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CANADA

**NATIONAL ACCOUNTS  
INCOME AND EXPENDITURE  
BY QUARTERS  
1947 - 1957**

**DOMINION BUREAU OF STATISTICS**

Research and Development Division



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Note on Continuity

"National Accounts, Income and Expenditure, 1947-1957,  
by Quarters"

The historical quarterly data contained in this report are carried forward into 1958 in the publication "National Accounts, Income and Expenditure, Fourth Quarter and Preliminary Annual 1958" (March, 1959). Revised data for the year 1957 are also contained in the latter document.



## FOREWORD

Quarterly estimates of Gross National Product and related aggregates were first published by the Dominion Bureau of Statistics in the fall of 1953 with the report, *National Accounts, Income and Expenditure, by Quarters, 1947-1952*. Since that time, they have been prepared regularly each quarter, with a time lag of slightly more than 2½ months. The present report brings together in a single volume the series for the years 1947 to 1957, and presents the figures on the same basis as the revised annual data published in *National Accounts, Income and Expenditure, 1926-1956*. For the most part, the changes incorporated in the present quarterly series are attributable to revisions in the annual figures rather than to changes in the nature of the quarterly data.

The preparation of National Accounts estimates on a quarterly basis is inherently a more complex task than the estimation of their annual counterpart. In particular, problems of timing and consistency become more acute when dealing with quarterly estimates, and for this reason, the quarterly data should be regarded as having a somewhat lower order of accuracy than the annual figures. Moreover, the procedures employed in seasonally adjusting economic time series are based on an averaging technique, and thus contain an element of approximation. In spite of this, the statistics are believed to reflect in broad outline the main contours of quarter-to-quarter movements in economic activity, and the shifting pattern of income and expenditure over the span of the business cycle.

The present report is divided into two parts. Part I presents the tabular information in both unad-

justed and seasonally adjusted form. Part II reviews the sources and methods upon which the quarterly estimates rest, and is designed to give users of the data a general background for appraising the reliability of the material. This section also includes notes on the conceptual framework which underlies the quarterly estimates. No analysis of the statistics is given in this report.

The present volume was prepared by the Research and Development Division of the Bureau. In a broad sense, a number of Bureau Divisions have contributed to this report. The estimates of wages, salaries, and supplementary labour income are prepared in the Labour Division of the Bureau; most of the price series used in the deflation project are prepared in the Prices Division; net income of farm operators from farming operations in the Agriculture Division; and exports and imports of goods and services in the International Trade Division. The basic data for many of the estimates are collected and tabulated in the Industry and Merchandising Division, the Public Finance and Transportation Division, the General Assignments Division, and the Special Surveys Division. The housing data are provided by Central Mortgage and Housing Corporation. The assistance of cooperating firms and governments is gratefully acknowledged.

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PART I

TABLES

SECTION 1

QUARTERLY DATA UNADJUSTED FOR SEASONALITY

TABLE 1. National Income and Gross National Product, by Quarters, 1947-1957

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Wages, salaries, and supplementary labour income .....	1,462	1,545	1,660	1,732	6,399
2	Military pay and allowances .....	26	18	20	19	83
3	Corporation profits before taxes <sup>1</sup> .....	316	427	445	378	1,566
4	Rent, interest, and miscellaneous investment income .....	144	130	165	152	591
5	Accrued net income of farm operators from farm production <sup>2</sup> .....	8	156	791	165	1,120
6	Net income of non-farm unincorporated business <sup>3</sup> .....	233	302	306	332	1,173
7	Inventory valuation adjustment <sup>4</sup> .....	- 114	- 119	- 136	- 202	- 571
8	<b>Net National Income at Factor Cost</b> .....	<b>2,075</b>	<b>2,459</b>	<b>3,251</b>	<b>2,576</b>	<b>10,361</b>
9	Indirect taxes less subsidies .....	370	394	400	444	1,608
10	Capital consumption allowances and miscellaneous valuation adjustments .....	264	302	311	346	1,223
11	Residual error of estimate .....	- 5	- 53	- 34	65	- 27
12	<b>Gross National Product at Market Prices</b> .....	<b>2,704</b>	<b>3,102</b>	<b>3,928</b>	<b>3,431</b>	<b>13,165</b>
13	<i>Gross National Product at market prices excluding accrued net income of farm operators</i> .....	<i>2,696</i>	<i>2,946</i>	<i>3,137</i>	<i>3,266</i>	<i>12,045</i>
		1951				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income .....	2,323	2,487	2,616	2,677	10,103
2	Military pay and allowances .....	41	48	54	58	201
3	Corporation profits before taxes <sup>1</sup> .....	620	713	624	498	2,455
4	Rent, interest, and miscellaneous investment income .....	234	230	273	283	1,020
5	Accrued net income of farm operators from farm production <sup>2</sup> .....	71	343	1,292	227	1,933
6	Net income of non-farm unincorporated business <sup>3</sup> .....	327	399	391	402	1,519
7	Inventory valuation adjustment <sup>4</sup> .....	- 237	- 191	- 94	- 121	- 643
8	<b>Net National Income at Factor Cost</b> .....	<b>3,379</b>	<b>4,029</b>	<b>5,156</b>	<b>4,024</b>	<b>16,588</b>
9	Indirect taxes less subsidies .....	591	574	646	658	2,469
10	Capital consumption allowances and miscellaneous valuation adjustments .....	503	552	550	598	2,203
11	Residual error of estimate .....	- 21	- 55	- 24	10	- 90
12	<b>Gross National Product at Market Prices</b> .....	<b>4,452</b>	<b>5,100</b>	<b>6,328</b>	<b>5,290</b>	<b>21,170</b>
13	<i>Gross National Product at market prices excluding accrued net income of farm operators</i> .....	<i>4,381</i>	<i>4,757</i>	<i>5,036</i>	<i>5,063</i>	<i>19,237</i>
		1955				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income .....	3,087	3,262	3,428	3,438	13,215
2	Military pay and allowances .....	93	100	101	100	394
3	Corporation profits before taxes <sup>1</sup> .....	432	677	751	629	2,489
4	Rent, interest, and miscellaneous investment income .....	416	431	457	444	1,748
5	Accrued net income of farm operators from farm production <sup>2</sup> .....	- 7	133	1,038	97	1,261
6	Net income of non-farm unincorporated business <sup>3</sup> .....	340	457	463	533	1,793
7	Inventory valuation adjustment <sup>4</sup> .....	- 47	- 36	- 57	- 77	- 217
8	<b>Net National Income at Factor Cost</b> .....	<b>4,314</b>	<b>5,024</b>	<b>6,181</b>	<b>5,164</b>	<b>20,683</b>
9	Indirect taxes less subsidies .....	756	800	831	851	3,238
10	Capital consumption allowances and miscellaneous valuation adjustments .....	726	794	808	835	3,163
11	Residual error of estimate .....	17	- 23	- 19	11	- 14
12	<b>Gross National Product at Market Prices</b> .....	<b>5,813</b>	<b>6,595</b>	<b>7,801</b>	<b>6,861</b>	<b>27,070</b>
13	<i>Gross National Product at market prices excluding accrued net income of farm operators</i> .....	<i>5,820</i>	<i>6,462</i>	<i>6,763</i>	<i>6,764</i>	<i>25,809</i>

<sup>1</sup> Excludes dividends paid to non-residents.<sup>2</sup> Includes change in farm inventories as shown in line 11, Table 4. An adjustment has been made to take account of the accrued earnings of farm operators arising out of the operations of the Canadian Wheat Board.

TABLE 1. National Income and Gross National Product, by Quarters, 1947-1957

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
1,716	1,812	1,931	1,955	7,414	1,911	1,974	2,057	2,058	8,000	1,983	2,105	2,227	2,314	8,629	1
19	18	22	23	82	26	30	30	29	115	32	30	36	39	137	2
380	443	485	407	1,715	348	383	438	393	1,562	367	504	695	552	2,118	3
156	147	168	180	651	143	165	196	199	703	200	199	241	250	890	4
- 11	126	1,106	157	1,378	37	146	904	161	1,248	29	128	992	173	1,322	5
255	329	333	352	1,269	290	363	365	371	1,389	285	351	398	405	1,439	6
- 149	- 128	- 122	- 107	- 506	- 58	- 8	- 21	- 25	- 112	- 24	- 78	- 122	- 150	- 374	7
2,366	2,747	3,923	2,967	12,003	2,697	3,053	3,969	3,186	12,905	2,872	3,239	4,467	3,583	14,161	8
426	436	442	481	1,765	439	448	456	465	1,808	451	481	510	558	2,000	9
319	361	361	400	1,441	373	419	423	458	1,673	428	465	491	529	1,913	10
- 23	- 104	- 23	61	- 89	- 16	- 61	7	27	- 43	3	- 4	- 118	51	- 68	11
3,088	3,440	4,703	3,889	15,120	3,493	3,859	4,855	4,136	16,343	3,754	4,181	5,350	4,721	18,006	12
3,099	3,314	3,597	3,732	13,742	3,456	3,713	3,951	3,975	15,095	3,725	4,053	4,358	4,548	16,684	13
1952					1953					1954					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
2,651	2,737	2,874	2,946	11,208	2,895	3,016	3,118	3,081	12,110	2,965	3,076	3,201	3,190	12,432	1
60	67	69	74	270	70	77	79	83	309	83	92	95	97	367	2
522	658	640	544	2,364	540	661	621	472	2,294	411	538	563	451	1,963	3
269	255	325	326	1,175	315	306	348	360	1,329	345	351	398	417	1,511	4
139	149	1,449	222	1,959	30	112	1,339	94	1,575	40	111	735	131	1,017	5
305	417	412	438	1,572	354	454	435	445	1,688	329	423	427	477	1,656	6
-	62	39	5	106	3	- 4	- 42	32	- 11	38	15	27	6	86	7
3,946	4,345	5,808	4,555	18,654	4,207	4,622	5,898	4,567	19,294	4,211	4,606	5,446	4,769	19,032	8
646	652	693	726	2,717	691	734	745	741	2,911	724	741	734	748	2,947	9
551	610	609	652	2,422	618	678	665	712	2,673	671	732	734	768	2,905	10
- 14	132	61	23	202	- 55	2	81	114	142	- 80	3	25	39	- 13	11
5,129	5,739	7,171	5,956	23,995	5,461	6,036	7,389	6,134	25,020	5,526	6,082	6,939	6,324	24,871	12
4,990	5,590	5,722	5,734	22,036	5,431	5,924	6,050	6,040	23,445	5,486	5,971	6,204	6,193	23,854	13
1956					1957										No.
I	II	III	IV	Year	I	II	III	IV	Year						
3,381	3,637	3,850	3,851	14,719	3,731	3,955	4,136	4,003	15,825					1	
93	106	113	112	424	108	116	131	121	476					2	
606	795	777	624	2,802	566	728	687	524	2,505					3	
463	478	509	514	1,964	521	515	569	574	2,179					4	
- 6	86	1,247	141	1,468	9	58	828	73	966					5	
385	513	508	531	1,937	406	511	505	519	1,941					8	
- 64	- 86	- 43	- 67	- 260	- 29	- 30	- 7	6	- 60					7	
4,858	5,529	6,961	5,706	23,054	5,312	5,853	6,849	5,820	23,834					8	
855	909	912	925	3,601	955	948	963	936	3,802					9	
797	878	911	929	3,515	897	946	938	941	3,722					10	
- 43	- 68	- 9	132	12	- 46	- 36	39	128	85					11	
6,467	7,248	8,775	7,692	30,182	7,116	7,711	8,789	7,825	31,443					12	
6,473	7,162	7,528	7,551	28,714	7,109	7,653	7,961	7,752	30,475					13	

<sup>3</sup> Includes net income of independent professional practitioners.<sup>4</sup> See footnote 3, Table 2.

TABLE 2. Gross National Expenditure, by Quarters, 1947-1957

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Personal expenditure on consumer goods and services .....	1,985	2,218	2,251	2,636	9,090
2	Government expenditure on goods and services <sup>1,4</sup> .....	450	309	391	391	1,541
3	Business gross fixed capital formation <sup>2</sup> .....	385	533	559	608	2,085
4	<i>New residential construction</i> .....	73	135	140	146	494
5	<i>New non-residential construction</i> .....	108	137	169	183	597
6	<i>New machinery and equipment</i> .....	204	261	250	279	994
7	Value of physical change in inventories <sup>3</sup> .....	- 91	30	626	- 162	403
8	<i>Non-farm business inventories</i> .....	121	136	57	123	437
9	<i>Farm inventories and grain in commercial channels</i> .....	- 212	- 106	569	- 285	- 34
10	Exports of goods and services .....	773	930	974	963	3,640
11	Deduct: imports of goods and services .....	- 802	- 971	- 907	- 941	-3,621
12	Residual error of estimate .....	4	53	34	- 64	27
13	Gross National Expenditure at Market Prices .....	2,704	3,102	3,928	3,431	13,165
		1951				
		I	II	III	IV	Year
1	Personal expenditure on consumer goods and services .....	3,049	3,359	3,293	3,759	13,460
2	Government expenditure on goods and services <sup>1,4</sup> .....	749	648	951	923	3,271
3	Business gross fixed capital formation <sup>2</sup> .....	842	1,056	1,048	1,013	3,959
4	<i>New residential construction</i> .....	190	253	238	214	895
5	<i>New non-residential construction</i> .....	242	295	364	369	1,270
6	<i>New machinery and equipment</i> .....	410	508	446	430	1,794
7	Value of physical change in inventories <sup>3</sup> .....	27	336	1,079	- 528	914
8	<i>Non-farm business inventories</i> .....	243	377	138	- 194	564
9	<i>Farm inventories and grain in commercial channels</i> .....	- 216	- 41	941	- 334	350
10	Exports of goods and services .....	1,024	1,209	1,416	1,440	5,089
11	Deduct: imports of goods and services .....	-1,259	-1,563	-1,484	-1,307	-5,613
12	Residual error of estimate .....	20	55	25	- 10	90
13	Gross National Expenditure at Market Prices .....	4,452	5,100	6,328	5,290	21,170
		1955				
		I	II	III	IV	Year
1	Personal expenditure on consumer goods and services .....	3,953	4,397	4,278	4,836	17,464
2	Government expenditure on goods and services <sup>1,4</sup> .....	1,197	1,061	1,303	1,219	4,780
3	Business gross fixed capital formation <sup>2</sup> .....	978	1,346	1,467	1,419	5,210
4	<i>New residential construction</i> .....	236	349	399	394	1,378
5	<i>New non-residential construction</i> .....	338	435	561	514	1,848
6	<i>New machinery and equipment</i> .....	404	562	507	511	1,984
7	Value of physical change in inventories <sup>3</sup> .....	- 119	- 68	814	- 346	281
8	<i>Non-farm business inventories</i> .....	158	- 28	8	- 36	102
9	<i>Farm inventories and grain in commercial channels</i> .....	- 277	- 40	806	- 310	179
10	Exports of goods and services .....	1,217	1,440	1,586	1,521	5,764
11	Deduct: imports of goods and services .....	-1,397	-1,605	-1,665	-1,776	-6,443
12	Residual error of estimate .....	- 16	24	18	- 12	14
13	Gross National Expenditure at Market Prices .....	5,813	6,595	7,801	6,861	27,070

<sup>1</sup> Includes outlays on new durable assets such as building and highway construction by governments, other than government business enterprises. Also includes net purchases of government commodity agencies.

<sup>2</sup> Includes capital expenditures by private and government business enterprises, private non-commercial institutions, and outlays on new residential construction by individuals and business investors.

<sup>4</sup> Includes defence expenditures of:

1947					1948					1949					1950					1951					1952				
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year
88	55	42	42	227	82	54	57	63	236	95	74	87	105	361	136	108	112	137	493	220	243	385	329	1,157	511	382	409	498	1,800



TABLE 2. Gross National Expenditure, by Quarters, 1947-1957

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
2,232	2,459	2,480	2,914	10,085	2,377	2,749	2,715	3,082	10,923	2,640	2,974	2,999	3,413	12,026	1
469	353	484	491	1,797	522	434	590	581	2,127	607	467	628	642	2,344	2
511	683	686	739	2,619	667	812	785	768	3,032	685	872	906	885	3,348	3
76	166	187	180	609	151	220	221	202	794	154	224	259	246	883	4
158	185	231	242	816	190	217	257	256	920	206	249	297	290	1,042	5
277	332	268	317	1,194	326	375	307	310	1,318	325	399	350	349	1,423	6
- 254	- 153	848	- 328	113	- 105	- 123	665	- 388	49	- 132	- 32	712	2	550	7
37	- 28	53	23	85	144	26	33	- 53	150	108	91	- 27	227	399	8
- 291	- 125	795	- 351	28	- 249	- 149	632	- 335	- 101	- 240	- 123	739	- 225	151	9
867	961	1,095	1,127	4,050	879	1,025	1,046	1,071	4,021	852	1,045	1,124	1,162	4,183	10
- 759	- 968	- 912	- 994	- 3,633	- 864	- 1,099	- 938	- 952	- 3,853	- 895	- 1,149	- 1,137	- 1,332	- 4,513	11
22	105	22	- 60	89	17	61	- 8	- 26	44	- 3	4	118	- 51	68	12
3,086	3,440	4,703	3,889	15,120	3,493	3,859	4,855	4,136	16,343	3,754	4,181	5,350	4,721	18,006	13
1952					1953					1954					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
3,298	3,712	3,636	4,135	14,781	3,572	3,920	3,806	4,294	15,592	3,635	4,047	4,001	4,492	18,175	1
1,026	999	1,133	1,121	4,279	1,094	999	1,216	1,123	4,432	1,057	1,023	1,232	1,149	4,461	2
891	1,200	1,196	1,164	4,451	1,044	1,335	1,372	1,247	4,998	1,015	1,291	1,268	1,205	4,779	3
150	235	265	283	933	210	298	332	326	1,166	218	298	351	360	1,227	4
297	385	452	432	1,566	328	405	522	464	1,719	346	403	489	433	1,671	5
444	580	479	449	1,952	506	632	518	457	2,113	451	590	428	412	1,881	6
- 132	- 81	1,189	- 464	512	- 122	- 18	1,094	- 371	583	- 86	- 76	442	- 410	- 130	7
27	80	48	- 65	90	117	201	89	- 56	351	146	15	- 60	- 141	- 40	8
- 159	- 161	1,141	- 399	422	- 239	- 219	1,005	- 315	232	- 232	- 91	502	- 269	- 90	9
1,234	1,409	1,430	1,500	5,573	1,154	1,399	1,478	1,369	5,400	1,090	1,278	1,400	1,379	5,147	10
- 1,202	- 1,368	- 1,353	- 1,477	- 5,400	- 1,335	- 1,597	- 1,496	- 1,415	- 5,843	- 1,264	- 1,478	- 1,379	- 1,453	- 5,574	11
14	- 132	- 60	- 23	- 201	54	- 2	- 81	- 113	- 142	79	- 3	- 25	- 38	13	12
5,129	5,739	7,171	5,956	23,995	5,461	6,036	7,389	6,134	25,020	5,526	6,082	6,939	6,324	24,871	13
1956					1957										No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
4,273	4,660	4,574	5,190	18,697	4,601	4,928	4,810	5,429	19,768						1
1,180	1,173	1,514	1,399	5,266	1,265	1,294	1,620	1,433	5,612						2
1,263	1,810	1,911	1,790	6,774	1,568	2,013	2,026	1,782	7,389						3
291	414	428	393	1,526	252	364	396	412	1,424						4
425	624	806	734	2,589	622	819	990	802	3,233						5
547	772	677	663	2,659	694	830	640	568	2,732						6
62	- 27	969	- 189	815	51	- 24	559	- 444	142						7
321	158	- 11	77	545	304	80	- 38	- 103	243						8
- 259	- 185	980	- 266	270	- 253	- 104	597	- 341	- 101						9
1,342	1,634	1,725	1,638	6,339	1,408	1,579	1,761	1,627	6,375						10
- 1,697	- 2,069	- 1,926	- 2,005	- 7,697	- 1,821	- 2,115	- 1,948	- 1,874	- 7,758						11
44	67	8	- 131	- 12	46	36	- 39	- 128	- 85						12
6,467	7,248	8,775	7,692	30,182	7,118	7,711	8,789	7,825	31,443						13

<sup>3</sup> The book value of inventories is deflated to remove the effect of price changes and the derived "physical" change is then valued at average prices of the current period to obtain the value of physical change. The difference between this value of physical change and the change in book value is called the inventory valuation adjustment. (See line 7, Table 1).

