictly 'non-tax' revenues. From the perspective of the provincial government, these are non-tax revenues because it is the federal government which defines the bases and rates of surcharges and royalties and also collects these revenue; the provincial governments just receive the money collected by the federal government. The same argument should apply to federal excise duty on natural gas but the Punjab budget documents exclude the revenue from this head from the category of non-tax revenue. We should note that in the federal budget documents, Straight Transfers include royalty on crude oil, royalty on natural gas, development surcharge on natural gas as well as excise duty on natural gas.

[38] The Constitution also allows transfer of excise duty on oil but the excise duty on oil is zero at present. However, the revenue from this source cannot be ruled out in the future.

Figure 4-1: Revenue Receipts Punjab FY2012/13

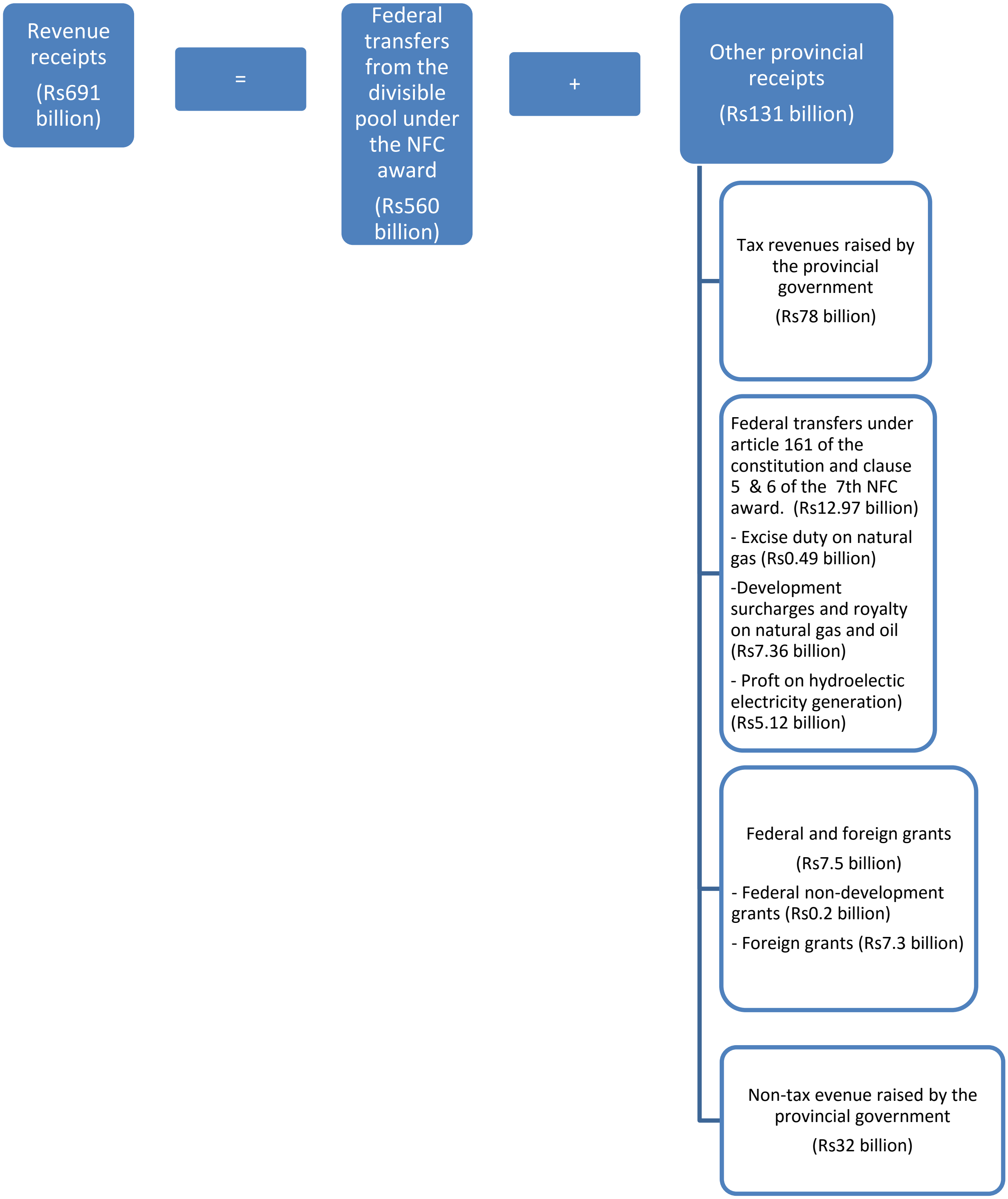

Table 4-1: Break up of Revenue Receipts (Accounts), Punjab FY2012/13

	Receipts (Rs billion)	Receipts (% of Revenue Receipts excluding receipts from sale of nonfinancial assets)
Transfer from divisible pool	**560.00**	**81.04%**
Tax receipts:	**78.39**	**11.34%**
- Direct	19.64	2.84%
- Indirect	58.75	8.50%
Transfers under article 161 and clause 5 & 6 of NFC award:	**12.97**	**1.88%**
- Excise duty on natural gas (transfer under article 161)	0.49	0.07%
- Excise duty on oil (transfer under constitutional article 161)	0.00	0.00%
- Hydo-electric profit (transfer under constitutional article 161)	5.12	0.74%
- Development surcharge and royalties (transfer under NFC and constitutional article 161)	7.36	1.07%
Grants:	**7.52**	**1.09%**
- Non-development	0.22	0.03%
- Foreign	7.30	1.06%
Other non-tax revenue:	**32.17**	**4.66%**
- Income from property and enterprise (except state trading schemes-electricity)	0.46	0.07%
- *Interest on loans*	*0.46*	*0.07%*
- Civil administration and other functions	7.32	1.06%
- *General administration*	*0.41*	*0.06%*
- *Defence and Law and order*	*3.13*	*0.45%*
- *Community services*	*1.85*	*0.27%*
- *Social services*	*1.49*	*0.22%*
- *Social services Miscellaneous*	*0.45*	*0.06%*
- Miscellaneous receipts (except federal/foreign grants, receipts from sale of nonfinancial assets, hydro-electricity profits and development surcharges and royalty)	24.40	3.53%
Revenue Receipts (excluding receipt from sale of nonfinancial assets)	**691**	**100%**

Source: Annual Budget Statement for 2014-15, Government of Punjab and author's calculations.

4.1 Federal transfers from the divisible pool of tax revenue

The current tax revenue sharing between the federal government and provincial governments takes place under the 7th NFC award, which is effective since July 1, 2010. The federal divisible pool of tax revenues is collected by the federal government from any taxes on income[39], wealth tax, capital

[39] Taxes on income excludes income taxes charged to federal consolidated fund, ie income tax deducted from salaries of federal employees.

value tax, taxes on sales and purchases of goods, export duty on cotton, customs duties, federal excise duties excluding the excise duty on gas charged at well-head, and any other tax which may be levied by the Federal Government (President's Order, Gazette of Pakistan, May 10, 2010). The federal government retains one percent of the federal divisible pool as collection charges,[40] and of the net proceeds (net of collection charges), one percent is "assigned to the Government of KP to meet expenses on the war on terror." Of the balance, the provincial share in the federal divisible pool of tax revenue was 56% in FY2010/11 and 57.5% in the remaining four years of the award. Punjab's share within the provincial share of the divisible pool is 51.74%.

The size of the divisible pool depends on the GDP and the tax-to-GDP ratio of the federal government. We have used the GDP growth and the tax-to-GDP ratio as given in the IMF 7th Review to obtain the pool of tax revenue which can then be shared between the federal and provincial governments.

The ratio of total tax to GDP was 9.9% in FY2012/13. The ratio of federal divisible tax to GDP (mp) was 8.58% in FY2012/13.[41] This gives the ratio of divisible pool to total taxes to be 86.7% in FY2012/13. We have assumed that this ratio of federal divisible pool of taxes to total taxes will remain unchanged at the FY2012/13 level. The overall ratio of tax to GDP (mp) was expected to go up from 9.9% in FY2012/13 to 14.7% by 2020 (see IMF, 7th Review, Table 4). Under our assumptions, the share of divisible pool of taxes in GDP is expected to go up from 8.58% to 12.74%.

[40] The NFC award notified in the Gazette of Pakistan states that the collection charges would be ascertained and certified by the Auditor General of Pakistan. The 1% collection charge is reported in the Punjab Budget White Paper 2010-11, p.109, Government of Punjab.

[41] The 8.58% was calculated by taking the ratio of gross federal divisible pool of tax revenue in FY2012/2013 (Rs1920.55 billion) to GDP at market prices in FY2012/2013 (Rs22379 billion). The gross federal divisible pool is obtained by working backwards to gross federal divisible pool of tax revenue from Punjab's share of federal transfers from the divisible pool. The latter was Rs560 billion and was obtained by subtracting transfers on account of federal excise on natural gas (Rs0.49 billion), which is not part of federal divisible pool of tax revenue, from the federal transfers of Rs560.49 billion, (as given in the Annual Budget Statement, 2014-15, p. 3, Finance Department, Government of Punjab). Retracing back to gross divisible pool of tax revenue involve calculating the following: (1) provincial divisible pool of tax revenue as Rs560 billion/0.5174 = Rs1082.34 billion; (2) federal divisible pool after deduction of KP share in war on terror as Rs1082.34 billion/0.575 = Rs1882.33 billion; (3) federal divisible pool of tax revenue before subtracting KP share of war on terror as Rs1882.33billion/0.99 = Rs1901.35 billion, and (4) federal divisible pool before deduction of collection charges as Rs1901.35/0.99 = Rs1920.55 billion.

In FY2012/13, Punjab received Rs560 billion as its share in the federal divisible pool. The forecast levels of federal divisible pool and Punjab's share are given in Table 4-2 below:

Table 4-2: Forecast of Punjab's share in the federal divisible pool of tax revenue

Row No.	Variables	Financial Year							
		2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	1 + GDP deflator*		1.114	1.087	1.094	1.102	1.105	1.105	1.105
2	GDP (mp) (Rs billion)	22379	24927	27091	29641	32678	36096	39872	44043
3	Tax-to-GDP ratio**	0.099	0.104	0.111	0.122	0.131	0.139	0.146	0.147
4	Ratio of divisible pool of taxes to total taxes***	0.867	0.867	0.867	0.867	0.867	0.867	0.867	0.867
5	Ratio of divisible pool of tax to GDP (row 3 x row 4)	0.0858	0.0902	0.0962	0.1058	0.1136	0.1205	0.1266	0.1274
6	Federal divisible tax pool (gross of collection charges and of KP share on account of war on terror) (Rs billion) (row 2 x row 5)	1921	2247	2607	3135	3711	4349	5046	5612
7	Federal divisible pool after subtracting 1% collection charges (Rs billion) (0.99 x row 6)	1901	2225	2581	3103	3674	4306	4996	5556
8	Federal divisible pool after subtracting collection charges and 1% KP share on account of war on terror (Rs billion) (0.99 x row 7)	1882	2203	2555	3072	3637	4263	4946	5501
9	Share of provinces in the divisible pool (Rs billion) (0.575 x row 8)	1082	1266	1469	1767	2091	2451	2844	3163
Punjab's share in the divisible pool (R_1) (Rs billion) (=0.5174 x row 9)		**560**	**655**	**760**	**914**	**1082**	**1268**	**1471**	**1636**

Source: IMF 7th Review and authors calculations.

