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June 25, 1976

Sampling Procedures and Coverage
Survey of Terms of Bank Lending

Report to the Committee on Agriculture and Rural Development

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Board of Governors

To initiate the process of selecting the sample for the proposed Survey of Terms of Bank Lending, all member banks and state nonmember banks on the FRS par list (structure class code under 22) were ranked in descending order of their outstanding volume of commercial and industrial loans (business loans) as of June 30, 1974. The top 50 banks in this list were selected with certainty and comprise stratum 1. The remaining banks were divided into five additional strata (2 through 6), with stratum boundaries chosen to equalize approximately the variances of business loan volume among strata. With the same variance in each stratum, samples of equal size from each stratum are equally efficient. Plans called for selecting a sample of 60 banks from each of these five strata, which together with the 50 banks in stratum 1 would result in a total sample size of 350 banks.

The survey will ask for information on non-real-estate loans to farmers (farm loans) as well as on business loans. After the initial stratification described above, it was observed that the banks in strata 5 and 6 held only 17 per cent of national business loan volume, but 73 per cent of national farm loan volume. Therefore, these two strata were restructured to take advantage of this opportunity to give more emphasis to farm loan volume in the selection of the sample. The banks in these two strata were combined, ranked in descending order of their outstanding

farm loan volume, and then re-divided into two strata (5 and 6) containing approximately equal total farm loan volume.

Next, strata 2 through 6 were each divided into 10 zones containing equal numbers of banks. At the time of this division into zones, the banks remained ranked by business loan volume (strata 2 through 4) or farm loan volume (strata 5 and 6). Thus, for the intended purposes of the survey, the banks within each zone were more homogenous than were all banks in the stratum. The sample would therefore be further improved by this additional stratification. To comprise the survey sample, six banks were randomly selected from each zone, yielding a sample of 60 banks from each of the five strata.

To facilitate the computation of variances of survey data, subsamples were identified during the selection process. The first bank selected from each zone of each stratum was identified as a member of subsample 1, the second bank selected as a member of subsample 2, and so forth. Thus six subsamples were identified, with each subsample containing 50 banks. The basic Central Limit Theorem states that when samples of the same size are drawn from a large population, the means of data from such samples tend to be normally distributed. Thus the variance of the means of subsample estimates will be useful in computing the reliability of survey data.

Table 1 shows loan data for the population of banks from which the sample was drawn, classified by the six survey strata. The boundaries of each stratum are specified in the stub of the table.

Tables 2 through 5 compare selected data (number of banks, total assets, business loans, and farm loans) for the banks in the sample with similar data for all insured commercial banks in the United States. The respective tables show these data classified by Federal Reserve District, state, deposit size of bank, and farm loan ratio of bank.

The sampling procedures reported herein were devised and implemented by Irving Gedanken, Senior Statistician, Board of Governors. His cooperation in supplying information for the text and for Table 1 of this report is gratefully acknowledged.

Table 1

Loan volume by STBL strata
 (Member banks and state nonmember banks on FRS par list)
 Data as of June 30, 1974.

Stratum	Number of banks	Loan volume (millions of dollars)			
		Total		Largest at individual bank	
		Business	Farm non-real-estate	Business	Farm non-real-estate
All banks.....	14,040	175,046	18,346	9,330	789
Survey stratum:					
Business loans at bank					
(thousands of dollars):					
1. 464,579 and over.....	50	90,144	2,266	9,330	789
2. 140,074 to 464,578.....	100	25,035	818	464	215
3. 54,006 to 140,073.....	180	15,103	875	139	100
4. 18,278 to 54,005.....	490	14,867	989	54	56
Under 18,278:					
Farm non-real-estate					
loans at bank					
(thousand of dollars):					
5. 2,443 and over.....	1,520	4,555	6,872	18	28
6. Under 2,443.....	11,700	25,342	6,526	18	2

Table 2

Relative coverage of the STBL sample, by Federal Reserve District

Data as of June 30, 1974

Federal Reserve District	Number of banks		Sample banks as percentage of all banks			
	Total	Sample	Number	Assets	Business	Farm non-real
					loans :	estate loans
United States	14,108	350	2.5	51.0	64.7	17.9
1 Boston	372	20	5.4	52.7	61.9	19.0
2 New York	432	36	8.3	80.8	87.5	52.2
3 Philadelphia	411	12	2.9	42.8	57.0	8.1
4 Cleveland	768	26	3.4	48.2	63.7	5.7
5 Richmond	772	19	2.5	33.9	42.5	10.2
6 Atlanta	1,898	30	1.6	19.1	27.3	2.5
7 Chicago	2,642	68	2.6	43.6	62.6	9.9
8 St. Louis	1,409	24	1.7	25.9	43.5	3.5
9 Minneapolis	1,388	14	1.0	20.1	36.1	2.4
10 Kansas City	2,150	35	1.6	18.9	22.9	8.6
11 Dallas	1,439	35	2.4	34.0	41.2	8.5
12 San Francisco	427	31	7.3	75.7	80.6	68.5