1953					1954					1955					1956					1957				
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year
590	401	452	464	1,907	528	360	399	440	1,727	520	390	413	433	1,756	490	394	448	468	1,800	509	366	442	431	1,768

TABLE 3. Sources of Personal Income, by Quarters, 1947-1957

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Wages, salaries, and supplementary labour income .....	1,462	1,545	1,660	1,732	6,399
2	Deduct: employer and employee contributions to social insurance and government pension funds .....	- 46	- 39	- 45	- 51	- 181
3	Military pay and allowances .....	26	18	20	19	83
4	Net income received by farm operators from farm production <sup>1</sup> .....	8	121	782	175	1,086
5	Net income of non-farm unincorporated business .....	233	302	306	332	1,173
6	Interest, dividends, and net rental income of persons <sup>2</sup> .....	209	251	225	274	959
	Transfer payments to persons:					
7	From government (excluding interest) .....	235	218	189	197	839
8	Charitable contributions by corporations .....	4	5	4	4	17
9	Personal Income .....	2,131	2,421	3,141	2,682	10,375
		1951				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income .....	2,323	2,487	2,616	2,677	10,103
2	Deduct: employer and employee contributions to social insurance and government pension funds .....	- 80	- 83	- 87	- 86	- 336
3	Military pay and allowances .....	41	48	54	58	201
4	Net income received by farm operators from farm production <sup>1</sup> .....	51	402	1,234	258	1,945
5	Net income of non-farm unincorporated business .....	327	399	391	402	1,519
6	Interest, dividends, and net rental income of persons <sup>2</sup> .....	313	327	330	363	1,333
	Transfer payments to persons:					
7	From government (excluding interest) .....	296	242	244	250	1,032
8	Charitable contributions by corporations .....	7	7	7	6	27
9	Personal Income .....	3,278	3,829	4,789	3,928	15,824
		1955				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income .....	3,087	3,262	3,428	3,438	13,215
2	Deduct: employer and employee contributions to social insurance and government pension funds .....	- 106	- 110	- 113	- 120	- 449
3	Military pay and allowances .....	93	100	101	100	394
4	Net income received by farm operators from farm production <sup>1</sup> .....	- 38	141	1,008	86	1,197
5	Net income of non-farm unincorporated business .....	340	457	483	533	1,793
6	Interest, dividends, and net rental income of persons <sup>2</sup> .....	450	478	471	512	1,911
	Transfer payments to persons:					
7	From government (excluding interest) .....	536	419	391	385	1,731
8	Charitable contributions by corporations .....	6	7	8	7	28
9	Personal Income .....	4,368	4,754	5,757	4,941	19,820

<sup>1</sup> This item differs from line 5 of Table 1 in that it excludes the adjustment which has been made to take account of the accrued net earnings arising out of the operations of the Canadian Wheat Board.

<sup>2</sup> Includes all government debt interest paid to persons.



TABLE 3. Sources of Personal Income, by Quarters, 1947-1957

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
1,716	1,812	1,931	1,955	7,414	1,911	1,974	2,057	2,058	8,000	1,983	2,105	2,227	2,314	8,629	1
- 56	- 52	- 57	- 59	- 224	- 60	- 57	- 60	- 62	- 239	- 59	- 60	- 67	- 70	- 256	2
19	18	22	23	82	26	30	30	29	115	32	30	36	39	137	3
- 24	234	1,133	135	1,478	16	326	884	133	1,359	15	99	906	136	1,156	4
255	329	333	352	1,269	290	363	365	371	1,389	285	351	398	405	1,439	5
247	243	233	275	998	254	241	243	305	1,043	295	315	312	346	1,268	6
247	212	198	205	862	261	223	222	242	948	303	249	238	240	1,030	7
5	8	6	5	22	5	6	6	6	23	4	6	8	7	25	8
2,409	2,802	3,799	2,891	11,901	2,703	3,106	3,747	3,082	12,638	2,858	3,095	4,058	3,417	13,428	9
1952					1953					1954					
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
2,651	2,737	2,874	2,946	11,208	2,895	3,016	3,118	3,081	12,110	2,965	3,076	3,201	3,190	12,432	1
- 91	- 93	- 93	- 98	- 375	- 98	- 102	- 104	- 106	- 410	- 101	- 105	- 106	- 110	- 422	2
60	67	69	74	270	70	77	79	83	309	83	92	95	97	367	3
127	105	1,395	289	1,916	-	135	1,304	160	1,599	44	120	704	141	1,009	4
305	417	412	438	1,572	354	454	435	445	1,688	329	423	427	477	1,656	5
328	363	350	377	1,418	364	397	385	405	1,551	385	443	429	462	1,719	6
379	321	330	329	1,359	422	344	346	349	1,461	476	387	379	392	1,634	7
6	7	7	7	27	7	8	7	6	28	6	7	7	6	26	8
3,765	3,924	5,344	4,362	17,395	4,014	4,329	5,570	4,423	18,336	4,187	4,443	5,136	4,655	18,421	9
1956								1957							
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
3,381	3,637	3,850	3,851	14,719	3,731	3,955	4,136	4,003	15,825						1
- 117	- 122	- 125	- 126	- 490	- 133	- 132	- 141	- 141	- 547						2
93	106	113	112	424	108	116	131	121	476						3
- 2	86	1,228	136	1,448	28	79	810	57	974						4
385	513	508	531	1,937	406	511	505	519	1,941						5
479	541	525	580	2,125	532	600	592	634	2,358						6
540	420	404	401	1,765	594	471	491	527	2,083						7
7	8	8	7	30	7	9	9	7	32						8
4,766	5,189	6,511	5,492	21,958	5,273	5,609	6,533	5,727	23,142						9

TABLE 4. Disposition of Personal Income, by Quarters, 1947-1957

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Personal direct taxes .....	191	298	161	141	791
2	Income taxes .....	164	274	137	120	695
3	Succession duties .....	14	15	18	14	61
4	Miscellaneous .....	13	9	6	7	35
5	Personal expenditure on consumer goods and services .....	1,985	2,218	2,251	2,636	9,090
6	Non-durable goods .....	1,121	1,296	1,373	1,600	5,390
7	Durable goods .....	165	201	204	271	841
8	Services <sup>1</sup> .....	699	721	674	765	2,859
9	Personal net saving .....	- 45	- 95	729	- 95	494
10	Personal saving excluding change in farm inventories .....	93	- 59	261	253	548
11	Value of physical change in farm inventories .....	- 138	- 36	468	- 348	- 54
12	Personal income .....	2,131	2,421	3,141	2,682	10,375
13	Personal disposable income <sup>2</sup> .....	1,940	2,123	2,980	2,541	9,584
		1951				
		I	II	III	IV	Year
1	Personal direct taxes .....	221	302	237	270	1,030
2	Income taxes .....	179	268	209	234	890
3	Succession duties .....	17	18	15	19	69
4	Miscellaneous .....	25	16	13	17	71
5	Personal expenditure on consumer goods and services .....	3,049	3,359	3,293	3,759	13,460
6	Non-durable goods .....	1,579	1,870	1,927	2,234	7,610
7	Durable goods .....	402	400	322	366	1,490
8	Services <sup>1</sup> .....	1,068	1,089	1,044	1,159	4,360
9	Personal net saving .....	8	168	1,259	- 101	1,334
10	Personal saving excluding change in farm inventories .....	163	169	309	344	985
11	Value of physical change in farm inventories .....	- 155	- 1	950	- 445	349
12	Personal income .....	3,278	3,829	4,789	3,928	15,824
13	Personal disposable income <sup>2</sup> .....	3,057	3,527	4,552	3,658	14,794
		1955				
		I	II	III	IV	Year
1	Personal direct taxes .....	359	378	371	383	1,491
2	Income taxes .....	310	336	322	329	1,297
3	Succession duties .....	25	25	39	38	127
4	Miscellaneous .....	24	17	10	16	67
5	Personal expenditure on consumer goods and services .....	3,953	4,397	4,278	4,836	17,464
6	Non-durable goods .....	1,977	2,157	2,176	2,569	8,879
7	Durable goods .....	433	653	572	626	2,284
8	Services <sup>1</sup> .....	1,543	1,587	1,530	1,641	6,301
9	Personal net saving .....	56	- 21	1,108	- 278	865
10	Personal saving excluding change in farm inventories .....	273	13	354	26	666
11	Value of physical change in farm inventories .....	- 217	- 34	754	- 304	199
12	Personal income .....	4,368	4,754	5,757	4,941	19,820
13	Personal disposable income <sup>2</sup> .....	4,009	4,376	5,386	4,558	18,329

<sup>1</sup> Includes net expenditure abroad.<sup>2</sup> Personal income less total personal direct taxes.

TABLE 4. Disposition of Personal Income, by Quarters, 1947-1957

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
176	294	171	181	822	229	287	127	146	789	180	216	165	179	740	1
143	267	149	158	717	199	259	101	118	677	144	184	137	147	612	2
16	16	14	12	58	11	15	14	15	55	16	16	16	18	66	3
17	11	8	11	47	19	13	12	13	57	20	16	12	14	62	4
2,232	2,459	2,480	2,914	10,085	2,377	2,749	2,715	3,082	10,923	2,840	2,974	2,989	3,413	12,026	5
1,283	1,466	1,547	1,774	6,070	1,325	1,562	1,598	1,803	6,288	1,417	1,635	1,691	1,968	6,711	6
183	221	217	313	934	205	303	286	352	1,146	293	367	377	414	1,451	7
766	772	716	827	3,081	847	884	831	927	3,489	930	972	931	1,031	3,864	8
1	49	1,148	- 204	994	97	70	905	- 146	926	38	- 95	894	- 175	862	9
191	86	576	174	1,027	265	112	474	182	1,033	194	- 50	260	179	583	10
- 190	- 37	572	- 378	- 33	- 168	- 42	431	- 328	- 107	- 156	- 45	634	- 354	79	11
2,409	2,802	3,799	2,891	11,901	2,703	3,106	3,747	3,082	12,638	2,858	3,095	4,058	3,417	13,428	12
2,233	2,508	3,628	2,710	11,079	2,474	2,819	3,620	2,936	11,849	2,678	2,879	3,893	3,238	12,688	13
1952					1953					1954					
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
314	368	306	335	1,323	358	416	323	335	1,432	339	392	341	365	1,437	1
266	332	279	300	1,177	312	381	291	303	1,287	298	359	314	325	1,296	2
21	18	15	19	73	19	17	20	17	73	17	17	18	26	78	3
27	18	12	16	73	27	18	12	15	72	24	16	9	14	63	4
3,298	3,712	3,636	4,135	14,781	3,572	3,920	3,806	4,294	15,592	3,635	4,047	4,001	4,492	16,175	5
1,749	1,970	2,010	2,322	8,051	1,798	2,014	2,037	2,350	8,199	1,793	2,036	2,110	2,434	8,373	6
344	493	432	511	1,780	453	554	466	528	2,001	441	541	472	516	1,970	7
1,205	1,249	1,194	1,302	4,950	1,321	1,352	1,303	1,416	5,392	1,401	1,470	1,419	1,542	5,832	8
153	- 156	1,402	- 108	1,291	84	- 7	1,441	- 206	1,312	213	4	794	- 202	809	9
299	- 3	324	340	960	347	133	549	197	1,226	401	62	309	112	884	10
- 146	- 153	1,078	- 448	331	- 263	- 140	892	- 403	86	- 188	- 58	485	- 314	- 75	11
3,765	3,924	5,344	4,362	17,395	4,014	4,329	5,570	4,423	18,336	4,187	4,443	5,136	4,655	18,421	12
3,451	3,556	5,038	4,027	16,072	3,656	3,913	5,247	4,088	16,904	3,848	4,051	4,795	4,290	16,984	13
1956					1957										
I	II	III	IV	Year	I	II	III	IV	Year						
400	459	426	435	1,720	466	497	472	472	1,907						1
331	390	382	392	1,495	393	444	424	429	1,690						2
37	50	30	29	146	31	32	32	32	127						3
32	19	14	14	79	42	21	16	11	90						4
4,273	4,660	4,574	5,190	18,697	4,601	4,928	4,810	5,429	19,768						5
2,150	2,265	2,336	2,801	9,552	2,272	2,417	2,436	2,896	10,021						6
482	704	592	628	2,406	522	672	598	622	2,414						7
1,641	1,691	1,646	1,761	6,739	1,807	1,839	1,776	1,911	7,333						8
93	70	1,511	- 133	1,541	206	184	1,251	- 174	1,467						9
314	247	558	180	1,299	452	303	667	197	1,619						10
- 221	- 177	953	- 313	242	- 246	- 119	584	- 371	- 152						11
4,766	5,189	6,511	5,492	21,958	5,273	5,609	6,533	5,727	23,142						12
4,366	4,730	6,085	5,057	20,238	4,807	5,112	6,061	5,255	21,235						13



SECTION 2

QUARTERLY DATA SEASONALLY ADJUSTED AT ANNUAL RATES



TABLE 5. National Income and Gross National Product, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Wages, salaries, and supplementary labour income.....	6,044	6,248	6,492	6,812	6,399
2	Military pay and allowances .....	104	76	76	76	83
3	Corporation profits before taxes <sup>1</sup> .....	1,420	1,620	1,604	1,620	1,566
4	Rent, interest, and miscellaneous investment income .....	592	584	600	588	591
5	Accrued net income of farm operators from farm production <sup>2</sup> .....	1,160	1,164	1,028	1,128	1,120
6	Net income of non-farm unincorporated business <sup>3</sup> .....	1,120	1,160	1,188	1,224	1,173
7	Inventory valuation adjustment <sup>4</sup> .....	- 456	- 476	- 544	- 808	- 571
8	<b>Net National Income at Factor Cost.....</b>	<b>9,984</b>	<b>10,376</b>	<b>10,444</b>	<b>10,640</b>	<b>10,361</b>
9	Indirect taxes less subsidies .....	1,472	1,604	1,652	1,704	1,608
10	Capital consumption allowances and miscellaneous valuation adjustments .....	1,128	1,184	1,260	1,320	1,223
11	Residual error of estimate .....	- 192	96	- 92	80	- 27
12	<b>Gross National Product at Market Prices .....</b>	<b>12,392</b>	<b>13,260</b>	<b>13,264</b>	<b>13,744</b>	<b>13,165</b>
13	<i>Gross National Product at market prices excluding accrued net income of farm operators.....</i>	<i>11,232</i>	<i>12,096</i>	<i>12,236</i>	<i>12,616</i>	<i>12,045</i>
		1951				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income.....	9,580	10,024	10,252	10,556	10,103
2	Military pay and allowances .....	168	196	212	228	201
3	Corporation profits before taxes <sup>1</sup> .....	2,700	2,548	2,284	2,288	2,455
4	Rent, interest, and miscellaneous investment income .....	972	1,004	1,020	1,084	1,020
5	Accrued net income of farm operators from farm production <sup>2</sup> .....	1,752	2,324	1,928	1,728	1,933
6	Net income of non-farm unincorporated business <sup>3</sup> .....	1,564	1,524	1,504	1,484	1,519
7	Inventory valuation adjustment <sup>4</sup> .....	- 948	- 764	- 376	- 484	- 643
8	<b>Net National Income at Factor Cost .....</b>	<b>15,788</b>	<b>16,856</b>	<b>16,824</b>	<b>16,884</b>	<b>16,588</b>
9	Indirect taxes less subsidies .....	2,448	2,320	2,556	2,552	2,469
10	Capital consumption allowances and miscellaneous valuation adjustments .....	2,120	2,172	2,216	2,304	2,203
11	Residual error of estimate .....	- 84	- 100	- 60	- 116	- 90
12	<b>Gross National Product at Market Prices .....</b>	<b>20,272</b>	<b>21,248</b>	<b>21,536</b>	<b>21,624</b>	<b>21,170</b>
13	<i>Gross National Product at market prices excluding accrued net income of farm operators .....</i>	<i>18,520</i>	<i>18,924</i>	<i>19,608</i>	<i>19,896</i>	<i>19,237</i>
		1955				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income.....	12,800	13,072	13,348	13,640	13,215
2	Military pay and allowances .....	392	396	392	396	394
3	Corporation profits before taxes <sup>1</sup> .....	2,028	2,456	2,672	2,800	2,489
4	Rent, interest, and miscellaneous investment income .....	1,684	1,752	1,792	1,764	1,748
5	Accrued net income of farm operators from farm production <sup>2</sup> .....	1,200	1,436	1,216	1,192	1,261
6	Net income of non-farm unincorporated business <sup>3</sup> .....	1,672	1,756	1,812	1,932	1,793
7	Inventory valuation adjustment <sup>4</sup> .....	- 188	- 144	- 228	- 308	- 217
8	<b>Net National Income at Factor Cost.....</b>	<b>19,588</b>	<b>20,724</b>	<b>21,004</b>	<b>21,416</b>	<b>20,683</b>
9	Indirect taxes less subsidies .....	3,092	3,196	3,292	3,372	3,238
10	Capital consumption allowances and miscellaneous valuation adjustments .....	3,048	3,128	3,206	3,268	3,163
11	Residual error of estimate .....	340	- 96	- 144	- 156	- 14
12	<b>Gross National Product at Market Prices .....</b>	<b>26,068</b>	<b>26,952</b>	<b>27,300</b>	<b>27,900</b>	<b>27,070</b>
13	<i>Gross National Product at market prices excluding accrued net income of farm operators.....</i>	<i>24,868</i>	<i>25,516</i>	<i>26,144</i>	<i>26,708</i>	<i>25,809</i>

<sup>1</sup> Excludes dividends paid to non-residents.<sup>2</sup> Includes an arbitrary smoothing of crop production and standard seasonal adjustments for withdrawals of grain from farm stocks and the change in livestock items. Because of the arbitrary elements, too precise an interpretation should not be given the seasonally adjusted figures of accrued net income of farm operators.



