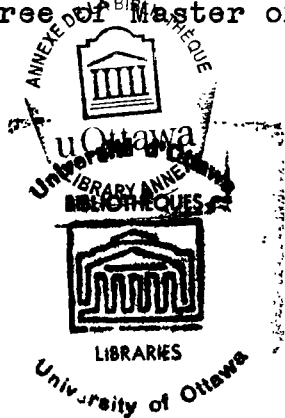


THE FULL EMPLOYMENT SURPLUS THEORY AND ESTIMATION;

THE CANADIAN CASE

by Denis Baribeau

Thesis presented to the Faculty of Social Sciences of the University of Ottawa, as partial fulfillment of the requirements for the degree of Master of Arts.



Ottawa, Canada, 1966

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I N T R O D U C T I O N

A monument to a long line of theorists was fashioned through recent enactment of tax-cut bills by legislators, both in the United States and Canada. For, to be true, no one but such academic economists as R.F. Kahn, Joan Robinson, R.F. Harrod, and - not the least - John Maynard Keynes, are the real authors of these newly formulated policies.

This legislation may seem to validate the oft-quoted Keynes' statement that:

"The ideas of economists and political philosophers both when they are right and when they are wrong are more powerful than is commonly understood. Indeed the world is ruled by little else."¹

But the ideas of economists cannot be formed in a vacuum. Special circumstances have to exist which favor their general acceptance and trial into the real world. In short, the world is ruled as much by circumstances as ideas.

For a long time, government finance existed without fiscal policy. The general idea prevailing at that time was that the budget should be balanced annually. During the U.S. presidential campaign of 1932, candidates Franklin D. Roosevelt and Herbert C. Hoover were urging the restoration of budget balance as an important instrument for promoting recovery.

Three major factors accounted for the abandonment of the traditional annually balanced budget approach: (1) the impossibility of balancing the budget during the nineteen thirties, (2) the publication of the General Theory of Keynes and, (3) the deficit requirements of the second world war.

¹ John Maynard Keynes, The General Theory of Employment, Interest and Money (London: Macmillan & Co. Ltd, 1961), p. 383.

For fifteen years from 1930 to 1945, the ideas pertaining to budgetary matters were shaped by circumstances with the result that by 1945 - 46, governments accepted responsibility for the stabilization of employment, income and purchasing power.

From 1945 to 1964, the financial orthodoxy of the annually balanced budget was replaced by a new orthodoxy of a relatively crude compensatory fiscal policy. As we shall later see, this crude theory lacked some useful analytical tools for budget making.

High levels of unemployment and slow economic growth since the mid-nineteen fifties were the triggers of the so-called "fiscal stagnation thesis"¹ recently developed by the Council of Economic Advisers.

The development of this particular stagnation thesis involved the use of three analytical tools: (1) potential output, (2) the national-income-accounts budget and, (3) the full-employment budget surplus.

No attempt is done in this thesis to bear any judgment on the "fiscal stagnation thesis", rather, the purpose of this work is to review, refine and apply to Canada the new analytical tools mentioned above which are now indispensable instruments of good budget making.

Part I of the thesis discusses the full-employment surplus theory. Part II deals with general problems of estimation and shows how calculations were made for Canada. Chapter VIII is an application of the theory to full-employment surplus estimates for Canada.

By government surplus is meant the government surplus on a national income basis. This surplus means more in terms of income, prices and employment effects of government fiscal policy than other budgetary concepts. The differences

¹ See Arthur F. Burns, "Examining the New Stagnation Theory," The Morgan Guaranty Survey, May 1961.

between different budget presentations are brought out in Appendix "A".

Complete details of calculations are given in the appendices and each appendix is followed by its particular source of data.

P A R T I

THE FULL EMPLOYMENT

SURPLUS THEORY

C H A P T E R I

INADEQUACY OF THE CRUDE COUNTER-CYCLICAL FISCAL POLICY

1. A Crude Theory of Fiscal Policy

"A crude theory of fiscal policy has achieved currency, according to which a deficit in the budget is expansionary, a surplus is restrictive, and a balanced budget is neutral. When the built-in stabilizers throw the budget into deficit in a recession, this crude quantity theory of fiscal policy says that the budget has become stimulative. In an upswing, when the budget passes from red to black as a result of rising revenues generated by increasing income, the same theory says that the budget has become restrictive."¹

The pragmatic "pump-priming" experiments of the New Deal and the appearance in the late 1930's of Keynes' General Theory and subsequent refinements gave the deadly blow that destroyed the financial orthodoxy that had prevailed before. This financial orthodoxy which consisted in an annually balanced budget as a policy goal was replaced in the late 1940's by a very crude countercyclical fiscal policy.

The rationale of this countercyclical fiscal policy is that government expenditures, as a rule, add to the income of the private sector whereas receipts reduce this income. Hence, an excess of government spending over government receipts (during an economic contraction) increases

¹ Robert Solomon, "The Full Employment Budget Surplus as an Analytical Concept," Papers and Proceedings of the American Statistical Association, Minneapolis: American Statistical Association, 1962. "p. 50

the income available to the private sector of the economy for consumption and investment and thereby tends to stimulate private spending. Conversely a budget surplus, or an excess of receipts over expenditures, is desirable during an economic expansion with inflationary pressures because it reduces the income available to the private sector for consumption and investment. Therefore, this theory favors budgetary deficits during recessions and surpluses during expansions as a means of mitigating the magnitude of business cycles and counteracting any deflationary or inflationary pressures.

A very important concept closely related to this crude countercyclical fiscal policy is that of "automatic built-in stabilization." Assuming no change in the structure of government revenues and expenditures, any weakening in private spending reduces income, causing tax revenues to fall and transfer payments to rise. Thus, disposable income declines less than income before taxes and is partly cushioned against the decline in private demand. Automatic stabilization operates in reverse when private demand increases and generates additional income; part of this additional income is withdrawn from the private sector of the economy through higher taxes and lower transfer payments. Disposable income therefore rises less than income before taxes.

The figure 1.1 on page seven represents the behavior of the government budget surplus and/or deficit during three business cycles.¹ It is against this sort of graphic analysis that the crude countercyclical fiscal policy was evaluated.

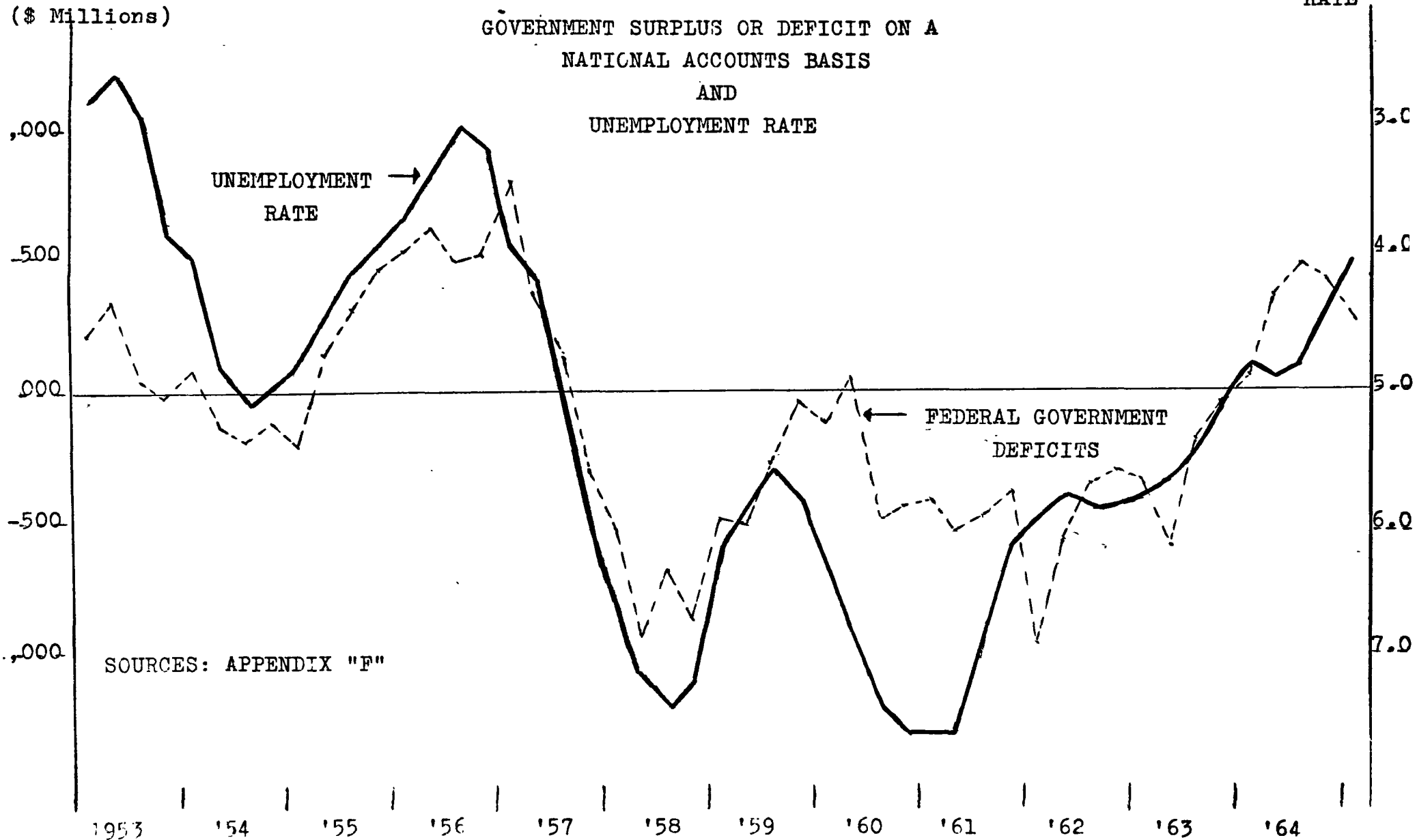
¹ The surpluses and/or deficits shown on Graph 1.1 are on a national income basis whereas the crude fiscal policy described here usually considered the administrative or cash budget surplus or deficit.

