

BARGER'S REVISED QUARTERLY NIPA DATA: 1921-41

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Abstract

The goal of this paper is to make revised quarterly National Income and Product Account (NIPA) data 1921-1941 compiled by Professor Harold Barger of Columbia University available as part of history and to share this information with other researchers who believe the interwar period may contain lessons for today. His nominal quarterly GNP data are in the same format as Table 43 of the 1947 National Income Supplement to the Survey of Current Business (8) which has quarterly data 1939-1946. His national income results match Table 47 in the 1947 report with a similar 1939-41 overlap. He also calculated GNP in real terms using 1939 prices.

Balke and Gordon (1) developed quarterly real and nominal GNP data in 1986 but for C+I+G+X-M only, not national income. Essentially their series are backward extensions of Tables 1.1 and 1.2 of the National Income & Product Accounts of the U. S. 1929-76 Statistical Tables (10). Their 1929-41 quarterly numbers were generated by interpolating the annual figures from the 1976 tables with industrial production and a few other series (5), while Barger used data from the 1947 Supplement.

It might be suspected that the 1976 tables reporting 1929-41 would be superior to those of 1947 but the GNP correlation (percent change basis) from the two sources is .99889 with a t-statistic of 105.03. Both Balke-Gordon and Barger base their results on Department of Commerce data when possible. Another statistical test using quarterly 1939-41 data from the 1954 National Income Supplement (8) shows that Barger's quarterly figures are significantly closer to Commerce than are those of Balke-Gordon.

To summarize, Barger provides income data 1921-41 not previously available along with some more details about government spending. Regarding GNP expenditures it is suspected that the best of Balke-Gordon and the best of Barger could lead to a series better than either alone. To that end the Barger data is presented in the appendix for future research.

The data were given to Carlson in 1974 for thesis research (3). Professor Barger had just one request, that if the tables were published that he be recognized as the author. Due to a lack of interest nothing was done with the data until now.

PART 1: Background

THE NEED FOR QUARTERLY DATA. Sponsored by the National Bureau of Economic Research (NBER) Professor Harold Barger of Columbia University published "Outlay and Income in the United States 1921-1938", Studies in Income and Wealth, Volume 4 in 1942 (2). It was the first effort to develop comprehensive data on a quarterly basis. Quoting from his Preface, "This volume is intended primarily as a contribution to materials for the study of business cycles. But (there is) a well known difficulty. Statistics of national income and of other measures of the national product are

rarely available in any other form than annual totals. Now, from the standpoint of business cycle studies annual totals have at best a strictly limited usefulness. Much happens within 12 months. Parts of the same calendar year may belong to two, or even more, entirely different phases of the business cycle. When annual figures are used - - - cyclical turning points are sometimes obliterated, amplitudes diminished, durations disturbed, and patterns transformed.”

Some notable examples are the 4th quarter of 1930 when GNP dropped 8%, the recession of 1937-8 which began in mid 1937 and bottomed in mid 1938, the short then longer recessions of 1980 and 1918-2, the veterans bonus of mid 1936 which could have been a temporary stimulus like that of 2008.

In March 1943 the Department of Commerce published its first quarterly data (for 1939-42) in the Survey of Current Business in nearly modern NIPA format. In the July 1947 National Income Supplement to the Survey of Current Business revised quarterly nominal GNP series were published in Table 43 and national income in Table 47 in modern format. Table 42 presents non-seasonally adjusted GNP and components which means implied seasonal factors can be found. However, Commerce did not adjust for inflation.

INFLATION ADJUSTED DATA. In his 1941 study for the NBER Kuznets (7) compiled annual inflation adjusted data for 1919-35. In the January 1951 issue of the Survey of Current Business Jaszi and Kendrick presented the first modern estimates of GNP in constant dollars (1939 base) but only on an annual basis. The first quarterly inflation adjusted figures from the Department of Commerce (1Q50-3Q58) appeared in the December 1958 Survey of Current Business in the article “Real National Output By Quarters – A New Major Economic Indicator” by Grose, Bassett, Bernhard, Rosenthal, and Wasson. The reason for the development was, “Quarterly estimates of GNP have had top place among the suggestions for additional information which users of national income and product data have made to OBE during the past few years. OBE’s experience in this regard was corroborated by the National Accounts Review Committee which at the request of the Bureau of the Budget reported last year on the status of the National Economic Accounts of the U. S. A canvass of user opinion made by this committee gave first priority to quarterly estimates of real GNP, and the committee itself took a similar view of the importance of these figures.”

By compiling inflation adjusted figures quarterly 1921-41, Barger was ahead of his time. An additional feature of having real figures is that dividing nominal figures by their real counterparts yields a set of implicit price deflators. These series allow additional investigations of inflation and deflation.