TABLE 5. National Income and Gross National Product, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
7,088	7,308	7,548	7,712	7,414	7,892	7,940	8,040	8,128	8,000	8,196	8,468	8,724	9,128	8,629	1
76	76	84	92	82	104	124	116	118	115	128	124	140	156	137	2
1,712	1,672	1,736	1,740	1,715	1,564	1,448	1,536	1,700	1,562	1,636	1,856	2,504	2,476	2,118	3
644	648	624	688	651	580	720	740	772	703	836	872	908	944	890	4
1,312	1,364	1,440	1,396	1,378	1,256	1,280	1,188	1,268	1,248	1,384	1,152	1,448	1,304	1,322	5
1,208	1,268	1,284	1,316	1,269	1,384	1,396	1,392	1,384	1,389	1,352	1,364	1,524	1,516	1,439	6
- 596	- 512	- 488	- 428	- 506	- 232	- 32	- 84	- 100	- 112	- 96	- 312	- 488	- 600	- 374	7
11,444	11,824	12,228	12,516	12,003	12,548	12,876	12,928	13,268	12,905	13,436	13,524	14,760	14,924	14,161	8
1,756	1,756	1,764	1,784	1,765	1,800	1,800	1,812	1,820	1,808	1,864	1,932	2,024	2,180	2,000	9
1,360	1,416	1,460	1,528	1,441	1,584	1,648	1,704	1,756	1,673	1,808	1,832	1,980	2,032	1,913	10
- 228	- 184	76	- 20	- 89	- 116	- 84	140	- 112	- 43	8	72	- 432	80	- 68	11
14,332	14,812	15,528	15,808	15,120	15,816	16,240	16,584	16,732	16,343	17,116	17,360	18,332	19,216	18,006	12
13,020	13,448	14,088	14,412	13,742	14,560	14,960	15,396	15,464	15,095	15,732	16,208	16,884	17,912	16,684	13
1952					1953					1954					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
10,952	10,996	11,232	11,652	11,208	11,960	12,108	12,168	12,204	12,110	12,268	12,332	12,484	12,644	12,432	1
248	268	272	292	270	292	304	312	328	309	348	364	372	384	367	2
2,352	2,336	2,284	2,484	2,364	2,476	2,372	2,216	2,112	2,294	1,920	1,948	2,004	1,980	1,963	3
1,104	1,100	1,240	1,256	1,175	1,292	1,288	1,336	1,400	1,329	1,400	1,480	1,520	1,644	1,511	4
2,308	1,872	1,820	1,836	1,959	1,648	1,620	1,624	1,408	1,575	1,132	976	988	972	1,017	5
1,484	1,588	1,592	1,624	1,572	1,716	1,712	1,692	1,632	1,688	1,596	1,620	1,668	1,740	1,656	6
-	248	156	20	106	12	- 16	- 168	128	- 11	152	60	108	24	86	7
18,448	18,408	18,596	19,164	18,654	19,396	19,388	19,180	19,212	19,294	18,816	18,780	19,144	19,388	19,032	8
2,860	2,624	2,744	2,840	2,717	2,844	2,928	2,956	2,916	2,911	2,968	2,952	2,908	2,960	2,947	9
2,320	2,400	2,452	2,516	2,422	2,600	2,660	2,672	2,760	2,673	2,824	2,872	2,928	2,996	2,905	10
20	372	296	120	202	- 76	- 76	372	348	142	- 100	- 16	40	24	- 13	11
23,448	23,804	24,088	24,640	23,995	24,764	24,900	25,180	25,236	25,020	24,508	24,588	25,020	25,368	24,871	12
21,140	21,932	22,268	22,804	22,036	23,116	23,280	23,556	23,828	23,445	23,376	23,612	24,032	24,396	23,854	13
1956							1957							No.	
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV		Year
14,060	14,572	14,956	15,288	14,719	15,524	15,828	16,048	15,900	15,825	1					
396	420	432	448	424	460	464	500	460	476	2					
2,860	2,840	2,736	2,772	2,802	2,664	2,548	2,420	2,388	2,505	3					
1,876	1,952	1,984	2,044	1,964	2,132	2,152	2,180	2,252	2,179	4					
1,432	1,496	1,452	1,492	1,468	996	904	1,092	880	968	5					
1,904	1,964	1,952	1,928	1,937	2,000	1,936	1,940	1,888	1,941	6					
- 256	- 344	- 172	- 268	- 260	- 116	- 120	- 28	24	- 60	7					
22,272	22,900	23,340	23,704	23,054	23,660	23,712	24,152	23,812	23,834	8					
3,456	3,632	3,608	3,708	3,601	3,824	3,788	3,836	3,760	3,802	9					
3,344	3,464	3,596	3,656	3,515	3,752	3,732	3,696	3,708	3,722	10					
28	- 92	- 112	224	12	80	136	- 4	128	85	11					
29,100	29,904	30,432	31,292	30,182	31,316	31,368	31,680	31,408	31,443	12					
27,668	28,408	28,980	29,800	28,714	30,320	30,464	30,588	30,528	30,475	13					

<sup>1</sup> Includes net income of independent professional practitioners.<sup>4</sup> See footnote 3, Table 2.

TABLE 6. Gross National Expenditure, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Personal expenditure on consumer goods and services .....	8,684	8,936	9,260	9,480	9,090
2	Government expenditure on goods and services <sup>1</sup> .....	1,592	1,528	1,500	1,544	1,541
3	Business gross fixed capital formation <sup>2</sup> .....	1,776	1,984	2,196	2,384	2,085
4	<i>New residential construction</i> .....	408	480	504	584	494
5	<i>New non-residential construction</i> .....	520	580	620	668	597
6	<i>New machinery and equipment</i> .....	848	924	1,072	1,132	994
7	Value of physical change in inventories .....	396	708	172	336	403
8	<i>Non-farm business inventories</i> .....	284	712	284	468	437
9	<i>Farm inventories and grain in commercial channels</i> <sup>3</sup> .....	112	- 4	- 112	- 132	- 34
10	Exports of goods and services .....	3,472	3,732	3,676	3,680	3,640
11	Deduct: imports of goods and services .....	- 3,720	- 3,532	- 3,632	- 3,600	- 3,621
12	Residual error of estimate .....	192	- 96	92	- 80	27
13	Gross National Expenditure at Market Prices .....	12,392	13,260	13,264	13,744	13,165
		1951				
		I	II	III	IV	Year
1	Personal expenditure on consumer goods and services .....	13,256	13,352	13,468	13,764	13,460
2	Government expenditure on goods and services <sup>1</sup> .....	2,756	3,136	3,592	3,600	3,271
3	Business gross fixed capital formation <sup>2</sup> .....	3,868	3,912	3,976	4,080	3,959
4	<i>New residential construction</i> .....	996	944	840	800	895
5	<i>New non-residential construction</i> .....	1,176	1,228	1,292	1,384	1,270
6	<i>New machinery and equipment</i> .....	1,696	1,740	1,844	1,896	1,794
7	Value of physical change in inventories .....	1,092	1,756	956	- 148	914
8	<i>Non-farm business inventories</i> .....	660	1,220	748	- 372	564
9	<i>Farm inventories and grain in commercial channels</i> <sup>3</sup> .....	432	536	208	224	350
10	Exports of goods and services .....	4,716	4,824	5,388	5,426	5,089
11	Deduct: imports of goods and services .....	- 5,500	- 5,836	- 5,900	- 5,216	- 5,613
12	Residual error of estimate .....	84	104	56	116	90
13	Gross National Expenditure at Market Prices .....	20,272	21,248	21,536	21,624	21,170

TABLE 6. Gross National Expenditure, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
9,776	9,872	10,192	10,500	10,085	10,396	10,968	11,104	11,224	10,923	11,620	11,764	12,224	12,496	12,026	1
1,696	1,748	1,832	1,912	1,797	1,900	2,120	2,236	2,252	2,127	2,236	2,298	2,380	2,484	2,344	2
2,324	2,560	2,868	2,924	2,619	3,052	3,020	3,012	3,044	3,032	3,148	3,244	3,452	3,548	3,348	3
424	604	680	728	609	808	796	784	788	794	824	832	924	952	883	4
752	784	836	892	816	900	908	924	948	920	988	1,032	1,064	1,084	1,042	5
1,148	1,172	1,152	1,304	1,194	1,344	1,316	1,304	1,308	1,318	1,336	1,380	1,464	1,512	1,423	6
- 128	112	444	24	113	276	- 40	212	- 252	49	288	218	192	1,504	550	7
- 84	- 24	288	160	85	316	104	240	- 60	150	148	228	36	1,184	399	8
- 44	136	156	- 136	28	- 40	- 144	- 28	- 192	- 101	140	- 12	156	320	151	9
3,932	3,896	4,116	4,256	4,050	3,996	4,104	3,944	4,040	4,021	3,900	4,172	4,228	4,432	4,183	10
-3,498	-3,556	-3,648	-3,832	-3,633	-3,924	-4,016	-3,788	-3,684	-3,853	-4,068	-4,260	-4,560	-5,164	-4,513	11
228	180	- 76	24	89	120	84	- 136	108	44	- 8	- 72	436	- 84	68	12
14,332	14,812	15,528	15,808	15,120	15,816	16,240	16,584	16,732	16,343	17,116	17,360	18,332	19,216	18,006	13
1952					1953					1954					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
14,256	14,748	14,680	15,240	14,781	15,444	15,508	15,616	15,800	15,592	15,856	16,056	16,456	16,532	16,175	1
3,996	4,336	4,200	4,584	4,279	4,300	4,380	4,500	4,548	4,432	4,264	4,480	4,504	4,596	4,461	2
4,152	4,404	4,500	4,748	4,451	4,948	4,928	5,124	4,992	4,998	4,856	4,804	4,684	4,772	4,779	3
804	908	956	1,064	933	1,132	1,148	1,180	1,204	1,166	1,180	1,156	1,248	1,324	1,227	4
1,464	1,592	1,580	1,628	1,566	1,632	1,680	1,796	1,768	1,719	1,728	1,652	1,648	1,656	1,671	5
1,884	1,904	1,964	2,056	1,952	2,184	2,100	2,148	2,020	2,113	1,948	1,996	1,788	1,792	1,881	6
628	260	748	412	512	464	496	704	668	583	92	- 272	- 208	- 132	- 130	7
- 208	- 32	344	256	90	96	484	516	308	351	136	- 184	- 104	- 8	- 40	8
836	292	404	156	422	368	12	188	360	232	- 44	- 88	- 104	- 124	- 90	9
5,652	5,568	5,440	5,632	5,573	5,308	5,528	5,552	5,212	5,400	4,992	5,112	5,140	5,344	5,147	10
-5,220	-5,140	-5,384	-5,856	-5,400	-5,772	-6,016	-5,948	-5,636	-5,843	-5,452	-5,608	-5,520	-5,716	-5,574	11
- 16	- 372	- 296	- 120	- 201	72	78	- 368	- 348	- 142	100	16	- 36	- 28	13	12
23,448	23,804	24,088	24,640	23,985	24,764	24,900	25,180	25,236	25,020	24,508	24,588	25,020	25,368	24,871	13

TABLE 6. Gross National Expenditure, by Quarters, 1947-1957 - Concluded

Seasonally Adjusted at Annual Rates

No.		1955				
		I	II	III	IV	Year
		millions of dollars				
1	Personal expenditure on consumer goods and services .....	16,988	17,364	17,592	17,912	17,464
2	Government expenditure on goods and services <sup>1</sup> .....	4,896	4,872	4,720	4,832	4,780
3	Business gross fixed capital formation <sup>2</sup> .....	4,752	5,000	5,376	5,712	5,210
4	<i>New residential construction</i> .....	1,288	1,356	1,424	1,444	1,378
5	<i>New non-residential construction</i> .....	1,724	1,776	1,880	2,012	1,848
6	<i>New machinery and equipment</i> .....	1,740	1,868	2,072	2,256	1,984
7	Value of physical change in inventories .....	200	208	320	396	281
8	<i>Non-farm business inventories</i> .....	124	- 260	208	336	102
9	<i>Farm inventories and grain in commercial channels</i> <sup>3</sup> .....	76	468	112	60	179
10	Exports of goods and services .....	5,584	5,700	5,864	5,908	5,764
11	Deduct: Imports of goods and services .....	- 6,012	- 6,084	- 6,656	- 7,020	- 6,443
12	Residual error of estimate .....	- 340	92	144	160	14
13	Gross National Expenditure at Market Prices .....	26,068	26,952	27,360	27,900	27,076

<sup>1</sup> Includes outlays on new durable assets such as building and highway construction by governments, other than government business enterprises. Also includes net purchases of government commodity agencies.

<sup>2</sup> Includes capital expenditures by private and government business enterprises, private non-commercial institutions, and outlays on new residential construction by individuals and business investors.

<sup>3</sup> Detail: Farm inventories -

	1947				
	I	II	III	IV	Year
	millions of dollars				
Value of grain crop production .....	776	776	780	780	778
Depletions of farm stocks of grain .....	-728	-684	-732	-932	-619
Change in livestock inventories .....	- 20	4	- 44	8	- 13
Grain in commercial channels .....	84	100	-118	12	20
	1951				
	I	II	III	IV	Year
Value of grain crop production .....	1,160	1,164	1,164	1,164	1,163
Depletions of farm stocks of grain .....	- 846	- 900	- 628	-1,120	- 874
Change in livestock inventories .....	52	172	60	- 44	60
Grain in commercial channels .....	68	100	- 386	224	1
	1955				
	I	II	III	IV	Year
Value of grain crop production .....	1,044	1,044	1,044	1,044	1,044
Depletions of farm stocks of grain .....	- 932	- 708	-1,028	- 840	- 877
Change in livestock inventories .....	36	52	40	-	32
Grain in commercial channels .....	- 72	80	56	- 144	- 20



TABLE 6. Gross National Expenditure, by Quarters, 1947-1957 - Concluded

Seasonally Adjusted at Annual Rates

1956					1957					No.
I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars										
18,320	18,464	18,824	19,180	18,697	19,584	19,600	19,860	20,048	19,768	1
4,936	5,196	5,420	5,512	5,266	5,344	5,740	5,728	5,636	5,612	2
6,146	6,688	7,012	7,248	6,774	7,552	7,468	7,376	7,160	7,389	3
1,576	1,584	1,512	1,432	1,526	1,376	1,396	1,412	1,512	1,424	4
2,196	2,524	2,720	2,916	2,589	3,160	3,272	3,308	3,192	3,233	5
2,376	2,580	2,780	2,900	2,659	3,016	2,800	2,656	2,456	2,732	6
980	708	424	1,148	815	400	364	60	- 256	142	7
668	596	192	724	545	540	372	80	- 20	243	8
312	112	232	424	270	- 140	- 8	- 20	- 236	- 101	9
6,152	6,452	6,356	6,396	6,339	6,456	6,232	6,460	6,352	6,375	10
- 7,408	- 7,692	- 7,720	- 7,968	- 7,697	- 7,916	- 7,900	- 7,812	- 7,404	- 7,758	11
- 28	88	116	- 224	- 12	- 84	- 136	8	- 128	- 85	12
29,100	29,904	30,432	31,292	30,182	31,316	31,368	31,680	31,408	31,443	13

1946					1949					1950				
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year
millions of dollars														
1,020	1,020	1,020	1,024	1,021	844	848	848	848	847	904	904	904	908	905
- 964	- 776	- 1,184	- 880	- 951	-952	-936	-1,152	-768	-957	-736	-772	-732	-840	-770
- 76	- 128	- 52	- 156	- 103	20	16	- 28	4	3	- 32	-144	- 8	- 40	- 56
- 24	20	372	- 124	61	48	- 72	304	-256	6	4	-	- 8	292	72
1952					1953					1954				
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year
1,372	1,372	1,376	1,376	1,374	1,264	1,264	1,268	1,268	1,266	696	700	700	700	699
- 968	-1,528	-1,056	-1,244	-1,199	-1,244	-1,132	-1,392	-1,092	-1,215	-820	-788	-756	-872	-809
200	268	116	40	156	-	24	64	32	35	44	4	52	40	35
232	180	- 32	- 16	91	348	- 144	228	152	146	36	- 4	-100	8	- 15
1956					1957									
I	II	III	IV	Year	I	II	III	IV	Year					
1,232	1,236	1,236	1,236	1,235	808	808	808	808	808					
- 968	-1,116	- 952	- 964	-1,000	-1,066	-1,000	-796	-932	-949					
52	44	16	36	7	8	76	52	-180	- 11					
- 4	36	- 36	116	28	112	108	- 84	68	51					

TABLE 7. Sources of Personal Income, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Wages, salaries, and supplementary labour income .....	6,044	6,248	6,492	6,812	6,399
2	Deduct: employer and employee contributions to social insurance and government pension funds .....	- 172	- 168	- 180	- 204	- 181
3	Military pay and allowances .....	104	76	76	76	83
4	Net income received by farm operators from farm production <sup>1</sup> .....	1,396	472	1,024	1,452	1,086
5	Net income of non-farm unincorporated business .....	1,120	1,160	1,188	1,224	1,173
6	Interest, dividends, and net rental income of persons <sup>2</sup> .....	864	1,016	960	996	959
	Transfer payments to persons:					
7	From government (excluding interest) .....	848	864	816	828	839
8	Charitable contributions by corporations .....	18	20	16	16	17
9	<b>Personal Income</b> .....	<b>10,220</b>	<b>9,688</b>	<b>10,392</b>	<b>11,200</b>	<b>10,375</b>
		1951				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income .....	9,580	10,024	10,252	10,556	10,103
2	Deduct: employer and employee contributions to social insurance and government pension funds .....	- 316	- 336	- 344	- 348	- 336
3	Military pay and allowances .....	168	196	212	228	201
4	Net income received by farm operators from farm production <sup>1</sup> .....	1,648	2,464	1,904	1,764	1,945
5	Net income of non-farm unincorporated business .....	1,564	1,524	1,504	1,484	1,519
6	Interest, dividends, and net rental income of persons <sup>2</sup> .....	1,288	1,304	1,364	1,376	1,333
	Transfer payments to persons:					
7	From government (excluding interest) .....	1,008	1,020	1,032	1,068	1,032
8	Charitable contributions by corporations .....	32	28	24	24	27
9	<b>Personal Income</b> .....	<b>14,972</b>	<b>16,224</b>	<b>15,948</b>	<b>16,152</b>	<b>15,824</b>
		1955				
		I	II	III	IV	Year
1	Wages, salaries, and supplementary labour income .....	12,800	13,072	13,348	13,640	13,215
2	Deduct: employer and employee contributions to social insurance and government pension funds .....	- 432	- 440	- 452	- 472	- 449
3	Military pay and allowances .....	392	396	392	396	394
4	Net income received by farm operators from farm production <sup>1</sup> .....	1,108	1,388	1,144	1,148	1,197
5	Net income of non-farm unincorporated business .....	1,672	1,756	1,812	1,932	1,793
6	Interest dividends, and net rental income of persons <sup>2</sup> .....	1,892	1,852	1,924	1,976	1,911
	Transfer payments to persons:					
7	From government (excluding interest) .....	1,732	1,728	1,740	1,724	1,731
8	Charitable contributions by corporations .....	28	28	28	28	28
9	<b>Personal Income</b> .....	<b>19,192</b>	<b>19,780</b>	<b>19,936</b>	<b>20,372</b>	<b>19,820</b>

<sup>1</sup> This item differs from line 5, Table 5 in that it excludes the adjustment which has been made to take account of the accrued net earnings arising out of the operations of the Canadian Wheat Board.

<sup>2</sup> Includes all government debt interest paid to persons.