FIGURE 1.1

SURPLUS
(\$ Millions)

UNEMPLOYMENT
RATE

GOVERNMENT SURPLUS OR DEFICIT ON A
NATIONAL ACCOUNTS BASIS
AND
UNEMPLOYMENT RATE



SOURCES: APPENDIX "F"

The fact is that the higher the tax rates, the more progressive the rate structure and the more sensitive the tax base to swings in the cycle, the more will changing tax yields absorb variations in national income.

But economists have taken too much comfort in the thought that the fiscal system was automatically stabilizing. We may find that we have overdone it: the tax structure may be too stabilizing on the upside. The increased tax "take" may set in too early in the upswing and absorb too great a proportion of spendable income. The revenue yield may be such as to balance the budget at some point below full employment. If such is the case, then, efforts to increase employment (other than tax cuts) must fight an uphill battle: larger and larger proportions of otherwise spendable income are sloughed off into the Treasury and taken out of the income stream.

This facet of built-in stabilization had been completely forgotten by the crude countercyclical fiscal policy. In fact, the crude countercyclical policy did not differentiate between passive and active surplus or deficit, i.e., did not distinguish at least quantitatively, for lack of appropriate analytical tools, between discretionary and non-discretionary budget policies. It will be shown in this paper, that the Canadian fiscal policy in the postwar period relied mainly on the operations of the built-in stabilizers to cushion recessions or restrain expansions and that active fiscal policy was at times quite perverse.

2. The Meaning of Fiscal Policy

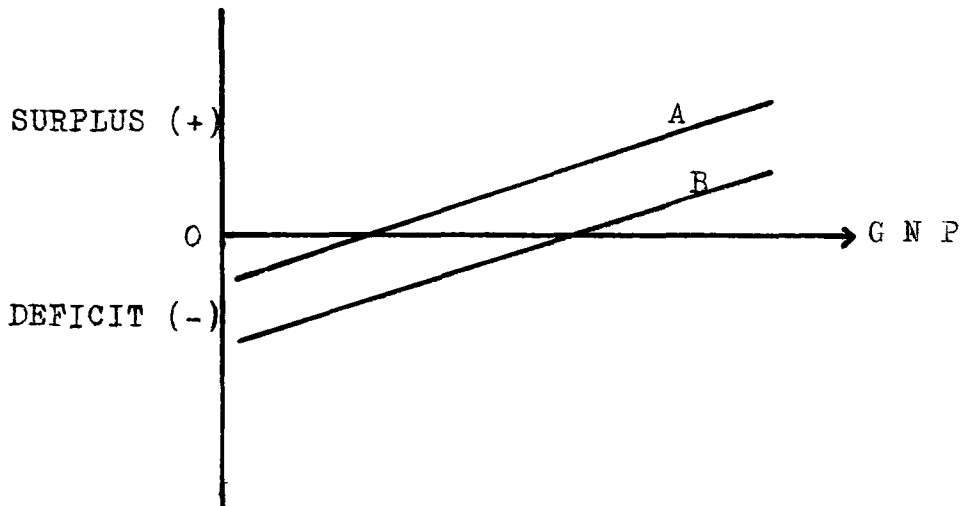
Fiscal policy is a choice of a fiscal program. Budget making involves a careful adjustment of the levels and composition of taxes and expenditures. The choice of a fis-

cal program therefore involves the choice of a certain size of budget surplus or deficit. This choice, in turn, implies an assumption or forecast about the national income and tax bases for the coming year. Given the choice of the budget surplus or deficit does not mean that the actual (realized) surplus will just equal the forecasted surplus. The outcome will depend on the national revenue and tax bases forecast accuracy. If the realized national income comes up to be greater than forecasted, it is likely that the realized surplus will exceed the forecasted surplus or that the ex-post deficit will come up to be smaller than the forecasted deficit; and vice-versa, if the realized national income is smaller than that forecasted.

Let us clarify all that by a diagram. The Figure 1.2 below presents two fiscal programs.

FIGURE 1.2

Alternative Fiscal Programs



The budget line A represents a given budget program. At any point on this line the level of federal spending and tax rates is exactly the same. This budget line represents the ex-ante federal budget or deficit i.e., the surplus or deficit that would be realized at any actual (realized) G N P level. The budget line B represent an alternative fiscal program under which for any given level of G N P the realized surplus and deficit would be respectively smaller and larger.

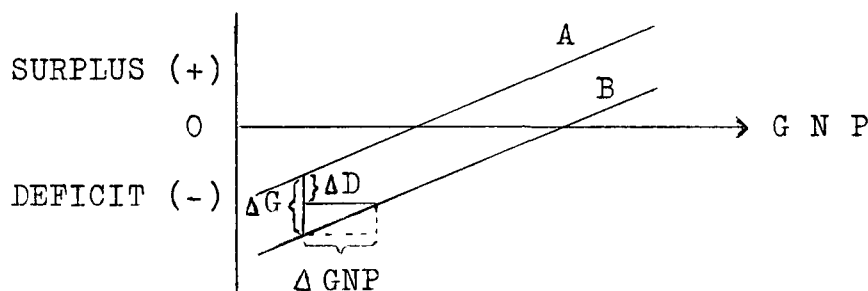
The steepness of the budget line depends on the structure of automatic stabilizers which is here assumed to be constant. The structure of the stabilizers determine the income elasticity of taxes and the marginal taxation rate.¹

3. The Deficit Multiplier

Too often, the actual (realized) deficit of the government has been taken as the multiplicand to which the multiplier coefficient was applied. This was a gross mistake. The true multiplier cannot be derived unless we confront two fiscal programs. The figure 1.3 below illustrates this fact.

FIGURE 1.3

Alternative Fiscal Programs and the Deficit Multiplier



¹ Infra, "p. 58"

The budget line B implies a higher level of government expenditures with the same level of tax rates than A, or lower taxes than A with the same level of expenditures; or a combination of that. The budget line A implies a more restrictive fiscal program than B. The multiplicand is ΔG , the vertical difference between the two budget line A and B. The discretionary or autonomous change in expenditures or taxes is the multiplicand. Now, if the government expenditure impact or first round multiplier is 1.4, an autonomous increase of \$300 millions in expenditures will raise G N P by $300 \times 1.4 = \$420$ millions. This expansionary effect of the "active" government deficit will effectively increase the government deficit by less than ΔG , the discretionary change in government fiscal policy. It is to be noted that ΔD (active deficit) is not the multiplicand either; it is the variation of the deficit resulting from a given discretionary change in government fiscal policy. $\frac{\Delta D}{\Delta G}$ could be conceived as the leverage factor of government discretionary change in fiscal policy. The absolute value of this leverage factor is less than one presumably.

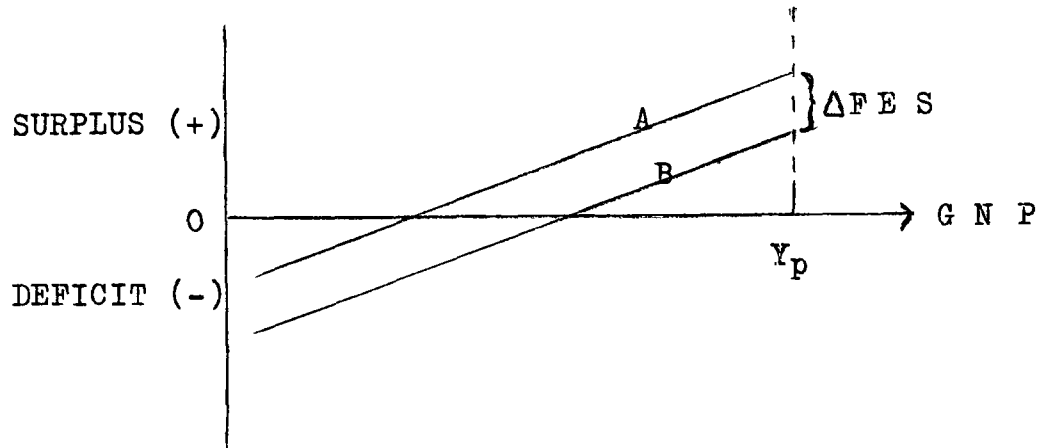
4. Fiscal Policy and the Full Employment Surplus.

