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Data Uncertainty: Implications for Policy-Formulation

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"At this point, it might be useful for us to recognize again the difference between risk and uncertainty. With risk, as we know, one can assign probabilities to the list of outcomes and act appropriately given the distribution. With uncertainty, it is difficult to assign probabilities to outcomes...Today we are operating in a world of increased uncertainty". **(***Anthony M. Santomero, Member of Federal Open Market Committee)*

Reliable data is a must ingredient for policy-making. However, policymakers face a dilemma when the data is subject to a number of revisions and has low frequency. Relying on uncertain data often leads to unreliable forecasting, policy assessment and recommendations. In short, data uncertainty impacts the power, validity and effectiveness of policy decisions. Data uncertainty is common in both developed and developing economies; however the severity is greater for developing economies. For instance, in Pakistan the main dataset of National Income Accounts is released once in a year. Major macroeconomic decisions and targets are formulated on the basis of this data. However, this information itself is subject to frequent revisions.

Table 1 shows the divergence between the provisional (the data used for policy making) and the final data (which is the actual data). For instance, in FY11 the revised data of fiscal deficit differed from the provisional data (however this change was primarily due to adjustment of circular debt in fiscal accounts). This had large implications on the monetary and fiscal decisions made at that time, because the provisional data was depicting a better picture (by showing a lower deficit), however the true picture was a bit dismal. Quite similarly, the revised data of consumption, large scale manufacturing (LSM) and major crops deviated from the provisional data in the last few years.

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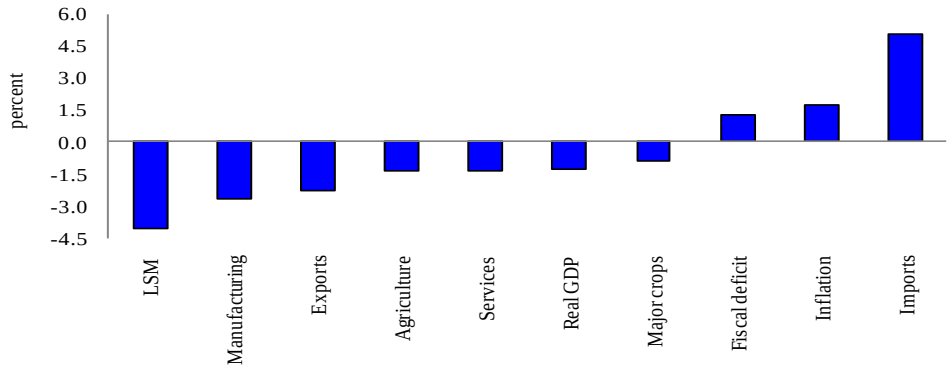
Table 1: Provisional and Actual Data (Growth in Percent)

	FY11		FY12		FY13		FY14		FY15	
	P	**R**	**P**	**R**	**P**	**R**	**P**	**R**	**P**	**R**
Real GDP	2.4	2.4	3.7	3.7	3.6	3.7	4.1	4.0	4.2	4.0
Fiscal deficit	6.6	7.1	8.5	6.4	8.1	8.2	5.5	5.5	5.3	5.3
Agriculture	1.2	2.0	3.1	3.5	3.3	2.9	2.1	2.5	2.9	2.5
Major crops	-4.0	1.5	3.2	7.4	2.3	1.2	3.7	8.0	0.3	1.0
Manufacturing	0.0	4.7	3.4	2.7	3.5	1.4	5.8	4.5	3.6	4.8
LSM	1.0	1.7	1.8	1.2	2.8	4.1	5.3	5.5	3.3	3.3
Services	4.1	3.9	4.0	5.3	3.7	4.9	4.3	4.5	5.0	4.3
Exports	28.6	28.6	-4.7	-4.8	3.5	3.5	2.7	2.7	-5.7	-4.9
Imports	16.4	16.4	11.1	11.1	0.1	0.1	0.4	0.3	1.7	2.0