TABLE 7. Sources of Personal Income, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
7,088	7,308	7,548	7,712	7,414	7,892	7,940	8,040	8,128	8,000	8,196	8,468	8,724	9,128	8,629	1
- 212	- 220	- 228	- 236	- 224	- 232	- 240	- 240	- 244	- 239	- 232	- 244	- 268	- 280	- 256	2
76	76	84	92	82	104	124	116	116	115	128	124	140	156	137	3
1,448	1,356	1,644	1,464	1,478	1,356	1,628	1,240	1,212	1,359	1,344	840	1,312	1,128	1,156	4
1,208	1,268	1,284	1,316	1,269	1,384	1,396	1,392	1,384	1,389	1,352	1,364	1,524	1,516	1,439	5
1,004	964	1,008	1,016	998	1,036	964	1,040	1,132	1,043	1,192	1,284	1,300	1,296	1,268	6
868	856	868	856	862	904	928	960	1,000	948	1,024	1,036	1,044	1,016	1,030	7
20	24	24	20	22	24	24	24	20	23	20	24	28	28	25	8
11,500	11,632	12,232	12,240	11,901	12,468	12,764	12,572	12,748	12,638	13,024	12,896	13,804	13,988	13,428	9
1952					1953					1954					
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
10,952	10,996	11,232	11,652	11,208	11,960	12,108	12,168	12,204	12,110	12,268	12,332	12,484	12,644	12,432	1
- 364	- 372	- 372	- 392	- 375	- 396	- 408	- 416	- 420	- 410	- 412	- 420	- 424	- 432	- 422	2
248	268	272	292	270	292	304	312	328	309	348	364	372	384	367	3
2,228	1,636	1,788	2,012	1,916	1,556	1,688	1,656	1,496	1,599	1,192	988	968	888	1,009	4
1,484	1,588	1,592	1,624	1,572	1,716	1,712	1,692	1,632	1,688	1,596	1,620	1,668	1,740	1,656	5
1,356	1,432	1,432	1,452	1,418	1,520	1,544	1,572	1,568	1,551	1,620	1,716	1,746	1,792	1,719	6
1,324	1,332	1,392	1,388	1,359	1,444	1,428	1,464	1,508	1,461	1,556	1,588	1,668	1,724	1,634	7
24	28	28	28	27	32	28	28	24	28	24	28	28	24	26	8
17,252	16,908	17,364	18,056	17,395	18,124	18,404	18,476	18,340	18,336	18,192	18,216	18,512	18,764	18,421	9
1956							1957								
I	II	III	IV	Year	I	II	III	IV	Year						
14,060	14,572	14,956	15,288	14,719	15,524	15,828	16,048	15,900	15,825						1
- 472	- 488	- 496	- 504	- 490	- 532	- 532	- 560	- 564	- 547						2
396	420	432	448	424	460	464	500	480	476						3
1,456	1,436	1,388	1,512	1,448	1,068	940	1,032	856	974						4
1,904	1,964	1,952	1,928	1,937	2,000	1,936	1,940	1,888	1,941						5
2,020	2,100	2,148	2,232	2,125	2,268	2,340	2,392	2,432	2,358						6
1,760	1,760	1,772	1,768	1,765	1,968	2,008	2,156	2,200	2,083						7
32	28	28	32	30	32	32	32	32	32						8
21,156	21,792	22,180	22,704	21,958	22,788	23,016	23,540	23,224	23,142						9

TABLE 8. Disposition of Personal Income, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Personal direct taxes .....	928	944	676	616	791
2	Income taxes .....	836	848	576	520	695
3	Succession duties .....	60	60	64	60	61
4	Miscellaneous .....	32	36	36	36	35
5	Personal expenditure on consumer goods and services .....	8,684	8,936	9,260	9,480	9,090
6	Non-durable goods .....	5,104	5,304	5,508	5,644	5,390
7	Durable goods .....	816	808	860	880	841
8	Services <sup>1</sup> .....	2,764	2,824	2,892	2,956	2,859
9	Personal net saving .....	608	- 192	456	1,104	494
10	Personal Income .....	10,220	9,688	10,392	11,200	10,375
11	Personal disposable income <sup>2</sup> .....	9,292	8,744	9,716	10,584	9,584
		1951				
		I	II	III	IV	Year
1	Personal direct taxes .....	852	980	1,120	1,168	1,030
2	Income taxes .....	716	848	976	1,020	890
3	Succession duties .....	68	68	68	72	69
4	Miscellaneous .....	68	64	76	76	71
5	Personal expenditure on consumer goods and services .....	13,256	13,352	13,488	13,764	13,460
6	Non-durable goods .....	7,264	7,592	7,688	7,896	7,610
7	Durable goods .....	1,772	1,484	1,364	1,340	1,490
8	Services <sup>1</sup> .....	4,220	4,276	4,416	4,528	4,360
9	Personal net saving .....	864	1,892	1,360	1,220	1,334
10	Personal Income .....	14,972	16,224	15,948	16,152	15,824
11	Personal disposable income <sup>2</sup> .....	14,120	15,244	14,828	14,984	14,794
		1955				
		I	II	III	IV	Year
1	Personal direct taxes .....	1,516	1,468	1,480	1,500	1,491
2	Income taxes .....	1,332	1,272	1,292	1,292	1,297
3	Succession duties .....	124	128	128	128	127
4	Miscellaneous .....	60	68	60	80	67
5	Personal expenditure on consumer goods and services .....	16,988	17,364	17,592	17,912	17,464
6	Non-durable goods .....	8,812	8,840	8,864	9,000	8,879
7	Durable goods .....	2,052	2,268	2,356	2,460	2,284
8	Services <sup>1</sup> .....	6,124	6,256	6,372	6,452	6,301
9	Personal net saving .....	688	948	864	960	865
10	Personal Income .....	19,192	19,780	19,936	20,372	19,820
11	Personal disposable income <sup>2</sup> .....	17,676	18,312	18,456	18,872	18,329

<sup>1</sup> Includes net expenditure abroad.<sup>2</sup> Personal income less total personal direct taxes.

TABLE 8. Disposition of Personal Income, by Quarters, 1947-1957

Seasonally Adjusted at Annual Rates

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
768	908	808	804	822	984	900	616	656	789	732	692	768	768	740	1
664	804	704	696	717	880	792	496	540	677	612	564	636	636	612	2
60	60	56	56	58	52	56	56	56	55	64	64	68	68	66	3
44	44	48	52	47	52	52	64	60	57	56	64	64	64	62	4
9,776	9,872	10,192	10,500	10,085	10,396	10,968	11,104	11,224	10,923	11,620	11,764	12,224	12,496	12,026	5
5,864	5,964	6,164	6,288	6,070	6,052	6,332	6,368	6,400	6,288	6,592	6,576	6,748	6,928	6,711	6
908	884	924	1,020	934	992	1,176	1,196	1,220	1,146	1,356	1,368	1,540	1,540	1,451	7
3,004	3,024	3,104	3,192	3,081	3,352	3,460	3,540	3,604	3,489	3,672	3,820	3,936	4,028	3,864	8
956	852	1,232	936	994	1,088	896	852	868	926	672	440	812	724	662	9
11,500	11,632	12,232	12,240	11,901	12,468	12,764	12,572	12,748	12,638	13,024	12,896	13,804	13,988	13,428	10
10,732	10,724	11,424	11,436	11,079	11,484	11,864	11,956	12,092	11,849	12,292	12,204	13,036	13,220	12,688	11
1952					1953					1954					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
1,232	1,232	1,400	1,428	1,323	1,468	1,440	1,396	1,424	1,432	1,412	1,440	1,432	1,464	1,437	1
1,084	1,088	1,256	1,280	1,177	1,324	1,296	1,252	1,276	1,287	1,272	1,300	1,296	1,316	1,296	2
76	72	72	72	73	72	72	72	76	73	76	76	80	80	78	3
72	72	72	76	73	72	72	72	72	72	64	64	56	68	63	4
14,256	14,748	14,880	15,240	14,781	15,444	15,508	15,616	15,800	15,592	15,656	16,056	16,456	16,532	16,175	5
7,924	8,024	8,100	8,156	8,051	8,176	8,204	8,184	8,232	8,199	8,052	8,332	8,564	8,544	8,373	6
1,536	1,800	1,804	1,980	1,780	2,020	1,976	1,984	2,024	2,001	2,024	1,932	1,976	1,948	1,970	7
4,796	4,924	4,976	5,104	4,950	5,248	5,328	5,448	5,544	5,392	5,580	5,792	5,916	6,040	5,832	8
1,784	928	1,084	1,388	1,291	1,212	1,456	1,464	1,116	1,312	1,124	720	624	768	809	9
17,252	16,908	17,364	18,056	17,395	18,124	18,404	18,476	18,340	18,336	18,192	18,216	18,512	18,764	18,421	10
16,020	15,676	15,964	16,628	16,072	16,656	16,964	17,080	16,916	16,904	16,780	16,776	17,080	17,300	16,984	11
1956					1957										No.
I	II	III	IV	Year	I	II	III	IV	Year						
1,656	1,716	1,752	1,756	1,720	1,920	1,912	1,920	1,876	1,907						1
1,428	1,488	1,528	1,536	1,495	1,692	1,692	1,696	1,680	1,690						2
148	148	144	144	146	124	128	128	128	127						3
80	80	80	76	79	104	92	96	68	90						4
18,320	18,464	18,824	19,180	18,697	19,564	19,600	19,860	20,048	19,768						5
9,452	9,344	9,580	9,832	9,552	9,892	10,004	10,012	10,176	10,021						6
2,328	2,452	2,420	2,424	2,406	2,480	2,332	2,484	2,360	2,414						7
6,540	6,668	6,824	6,924	6,739	7,192	7,264	7,364	7,512	7,333						8
1,180	1,612	1,604	1,768	1,541	1,304	1,504	1,760	1,300	1,487						9
21,156	21,792	22,180	22,704	21,958	22,788	23,016	23,540	23,224	23,142						10
19,500	20,076	20,428	20,948	20,238	20,868	21,104	21,620	21,348	21,235						11



SECTION 3

QUARTERLY DATA IN CONSTANT (1949) DOLLARS UNADJUSTED  
FOR SEASONALITY



TABLE 9. Gross National Expenditure in Constant (1949) Dollars, by Quarters, 1947-1957

Unadjusted for Seasonality<sup>1,2</sup>

No.		1947				
		I	II	III	IV	Year
		millions of dollars				
1	Personal expenditure on consumer goods and services .....	2,464	2,657	2,606	2,930	10,657
2	Non-durable goods .....	1,459	1,606	1,631	1,800	6,496
3	Durable goods .....	206	242	239	296	983
4	Services .....	799	809	736	834	3,178
5	Government expenditure on goods and services .....	569	382	454	445	1,850
6	Business gross fixed capital formation .....	488	658	664	686	2,496
7	New residential construction .....	100	174	170	166	610
8	New non-residential construction .....	134	165	197	204	700
9	New machinery and equipment .....	254	319	297	316	1,186
10	Change in inventories .....	- 125	56	687	- 172	446
11	Non-farm business inventories .....	155	154	69	142	520
12	Farm inventories and grain in commercial channels .....	- 280	- 98	618	- 314	- 74
13	Exports of goods and services .....	920	1,062	1,100	1,059	4,141
14	Deduct: imports of goods and services .....	- 977	-1,125	-1,043	-1,031	- 4,178
15	Residual error of estimate .....	5	63	38	- 74	32
16	Gross National Expenditure in Constant (1949) Dollars .....	3,344	3,753	4,506	3,843	15,446
		1951				
		I	II	III	IV	Year
1	Personal expenditure on consumer goods and services .....	2,786	2,979	2,853	3,199	11,817
2	Non-durable goods .....	1,446	1,661	1,667	1,893	6,667
3	Durable goods .....	367	345	273	312	1,297
4	Services .....	973	973	913	994	3,853
5	Government expenditure on goods and services .....	663	570	799	774	2,806
6	Business gross fixed capital formation .....	733	886	861	621	3,301
7	New residential construction .....	163	207	188	169	727
8	New non-residential construction .....	214	254	305	301	1,074
9	New machinery and equipment .....	356	425	368	351	1,500
10	Change in inventories .....	5	227	1,227	- 610	849
11	Non-farm business inventories .....	226	317	120	- 170	493
12	Farm inventories and grain in commercial channels .....	- 221	- 90	1,107	- 440	356
13	Exports of goods and services .....	913	1,046	1,206	1,215	4,380
14	Deduct: imports of goods and services .....	-1,069	-1,279	-1,233	-1,104	- 4,685
15	Residual error of estimate .....	18	48	21	- 8	79
16	Gross National Expenditure in Constant (1949) Dollars .....	4,049	4,477	5,734	4,287	18,547
		1955				
		I	II	III	IV	Year
1	Personal expenditure on consumer goods and services .....	3,321	3,722	3,612	4,083	14,738
2	Non-durable goods .....	1,792	1,954	1,961	2,318	8,025
3	Durable goods .....	390	601	538	575	2,104
4	Services .....	1,139	1,167	1,113	1,190	4,609
5	Government expenditure on goods and services .....	903	791	968	888	3,550
6	Business gross fixed capital formation .....	758	1,041	1,118	1,056	3,973
7	New residential construction .....	181	266	300	293	1,040
8	New non-residential construction .....	254	325	416	372	1,367
9	New machinery and equipment .....	323	450	402	391	1,566
10	Change in inventories .....	- 179	- 92	1,064	- 392	401
11	Non-farm business inventories .....	146	- 20	19	- 29	116
12	Farm inventories and grain in commercial channels .....	- 325	- 72	1,045	- 363	285
13	Exports of goods and services .....	1,072	1,238	1,359	1,291	4,960
14	Deduct: imports of goods and services .....	-1,239	-1,420	-1,477	-1,536	- 5,672
15	Residual error of estimate .....	- 13	20	14	- 10	11
16	Gross National Expenditure in Constant (1949) Dollars .....	4,623	5,300	6,658	5,380	21,961

<sup>1</sup> See footnotes, Table 2.<sup>2</sup> The implicit price deflators of the components of Gross National Expenditure which can be derived by dividing the value figures in Table 2 by the volume figures in Table 9 are not suitable as indicators of quarter-to-quarter price movements. This is because they are currently weighted, and are therefore affected by compositional shifts which occur within the components of the Gross National Expenditure on a quarter-to-quarter basis. Year-over-year comparisons are less subject to the problem of shifting weights at the component levels of Gross National Expenditure.

TABLE 9. Gross National Expenditure in Constant (1949) Dollars, by Quarters, 1947-1957

Unadjusted for Seasonality<sup>1,2</sup>

1948					1949					1950					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
millions of dollars															
2,395	2,582	2,531	2,943	10,451	2,394	2,763	2,709	3,057	10,923	2,614	2,919	2,892	3,217	11,642	1
1,389	1,539	1,560	1,765	6,253	1,328	1,573	1,594	1,793	6,288	1,425	1,633	1,651	1,865	6,574	2
190	226	221	317	954	206	303	285	352	1,146	293	366	374	399	1,432	3
816	817	750	861	3,244	860	887	830	912	3,489	896	920	867	953	3,636	4
522	383	497	500	1,902	517	437	595	578	2,127	594	453	594	601	2,242	5
564	735	712	747	2,758	667	814	790	761	3,032	673	842	850	802	3,167	6
85	178	194	181	638	151	220	221	202	794	154	219	240	220	833	7
172	196	238	244	850	189	217	259	255	920	202	239	281	266	988	8
307	361	280	322	1,270	327	377	310	304	1,318	317	384	329	316	1,346	9
- 283	- 149	856	- 337	87	- 107	- 106	666	- 404	49	- 141	- 46	827	- 79	561	10
23	- 38	55	30	70	145	28	31	- 54	150	100	96	- 18	220	398	11
- 306	- 111	801	- 367	17	- 252	- 134	635	- 350	- 101	- 241	- 142	845	- 299	163	12
921	1,017	1,133	1,122	4,193	866	1,022	1,063	1,070	4,021	839	1,015	1,063	1,082	3,999	13
- 800	-1,015	- 937	- 997	- 3,749	- 858	-1,101	- 956	- 938	- 3,853	- 857	-1,086	-1,055	-1,208	-4,206	14
23	110	22	- 62	93	17	61	- 8	- 26	44	- 3	4	113	- 48	66	15
3,342	3,663	4,814	3,916	15,735	3,496	3,890	4,859	4,098	16,343	3,719	4,101	5,284	4,367	17,471	16
1952					1953					1954					No.
I	II	III	IV	Year	I	II	III	IV	Year	I	II	III	IV	Year	
2,797	3,182	3,108	3,546	12,633	3,066	3,376	3,239	3,657	13,338	3,076	3,422	3,360	3,792	13,650	1
1,494	1,721	1,757	2,044	7,016	1,610	1,819	1,817	2,102	7,348	1,615	1,841	1,888	2,191	7,535	2
286	422	373	445	1,526	393	480	404	460	1,737	384	470	413	457	1,724	3
1,017	1,039	978	1,057	4,091	1,063	1,077	1,018	1,095	4,253	1,077	1,111	1,059	1,144	4,391	4
848	826	934	908	3,516	882	797	962	876	3,517	817	782	943	873	3,415	5
718	971	968	931	3,588	831	1,054	1,070	971	3,926	793	1,007	987	936	3,723	6
119	187	209	222	737	164	232	257	252	905	169	231	270	276	946	7
236	305	360	334	1,235	251	309	396	350	1,306	260	306	374	332	1,272	8
363	479	399	375	1,616	416	513	417	369	1,715	364	470	343	328	1,505	9
- 229	- 161	1,410	- 531	489	- 170	- 72	1,287	- 455	590	- 142	- 119	565	- 520	- 216	10
10	73	50	- 52	81	100	183	82	- 45	320	125	15	- 43	- 136	- 39	11
- 239	- 234	1,360	- 479	408	- 270	- 255	1,205	- 410	270	- 267	- 134	608	- 384	- 177	12
1,039	1,221	1,264	1,326	4,850	1,013	1,243	1,320	1,233	4,809	980	1,137	1,250	1,249	4,616	13
-1,051	-1,237	-1,248	-1,346	-4,882	-1,214	-1,437	-1,345	-1,273	-5,269	-1,140	-1,322	-1,237	-1,314	-5,013	14
12	- 110	- 50	- 19	- 167	45	- 2	- 67	- 93	- 117	64	- 2	- 20	- 31	11	15
4,134	4,692	6,386	4,815	20,027	4,453	4,959	6,466	4,916	20,794	4,448	4,905	5,848	4,985	20,186	16
1956					1957										No.
I	II	III	IV	Year	I	II	III	IV	Year						
3,576	3,900	3,783	4,257	15,516	3,699	3,957	3,823	4,335	15,814						1
1,952	2,049	2,078	2,465	8,544	1,992	2,117	2,105	2,511	8,725						2
438	642	545	560	2,185	456	580	525	548	2,109						3
1,186	1,209	1,160	1,232	4,787	1,251	1,260	1,193	1,276	4,980						4
852	826	1,067	969	3,714	864	867	1,089	946	3,786						5
923	1,320	1,379	1,268	4,890	1,097	1,401	1,401	1,225	5,124						6
214	303	311	283	1,111	181	258	279	290	1,008						7
301	439	565	509	1,814	424	556	671	542	2,193						8
408	578	503	476	1,965	492	587	451	393	1,923						9
- 28	- 117	1,186	- 290	751	- 42	- 117	751	- 499	93						10
280	132	- 24	65	453	252	70	- 26	- 74	222						11
- 308	- 249	1,210	- 355	298	- 294	- 187	777	- 425	- 129						12
1,136	1,372	1,444	1,370	5,322	1,168	1,299	1,474	1,403	5,344						13
-1,447	-1,768	-1,654	-1,721	-6,590	-1,529	-1,769	-1,647	-1,574	-8,519						14
34	52	6	- 101	- 9	35	27	- 29	- 97	- 64						15
5,046	5,585	7,211	5,752	23,594	5,292	5,665	6,862	5,739	23,558						16





## PART II

### CONCEPTS, SOURCES AND METHODS

#### SECTION I

#### REVIEW OF SOURCES AND METHODS, AND SUMMARY OF CONCEPTUAL FRAMEWORK

This section provides a general review of the statistical sources upon which the quarterly National Accounts estimates are based, together with a description of the procedures used in making the required estimates. It is designed to give the users of the data a general view of the content of the various aggregates and background for appraising the reliability of the statistical results. The section is introduced by a note on concepts and definitions,

and a discussion of problems peculiar to estimates of Gross National Product and Expenditure and personal income and expenditure on a quarterly basis. A table is included at the end of the section which summarizes in a schematic way the statistician's view of the qualitative precision of the various components of Gross National Product and Expenditure.