Upon deciding on any particular budget surplus or deficit program, the overriding consideration should be the current and prospective levels of national income, and how far these deviate from the full-employment level. The greater the deflationary gap, the lower should be the budget line and conversely if the prospective level of spending is too high.

Thus, for fiscal policy and growth, one should look at the restrictive impact of the budget at a full employment level i.e., one should look at the full employment surplus.

Changes in the full employment surplus become a measure of discretionary change in fiscal policy.

FIGURE 1.4
The Full Employment Surplus
as a Measure of Discretionary Changes in
Fiscal Policy.



On the diagram above, Y_p is the potential G N P. Change in the full employment budget surplus (ΔFES) gives us a measure of the discretionary changes in fiscal policy.

Modern fiscal theory possess^{es} a standard gauge for reviewing and adjusting the level of taxes: this standard gauge is full employment. This may in fact be the only major improvement of modern fiscal policy over the crude countercyclical fiscal policy; but this major improvement brought with it other refinements to which the subsequent two Chapters are devoted.

C H A P T E R I I

THE FULL EMPLOYMENT BUDGET SURPLUS:
DEFINITION AND USEFULNESS AS A TOOL OF FISCAL POLICY

1. Definition

The full employment or "potential" budget surplus is defined as the federal budget surplus on a national-income basis, that would be generated under a given budget program if the economy were operating at potential output at the prevailing level of prices.

This definition includes three concepts and analytical tools of recent origin or use. They are:

- (a) Potential output
- (b) The national-income-accounts budget and,
- (c) The full employment budget surplus.

Potential output is discussed in Chapter V, the national-income-accounts budget in appendix A. The present Chapter is confined to the concept of the "full employment budget surplus" and the theory underlying its use as an important analytical tool.

2. The Full Employment Surplus and the Structure of the Built-in Stabilizers.

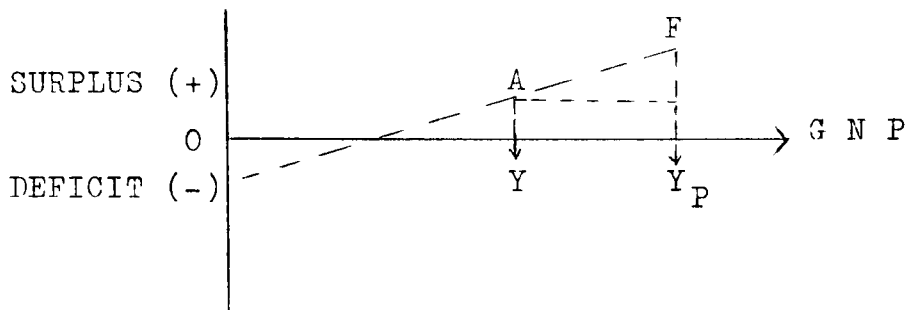
The full employment surplus can be used to measure the basic budget structure or budget program line.

On the figure 2.1, Y is the actual (realized or forecast) G N P level. If we know the actual (realized or forecast) surplus or deficit A and if on the other hand we know

both the potential G N P (Y_P) and the potential budget surplus F , we can draw a line between the two points A and F. This line is the budget line which reflects the structure of the built-in stabilizers.¹

FIGURE 2.1

The Budget Structure



3. The Full Employment Surplus as a Measure of Discretionary Change in Fiscal Policy.

In presenting for the first time the concept of the full employment budget surplus, the 1962 Annual Report of the Council of Economic Advisers in the U.S. pointed out that the surplus could be used for two main purposes:

- (a) "To distinguish the automatic changes in revenues and expenditures from the discretionary changes which occur when the Government varies tax rates or changes expenditure programs," and
- (b) As "a measure of the restrictive or expansionary impact of a budget program on over-all demand."²

¹ Note that in figure 2.1, $Y_P - Y$ equals the output gap.

² Economic Report of the President Transmitted to the Congress Together with the Report of the Council of Economic Advisers (Washington: United States Government Printing Office, 1962), pp. 79-80.

We shall look at the potential surplus from the point of view of these two uses. The first use is discussed in this section and the second in the next. As pointed out in the previous Chapter, a comparison of potential surplus for different budget programs may give us a view of the discretionary change in fiscal policy. This, however, is true only when comparing the fiscal impact of alternative budget programs for a "given fiscal year."

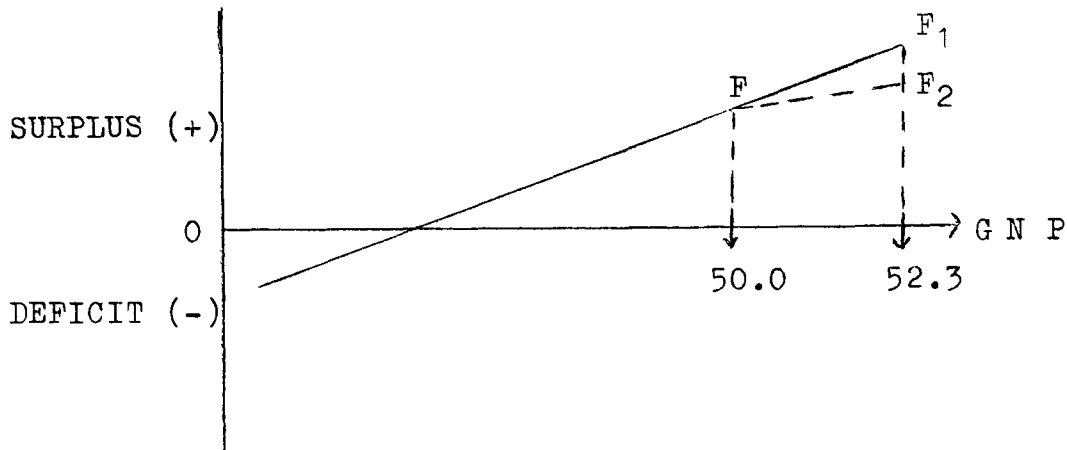
When comparing the budget structures relating to different fiscal years, the absolute size of the potential surpluses does not present an appropriate measure of their "relative" impact on the economy because full employment output has changed during the intervening periods. In this case, the relative full employment budget surplus should be used i.e., the full employment budget surplus expressed as a percentage of potential output. Let us elaborate a little on this point.

Suppose that during two successive years, the basic features of the tax structure remain unchanged and so do government expenditures. However it is likely that potential output will have increased due to larger labour force, higher capital stock and joint productivity. If the rate of growth of potential output is 4.6 percent per year, then potential output may have increased from say, \$50 billion to \$52.3 billion. Because of the built-in stabilizers, the new full employment budget surplus corresponding to a potential output of \$52.3 billion may now be expected to exceed the previous one. This fact is illustrated in the diagram below (figure 2.2) by the extension of the budget line to the point F_1 corresponding to the higher potential output of \$52.3 billion. However, the change in the full employment surplus due to a greater potential output is not likely to move along $F F_1$, but rather to $F F_2$ because as we shall

point out later, the secular or long-run elasticity of government tax revenues is much smaller than the short-term elasticity.

FIGURE 2.2

The Full Employment Surplus
Overtime



Hence, with government expenditures and the tax structure remaining constant, the full employment surplus could be expected to increase steadily over time. This means that for the potential surplus to remain constant over time, there needs to be downward shifts of the budget structure at an annual rate sufficient to offset the secular drift in revenues consequent to higher potential output. Such compensating discretionary shifts of the budget line could take the form of either an increase in expenditure, tax-cut or both.

Now, who would argue that a \$500. million absolute surplus does not have a greater impact on a \$50 billion economy like Canada than on a \$600 billion economy like the United States? Obviously what is important is the potential

surplus in relation to the size of the economy i.e., the full employment surplus expressed as a percentage of the full employment output. This relative measure permits us not only to compare the impact of the budget structure of two different economies, but to measure the changing impact over time of the budget structure on the same economy. A full employment surplus of \$500 million now, does not have the same impact on the Canadian economy now, as it would have had 30 years before or would have 30 years ahead.

Thus, we conclude that unadjusted changes in the absolute full employment budget surplus are not appropriate measures of discretionary changes in the budget structure when we compare two or more successive fiscal years.

The above discussion lets us with the feeling that the "relative full employment budget surplus" i.e., the surplus stated as a percentage of potential output, is a more appropriate measure of fiscal impact. Interpreted in this way, "no change in fiscal impact" implies that the relative full employment surplus remains constant, i.e., that both potential output and the absolute surplus grow at the same rate.