*Notes: Nominal GDP for FY2012/13 obtained from Pakistan Economic Survey 2014-15. To forecast GDP for later years real GDP growth rates and inflation rates are taken from IMF 7th Review. * Nominal; **IMF estimates; *** assumed constant at FY2012/13 level*

4.2 Other Provincial Receipts

In addition to transfers from the federal divisible pool, the provincial government has a number of other sources of revenue, which we have referred to as 'other provincial receipts'. These receipts can be categorized as: (1) provincial own-tax receipts, (2) receipts from the federal government under article 161 of the constitution and clause 5 & 6 of the NFC award, (3) federal and foreign grants, and (4) other non-tax revenue raised by the provincial government (mostly fees and charges from government's regulatory and economic functions).

These sources of revenue are discussed below.

4.2.1 Provincial Own-Tax Receipts

In FY2012/13, Punjab raised Rs78.4 billion from its own taxes. These tax revenues constituted about 11% of the total provincial revenue receipts of Rs691 billion and about 60% of total provincial receipts excluding transfer from the divisible pool of Rs131 billion. Table 4-3 provides the main taxes of the provincial government and the revenue from these sources in FY2012/13.

Table 4-3: Provincial (Punjab) Own-Tax Receipts, FY 2012/13

	Tax Receipts (Rs billion)	**Tax Receipts (% of Revenue Receipts)**	**Tax Receipts (% of Tax Receipts)**
Direct Taxes			
Tax on Income(Agriculture)	0.827	0.12%	1.06%
Property Tax	4.496	0.65%	5.74%
Land Revenue	9.778	1.41%	12.47%
Tax on professions, trade and callings	0.505	0.07%	0.64%
Capital value tax on immovable property	4.035	0.58%	5.15%
Total Direct Taxes	**19.64**	**2.84%**	**25.06%**
Indirect Taxes			
Sales Tax(GST Provincial)	34.35	4.97%	43.82%
Provincial Excise	1.482	0.21%	1.89%
Stamp Duty	12.508	1.81%	15.96%
Motor vehicle tax	9.299	1.35%	11.86%
Sale of Opium	0.005	0.00%	0.01%
Other Indirect Taxes	1.103	0.16%	1.41%
Total Indirect Taxes	**58.75**	**8.50%**	**74.94%**
Total	**78.387**	**11.34%**	**100.00%**

Source: Annual Budget Statement for 2014-15, Government of Punjab; and author's calculations.

The major sources of tax revenue for Punjab are sales tax, stamp duty, land revenue and motor vehicle tax. Sales tax on services is being collected by the provincial government since 2012, and has become one of its main sources of tax revenue, contributing about 44% of provincial tax revenue in FY2012/13. The tax was previously collected by the federal government and passed on to the provincial government as 'straight transfer'. Stamp duties are easy to collect and it is not surprising that the provincial government relies heavily on these taxes. To the extent that stamp duty is a charge for public services, the tax is justified but if it exceeds such service charge, it is a tax on transactions and as such discourages economic activity and encourages informality. Land revenue is mostly mutation fee or a tax on property or land transfers in rural areas. As a transaction tax it suffers from the same problem as stamp duty.

Potentially two important sources of tax revenue for Punjab are the agricultural income tax (AIT) and urban immovable property tax (UIPT). The Punjab government's revenue from these sources is miniscule compared with the potential.[42]

In FY2012/13, total tax revenue raised by the four provinces was Rs150.7billion or 6.85% of total consolidated (federal and provincial) tax revenues of Rs2199 billion and 0.67% of the GDP. Of this, Punjab raised Rs78.4 billion or 52% of the total provincial tax revenue.

In our forecasting model we assume that the ratio of provincial tax revenue to total tax revenue in the forecast period will remain constant at its FY2012/13 level of 0.0677. Given the assumptions about GDP growth rate and the tax-to-GDP ratios in the forecast period, this implies that the provincial tax to GDP ratio will go up from 0.67% in FY2012/13 to 1% by FY2019/20. We assume that the increase in revenue because of the increase in provincial tax share in the GDP will come from relatively greater revenue effort by the economically more prosperous provinces – Punjab and Sindh – and that this increase will be divided between the two provinces in proportion to their own-taxes in FY2012/13 or 0.533: 0.467.[43] The projection of revenue from Punjab's own taxation based on the above assumptions is given in Table 4-4.

[42] Mukhtar and Nasim (2016) estimate potential agricultural income tax in 2014 to be Rs54 billion if farm incomes were treated at par with business incomes for tax purposes. Nabi and Sheikh (2013) report that with tax reform, Punjab could have increased its UIPT collection to almost Rs25 billion in 2010. As a comparison, in the Indian city of Mumbai with a population of 22 million in 2015, property tax collection in 2015 was the equivalent of about Rs70 billion (Pak rupees). Punjab has six mega cities and about a dozen medium size cities. The largest city Lahore had an estimated population in 2015 of about 10 million. This comparison suggests that the estimated property tax potential of Rs25 billion in 2010 for Punjab may be an underestimate.

[43] The own-tax revenue raised by Punjab and Sindh were respectively Rs78.4 billion and Rs68.7 billion in 2012-13.

Table 4-4: Forecasts of Punjab's Own Tax Revenue FY 2012/2013 to FY 2019/20

Row No.	Variables	Financial Years							
		2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	GDP (mp) (Rs billion)	22379	24927	27091	29641	32678	36096	39872	44043
2	Tax revenue as a share of GDP*	0.099	0.104	0.111	0.122	0.131	0.139	0.146	0.147
3	Provincial tax to total tax ratio**	0.0680	0.068	0.068	0.068	0.068	0.068	0.068	0.068
4	Ratio of provincial taxes to GDP (row 2 x row 3)	0.0067	0.0070	0.0075	0.0083	0.0089	0.0094	0.0099	0.0100
5	Provincial tax revenue if provincial-tax-to-GDP ratio is as in preceding row (row 4 × row 1)	151	176	205	246	291	341	396	440
6	Provincial tax revenue if provincial-tax-to-GDP were constant at FY2012/13 level (row 3 x row 1)	151	168	182	200	220	243	269	297
7	Difference between (i) the forecast provincial revenue with increasing provincial-tax-to-GDP ratio, and (ii) provincial tax revenue if provincial tax-to-GDP ratio remained unchanged at FY2012/13 level (row 5 – row 6)	0	8	22	46	71	98	127	144
8	Ratio of Punjab's own-tax to the sum of own taxes of Punjab and Sindh in FY2012/13	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
9	Punjab's share in additional provincial own-taxes based on the ratio in the preceding row (row 7 x row 8)	0	5	12	25	38	53	69	78
10	Punjab's tax revenue if provincial-tax-to-GDP remains unchanged at its FY2012/13 level and Punjab's share in total provincial taxes is the same as in FY2012/13 (0.0067 x row 1 x 0.52)	78	87	95	104	114	126	140	154
Punjab's own tax revenue (R_2) (Rs billion) (= row 9 + row 10)		**78**	**92**	**107**	**129**	**152**	**179**	**208**	**231**

Source: IMF 7th Review; Pakistan Economic Survey 2014-15, Government of Pakistan; Annual Budget Statement for 2014-15, Government of Punjab; and author's calculations.

Notes: IMF estimates; ** Assumed constant at FY2012/13 level*

4.2.2 Transfer under Article 161 of the Constitution and Clause 5 & 6 of the NFC award (excise duty and royalty on oil and natural gas, profit on hydro-electricity generation and development surcharge on natural gas)[44]

The Constitution of Pakistan under article 161 stipulates that the federal duty of excise on natural gas levied at well-head and collected by the federal government and royalty on natural gas collected by the federal government shall be paid to the provinces in which the well-head of natural gas is located. The article makes a similar stipulation about excise duty on oil, and about net profits earned by the federal government from bulk generation of hydro-electric power. The 7th NFC makes provision (clause 5 and 6) for the transfer of net proceeds of royalty on oil to the provinces and for the transfer of net proceeds of development surcharge on natural gas to the provinces (also see footnote 36).

Punjab received Rs0.49 billion as transfer on account of excise duty on natural gas in FY2012/13. Our baseline assumption is that the ratio of excise duty to total taxes will remain unchanged at its FY2012/13 level.

There is no federal excise duty on oil and we assume that this status will be unchanged during the forecast period.

As for profits from hydro-power generation, the Punjab Budget White Paper 2010-11[45] notes that Punjab was not receiving these profits from the federal government since 1996-97 because of incorrect recording of minutes of a meeting of ECC. A conditional offer made by the chief executive of Punjab at the meeting was taken as an unconditional withdrawal of Punjab province from net hydel profit. The intent of the conditional offer was to reduce the price of electricity in the country by foregoing net hydel profit, provided other provinces did the same. Attempts by Punjab to get its right to hydel profit restored was eventually accepted by the federal cabinet and a committee was formed which decided that arrears amounting to Rs28.5 billion were payable to

[44] The Punjab White Paper 2014-15 (p.109) defines straight transfers to include some but not all of the transfers included under our revenue transfer category: 'transfers under article 161 of the constitution and clause 5 & 6 of the NFC award'. In Punjab's budget documents straight transfers exclude (1) excise duty on natural gas' and (2) profit from hydro-electricity generation. In the White Paper, the former is added to the transfers under the federal divisible pool of taxes and the later are shown as non-tax revenue under the heading 'income from property and enterprise'. The definition of straight transfer used in federal government is different from that of the provincial government. Also see footnote 37.

[45] Punjab Budget White Paper 2010-11, p.19, Finance Department, Government of Punjab.

the Punjab government of which Rs13 billion were paid in FY2009/10 and remaining amount was paid in the next three years in equal instalments of about Rs.5.17 billion. The Punjab government has continued to budget for hydel profits but has not received any payment under this head since FY2013/14.

Other transfers to Punjab under article 161 of the constitution and clause 5 and 6 of the NFC award include development surcharge on natural gas and royalties on oil and natural gas. In FY2012/13 these amounted to Rs7.4 billion. Our baseline assumption is that these transfers would increase at the same rate as taxes, or equivalently, the ratio of these transfers to total taxes would be unchanged at their FY2012/13 level. .

Forecasts for transfers under article 161 and clause 5 & 6 of the NFC award are given in Table 4-5 below.

