

SEASONAL ADJUSTMENT OF BANKING STATISTICS

London clearing banks

The monthly figures of the London clearing banks' deposits and advances are subject to large seasonal influences. The most important of these is the payment of tax to the Exchequer, a large part of which is concentrated in the first quarter of the calendar year and puts the Exchequer into surplus in this period. Two other examples are the harvest, which is preceded by greater need for finance by farmers and followed by repayment of this finance; and the heavy retail sales which take place before Christmas, with a consequent reduction in stocks and in retailers' need for finance.

These seasonal movements in banking figures, which are quite separate from long-term trends or from sporadic influences, can differ from year to year, both in their size and in their exact timing. This is because the seasonal influences in the economy themselves vary for a number of reasons; for example, the scale of the seasonal movement caused by the Budget varies from year to year with the structure of the Budget as a whole. Nevertheless, the pattern in the banks' figures each year is sufficiently similar to justify the assumption that something like it could reasonably be expected to recur in the current year. If an approximate allowance is made for this pattern, the interpretation of changes in current banking figures becomes much easier.

Method of calculating seasonal adjustments In calculating seasonal adjustments, steady and systematic changes in the seasonal pattern can be taken into account, but not a sudden change of pattern. We are simply comparing the present with the 'average' of what has happened at the same time over the

past few years. There is no unique method of finding this average. A number of methods have been suggested; the choice depends on the way the underlying forces are considered to affect the figures.

The method which has come to be most generally used in the analysis of movements in economic and financial series is the empirical one commonly known as 'ratio to moving average', where an average is taken of monthly deviations from the trend, as measured by a moving average. Those irregular movements which are not specifically taken out of the data beforehand are assumed to be ironed out in the process of averaging the monthly deviations. The Bank of England have hitherto used this method to adjust the clearing banks' figures; and the results have been mentioned, from time to time, in general terms in the Commentary in this *Bulletin*. Thanks to the co-operation of the Central Statistical Office, the Bank have recently been able to derive seasonal movements in several series of banking figures with the aid of the War Office computer, using a modification of the Census Method II developed at the United States Bureau of the Census. This is essentially an elaborate and iterative form of the ratio to moving average method based on information over five or more years, and it has been extensively applied to economic series (exports, imports, retail sales, etc.) over the past few years.^(a)

Use of seasonally-adjusted figures The difference between a change in the current figures and the average change, as a result of seasonal influences, in the same month of past years, is the seasonally-adjusted change. This

^(a) A detailed description of the method is given in Occasional Paper No. 57 (Electronic Computers and Business Indicators, by Julius Shiskin) published in 1957 by the National Bureau of Economic Research, New York.

difference must result from one or more of three causes. Either the current figures have a seasonal movement greater or smaller than usual, or the difference is due to a long-term trend, or it is due to other factors—unpredictable so far as past information goes—the effects of which are collectively referred to as ‘irregular movements’.

Beyond this, seasonal adjustment cannot go, and further explanation of the difference, *i.e.*, of the change in the seasonally-adjusted figures, must be sought by specific study of what is happening in the economy. For example, in the first quarter of the year the extent to which payments of taxes out of bank deposits are larger or smaller than usual is reflected in the seasonally-adjusted change in deposits. This change itself must then be interpreted in the light of current conditions, such as the different size of the Exchequer surplus as compared with previous years; any change in the way in which tax payments are being financed, perhaps by greater reliance on overdrafts or on sales of government debt instead of drawing on bank deposits; and any other factors, such as official sales of government debt, which may be affecting bank deposits at that particular time.

Although seasonal adjustment by Census Method II has given results which are a decided improvement on the more elementary methods it retains several shortcomings. For example, it does not cope satisfactorily with sharp changes of trend such as occurred in the clearing banks’ advances after July 1961. This difficulty could be overcome by processing separately the figures before and after the change of trend; but enough mid-monthly figures are not yet available for the clearing banks for this to be done. Neither can a satisfactory allowance be made for movable holidays such as Easter, which may sometimes fall close to the clearing banks’ make-up date,

or for the varying incidence of four and five-week periods between make-up dates—a factor which is particularly important in the first quarter of the year when large tax transfers are made to the Exchequer each week. For these reasons the seasonal movements, and consequently the seasonally-adjusted series, must be treated with discretion, particularly for a single month.

More elaborate computer programmes, either for the present or for different methods of calculation, will doubtless in time enable more refined seasonal adjustments to be produced. In the meantime it is worth showing some of the results which now provide the background to the commentary on banking statistics given in this *Bulletin*.

London clearing banks’ net deposits and advances The following tables show the monthly changes in the original figures of the London clearing banks’ net deposits and advances for the period from 1959 to March 1963, the seasonal variations calculated by the computer, and the changes in the seasonally-adjusted series.

