Business Data Management
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Lecture 2
Data Used for Classification – NIC, IIP and PMI

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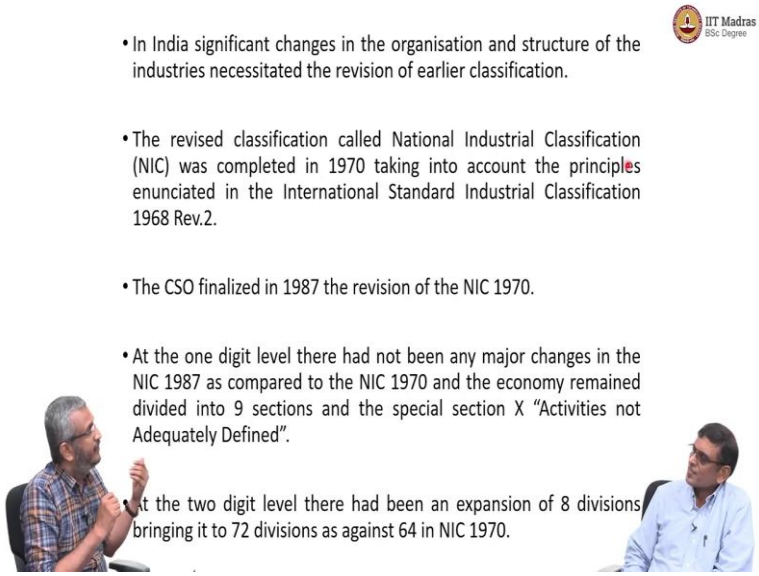

Professor M Suresh Babu: So, how is the data organized for the industries? In India, we know that the data is collected by the Central Statistical Office (CSO). Central Statistical Office collects this data and organizes it at their industry level in many terms. For example, in terms of the product classification that we have or what is the final product that is being produced. It is classified on these basis.

Professor G Venkatesh: But they will be making more than one product?

Professor M Suresh Babu: So, this data we are using is in terms of factory level information. But what you are talking is at the firm level information. A firm can have a number of factories.

Professor G Venkatesh: Okay, the classification is for the factories.

Professor M Suresh Babu: This classification uses the inspector of factories data. So, what each factory is producing? What is the product that gets produced in that factory? They collect these data and then they arrive at this factory level data for the different industries.

Professor G Venkatesh: This data is available in CSO website?

Professor M Suresh Babu: It is available in the CSOs publications and it is available as an annual publication called the annual survey of industries, ASI., which is published by the Central Ministry of Statistics and Central Statistical Organization.

Now, there is an important issue here in terms of classification of industries because over time, there will be new industries that might emerge and some old industries might actually die off.

For example, we talk about the sunrise sectors and the sunset sectors. So, constantly we need to revise this Industrial Classification. So, we have the NICs in these regards. It is known as the National Industrial Classification, where the classification is done according to the United Nations standard national accounts' statistics.

Professor G Venkatesh: How often they do this revision?

Professor M Suresh Babu: It is country specific. If they think that the country's production structure is changing, then they conduct revision. In India, the last NIC revision was done in 2008. So, we are due for a revision now. It is quite after 2008 that many changes have happened, that I will discuss in a moment.

Now, the United Nations in 1968 had a conference which emphasize the importance for comparable data across countries. Because if each of the countries organizes data in a different from, comparison cannot be done easily. So, in 1968, they came up with this idea that we should have a comparable classification and India followed that. In 1970, we came up with the first kind of NIC classification which was published by CSO.

Professor G Venkatesh: So, you explained many different ways of doing classification. So, this is which kind of classification?

Professor M Suresh Babu: This a final product based

Professor G Venkatesh: It is neither the small nor the medium? Not the large? None of those?

Professor M Suresh Babu: None of those.

Professor G Venkatesh: It is different completely

Professor M Suresh Babu: Using this data, we can actually classify according to small or medium etc.

Professor G Venkatesh: By looking at the product?

Professor M Suresh Babu: Yes.