Table 4-5: Forecasts of transfers under articles 161 of the Constitution and clause 5 & 6 of the NFC award

Row No.	Variables	Financial Years							
		2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	GDP (mp) (Rs billion)	22379	24927	27091	29641	32678	36096	39872	44043
2	Tax revenue as a share of GDP*	0.099	0.104	0.111	0.122	0.131	0.139	0.146	0.147
3	Excise duty to tax ratio **	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
4	Excise duty on natural gas (**R_3**) (Rs billion) (row 1 x row 2 x row 3)	0.49	0.57	0.67	0.80	0.95	1.11	1.29	1.43
5	Excise duty on oil (**R_4**) (Rs billion)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Hydo-electric profit (**R_5**) (Rs billion)	5.1	0.0	0.0	0.0	10.8	11.1	11.4	11.8
7	Ratio of development surcharges &royalty to total taxes **	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033
8	Ratio of development surcharges & royalty to GDP (row 7 x row 2)	0.00033	0.00035	0.00037	0.00041	0.00044	0.00046	0.00049	0.00049
9	Development surcharge and royalties) (**R_6**) (Rs billion) (row 1 x row 8)	7.4	8.6	10.0	12.0	14.2	16.7	19.3	21.5
Total transfer under article 161 of the constitution and clause 5 & 6 of the NFC award (R₇) (Rs billion) (=row 4 + row 5 + row 6 + row 9)		**13**	**9**	**11**	**13**	**26**	**29**	**32**	**35**

*Source: IMF 7th Review; Annual Budget Statement for 2014-15, Government of Punjab; and author's calculations; * IMF estimates; ** assumed constant at its FY2012/13 level*

4.2.3 Federal and Foreign grants

Under this heading are categorized the following sets of grants:

(i) *Grants under the NFC award / Non-development Grants:*

The Constitution requires the NFC to recommend grants-in-aid by the federal government to the provincial governments. In the budgetary documents these grants are included in the broader category of non-development grants (see White Paper 2010-11 p. 10). Under the 7th NFC award, only Sindh receives a grant-in aid of its revenue.

The 7th NFC award mentions that the federal government may assist the provinces through specific grants in times of unforeseen emergencies, which would also be categorized as non-development grant.

Federal government's payment of arrears of provincial revenues is also part of non-development grants. In our forecast model, we assume that non-development grants (including arrears and excluding interest on cash reserves (see below)) will be zero in the forecast period.

One other category of non-development grants that was non-existent till recently but likely to be important in the forecast period is interest on cash reserves (see Section 3.6). The provincial governments receive interest on these reserves, and it is recorded in the budget under non-development grants. The information on the interest rate on cash reserves is not available from the budget documents. We took the interest rate to be 8.57% and 7.83% for FY2013/14 and FY2014/15 respectively, and 6.48% for the other years in the forecast period (see footnote 31).

Applying these interest rates to the accumulated cash reserves till the end of the previous year, we obtain interest income on cash reserves for the current period.

Forecast values of cash reserves are given in Section 7, Table 7-1. Using the forecast value of cash reserves in Table 7-1, the interest rate calculation is given below in Table 4-6.

Table 4-6: Forecasts of Interest on Cash Reserves FY2012/13 to FY2019/20

Variables	Financial Years							
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Cash reserves	6.5	0.0	9	102	281	542	891	1268
Interest rate on cash reserves		0.086	0.078	0.065	0.065	0.065	0.065	0.065
Interest income from cash reserves		1	0	1	7	18	35	58

Source: Table 7-1 and author's calculations.

(ii) *Foreign budgetary support grants*:

In FY2012/13, foreign development grants amounted to Rs7.3 billion. This includes foreign grants routed through the federal government and foreign grants received by the provinces directly (e.g., DFID grants under the Punjab Education Sector Project-II and Punjab Health and Nutrition Program). We assume that foreign grants will remain unchanged in dollar terms in the forecast period, ie, in rupee terms, increase by the rate of exchange rate depreciation.

We note that the Punjab White Paper distinguishes between foreign grants and foreign project assistance (FPA). The latter is not a grant but a financing item and comprises 'loans borrowed from donor agencies through the federal government for specific foreign-assisted development projects.' (White Paper 2014-15 p. 19). FPA is, therefore, part of the capital account and not a revenue item of the provincial budget.[46]

(iii) *Federal development grants*:

As part of its annual budget, the federal government announces a Public Sector Development Program (PSDP). The PSDP includes development expenditure of the federal government and that of the provincial governments. Some of the federal PSDP programs are implemented through the provincial line departments, mostly vertical

[46] The definition of FPA in the federal budget is different from that in the provinces. The practice at the federal level is to define FPA to include both foreign grants and foreign loans.

programs such as population, health, irrigation etc. The Punjab White Paper 2013-14 refers to such development grants as a pass through item.[47]. The expenditure allocation for these programs by the federal government is not known at the time the budget is being prepared and it does not have to be approved by the provincial assembly. Therefore, it is not included in the budget estimates when the budget is presented and voted upon in the assembly, but it is made part of the revised budget estimates.[48] Federal development grant to the provinces is a federal expenditure and is accounted for in the federal budget. Technically, federal development grant and its corresponding expenditure should not be made part of the provincial budget but, as of now, it is included in the revised budget estimates in Punjab.

In FY2012/13, federal development grants amounted to Rs11 billion. In the forecast model we have chosen to disregard federal development grants as a component of provincial revenues. On the expenditure side, we also subtract these outlays from the total development expenditures of the provincial government in the base year 2012-13.

The forecasts for federal and foreign grants are given in Table 4-7 below.

[47] "Federal Grants, both Development and Non Development, comprise of public sector development programs (PSDP), grants from federal government as well as budget support grants received from foreign development partners. The federal PSDP grants are only pass through items. These grants are released to executing agencies for implementation of Federal Development Projects. Therefore, the estimates of PSDP grants are only made part of the revised estimates." (Punjab White Paper 2014-15, p.16).

[48] Occasionally the Punjab government budgets some of these federal development expenditures. For example in FY2013/14, budget estimate of Rs.3.2 billion was included against 'the vertical projects of health sector, devolved to provincial government under the 18th amendment.' It was done because the federal government had committed to provide resources for these projects during the duration of the 7th NFC Award (see White Paper 2013-14, p. 8).

Table 4-7: Forecasts of foreign and federal development grants (Rs billion)

Row No.	Variables	Financial Years							
		2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	Federal non-development grants (excluding interest on cash reserves)	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Interest on cash reserves	0.0	0.6	0.0	0.6	6.6	18.2	35.1	57.7
3	Federal non-development grants including interest on cash reserves ($\mathbf{R_8}$)	0.2	0.6	0.0	0.6	6.6	18.2	35.1	57.7
4	Foreign grants ($\mathbf{R_9}$)	7.3	7.8	8.0	8.2	8.5	8.7	9.0	9.3
5	Federal development grants ($\mathbf{R_{10}}$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Other grants($\mathbf{R_{11}}$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total federal and foreign grants ($\mathbf{R_{12}}$) (Rs billion) (=row 3 + row 4 + row 5 + row 6)		**7.5**	**8.3**	**8.0**	**8.7**	**15.1**	**26.9**	**44.1**	**67.0**

Source: Table 4-6; Annual Budget Statement for 2014-15, Government of Punjab; and author's calculations.

Notes: omitted from the provincial budgetary accounts as it is accounted in the federal budget

4.2.4 Non-Tax Revenues Raised by the Punjab Government

The provincial government earns revenue from its regulatory functions and from the rates and fees that it charges for the provision of economic and social functions. These are recorded under the following heads: (a) income from property and enterprise, (b) receipt from civil administration and other functions, and (c) miscellaneous functions.

In the budget documents, profit from hydro-electricity generation (under article 161 of the constitution) is included as a non-tax revenue under 'income from property and enterprise'. We have included this in the 'transfer from federal government under article 161 of the constitution and clause 5 & 6 of the 7th NFC award' (see section 4.2.2). Similarly miscellaneous receipts include: (a) development surcharges and royalties, (b) federal and foreign grants, and (c) extraordinary receipts. Of these three, 'development surcharges and royalties' is included in the 'transfer from federal government under article 161 of the constitution and clause 5 & 6 of the 7th NFC award' (see Section 4.2.2); 'federal and foreign grants' is treated separately (see Section 4.2.3), and most of 'extraordinary receipts is excluded from the category of revenue (see footnote 19 and 20).

In our baseline model we assume that non-tax revenues raised by the provincial government (revenue from its regulatory and economic functions) as a ratio of nominal GDP will remain unchanged during the forecast period. Effectively we assume that these revenues will grow at the same rate as nominal GDP.[49]

Forecasts of non-tax revenue raised by the provincial government are given in Table 4-8 below.

Table 4-8: Forecasts of non- tax revenues raised by the provincial government

Variables	**Financial Years**							
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
GDP	22379	24927	27091	29641	32678	36096	39872	44043
Ratio of non-tax revenue to GDP *	0.00144	0.00144	0.00144	0.00144	0.00144	0.00144	0.00144	0.00144
Non-tax revenue raised by the provincial government (R_{13}) (Rs billion)	**32**	**36**	**39**	**43**	**47**	**52**	**57**	**63**

Source: IMF 7th Review; Annual Budget Statement for 2014-15, Government of Punjab; and author's calculations.

*Notes: * assumed constant at FY2012/13 level*

4.2.5 Summary of Punjab Governments Revenue Receipts and forecasts

The following is a summary of the forecasts of Punjab government's revenue receipts:

1. We have categorized provincial government revenues under two broad headings: (1) receipts from federal divisible pool, (2) other provincial receipts. The latter are grouped under four categories: 2(a) provincial own-tax revenues, 2(b) transfers under article 161 of the constitution and clause 5 & 6 of the NFC award, 2(c) federal/foreign grants, and 2(d) non-tax revenues raised by the provincial government. The revenues from these broad sources are summarized in Table 4-9 below.

[49] In calculating overall fiscal balance in Section 6, we assume that policy lending (loans extended to 'local governments, financial institutions and autonomous bodies under its purview for meeting their current and development expenditures') will increase at the same rate as the nominal GDP. The interest income on this policy lending is recorded in the budget documents as non-tax revenue under the heading of 'income from property and enterprise'. Although we are not making assumptions about the individual components of *non-tax revenues raised by the provincial government*, the growth rate of the individual components, including interest income on policy lending, is constrained by the assumption that the growth of the aggregate of these components is the same as the growth rate of nominal GDP. We note that this treatment of interest income from policy lending is quite different from the endogenous determination of interest income on cash reserves (discussed in Section 3 and in Section 4.2.3) and of interest expenditures incurred by the provincial government on domestic and foreign loans (discussed in Section 3 and in Section 5.2).

