The Irony of Manufacturing and Services

The Purchasing Managers' Index (PMI) for manufacturing in the month of February is at a year high of 52.5 compared with 51 in April '13. On the other hand, the GDP estimates released last week suggested that the manufacturing industry slowed down by -1.9% in Q3 FY14 compared with the growth of 2.5% in the corresponding quarter of last fiscal. Likewise, the PMI services index for the month of February stands at a low of 48.8 maintaining its deterioration for the eighth consecutive month. However, the services industry emerged as one of the strong performers in the recent estimate of GDP growth in Q3 FY14.

This study aims to discuss the contradictions of the two indicators. Firstly, the PMI is analyzed to get a clear picture of its calculation followed by an overview of IIP and manufacturing GDP which are the two main indicators of industrial performance. The subsequent section explains the trends in PMI (manufacturing and services), IIP and GDP figures of FY14 and the last section concludes the study.

Understanding PMI

The Purchasing Managers' Index is a composite index constructed on the basis of survey responses collected from over 500 private manufacturing companies. The purchasing executives of these companies are questioned on five fronts: new orders, output, employment, suppliers' delivery time and stocks of purchases. The respondents are required to answer whether the conditions in the mentioned parameter have improved, remained the same or have declined. The reference month for all fronts is the previous month. The responses are collected during the latter half of the month.

The index is calculated based on the following formula;

$$PMI = (P_1 * 1) + (P_2 * 0.5) + (P_3 * 0)$$

Where P_1 = Percentage number of responses that reported an improvement, P_2 = Percentage number of responses that reported no change, P_3 = Percentage number of responses that reported a deterioration. These percentages (P_1, P_2 and P_3) are multiplied by the weights of 1, 0.5 and 0 respectively.

Hence, if 100% responses report an improvement, the PMI will be 100. If 100% responses report no change, then PMI would be 50 (100*0.5) and if 100% responses report deterioration, then PMI would read zero (100*0). Hence, an index of more than 50 would imply growth, an index of 50 indicates neither improvement nor deterioration over the previous month and an index of less than 50 implies a decline. Larger the index is above 50, stronger the growth is over the previous month*.*

Hence,the PMI is calculated based on business expectations and captures only expansion or contraction in the expectations held by private companies.

Index of Industrial Production (IIP) and Gross Domestic Product (GDP)

The Index of Industrial Production (IIP) is an indicator of the industrial production in the economy. IIP growth is measured on a year-over-year basis. The IIP includes 682 products from 16 Source agencies covering broad sectors of 'mining and quarrying', 'manufacturing' and 'electricity'. Each industry is attached with its respective weight. Mining and quarrying has a weight of 14.2, manufacturing has a weight of 75.5 and electricity has a weight of 10.3. These weights are fixed and were calculated in terms of the relative importance of these industries in GDP.

The Gross Domestic Product (GDP) is also calculated in a similar method where the final GDP at factor cost is calculated by adding the gross product in eight broad industries namely; 'agriculture, forestry and fishing', 'mining and quarrying', 'manufacturing', 'electricity, gas and water supply', 'construction', 'trade, hotels, transport and communication','financing, insurance, real estate and business services' and 'community, social and private services'. For the manufacturing sector, the CSO uses the ASI data as per the revised estimates for FY13.

Both IIP and GDP are calculated based on the actual production recorded in these sectors.While this does make the IIP more volatile as it is subject to seasonal factors, data variations and large fluctuations on account of base effect, it still is a real measure as it is computed based on the actual production as opposed to being calculated based on business expectations of private companies.