So, after 1970, the next revision in terms of NIC took place in 1987, after 17 years. We found that, there have been some changes because a lot of new activities came during this time.

So, they classify according to 1 digit, 2 digit, 3 digit, 4 digit based classification. 4 digit is the most disaggregated kind of thing. But one digit is at an aggregate level. For example, agriculture. Now within agriculture, there could be different industry like crop etc.

Professor G Venkatesh: One digit code is the first that you will have to look at?

Professor M Suresh Babu: Yeah and the second digit is at slightly disaggregate level

Professor G Venkatesh: Lower disaggregate.

Professor M Suresh Babu: Four digit.

Professor G Venkatesh: It is like a tree.

Professor M Suresh Babu: Yes, it is like a tree and then we expand this. For example, in NIC 1970, we had only 64 industries classified. But by the time we came to NIC 87, we had 72. More and more activities came in the economy then. So, more and more new industries came and I will show you an example of the most recent addition to NIC, which is very important in the Indian context. I will come to that in a minute

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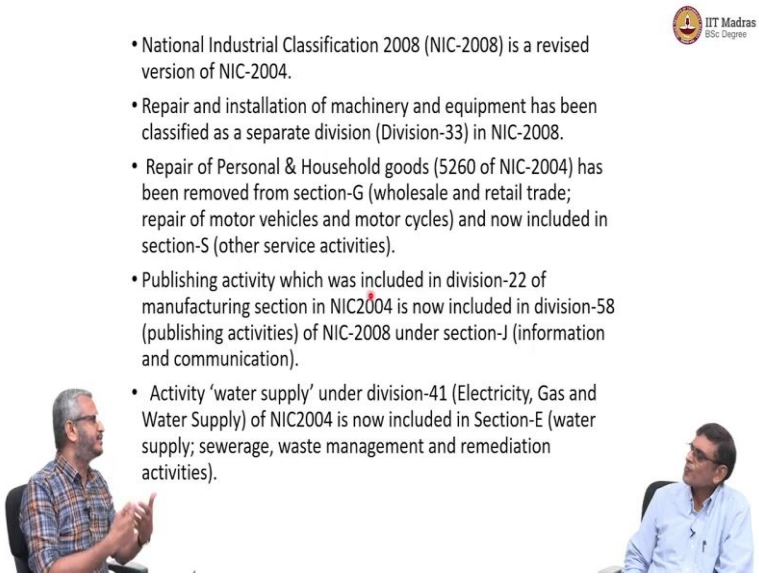

Now, 2008 is the most recent classification. In 2004, there was an attempt to revise but again 2008 is the most comprehensive revision. That is where I want to highlight about a new industry that is repair and installation.

Professor G Venkatesh: Yeah machinery and equipment. This has been introduced as a separate entity.

Professor M Suresh Babu: Yes, as a new industry. Repairs are becoming very important. Publishing as an activity became a major industry.

Professor G Venkatesh: It was not an industry earlier?

Professor M Suresh Babu: It was in printing then, now they have separated printing and publishing

Professor G Venkatesh: Separated printing and publishing.

Professor M Suresh Babu: There are various forms of publishing now. For example, online publishing. Now, it is not only printing. So, in accordance with the change in the activity, publishing now is very important. Then again in water supply and electricity industries, we find such changes. So, the point that we want to highlight here is that according to the changes that are taking place in the economic structure, NIC also gets revised and updated and the data is presented in terms of this kind of a classification.