2. The forecast assumptions about each revenue category are summarized in Appendix C Table_Apx C-1

3. The broad revenue categories in our forecasting model do not correspond to those in the budget documents but these can be constructed as shown in Box_Apx C-1in Appendix C

Table 4-9: Forecasts of Punjab Government's Revenues: FY 2012/13 to FY 2019/20 (Rs billion)

Row No.	Variables	Financial Years							
		2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	Punjab's share in the divisible pool (**R_1**)	560	655	760	914	1082	1268	1471	1636
2	Punjab's own tax revenue (**R_2**)	78	92	107	129	152	179	208	231
3	Total transfer under article 161 of the constitution and clause 5 & 6 of the NFC award (**R_7**)	13	9	11	13	26	29	32	35
4	Total federal and foreign grants (**R_{12}**)	8	8	8	9	15	27	44	67
5	Non-tax revenue raised by the provincial government (R_{13})	32	36	39	43	47	52	57	63
Revenue Receipts excluding receipts from disposal of non-financial assets (R_{14}) (Rs billion) (=row1+row2+row3+row4+row5)		**691**	**800**	**924**	**1107**	**1322**	**1555**	**1812**	**2032**

Source: Table 4-2, Table 4-4, Table 4-5, Table 4-7, Table 4-8 and author's calculations.

5 Forecast of Development and Current Revenue Expenditure

In Section 4 we discussed the Punjab government's revenues. In this section we discuss forecasts of government spending. If we disregard capital expenditure, budget documents categorize government spending into development expenditure and current revenue expenditure.[50] Development expenditure is a major component of investment expenditure of the government.[51] Current revenue expenditure or simply current expenditure "includes expenditures on government's regulatory, administrative and other such functions, including provision of social and economic services." (White Paper 2014-15, p. 106. Also see Appendix A for definition of development and current revenue expenditure).

In the following subsection we discuss forecast of development expenditure and then discuss current revenue expenditure in Section 5.2

5.1 Forecast of development expenditure (DE)

Our methodology takes as a starting point the projected public investment to GDP ratio to be as that given in the Planning Commission Vision 2025 (Discussion Draft) (see Table 5-1).

Table 5-1: Public and Private Investment as percentage of GDP

	2013	2015	2020	2025
Total Investment	14.2	22.4	25.6	25.7
Fixed Investment	12.6	20.8	24.0	24.1
Public incl. General Govt.	3.9	4.6	5.0	5.0
Private	8.7	16.2	19.0	19.1

Source: Vision 2025 Planning Commission (Discussion Draft), Government of Pakistan, December 2013.

To obtain investment levels for all the years from 2014 till 2020, we interpolate public investment to GDP ratio for 2014 and for 2016 to 2019. The resulting public investment to GDP ratios (in percentage terms) for the period 2013 to 2020 are given in Table 5-2:

[50] We have followed the definition of *expense* and *expenditure* as given in GFSM 2014 (see Section 3). Under this definition, capital expenditure or repayment of loans does not constitute as *expense* or *expenditure* (see Section 3).
[51] Public investment is not the same as development expenditure. Public investment includes development expenditure but also the investment carried out by publicly owned entities and corporations, which are not reflected in government budget.

Table 5-2: Public Investment as percentage of GDP: FY2012/13 to FY2019/20

	Financial Year							
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Public Investment (% of GDP)	3.9	4.3	4.6	4.68	4.760	4.84	4.92	5.00

Source: Vision 2025 Planning Commission (Discussion Draft), Government of Pakistan, December 2013 and author's calculations.

We assume that if the ratio of public investment to GDP is to go up from 3.9 to 4.3 from 2013 to 2014 then the federal share of public investment in GDP will go up by a factor of (4.3/3.9) = 1.09 as will the share of public investment of Punjab, Sindh and KP in the GDP. We further assume that development expenditure is a constant proportion of total public sector investment in Punjab.[52]

Thus the target level of development expenditure in Punjab in 2014 at 2014 prices ($DE_{2014;\ 2014\ prices}$) as a ratio of GDP in 2014 at 2014 prices ($GDP_{2014;\ 2014\ prices}$) is:

$$DE_{2014;\ 2014\ prices}/GDP_{2014;\ 2014\ prices} = (4.3/3.9) \times [(DE_{2013;\ 2013\ prices}/GDP_{2013;\ 2013\ prices}]$$

or

$$(5\text{-}1)\quad DE_{2014;\ 2014\ prices}/GDP_{2014;\ 2014\ prices} = (1.09) \times [(DE_{2013;\ 2013\ prices}/GDP_{2013;\ 2013\ prices}]$$

From (5-1) the forecast level of development expenditure in Punjab in 2014 (at 2014 prices) can be written as:

$$(5\text{-}2)\quad DE_{2014;\ 2014\ prices} = 1.09 \times DE_{2013;\ 2013\ prices} \times (GDP_{2014;\ 2014\ prices} / GDP_{2013;\ 2013\ prices})$$

Letting $g_{2013\text{-}14}$ be the real GDP growth rate in FY2013/14 over the previous year, and $\pi_{2013\text{-}14}$ be the rate of inflation (GDP deflator) over the same period, equation (5-2) can be expressed as:

[52] Public investment is not the same as development expenditure. Public investment includes development expenditure but also the investment carried out by publicly owned entities and corporations, which are not reflected in government budget.

(5-3) $DE_{2014;\,2014\text{ prices}} = 1.09 \times DE_{2013;\,2013\text{ prices}} \times (1 + g_{2013\text{-}14}) \times (1 + \pi_{2013\text{-}14})$

By substituting for $DE_{2013;\,2013\text{ prices}}$ (= Rs134 billion), using the data for development expenditure[53] from the Punjab budget and for the nominal GDP growth, $((1 + g_{2013\text{-}14}) \times (1 + \pi_{2013\text{-}14}))$, (see Table 5-3), we can obtain development expenditure in Punjab in 2014 at 2014 prices as:

(5-4) $DE_{2014;\,2014\text{ prices}} = 1.09 \times 134 \times (1.041) \times (1.07) =$ Rs163 billion

The forecast for each subsequent year can be obtained similarly, i.e. by multiplying the following three terms:

1. Ratio of development expenditure in period t (as percentage of GDP) to development expenditure in period t-1 (as percentage of GDP) – from Table 5-2
2. Level of development expenditure calculated for period t-1; and
3. (1 + real GDP growth rate)
4. (1 + GDP deflator)

Forecast values for development expenditure are given in Table 5-3 below.

[53] The figure for development expenditure excludes the expenditure on federal development programs routed through the provincial government. Data is available on federal development grant in the provincial revised and actual budgets, and since these grants are pass through items, the expenditure on these programs are equated with the federal development grants and subtracted from the development expenditure to arrive at the figure of Rs134.35 billion in FY2012/13.

Table 5-3: Forecast Values of Development Expenditure (Punjab)

	Financial Year							
Variable	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Development expenditure (% of GDP)	3.90	4.25	4.60	4.68	4.76	4.84	4.92	5.00
Ratio of Development expenditure in year t to development expenditure in year t-1*		1.0897	1.0824	1.0174	1.0171	1.0168	1.0165	1.0163
Nominal GDP Growth Factor**		1.114	1.087	1.094	1.102	1.105	1.105	1.105
Development Expenditure (Rs billion)	**134**	**163**	**192**	**214**	**239**	**269**	**302**	**339**

Source: IMF 7th Review; Annual Budget Statement for 2014-15, Government of Punjab; and author's calculations.

*Notes: *Both development expenditures in year t and year t-1 are as a percentage of GDP; ** Nominal GDP Growth factor = (1+ real GDP) × (1 + GDP deflator)*

5.2 Forecast of current revenue expenditures (CRE)

Current revenue expenditure (CRE) includes the expenditures on the regulatory functions of the government and provision of social and economic services. The main functions heads are listed in Table 2-1. The definition of these expenditure heads is provided in Appendix B.

The expenditure on each of these heads in FY2012/2013 is given in Table 5-4 below:

Table 5-4: Current Revenue Expenditure in Punjab in FY 2012/2013 (Accounts)

	Expenditure (Rs billion)	Expenditure (% of total current revenue expenditure)	Expenditure (% of Punjab GDP)[54]
General Public Service	308.772	57.80%	2.53%
Public Order and Safety Affairs	83.9	15.71%	0.69%
Economic Affairs	55.167	10.33%	0.45%
Environment Protection	0.083	0.02%	0.00%
Housing and Community Amenities	5.558	1.04%	0.05%
Health	34.611	6.48%	0.28%
Recreational, Culture and Religion	2.165	0.41%	0.02%
Education Affairs and Services	37.74	7.06%	0.31%
Social Protection	6.209	1.16%	0.05%
Total	**534.205**	**100.00%**	**4.37%**

Source: Annual Budget Statement for 2014-15, Government of Punjab and Author's calculations

It is worth noting here that the expenditure on education affairs does not include expenditure on primary education. The latter is part of local government functions, and this expenditure comes out of transfer by the provincial government to local governments. Transfer to local governments is part of the budget of general public services and amounted to Rs217 billion in FY2012/13.

We distinguish between non-interest current expenditure and interest expense on domestic and foreign debt. Interest expense is a component of the expenditure on *general public service*. In our forecasting model, we assume that the non-interest component of CRE would increase at the same *real* rate at which it grew during the period FY2008/2009 to FY2012/13 or 8%. The nominal growth factor is then obtained by multiplying the real growth factor, (1.08), by the CPI inflation factor $(1 + \dot{P})$ given in Table 5-5.

The above assumption on real growth of non-interest current expenditure, does not take into account that new development expenditure results in higher level of current expenditures in future years, and if the path of development expenditure in the forecast period departs significantly from

[54] Since the Government of Pakistan does not compile provincial GDP accounts, we have relied on World Bank estimates of provincial GDP in FY2010/11 ('Pakistan: Khyber Pakhtunkhwa Public Expenditure Review (PER)', The World Bank, 2013). The estimate of Punjab's contribution to GDP in FY2010/11 was 54.6%. Assuming that the share of Punjab in the national GDP was the same in FY2012/13 and with GDP at current basic prices in FY2012/13 of Rs22379 billion, Punjab's GDP is estimated to be Rs12219 billion in FY2012/13.

the past then the growth of current expenditure may depart from its historical path as well. To address this, we explored an alternative forecast of non-interest current expenditure (inspired by Medium Term Fiscal Framework (MTFF), Government of Punjab 2013) based on the assumption that development expenditure in the previous year creates liability for non-interest current expenditure in future years. To explore the relationship, we hypothesized that non-interest current expenditure in any year (in real terms) equals previous year non-interest current expenditure (in real terms) plus some fraction of development expenditure in the previous year (in real terms). We found no clear pattern over the last ten years.[55]

Forecast of interest expenditure is obtained as a product of interest rate and debt in the previous period. The methodology for calculating foreign and domestic debt was outlined in Section 3.6. The constituents for calculating foreign and domestic debt are past year debt, debt repayment in the current year and new loans in the current year. Calculations on these constituents and total foreign and domestic debt are given in Section 7, Table 7-1. The debt figures given below in Table 5-5 are taken from Table 7-1.