#### CONCEPTS AND DEFINITIONS

Except for the time interval involved, the objectives of both the quarterly and annual estimates of Gross National Product and Expenditure are identical—that is to measure the value of goods and services produced by Canadian residents in a given period (a quarter or year) and to portray the interrelated structure of transactions generated by productive activity. Similarly, the objectives of both the quarterly and annual estimates of personal income and expenditure are identical—to measure all current receipts of income, in cash or in kind, by persons (including individuals, private non-commercial institutions and pension funds), and to show the disposition of this income by major categories. Thus, the broad conceptual framework which underlies the quarterly estimates is the same as that upon which the annual estimates are based. This conceptual system is described in Part II of *National Accounts, Income and Expenditure, 1926-1956*, and will not be further elaborated here. However, for convenience, a brief description of the main aggregates is given below.

##### Gross National Product

An overall measure of our economic achievements is provided by the Gross National Product. This aggregate measures the value of goods and services produced by Canadian residents in a given period by adding together all costs arising in production. For the economy as a whole, these costs consist first of factor costs, that is to say, the earnings of the factors of production employed: wages and salaries, corporation profits before taxes, rent, interest and miscellaneous investment income, accrued net income of farm operators from farm production, and net income of non-farm unincorporated business. The sum of these factor costs plus the inventory valuation adjustment is the National Income. To arrive at the total which measures production at market prices it is necessary to add

elements of market prices which do not represent incomes of factors of production, that is, capital consumption allowances and miscellaneous valuation adjustments, and indirect taxes less subsidies. The total thus obtained is called the Gross National Product.

##### Gross National Expenditure

The market value of goods and services produced by Canadian residents in a given period can also be measured by adding together all final sales made during the period, adjusted for changes in inventories and imports; for what is produced must be disposed of, either by sales or addition to inventories. The aggregate arrived at in this manner is called Gross National Expenditure. It is made up of four main components: sales to consumers (personal expenditure on consumer goods and services); sales to governments (government expenditure on goods and services); sales to business on capital account (business gross fixed capital formation in new construction, machinery and equipment, and the value of physical change in inventories); and sales to non-residents (exports of goods and services). Since the total of sales thus enumerated includes the value of imported goods and services and since it is desired to measure production of Canadian residents only, imports of goods and services are deducted from the grand total of sales.

##### Personal Income

Personal income is a measure of all current receipts of income, in cash or in kind, of persons (including individuals, private non-commercial institutions and private pension funds). It differs from National Income in that it excludes all earnings not paid out to persons, such as undistributed corporation profits and profits of government business enterprises, and includes receipts which have not been earned in the course of current production, that is,

transfer payments. The whole of net income of unincorporated business is included<sup>1</sup> since it is not statistically possible to separate withdrawals for personal use from earnings retained in the business.

### Personal Expenditure

The other side of the personal income and expenditure account shows the disposition of personal income by three main categories: personal

direct taxes, (i.e. personal income taxes, succession duties, and miscellaneous licenses and fees), personal purchases of goods and services; and personal net saving. The latter category is estimated residually, and includes, in addition to cash savings, purchases of bonds, the savings portion of life insurance premiums, repayment of debt including residential mortgages, and net new investment in plant, equipment and inventories by individual enterprisers including farmers.

## PROBLEMS RELATING TO THE CONCEPT OF QUARTERLY ESTIMATES

Although the concepts and definitions which underlie the annual estimates are theoretically consistent with the requirements of the quarterly estimates, a number of special problems of application arise when an attempt is made to convert this conceptual system to a quarterly basis. It will be appropriate at this point to comment briefly on some of these problems.

### (a) The Accrual Principle

Quarterly estimates of Gross National Product and Expenditure aim primarily at measuring the value of production in specific quarters. As indicated above, this aim can be achieved in two ways — by summing the costs involved in production, on the one hand (G.N.P.), and by tracing the disposition of this production through sales adjusted for imports and changes in inventories, on the other hand (G.N.E.). On the Gross National Product side of the account, it is theoretically desirable to include expenses on an accrual basis in order to relate factor and other costs to the quarter in which the economic activity occurred. For example, bond interest which is normally paid only once or twice a year, accrues continuously throughout the year, and is, therefore, chargeable to the production of all four quarters. Similarly, retroactive wage payments should, theoretically, be allocated back to the quarter to which they refer, since the services rendered relate to past periods.

In practice, however, the factor and other costs included in Gross National Product are drawn from a variety of different sources which are, in many cases, independent of each other in an accounting sense. For example, quarterly corporation profits (and in some cases, net incomes of unincorporated businesses) reflect prevailing practices in industry with respect to the treatment of business expenses (mainly accrual), while the bulk of wages and salaries, and indirect taxes, are reported to the Bureau on a cash basis. It will therefore be seen that there is necessarily a mixture of both cash and accrual elements in the quarterly estimates of Gross National Product. In general, the principle of computing expenses on an accrual basis has been adhered to wherever the data permit it to be done. Even within these limits, however, consistency with other series has had to be an over-riding consideration.

<sup>1</sup> Except for the allowance which is made for the adjustment on grain transactions (see p. 39).

From the foregoing it will be clear that failure to apply the accrual principle uniformly throughout the estimates of Gross National Product stems mainly from the manner in which data are reported to the Dominion Bureau of Statistics. However, comparability in the estimates from quarter to quarter need not be affected, even though a degree of unbalance between the Gross National Product and Gross National Expenditure may exist within each quarter because individual series are not mutually consistent in an accounting sense. This unbalance is reflected, together with other errors and omissions, in the item called "residual error of estimate". It will be noted that the latter is small relative to the magnitude of the aggregates included in the tables.

It may be noted that to some extent the problem of the "accrual" versus the "cash" basis of calculation applies to annual estimates as well. However, since the year rather than the quarter is regarded as the standard unit of time for production and accounting purposes, cash payments and accrued expenses coincide to a very large extent over the full year.

In contrast to the Gross National Product which is linked to the accrual principle through the "measurement of production" approach, personal income is defined in terms of "receipts" of income. Thus, in general, the quarterly components of personal income are shown on a "receipts" basis except in the case of certain elements of interest and net rental income of persons where the statistical information permits only an accrual method of calculation. In the case of net income of unincorporated business, it is not possible to separate withdrawals for personal use from earnings retained in the business. This latter problem is not unique to the quarterly estimates, however, but also occurs in the annual calculations.

### (b) Quarterly Farm Inventories<sup>2</sup>

The measurement of farm inventories (and thus of net income of farm operators from farm production) on a quarterly basis presents a difficult theoretical problem which is closely related to the accrual principle discussed above. Farm production has marked seasonal characteristics associated particularly with plant growth, and in such cases it is difficult

<sup>2</sup> For method of estimation, see page 39.



to assess the production represented by growing inventories not yet in market form. Thus, the harvesting of a grain crop in the fall of the year represents the culmination of the productive activity of previous periods, and in a theoretical sense the value of this production might be "accrued" throughout the ploughing, seeding and growing periods. As a practical matter, however, it is impossible to assess the value of growing inventories in this way; such a procedure would entail a forecast of the farm price value of the harvested crop, thus implying a knowledge of future climatic conditions and prices, which cannot be foreseen.

In the case of "goods in process" in manufacturing, we can obtain a reliable measure of production by evaluating "inputs"; thus in the broadest sense, non-farm inventories of "goods in process" appearing in Gross National Expenditure are evaluated at cost, being matched on the Gross National Product side of the accounts by factor shares and other costs. Theoretically, it would be desirable to carry over this procedure to the treatment of agricultural inventories. A considerable part of agricultural activity takes place in the first half of the year, and it should be the objective to measure the value of "inputs", or factor shares and other costs generated in these periods. This approach does not imply any attempt to place a value on crops growing in the field, but is simply a recognition of the fact that unless inventories are measured on an "input" basis, Gross National Product is understated in the first half of the year by the amount of factor and other costs chargeable to the production of this period, and overstated in the third (harvest) quarter by an equivalent amount. Thus, to take account of grain inventories only in the third (harvest) quarter

could conceivably result in farm net income showing losses in the early part of the year, with net income in the third quarter greater than for the year as a whole. On the other hand, the "input" method would eliminate such losses in the early part of the year, and reduce the amount of net income in the third quarter by whatever expenses are incurred in the early part of the year.

At the present time, statistics are not available which will permit the quarterly allocation of farm expenses to grain inventories on an "input" basis, and as a consequence grain inventories have to be counted as production only when they reach marketable form, that is, after harvesting. Consequently, the level of Gross National Product in the first half of the year does not vary according to the intensity of crop-production activity; the value of production generated by such activity is offset by the expenses charged against gross farm income, there being no counter-balancing increase in grain inventories. In the third quarter, however, accrued net farm income (and thus Gross National Product) is overstated to the extent that the expenses incurred earlier in the year are not charged against the harvested crop at this particular point of time. The method of estimating changes in grain and livestock inventories are described on page 40.

The concentration of crop production in the third quarter of the year presents a special problem of seasonal adjustment which cannot be adequately handled by standard techniques. The treatment accorded this item in the seasonally adjusted data is described on page 52, under the section, "Notes on Seasonally Adjusted National Accounts Data".

## GROSS NATIONAL PRODUCT, SOURCES AND METHODS

The following outline of sources and methods gives a brief summary of the content of each component and describes the procedures employed in making the required estimates. The section is designed to permit users of the data to appraise in a general way the reliability of the statistical results.

### Wages, Salaries, and Supplementary Labour Income

The estimates of wages, salaries, and supplementary labour income are prepared by the Labour Division of the Dominion Bureau of Statistics. These estimates are designed to include all compensation to Canadian wage earners and salaried employees, including income in kind such as board and lodging.<sup>1</sup> They do not include the earnings of self-employed individuals or partners, the income of independent professionals, the net income of farmers, or payments to members of the armed services.

<sup>1</sup> It may be noted that income in kind consumed by farm proprietors is included with accrued net income of farm operators from farm production, while food and clothing supplied to the armed forces is included with military pay and allowances.

Wages and salaries are estimated on a "gross" basis—that is, they are reckoned before tax deductions, contributions of employees to unemployment insurance, pension and other social security schemes. Retroactive wage increases are included in the quarter in which they are paid.

Supplementary labour income consists of other expenditures by employers on labour account that can be regarded as payment for employees' services. Included here are employers' contributions to pension and employee welfare funds, the unemployment insurance fund, and workmen's compensation funds.<sup>2</sup>

Monthly estimates are prepared for each industry in each province. The general method is to distribute the estimates annual totals on the basis of related monthly indicators. In a recent year, for which no independent total is yet available, the

<sup>2</sup> That portion of employers' contributions to workmen's compensation funds which is estimated to be for medical aid and hospitalization is not regarded as a form of employee income and is therefore excluded.

preliminary estimates are obtained by using the monthly indicators to project from the monthly data of the last year for which such a total is available. Quarterly estimates are obtained by summing the three relevant monthly estimates.

The greater part of the monthly income estimates is based on projections using monthly payroll indexes. For industries in which there is no monthly payroll coverage, as in agriculture and some of the service groups, special indexes are constructed from directly related information. In a few cases estimates are based on indirect evidence, but these are quantitatively not of much importance in the aggregate.

#### (a) Industries Covered by Payroll Indexes

Payroll indexes, calculated from reports of establishments normally employing fifteen or more persons, are used to estimate for the following industries: manufacturing; forestry; construction; mining; public utilities; transportation, communication and storage; trade; personal service, recreation service, and business service; finance, insurance, and real estate. Federal and provincial government payments are estimated on the basis of indexes which are constructed from the monthly returns of wages and salaries as received by the Public Finance and Transportation Division of the Dominion Bureau of Statistics.

#### (b) Industries Estimated on the Basis of Related Data

Wages and salaries in agriculture are estimated by means of an index obtained by multiplying numbers of paid workers (from the D.B.S. Labour Force Survey) by a farm wage-rate index.<sup>1</sup> Monthly wage and salary figures for community service and for municipal government are derived by employing indexes obtained by multiplying numbers of paid workers in each industry by average weekly earnings in finance, insurance, and real estate. Similar techniques are employed to estimate the value of income in kind received by employees of hospitals and religious institutions.

#### (c) Estimates Based on Indirect Evidence

Total wages and salaries paid in the fishing industry are estimated using an index of the monthly value of fish caught and landed.

In hunting and trapping, the annual figure is arbitrarily divided into six equal parts covering the six coldest months of the year.

#### (d) Supplementary Labour Income

Employers' contributions to pension and welfare funds on behalf of employees are estimated on the basis of trends observed in the annual estimates of these items. It should be noted that pensions paid

by employers who had no funds set aside for that purpose and to which employees do not contribute are also included as supplementary labour income.

Employers' contributions to unemployment insurance and to workmen's compensation funds are estimated on the basis of the trend of total wages and salaries, excluding agriculture and personal service.

#### Military Pay and Allowances

Payments to members of the armed forces in Canada and overseas are treated as compensation for services rendered. Under this heading are included military pay of rank and trades pay, marriage, separation, and subsistence allowances, clothing allowances, and the rehabilitation and civilian clothing grants payable to members of the Special Forces on discharge. War service gratuities and all post discharge re-establishment benefits are excluded as transfer payments. The estimated value of food and clothing issues "in kind" is included.

Cash pay and allowances to the armed forces are available on a monthly basis from the Department of National Defence.

Income in kind is calculated on the basis of quarterly statements of strengths of the three armed services, and estimated man-day costs for food and clothing.

#### Corporation Profits Before Taxes

Corporation profits before taxes are measured before the deduction of corporation income and other direct taxes. Since they are computed on a national basis, they include the earnings of Canadian factors only. Dividends and profits remitted to non-residents are therefore deducted. Undistributed profits relating to assets owned by non-residents should also be deducted, but are not because of statistical difficulties. Since the National Income includes only earnings from the production of new goods and services, capital gains and losses are excluded.

The general procedure followed in estimating quarterly corporation profits before taxes is similar to that employed for the annual National Accounts estimates.

The concept "profits before taxes" used in the National Accounts differs somewhat from the one employed by the Department of National Revenue for taxation purposes. Adjustments are made to the calendar year figures published by the Department of National Revenue in order to bring them into line with the definitions required for the National Accounts. Depletion charges, which are deductible for income tax purposes, are added back, since discoveries of natural resources are not counted as part of capital formation; the exhaustion of natural resources therefore, is not regarded as a charge against the National Income. Another adjustment

<sup>1</sup> This index is based on a survey made only three times each year. Inter-survey period indexes are derived by interpolation or extrapolation.



is for provincial mining and logging taxes which are allowed as an expense for income tax purposes, but are added back to profits in the National Accounts. Similarly, banks calculate profits for taxation purposes after transfers to reserves. These transfers are added back to the National Income since they are not a charge against production, and a deduction is then made for estimated bad debt losses. Charitable contributions made by corporations are added back on the grounds that they are not a cost of production, but a distribution of earnings. Corporate losses are also deducted in order to bring the figures to a profits less losses basis. It should be noted that under income tax regulations, taxable profits, calculated before payment of dividends, do not include dividends received from Canadian corporations. No special allowance need therefore be made to eliminate Canadian inter-corporate dividends. The profits of co-operatives are included in the National Accounts in corporation profits.

From 1950 on, the basic annual data have been distributed according to movement of profits published in *Corporation Profits* (General Assignments Division, D.B.S.). Dividends and profits remitted to non-residents quarterly are supplied by the Balance of Payments Section of the Dominion Bureau of Statistics.

Prior to 1950, the average quarterly pattern for the years 1950-1956 was employed to distribute annual profits by quarters.

Quarterly corporation profits from the above publication form the basis of current quarterly estimates.

#### **Rent, Interest, and Miscellaneous Investment Income**

This component of national income includes the interest and net rental income of persons, government investment income, and withholding taxes on interest, dividends, rents and royalties paid to non-residents. All these components are measured before deduction of direct taxes, and include the earnings of Canadian factors only. All interest on the public debt and a part of interest on the consumer debt are treated as transfer payments and are therefore excluded.

##### **(a) Interest and Net Rental Income of Persons**

This component is made up of the following items:

- (i) Canadian bond, mortgage, and deposit interest received by or accruing to persons;
- (ii) Net rents received by or accruing to persons;
- (iii) Interest and dividends received by persons from non-residents;
- (iv) Miscellaneous investment income.

##### **(1) Canadian Bond, Mortgage and Deposit Interest**

The annual estimate of bond interest received by persons is distributed by quarters on the total of interest on government direct and federal guaranteed

debt, C.N.R. non-guaranteed debt, funded corporation debt, less total interest paid to non-residents. The interest on the federal debt quarterly is obtained from the Comptroller of the Treasury. Quarterly data on provincial interest payments are available since 1951; for previous years, the pattern of interest payments prevailing in 1951 was employed. Quarterly estimates of corporate debt outstanding (to which a rate of interest is applied), Canadian railway non-guaranteed debt interest and federal guaranteed debt interest are provided by the Bank of Canada. Quarterly interest paid to non-residents is estimated by the Balance of Payments Section of D.B.S.

The figure of mortgage interest accruing to persons (including interest on agreements of sale) is derived by straight line interpolations between the annual totals. Currently, the annual interest is forecast and the quarterly estimates are obtained by interpolation. Deposit interest received by persons from the chartered banks is obtained from the Bank of Canada. Imputed interest received from the banks is moved according to the level of monthly notice deposits as shown in the *Statistical Summary* of the Bank of Canada. Other deposit interest received is moved on a straight line.

##### **(ii) Net Rents Received by Persons**

For convenience in making the estimates, the rental field is divided into three main parts:

- (a) Residential non-farm rents –
  - (i) Net rents paid by tenants,
  - (ii) Net rents imputed on owner-occupied dwellings.
- (b) Non-residential non-farm rents, and
- (c) Residential and non-residential farm rents.

Of these three major classes, the first is the most important in size and is also the one for which statistical coverage is most satisfactory.

Broadly speaking, the method used for each class is similar; total gross rents are first estimated and total expenses subtracted. Net rents paid to other than persons are then deducted leaving net rents received by individuals. The sum of net rents received by persons for the above three groups gives the required total.

**Residential non-farm rents.** Gross residential non-farm contract rent paid by tenants is estimated by multiplying the number of tenant-occupied dwellings by the figure of average rent per dwelling. From this gross figure of contract rent, the cost of facilities provided by the landlord such as heat, water, electricity, amortization of stoves, refrigerators, etc., is deducted to arrive at gross space rent paid by tenants. Gross space rent imputed on owner-occupied dwellings is derived by multiplying the number of owner-occupied dwellings by an average imputed space rent per dwelling. Space expenses which include repair and maintenance, municipal residential property taxes, depreciation, fire insurance, mortgage interest and real estate commissions

on transfers of existing dwellings, are then deducted from the total of gross paid and imputed space rent leaving paid and imputed net rent paid by individuals as a remainder. Net rent paid to other than persons is deducted and an estimated rental for garages is added. This leaves the portion of paid and imputed net rent which is received by individuals.

Quarterly figures of the number of non-farm tenant and owner occupied dwellings are interpolated between the annual benchmarks on the basis of dwellings completed. Currently the figures are brought forward on the basis of dwelling completions obtained from *New Residential Construction* published by the Special Surveys Division of the D.B.S. The average rent paid by tenants is obtained monthly from the Prices Division of D.B.S.

Landlords' heating costs are projected on the figures of residential fuel consumption. The other facility expenses are moved forward on the number of rented dwellings.