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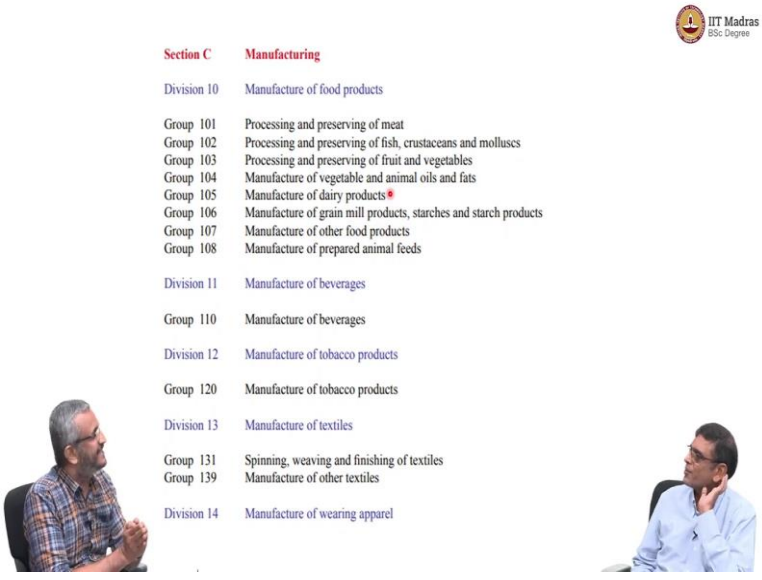

Now, let me show you an example of this. Now, I am just taking an example from manufacturing. Now 1 is for manufacturing. 10 is for manufacture of food products. Now,

within that 10, i.e., food products, there are 101, 102 etc. 101 is for meat, 102 is for fish.105 is dairy product etc. So, that is what I talked about the third digit. Further also we have four digit but I am not complicating it with a four digit classification. Just for example, within manufacturer of dairy products, we have further subdivisions, that comes down to the fourth digit code classification

So, this is how the data is organized. Next, 11 is for beverages. So, 110 becomes the category under 11. 12 is for tobacco products, 13 is for textiles and so on. So, like this there are classifications which at an aggregate level shows broad category of industry.

Professor G Venkatesh: So, how many would be there like this in 2008?

Professor M Suresh Babu: 284.

Professor G Venkatesh: 284?

Professor M Suresh Babu: 84.

Professor G Venkatesh: 84 codes are there.

Professor M Suresh Babu: At the two digit level.

Professor G Venkatesh: Yes, at the two digit level.

Professor M Suresh Babu: And then there were 272 at the previous level and then at four digit level, it just multiplies.

Professor G Venkatesh: There are even at four digits.

Professor M Suresh Babu: Yeah. But access to that data in public domain is very difficult

Professor G Venkatesh: You do not need.

Professor M Suresh Babu: Yes, at that micro level.

Professor G Venkatesh: May not need because you will eventually end up, if you put more digits. You will adapt in one company, so you would not do that.

Professor M Suresh Babu: But three digit is available.

Professor G Venkatesh: 272 is okay.

Professor M Suresh Babu: So it is an important source of data because it gives us an idea in terms of all…

Professor G Venkatesh: All the companies that are there in one industry.

Professor M Suresh Babu: All the factories.

Professor G Venkatesh: All the factories that are there producing that particular type of product.

Professor M Suresh Babu: Yeah, for example, all the factories' information in terms of dairy products is available.

Professor M Suresh Babu: Now when I talk of information, we have information in terms of number of factories.

Professor G Venkatesh: Capacity of these factories.

Professor M Suresh Babu: Fixed capital, productive capital, working capital. Then we have information in terms of number of workers. Also we have information in terms of total number of employees i.e., workers plus managers.

Professor G Venkatesh: And you will get trend charts for all this?

Professor M Suresh Babu: We get data over time like time series data.

Professor G Venkatesh: Time series data.

Professor M Suresh Babu: Yeah. Then we have information on consumption of raw materials, consumption of energy etc.

Professor G Venkatesh: So, you can fully understand that industry by looking at the data.

Professor M Suresh Babu: And then we can get gross output, value added, depreciation and interest payments and profits.

Professor G Venkatesh: So, whatever we have discussed about this industries' specific information, can be obtained from CSO annual data survey.

Professor M Suresh Babu: CSO's annual survey. So, I would say this is the most authentic and the official source of data on Indian industry.

