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COVID IS THE SIGNIFICANT STRUCTURAL BREAK: INPUT-OUTPUT DECOMPOSITION ANALYSIS

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ABSTRACT: Here, I am finding out the structural break through Structural Decomposition Method of the Input-Output Analysis.

KEYWORDS: Structural Break, Structural Decomposition, Input-Output Analysis.

Input Output Methodology has been used to analyze the decomposition of structural change from a particular period to another period. The relevant formula is given below (Sinha, 2015, Sinha 2019).

$\Delta X = V_1(I-A_1)^{-1}\Delta F + \Delta\{V(I-A)^{-1}\}F_0 = ISR1.\Delta F + \Delta ISR.F_0$ .....(1)

This method decomposes the Value Added to two effects, (i) Final Demand Effect and (ii) Input Structure and Reallocation Effect (simultaneous effect because as value added is identically equal to (1-input sum of a particular industry), hence, infinitesimal change in input structure will bring corresponding change in the value added per unit). However, the demerit of this method is that if any structural break or recession comes in between periods 0 and period 1, then this decomposition method fails to explain it. So, to analyze recessionary effect, the period 1 must end to a recession by this method.

I have found an advancement over this decomposition method that, if coupled with this broad decomposition analysis, will be able to find out any structural break or recessionary effect through decomposition analysis. The idea is to perform the decomposition analysis for each particular year to find out the year of structural break or recessionary outlier.

We have done this structural decomposition analysis, for the Indian economy, taking the input structure matrix of 2007-08 as given (in India, the problem is that since 1968-69, every five years, Input-Output Transaction Table had been published by the Ministry of Statistics and Programme Implementation up to 2007-08 and thereafter there is no official Input-Output Table. So, the first problem is that there is no regular yearly published Input-Output Transaction Table (IOTT) and the second problem is that we are not obtaining the publication of Input-Output Transaction Tables since 2007-08). In this scenario, taking 2007-08 input structure matrix and value added matrix as fixed, we have done the decomposition solely based upon the change in the final demand structure for each pair of consecutive years since 2004-05.

We have found the year 2020-21 as the most significant structural break (through sectoral decomposition as well as by the aggregate decomposition) by our structural break methodology. 2020-21 is the year of COVID. As has been opined by the Human Development Report, COVID is the "the worst economic fallout since the Great Depression" (2020

HUMAN DEVELOPMENT PERSPECTIVES COVID-19 AND HUMAN DEVELOPMENT: Assessing the Crisis, Envisioning the Recovery; http://hdr.undp.org). So, our methodology correctly identifies the structural break and provides economic justification of that structural break. The general endogenous structural break methodologies suffer from the limitation that they are often unable to provide economic reasoning and interpretation of the structural break. Our method is above such limitation.

Thus, Structural Decomposition for a long period, say, from 1973-74 to 2023-24 cannot provide the recessionary fluctuation unless and until 2023-24 is itself a recessionary year (do it by yourself). Analysis has already been done in Sinha 2015 and Sinha 2019. However, if the Structural Break Decomposition is taken into account, then we can find out the recessionary outliers. Table-1 tells the story. Decomposition analysis is showing that during 2020-21, Productive Services (S1) has been worstly hit (-503825 Rs. Crores) and then the Industrial Sector (-275999 Rs. Crores). Aggregate decline is (-546175 Rs. Crores) because even during this period Agriculture has provided significant positive contribution (+222490 Rs. Crores).

References:

2020 HUMAN DEVELOPMENT PERSPECTIVES COVID-19 AND HUMAN DEVELOPMENT: Assessing the Crisis, Envisioning the Recovery; http://hdr.undp.org

Bhagwati, J. (1984), Splintering and disembodiment of Services and Developing Nations, World Economy, 7, 133-43.

Central Statistical Organisation(1981), Input-Output Transaction Tables,1973-74, 1993-94, 2006-07, 2007-08, CSO, Government of India, New Delhi.

Kuznets. S (1971), Economic Growth of Nations: Total Output and Production Structure, Harvard University Press. Kuznets. S (1966), Modern Economic Growth: Rate, Structure and Spreads', Yale University Press.

Sinha, A. (2014), 'Goods Versus Services Production In The Indian Economy: Projections for 2020', Ph.D Thesis awarded in March, 2014 in the Department of Economics, University of Kalyani, Kalyani, West Bengal, India.

Sinha, A. (2015), 'India's Services Revolution Amidst Worldwide Structural Change', Journal of Quantitative Economics 13(2),253-284, e-ISSN: 2364-1045; print-ISSN: 0971-1554.

Sinha, A. (2019), 'Ahistorical Services Led Growth of India': An Unsolved Question', pp: 710-728; Journal of Emerging Technologies and Innovative Research.

TABLE 1: AGGREGATE STRUCTURAL DECOMPOSITION ANALYSIS TO FIND OUT THE STRUCTURAL BREAK

year	Δ2021-22	Δ2020-21	Δ2019-20	Δ2018-19	Δ2017-18	Δ2016-17	Δ2015-16	Δ2014-15	Δ2013-14	Δ2012-13	Δ2011-12	Δ2010-11	Δ2009-10	Δ2008-09	Δ2007-08	Δ2006-07	Δ2005-06
A	277798	222490	377756	186451	311164	291129	133921	167240	251265	173160	202063	233876	140130	105346	105353	75191	72353
I	175627.2	-275999	-62543	454063	431756	330859	318060	257318	267477	288370	289326	364385	264386	203082	198006	243136	141685
S1	394322.4	-503825	653345	736609	555541	529942	449707	1411917	340508	421821	-238848	390063	236767	254611	217596	217251	163988
S2	220385.8	11159	331571	278425	242004	238770	168531	21369	230354	189162	148109	120440	160785	119611	64339	42402	44590
Agg. Decomposition	1068133.4	-546175	1300129	1655548	1540465	1390700	1070219	1857844	1089604	1072513	400650	1108764	802068	682650	585294	577980	422616

Source: Own Calculations based upon Input-Output Matrix 2007-08 and Component-wise GDP of RBI DATABASE (2020-21)