Given the present federal budget structure, both the absolute and relative full employment surpluses would increase year after year at decelerating rates with the rate of growth of the relative surplus much lower than that of the absolute surplus¹. Therefore, in comparisons over time, changes in the relative full employment surplus do not measure the full impact of all discretionary budget changes, but only "non compensatory" discretionary budget changes, i.e., "the extent to which these discretionary changes fell short of, or exceeded, the

1 See Appendix "B".

annual reductions of the saving structure of the budget which are necessary to keep the relative full employment surplus constant."¹

4. The Full Employment Budget as a Measure of Fiscal Impact

"The full employment budget surplus represents the amount of government saving, on a national-income-accounts basis, that will be generated at full employment with stable prices."²

Ceteris paribus, it can be stated that the fiscal program that generates more government saving at full employment can also be expected to yield a higher rate of government saving at any other output level. Therefore we can talk simply in terms of "low-saving" and "high-saving" budget programs.

Given a certain budget program, the actual (realized) deficit or surplus not only reflects the impact of the budget on the private economy but reflects the impact of the private economy, via the built-in stabilizers, on the government sector. Thus, a very large actual deficit which seems highly expansionary may simply be the result of a very restrictive budget structure which depressed the private commercial economy and government tax revenues.

The full employment surplus is free from this optical illusion, because it reflects the restrictiveness of the budget program at a high level of economic activity. Thus, whereas a low actual surplus may either be a sign of depressed economy or of a low-saving budget structure, a low

¹ Michael E. Levy, Fiscal Policy, Cycles and Growth (New York: The National Industrial Conference Board, Inc., 1963), p. 88.

² Ibid., p. 23.

full employment surplus is always unequivocally a sign of a low-saving budget structure.

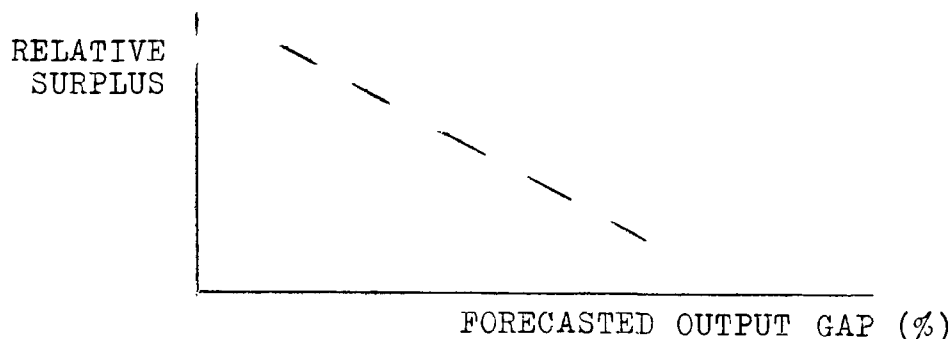
Therefore, full employment analysis is the relevant approach for the purpose of evaluating the fiscal impact of the budget on the private economy.

A comparison of relative full-employment surpluses over time may give us a view of the changing restrictiveness of fiscal programs. However, this sort of comparison does not give us an insight on the effect of the budget in relation to prevailing economic forces. For example, the same relative full employment surplus for a given fiscal year may either correspond to a "too high" and a "too low" budget saving structure when related to the prevailing economic conditions of the private sector of the economy.

For consistent counter-cyclical fiscal policy as well as growth policy, the relative full employment surplus should be negatively correlated with the forecasted output gap i.e., the greater the forecasted output gap, the smaller should be the relative full employment surplus and vice-versa. The diagram below gives us an ideal correlation between the budget surplus expressed as a per cent of potential output and the forecasted output gap expressed also as a per cent of potential output.

FIGURE 2.3

Sound Fiscal Policy



C H A P T E R IIITHE FULL EMPLOYMENT SURPLUS
AND THE
NATIONAL INCOME EQUILIBRIUM

Up to now, we have considered the full employment surplus as a tool of fiscal policy without taking into account other variables which affect the determination of the output level. This Chapter takes into account some of these factors and analyses to some extent the implications of these for fiscal policy.

1. The National Income Equilibrium

The notation used is as follows:

C = consumption

I = investment (private)

X = exports

G = government expenditures ¹

S = private savings

M = imports

T = taxes ¹

In equilibrium the sum of injections into the economy is equal to the sum of leakages, mathematically:

$$(1) \quad C + I + X + G = C + S + M + T$$

Eliminating C on both sides,

$$(2) \quad I + X + G = S + M + T$$

Transforming the equation, we get:

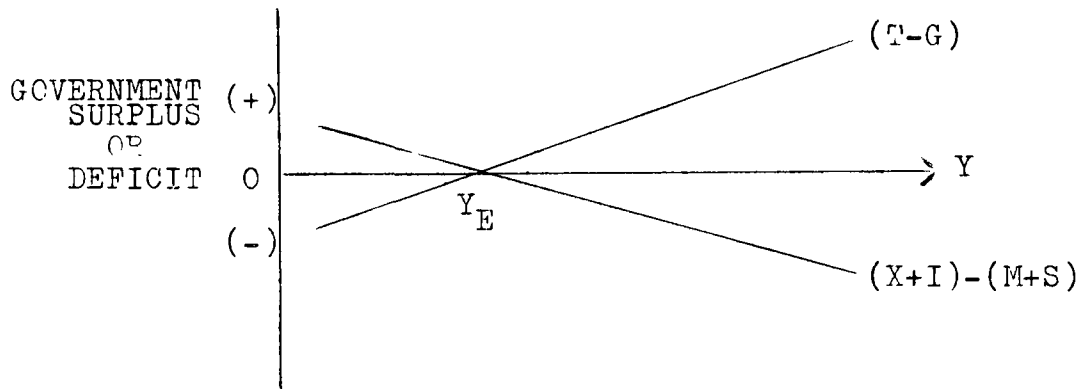
$$(3) \quad T - G = (X + I) - (M + S)$$

¹ Federal government only. Provincial and municipal taxes and expenditures are respectively treated as private savings and consumption or investment.

The third equation is to be interpreted to mean that in equilibrium or in an ex-post position, the government sector surplus (taxes minus government expenditures) is always equal to the excess of the private sector exports plus investment over saving and imports.

For the purpose of showing diagrammatically the effect of the government budget program on the equilibrium level of national income, let us express equation (3) in ex-ante terms.

FIGURE 3.1
National Income Equilibrium

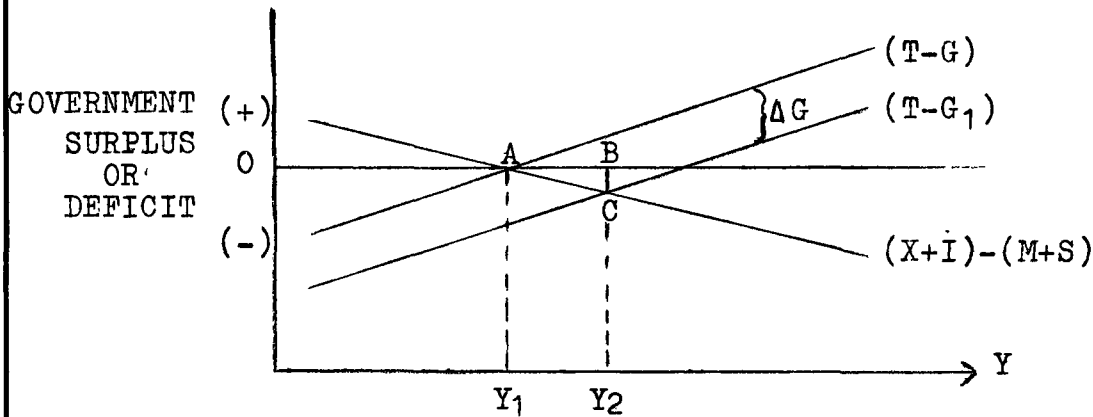


On the diagram above, the budget line $T - G$ is sloping upward because government expenditures (G) is assumed to remain more or less constant in the short-run while tax revenues will increase with income (Y). So long as the structure of the built-in stabilizers is stable, changes in tax levels or government expenditures will shift up or down the budget-line $T - G$, without affecting its slope. The second curve $(X + I) - (M + S)$ is sloping downward since in the short-run private investment and exports are assumed to be more or less constant while savings and imports will grow with income. Thus growing amounts of imports and savings, subtracted from a more or less constant amount of exports and investment, account for the downward sloping line $(X + I) - (M + S)$.

Now since, as we have seen, the national income is in equilibrium when $T - G = (I + X) - (M + S)$, the equilibrium level of national income in figure 3.1 is set at Y_E , the level of national income where the $T - G$ curve meets the $(X + I) - (M + S)$ curve.

The next diagram (Figure 3.2) illustrates the effect of a discretionary increase in government expenditures.

FIGURE 3.2
Effect of a Discretionary Increase
in Government Expenditure



The budget line $T - G$ and $T - G_1$, are two alternative budget programs¹ where $T - G_1$ is the more expansionary one. The budget program $T - G$ would bring about a balanced budget at the national income level Y_1 . The budget program $T - G_1$ would bring about an active government deficit of BC but at the national income level Y_2 which is greater than Y_1 .

