

# A Note on the Use-Classification of Four Digit Industries or How to Call a Spade a Spade

by

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Much of our understanding of structural change with industrialization is based on empirical studies that describe patterns in the relationship between consumption, intermediate and capital goods [1; 2, for instance]. Thus, classification of an industry's output, prices, imports or exports by *use* is of primary importance.

Even if the data available describe individual products, there is some ambiguity in use classification—safety razor blades (metal products) are clearly consumption goods but sewing machines (nonelectric machinery) are consumption goods if owned by housewives and capital goods if owned by tailors. Far more serious problems, however, arise when large industry sectors, like whole four digit industries, must be classified by use. If there is no basis for dividing any industry's output (or prices or imports or exports) among its alternative uses, then the entire industry must be classified as a single lump in one of the three use categories on the basis of some judgment— even if heroic—or else such aggregation by use must be abandoned.

But *ad hoc* classifications that lump entire four-digit industries under one or another heading are not appropriate if there exists a reasonable basis for dividing each industry's output among uses. Then, instead of assigning all metal products to capital goods (as did Chenery) it is possible to assign some portion to consumption goods (representing razor blades, *et al*), some to intermediate goods (rivets) and some to capital goods (spades).

To represent a step in the right direction, any system of division need only improve on the whole-industry classification. Such a system obviously can be based on the allocations of output shown in a country input-output table if changes over the period of the data in an industry's allocation are deemed to introduce a less serious error than that of whole-industry classification.

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To illustrate this sort of industry classification and to show what it means in a study of structural change, we have used industry allocation from the Tims-Stern Table for Pakistan (1963/64) [3] to recompute two columns of Lewis and Soligo's study of Pakistan's industrial structure—the columns that show growth of gross output by four-digit industry between 1954/55 (averaged) and 1963/64 (fiscal) [2, Table A-4, p. 126]. Against Lewis and Soligo's growth rates, Table I reveals a lower rate for intermediate goods and a higher rate for consumption goods.

While Table I is self-explanatory, it is worth noting the contradictions in classification in cases like wood and furniture or chemicals and pharmaceuticals. Of course, one can argue with the input-output assignments of an industry's output (the high consumption of jute textiles) even while accepting this as a better approximation of what the use-categories are intended to describe.

TABLE I  
A WEIGHTED USE-CLASSIFICATION OF INDUSTRY OUTPUT

Industry (1)	Lewis and Soligo			Our division		
	Weight* (2)	Output at factor cost		Weight* (5)	Output at factor cost	
		1954/55 (3)	1963/64 (4)		1954/55 (6)	1963/64 (7)
<b>A. Consumption Goods</b>						
Sugar	1	97,576	383,835	1.000	97,576	383,835
Edible oils	1	92,175	574,294	0.813	74,938	466,901
Tea	1	132,415	183,351	1.000	132,415	183,351
Food	1	19,447	64,260	1.000	19,447	64,260
Beverages	1	17,938	26,055	1.000	17,938	26,055
Tobacco	1	72,639	404,422	1.000	72,639	404,422
Cotton & other textiles	1	631,721	2,010,320	0.873	551,492	1,755,009
Jute textile	0	—	—	0.768	64,297	397,727
Silk & Artsilk	1	35,256	105,509	1.000	35,256	105,509
Footwear	1	40,200	84,220	1.000	40,200	84,220
Wood and furniture	1	3,291	20,010	0.278	915	5,563
Paper	0	—	—	0.087	2,654	13,810
Printing and publishing	1	37,164	119,160	1.000	37,164	119,160
Leather	0	—	—	0.850	31,468	161,441
Rubber and other goods	0	—	—	0.745	9,888	31,487
Soaps	1	23,750	110,671	1.000	23,750	110,671
Matches	1	27,683	47,490	1.000	27,683	47,490
Chemicals & pharmaceuticals	0	—	—	0.720	26,122	188,402
Petroleum	0	—	—	0.830	59,719	185,098

(contd.)

TABLE I (Contd.)

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Industry (1)	Lewis and Soligo			Our division		
	Weight* (2)	Output at factor cost		Weight* (5)	Output at factor cost	
		1954/55 (3)	1963/64 (4)		1954/55 (6)	1963/64 (7)
Non-metallic minerals	0	—	—	0.091	5,824	22,788
Basic metal industry	0	—	—	0.086	4,356	35,107
Metal	0	—	—	0.454	24,650	132,532
Electrical machinery	0	—	—	0.251	3,177	45,295
Transport	0	—	—	0.409	7,629	84,964
Miscellaneous	1	19,014	138,310	1.000	19,014	138,310
<b>Total</b>		<b>1,250,269</b>	<b>4,271,907</b>		<b>1,390,158</b>	<b>5,193,115</b>
<b>Growth</b>			<b>242%</b>			<b>274%</b>