P stand for Provisional and R for Revised

Figure 1: Deviation of Actual Data from Target (Average of Last Ten Years)

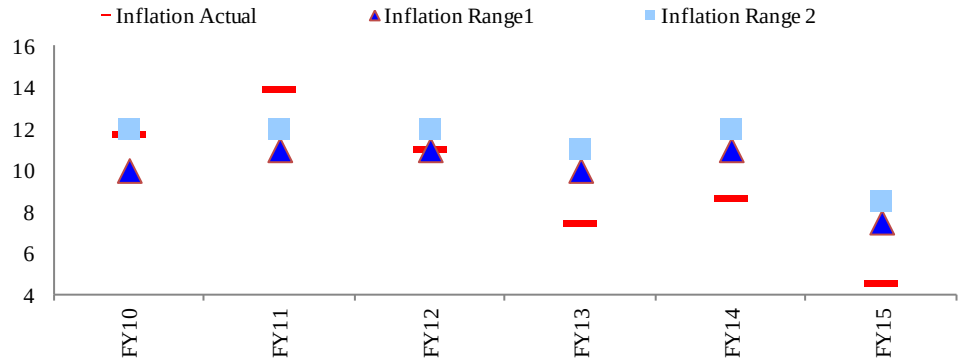


Since provisional data is used by the concerned authorities to set an annual target of various economic indicators; actual data mostly deviates from their respective targets also (this deviation also occurs due to other shocks). **Figure 1** indicates that on average during the last ten years; fiscal deficit, inflation and imports have exceeded the annual target where as real GDP, exports, agriculture, manufacturing and services sector growth has remained lower than the target.

Data uncertainty also impedes the forecasting process. As many countries follow the forward looking monetary policy; forecasting is an important component for policy-making. While forecasting itself is an uncertain phenomenon, projections based on unreliable and erratic data also puts a question mark on the credibility of projections.

During the last three years, inflation projections remained off-target and the actual number turned out to be much lower than the forecasted range (**Figure 2**). Since inflation data is not subject to data uncertainty (inflation numbers do not get revised), actual inflation deviation from the target indicates that the target was probably unrealistic or incredible.

Figure 2: Projected Inflation vs. Actual Inflation



Due to revisions in the data sets (variables such as LSM, agriculture growth, exports, and imports that could impact inflation) and availability of new data points, inflation projections are adjusted accordingly. Sometimes, projections are revised even four times a year (**Table 2**).

Table 2: Revisions in Projections

Year	Projection Date	Projection
FY13	12-Apr	9.0-10.0%
	12-Aug	10.0-11.0%
	13-Feb	8.0-9.0%
	Actual inflation	**7.40%**
FY14	13-Jun	more than 8%
	13-Sep	11.0-12.0%
	13-Nov	10.5-11.5%
	14-Jan	10.0-11.0%
	Actual inflation	**8.60%**
FY15	14-Jul	7.5-8.5%
	15-Jan	4.5-5.5%
	15-Mar	4.0-5.0%
	Actual inflation	**4.50%**
FY16	15-Sep	4.5-5.5%
	16-Jan	3.0-4.0%
	Actual inflation	**2.90%**

Conclusion

The problem of data uncertainty reduces the power and effectiveness of various economic policies and also effects the projections of main economic indicators. Since, dealing with unreliable data is inevitable; policy-makers can take the following considerations into account.

- Estimating the measurement error in provisional and revised datasets is important. Inflation data typically do not get revised, therefore the measurement error in revised inflation data is the same as that in old data. However in datasets of consumption (demand side) or agriculture (supply-side), meaurement errors in revised datasets are smaller compared with provisional data.
- Since projections are made on the basis of provisional data, indicating the degree of uncertainty attached to the forecast is very important. Quantitative forecasting models are more effective when the available data is reliable and when it is rational to assume that the past trend would continue into the future. However, in the absence of accurate data, qualitative methods such as judgement of policy-makers are a more sutibale option to make projections.