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Should Transaction Costs be Subtracted from Gross National Product?

JOHN JOSEPH WALLIS AND DOUGLASS C. NORTH

In the early 1950s Simon Kuznets questioned whether many types of service income in developed countries were misclassified as final income when they were, in fact, a type of intermediate product.[1] Several years ago, we began an investigation into the size of the transaction sector in the American economy to ascertain whether transaction costs were inappropriately classified as final product and should, therefore, be excluded from national income. When we found the transaction sector had grown from 25 percent of GNP in 1870 to 45 percent of GNP in 1970 the potential miscounting loomed larger than we expected. Our critics and commentators have suggested the Kuznetsian adjustment as the natural next step.[2]

Somewhat to our surprise, given the magnitude of the transaction sector estimates, we have since found that almost the entire transaction sector is already treated appropriately in the national accounts. The calculations are of interest in themselves, in terms of the composition of the transaction sector, and as empirical evidence for central hypotheses in the works of Oliver Williamson and Alfred D. Chandler.

Table 1 presents the results of our earlier study. We measured the transaction sector by taking all the resources used in the "transaction industries" (wholesale and retail trade; and finance, insurance and real estate, FIRE) and adding wages paid employees in transaction-related occupations in all other industries, the "non-transaction" industries. These occupations encompass managers, supervisors, clerical workers, and employees in purchasing and marketing departments. Similar occupational classifications were used to calculate the size of the transaction sector within government. We found that 45 percent of the increase in the size of the transaction sector between 1870 and 1970 was due to increases in transaction services produced by transaction industries and sold in the market, 37 percent was due to transaction services produced and consumed within firms in non-transaction industries, while the remaining 8 percent was due to growth in government transaction services.

Almost all growth in the transaction sector can be attributed to the private sector,

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[1] "First such activities as beyond any doubt represent payments by consumers that are nothing but occupational facilities should be excluded from the estimates for both types of country. Clear examples are commutation to and from work, and payments to unions and employment agencies; but one might add almost the entire gamut of what the Department of Commerce classifies as business services. . . . Second, where in industrial societies the costs of consumer services are inflated by the difficulties of urban life, some revelation of these services by comparison with their costs in rural communities is in order. . . . Finally, it seems indispensable to include in national income only such governmental activities as can be classified as direct services to consumers. Simon Kuznets, "National Income and Industrial Structure," *Proceedings of the International Statistical Conference* (Washington, D.C., 1947), p. 219.

[2] John Joseph Wallis and Douglass C. North, "Measuring the Transaction Sector in the American Economy, 1870 to 1970," in Stanley L. Engerman and Robert E. Gallman, eds., *Long Term Trends in the American Economy* (Chicago, 1986), pp. 95–148. See also Lance Davis's comment on our paper in that volume and William Parker's review "Old Themes and New Techniques," this JOURNAL, 48 (June 1988), pp. 428–435.

TABLE 1
TRANSACTION COMPONENTS AS A PERCENTAGE OF GNP, 1870–1970

	Non-transaction Industries (1)	Transaction Industries		Government (4)	Total (5)
		Trade (2)	FIRE (3)		
1870	2.16%	16.14%	4.19%	1.70%	24.19%
1880	2.50	18.02	4.75	1.70	26.97
1890	4.18	18.07	6.87	1.70	30.82
1900	3.32	19.15	7.96	1.71	32.14
1910	4.32	19.07	8.12	1.93	33.44
1920	7.25	19.57	8.28	2.07	37.17
1930	6.84	18.74	12.61	2.62	40.81
1940	6.67	20.54	9.88	4.83	41.92
1950	7.98	21.87	10.45	4.33	44.63
1960	9.52	21.18	10.61	4.05	45.36
1970	10.40	18.25	12.15	5.86	46.66
	Percentage of Total Transaction Sector				
1870	8.93%	66.72%	17.32%	7.03%	100.00%
1880	9.27	66.81	17.61	6.30	100.00
1890	13.56	58.63	22.29	5.52	100.00
1900	10.33	59.58	24.77	5.32	100.00
1910	12.92	57.03	24.28	5.77	100.00
1920	19.50	52.65	22.28	5.57	100.00
1930	16.76	45.92	30.90	6.42	100.00
1940	15.91	49.00	23.57	11.52	100.00
1950	17.88	49.00	23.41	9.70	100.00
1960	20.99	46.69	23.39	8.93	100.00
1970	22.29	39.11	26.04	12.56	100.00