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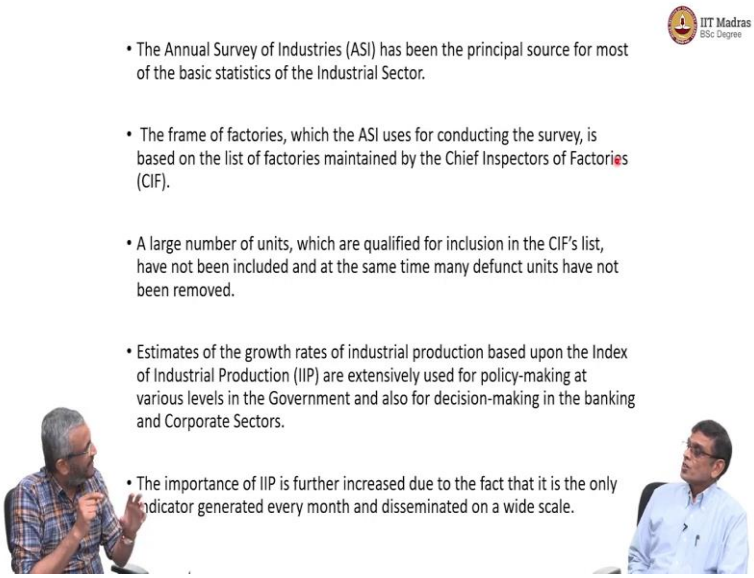

Now, but then there are some small issues that we need to keep in mind when we use this data. For example, as I keep repeating this is the principal source of data. But this data comes from the chief inspectors of factories, CIF. Now the problem is that, sometimes some of these factories would have been shut down. They may get deleted from the database of the chief inspector of factories. So, the reliability of this data needs to be looked at

Professor G Venkatesh: And also if we take 13 years to revise it, the above problem will arise. We should do it at a higher frequency.

Professor M Suresh Babu: So, that is why now we have come up with this data set called MCA (Ministry of Corporate Affairs), MCA 21, which is supposed to be a little cleaner version of the data with the chief inspector of factories and the idea is to have a frequent updating of this available factories. Now, the problem with this data is that there is a time delay. The most recent annual survey of industries that is available now is for 2018.

Professor G Venkatesh: Oh there is? But it doesn't provide full coverage.

Professor M Suresh Babu: It is not an exhaustive data but the summary results is available. For 2017, we have the full data, but now we are in 2021. So, we can always do a kind of a post mortem analysis only. If we want to look at the current scenario, instead of this annual survey of industries, we can look at the index of industrial production data. Index of industrial production is basically a kind of a quantity index which is in terms of physical production. It is not a value index

Professor G Venkatesh: Quantity.

Professor M Suresh Babu: It is a quantity index. Now the good thing about index of industrial production data is that we get it monthly and we get it annually.

Professor G Venkatesh: And this data also can be found at the same site? Central Statistical Office? So, monthly data on a production of every type of product and like every NIC classified coded!

Professor M Suresh Babu: Now, I will show you their classification. There is a slight difference.

Professor G Venkatesh: Slight difference.

Professor M Suresh Babu: But it is important to understand that classification.

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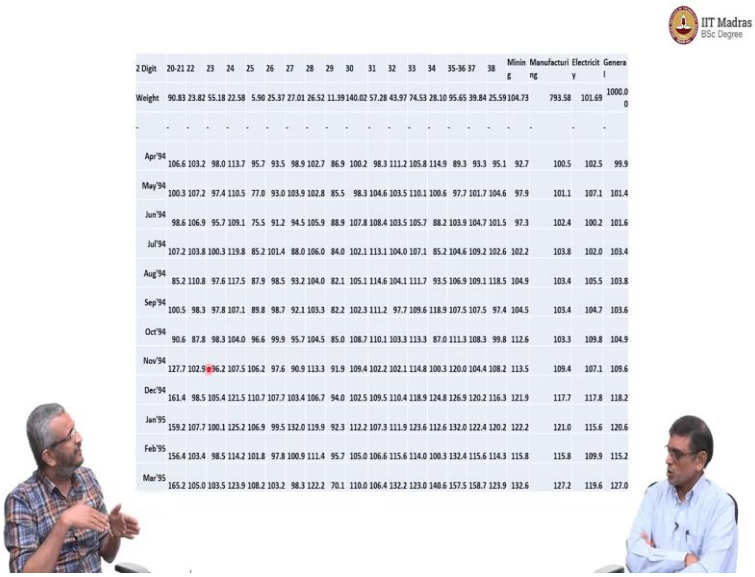