It is to be noted that the resulting government active deficit CB is smaller than the discretionary change in government expenditures ΔG . As noted in Chapter III, the ratio $\frac{CB}{\Delta G}$ could be conceived as a leverage factor of gov-

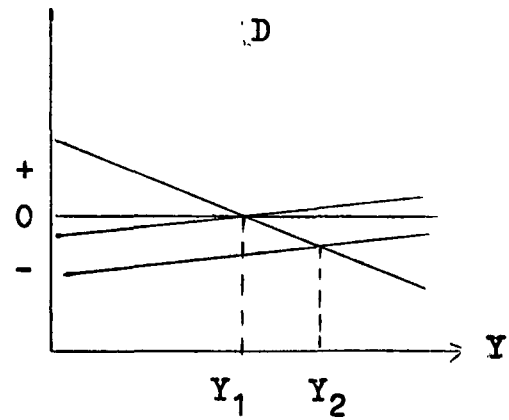
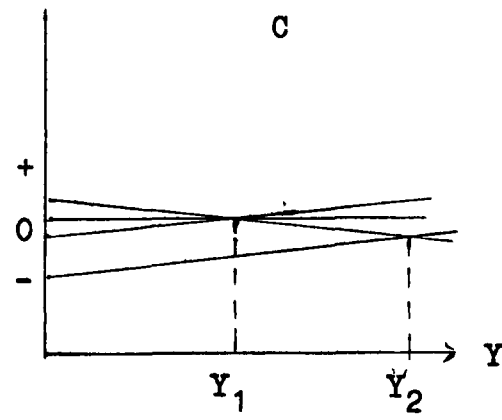
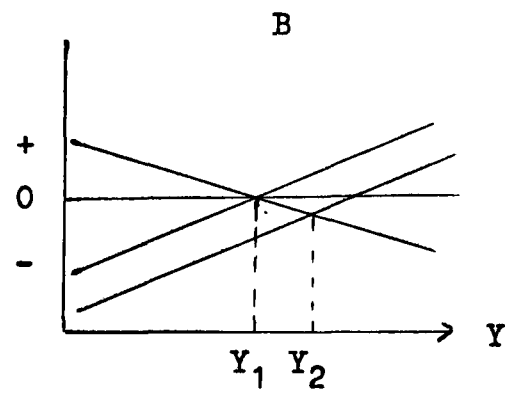
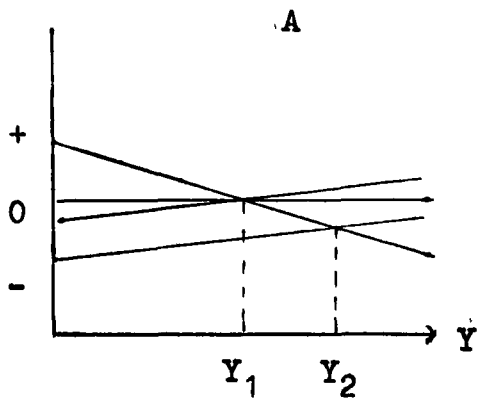
¹ Refer to Chapter III, page 9.

ernment discretionary change in fiscal policy. If the absolute value of this leverage factor is $\frac{1}{2}$, this would mean that an autonomous increase of \$100 millions in government expenditures could be expected to decrease the government surplus or increase its deficit by $\frac{1}{2} \times 100 = \50 millions.

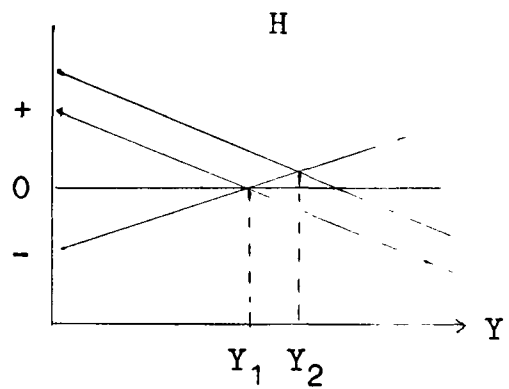
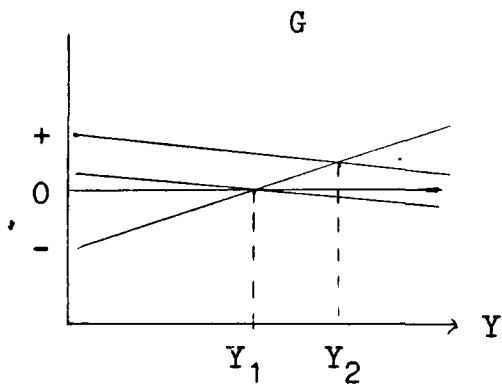
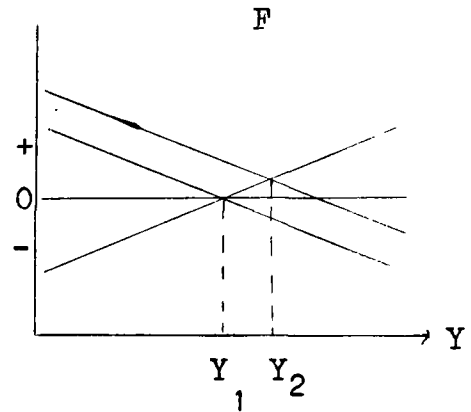
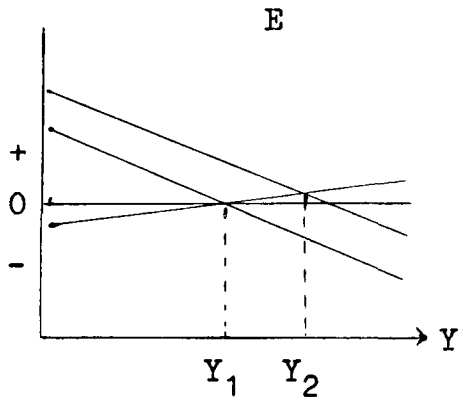
The absolute value of this leverage factor will depend partly on the slopes of the two curves $T - G$ and $(X + I) - (M + S)$. This is illustrated on the diagrams on the next two pages which lead us to the following postulates:

- a) Ceteris paribus, the steeper the slope of the budget line $T - G$, the smaller will be the budget leverage effect¹ of a discretionary change in budget policy, and the smaller also will be the income effect. (The smaller will be the government expenditure multiplier).
- b) The steeper the slope of the $(X + I) - (M + S)$ curve, the greater will be the budget leverage effect of a discretionary change in budget policy, and the smaller will be the income effect. (The smaller will be the government expenditure multiplier).
- c) The steeper the slope of the budget line $T - G$, the greater will be the budget leverage effect of an autonomous change in exports or investment and the smaller will be the income effect.
- d) The steeper the slope of the $(X + I) - (S + M)$ curve, the smaller will be the budget leverage

¹ The smaller the leverage effect, the smaller will be the surplus reduction or deficit increase from a given discretionary change in fiscal policy.



Note: Upward sloping curves are T-G curves and downward sloping curves are $(X+I) - (M+S)$ curves.



Note: Upward sloping curves are T-G curves and downward sloping curves are $(X+I) - (M+S)$ curves.

effect of an autonomous change in exports or investment and the smaller will be the income effect.

These postulates leads us to the following three conclusions; one having regard to the income effect and the other two to the leverage effect:

- a) The smaller the slope of the two curves $T - G$ and $(X + I) - (M + S)$, the greater will be the income effects of a discretionary change in fiscal policy or of an autonomous change in investment or exports.
- b) The greater the slope of the budget line $T - G$, the smaller will be the budget leverage effect of a discretionary change in fiscal policy, but the greater will be the budget leverage effect of an autonomous change in investment or exports. (Compare diagrams A, B, E, F.)
- c) The greater the slope of the $(X + I) - (M + S)$ curve, the greater will be the budget leverage effect of a discretionary change in budget policy but the smaller will be the budget leverage effect of an autonomous change in investment or exports. (Compare diagrams C, D, G, H.)

Now, for any country at any given time there will be a certain $(X + I) - (M + S)$ curve, the level of which will depend on the prevailing strength of the private economy, and whose slope will be a structural function. Changing the $(X + I) - (M + S)$ curve slope is a very long-run process. But the government by changing the tax rates structure may in a relatively short time alter the slope of the budget line

If a country like Canada, has a very steep $(X + I) - (M + S)$ curve, what should the slope of the $T - G$ curve be? In other words how progressive should the tax rates structure be? We have not as yet developed the necessary conceptual tools to answer this question; we need beforehand to know something about the national income equilibrium in relation to public policy. The next step is to consider this relation.

2. National Income Equilibrium at Full Employment

One of the main objectives of public policy is to maintain a high level of economic activity over time i.e., keep the economy working at full employment.