Source: John Joseph Wallis and Douglass C. North, "Measuring the Transaction Sector in the American Economy: 1870–1970," in Stanley L. Engerman and Robert E. Gallman, eds., *Long Term Trends in the American Economy* (Chicago, 1986), tables 3.13 and 3.A.12.

roughly half to growth in transaction industries and half to growth of transaction services within firms in non-transaction industries. The rate of growth in the transaction sector was much more rapid within firms in the non-transaction industries, which grew from 2 to 10 percent of GNP over the century. Within the transaction industries growth was dominated by finance, insurance, and real estate (FIRE), net of housing, which grew from 4 to 12 percent of GNP over those years.

The numbers in Table 1 suggest a rather large portion of GNP may be miscounted, if the transaction sector is inappropriately treated as final product in the accounts. Column 1 of Table 2 gives the level of GNP in 1870 and 1970 (in 1958 prices) and the annual growth rate in GNP between those dates. As is shown in column 2, simply subtracting out the total transaction sector from GNP—reducing GNP by the percentages in column 5 of Table 1—results in substantially lower GNP levels in both years and reduces the annual growth rate over the period from 3.50 percent to 3.18 percent.

But such a simple adjustment is unwarranted. Kuznets's concern was with intermediate goods mistakenly classified as final goods. Most transaction services included in the transaction sector measurement are already treated as intermediate goods. All of the transaction services produced within the non-transaction industries and the government transaction sector are intermediate goods (payments to labor), and a sizable percentage of the output of trade and FIRE is sold to other industries not final consumers. In 1970,

TABLE 2
GNP ESTIMATES AND ANNUAL GROWTH RATES WITH ADJUSTMENTS, 1870–1970
(GNP in billions of dollars, 1958 = 100)

	Total GNP (1)	Excluding Transaction Sector (2)	Excluding Final Goods Transaction Sector (3)	Excluding Final Goods in FIRE (4)
1870	$23.1	$17.3	$20.3	$22.7
1970	$722.5	$397.4	$592.5	$687.1
Annual growth rate	3.50%	3.18%	3.43%	3.47%

Notes: Column 2: GNP minus total transaction sector, Table 1, column (5). Column 3: GNP minus cost of final goods in Trade and FIRE. Column 4: GNP minus cost of final goods in FIRE. FIRE = finance, insurance, and real estate sectors. Annual Growth Rate, r, calculated from $GNP_{1970} = GNP_{1870}e^{rn}$.
Source: U.S. Department of Commerce, *Historical Statistics of the United States* (Washington, D.C., 1975), series F-3, p. 224.

40 percent of output in trade and FIRE was in intermediate goods, and should not, therefore, be excluded from an adjusted GNP measure.[3] If we assume that a similar 40 percent of output in the transaction industries was intermediate product in 1870, net out intermediate goods from the transaction sector in both years, and reduce GNP by the total of final goods produced in trade and FIRE generates the adjusted figures shown in column 3 of the table.[4] The adjustment reduces GNP by only those components of the transaction sector that are treated as final product. The level of GNP falls considerably in both years, but growth rates fall by only 0.07 percentage points, from 3.50 percent to 3.43 percent.