Current expenditure with its break up into non-interest current expenditure and interest expense is given in Table 5-5 below:

[55]For the four years, FY2009/10 to FY2012/2013, the coefficient of lagged real development expenditure in the equation: Δ(Non-interest Current Expenditure (real))$_t$ = β(Development Expenditure (real))$_{t-1}$ was respectively, -0.1, 0.16, 0.36 and 0.35. Part of the explanation for this is that the resource constrained governments have been under-spending on operations and maintenance. The consequence is that newly created capital in not optimally utilized and erodes faster; requiring re-creation after a few years.

Table 5-5: Forecast Values of Current Revenue Expenditure (Punjab) FY2012/13 to 2019/20

		Financial Year							
Row No.	**Variable**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	Real growth factor		1.080	1.080	1.080	1.080	1.080	1.080	1.080
2	Inflation factor (CPI)		1.086	1.044	1.047	1.055	1.05	1.05	1.05
3	Non-interest current revenue expenditure (Rs billion)	524	615	693	784	893	1012	1148	1301
4	Domestic Debt	42	24	6	0	0	0	0	0
5	Interest rate on domestic debt		0.131	0.131	0.131	0.131	0.131	0.131	0.131
6	Interest payment on domestic debt (Rs billion)		5.48	3.11	0.74	0.00	0.00	0.00	0.00
7	Foreign debt (Rs billion)	403	438	453	469	491	510	531	552
8	Interest rate on foreign debt		0.0149	0.0149	0.0149	0.0149	0.0149	0.0149	0.0149
9	Interest payment on foreign debt (Rs billion)		6.4	6.7	6.9	7.2	7.5	7.8	8.1
10	Interest payments on domestic and foreign debt (Rs billion)	9.8	11.9	9.8	7.7	7.2	7.5	7.8	8.1
Current revenue expenditure (Rs billion) (=row 3 + row 10)		**534**	**627**	**703**	**791**	**900**	**1020**	**1156**	**1309**

Source: IMF 7th Review; Annual Budget Statement for 2014-15, Government of Punjab; White Paper, Budget 2013-14, Government of Punjab; and author's calculations.

5.3 Combining Current and Development Expenditure

Combining development expenditure forecasts in Table 5-3 with current expenditure forecasts in Table 5-5, we obtain total development and current expenditure forecasts. These are reported below in Table 5-6.

Table 5-6: Forecast Values of Total Expenditure (Development and Current) (Punjab) (Rs billion)

	Financial Year							
Variable	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Development expenditure (Rs billion)	134	163	192	214	239	269	302	339
Current revenue expenditure (Rs billion)	534	627	703	791	900	1020	1156	1309
Total Development and Current revenue expenditure (Rs billion)	**669**	**790**	**895**	**1005**	**1140**	**1289**	**1458**	**1648**

Source: Table 5-3 and Table 5-5.

6 Forecast of Gross Operating Balance and Overall fiscal Balance

We reproduce the equations for gross operating balance and overall fiscal balance from sections 3:

(6-1) $GoB = (GRR - disposal\ of\ nonfinancial\ assets) - current\ revenue\ expenditure$

(6-2) $OFB = GRR - current\ revenue\ expenditure - development\ expenditure - net\ policy\ lending$

Gross Operating Balance

Forecasts of GRR, net of receipts from disposal of nonfinancial assets, is reported in Table 4-9. Current revenue expenditure is reported in Table 5-5 and Table 5-6. GoB is reported in Table 6-1 below.

Overall fiscal Balance

To calculate OFB in (6-2) we need forecast of GRR and net policy lending in addition to forecast of current revenue expenditure (reported in Table 5-6) and development expenditure (reported in Table 5-6). Forecast of $(GRR - receipts\ from\ disposal\ of\ nonfinancial\ assets)$ is given Table 4-9. To this forecast we need to add forecast of receipts from disposal of nonfinancial assets to obtain forecast for GRR. The underlying assumptions to obtain forecasts of receipts from disposal of non-financial assets and from policy lending are outlined below:

Receipts from disposal of nonfinancial assets: We assume these receipts to remain unchanged in real terms at their FY2012/13 level of Rs0.86 billion. (Also see Section 3.5). The nominal value is obtained by multiplying the base year value by the accumulated inflation (CPI) factor. The forecast values are given in Table 6-1.

Net Policy lending: Net policy lending (loan minus repayment) is taken as net loans extended by the provincial government to ‘local governments, financial institutions and autonomous bodies under its purview for meeting their current and development expenditures’. These amounted to Rs7.2 billion in FY2012/13. We assume that in the forecast period these would increase at the same rate as the nominal GDP. The forecast values are given in Table 6-1

Table 6-1: Forecast of operating deficit/surplus and debt of the Punjab government FY2012/13 to FY2019/20 (Rs billion)

		Financial Year							
Row No.	**Variable**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	General Revenue receipts (excluding receipts from disposal of nonfinancial assets)	691	800	924	1107	1322	1555	1812	2032
2	Total current revenue expenditure	534	627	703	791	900	1020	1156	1309
3	Gross operating surplus (row 1 – row 2)	157	174	221	315	422	535	657	723
4	Development expenditure	134	163	192	214	239	269	302	339
5	Receipts from disposal of nonfinancial assets	0.86	0.94	0.98	1.02	1.08	1.13	1.19	1.25
6	Net loans and advances by provincial government	6.7	7.5	8.2	8.9	9.8	10.9	12.0	13.3
Overall fiscal balance (Rs billion) (= row 3 + row 5 – row 2- row 4– row 6))		**17**	**4**	**22**	**94**	**174**	**256**	**344**	**372**

Source: Table 4-9, Table 5-6; IMF 7th Review; Annual Budget Statement 2014-15, Government of Punjab; and author's calculations.

7 Forecast of domestic and foreign debt, cash reserves and their determinants

Forecasts values of cash reserves, domestic and foreign debt and their determinants are provided in Table 7-1, in line with the methodology explained in Section 3.

Table 7-1: Forecast of domestic and foreign debt, cash reserves and other determinants of these variables FY2012/13 to FY2019/20

Row No.	Variables	Financial Years							
		2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
1	Overall fiscal balance (Rs billion)	17	4	22	94	174	256	344	372
2	Domestic debt repayment (Rs billion)	18.1	18.1	18.1	5.6	0.0	0.0	0.0	0.0
3	New domestic loans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Domestic debt (Rs billion)	42	24	6	0	0	0	0	0
5	Exchange rate depreciation factor	1.000	1.066	1.024	1.027	1.035	1.030	1.030	1.030
6	Accumulated exchange rate depreciation factor between the base year and year t.	1.000	1.066	1.092	1.121	1.160	1.195	1.231	1.268
7	Foreign debt repayment (Rs billion)	12.6	13.4	13.8	14.1	14.6	15.1	15.5	16.0
8	New Foreign loans (Rs billion)	16.8	21.1	18.3	18.8	19.4	20.0	20.6	21.2
9	Threshold level of new foreign loans (Rs billion) (= 16.75 × row 6 × 1.25)	21	22	23	23	24	25	26	27
10	Foreign debt (Rs billion)	403	438	453	469	491	510	531	552
11	Cash reserves (Rs billion)	6	0	9	102	281	542	891	1268

Source: Table 6-1; IMF 7th review; White Paper, Budget 2013-14, Government of Punjab; and author's calculations

Our forecasts show that given our assumptions about future revenues and expenditures, Punjab will be able to post large fiscal surpluses in the medium term. Most of these surpluses will be used to build cash reserves, which in turn result in interest income and help generate future fiscal surpluses. The accumulated cash reserves increase from zero in FY2012/13 to Rs1268 billion by FY2019/20.

8 Forecast versus Actual Values

Our model uses FY2012/13 as the base year and forecasts revenue and expenditure for FY2013/14 to FY2019/20. We can compare the forecast values from our model with the actual values that are now available for FY2013/14 and FY2014/15. Table 8-1 and Table 8-2 below compare the forecast values of revenue and expenditure with actual. There are three sets of figures that are reported in the budget documents: (i) the budget estimates, (ii) revised estimates, and (iii) accounts. The budget estimates are provided at the time the budget is presented. The revised figures are available at the time the new budget is presented around early June, but before the close of the financial year, which runs from July 1 to June 30. The revised figures are therefore also in the nature of 'estimates' for the financial year as a whole. The 'accounts' figures reflect the data for the entire year and are released after completion of another fiscal year.

For FY2013/14 we are able to compare forecast values with 'accounts', but for FY2014/15 the forecast values are compared with revised estimates.

Table 8-1: Comparison of Revenue Forecast with Actual: FY2013/14 and FY2014/15

Variables	Financial Year					
	2014			2015		
	Actual (Accounts) (Rs billion)	Forecast (Rs billion)	Forecast error* (Rs billion)	Actual (Rs billion)	Forecast (Rs billion)	Forecast error* (Rs billion)
Punjab's share in the divisible pool (R_1)	637	655	-18	746	760	-15
Punjab's own tax revenue (R_2)	96	92	4	114	107	8
Total transfer under article 161 of the constitution and clause 5 & 6 of the NFC award (R_7)	9.18	9.19	0	7.72	10.66	-3
Total federal and foreign grants excluding federal development grants (R_{12})	11.91	8.33	4	42.00	7.97	34
Non-tax revenue other than (i) transfers under article 16 of the constitution, (ii) NFC award (clause 5 &6) and (iii) federal and foreign grants (R_{13})	24.43	35.83	-11	23.81	38.94	-15
General Revenue Receipts excluding receipts from disposal of nonfinancial assets (R_{14})	**778.8**	**800**	**-22**	**933.4**	**924**	**9**

*Notes: *Forecast Error= Actual-Forecast*

The forecast error for the two years for which data is available are highlighted. Our forecasts overestimated revenue by Rs22 billion in FY2013/14 and underestimated by Rs9 billion in FY2014/15.

Table 8-2: Comparison of Expenditure Forecast with Actual: FY2013/14 and FY2014/15

	Financial Year					
Variable	**2014**			**2015**		
	Actual (Accounts) (Rs billion)	Forecast (Rs billion)	Forecast error* (Rs billion)	Actual (Rs billion)	Forecast (Rs billion)	Forecast error* (Rs billion)
Development expenditure	153	163	-10	263	192	72
Current revenue expenditure	569	627	-57	683	703	-20
Total development and current revenue expenditure	**722**	**790**	**-68**	**947**	**895**	**52**

Source: Annual Budget Statement for 2014-15 and 2015-16, Government of the Punjab; and author's calculations

*Notes: * Forecast error= Actual-Forecast*

Development expenditure in FY2014/15 increased far more than projected. On the other hand, in FY2013/14, current expenditure grew by far less than its growth rate in the recent past, which explains the 10% margin of error in FY2013/14.