This is a two digit example. We have three digit also. But for the sake of simplicity I took two digit based example. This is a two digit index of industrial production data. You get it at an aggregate level. Then you get for electricity, manufacturing and mining. Manufacturing generally accounts for 79 to 80 percent of general index of industrial products. And mining and electricity is also important, but the dominant component is manufacturing. Now, within that every industry…..

Professor G Venkatesh: This is 1 something, 1.

Professor M Suresh Babu: This is 20, 21 22, 23 and all these are industry codes. Industry codes with the ASI data, which is similar to the NIC classification. Then weights of each of this in the total is given, so it is an index, it is a weighted index.

Professor G Venkatesh: Weighted index.

Professor M Suresh Babu: And then we get it for…

Professor G Venkatesh: The weight is determined on the basis of the value.

Professor M Suresh Babu: Importance of that sector in the economy.

Professor G Venkatesh: So, from the value we get it's weight.

Professor M Suresh Babu: And they keep revising that. Then we get the data monthly. April, May, June, July, October, I have just put one year's data.

Professor G Venkatesh: So, you can see, there is variation. So, you can see the seasonal variation.

Professor M Suresh Babu: Seasonality.

Professor G Venkatesh: Seasonality you can see.

Professor M Suresh Babu: We talked about demand. First cut indicator of reflection of that demand is with IIP data.

Professor G Venkatesh: But, now when you look at the production data.

Professor M Suresh Babu: Yeah, production data.

Professor G Venkatesh: Everything produced more or less is consumed, some might be in inventory.

Professor M Suresh Babu: But generally, we assume that.

Professor G Venkatesh: But generally, we assume that over period of time it will get consumed.

Professor M Suresh Babu: It should get consumed, otherwise, inventories get piled up.

So, 1. We can look at the seasonality in terms of production and 2. We can have some projects.

Professor G Venkatesh: This is quite a lot of data. So, you have every category that is two digit code, meaning each of them moderately aggregated. You are saying you can see this monthly. The amount of goods produced all over India every month. Incredible. So, I think the students should go look at this.

Professor M Suresh Babu: Look at this data. You can look at the seasonality, the variations for example in festive season what is happening

Professor G Venkatesh: Of course there will be a lead time. For October we will produce in March or April.

Professor M Suresh Babu: Yeah but generally we find that there is a seasonality into the production also

Professor G Venkatesh: In the production?

Professor M Suresh Babu: Because

Professor G Venkatesh: During holidays labour will go away etc.

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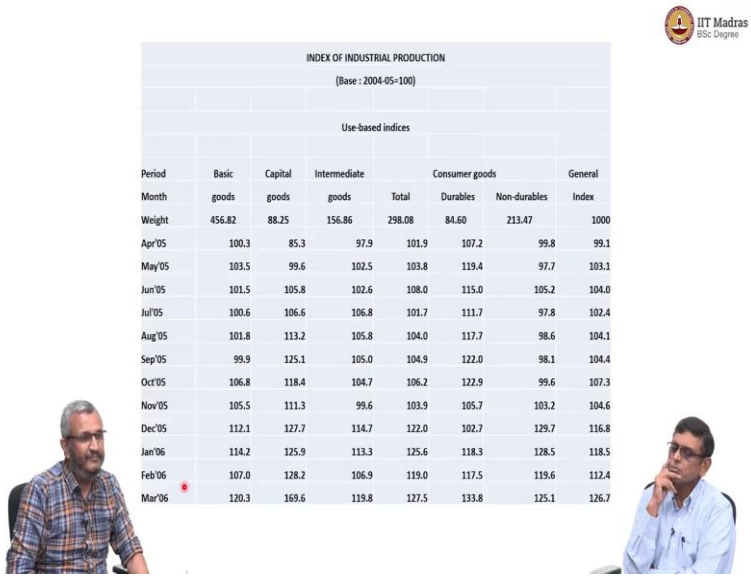