It should be noted that the seasonal variation (as computed) for any month may not always be the same throughout the years, partly because of the considerable rise in deposits and advances during these years and partly because, over the course of a number of years, there can be a marked change in the regular seasonal pattern. It should perhaps again be emphasised that the adjusted changes for any single month should be treated with discretion, and particularly those for advances in the latest months shown—when the sharp increases may have led to undue weight being given to the seasonal variations calculated, and shown in the table, for these months.

LONDON CLEARING BANKS' NET DEPOSITS

Changes from make-up date in previous month

£ millions

	Original figures					Seasonal variations					Seasonally-adjusted figures				
	1959	1960	1961	1962	1963	1959	1960	1961	1962	1963	1959	1960	1961	1962	1963
January ...	+ 23	+ 66	+114 ^(a)	+121	+129	+ 65	+ 79	+ 97	+108	+115	-42	-13	+ 17 ^(a)	+13	+14
February ...	-260	-246	-169	-201	-205	-228	-231	-218	-211	-216	-32	-15	+ 49	+10	+11
March ...	- 8	-134	- 63	- 10	+ 11	- 88	- 91	- 73	- 44	- 15	+80	-43	+ 10	+34	+26
April ...	+ 32	+ 56	+145	- 6		+ 23	+ 35	+ 29	+ 9		+ 9	+21	+116	-15	
May ...	- 50	+ 1	- 28	+ 16		- 38	- 21	- 10	- 2		-12	+22	- 18	+18	
June ...	+130	+ 46	+ 99	+132		+ 90	+ 85	+ 91	+ 99		+40	-39	+ 8	+33	
July ...	+137	+ 86	+ 61	+ 50		+ 89	+ 76	+ 58	+ 42		+48	+10	+ 3	+ 8	
August ...	+ 24	- 13	- 90	- 20		- 27	- 33	- 43	- 49		+51	+20	- 47	+29	
September ...	+ 70	+ 28	- 15	+ 47		+ 26	+ 18	+ 11	+ 9		+44	+10	- 26	+38	
October ...	+145	+ 28	+ 37	+ 87		+ 54	+ 55	+ 54	+ 53		+91	-27	- 17	+34	
November ...	- 31	- 75	- 45	- 13		- 38	- 49	- 50	- 48		+ 7	-26	+ 5	+35	
December ...	+103	+ 32	+ 32	+ 31		+ 60	+ 43	+ 30	+ 22		+43	-11	+ 2	+ 9	

LONDON CLEARING BANKS' ADVANCES AND OTHER ACCOUNTS^(b)

Changes from make-up date in previous month

£ millions

	Original figures					Seasonal variations					Seasonally-adjusted figures				
	1959	1960	1961	1962	1963	1959	1960	1961	1962	1963	1959	1960	1961	1962	1963
January ...	+ 73	+61	+ 38 ^(a)	+30	+ 45	+11	+20	+28	+32	+35	+62	+41	+10 ^(a)	- 2	+10
February ...	+ 90	+95	+ 35 ^(c)	+93	+165	+33	+47	+64	+80	+99	+57	+48	-29 ^(c)	+13	+66
March ...	+107	+64	+ 60	+46	+117	+32	+34	+37	+47	+72	+75	+30	+23	- 1	+45
April ...	+ 48	+83	+ 67	+ 3		+ 8	+15	+11	- 7		+40	+68	+56	+10	
May ...	+ 55	+42	+ 25	- 3		- 1	- 2	- 5	- 8		+56	+44	+30	+ 5	
June ...	+ 38	+12	+ 52	+54		-20	-12	+ 6	+18		+58	+24	+46	+36	
July ...	+ 72	+92	+ 42	+46		+27	+34	+33	+27		+45	+58	+ 9	+19	
August ...	+ 43	-35	-107	- 9		-33	-49	-60	-59		+76	+14	-47	+50	
September ...	+ 30	+ 7	-115	-28		-33	-51	-66	-74		+63	+58	-49	+46	
October ...	+ 66	+25	- 70 ^(d)	+41		- 7	- 7	- 7	-10		+73	+32	-63 ^(d)	+51	
November ...	+ 42	- 5	- 28	+12		-15	-26	-33	-38		+57	+21	+ 5	+50	
December ...	+ 29	+ 5	- 17	+10		-24	-23	-22	-24		+53	+28	+ 5	+34	

^(a) Reflecting the exclusion of Lloyds Bank's Eastern branches after December 1960.

^(b) Excluding items in transit and advances to the nationalised industries.

^(c) Reflecting the exclusion of re-financeable export credits due for repayment within eighteen months which, from February 1961, were transferred from Advances and other accounts to Liquid assets.

^(d) Reflecting the exclusion of certain assets, totalling 40, transferred from Advances and other accounts to Money at call and short notice.