Imputed space rent on owner-occupied dwellings is calculated by multiplying the average space rent paid by tenants (obtained by deducting the cost of facilities provided by the landlord from the contract rent paid by the tenant) by a ratio of the number of rooms in owner-occupied to tenant occupied dwellings from the 1951 Census.

The estimates of repair and maintenance, depreciation, and mortgage interest are based on data obtained from C.M.H.C. Taxes are an equal quarterly allocation of the annual figure.

The estimates of fire insurance and real estate commissions on the transfer of existing dwellings are interpolations between annual benchmarks. Net rents paid by individuals to corporations, government, C.M.H.C. and abroad are related to the pattern of net rents paid. Garage rent, not implicitly included in house rent, is estimated by multiplying the number of garages by an estimated average garage rent.

**Non-residential, non-farm rents<sup>1</sup>** received by persons are estimated quarterly by straight line interpolation.

**Residential and non-residential farm rents** are estimated for the quarter by a straight line projection between annual benchmarks.

### (iii) Interest and Dividends Received by Persons from Non-Residents

Quarterly estimates of interest and dividends received by persons from non-residents are supplied by the Balance of Payments Section of the Bureau.

<sup>1</sup> Only rents paid are included here. Imputed rents of owner-occupied premises used by business are implicitly included in the estimates of profits and net income.

### (iv) Miscellaneous Investment Income

In addition to investment income received by life insurance on behalf of Canadian policy-holders, this component includes several categories of income. These are: investment income of fraternal and mutual benefit societies, which like life insurance companies, are treated as individuals; interest on federal government annuities and private industrial pension funds, royalties and the profits of mutual non-life insurance companies.

The investment income of life insurance companies, fraternal and mutual benefit societies, and industrial pension funds is divided into two parts—interest received from government bonds, and other. The government debt interest received is projected by quarters on the total payments of government direct debt interest paid.

Investment income arising from other sources is interpolated as a straight line.

Investment income on federal government annuities account is distributed according to the interest paid on the federal debt.

Other income is simply the annual estimate divided by four.

### (b) Government Investment Income

This item includes profits of government business enterprises, and interest on government loans and advances, and on public funds.

**Profits of government business enterprises** consist of profits (less losses) of those government agencies which conduct their activities on an essentially commercial basis, setting a price for their services which is calculated to cover costs. Included here are profits of the Canadian National Railways, provincial liquor control boards, and provincial and municipal public utilities such as hydro-electric systems, telephone systems, street railways, and so on. The federal Post Office Department is included here, its gross expenditures being offset against its gross revenues to arrive at an estimate of profits.<sup>2</sup> Net imputed rent on government buildings is also included here.

At the federal level, current quarterly data are available only with respect to the profits (or losses) of the Canadian National Railways and the Post Office Department. This information is obtained directly from the federal Department of Finance. All other quarterly profits of federal government business enterprises are estimates based on the previous year's annual figure, and allocated equally to the four quarters of the current year. The figures are adjusted retrospectively when firm annual figures for the current year become available.

<sup>2</sup> This treatment is approximate only since no allowance has been made for depreciation on postal property.



At the provincial level, quarterly profits of liquor commissions are available for some provinces, while for others annual data are distributed on the basis of quarterly provincial sales of liquor, wine and beer. Profits of hydro-electric commissions are allocated in accordance with average consumption of electric power. Profits of provincial telephone and railway companies and other miscellaneous enterprises are allocated equally among the four quarters of the year. Current period estimates are based on the distribution of a forecast annual figure, based on budget estimates and other data.

At the municipal level, all profits of public utilities are distributed by straight line interpolation between annual figures. For current quarters, this procedure involves a forecast of the current annual figure.

**Interest on government loans and advances** includes interest on loans to government agencies such as the Canadian National Railways and various public utilities, and interest on loans to foreign and domestic governments. The quarterly figures are derived by straight line interpolation between annual data, involving a forecast annual for the current period.

**Interest on government pension and social insurance funds** includes interest on pension and superannuation funds, the unemployment insurance fund, and provincial workmen's compensation funds. Since these funds are mainly invested in the government's own bonds, the interest is distributed quarterly according to the movement of gross debt interest. Again, for current quarters, this procedure involves a forecast of the annual total for the current year.

### (c) Adjustments

The estimates of corporation profits, bond interest and miscellaneous investment income described thus far include interest on the public debt and the "transfer" portion of interest on consumer debt. These transfers must be excluded from the National Income. Further, the estimates of dividends and interest paid to non-residents, which have been explicitly excluded from these totals, include a portion retained by the federal government in the form of "withholding taxes"; as these withholding taxes are retained in Canada it is therefore necessary to add them back.

**Interest on the public debt.** The federal content of this item is available on a quarterly basis from Comptroller of the Treasury. At the provincial level quarterly data of interest payments are also available since 1951, while for previous years, the pattern of interest payments prevailing in 1951 was employed. The municipal content is distributed on the basis of studies of bond and Treasury bills outstanding. Again for current quarters, a forecast of the annual is involved.

**Interest on consumer debt** is calculated by applying a rate of interest to the estimated volume of consumer credit outstanding at the end of each

quarter. These data are obtained from the *Statistical Summary* published by the Bank of Canada.

**Withholding tax collections** on interest, dividends etc., paid to non-residents are available quarterly from the Comptroller of the Treasury.

### Accrued Net Income of Farm Operators from Farm Production

Accrued net income of farm operators from farm production and the next following component of National Income, i.e., net income of non-farm unincorporated business, are accounted for separately in the National Income since they represent a mixture of labour income and investment income which cannot be separated on anything but an arbitrary basis.

The quarterly estimates of accrued net income of farm operators from farm production are computed in the same way as the annual estimates, that is, by constructing a synthetic operating account for the agriculture industry. The procedure is summarized briefly below: farm cash income from the sale of farm products is available on a quarterly basis from the Agriculture Division of D.B.S. Quarterly estimates are made of the value, at farm prices, of land and forest products grown and consumed on farms, and these, together with imputed gross rents on owner-occupied farm dwellings constitute the value of "income in kind" received by farmers. The value of the physical change in inventories of grain and livestock held on farms is computed at prevailing quarterly prices. The sum of all these items constitutes gross farm income.

Farm operating expenses are then deducted from this figure. These include taxes on real estate, gross rents on farm land, labour costs, interest on on farm debt, feed and seed, binder twine, repairs and depreciation, operating costs of farm machinery, fertilizer, and so on. The resultant figure, after deduction of these expenses, corresponds closely to the annual concept of "net income of farm operators from farming operations".

For National Accounts purposes, certain adjustments are made to this figure. Firstly, imputed rents on owner-occupied farm dwellings and profits of agricultural enterprises organized as corporations, are deducted, since these are included in investment income. Secondly, an "adjustment on grains transactions" is made in two parts. The first part takes account of the undistributed earnings of the Canadian Wheat Board.<sup>1</sup> This procedure results in a figure of earnings of farm operators arising from current farm production, which is the appropriate aggregate to include in Gross National Product. The second part of the adjustment allows for the fact that the earnings of the Canadian Wheat Board are calculated

<sup>1</sup> Data obtained from weekly reports on Canadian Grain Statistics.

on the basis of change in book values of inventories, whereas the required valuation of inventories for the National Accounts is the value of physical change.

To obtain the quarterly distribution of certain of the above items, a number of special procedures have had to be adopted. Farm cash income is, as noted above, available quarterly from the Agriculture Division of D.B.S. Estimates are made for each of the items of "income in kind" consumed on farms, and these are then summed to obtain a total quarterly figure; when necessary the four quarters are adjusted to bring them into line with the final annual estimate. Specifically, the value of dairy products consumed on farms in each quarter is calculated from monthly price and quantity data supplied by the Agriculture Division of D.B.S. Estimates of the quantity and value of poultry consumed on farms are available only on an annual basis. Consumption of hens and chickens is allocated throughout the year, while other types of poultry consumed are assigned arbitrarily to the fourth quarter. For current quarters where no annual data are available, the estimates are based on a forecast annual figure. The value of eggs consumed on farms is published monthly by the Agriculture Division. Estimates of the value of cattle, calves, sheep, lambs and hogs killed and eaten on farms are computed from number and price data. Numbers are available for each six-month period from the semi-annual livestock surveys of the Agriculture Division, and these are arbitrarily allocated to the periods in which farm slaughtering normally occur, that is, the first and fourth quarters; for current periods a forecast is made until the livestock survey is available. Current prices per head of livestock are obtained by projecting the average price per head according to the 1941 Census, on an index of cwt. prices.

The annual estimate of fruits and vegetables consumed in kind is distributed quarterly according to production patterns for each area worked out by the Agriculture Division. For current periods, this method involves a forecast of the annual figure. The value of forest products consumed on the farm is assigned to the months of October to April, inclusive.

Quarterly changes in farm inventories are calculated as follows: the Agriculture Division of D.B.S. prepares estimates of stocks of grain held on farms at the end of each quarterly period. The quarterly quantum change in these stocks is then valued at the average farm price prevailing during the quarter. Similarly, estimates of the number of head of livestock on farms, by type and age groups, are prepared at quarterly intervals by the Agriculture Division. The quarterly quantum changes in the case of livestock are valued at farm prices prevailing at the end of each quarter.

Quarterly estimates of farm operating expenses are obtained for past periods by allocating the annual estimate and for current periods by allocating

a forecast annual estimate. The method of allocation differs for most of the expense items. Taxes on real estate and gross rents on farm lands are allocated equally to the four quarters of the year. Farm labour costs are estimated monthly by the Labour Division of the Bureau and they are identical with the figure included in the wage and salary component of National Income. Interest on farm debt is computed by straight line interpolation between annual benchmarks. The bulk of feed and seed expense is allocated to the first and fourth quarters of the year, since grain fed to livestock is heaviest during the winter period.

Machinery repair is allocated equally to the first three quarters of the year, while building repair is determined by straight line interpolation between annual estimates. Depreciation is also determined by straight line interpolation. The bulk of tractor fuel expense is allocated to the second and third quarters. Truck expenses of tires and tubes, licence fees, petrol, oil, lubricants, repairs and insurance are allocated on a pattern of expenditures obtained from the Agriculture Division, D.B.S. Estimates of fertilizer are allocated evenly over the first three quarters of the year.

#### **Net Income of Non-Farm Unincorporated Business**

Net income of non-farm unincorporated business consists of the earnings of working proprietors from their own business.

##### **(a) Net Professional Income**

This group includes independent professional practitioners such as doctors, dentists, accountants, lawyers and engineers. In general, there is little quarterly data available on professional incomes. Quarterly net incomes are therefore apportioned on the basis of a straight line trend between annual benchmarks; current quarterly figures are derived on the basis of a forecast of the annual.

##### **(b) Other Unincorporated Non-Farm Income**

The non-farm group of other unincorporated business covers a heterogeneous range of industries. Again, little systematic information on quarterly net income is available for this group. Various methods of estimation are employed to construct the net income series for these industries, including the synthetic operating account method, the "ratio of net to gross income" method, and allocation or projection on the base of indexes. In the latter case, the relationship of the index in the net income series for which it is employed as an indicator is sometimes quite tenuous, resting on assumptions of an uncertain nature.

In **forestry**, quarterly estimates of net income are derived by distributing annual figures on the basis of the change in the number of working proprietors; current quarterly figures are obtained by projections of this index.



In **fishing**, estimates are obtained by the synthetic operating account method. Gross revenue is taken to be the value of fish caught and landed as compiled monthly by the Fisheries Section of D.B.S. From this figure are deducted the values of expense items. Quarterly estimates of depreciation are derived by straight line interpolation between annual benchmarks. For the current period, this involves forecasting the annual figure. Other expenses such as wages and salaries, fuel and repair costs are moved according to the pattern of the value of fish caught and landed.

In **hunting and trapping**, the annual estimate is distributed evenly over the fall and winter months. For the current period this involves a forecast of the annual.

In **manufacturing**, the annual estimates are distributed or projected on an index which reflects changes in wholesale prices of selected manufacturing commodities and changes in the number of working proprietors. In **construction**, net income of working proprietors is allocated and projected on the change in the volume of new residential construction.

Net income of **unincorporated retail stores** is estimated by applying sales-profit ratios to quarterly sales of unincorporated retail stores. Since 1950, the ratios are based on the quarterly corporation profits survey. For prior years, the annual net income figures are allocated according to the quarterly pattern established for 1950-1952. Quarterly net income in **wholesale trade** is obtained by distributing the annual estimate evenly over the four quarters; currently this involves a forecast of the annual.

In **finance, insurance and real estate**, net income of stock and bond dealers is moved according to the value of shares traded on the Toronto stock exchange. Net income in insurance is derived by straight-line interpolation between annual estimates. Net income in other financial groups is distributed according to the movement of net income in the above two groups.

The various **service industries** constitute an important segment of the unincorporated business field, but information respecting quarterly movements of net income for this group is fragmentary. The methods of estimation are therefore based on assumptions of uncertain validity.

In **laundry and dry-cleaning, barbering, etc.**, the estimates are linked to the movement of consumer expenditures on similar services.

Net income in **undertaking** is based on an index combining the number of deaths with the consumer price index.

Net income in **hotels and tourist camps** is based on an index of employment in hotels. In **restaurant service**, an index of total restaurant sales is used.

Net income in **boarding and lodging** is derived by straight-line interpolation between annual estimates. **Miscellaneous business and personal service** is adjusted according to the movement of total business and personal service above.

### Indirect Taxes Less Subsidies

Indirect taxes represent a part of the market price of goods and services which is not received by factors of production. They are, therefore, not included in the National Income, but must be added to factor costs to arrive at total costs entering into market prices.

Subsidies represent amounts contributed by government toward current cost of production. For this reason they must be deducted from factor costs to arrive at Gross National Product at market prices.

#### (a) Indirect Taxes

**Federal indirect taxes** consist of: (1) customs import duties; (2) excise duties and taxes; (3) the business share of privileges, licences and permits where no direct service by the government is involved; (4) taxes on corporations other than on profits; and (5) the levy against farmers under the *Prairie Farm Assistance Act*. With the exception of the latter item, all these data are available monthly on a collections basis from statements prepared in the office of the Comptroller of the Treasury. The quarterly figure is simply taken as the sum of the three relevant monthly figures. The *Prairie Farm Assistance Act* levy is obtained quarterly from the Board of Grain Commissioners.

**Provincial indirect taxes** on a quarterly basis are obtained since 1951 from almost all the provinces. For the non-reporting provinces, an annual forecast is made and distributed on related indicators as described below or on the quarterly pattern of indirect taxes in a contiguous province.

For the years 1947 to 1950, the provincial quarterly estimates, for the most part, are derived by allocating the annual figure according to the movement of related indicators. Gasoline taxes are distributed in accordance with quarterly sales of taxable gasoline in the years 1947-1950, as reported to the Public Finance and Transportation Division (D.B.S.). Retail sales taxes are distributed according to the quarterly value of taxable retail sales (after adjustment for tax exempt sales) in the province in which the tax is levied (data from *Retail Trade*—D.B.S.). Tobacco taxes are divided according to quarterly releases of tobacco, as reported to the Industry and Merchandising Division, D.B.S. Real and personal property taxes are allocated equally to the four quarters of the year since they are considered to accrue on a day-to-day basis. All other taxes, including the business share of motor vehicle licences and permits, the amusement tax, taxes on corporations other than on profits, and

miscellaneous taxes, licences, permits and public domain revenues, are allocated according to the 1951 pattern of tax collections.

**Municipal indirect taxes** consist mainly of real property taxes on owner-occupied and rented property. Again, these taxes are allocated evenly throughout the year. Municipal retail sales taxes are allocated according to the quarterly value of taxable retail sales in the provinces where they are levied. All other municipal taxes are allocated since 1951 according to the pattern of the corresponding provincial taxes. For current quarterly periods, these procedures involve a forecast of the annual.

#### (b) Subsidies

Direct subsidy payments by the federal government are obtained on monthly basis from expenditure statements prepared in the office of the Comptroller of the Treasury; the quarterly figure is derived as the sum of the three relevant months.

Trading losses on operations of government commodity agencies are available only on an annual basis, and the quarterly estimates are derived by allocating the annual figures equally to the four quarters of the year. For the current quarterly period this procedure involves a forecast of the annual.

Provincial subsidies are obtained from the reporting provinces since 1951. Prior to 1951, provincial subsidies were allocated on the basis of the pattern prevailing in 1951.

There were no subsidies paid at the municipal level.

#### Capital Consumption Allowances and Miscellaneous Valuation Adjustments

To arrive at Gross National Product at market prices, allowances for current consumption of capital and similar non-cash charges deducted to arrive at the profit, net rent, and net income components of the National Income must be added back. Current accounting allowances are used as a basis for the estimates, although these may vary widely from true economic capital consumption. It is convenient, however, to regard "capital consumption allowances and miscellaneous valuation adjustments" as the sum of true capital consumption and various "valuation adjustments", even though the former are not at present completely separable.

Valuation adjustments arise from differences in the concepts of income as reflected in business accounting records and the corresponding concepts relevant for the National Accounts. In some cases, outlays essentially capital in nature are charged by business to current expenses. Capital outlays of this nature are included in the estimates of business gross fixed capital formation in Gross National Expenditure; they must therefore be included as a component of Gross National Product

to preserve the balance of the accounts. Conversely, certain non-tangible outlays capitalized by business are deducted under this general heading.

The claim portion of insurance against fire and other damage to business property (including all residential property), is regarded as analogous to depreciation in that it is included in market prices but does not represent income of any factor of production. It is a cost in the maintenance of the national capital and is therefore included under this heading. An estimate is also included for the claim portion of business insurance against financial loss, e.g. fidelity insurance.

Bad debt allowances (less recoveries) are included here since they are deducted in computing net income and profits but do not represent income of any factor of production.

Other items included under this general heading are business scrap and salvage allowances and net business sales of used motor vehicles.

In general, methods by which quarterly estimates of depreciation are derived may be grouped into four main classes. The most important of these relies on the *Corporation Profits* publication, issued by the General Assignments Division of D.B.S., and this is used beginning with the year 1950 for distribution or projection of the main components of depreciation for incorporated private companies, government business enterprises (based on the utilities group of private corporations) and unincorporated retail trade. For the years 1947 to 1949, the average pattern of depreciation obtained from *Corporation Profits* was used to distribute the annual data quarterly.

The second group of estimates relies on information prepared in the estimation of net income of unincorporated business where a synthetic operating account is employed. The estimates of depreciation in agriculture and in fisheries are thus obtained. Depreciation estimated in the calculation of residential non-farm rents is used for the housing depreciation.

A third class of estimates is based on the allocation or projection of the depreciation figures according to the movement of related indicators. Thus capital outlays charged to current expenses, and scrap and salvage allowances, are distributed on the movement of quarterly capital formation in new machinery and equipment. Net bad debt write-offs and the claim portion of business and residential insurance are moved on the trend of corporate depreciation. Mining development expenditure write-offs are moved according to depreciation in mining. Trade-in allowances on the sale of used cars are based on the sale of new and used cars.

The fourth estimate is one for which no quarterly information is available. The method employed here is one of interpolation through annual averages and the current figure is obtained by extension.



This includes estimates of depreciation in unincorporated business (other than industries explicitly mentioned), real estate commissions on the transfer

of non-residential buildings, amortization of landlord facilities, commissions on the purchase and sale of stocks and bonds, and other adjustments.