Period	Basic	Capital	Intermediate	Consumer goods			General
Month	goods	goods	goods	Total	Durables	Non-durables	Index
Weight	456.82	88.25	156.86	298.08	84.60	213.47	1000
Apr'05	100.3	85.3	97.9	101.9	107.2	99.8	99.1
May'05	103.5	99.6	102.5	103.8	119.4	97.7	103.1
Jun'05	101.5	105.8	102.6	108.0	115.0	105.2	104.0
Jul'05	100.6	106.6	106.8	101.7	111.7	97.8	102.4
Aug'05	101.8	113.2	105.8	104.0	117.7	98.6	104.1
Sep'05	99.9	125.1	105.0	104.9	122.0	98.1	104.4
Oct'05	106.8	118.4	104.7	106.2	122.9	99.6	107.3
Nov'05	105.5	111.3	99.6	103.9	105.7	103.2	104.6
Dec'05	112.1	127.7	114.7	122.0	102.7	129.7	116.8
Jan'06	114.2	125.9	113.3	125.6	118.3	128.5	118.5
Feb'06	107.0	128.2	106.9	119.0	117.5	119.6	112.4
Mar'06	120.3	169.6	119.8	127.5	133.8	125.1	126.7

Professor M Suresh Babu: Now, the good thing about this data is that it is also classified in what is known as the use based classification. When we talk about use based classification, it is in terms of basic goods, capital goods, intermediate goods. You also have it in terms of consumer goods, like durables and non-durables. Also, then you have a general index. So, the point that we want to emphasize to the students is that we can do different types of analysis with this data.

Professor G Venkatesh: So, to remind about basic goods, an example can be steel. Here very low value addition happens because there is just one process and capital goods can be about making machinery.

Professor M Suresh Babu: Making machinery, textile etc. Next, intermediate goods.

Professor G Venkatesh: Like tires.

Professor M Suresh Babu: Yes, Tires, cement…

Professor G Venkatesh: Cement?

Professor M Suresh Babu: It is an intermediate good

Then we have a total. Also, we have consumer goods like durables and non-durables.

Professor G Venkatesh: Durable like washing machine and non-durable would be…

Professor M Suresh Babu: Our high frequency consumption, FMCG.

Professor G Venkatesh: FMCG.

Professor M Suresh Babu: So, you get data on this. Now, the importance of this data is that you can actually decipher the kind of demand in an economy from this. For example, when there is a new Pay Commission award that is coming, we find that there is an increase in purchase of consumer durables

Professor G Venkatesh: So, people in anticipation, will start producing more.

Professor M Suresh Babu: Yes, they will also start producing more.

Professor G Venkatesh: Build more capacity or something alike.

Professor M Suresh Babu: So, the macro picture can be analysed using this data and the good thing about this data is that you get it monthly and you have two different classifications.

Professor G Venkatesh: Is all of the data fully accessible? It's not like, we need to have a log in or give money or anything? Anybody can get it?

Professor M Suresh Babu: Yes. You can access these data on Ministry of Statistics and Program Implementation Website, So, this is the second index. So, first is the annual survey of industries, second is the index of industrial production.