Most of the adjustment shown in column 3 is due to final goods produced within the trade industry, which made up 67 percent of the transaction sector in 1870 and a third in 1970. It is clear that the distinction made by Kuznets between final and intermediate product does not apply to trade. Indeed Kuznets explicitly treated wholesale and retail distribution margins as final product. Eliminating trade from the calculation altogether leaves only the growth in final goods produced by FIRE to be subtracted from GNP. These adjusted GNP levels are shown in column 4 of Table 2 and are very close to their unadjusted levels; the growth rate differs by only 0.03 percentage points.

Concern about inappropriately treating transaction costs as final goods appears unfounded, but not because transaction costs are small, indeed they account for almost

[3] In our earlier estimates the total output (intermediate and final product) of the transaction industries was included in the transaction sector, since the transaction services produced in the non-transaction industries were attributed only to labor employed in those industries (i.e., intermediate inputs purchased from the transaction industries were attributed to the transaction industries in our estimates in Table 1).

The 40 percent figure was derived by taking total industry output for wholesale and retail trade, finance and insurance, and real estate from the input-output tables for 1972 from U.S. Department of Commerce, *Survey of Current Business*, 59 (Apr. 1979), pp. 67–68; and deducting from that gross housing output from U.S. Department of Commerce, *National Income and Product Accounts of the United States, 1929–1976* (Washington, D.C., 1981). The estimate for total non-rental industry output was $376,351 million. Intermediate products from those industries totaled $150,075 million (*Survey of Current Business*, p. 68) or 39.88 percent of total industry output.

[4] Assuming that 40 percent of output in trade and FIRE in 1870 was intermediate product is problematic, but there is no obvious way to generate an estimate. Substantially different assumptions, however, (say 20 or 60 percent) would not change the conclusion of this note.

half of GNP in 1970. Rather, most transaction costs are incurred in the exchange of intermediate products. Transactions between firms are as important as transactions between firms and final consumers. In 1970, 60 percent of the output in trade and FIRE was final product, representing exchange between firms and final consumers, and if we assume that 20 percent of the transaction sector within firms represents exchange between firms and final consumers, then roughly 44 percent of the transaction sector is devoted to facilitating exchange between firms and final consumers and 56 percent to facilitating exchange between firms.[5] Tracing that logic through the figures in Table 1 indicates that the portion of the transaction sector devoted to facilitating exchanges between and within firms has grown significantly over the last century, and grown more rapidly than the resources devoted to facilitating exchange between firms and final consumers.

The fact that growth of the transaction sector is due primarily to an expansion of intermediate transaction services belies a common but erroneous perception among economists and economic historians that transaction costs do not produce a corollary benefit. Or, as William Parker put it, they are "*waste*—sheer, reckless, glorious spendthrift waste."[6]

Rational, calculating, profit-maximizing firms incur the majority of the costs in inter- and intra-firm exchange. The finding supports, in a clear quantitative manner, the contentions of Williamson and Chandler that coordinating and monitoring costly inter-firm transactions and controlling the intra-firm processes of production are important tasks in the modern economy.[7] Our aggregate results do not show whether these costs are more important in large or small firms, or in firms and industries that grow more rapidly than the rest of the economy, but the method we have developed for measuring transaction costs holds out the possibility of addressing these kinds of issues.

[5] From the bottom panel of Table 1 we can see that in 1970 the transaction industries make up 65 percent of the transaction sector and that the non-transaction industries make up 22 percent. Assuming that 60 percent of the output from transaction industries is final product and that 20 percent of the output from non-transaction industries is distributed directly to consumers, and that government distributed no goods to consumers we get: $(.65 \times 0.6) + (.22 \times 0.2) = .434$. The 20 percent figure comes from Barger, who estimates that 20 percent of all commodities were distributed directly by firms to consumers in 1948. Harold Barger, *Distribution's Place in the American Economy since 1869* (Princeton, 1955), p. 22.

[6] Parker, "Old Themes and New Techniques," p. 433.

[7] Oliver Williamson, *The Economic Institutions of Capitalism* (New York, 1986); and Alfred D. Chandler, Jr., *The Visible Hand* (Cambridge, 1977).