We can compare the overall fiscal balance projected by our model with the actual. Table 8-3 provides the comparison.

Table 8-3: Comparison Forecast with Actual Values of OFB: FY 2013/14 and FY 2014/15

	Financial Year					
Variable	**2014**			**2015**		
	Actual (Accounts) (Rs billion)	Forecast (Rs billion)	Forecast error* (Rs billion)	Actual (Rs billion)	Forecast (Rs billion)	Forecast error* (Rs billion)
General revenue receipts excluding receipts from disposal of nonfinancial assets	779	800	-22	933	924	9
Total current revenue expenditure	569	627	-57	683	703	-20
Gross operating deficit/surplus	209	174	36	250	221	29
Development expenditure	153	163	-10	263	192	72
Net loans and advances by provincial government	18	8	10	21	8	12
Receipts from disposal of nonfinancial assets	0.25	1	-1	1	1	0
Overall fiscal balance	39	4	35	-32	22	-55

Source: Annual Budget Statement for 2014-15 and 2015-16, Government of the Punjab; and author's calculations

*Notes: * Forecast error= Actual- Forecast*

Our model forecasts a surplus of Rs4 billion in FY2013/14 and Rs22 billion and FY2015/16, whereas the Punjab government posted a surplus of Rs39 billion FY2013/14 and a deficit of Rs32 billion in FY2015/16.

We show below, that our forecasts of fiscal surpluses as well as the actual fiscal surpluses posted by the Punjab government are far lower than those projected by the Government of Pakistan in their discussions with the IMF which led to the approval of the Extended Fund Facility to Pakistan in 2013. The Government of Pakistan had informed the IMF in August 2013 that the provincial governments had agreed to save the revenue transfers under the 7th NFC award. The following sentence is taken from the attachment to the Government of Pakistan's Letter of Intent:[56]

[56] See "Pakistan 2013 Article IV Consultation and Request for an Extended Arrangement Under Extended the Extended Fund Facility, IMF Country Report No. 13/287. The quoted sentence is in Clause 14 of the Memorandum on Economic and Financial Policies (MEFP) for 2013/14 – 2014/15, which is an attachment to the Letter of Intent written by the Federal Minister of Finance and the Governor State Bank of Pakistan, to the Managing Director, IMF, dated August 19, 2013, requesting for a 36-month extended arrangement under the Extended Fund Facility in the amount of about USD6.6 billion.

“Since under the NFC award, the bulk of the additional revenue generated by the program will be distributed to the provinces, an agreement has been reached at the level of the Council of Common Interest to assure that it is used for deficit reduction or saved.”

Based on the above, Table 8-4 presents the targets for fiscal balances in the discussions between the IMF staff and the Government of Pakistan.[57]

Table 8-4: Federal and Provincial Fiscal Balances (In percent of GDP) as Committed with IMF

	2012/13	2013/14	2014/15	2015/16
Overall balance	-8.5	-5.5	-4.4	-3.6
Provincial balance	-0.1	0.5	1.0	1.4
Share in federal revenue	5.2	5.7	6.2	6.6
Net other	-5.3	-5.2	-5.2	-5.2
Federal balance	-8.4	-6.0	-5.4	-5.0

Source: “Pakistan 2013 Article IV Consultation and Request for an Extended Arrangement Under Extended the Extended Fund Facility, IMF Country Report No. 13/287.

In Table 8-5 below we compare the projected provincial balances based on the discussion between the IMF and the Government of Pakistan with the actual/budgeted figures and with those that our model forecasts. In calculating the fiscal balances for Punjab we have assumed that Punjab’s share in fiscal balance would be in proportion to its relative size in the GDP in FY2010/11 or 54.6%.[58]

[57] Ibid, p. 32.
[58] As reported in ‘Pakistan: Khyber Pakhtunkhwa Public Expenditure Review (PER)’, The World Bank, 2013).

Table 8-5: Comparison of Actual Provincial Balances with Model Forecasts and Projections Based on IMF/GoP Discussions

	2013/14	2014/15
GDP as given in IMF 7th Review (Rs billion)	25402	27614
Provincial balance as committed by GoP (percent of GDP)	0.5	1.0
Provincial balance as committed by GoP (Rs billion)	127	276
Punjab's balance as committed (assuming Punjab's share is in proportion to its size in the GDP in FY2010/11 or 54.6% (Rs billion)	69	150
Punjab's fiscal balance (actual for FY2013/14 and 2014/15 (Rs billion)	39	-32
Punjab's fiscal balance as forecasted (Rs billion)	4	22

Source: (1) "Pakistan 2013 Article IV Consultation and Request for an Extended Arrangement under Extended the Extended Fund Facility, IMF Country Report No. 13/287. (2) IMF 7th Review, (3) Annual Budget Statement for 2014-15 and 2015-16, Government of the Punjab; and (4) author's calculations

Table 8-5 shows that our forecast of overall fiscal surplus in FY2013/14 for Punjab was Rs4 billion compared with the actual surplus of Rs39 billion, and a surplus of Rs69 billion that was 'agreed' with the IMF – the latter figure is derived from the agreement with the IMF that provincial balances will be 0.5% of GDP in FY2013/14, and our assumption that Punjab's share of this balance will be in proportion to its size in the GDP. The provincial balance of 0.5% of GDP reflects the agreement among provinces and the federal government in the CCI as conveyed to the IMF by the federal government. Similarly, our model projects a surplus of Rs22 billion in FY2014/15, compared with an actual deficit of Rs32 billion and a surplus of Rs150 billion as 'agreed' with the IMF – the latter figure is derived from the agreement with the IMF that provincial balances will be 1% of GDP in FY2014/15, and our assumption about Punjab's share of this balance.

9 Summary and Conclusions

The projections for budget surplus/deficit depend on the assumptions made, in particular about the rate of growth of the economy and the tax effort at the federal and provincial levels. Under these assumptions, Punjab can expect fairly large budget surpluses in the forecast period. The surplus, which was about 0.07% of GDP in FY2012/13, is forecasted to reach about 0.84% by FY2019/20.

The fiscal surpluses, after repayment of debt and adjusting for new foreign loans, result in additions to cash reserves. Under the assumptions of the model, the accumulated cash reserves were expected to go up from 0.03% of GDP in FY2012/13 to 2.9% of GDP in FY2019/20.

Although the model allows interest income on cash reserves, it is unlikely that Punjab will continue to post large budget surpluses and build huge cash reserves. Cash reserves provide a cushion against unexpected drop in fiscal transfers from the federal government, which can be because of economic shocks or poor tax collection by the FBR. However, beyond a certain point the provincial government will be inclined to expand its expenditures programs, e.g., investment in infrastructure development and maintenance programs or expansion of social sector programs, rather than continue to build precautionary reserves.

As was mentioned in the beginning, budget making is an iterative process and if the government runs a large deficit, it may curtail its expenditure or expand its tax effort; or if its runs a surplus, it may expand its expenditure or provide tax relief to the public. The prediction of our model that Punjab will post very large fiscal surpluses in the near future may appear unrealistic, and this brings into question the reasonableness of the assumptions of the model. The online forecasting tool is an opportunity to tweak with the assumptions. As we emphasized in the beginning, the model should be viewed as a learning tool with potential to be used as a policy tool as well by modifying the underlying assumptions of the model.

If the federal government does not meet its tax-to-GDP target or the GDP growth is much lower than being forecasted, the projected federal transfers will not materialize and the importance of the provincial government's own-source revenues will become all the more important. The increase in provincial tax-to-GDP ratio that is implied by our assumption that provincial tax to total tax remains at its FY2012/13 level, have to be translated into concrete measures. The Punjab government has made important headway in implementing sales tax on services but agricultural income tax and UIPT also have to be made more buoyant sources of revenue.

The efficiency of government expenditure is an important subject that we have not touched upon in this paper. If the government objective is to achieve growth rate of 7-8 percent in the medium term, its investment targets in the public sector has to be complemented by investment in the private sector. Capital investment has to be accompanied by productivity enhancing investment in human capital in the form of education, skills, training and health services. A dysfunctional regulatory environment and weak systems and processes for implementing public sector projects can also constrain growth, and these also have to be revisited if growth objectives are to be achieved. A number of these issues are addressed in The Punjab Growth Strategy 2018 (available at: http://www.pndpunjab.gov.pk/economic_growth_strategy).

Appendix A Definition of Terms/Variables

General revenue receipts consist of federal transfers from the federal divisible pool, provincial own tax and non-tax receipts. Non-tax receipts consist of straight transfers on account of royalty on oil/gas and proceeds from federal excise duty on natural gas, extraordinary receipts from sale of assets, development and non-development federal grants, and other non-tax revenues of the provincial government.

Current revenue expenditure includes the expenditures on the regulatory functions of the government and provision of social and economic services. Following are the main functional heads of expenditure in current revenue expenditure: (1) General Public Service, (2) Defense (not a provincial subject), (3) Public Order and Safety Affairs, (4) Economic Affairs, (5) Environment Protection, (6) Housing and Community Amenities, (7) Health, (8) Recreational, Culture and Religion, (9) Education Affairs and Services, and (10) Social Protection.

General Capital Receipts consist of provincial government loans, recovery of loans extended to provincial bodies, and commercial bank loans for commodity operations (wheat/food).

Current Capital Expenditure consists of payment of principal portion of domestic/foreign debt, investments by the provincial government in various enterprises, and repayment of commercial loans through resale of wheat/food stocks.

Development Receipts: DR = Foreign Project Assistance **(FPA) +** Public Sector Development Program (**PSDP)** of the federal government that is routed through the provincial government

FPA is foreign loans for specific development projects

PSDP routed through the provincial government and is a pass through item which is not included at the time the budget is presented but added to the revenue and expenditure at the time the revised budget is presented.

Development expenditure has two components, (1) development revenue expenditure and (2) development capital expenditure. These are defined below:

Development Revenue Expenditure. The expenditure under this pertains to most of the expenses other than the brick and mortar expense. Employees related expense, purchase of transport, machinery and equipment, operating expenses, research and development, training etc. provided under the projects during the execution of the projects are all part of the development revenue expenditures. (White Paper 2014-15, p.106, Government of the Punjab, Finance Department).

Development capital expenditure is the capital investment under the development programs in roads, buildings, irrigation sectors etc. (White Paper 2014-15, p.106, Government of the Punjab, Finance Department).