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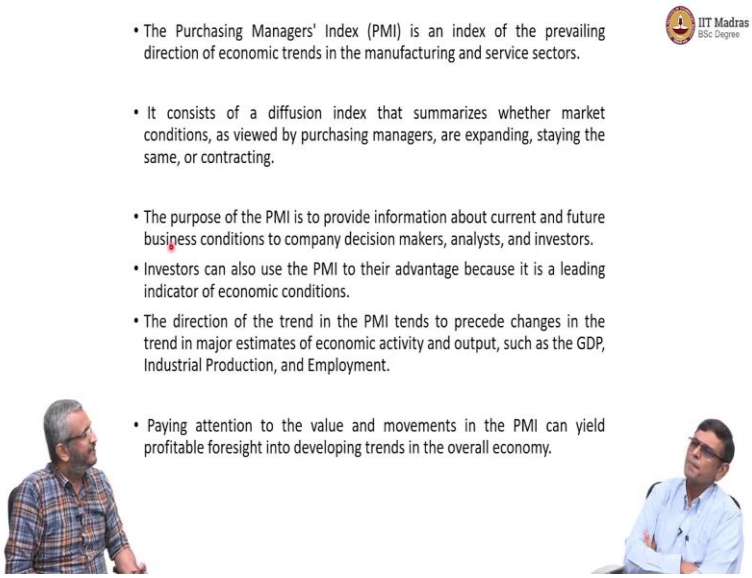

INDEX OF INDUSTRIAL PRODUCTION

(Base : 2004-05=100)

Use-based indices

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Jul'05	100.6	106.6	106.8	101.7	111.7	97.8	102.4
Aug'05	101.8	113.2	105.8	104.0	117.7	98.6	104.1
Sep'05	99.9	125.1	105.0	104.9	122.0	98.1	104.4
Oct'05	106.8	118.4	104.7	106.2	122.9	99.6	107.3
Nov'05	105.5	111.3	99.6	103.9	105.7	103.2	104.6
Dec'05	112.1	127.7	114.7	122.0	102.7	129.7	116.8
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Mar'06	120.3	169.6	119.8	127.5	133.8	125.1	126.7

Now, in the third data, what I want to highlight is a recent kind of thing. Here, there is a lag when we talk about the index of industrial production. Because April's thing will come only in May and sometimes there could be a delay. But we want to know the current situation in terms of industries or industrial sector. So, we use what is known as a Purchasing Managers Index, PMI.

Professor G Venkatesh: Purchasing managers.

Professor M Suresh Babu: Purchasing Managers index is a kind of broad sentiment of the industry. It is a diffusion index that summarizes whether market conditions, as viewed by the purchasing managers, are expanding, contracting or staying.

Professor G Venkatesh: It’s an intent. They are not actually talking about what happened, they are saying I am likely to buy something.

Professor M Suresh Babu: It is a kind of an impressionistic kind of a thing of the managers.

Professor G Venkatesh: They are saying what am I going to buy? This is what I am going to buy.

Professor M Suresh Babu: A perception to some extent.

Professor G Venkatesh: Which does production.

Professor M Suresh Babu: And we find that this actually tallies with the rest of the indicators in the economy. That is why this has become very popular now. Here the purpose is to provide the information about current and future business conditions. How decision makers are viewing the state of the economy, decision maker for a firm that is how the purchase managers are viewing it.

Professor G Venkatesh: So, who creates this PMI? I mean government?

Professor G Venkatesh: It is a purely private. There is an organization, IHS market, which publishes this. There are other organizations who publishes different kinds of purchase managers index. For example, HSBC

Professor G Venkatesh: They will go around and sample. They make sure that they cover all the NIC codes, mainly two digit codes.

Professor M Suresh Babu: And the big firms.

Professor G Venkatesh: And the big firms?

Professor M Suresh Babu: To get a kind of a dipstick of the sentimental.

Professor G Venkatesh: Sentimental.

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Professor M Suresh Babu: Now the PMI has got five broad indicators that are used. They look at the new orders, are you getting new orders? What is your inventory level? What is your production at this point, supply deliveries and employment environment? So, this is also a comprehensive data in a way.

Professor G Venkatesh: And all of that is put together with PMI index.

Professor M Suresh Babu: All of that is summarized in PMI index.

Professor G Venkatesh: And you will get the individual component data also?