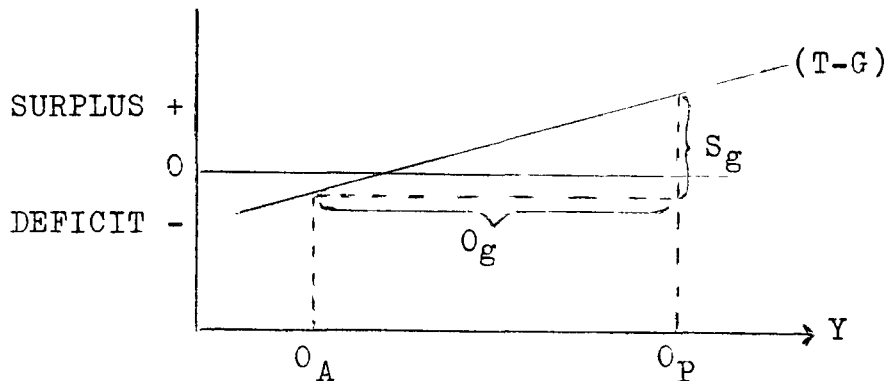
If there exists a deflationary gap, the purpose of fiscal policy should be to eliminate it i.e., to make actual output (O_A) equal potential output (O_P).

In mathematical terms, this aim could be expressed as:

$$\text{Primary aim: } O_A = O_P \quad (1)$$

But when O_A is smaller than O_P , there will exist a gap $(O_P - O_A) = O_g$. This gap is shown on the diagram below by the horizontal distance between O_A and O_P .

FIGURE 3.3
Fiscal Objectives



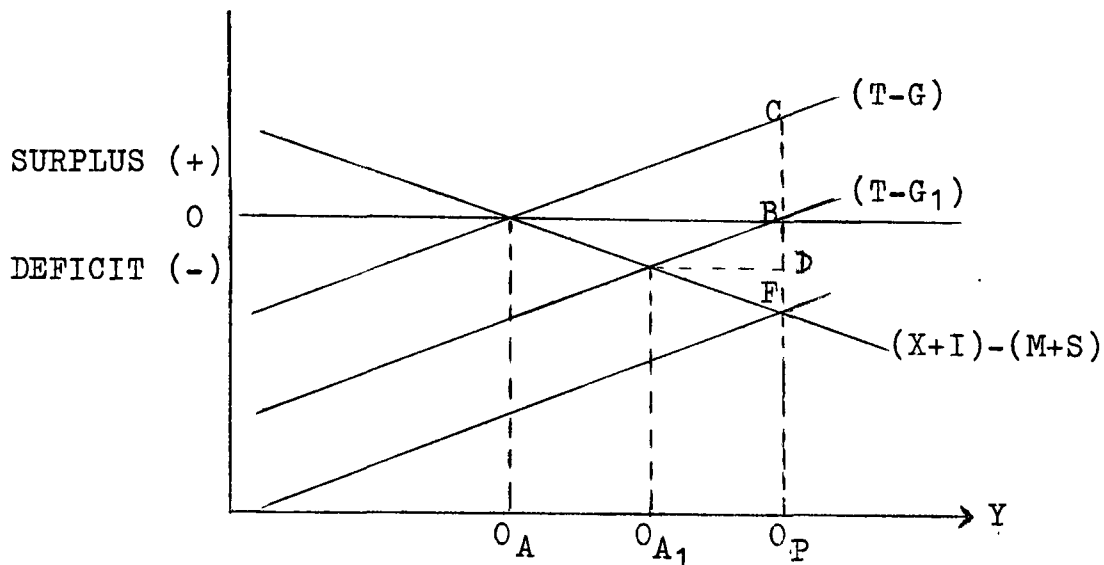
Whenever there exists a deflationary gap, there will also exist a surplus gap (S_G) which will be equal to the output gap multiplied by the coefficient of built-in stabilizers ($\text{tang } \theta$). Thus, the first aim (elimination of the output gap: $O_P - O_A = 0$) implies a second aim which is the elimination of the surplus gap i.e., the elimination of any difference between the full employment surplus (S_F) and the actual surplus (S_A).

Thus mathematically,

$$\text{Secondary aim: } S_F - S_A = 0 \quad \text{or} \quad S_G = 0 \quad (2)$$

Some economists have argued that the surplus gap represents the total drag of the budget structure on the economy. This is only partly true. The simple elimination of the surplus gap existing at any given time will not automatically bring about full employment. In fact, the elimination of this surplus gap existing at any given time will not eliminate the total surplus gap which is to be eliminated if full employment is to be attained. Let us illustrate by a diagram.

FIGURE 3.4
Total Fiscal Drag

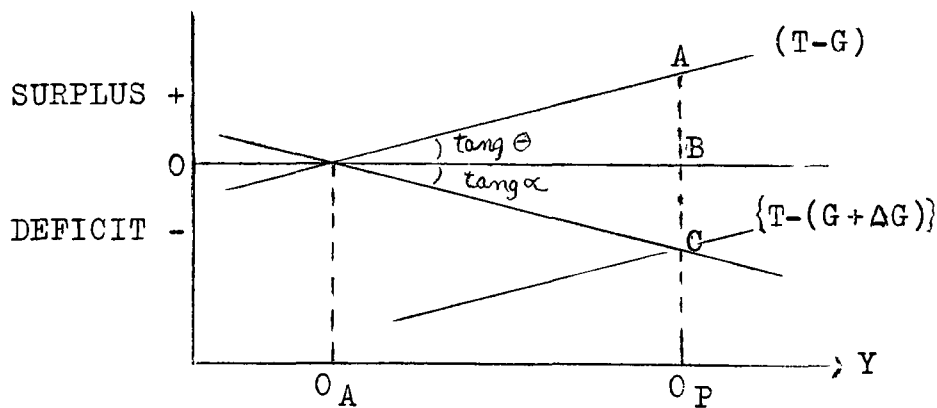


On the figure 3.4, O_A is the output level that would be realized with the given $(X + I) - (M + S)$ curve and the level and structure of the fiscal program $T - G$. With this output level (O_A) and the given potential output O_P , the surplus gap is equal to $C B$. Now, to eliminate the surplus gap $C B$, let us suppose that the government increases expenditure by $C B$. We now have the budget program $T - G_1$ to which correspond the output O_{A1} . Note that there still exists a surplus gap equal to $B D$. We can see from the diagram that it would be only by increasing government expenditures¹ by $C F$ that the surplus gap could be totally eliminated.

If fiscal policy is to be completely effective, it should be devised to fill in any deflationary gap. On the diagram below (figure 3.5), we can see that full employment would require a total increase in government expenditures (ΔG) equal to $A B + B C$.

FIGURE 3.5

Elimination of the Fiscal Drag



¹ It is to be noted that tax-cuts are not presented here as an alternative to increasing expenditures. This is due to a different effect of tax-cut on the national income equilibrium. Refer to the Appendix "C".

Thus, for a completely effective fiscal policy, when the output forecast is O_A , the government should increase expenditures by $A C$. In mathematical terms:

$$A B = (O_P - O_A) \text{ tang } \theta$$

$$B C = (O_P - O_A) \text{ tang } \alpha$$

$$A B + B C = (O_P - O_A) (\text{tang } \theta + \text{tang } \alpha)$$

$$A C = (\text{tang } \theta + \text{tang } \alpha) O_G$$

The fiscal policy requirement "A C" expressed as a percentage of potential output provides us with an analytical tool to evaluate fiscal policy in different years. The greater the fiscal requirements as a percentage of potential output, the more inertia or perverseness was demonstrated by fiscal budgeting¹. It should be evident to the reader that so long as $\text{tang } \theta$ and $\text{tang } \alpha$ are constant, the fiscal requirements are directly related to the relative output gap i.e., the output gap expressed as a per cent of potential output.

The question here is whether one accepts the principle that fiscal policy should totally compensate for the erratic movements of the economy. This question involves a value judgment on the extent it should, and such a judgment will be avoided here.

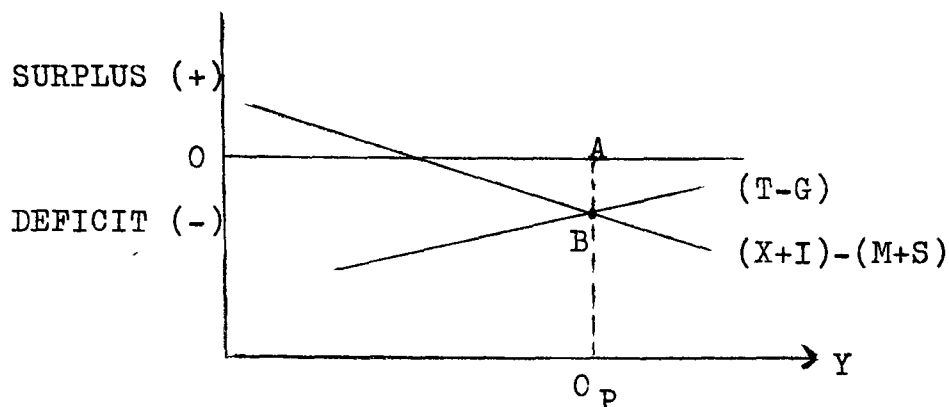
The above considerations may help us to answer a question we had before left unanswered. The question was:

"If a country like Canada has a very steep $(X + I) - (M + S)$ curve, what should the slope of the $T - G$ curve be?"

¹ The reader should however note that complete abstraction is made here of monetary policy. Furthermore the apparent inertia or perverseness may be the result of bad forecasts.