Table 3

Relative coverage of the STBL sample by State

Data as of June 30, 1974

State	Number of banks		Sample banks as percentage of all banks			
	Total	Sample	Number	Assets	Business loans	Farm non-real estate loans
United States	14,108	350	2.5	51.0	64.7	17.9
Alabama	292	2	.7	13.0	14.4	.1
Alaska	10	0	--	--	--	--
Arizona	16	2	12.5	5.3	6.9	1.1
Arkansas	256	3	1.2	7.3	7.4	1.2
California	182	15	8.2	86.8	89.1	94.8
Colorado	259	7	2.7	33.6	34.1	24.6
Connecticut	70	2	2.9	40.3	45.8	47.7
Delaware	17	1	5.9	17.9	30.0	8.6
District of Columbia	16	4	25.0	72.7	65.6	--
Florida	686	10	1.5	4.8	7.9	1.5
Georgia	439	6	1.4	44.3	57.5	2.7
Hawaii	8	3	37.5	46.3	52.4	44.3
Idaho	23	1	4.3	12.6	19.3	7.3
Illinois	1,175	22	1.9	52.0	74.1	20.1
Indiana	407	6	1.5	22.8	30.5	2.1
Iowa	659	17	2.6	3.2	3.1	4.1
Kansas	613	5	.8	1.0	.7	2.3
Kentucky	341	6	1.8	28.8	41.2	5.5
Louisiana	248	8	3.2	15.9	19.0	1.0
Maine	44	2	4.5	13.9	15.1	.2
Maryland	112	5	4.5	44.8	51.5	12.6
Massachusetts	147	11	7.5	62.4	69.3	32.8
Michigan	340	14	4.1	48.1	54.4	8.6
Minnesota	740	7	.9	32.2	51.6	2.3
Mississippi	184	4	2.2	3.4	2.2	5.6
Missouri	685	13	1.9	33.9	54.2	5.6
Montana	151	4	2.6	7.2	8.6	7.9
Nebraska	446	11	2.5	12.0	12.9	9.9
Nevada	8	1	12.5	17.8	36.9	3.3
New Hampshire	80	2	2.5	1.8	1.1	--

Table 3 (cont.)

State	Number of banks		Sample banks as percentage of all banks			
	Total	Sample	Number	Assets	Business loans	Farm non-real estate loans
New Jersey	223	11	4.9	25.9	35.6	6.7
New Mexico	75	1	1.3	2.3	2.5	1.5
New York	269	27	10.0	87.0	90.9	52.6
North Carolina	90	4	4.4	56.0	69.4	17.8
North Dakota	167	2	1.2	.9	.3	1.5
Ohio	498	20	4.0	43.5	57.3	3.4
Oklahoma	450	6	1.3	21.2	25.1	7.5
Oregon	46	3	6.5	78.7	81.7	82.1
Pennsylvania	408	14	3.4	54.9	68.0	9.4
Rhode Island	14	2	14.3	68.5	77.3	95.9
South Carolina	91	0	--	--	--	--
South Dakota	159	0	--	--	--	--
Tennessee	326	9	2.8	44.2	61.3	13.3
Texas	1,286	30	2.3	35.9	42.8	9.6
Utah	53	1	1.9	28.6	31.3	32.2
Vermont	36	1	2.8	5.0	3.5	12.7
Virginia	278	5	1.8	17.0	22.7	6.7
Washington	85	6	7.1	77.7	82.1	70.3
West Virginia	212	1	.5	.5	.5	--
Wisconsin	617	11	1.8	23.6	37.4	4.0
Wyoming	71	2	2.8	10.6	15.3	2.8

Table 4

Relative coverage of the STBL sample, by deposit size classes

Data as of June 30, 1974

Deposit size of bank (millions of dollars)	Number of banks		Sample banks as percentage of all banks			
	Total	Sample	Number	Assets	Business loans	Farm non-real estate loans
All banks	14,108	350	2.5	51.0	64.7	17.9
Under 2	523	4	.8	.7	1.1	.3
2 to 4	2,319	13	.6	.6	.7	.4
5 to 9	3,235	32	1.0	.9	.8	1.7
10 to 24	4,502	50	1.1	1.1	.9	2.6
25 to 49	1,868	9	.5	.5	.4	2.0
50 to 99	895	26	2.9	3.1	4.7	4.8
100 to 249	434	51	11.8	12.7	14.7	13.1
250 to 499	162	47	29.0	30.2	31.0	33.0
500 and over	170	118	69.4	88.7	91.3	78.4

Table 5

Relative coverage of the STBL sample, by farm-loan-ratio classes

Data as of June 30, 1974

Farm loan as percentage of total loans at bank	Number of banks		Sample banks as percentage of all banks			
	Total	Sample	Number	Assets	Business loans	Farm non-real estate loans
All banks	14,108	350	2.5	51.0	64.7	17.9
Under 5	5,239	225	4.3	60.6	70.8	74.4
5 to 24	3,579	53	1.5	16.3	22.8	14.0
25 to 49	3,001	37	1.2	2.5	3.4	2.7
50 and over	2,289	35	1.5	2.5	2.5	2.6