Professor M Suresh Babu: Individual component data is there. But, as a lot of private kind of agencies collect this data, they generally give the aggregate index.

Professor G Venkatesh: You have to buy the rest of the thing.

Professor M Suresh Babu: Rest of the thing is not accessible. But the most important component of this data is the new orders.

Professor G Venkatesh: Yes, the new orders.

Professor M Suresh Babu: Are you getting new orders? Which means that what is the sentiment now? Is there an uptick in activity and what are your inventory levels? So, this then broadly gives us an idea of industry performance. Now, let me quickly summarize.

Professor G Venkatesh: And they put this thing in some 50 or 50 above or 50 below? It is 0 to 100?

Professor M Suresh Babu: It is a scale in terms of all this, there are 5 components into this. So, each one out of a score of 10. Above 10 if you have then you our market is looking quite good, below 10 means it is not.

Professor G Venkatesh: So, 10 * 5 is 50. That is how you get 50.

Professor M Suresh Babu: Yes. So, generally if you are at 51, 52 or above, we think there is a uptick.

Professor G Venkatesh: And 45 means it is bad.

Professor M Suresh Babu: Yes, then someone is pulling it down.

So, to summarize this industry analysis, industry analysis is very important because that gives us a macro picture in terms of a sector within an economy. Now, the data is the important thing here, because definition of industry is very important.

How you define industry can also influence your outcomes as well as the results. So, we look at the data sources. But prior to that, we need to have an idea in terms of the classification of industries. That is what we did in terms of knowing what the definitions are, looking at the data sources and the official sources. There are two official sources, the annual survey of industries using the NIC codes and the IIP data. The annual survey of industries using the NIC codes is..

Professor G Venkatesh: Which is infrequent.

Professor M Suresh Babu: Which is infrequent, but very comprehensive.

Professor G Venkatesh: Very comprehensive.

Professor M Suresh Babu: And we have even micro level factory level there.

Professor G Venkatesh: Which covers everybody?

Professor M Suresh Babu: Covers everybody.

Professor G Venkatesh: It is a survey, it covers everybody. It is a census, whereas the industrial production IIP data is sampled.

Professor G Venkatesh: IIP is sampled, but it is more frequent.

Professor G Venkatesh: More frequent.

Professor M Suresh Babu: Now, we want to…

Professor G Venkatesh: Because they actually have it monthly.

Professor M Suresh Babu: Yes, we have it monthly. Now, the important thing is that you might sometimes get a kind of a diverging trends when we look at both of these, the one might go, the other might come down to anything that is because the coverage is different, the time period is different and the source is entirely different and to supplement all this, there is also private kind of information available.

Professor G Venkatesh: Private sector, PMI.

Professor M Suresh Babu: That is an example. Now, this is something which we would urge our students to look into it and do industry level analysis. For example, projecting industrial growth. Now, that is an important aspect of our decision making. Now, if you want to see whether the entire growth of an economy is really moving from one stage to another stage, manufacturing plays an important role. Within manufacturing…

Professor G Venkatesh: Which sector is contributing?

Professor M Suresh Babu: Yes. We can identify it. Is it the basic industries? Is it the consumer durables? So, generally there is a feeling that if it is driven mostly by consumer durables, then it is what we call as a shallow kind of growth and if it is driven by capital goods, then it is more structural kind of a growth.

So, that will be one of our assignments to students to go and look at this data and see the industrial performance. Now, from here, we will look at using this industry level data for two things; 1. Can we have an idea of market structure? 2. Using this industry level data, can we develop some firm strategies? Because…

Professor G Venkatesh: Positioning, how do I position myself?

Professor M Suresh Babu: Yes, how do we position a firm within the industry itself?

Professor G Venkatesh: So that you choose your industry you want to be in.

Professor M Suresh Babu: Industry to be in.

Professor G Venkatesh: And then in the industry, you have got to position yourself correctly.

Professor M Suresh Babu: So, that I think is very important component in terms of industry level analysis.