FIGURE 3.6

Planning Deficit



If, for the purpose of the analysis, we assume that fiscal policy should be fully compensating, then at a given potential output O_p and forecast level for the $(X + I) - (M + S)$ curve as shown on the figure above, the planned budget deficit should be $A B$, the vertical distance between the zero line and the $(X + I) - (M + S)$ curve at the output O_p . Thus, with a given strength of the private sector of the economy i.e., with a given level of the $(X + I) - (M + S)$ curve, the planned deficit ($A B$) is completely independent of the $T - G$ curve slope.

However, an important consideration bears heavily on the choice of a more or less progressive $T - G$ curve. Experience has demonstrated that there is very little place in the budget program for expenditure adjustments to fit prevailing economic circumstances. So, to make active fiscal policy most effective, there is need to minimize fiscal policy requirements i.e., minimize the variations in expenditures (ΔG) needed to achieve certain desired results. What all this amounts to is that there is need to maximize the income leverage effect of government expenditure, or more

simply to maximize the government expenditure multiplier.

Now, as fiscal policy requirements have been defined as

$$A C = (\text{tang } \theta + \text{tang } \alpha) O_G$$

the minimization of $A C$ means the minimization of $\text{tang } \theta + \text{tang } \alpha$ at any output level.

As $\text{tang } \alpha$ is given by structural variables built into the private sector, the minimization of $\text{tang } \theta + \text{tang } \alpha$ implies the reduction of $\text{tang } \theta$ as far as possible¹.

FIGURE 3.7

Impact of Budget Structure on Fiscal Requirements

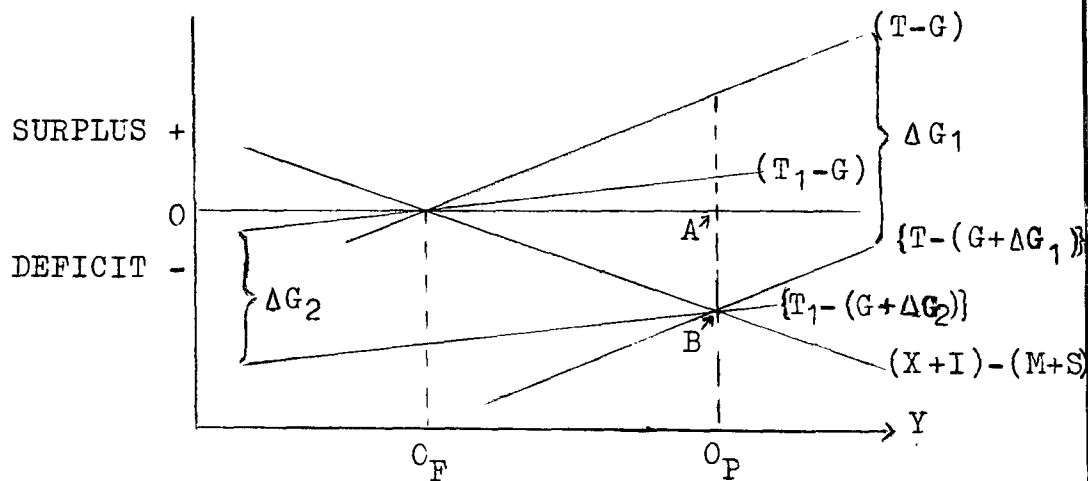


Figure 3.7 illustrates the impact of the budget structure on fiscal requirements. Two budget progressivity structures are presented, $T - G$ being very progressive and $T_1 - G$ being less progressive. As is evidenced by the diagram, at the forecast output O_P , fiscal requirements ΔG_1 are much greater with the more progressive budget structure than fis-

¹ There are offsetting effects however. See Appendix "C".

cal requirements ΔG_2 of the less progressive budget structure to attain potential output O_p and develop the same active budget deficit A B.

The minimization of fiscal requirements principle has another facet however. It implies less reliance on the so-called built-in stabilizers.¹ In fact, there exists a "trade off" between built-in stabilization and the minimization of fiscal requirements. The choice between relying primarily on the built-in stabilizers or else on active fiscal policy will depend on a host of factors not the least important of which is the ability to forecast accurately future economic development. The more accurately it is possible to foresee future economic situations, the more it is possible to rely on active policy and less on automatic stabilization.

¹ See postulate (a) and (c), p. 23

P A R T II

CANADIAN FULL EMPLOYMENT SURPLUS
ESTIMATES AND A CRITIQUE OF
CANADIAN FISCAL POLICY IN
THE LIGHT OF THE POTENTIAL
SURPLUS CONCEPT

C H A P T E R I V

METHODOLOGICAL PROBLEMS OF ESTIMATION
AND ACCURACY OF RESULTS

Problems of Estimation

Three main steps are involved in the computation of full employment surpluses:

- (a) The computation of potential output and output gap i.e., the extent by which the actual output differs from the potential output,
- (b) The breaking down of the national accounts government sector into discretionary budget items on the one hand and, built-in non-discretionary budget items on the other hand,
- (c) The adjustments to potential output of all built-in non-discretionary budget items. These adjusted non-discretionary items are then added to the discretionary items on the proper side of the account whereafter the simple subtraction of the expenditure side of the account from the revenue side yields the full employment surpluses.

Potential Output

The methodology used in the computation of quarterly potential output estimates is discussed in Chapter V.

Non-Discretionary Budget Items

Within the context of full employment surpluses estimation, discretionary budget items are deemed to be those that bear no direct short-term link to the level of output.

Non-discretionary budget items are defined as those items that have a more or less fixed structure determined by past legislation but whose level is much dependent on the prevailing economic circumstances. In other words, the level of a non-discretionary budget item varies, in the short-run, with the level of G N P. The so-called built-in stabilizers are good examples.

In the estimating procedure used for Canada, seven such items were arbitrarily considered:

On the revenue side:

- Personal income tax
- Corporate income tax
- Customs import duties
- Indirect taxes less import duties
- Contributions to the unemployment insurance funds.

On the expenditure side:

- Unemployment insurance benefits
- Transfers to other levels of governments.

Adjustments of Non-Discretionary Budget Items to Potential

Changes in the levels of non-discretionary budget items as the output gap is closed may be estimated by various methods. One way of doing it would be to calculate a single "incremental coefficient of built-in stabilizers" and apply it directly to the output gap of each quarter.¹ However, this

¹ See Levy, loc cit., p. 104.

method assumes that the overall marginal taxation rate is constant and this is deemed unrealistic.¹ Moreover its computation requires standardization of all tax rates.²

The general method adopted for Canada was to calculate the elasticity of each non-discretionary budget item to its base e.g., the elasticity of corporate taxes to corporation profits. Then, the base of each non-discretionary budget items has been evaluated at full employment and gaps in tax base thereby calculated. Then, non-discretionary budget items at potential have been evaluated by the following general formula:

$$B_F = B_A \left(1 + (G_b \cdot \xi) \right)$$

where,

B_F equals the full employment value of the non-discretionary budget item,

B_A equals the actual value of the non-discretionary budget item,

G_b equals the ^{relative} gap in the base of the non-discretionary budget item and,

ξ equals the elasticity of the non-discretionary budget item to its base.

Using this method for the quarterly projection of each non-discretionary budget item avoids "pegging" their income elasticities.

¹ See p. 58.

² Such standardization has been carried in Chapter VI for the personal income tax only, but for another purpose than that of calculating an incremental coefficient of built-in stabilization.

Accuracy of Results

Two points are worth noting concerning the accuracy of results:

- (a) Present estimates of full employment surpluses are unreliable with regard to their size.
- (b) Present estimates of full employment surpluses are good indicators of the direction and relative magnitude of changes in the surpluses over time.

Since the adjustments to potential of non-discretionary budget items depend heavily on the output gaps estimates, the size of full employment surpluses is not invariant to the methodology used for the computation of potential output. Ceteris paribus, the higher the output gaps, the greater the adjustments of non-discretionary budget items to potential.

Whereas present estimates of full employment surpluses are not reliable with regard to their size, they are deemed to be fairly good indicators of the direction and relative magnitude of changes in the surpluses overtime. A large increase in the relative surplus is an indication of a change toward a "higher saving" and more restrictive budget. Changes in the restrictiveness of the budget however, are more significant when the changes in the surpluses have been broken down according to their causes and weighted by their relevant income effects. That is to say, changes in surpluses may arise because of discretionary changes in revenues or expenditures. These two major causes have quite different impact on the economy since the "impact multiplier" of changes in tax rates is only about half that of changes in expenditures.

This explains why it was said above that large increases in the relative surplus was an indication of a shift toward

a "higher saving" and more restrictive budget structure. A small change in the surplus may carry a wrong impression of the directional change in fiscal policy due to cross-directional changes in different discretionary budget items. Chapter VIII has taken these factors into account in assessing Canadian past fiscal policy.

C H A P T E R V

SHORT-TERM POTENTIAL OUTPUT :

CONCEPTS, MEASUREMENTS

1. Definition

The reader will remember from Chapter II, that the definition of the full employment surplus implies also the concept of potential output. Indeed, estimates of potential output are necessary prerequisites for the derivation of potential surpluses.