*Points of distinction between PMI and IIP, GDP*

PMI	*IIP, GDP*
• PMI is calculated based on the replies to a questionnaire from over 500 private firms towards the end of every month.	• Both IIP and GDP are calculated based on actual production (output) in the respective industries.
• Calculated on a month-on-month basis.	• Calculated on a year-on-year basis.[1]
• Subjective concept.	• Objective concept with figures as evidence.
• Less volatile (no seasonal factors)	• Volatile (seasonal factors play a role)

PMI – Manufacturing vis-à-vis IIP in FY14

PMI manufacturing stood at 51 in April 2013, reaching a low of 48.5 in August '13 and then improved to 52.5 in February '14. The overall trend in PMI manufacturing although range bound has been fluctuating in FY14. More recently, PMI manufacturing appears to be improving consistently since December 2013, moving up from 50.7 to 52.5 as of February 2014.
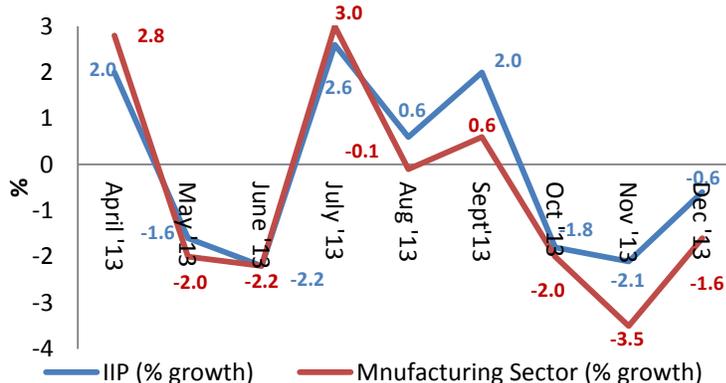
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[1]*IIP is published monthly and GDP is published quarterly.*

Exhibit 1: PMI Manufacturing in FY14
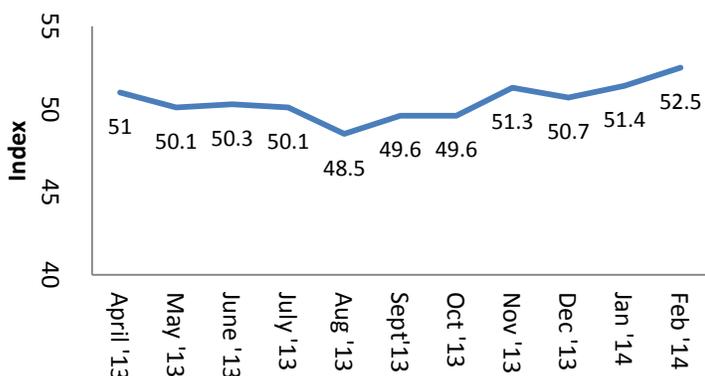
Exhibit 2: IIP and Manufacturing sector % growth in FY14

Source: Emerging Economies PMI by HSBC   *Source: MOSPI*

- IIP has maintained a fluctuating trend this fiscal recording a growth of 2% in April 2014 but it subsequently deteriorated to -2.2% in June 2013. It further increased in September 2013 to 2% but fell to -0.6% in December 2013.
- In Q1 the PMI came down but was above 50. Manufacturing growth however, was negative in May and June thus severing the link between the two.
- In Q2, manufacturing growth was positive in July and September but negative in August. The PMI went below 50, meaning thereby a decline in July and August. Once again there is no link between the two.
- In Q3, the complete link was severed with manufacturing growing at a negative rate in all three months, while the PMI has witnessed an increase in October and November and been in the positive zone.
- Even if the PMI movements are compared with the IIP numbers month-on-month basis (which is not seasonally adjusted, there is no link between the two series.

This sluggish growth in FY14 (so far) is a result of weak consumer demand, and low investments partly due to the high interest rates maintained by RBI in its bid to fight inflation. Further, manufacturing sector having recorded negative growth for the last three consecutive months vis-à-vis the same time window in FY13 is indicative of the stagnation the manufacturing industry is currently encountering.

Manufacturing industry

The above analysis of the IIP is in line with the growth witnessed in the manufacturing sector released in the Q3 FY14 GDP data.