DATA SOURCES. There was a close working relationship between the NBER and the Department of Commerce at the time of Barger’s 1942 project. Simon Kuznets worked at both Commerce and the NBER and much of Barger’s data came from him (6,7). Members of the executive committee of the NBER Conference on National Income and Wealth overseeing Barger’s work included Kuznets, Milton Friedman, Milton Gilbert, A. G. Hart, O. C. Stine among others. Gilbert was a co-author of the March 1943 Survey of Current Business article with the first quarterly series of GNP, and

producer of the 1947 Supplement (8). See (2) for complete references regarding Barger's sources of data.

REVISION AND EXTENSION OF BARGER'S ORIGINAL DATA. Barger's 1942 results were not in modern NIPA format. The following exhibit shows the difference between Outlays (Barger 1942 format) and GNP (Commerce 1947 format and Barger's revised data).

OUTLAY (tables 9-11)	Table 43 (1947 Supplement)
Outlay	GNP
Consumption	Consumption
Perishable	Durables
Semi-durable & Durable	Non durable
Services	Services
Investment	Investment
Construction	Construction
Durables	Durables
Change in inventory	Change in inventory
Foreign Balance	Net Foreign Investment
Government	Government Spending Goods and Services
Federal Deficit	Federal
State & Local Deficit	State and Local
Change in gold balance	
Change in silver balance	

The relation of GNP, national income and personal income is in Table 47 of the 1947 Supplement. Barger's revised equivalent is almost the same but lacks the business transfer item which fortunately is nearly trivial.

COMPARING BARGER DATA WITH THAT OF BALKE-GORDON

Balke and Gordon (1) have generated quarterly C+I+G+X-M + GNP figures both real and nominal for 1919-1941, seasonally adjusted at annual rates (saar). Essentially their data are a backwards extension (1942-6 excepted) of Tables 1.1 and 1.2 in the National Income & Product Accounts of the U. S. 1929-76 Statistical Tables.

Barger's data covers 1921-41 quarterly C+I+G+X-M = GNP real and nominal and also the income (wages, rent, interest, taxes, etc.) method of estimating GNP as well. His nominal series are backwards extensions of Table 43 (C+I+G) and Table 47 (national income) in the National Income Supplement to the Survey of Current Business, July 1947, also saar. Barger's real GNP and components (1939 prices) were new at the time, Commerce did not develop quarterly real series until the December 1958 issue of the Survey of Current Business and then only for 1Q50 to 3Q58. An advantage of Barger is that his data can be deseasonalized since seasonal factors are given in his original work: Outlay and Income in the U. S. 1921-38 (2). There have been criticisms of the accuracy of seasonal adjustments and some researchers prefer to use NSA data. Barger's

government spending series (state and local, federal; and structures, non-structures) are more detailed than that of B&G who simply report one number for G. Barger also has transfers and other items from the national income method whereas B&G did not develop income statistics.

Developing Quarterly Data 1929-1941. Balke and Gordon use the 1976 annual GNP = C+I+G+X-M figures as a base and get quarterly estimates with Chow – Lin interpolations of industrial production and subcomponents, department store sales, construction and construction contract indexes (BG, p328-35, 842). Barger linked his series to the 1947 Supplement Tables 43 (C+I+G method) and 47 (income method). A question is whether the 1976 data are a significant improvement over the 1947 data. The following table shows GNP 1929-41 from current BEA figures (NIPA Table 1.7.5) and the National Income Supplements of 1982, 1976, 1954, and 1947 along with percent changes.

Year 2009 1982 1976 1954 1947

1941	127.16	125.5	125.04	125.82	125.294
1940	101.71	100.4	100.02	100.62	100.477
1939	92.54	91.3	90.93	91.10	90.426
1938	86.51	85.4	65.01	85.23	84.683
1937	92.23	91.3	90.88	90.78	90.213
1936	84.03	83.1	82.74	82.74	82.445
1935	73.64	72.8	72.49	72.50	72.193
1934	66.26	65.6	65.29	64.98	64.868
1933	56.70	56.0	55.82	55.96	55.670
1932	59.09	58.5	58.28	58.47	58.340
1931	77.00	76.4	76.07	76.27	75.930
1930	91.92	91.1	90.70	91.10	90.857
1929	104.37	103.9	103.42	104.44	103.828

Percent Changes:

1941	25.02%	25.00%	25.01%	25.04%	24.69%
1940	9.91	9.97	10.00	10.45	11.11
1939	6.97	6.91	6.96	6.89	6.79
1938	-6.20	-6.46	-6.46	-6.11	-6.13
1937	9.76	9.87	9.84	9.72	9.41
1936	14.11	14.15	14.14	14.12	14.21
1935	11.14	10.98	11.03	11.57	11.28
1934	16.86	17.14	16.97	16.11	16.34
1933	-4.04	-4.27	-4.22	-4.29	-4.42
1932	-23.26	-23.43	-23.39	-23.34	-23.17
1931	-16.23	-16.14	-16.13	-16.28	-16.43
1930	-11.93	-12.32	-12.30	-12.77	-12.48

The series are very similar. In particular the 1947 series (used by Barger) and 1976 (used by B&G) have a correlation of .99986, t-statistic 197.48, with the p-value virtually zero. The correlation for % changes is .99889, t-statistic 105.03, p-value 1.11 e-16. There is no penalty for using 1947 data rather than 1976.