## B. Intermediate Goods

Edible oils	0	—	—	0.187	17,237	107,393
Cotton textiles	0	—	—	0.127	80,230	255,311
Jute textiles	1	83,720	517,874	0.232	19,423	120,147
Wood and furniture	0	—	—	0.494	1,626	9,885
Paper	1	30,503	158,730	0.788	24,036	125,079
Leather	1	37,021	189,930	0.150	5,553	28,490
Rubber	1	13,273	42,265	0.255	3,385	10,778
Fertilizer	1	2,848	80,569	1.000	2,848	80,569
Chemicals & pharmaceuticals	1	36,280	261,670	0.280	10,158	73,268
Petroleum	1	71,951	223,010	0.170	12,232	37,912
Non-metallic minerals	0	—	—	0.062	3,968	15,526
Basic metal industry	0	—	—	0.147	7,446	60,008
Metal products	0	—	—	0.158	8,579	46,123
Electrical machinery	0	—	—	0.028	354	5,053
Transport	0	—	—	0.053	989	11,010
<b>Total</b>		<b>275,596</b>	<b>1,474,048</b>		<b>198,066</b>	<b>986,572</b>
<b>Growth</b>			<b>435%</b>			<b>398%</b>

(contd.)

TABLE I (Contd.)  
A WEIGHTED USE-CLASSIFICATION OF INDUSTRY OUTPUT

Industry (1)	Lewis and Soligo			Our division		
	Weight* (2)	Output at factor cost		Weight* (5)	Output at factor cost	
		1954/55 (3)	1963/64 (4)		1954/55 (6)	1963/64 (7)
<b>C. Capital Goods</b>						
Wood and furniture	0	—	—	0.228	750	4,562
Paper	0	—	—	0.125	3,813	19,841
Non-metallic minerals	1	64,000	250,420	0.847	54,208	212,106
Basic metal industry	1	50,656	408,220	0.767	38,853	313,105
Metal products	1	54,297	291,920	0.388	21,067	113,265
Machinery non-electric.	1	16,959	165,660	1.000	16,959	165,660
Electrical machinery	1	12,657	180,460	0.721	9,126	130,112
Transport	1	18,653	207,737	0.538	10,035	111,763
Total		217,222	1,504,417		154,734	1,069,982
Growth			593%			591%

\* Weights were computed as proportion of total *supply* allocated to each category except: a) that where less than 2 per cent fell outside the principle category, the refinement was ignored and b) that intermediate deliveries to construction were counted as deliveries to the capital goods category since Lewis and Soligo dealt only with manufacturing industry.

In addition to these two—the gross whole-industry classification used by Lewis and Soligo and the weighted classification we have used—a third alternative exists in the whole-industry classification used by Chenery [3]. This differs from Lewis and Soligo in that it classifies textiles as intermediate goods. Since Pakistan's cotton textile industry was, in 1954/55, larger *by itself* than all other consumption goods included in the Lewis and Soligo study and larger than all capital *and* intermediate goods combined, this is not an insignificant difference in classification.

In Table II the different descriptions of the composition of industrial structure which emerge from the three classifications are shown. It appears on *a priori* grounds that treating cotton textiles as intermediate goods (Chenery) yields a rather suspicious structure of output. Both our classification system and that of Lewis and Soligo yield similar and seemingly more reasonable pictures of the

structure of output — both in terms of composition and trend. There are, however, two differences worth noting: first, our classification yields a less radical shift in production structure during the 1954/55 to 1963/64 period; second, with regard to relative proportions, our classification indicates that the economy in 1963/64 was in roughly the position which Lewis and Soligo argue it was starting from in 1954/55.

Even if these differences were not significant, the basic virtue of this method would not be mitigated. The input-output based classification system has a better conceptual basis than those systems previously used. It allows us to call a spade a spade, and the results which it yields will, therefore, give a better picture of industrial structure.

**TABLE II**  
**THE STRUCTURE OF INDUSTRIAL OUTPUT**

Sector	1954/55	1959/60	1963/64
<b>A: Lewis-Soligo Data, Our Classification</b>			
Consumption goods	79.8%	76.0%	71.6%
Intermediate goods	11.4%	13.0%	13.4%
Capital goods	8.9%	11.0%	14.8%
<b>B: Lewis-Soligo Data, Lewis-Soligo Classification</b>			
Consumption goods	71.7%	62.5%	58.9%
Intermediate goods	15.8%	21.6%	20.3%
Capital goods	12.5%	15.9%	20.7%
<b>C: Lewis-Soligo Data, Chenery Classification</b>			
Consumption goods	33.5%	26.7%	29.7%
Intermediate goods	54.1%	57.4%	49.5%
Capital goods	12.4%	15.9%	20.7%

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3. Pakistan, Planning Commission, *The Methodology of Estimating Import Requirements*. (Karachi: Planning Commission, March 1965).