Appendix B Definition of Budgetary Heads of Current Revenue Expenditure

Table_Apx B-1: Definition of Budgetary Heads of Current Revenue Expenditure

	Definition
General Public Service	"General Public Services includes primarily the expenditure on the provision of services related to executive and legislative organs; and financial and fiscal affairs." *White Paper, Punjab 2014-15*
Public Order and Safety Affairs	Includes the allocation for law courts, police, fire protection, prison administration and operation and administration of public order. *White Paper , Punjab, 2014-15*
Economic Affairs	"The sectors / departments in the provincial government contributing to economic development fall under this classification. These sectors / departments are Agriculture, Communication and Works, Forestry, Wildlife & Fisheries, Industries, Irrigation, Livestock & Dairy Development, Mines & Mineral Department, etc." *White Paper , Punjab 2014-15*
Housing and Community Amenities	This classification includes expenditure on Housing Urban Development & Public Health Engineering Department, Environment Protection and Local Government and Community Development Department
Health	"This functional classification includes allocation for hospitals, healthcare Institutes, laboratories and other expenditure related to health administration, including the general administration." *White Paper, Punjab 2014-15*
Recreational, Culture and Religion	"Includes Recreational and Sporting, Cultural Services Broadcasting and Publishing, Religious Affairs, Administration of Information, Recreation & Culture" *White Paper, Punjab 2014-15*
Education Affairs and Services	"Includes school education, higher education, special education and non formal basic education. Allocations are for: pre Primary Education Affairs & Services, Secondary Education Affairs & Services, Tertiary Education Affairs & Services, Education Services Non Definable by Level, Subsidiary Services to Education, Education Affairs, Services Not Elsewhere Classified." *White Paper, Punjab 2014-15*

Appendix C Summary of Forecast Assumptions

The forecasts of revenue, spending, overall fiscal balance, domestic and foreign debt and cash reserves of the Punjab government are based on several assumptions, which have been stated throughout the paper. In Table_Apx C-1we summarize the assumptions made for projecting revenue. In Table_APX C-2 we summarize the assumptions made for projecting current and development spending, proceeds from disposal of nonfinancial assets and net policy lending. We note that some of the revenue, in particular, interest income, depends on income from cash reserves, which in turn depends on overall fiscal balance. Since overall fiscal balance is the difference between revenue and current and development spending after adjusting for proceeds from disposal of nonfinancial assets and for net policy lending, the forecasts of revenue depend not just on the assumptions in Table_Apx C-1 but also those in Table_APX C-2.

Table_Apx C-1: Assumptions for Forecasting Revenues

Source of Revenue	Assumptions
Federal transfers from the divisible pool of tax revenue	The 7th NFC award formula for distribution of divisible pool of tax revenue between the federal and provincial governments will be unchanged in the forecast period. The GDP growth, inflation rate and tax-to-GDP ratio will be the same as given in the IMF 7th review. The ratio of divisible pool of taxes to total taxes will be unchanged at its FY2012/13 level of 86.7%.
Punjab own tax revenues	The ratio of total provincial taxes to total taxes will remain unchanged at its FY2012/13 level of 6.7%. The increase in provincial tax to GDP ratio, implied by the assumed increase in the overall tax-to-GDP ratio, will be on account of greater tax effort by Punjab and Sindh. These provinces will share this increase in proportion to their own-taxes raised in FY2012/13. (In FY2012/13, Punjab raised Rs78.4 billion and Sindh Rs68.7 billion. The increase in provincial tax because of the increase in provincial-tax-to-GDP ratio is distributed between Punjab and Sindh in the same ratio as in FY2012/13 ie 0.533:0.467.
Transfer Under Article 161 of the Constitution and Clause 5 & 6 of the NFC award	The ratio of transfer on account of excise duty on natural gas to total taxes will remain unchanged at the FY2012/13 level during the forecast period. There was no excise duty on oil in the base year, FY2012/13, and therefore there was no transfer on account of excise duty on oil. We assume that this status will be unchanged during the forecast period. In FY2012/13 Punjab received Rs 5.1 billion on account of profit from hydro-electricity generation. In order to have a claim on the federal government the Punjab government continues to budget for this even though it has not received any transfer under this head for the last two years. We have assumed that federal transfers on account of hydro-electricity generation will be zero from 2014 till 2016 but the next NFC award will allow Punjab to receive its claim adjusted for inflation and arrears so

	that in FY2016/17 it will receive Rs10.8 billion on account of hydro profits, which will go up to Rs11.8 billion in FY2019/20. Development surcharges and royalties as a ratio of taxes are assumed to remain constant at the FY2012/13 level.
Federal/foreign development and non-development grant	In FY2012/13 Punjab received Rs0.224 billion as non-development grant (excluding income from cash reserves). We assume that non-development grants, excluding income from cash reserves, will be zero in the forecast period. The interest rate on cash reserves is taken to be 8.6% in FY2013/14, 7.8% in FY2014/15 and 6.5% in the remaining years of the forecast period. In FY2012/13, foreign development grants amounted to Rs7.3billion. We assume that this level will remain unchanged in dollar terms. In rupee terms it will increase at the same rate as the exchange rate depreciation. The exchange rate will depreciate at the rate of domestic inflation minus the rate of foreign inflation. The former is given in Table 5-5. The latter is assumed to be 2% throughout the forecast period. The exchange rate depreciation factor is given in Table 7-1. In FY2012/13, federal development grant to Punjab amounted to Rs11 billion (a pass through item). This is part of the federal PSDP but the provincial government also includes this in the revised budget. We treat this component of the federal grant as part of federal expenditure and exclude it from the revenue and expenditure side in the provincial budget. Other development grants amounting to Rs0.06 million in FY2012/13 are assumed to be zero in the forecast period.
Non-tax revenue raised by the provincial government (revenues from regulatory and economic functions)	The provincial revenue from its regulatory and economic functions as a ratio of GDP will remain unchanged during the forecast period. Effectively we assume that these revenues will grow at the same rate as the GDP.

Box_Apx C-1: Correspondence between Revenue Categories of the Punjab Budget and Revenue Categories Defined in the Paper

1. Federal Transfers = $R_1 + R_3$ (see Table 4-2 for R_1 and Table 4-5 for R_3)
2. Provincial Own Tax revenue = R_2 (see Table 4-4 for R_2)
3. Provincial Non-Tax revenue = $R_7 + R_{12} + R_{13} - R_3$ + Receipts from disposal of nonfinancial assets (see Table 4-5 for R_3 and R_7, Table 4-7 for R_{12}, Table 4-8 for R_{13} and Table 6-1 for receipts from disposal of nonfinancial assets.
4. General Revenue Receipts (as given in the White Paper) = R_{14} + receipts from disposal of nonfinancial assets (see Table 4-9 for R_{14} and Table 6-1 for receipts from disposal of nonfinancial assets.

Table_APX C-2: Summary of forecasting assumption on: (i) current & development expenditure, (ii) lending to local governments and autonomous institutions, and (iii) receipts from disposal of nonfinancial assets

Expenditure	Assumptions
Development expenditure	Development expenditure as a percentage of GDP is as projected in the Vision 2025 Discussion Draft and interpolated for FY2013/14 and FY2015/16 to FY2018/19 (see Table 5-2). The ratio $\frac{DE_t}{GDP_t} \Big/ \frac{DE_{t-1}}{GDP_{t-1}}$ for each province can be obtained from Table 5-2. GDP growth and inflation rate are as given in the IMF 7th review. The nominal GDP growth factor is as given in Table 5-3
Non-interest current revenue expenditure	Non-interest component of CRE would increase at the same real rate at which it grew during FY2008/09 to FY2012/13 or 8%. The nominal rate of growth is obtained by multiplying the real growth factor by the CPI inflation factor. Annual CPI inflation rate will be as given in the IMF 7th Review (see Table 5-5). Rate of exchange rate depreciation will equal the rate of inflation minus the rate of foreign inflation, assumed to be 2%.
Domestic and foreign debt and interest rates	Punjab will pay Rs18 billion in domestic debt repayment (same as in FY2012/13) or the outstanding debt, whichever is less. Interest rate on domestic debt will be 13.1% per annum from FY2013/14 onwards. Foreign debt repayment remains unchanged in dollar terms from its base year level in FY2012/13. New domestic and foreign loans are as explained in Section 3.6. The threshold level of new foreign loans is 25% more than the new foreign loans in the base year (FY2012-13) in dollar terms. Interest rate on foreign loans will be 1.49% in the forecast period.
Net policy lending to local governments and institutions under the provincial government purview.	The ratio of policy lending to nominal GDP and the ratio of policy loans repayment to nominal GDP will remain unchanged at its level in FY2012/13 ie net policy lending will increase at the same rate as the nominal GDP growth.
Receipts from disposal of nonfinancial assets	Receipts from disposal of nonfinancial assets will remain unchanged from the base year value in real terms. Nominal value is obtained by multiplying the base year value by the appropriate inflation factor.

Appendix D : Cash Reserves, Domestic Debt and Foreign Debt

As mentioned in Section 3.6, the following equation relates OFB with the financing variables – domestic and foreign debt, cash reserves, and other financial assets:

(A-1) $$OFB_t = -\left(\Delta B_t^d + E_t\,\Delta B_t^{f(\$)}\right) + \Delta CR_t + \Delta Other\ Financial\ Assets_t$$

Where

ΔB_t^d is change in domestic debt between the end of period t and end of period t-1;

$\Delta B_t^{f(\$)}$ is change in foreign debt in dollars terms between the end of period t and end of period t-1;

E_t is the exchange rate (number of rupees per dollar) in period t;

$E_t\,\Delta B_t^{f(\$)}$ is change in foreign debt in rupees between the end of period t and end of period t-1;

ΔCR_t is change in cash reserves between the end of period t and the end of period t-1;

$\Delta Other\ Financial\ Assets_t$ is change in other financial assets between the end of period t and end of period t-1.

We first express domestic debt at the end of period t as follows:

(A-2) $$B_t^d = B_{t-1}^d - DR_t^d + (new\ loan)_t^d$$

Where

DR_t^d is domestic debt repayment in period t;

$(new\ loan)_t^d$ is new domestic loan received by government in period t;

Rearranging (A-2), we can write:

(A-3) $B_t^d - B_{t-1}^d = \Delta B_t^d = -DR_t^d + (new\ loan)_t^d$

Similarly

(A-4) $B_t^{f(\$)} - B_{t-1}^{f(\$)} = \Delta B_t^{f(\$)} = -DR_t^{f(\$)} + (new\ loan)_t^{f(\$)}$

Where

$DR_t^{f(\$)}$ is foreign debt repayment (in dollars) in period t;

$(new\ loan)_t^{f(\$)}$ is new foreign loan (in dollars) received by government in period t;

Substituting (A-3) and (A-4) in (A-1) we obtain:

(A-5) $OFB = \left(DR_t^d - (new\ loan)_t^d\right) + \left(E_t\left(DR_t^{f(\$)}\right) - E_t(new\ loan)_t^{f(\$)}\right) + \Delta CR_t + \Delta Other\ Financial\ Assets_t$

In order to obtain determinate values for cash reserves, domestic debt and foreign debt, we list a set of assumptions and their implications for (A-5).