Both Barger and B&G deferred to Commerce data when possible. All three of these sources compiled quarterly results for 1939-1941. The following table contains the B&G results interpolated from 1976 Table 1, Commerce numbers from the 1954 National Income Supplement (9), and Barger's figures. It should be noted that quarterly tables published after 1954 only go back to 1947. All figures are seasonally adjusted.

	B&G	1954	Barger
1Q39	88.59	88.8	87.34
2Q39	86.76	89.1	88.43
3Q39	90.37	92.6	91.26
4Q39	98.15	93.9	94.77
1Q40	96.49	97.3	97.68
2Q40	96.82	98.5	98.18
3Q40	100.92*	101.7	100.76
4Q40	100.92*	104.9	105.27
1Q41	110.65	112.5	112.31
2Q41	120.35	122.8	120.41
3Q41	131.40	129.3	129.71
4Q41	138.80	138.7	138.59

*double checked

Percent Changes:

2Q39	-2.065%	0.338%	1.248%
3Q39	4.161	3.928	3.200
4Q39	8.609	1.404	3.848
1Q40	-2.710	3.621	3.071
2Q40	1.393	1.233	0.512
3Q40	4.235	3.249	2.628
4Q40	0.000	3.147	4.476
1Q41	9.641	7.245	6.688
2Q41	8.766	9.156	7.212
3Q41	9.182	5.293	7.724
4Q41	5.632	7.270	6.846

Many regressions are run on first differences so comparisons are made with the % change table. Assuming that the Commerce numbers are the best available the correlation of B&G with Commerce 1954 is .60628 with a t-statistic of 2.2871 and p-value of .02400. Barger's correlation is .86155 with a t-statistic of 5.0912 and p-value of

.000326. This does not necessarily mean that all of Barger's numbers are better than that of Balke and Gordon. But it does indicate that Barger's data may be of value regarding the C+I+G approach to GNP measurement as well as presenting the income approach not done by Balke and Gordon. And to the extent that there are problems with seasonal adjustments, Barger's seasonal adjustments can be undone.

1919-1928. The basic source of annual data is the summary 1909-1928 GNP Table 1.29 in the 1976 Statistical Tables (10). To get their quarterly data for components Balke and Gordon used annual data from Swanson and Williamson (11) who put data from Kuznets into modern format. Balke-Gordon then generated quarterly series by interpolating with various series (5). Barger used Kuznets also without (11) as an intermediary, nor the use of Table 1.29. However, Barger did gather data for the income approach which was not done by Balke-Gordon.

Future Revisions. With new data and more modern analytical techniques old data series may be improved. In (1) Barger notes several problems, particularly with inventories. It is possible that new series could be compiled consisting of the best of Balke-Gordon, the best of Barger, and more efficient use of existing and new raw data series.

RESULTS. Appendix Table ! contains Barger's backward extension to 1921 of nominal GNP linked to Table 43 in the 1947 National Income Supplement.

Appendix 2 contains quarterly real GNP and components adjusted to 1938 prices.

Appendix 3 contains the National Income backward extension to Table 47 in the 1947 Supplement (4 has the adjustment to the statistical discrepancy 1921-28).

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FOOTNOTES.

Appendix 1: Nominal GNP and Components. The quarterly numbers for 1942 taken from the 1947 National Income Supplement to the Survey of Current Business are in SAAR format (seasonally adjusted at annual rates) whereas Barger presents quarterly totals seasonally adjusted. A note on the 1936-8 original page reads, "Data for 1931-41 are from "National Income Supplement" to Survey of Current Business July 1947 Table 43 page 49. Millions of current dollars seasonally adjusted." The most recent figures for 1939-41 are in the 1954 National Income Supplement (courtesy of the library of the Federal Reserve Bank of St. Louis).

Appendix 2: Real GNP and Components in 1939 Dollars. There is no extension to 1942 because there are no Department of Commerce quarterly inflation adjusted figures for 1942 (nor 1943-46). Adjusted for trend in the statistical discrepancy. See Appendix 4 for the 1921-28 adjustment.

Appendix 3: Nominal GNP, National Income, and Personal Income. These nominal series link to Table 47 page 51 in the 1947 Supplement with an overlap of 1939-41. Barger does not have the Business Transfers item present in the Commerce format. Otherwise the items basically are the same. A note from Barger, "1921-28 data here are before adjustment of consumption to absorb linear trend in statistical discrepancy."

Appendix 4: 1921-28 with Linear Adjustment to Statistical Discrepancy.

These Appendices are available from the authors: Lackman@duq.edu