## GROSS NATIONAL EXPENDITURE AT MARKET PRICES

### Personal Expenditure on Consumer Goods and Services

This component comprises personal expenditure of Canadian residents, including implied expenditure out of income in kind, on consumer goods and services. All types of consumer durable goods are included. Purchases of houses, however, are regarded as capital goods, and are shown with the estimate of business gross fixed capital formation. The rental value of owner-occupied houses is included, as are the operating costs of private non-commercial institutions and life insurance companies (see page 123, *National Accounts, Income and Expenditure, 1926-1956*). The estimate includes expenditures of Canadian residents temporarily abroad, (e.g. tourists, members of the armed forces), but excludes expenditures of foreign residents temporarily in Canada. All expenditures that are regarded as business costs are excluded.

The estimates are calculated under three broad categories: commodities, services, and net expenditures abroad.

#### (a) Personal Expenditure on Commodities

This estimate consists of purchases of commodities by persons, and implied expenditure out of income in kind. The general method of estimating quarterly purchases of commodities is to adjust the quarterly figure of total retail sales to exclude the value of non-personal purchases of commodities at retail, and to eliminate sales of second hand merchandise not assignable to the production of the current quarter. Receipts from repairs and services are also subtracted from the total, since they are included with personal expenditure on services. Commodities purchased by individuals through non-retail outlets are added, as well as certain provincial and local taxes which are not included in the total retail sales figure. The method of estimating each of the above component series on a quarterly basis is described in the following sections. In general, the procedure followed is to allocate annual figures on the basis of monthly retail sales or other data obtained from the various Divisions of D.B.S.; these data are also used to carry forward the quarterly series into current years for which annual information has not yet become available.

##### (i) Total Retail Sales

Quarterly estimates of total retail sales are based on the monthly retail sales figures from the Industry and Merchandising Division.

##### (ii) Non-Personal Purchases at Retail

Non-personal purchases at retail, which are deducted from the estimate of total retail sales, are estimated quarterly by groups. The retail sales

figures relevant to the group are used as the interpolating or extrapolating series for estimates of wholesale sales of automotive dealers, building material, hardware, plumbing and heating equipment; business purchases of new and used motor vehicles, gasoline, oil and grease, automobile parts and accessories, alcoholic beverages, work clothing; wholesale sales by retail establishments; tractors and farm implements and parts and hay, straw and feed. The value of meals and beverages charged to business and government expense accounts is projected according to the movement of labour income in manufacturing, wholesale and retail trade and government.

#### (iii) Sales of Second-Hand Merchandise

Since Gross National Expenditure measures only sales of currently produced goods and services, it is necessary, in computing personal expenditure on consumer goods and services, to exclude the transfer value of sales of second-hand merchandise from total retail sales; only the "mark-up" value of such merchandise is properly included in the figures.

Sales of used automobiles by motor vehicle dealers and used car dealers are estimated on the basis of monthly data from the Industry and Merchandising Division. From this figure it is necessary to subtract the value of trade-in allowances on new and used automobiles and/or the cost of dealer purchases. Estimates of trade-in allowances by motor vehicle dealers are based on monthly data from the Industry and Merchandising Division and a constant mark-up is assumed in the case of sales by used car dealers.

The estimates of trade-in allowances on other used merchandise are projected on the trend of furniture store sales.

#### (iv) Receipts from Repairs and Services

Since the estimates in this section refer wholly to commodities, repair and service receipts are deducted from the total of retail sales and included in personal expenditure on services below. The repair and service receipts by garages are projected on the trend of garage and filling station sales. All other repair and service receipts are projected on the trend of total retail sales less restaurants.

#### (v) Commodities Purchased Through Non-Retail Outlets

A significant volume of retail sales to individuals occurs through outlets not ordinarily classified as retail stores, and these must be added to the retail sales figures. Included here are retail sales by manufacturing bakeries and dairies (house to house deliveries). The former is projected on a combined index of employment, average hours worked

and the price of bread and other bakery products; and the latter on a combined index of fluid milk sales and milk prices.

Direct consumer sales by farmers are also added insofar as estimates can be made. Direct sales of fuel wood to consumers by farmers is moved according to farm cash income from the sale of forest products. Sale of farm produce by means of house-to-house delivery and markets is projected by a combined index of consumer prices and urban population.

Sale of beer through factory outlets is projected on the trend of retail beer sales. Consumer purchases of fuel oil and kerosene from bulk tank stations are projected on the basis of manufacturers' sales (from the Industry and Merchandising Division) and the price of fuel oil.

Consumer purchases in railway dining and buffet cars are projected according to the movement of total passenger operating revenues of all Canadian railways obtained from the Public Finance and Transportation Division. Purchases of alcoholic beverages are related to monthly sales of alcoholic beverages (collected by the Industry and Merchandising Division). Purchases of meals and merchandise through hotels and cafeterias and canteens on business premises are distributed in accordance with the movement of retail sales of restaurants, obtained from the Industry and Merchandising Division. Retail sales by manufacturers, wholesalers, service establishments and miscellaneous outlets are projected on the basis of related retail sales data furnished by the Industry and Merchandising Division.

The service or mark-up portion of meals and alcoholic beverages served for on premise consumption must be deducted from retail sales and added to services since the estimates in this section refer wholly to commodities. The mark-up on meals is assumed to be 25% while for alcoholic beverages available data are extrapolated on the basis of sales of spirits, beer and wines to licensees obtained from the Industry and Merchandising Division.

#### **(vi) Provincial and Local Taxes**

In general, retail sales estimates include federal sales and excise taxes, but do not include certain types of local and provincial sales taxes. These must, therefore, be added to bring the estimates of retail sales to persons to a market price valuation. Data are obtained in connection with the quarterly estimates of indirect taxes.

#### **(vii) Income in Kind, Goods**

An imputation is made to personal expenditure for the value of goods consumed out of income in kind. In each case the figures included in expenditure are based on the quarterly estimates used for the income side. The estimate of food and fuel consumed on farms is a part of the calculation of

net farm income prepared by the Agriculture Division. Food received and consumed by non-agricultural workers is computed in connection with the estimates of wages, salaries and supplementary labour income. The value of lodging supplied to both farm and non-farm workers is not included here, being classified to the "services" estimate. Estimates of food and clothing issued to the armed forces are prepared in connection with the figures of military pay and allowances.

### **(b) Personal Expenditure on Services**

This includes the value of services rendered directly to individuals as distinct from those rendered to business or to government. The general method of estimating the quarterly figure is to allocate the annual benchmark on the basis of an interpolating series, and to carry the resulting quarterly estimate forward to the current period by projection.

#### **(i) Estimates Based on Actual or Directly Related Information**

For certain classes of services fairly reliable data are available to serve as the interpolating or extrapolating series. Bridge, tunnel and ferry tolls are distributed in accordance with Canadian re-entries at border points; expenditure for transportation on steam railways, electric railways and buses, and air carriers, in accordance with monthly passenger operating revenues; expenditure for postal service in accordance with monthly post office revenues; expenditure on express service in accordance with express operating revenues of railways; expenditure on electric power in accordance with a composite index of net generation by utilities and the price of electric power; and expenditure for household gas in accordance with domestic sales to households.

#### **(ii) Estimates Explicitly Articulated with the Income Side**

Other service groups included in the estimates of personal expenditure on services are explicitly articulated with the income side of the accounts, the estimates being computed in connection with the calculations of components of the Gross National Product. Farm and non-farm residential space rents, paid and imputed, are calculated in connection with the rent component of investment income. Wages and salaries (including income in kind in the form of food received) of domestic servants are calculated in connection with the estimate of wages, salaries and supplementary labour income.

Personal expenditure for board and lodging is taken as being equal to net income from boarding and lodging, which is included in net income of unincorporated business. The figure is included on a net basis in this case since expenses relating to boarding and lodging are already included in personal expenditure for food, rent, fuel and so forth.

Estimates of personal expenditure for services of physicians and surgeons, dentists, nurses, law-



yers, and miscellaneous health services, are all related to the estimates of net income of the professional service groups.

The value of free lodging supplied to non-agricultural workers occupying non-residential property such as bunk-houses, hotels and steamships, is added as an imputed expenditure. The calculation is made in connection with wages, salaries and supplementary labour income.

Estimates of banking services imputed to individuals and estimates of the net personal expenditure on consumer debt service are based upon calculations made in investment income.

### (iii) Estimates Based on Indirect Evidence

A substantial part of the services estimate is allocated according to the movement of series which are not directly related to the data to be distributed. For the most part, the methods used for this group of estimates have had to be based on certain assumptions concerning relationships. The fact that these assumptions are quite often tenuous must be taken into account in assessing the quality of this group of estimates.

In general, the methods of interpolating or projecting are based on indexes of price and population, retail sales of related commodities and straight line projection of trend.

Among the major components to be found in this group are: personal expenditures on repairs and maintenance, hospital services, telephone charges, taxi service, cables and telegram charges, prepaid medical care and expenses of insurance companies.

### (c) Net Personal Expenditure Abroad

This net adjustment is necessary to include, in personal expenditure, the expenditure of Canadian residents in foreign countries, and to exclude the expenditures of non-residents in Canada. The adjustment covers net expenditures of members of the armed forces, as well as net tourist expenditures. In addition, net private remittances to non-residents are included to correspond to the contra-entry in the balance of payments component. To the extent that gifts in kind sent abroad do not appear in retail sales (e.g. Red Cross parcels) an estimate of their value is also added. (Data are obtained from the Balance of Payments Section of the Bureau). An arbitrary adjustment is made to Canadian tourist expenditures abroad to exclude expenditures chargeable to business expense accounts.

### Government Expenditure on Goods and Services

This component consists of the outlays of federal, provincial and municipal governments (including municipal school corporations) for currently produced goods and services. The figure is essentially a residual one, derived by eliminating from government budgetary expenditures all outlays which are not made directly to purchase new goods and

services—i.e., subsidies, transfer payments to individuals and private non-commercial institutions, transfers to other governments,<sup>1</sup> losses of government-owned enterprises, provisions for debt retirement, reserves, write-downs and other bookkeeping adjustments, and purchases of land and used capital assets. The expenditure of the Post Office Department is also eliminated, since this agency is treated in the National Accounts as a government business enterprise. Finally, government expenditures on goods and services which take place outside the framework of the budgetary accounts are added.

The figure of government expenditure on goods and services includes an estimate of gross imputed rent on government-owned buildings. The imputed rent is based on a projection of a 1954 annual benchmark for space owned by government and an especially constructed commercial rent index; it is assumed to accrue equally throughout the year.

Since 1952, a timing adjustment to current government expenditure data is made to convert government capital expenditures from a cash to an accrual basis. For details of this adjustment see page 46.

At the federal level, all of the budgetary data necessary to carry out the above procedures are available from monthly expenditure statements of the Comptroller of the Treasury. It should be noted that expenditures charged in the supplementary period<sup>2</sup> of the fiscal year by the Comptroller of the Treasury are divided equally between the first and second quarters in the National Accounts figures. Although the bulk of the supplementary payments relate to first quarter transactions, (the Treasury books being held open after this period to permit payment with respect to transactions completed prior to March 31), the mechanics by which a number of related series are recorded in the National Accounts (e.g. imports, change in inventories) requires that, for consistency, an adjustment be made to include a part of supplementary period outlays in the government expenditure component in the second quarter. The exact amount of the required adjustment is not known, but it is estimated to be approximately one-half of the total supplementary period payment.

In addition, adjustments are made to eliminate amounts charged to the defence appropriation which are not related to current production. Thus, shipments from stocks of previously produced military equipment to NATO countries are reflected in the government accounts as budgetary expenditure, and it is necessary to delete these amounts and to add back the outlay for new goods and services made from the Defence Equipment Replacement Account; the latter are not included in the government accounts as expenditure. An adjustment is also made

<sup>1</sup> Expenditures on goods and services financed by inter-governmental transfers are included at the level of the government which spends the funds for goods and services.

to allocate government housing expenditure for the armed services to the quarter in which the actual construction was carried out.

Federal extra-budgetary expenditures on goods and services are added to these figures. Included here are net purchases by various government commodity agencies such as the Agricultural Prices Support Board, and from the Defence Production Revolving Fund. Information is obtained quarterly from the Departments of Agriculture and Defence Production. Expenditures of agencies such as the Canadian Broadcasting Corporation, which are not treated as government business enterprises, are also added. These figures are derived quarterly by allocating the annual data evenly throughout the year; for current periods, this involves a forecast of the annual figure.

Since 1951, at the **provincial** level, a similar process yields quarterly government expenditure on goods and services from returns of the provinces. For the years 1947 to 1951 the quarterly pattern prevailing in 1951 was employed to distribute the annual data.

No data are available on the quarterly movements of **municipal** government expenditures. These have therefore been distributed according to the provincial patterns, it being assumed that the movement in the municipal data follows closely the pattern of provincial expenditure on goods and services.

#### **Business Gross Fixed Capital Formation**

Business gross fixed capital formation, as defined in the National Accounts, includes expenditures for new construction and new machinery and equipment. Expenditures of persons for new housing (including major alterations and improvements and supplementary costs) are also included, since individuals, in their capacity as home-owners, are treated as business enterprisers. Thus, this component covers gross capital formation of the private sector of the economy and government business enterprises. Expenditure on new construction and equipment for general government purposes is excluded since it is included in the component "government expenditure on goods and services".

In general, the quarterly figures of total private and public gross fixed capital formation are obtained by allocating annual data on the basis of specially constructed indicators and the government portion is then excluded. For current quarters for which no annual data are available, the series are carried forward according to the movement of these indicators. The interpolating (or extrapolating) series are prepared for each of the main components of the annual figures: new residential construction, new non-residential highway and railway construction, new non-residential building and other engineering construction, and new machinery and equipment.

In the case of **new residential construction**, a slight departure in method is made. A series of annual value estimates of new residential construction is prepared by the Economic Research Department of Central Mortgage and Housing Corporation, using a formula which takes into account physical units ("starts" and "completions"), appraised unit cost of construction, and combined cost indexes of wage rates of construction workers and residential building material prices. Annual estimates are allocated into quarterly estimates on the basis of "starts" and "completions", units under construction and a combined cost index; and projections to current quarters are based on physical units and a combined cost index. Annual and quarterly data on housing outlays made by federal government departments (the value of which is included with "government expenditure on goods and services") are also provided by the Corporation. The new residential construction component of business gross fixed capital formation is derived by taking the difference between the total and the government series, as estimated above.

Quarterly estimates of **new highway construction** are obtained by interpolation of the annual data on the basis of a composite index which incorporates data on employment and average hours worked in highway construction (volume component) and prices of construction materials and average hourly earnings (price component). Estimates of outlays for **new railway construction** are distributed on the basis of employment, average weekly earnings and construction material prices. For current years, prior to preparation of annual estimates, the index is used to project the latest available annual estimate. The highway construction estimate is entirely "government" and as such is excluded from business fixed capital formation.

Quarterly estimates of **new non-residential building and other engineering construction** are obtained by interpolation (or projection) on the basis of composite indexes which take account of employment, average hours worked, building material prices, and average hourly earnings of construction workers. An adjustment is made to the value series to eliminate government construction, which is included with "government expenditure on goods and services".

It should be noted that government expenditure on goods and services, including government capital expenditure, is on a cash basis. A timing adjustment, consisting of the difference between the cash basis and the accrual basis described above, is therefore added to government expenditure on goods and services in order to achieve consistency with other component series.

Quarterly estimates of **new machinery and equipment** are derived by allocating the annual estimates on the basis of data reflecting domestic supply, i.e. total Canadian shipments of various types of machinery and equipment, adjusted to include



imports and to exclude exports. The composite series, which is also used to project current quarterly estimates, covers such components as agricultural implements, non-agricultural machinery and equipment, trucks, passenger vehicles, and other transportation equipment. Expenditures by government for machinery and equipment are deducted, to yield private investment in machinery and equipment.

### Change in Inventories

The net change during the quarter of holdings of inventories must be recorded in the Gross National Expenditure in order to allow for that portion of current production which remains unsold at the end of the quarter (positive change in inventories), or to eliminate that portion of previous quarters' production which is included in sales of the current quarter (negative change in inventories).

The inventory estimates are presented in two parts: 1) Non-farm business inventories which include changes occurring in private business and government business enterprises, and 2) farm inventories and grain in commercial channels which include changes occurring in livestock on farms and grain inventories held on farms and in commercial channels. In the former, net purchases by various government commodity agencies not organized as business enterprises are excluded as they are included with government expenditure on goods and services. Government pre-financing of private inventories is included with government expenditure on goods and services and is therefore excluded.

The method of recording all estimated quarter-to-quarter changes in inventories is based on the physical change during the period, valued at average prices of that period, rather than on the change in their book valuation. In recording inventories in this manner, inventory "gains" and "losses" which arise through differences in the replacement cost of stocks consumed and their book valuation at the time of consumption are eliminated. However, in using a value of physical change concept for non-farm business inventories, an adjustment has to be made to corporate profits and net income of unincorporated businesses, both of which reflect the method used in arriving at book valuation of inventories; this adjustment is shown in the accounts as the "Inventory Valuation Adjustment". For farm inventories and grain in commercial channels, this adjustment is largely unnecessary due to the direct calculation of inventories in value of physical change terms. A comprehensive description of methods used to compute value of physical change and inventory valuation adjustment series from conventional business book valuations, may be found in *National Accounts, Income and Expenditure, 1926-1956*, paragraphs 473-515.

Following are the sources and methods used to estimate non-farm business inventories by industrial groups:—

In **forestry**, quarterly book values are derived by interpolating between annual benchmark data, and projecting in the case of current quarters, on the basis of the value of stocks of pulpwood cut and in streams but excluding that held at mills. The information on physical stocks is collected in monthly surveys carried out by the Industry and Merchandising Division of the Dominion Bureau of Statistics. From 1947 to 1954 prices with which to value these physical stocks were obtained from the same source, but from 1955 to date, prices have been advanced on the basis of two related indicators, average weekly earnings in the logging industry and average unit value of pulpwood exported.

In computing the book values of **mining** inventories, calculations are made separately for finished goods and raw materials. For finished goods, quarter-end holdings of physical inventories at iron ore, asbestos and coal mines are obtained from the Industry and Merchandising Division. Price series to value the physical stocks are obtained from the Prices Division of the Dominion Bureau of Statistics. The resulting quarter-end book values are used to interpolate between annual benchmarks and for projection to current quarters. Quarterly inventory holdings of raw materials are assumed to move between annual benchmarks in accordance with an index of payrolls in the mining industry. The sum of the two series so computed constitutes the book values of total inventories held in the mining industry.

Book values of inventories held by **manufacturing** industries are based on a monthly sample survey conducted by the Industry and Merchandising Division. The survey covers raw materials and supplies, goods-in-process and finished goods for all seventeen manufacturing industrial groups. The information obtained monthly from the sample survey is adjusted to the annual benchmark data which are derived from the annual Census of Production. Adjustments based on information contained in the sample are also made to exclude trading inventories held at selling outlets which are considered part of wholesalers' inventories, inventories financed by government progress payments, as they are included in government expenditure on goods; and to include the value of goods owned by manufacturers but purchased for re-sale only.

Quarterly estimates of inventories of building materials held by **construction** contractors are based on the movements of construction employment and a 3-month average of building material prices. Information is obtained from the Employment Section and from the Prices Division of D.B.S. The resulting series is used to interpolate between annual benchmarks, and for projection.

In **transportation, storage and communication**, quarterly inventory holdings are derived by moving between annual benchmarks and projecting current estimates on the basis of information supplied by Canadian Pacific Railways and Canadian National

Railways as well as supplementary information obtained about inventories of materials and equipment held by telephone companies.

The method of estimating quarterly inventories held by **public utilities** is to interpolate between annual benchmarks using a 3-month moving average of employment in public utilities; for current quarters, the estimates are carried forward using a similar method. The data on employment are obtained from the Employment Section.