Table 1: Manufacturing growth in FY13 and FY14 (y-o-y %)

Manufacturing (% growth)	FY13	FY14
1st Quarter	-1.1	-1.2
2nd Quarter	0.0	1.0
3rd Quarter	2.5	-1.9
April-December	**0.5**	**-0.7**

Source: MOSPI

Except Q2 FY14, manufacturing sector has recorded slower growth in Q1 and Q3 FY14 compared with the growth registered in the corresponding quarters of FY13.

  o Q3 FY14 witnessed a drastic reduction from a growth of 2.5% in FY13 to a contracted growth rate of -1.9% in FY14.
  o The cumulative growth in manufacturing under the GDP estimation has deteriorated to -0.7% so far in FY14 as against a positive growth of 0.5% over the same period in FY13.

There clearly is no reconciliation between the PMI manufacturing and the actual estimates of the performance of the manufacturing industry as evidenced by GDP and IIP releases.

PMI- Services vis-à-vis growth in service sector in FY14

The PMI services index has remained below 50 from July 2013 onwards. The index has fallen from 50.7 in April '13 to 48.8 in February '14. The index below 50 indicates that the services sector has witnessed negative growth based on the responses by the private companies.

Exhibit 3: PMI- Services in FY14
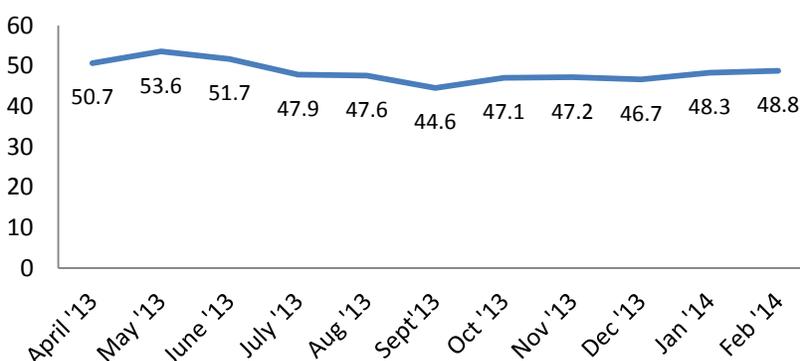
Source: Emerging Economies PMI by HSBC

However, the growth in the services sector as revealed in the quarterly estimates of GDP paint a different picture. Table below shows the movements in growth in service sectors of 'trade, hotels, transport and communication', 'financing, insurance, real estate and business services' and 'community, social and personal services'. (Data for construction has also been provided if considered as part of services).

Table 2: Services growth in FY13 and FY14 (y-o-y %)

(% growth)	FY13			FY14		
	Q1	Q2	Q3	Q1	Q2	Q3
Trade, hotels, transport and communication	4.0	5.6	5.9	3.9	4.0	4.3
Financing, insurance, real estate and business services	11.7	10.6	10.2	8.9	10.0	12.5
Community, social and personal services	7.6	7.4	4	9.4	4.2	7
Construction	**2.8**	**-1.9**	**1.0**	**2.8**	**4.3**	**0.6**

Source: MOSPI

As is evident in the table above, service sectors have registered a relatively strong performance in FY14.
- o Over the cumulative period, 'financing, insurance, real estate and business services' has grown significantly higher at 10.5% in FY14 as compared to the growth of 10.8% over the corresponding period in FY13.
- o 'Community, social and personal services' grew by 6.7% from April-December 2013 compared with the growth of 6.3% during the same time window in FY13.

The trend seen in the PMI Services index is not supported in the results of sector wise growth released in the GDP estimates.

Concluding remarks

Divergence between the PMI indices for manufacturing and services and the actual data (growth rates) released under the GDP estimates and IIP figures will continue since the nature of these indicators is different. The PMI captures in a way the level of confidence or perception based on a comparison over the immediate previous period, while growth rates are over the same period of the previous year thus adjusting to an extent the seasonal component. Each of these concepts has their own uses but the PMI may not be taken to be reflective of the growth in the concerned sector.

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