Assumption # 1. The provincial government does not engage in any sale/purchase of 'other financial assets':

(A-6) $\Delta Other\ Financial\ Assets_t = 0$

Applying this assumption in (A-5) gives

(A-7) $OFB = \left(DR_t^d - (new\ loan)_t^d\right) + \left(E_t\left(DR_t^{f(\$)}\right) - E_t(new\ loan)_t^{f(\$)}\right) + \Delta CR_t$

Assumption # 2: There is no premature domestic debt retirement and the only domestic debt that the government must retire is the debt that it is obligated to retire under the terms of the contract.

Assumption # 3: DR_t^d, the annual domestic nominal debt retirement, will either be the same as in FY2012/13 (Rs18 billion) or the nominal debt outstanding, whichever is less.

Assumption # 4: Foreign debt retirement in each of the forecast periods will be unchanged in dollar terms from the FY2012/13 level. This assumption implies that $DR_t^{f(\$)}$ in (A-5) and (A-7) takes the form:

(A-8) $DR_t^{f(\$)} = DR_0^{f(\$)}$ for all t

so that

(A-9) $E_t DR_t^{f(\$)} = E_t DR_0^{f(\$)} = \left(\frac{E_t}{E_0}\right) E_0 DR_0^{f(\$)} = (1 + \dot{E}_{0,t}) DR_o^f$ for all t

$\dot{E}_{0,t} = \frac{E_t - E_0}{E_0}$ is the accumulated rate of depreciation of the exchange rate between the base year and year t;

DR_0^f is the foreign debt repayment in the base year in rupee terms (Rs 12.6 billion);

Assumption # 5. To take advantage of the low cost foreign loans, the government will contract new foreign loans each year which will at least equal their base-year value in dollar terms. New foreign loans that equal the base-year level of new foreign loans (in dollar terms) will be referred to as *default level of new foreign loans*.

The default level of foreign loans are given by (A- 10) below:

(A- 10) $E_t(new\ loan)_t^{f(\$)} = E_t(new\ loan)_0^{f(\$)} = (1 + \dot{E}_{0,t})(new\ loan)_0^f$

where $(new\ loan)_0^f$ is new foreign loans (in rupees) in the base year.

Assumption 6: If, by restricting domestic loans to zero and foreign loans to their base-year value in dollar terms, and applying assumptions 2 – 4, the value of cash reserves (C_t) that solves (A-7) is non-negative, then the government will keep its domestic borrowing to zero and foreign borrowing to its base-year level in dollar terms. In this case cash reserves is the balancing variable in (A-7). Formally if we define Ω_t as in (A-11) below:

(A-11) $\Omega_t = CR_{t-1} + OFB_t - DR_t^d - \left((1 + \dot{E}_{0,t})DR_0^f - (1 + \dot{E}_{0,t})(new\ loan)_0^f\right)$

then the assumption on cash reserves as a balancing variable in (A-7) can be stated as:

(A-12) If $\Omega_t \geq 0,\ CR_t = \Omega_t$

For this case where $\Omega_t \geq 0$, domestic and foreign loans and debt can be expressed as (see **(**A-3) and (A-4)):

(A- 13) $(new\ loan)_t^d = 0$ if $\Omega_t \geq 0$

(A- 14) $E_t(new\ loan)_t^{f(\$)} = E_t(new\ loan)_0^{f(\$)} = (1 + \dot{E}_{0,t})(new\ loan)_0^f$ if $\Omega_t \geq 0$

(A-15) $B_t^d = B_{t-1}^d - DR_t^d$ if $\Omega_t \geq 0$

(A- 16) $B_t^f = E_t B_{t-1}^{f(\$)} - E_t DR_0^{f(\$)} + E_t(new\ loan)_t^{f(\$)}$ if $\Omega_t \geq 0$

or

(A- 17) $B_t^f = (1 + \dot{E}_{t-1,t})B_{t-1}^f - (1 + \dot{E}_{0,t})DR_0^f + (1 + \dot{E}_{0,t})(loan)_0^f$ if $\Omega_t \geq 0$

where B_t^f is foreign debt (in rupees) in the base year and $\dot{E}_{t-1,t} = (E_t - E_{t-1})/E_{t-1}$.

Assumption # 7. Cash reserves are non-negative.[59]

If by applying assumptions on debt repayment and restricting domestic loans to zero and foreign loans to the default level, the value of C_t that solves (A-7) is negative, then C_t is taken to be zero. Combining this assumption on cash reserves with (A-11) and (A-12), we define cash reserves as:

(A- 18) $CR_t = \Omega_t$ if $\Omega_t \geq 0$; $CR_t = 0$ if $\Omega_t < 0$

Assumption # 8. If $\Omega_t < 0$, then by applying assumptions on debt repayment (assumption 2 – 4) and restricting domestic loans to zero in (A-7), solve for 'new foreign loans'; and if 'new foreign loans' do not exceed an upper bound Γ_t then 'new foreign loans' will be the balancing variable in (A-7). Thus if we define Ψ_t as in (A-19):

(A-19) $\Psi t = DR_t^d + (1 + \dot{E}_{0,t})DR_o^f - (CR_{t-1} + OFB_t)$

then:

(A-20) $E_t(new\ loan)_t^{f(\$)} = \Psi t$ *if* $\Omega_t < 0$ *and* $\Psi t \leq \Gamma_t$

For this case, domestic and foreign debt take the form:

[59]Negative cash reserves could be treated as borrowing from SBP – a form of domestic borrowing – but we have introduced domestic borrowing as a separate variable, which kicks in after an upper bound on foreign borrowing is reached (see assumption 8).

(A-21) $B_t^d = B_{t-1}^d - DR_t^d$ if $\Omega_t < 0$ and $\Psi t \le \Gamma_t$

(A-22) $B_t^f = E_t B_{t-1}^{f(\$)} - E_t DR_0^{f(\$)} + \Psi_t$ if $\Omega_t < 0$ and $\Psi_t \le \Gamma_t$

or

(A-23) $B_t^f = (1 + \dot{E}_{t-1,t})B_{t-1}^f - (1 + \dot{E}_{0,t})DR_0^f + \Psi_t$ if $\Omega_t < 0$ and $\Psi_t \le \Gamma_t$

Assumption # 9. If new foreign loans reach an upper bound Γ_t, the government turns to the more expensive domestic loans, which will then be the balancing variable in (A-7).

In this case new domestic loan and domestic debt, and new foreign loans and foreign debt will take the form:

(A-24) $(new\ loan)_t^d = \Psi_t - \Gamma_t$ If $\Omega_t < 0$ and $\Psi_t > \Gamma_t$

(A-25) $B_t^d = B_{t-1}^d - DR_t^d + \Psi_t - \Gamma_t$ if $\Omega_t < 0$ and $\Psi_t > \Gamma_t$

(A-26) $E_t(new\ loan)_t^{f(\$)} = \Gamma_t$ If $\Omega_t < 0$ and $\Psi_t > \Gamma_t$

(A-27) $B_t^f = E_t B_{t-1}^{f(\$)} - E_t DR_0^{f(\$)} + \Gamma_t$ If $\Omega_t < 0$ and $\Psi_t > \Gamma_t$

or

(A-28) $B_t^f = (1 + \dot{E}_{t-1,t})B_{t-1}^f - (1 + \dot{E}_{0,t})DR_0^f + \Gamma_t$ If $\Omega_t < 0$ and $\Psi_t > \Gamma_t$

Base year values and interest rates

Cash reserves

Base year values for cash reserves are not available from the budget documents, nor is the interest rate on these reserves. We work with base year value of cash reserves of Rs6.5 billion and an interest rate on cash reserves in the forecast period that ranges between 8.6% and 6.5%.[60]

[60] For FY2013/14, and FY2014/15, the interest rates were taken to be the weighted average rates of return on treasury bills when sold by the State Bank of Pakistan (SBP), which were respectively 8.57% and 7.83%. For the remaining years, we have taken the interest rate to be 6.48%, which was the weighted average rate of return on treasury bills in June 2015, the last month for which the weighted average rate of return figures are available from the annual report of SBP. The cash reserve value for the base year FY2012/13 was obtained by taking into account the 'incentive grant for maintaining provincial surpluses in terms of CCI decision for Punjab' in FY2013/14, which was Rs0.556 billion (see Federal Budget Details of Demand for Grants and Appropriations 2014-15, Demand No.

Foreign debt

The base year value of foreign debt in rupee terms was Rs403 billion, base year value of foreign debt retirement was Rs12.6 billion, base year value of new foreign debt contracted was Rs16.75 billion.

The interest cost on foreign debt in dollar terms can be written as:

(A- 29) Interest payment on foreign debt in period t (in dollars) = $\bar{\iota}^f B_{t-1}^{f(\$)}$

where $\bar{\iota}^f$ is the interest rate on foreign debt (assumed fixed during the forecast period) and $B_{t-1}^{f(\$)}$ is the foreign debt (in dollars) outstanding at the end of year t-1.

In rupee terms the interest payment on foreign debt is obtained by multiplying the RHS in (A- 29) by the exchange rate:

Interest payment on foreign debt in period t (Rs) = $E_t \bar{\iota}^f B_{t-1}^{f(\$)} = \bar{\iota}^f \left(\frac{E_t}{E_{t-1}}\right) E_{t-1} B_{t-1}^{f(\$)}$

or

(A- 30) $Interest\ payment\ on\ foreign\ debt\ in\ period\ t\ (Rs) = \bar{\iota}^f (1 + \dot{E}_{t-1,t}) B_{t-1}^f$

In the base year, interest rate on foreign debt, $\bar{\iota}^f$, is taken to be 1.49%[61] and treated as fixed for the entire forecast period.

Obligatory foreign debt repayment, which is assumed to equal the base year level of debt repayment in dollar term, is converted into rupee terms by multiplying by (1 + accumulated exchange rate depreciation between the base year and year t). The exchange rate is expected to depreciate by the difference between the domestic and foreign inflation rates. The former is obtained from IMF 7th review and the latter is assumed to equal 2%.

035). In our model, this payment was equivalent to the product of the interest rate (0.0857) and cash reserves at the end of FY2012/13. The implied cash reserve value is Rs6.485 billion in FY2012/13.

[61] See White Paper, Budget 2013-14, p. 77 and Table 6.2, Finance Department, Government of Punjab.

The choice of the upper bound on foreign loans, Γ_t, is a matter of policy judgement and is to be specified by the user/policy maker. In the forecasts presented in this paper, we take this to be 25% more than the base-year level of new foreign loans in dollar terms.

Domestic debt

The base year value of domestic debt was Rs42 billion. The interest rate on domestic debt is assumed to remain unchanged at its FY2013/14 level of 13.11% in all forecast years.[62]

The annual domestic nominal debt retirement, is assumed to be either the same as in FY2012/13 (Rs18 billion) or the nominal debt outstanding, whichever is less.

[62] As given in Table 6.2. p.80 of the White Paper, Budget 2014-15, Finance Department, Government of Punjab.