Quarterly data on the trend of holdings of **wholesale** inventories by twenty trade groups are obtained from the Industry and Merchandising Division of the Dominion Bureau of Statistics and are based on a monthly sample survey. Physical volume data on petroleum are obtained from the same source and on coal from the Dominion Coal Board. Both are valued at prices obtained from the Prices Division of the Dominion Bureau of Statistics. This information is used to interpolate between annual benchmarks and to project current estimates. Manufacturers' sales outlets, stocks which are classified under wholesale, and agents and brokers stocks are advanced between annual benchmarks and projected on the trend of manufacturers' inventories.

Most of the quarterly information concerning stock holdings of **retail** trade is based on monthly sample surveys, stratified by store type, carried out by the Industry and Merchandising Division. In the case of chain and department stores, the monthly survey coverage is very close to being complete and actual inventory holdings are reported. The trends of independent store inventories which are based on a much smaller sample, are calculated mainly from monthly sales and purchases data applied to beginning of the year inventories (collected annually). The trend of inventory movements derived in these surveys is used to interpolate between annual benchmarks and to project current estimates. Additional information on coal stocks obtained from the Dominion Coal Board and new car inventories based on shipments from factories adjusted for imports, exports and retail sales is also used in deriving retail trade inventories.

No quarterly information is available on inventory holdings of the **finance, insurance, real estate and service groups**. They are assumed to move in accordance with the quarterly trend of the manufacturing, wholesale and retail trade inventories.

The change in **farm inventories** is calculated as indicated in the section, "Accrued Net Income of Farm Operators from Farm Production".

The value of physical change in **grain in commercial channels** is obtained quarterly by applying to the quantity changes supplied by the Agriculture Division of the Dominion Bureau of Statistics, the average initial price paid to producers during the

quarter by the Canadian Wheat Board, in the case of wheat, and the average market prices (Winnipeg Grain Exchange data), in the case of coarse grains.

As has been indicated in the two preceding paragraphs, farm inventories and grain in commercial channels are calculated directly in value of physical change terms. However, two minor adjustments to the income side are necessary, to allow for the fact that earnings arising out of the operations of the Canadian Wheat Board are based on inventories valued in the conventional business manner and similarly to allow for private grain dealers. In the former case the adjustment is made directly to "Accrued Net Income of Farm Operators from Farm Production" and in the latter, it is included in the published "Inventory Valuation Adjustment".

### Inventory Valuation Adjustment

As indicated above, for national accounting purposes, the change in the value of inventories should be measured in current prices of the period under consideration. Because this method of valuation differs from that employed in conventional business accounting practices, an adjustment to corporate profits and net income of unincorporated businesses is necessary; for both these income aggregates reflect inventory valuation according to business practices. The adjustment is shown explicitly on the income side of the accounts.

A detailed description of the problems faced and the methods used to derive the adjustment, may be found in *National Accounts, Income and Expenditure, 1926-1956*, paragraphs 493-515 inclusive.

A brief outline of the steps taken to arrive at a value of physical change and the inventory valuation adjustment is outlined below:

- i) Estimate book value of inventory from reported data;
- ii) Establish the deflator price index relevant to the period of acquisition of stocks, (taking into account turnover period and predominant business accounting practices);
- iii) Calculate the constant dollar book value  $((i) \div (ii))$ ;
- iv) Calculate the quarter-to-quarter change in constant dollar book value (from (iii));
- v) Establish the revaluer price index (based on average prices during the current period);
- vi) Calculate the value of physical change in current dollars  $((iv) \times (v))$ ;
- vii) Enter the quarter-to-quarter change in reported book values from (i);
- viii) Calculate the inventory valuation adjustment  $((vi) - (vii))$ .



These steps are done in considerable detail for manufacturing, where inventories are identified within industries as raw materials, goods in process and finished goods, and for wholesale and retail. In all, about one hundred items or industry groups are dealt with separately. Price data are supplied by the Prices Division of the Dominion Bureau of Statistics. Assumptions, in the light of all relevant information, are made with respect to business inventory accounting practices.

### Exports Minus Imports

Because a part of Canada's current production of goods and services is sold to non-residents, it is necessary to add the value of exports to arrive at a final accounting of current production through sales. Conversely, because sales to persons, governments, business on capital account and non-residents, include goods and services produced by non-residents, i.e. imports, it is necessary to subtract these in order to arrive at a correct valuation of Canadian output.

It should be noted that the terms "exports" and "imports" are used here in a broad sense to include both goods and services; interest and dividends received from non-residents are regarded as receipts for the service of capital and are included with the "export" series, while interest and dividends paid to non-residents are regarded as payments for the service of capital and are included with the "import" series. It will be recalled that adjustments corresponding to these dividend and interest transactions are made to investment income on the income side of the National Accounts. In addition, gold production available for export, tourist and travel expenditures of non-residents in Canada, freight and shipping credits earned on Canadian account and various receipts for business services are included in the "export" figures; tourist and travel expenditures of Canadians abroad, and freight and shipping charges and business service costs incurred by Canada on foreign account are included with the "import" series.

The quarterly figures appearing in the National Accounts are the gross receipts and payments on

current account prepared by the Balance of Payments Section of the Bureau. These figures are published regularly in the reports *Quarterly Estimates of the Canadian Balance of International Payments*. For current quarters, only one adjustment is necessary to bring these figures into line with National Accounts definitions; emigrants' funds and inheritances are deducted from gross current debits (imports), and immigrants' funds and inheritances are deducted from gross current credits (exports). These unilateral items do not represent payments for goods and services, nor are they related to the current earnings of Canadian or foreign factors of production; they are treated as transfers of capital which are not included in the National Income, (although they occur with sufficient regularity to be considered as "current" transactions for Balance of Payments purposes).

For a detailed description of the sources and methods used by the Balance of Payments Section of the Bureau, reference should be made to *The Canadian Balance of International Payments, 1926 to 1948*, Dominion Bureau of Statistics, 1949, and also to *The Canadian Balance of International Payments in the Post-War Years, 1946-1952*, Dominion Bureau of Statistics, 1953.

### Residual Error of Estimate

As has been indicated, substantially independent estimates are made for the Gross National Product and the Gross National Expenditure. Since both of these aggregates measure the value of goods and services produced by Canadians in a given quarter, they should add up to the same sum. In fact, however, there is a statistical discrepancy between the two totals due to the shortcomings in available statistics. On the assumption that the "best" estimate of the common total is half way between the two independently computed totals, the statistical discrepancy is divided into two equal parts and one-half is allocated to each of the two sides of the account under the heading of "residual error of estimate". In this manner, balance is achieved between the two sides of the account.

## QUALITATIVE SUMMARY OF METHODS

By way of summary, the following table is designed to give the users of the quarterly estimates a synoptic view of the quality of the data. The table expresses in quantitative terms the relative reliability of the estimates of the various major components. It will be noted that both the Gross National Product and Gross National Expenditure are almost identical in terms of the proportion of the material which is based on survey data or regular accounting records, on reliable related data, and on tenuous assumptions or judgment. Although complete exactitude cannot be attached to the figures, they do express in a broad way the stat-

istician's view of the general order of qualitative precision of the constituent series.

The second quarter of 1958 was selected as being representative of a typical quarter of a year for which annual data had not (at that time) become available. Among the qualitatively less reliable series, the following may be noted: the expense component of accrued net farm income; the greater part of net income of unincorporated business; personal expenditure on services; and municipal government expenditure on goods and services.



## Qualitative Summary of Methods

Second Quarter, 1958

	Based on survey data or regular accounting records	Based on reliable related data	Based on tenuous assumptions or judgments	Total
	Per cent			
Wages, salaries, and supplementary labour income .....	86	11	3	100
Military pay and allowances .....	100	—	—	100
Corporation profits before taxes .....	97	—	3	100
Rent, interest, and miscellaneous investment income .....	41	33	26	100
Accrued net income of farm operators .....	62	11	27	100
Net income of non-farm unincorporated business .....	5	45	50	100
Indirect taxes less subsidies .....	68	29	3	100
Capital consumption allowances and miscellaneous valuation adjustments .....	49	18	33	100
<b>Total (weighted) .....</b>	<b>71</b>	<b>17</b>	<b>12</b>	<b>100</b>
Personal expenditure on consumer goods and services .....	79	5	16	100
Government expenditure on goods and services .....	70	4	26	100
Business gross fixed capital formation .....	17	72	11	100
Value of physical change in inventories <sup>1</sup> .....	80	10	10	100
Exports of goods and services .....	90	7	3	100
Imports of goods and services .....	84	11	5	100
<b>Total (weighted) .....</b>	<b>70</b>	<b>17</b>	<b>13</b>	<b>100</b>

<sup>1</sup> These percentages are based on book values of non-farm business inventories only.

## SECTION 2

## MISCELLANEOUS NOTES

## NOTES ON SEASONALLY ADJUSTED NATIONAL ACCOUNTS DATA

Seasonal variation may be viewed as a "repetitive intra-annual fluctuation".<sup>1</sup> The majority of the time series given in Tables 1-4 of this report exhibit clearly defined seasonal patterns, which recur with characteristic regularity. Such fluctuations reflect the influence of a variety of factors. Climatic conditions, for example, influence the production and marketing of crops, the intensity of cutting operations in the woods, the purchase of winter and summer clothing, the shipment of commodities through the St. Lawrence River, and so on. The observance of Christmas and Easter is reflected in the buying habits of consumers, with levels of purchasing fluctuating sharply in these periods. Trade practices also exert their influence—for example, the dates of the annual appearance of new automobiles are an important factor in the seasonal movement of automobile purchases. Thus, climate, social institutions, trade practices and a myriad of other factors all generate "repetitive intra-annual fluctuations" in statistical time series.

In dealing with a time series in which such seasonal fluctuations occur, it is usually difficult to detect the basic underlying movements of the data since these are often obscured or hidden by the regular seasonal upswing or downturn. Thus, in order to isolate turning points or trends in the basic economic situation, it is necessary to eliminate the effects of seasonal movements from economic data. Although this "elimination", or seasonal adjustment, can be made in approximate terms only, seasonally adjusted data nevertheless provide an important aid in the analysis of time series and can shed considerable light on underlying trends or tendencies in the economy.

The general approach to the seasonal adjustment of economic time series adopted by the Dominion Bureau of Statistics is the ratio-to-moving-average technique. A detailed outline of problems and methods in seasonal adjustment has been given in D.B.S. Reference Paper #77—*Seasonally Adjusted Economic Indicators, 1947-1955*, (published in 1957), and will not be further elaborated in this section. Recent developments in the application of electronic computers to the problem of seasonal adjustment have permitted an adaptation of the ratio-to-moving-average technique to

machine methods.<sup>2</sup> The following paragraphs deal briefly with the procedures followed.

It may be noted that the adaptation of electronic computers to the seasonal adjustment of economic time series by no means disposes of the need for careful professional scrutiny of the final seasonally adjusted series. While the machine technique has been thoroughly tested and found to provide a seasonal adjustment at least as good as that of the best hand series in the great majority of cases, there are still problem areas which require the judgment and professional scrutiny of the trained statistician. All of the material which has been processed on an electronic computer has been subjected to the most careful testing to ensure that the quality of the seasonally adjusted data met acceptable standards. Out of a total number of 250 series processed on a computer, it was found that about 90 per cent were successfully handled by the machine, but that a small number of cases still required adjustment by a hand technique.

The advantages of electronic computers in the seasonal adjustment of economic time series are, first, that it can perform mass operations on economic data quickly and economically, where formerly laborious and costly manual operations had to be carried out; and secondly, that it tends to narrow the subjective element in seasonal adjustment by enforcing uniformity and standardization across areas where formerly individual statisticians carried out their own hand seasonal adjustment, with the possibility that differing evaluations might be made.

## The Method

The general approach employed on the computer is one of reiteration. A preliminary seasonally adjusted series, derived in much the standard manner, is smoothed by a weighted moving average, giving a more sensitive indicator of the underlying trend and cycle, with the erratic elements removed. This result is then used as the basis of a second round of calculations. The ratios of the original data to the smoothed preliminary seasonally adjusted series are calculated. These ratios are then used to compute a moving seasonal; any highly irregular ratios

<sup>1</sup> Burns and Mitchell, *Measuring Business Cycles*, National Bureau of Economic Research, New York, 1946, p. 44.

<sup>2</sup> The program of seasonal adjustment by electronic computer techniques was developed by the U.S. Bureau of the Census, in Washington, D.C. See also *Seasonal Adjustment by Electronic Computer Methods*, by Julius Shiskin and Harry Eisenpress, Technical Paper #12, National Bureau of Economic Research, New York, 1957.



are removed by a formula which gives much less weight to those ratios which are outside the range of a given tolerance. The final seasonal ratios are then divided back into the original data to yield a final seasonally adjusted series. Essentially, then, the computer method employs the same principles that are used in the hand technique.

It is at this point that quarterly series are subjected to professional scrutiny to ascertain whether the machine has adequately seasonally adjusted the series. To facilitate this analysis, charts of the old hand seasonal adjustment and the new computer seasonal adjustment were made to pinpoint major divergences. Tier charts, based on the new seasonally adjusted series, were also developed to ensure that no residual seasonal remained in the series. It was found that in the great majority of cases, the computer method could be accepted. However, in cases where the irregular factor was high for a series, some adjustments to the results proved necessary. Residual seasonal appeared quite frequently in these series. It was found that the seasonal factors computed by the machine, in cases of series with a high irregular, tended to be too inflexible, not fitting a succession of three or four deviations closely enough, with the result that a peak or a trough would repeat itself for a specific quarter in the seasonally adjusted results for three or four years. Such series were modified by hand to allow greater flexibility of the seasonal ratios.

Due to the fact that the change in inventory series are made up of plus and minus items, these series did not lend themselves to adjustment by the electronic computer. They were therefore adjusted by a hand technique based on an absolute, rather than a multiplicative relationship between the original data and a moving average of the original data.

It should be understood that considerable scrutiny of the unadjusted data is necessary prior to processing for seasonal adjustment. This can be best described as an attempt to minimize the effect of high irregulars on the computation of the seasonal. Strike adjustments are one illustration of this procedure. Here the unadjusted data are prepared for machine processing as if the strike had never occurred. This can be easily accomplished in an employment series by adding back estimated layoffs due to the strike. If this procedure were not followed the first approximation to the trend cycle component of the series would be deflected off its course both prior to and subsequent to the strike. Seasonal-irregular deviations, and ultimately the seasonal factors themselves would also be affected adversely during this period. Once the machine has calculated the seasonal factors, these are applied to the original unadjusted series, so that the strike appears in the final seasonally adjusted series.

By analogy this type of correction can be carried to other areas, except that it may not be as simple a matter to anticipate how the series would have behaved if the irregular event had not occurred.

Where a sudden and drastic shift in the seasonal has taken place due possibly to a statistical break or a change in government regulations, such series must be treated as two distinct series (before and after the break) for seasonal adjustment purposes. If this were not done, moving seasonal factors would move slowly and smoothly through such a period, adversely affecting the computation of the seasonal for a number of years.

#### **Special Problem of Seasonally Adjusting Crop Production and Accrued Net Income of Farm Operators**

In the case of crop production, the ordinary methods of adjusting the series for seasonal movements are inadequate. Crop production is characterized by concentration of output in the third quarter of the year, and by large and erratic fluctuations in amplitude from year to year. Ordinary techniques of seasonal adjustment do not appear to be appropriate for time series of this nature, and give rise to results which are capable of misinterpretation. A simple expedient has therefore been employed to handle the problem of seasonally adjusting crop production. The annual value of crop production is simply divided into four equal parts and allocated equally to each of the four quarters of the year in the seasonally adjusted tables. In going into a new year, before the crop is known, production is estimated on the basis of average yields of preceding years, estimated acreage and initial prices. This preliminary first quarter estimate is revised later in the year as actual data become available.

More specifically, the treatment is based on the following procedure:

Step 1 — The change in grain inventories is broken down into two parts—(a) depletions, which are continuous throughout the year; and (b) additions, which are single events occurring in the third quarter of each year, i.e., the harvesting of the crop.

Step 2 — The depletions data are seasonally adjusted by a standard technique. (The current value data can thus be used analytically in conjunction with the farm cash income series, the export series, changes in grain in commercial channels, and so on, all of which are also seasonally adjusted by a standard technique).

Step 3 — The additions to grain inventories, i.e., the crop, is simply divided by four and allocated equally to each of the four quarters of the year. All of the data are available in terms of physical quantity units, and can be valued both in terms of base year prices (for constant dollar series)<sup>1</sup> and current year prices (for current dollar series). This treatment of the crop is arbitrary, but it has the advantage of isolating the problem and treating it independently of all other items in the system.

<sup>1</sup> Seasonally adjusted constant dollar series are not published in this report.



It may be noted that the "divided by four" technique is used in the case of crop production only, since it is only here that the special difficulties noted above arise. Livestock and other items in the farm sector are estimated on a quarterly basis and deseasonalized by standard techniques.

In order to depict more clearly movements in the value of production in the non-farm sector of

the economy, an additional line in italics has been inserted in Tables 1 and 5 which shows "Gross National Product at market prices, excluding accrued net income of farm operators from farm production". Details of the seasonally adjusted farm inventories series (including the item "crop production") are shown in Footnote 3 to Table 6.

#### NOTES ON CONSTANT (1949) DOLLAR ESTIMATES OF GROSS NATIONAL EXPENDITURE

The general method of deflating current dollar estimates is described in *National Accounts, Income and Expenditure, 1926-1956*, pages 176 to 185. The quarterly deflation is carried out in a manner similar to that described in the above document. However, there are certain additional points to be emphasized.

The constant dollar estimates provided in Table 9 of the present publication are base-weighted, that is to say, prices of the year 1949 have been used to weight the various volume figures shown. On the other hand, the weighting of the implicit price indexes (which may be obtained at any stage of summation by dividing current dollars by constant dollars) is that of the Paasche's or currently weighted type. This type of price index cannot be used for quarter to quarter comparisons, because the weights change every quarter. To illustrate, prices of the base period and the second quarter are weighted by the second quarter basket of goods; prices of the base period and the third quarter are weighted by the third quarter basket of goods. Since these baskets differ (reflecting seasonal changes in the composition of production) price comparisons may not be made between the second and third quarters although each quarter may be compared with the base period.<sup>1</sup>

The variations in the implicit price index of Gross National Expenditure due to the change in weights between the second and third quarters of

recent years are in the order of magnitude of 6 per cent. Because of this large variation, and the consequent possibility of misinterpretation, the price indexes are not published. It may be added that the effect of weight changes is less serious on an annual basis than it is on a quarterly basis. However, even the annual indexes may reflect pronounced weighting effects during periods of marked compositional changes. (See paragraphs 592 to 597, *National Accounts, Income and Expenditure, 1926-1956*.)

The development of quarterly deflators has enabled the D.B.S. to employ quarterly weighting in the deflators for the annual figures. As a matter of fact, from 1947 on, the annual constant 1949 dollar estimates of Gross National Expenditure and the deflators accompanying them, as shown in Tables 5 and 6 of *National Accounts, Income and Expenditure, 1926-1956*, incorporate the work with quarterly deflators and contain the effects of quarterly weighting. This type of quarterly weighting is obtained by deflating current values on a quarterly basis and summing current and constant dollars over four quarters of each year. The annual current dollar estimate divided by the annual constant dollar estimate for any item yields a quarterly weighted annual deflator.

<sup>1</sup> i.e.  $\frac{\sum p_2 q_2}{\sum p_0 q_2}, \frac{\sum p_3 q_3}{\sum p_0 q_3}$







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