Knowles has defined potential output as "a measure of the optimum or best practice which it is believed the economy is capable of sustaining on the average, year after year, without running into serious instability of employment, output, or prices."¹

As things now stand, the only available estimates of potential output for Canada have been provided by the Economic Council of Canada in its Staff Study #2.

2. Short-Term versus Long-Term Potential Output

A host of methods can be used in estimating potential output estimates.² The best method depends heavily on whether the data are to be used for short-term or long-term analysis. Much of the controversy about different potential output estimates is due to a failure to distinguish this time perspective. In this paper, we are primarily concerned with short-term potential output estimates.

¹ James W. Knowles, "The Potential Economic Growth in the United States", p.6, cited by B.J. Drabble, Potential Output 1946 to 1970, (Staff Study #2 Prepared for the Economic Council of Canada; Ottawa: Queen's Printer, 1964), p. 1.

² For an excellent description of four methods, see Levy, loc. cit., pp. 64-72.

In short-term analysis, we deal with more or less given factors such as the quantity and quality of available inputs subject to a certain norm of full utilization. In the short-term, long-run considerations such as, technological change or changes in social norms of factor utilization like the long-term trend decline in average hours worked per week or the substitution of paid workers for self-employed, are irrelevant.

3. Critique of the Economic Council's Estimates

The Council's potential output estimates are long-term in nature. However considerations of these estimates are given here since the present paper includes some long-run considerations; furthermore, it is thought that some contribution toward understanding the potential output concept may well be in order.

The main point of my argument against the Council's estimates is that essentially the Council's estimates are not economic but technical. To understand my argument, we have to place ourselves in the Council's much broader perspective.

The Council's First Annual Review is subtitled "Economic Goals for Canada to 1970."¹ These goals are stated in page one of the main report as

- full employment
- a high rate of economic growth
- reasonable stability of prices
- a viable balance of payments
- an equitable distribution of rising income

¹ Economic Council of Canada. First Annual Review: Economic Goals for Canada to 1970 (Ottawa: Queen's Printer, December 1964).

Now, the quantification of these goals mean their translation into targets allowing for some "trade-offs" between various economic goals such as full employment and price stability. In fact target setting implies defining by quantification all economic goals so that the various goals be compatible with one another. Thus to define full-employment as a situation where 97 per cent of the labour force is employed may mean that a reasonable stability of prices is defined as a yearly three per cent increase in the price level. What the Council did in fact was, independently of other goals, define full employment as 97 per cent of the labour force, project potential output at 5.5 per cent per year between 1963 to 1970 in order to achieve potential output by that date, and then to project the implications of this growth rate for the balance of payments for which it projected an international current account deficit of \$1.5 to 2.0 billion in 1970, and expressed hopes that this deficit would be reduced.

How realistic is the Council's model? What is its feasibility? These are important questions the answer to which depend on a host of considerations including the model itself and to some of these considerations we now turn.

The Council's estimate of potential output are based on a 3 per cent unemployment level accepted as a criterion for full employment. How realistic is this particular goal in relation to others? Let us make the Council speak for itself.

" The estimation of a minimum unemployment rate in this study has been made without reference to associated price effects. The approach has been essentially a technical one: the decomposition of the historical unemployment rates into designated components; the reassembling of selected components into an estimate of a feasible minimum. There are, of course, other approaches to a definition of minimum unemployment, in particular those which stress the relationship between employment goals and price stability in terms of the

"trade-off" between unemployment and price change."¹

G.L. Reuber of the University of Western Ontario has in a recent article² estimated empirical trade-offs between unemployment level and changes against price increases. His study shows that changes in Canadian price levels depend largely on changes in the level of international prices as represented by import prices and changes in the level of unemployment. One of his conclusions is that:

"Beyond a 3.5 per cent level of unemployment the pressure on domestic price levels seems likely to become so great that compensation through the exchange rate, increased capital inflows, or foreign inflation would be required to maintain a viable balance of payments."³

Furthermore, Reuber found out that with a 3.0 per cent level of unemployment, Canadian price levels might be expected to increase by 1.7 per cent annually assuming an unrealistic hypothesis of constant international prices.

Based on Reuber's study, my conclusion is that the Council's full employment criterion is inconsistent with the price objective of two per cent increase annually since assuming a yearly rise in international prices of 2.0 per cent, Canadian price levels would rise 3 per cent per year.

¹ Frank T. Denton & Sylvia Ostry, An Analysis of Postwar Unemployment (Staff Study No. 3 Prepared for the Economic Council of Canada; Ottawa: Queen's Printer, 1964), p. 21.

² G. L. Reuber, "The Objectives of Canadian Monetary Policy, 1949-61, Empirical "Trade-Offs" and the Reaction Function of the Authorities", Journal of Political Economy, April 1964. Cited by Denton & Ostry, loc. cit.

³ Ibid., p. 119.

The purpose of the Council's calculations of potential output was to derive output gap estimates particularly for the year 1963 so as to project growth requirements for the intervening years 1963 to 1970 which would imply a closing of the gap by 1970 plus achievement of a growth rate equal to that of potential output.

The total output gap (potential output minus actual output) for the year 1963 is the sum of two gaps estimates: the employment gap and the productivity gap. We have already discussed the employment gap and we concluded that the Council's full employment criterion was unacceptable in terms of other goals and that a 3.5 to 4 per cent target for unemployment would have been much more realistic.

With regard to the productivity gap, the Council projected the output per man-hour of paid workers for the commercial non-farm economy to grow at 2.5 per cent per year. I have no argument against this growth rate itself; but why should the trend growth line pass through the year 1956 instead of 1957? ¹ No doubt, in such long-term projection of potential output, increases in productivity overtime have to be fully accounted for; however, account must also be taken of the fact that even temporary or intracyclical dips of output affect future factor quality and availability and doubtless the long-term growth path. These considerations, the Council has completely passed over, and indeed their concept of the productivity gap becomes quite obscure and it implicitly includes a "catching up hypothesis" rooted probably in an exogeneously determined technological trend supplemented with a particular capital deepening process theory. If these last hypotheses are what the Council had in mind, it completely failed to inform the reader.

¹ See Drabble, loc. cit., p. 29.

Now, if my argument has some validity, the Canadian economy is bound to be much overheated if public policy is ever geared to the achievement of a 5.5 per cent annual growth rate to 1970, as suggested by the Council, instead of a much slower rate sufficient to reduce whatever the actual gap is deemed to be plus keeping pace with the growth rate of potential output described at 4.6 per cent per year by the Council.

4. Short-Term Potential Output Estimates

An attempt was first made to use an estimating technique relating directly employment to output. This technique was rejected when after careful examination of the past it was realized that the full employment goal is a recessive one i.e., as we approach full employment, it takes more and more employment to reduce unemployment because of the changing labor force participation rate.

The technique used was to link directly changes in output with changes in the unemployment rate. This method has the advantage of self-containing the full employment recessivity mentioned above. It also does away with the so-called "productivity gap hypothesis" embodied in the Council's estimates.

The procedure adopted can be summed up in three steps:

Step 1. A linear regression was fitted through percentage changes in the non-farm gross domestic product and changes in the unemployment rate for the period 1953-1965. The regression fitted through annual data yielded the following equation:

$$Y = 4.635 - 2.1104 (X)$$

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where X is the change in the unemployment rate and
 Y is the per cent change in non-farm G D P.

The same regression fitted through quarterly data yielded:

$$Y = + 1.101 - 1.878 (X)$$

Step 2. Preliminary estimates of potential output were derived by applying simultaneously the following equation to actual quarterly data:

$$O_p = \frac{O_a \{100 + 2 (u - 4.0)\}}{100}$$

where O_p stands for potential output (Potential non-farm G N P), O_a stands for actual output and u for the actual unemployment rate. ¹

Step 3. Final potential output estimates were derived by running a nine-quarter moving average through preliminary estimates obtained in step 2. ²

The figure 5.1 on page 47 shows the correlation between annual data of changes in the unemployment rate and percentage changes in the non-farm G D P. The correlation shows that it requires an annual output increase of at least 4.6 per cent in the non-farm sector just to maintain unemployment steady.

The figure 5.2 on page 48 shows the potential and actual output by quarter for the period 1963 to 1965. ³

¹ This method bears close resemblance to Okun's "Truncated Production Function Method". See Levy, *loc. cit.*, p. 65. The only difference is that whereas Okun estimates $O_{p,t}$ by application of his formula to the period $O_{a,t-1}$, my formula estimates directly $O_{p,t}$ by applying the equation to $O_{a,t}$.

² See Appendix "D" for complete calculation of potential output.

³ All figures are given in Appendix "D".

CHANGE IN THE

UNEMPLOYMENT RATE

X

CORRELATION BETWEEN

CHANGES IN THE UNEMPLOYMENT RATE

AND PER CENT CHANGES IN THE VOLUME

OF NON-AGRICULTURAL OUTPUT

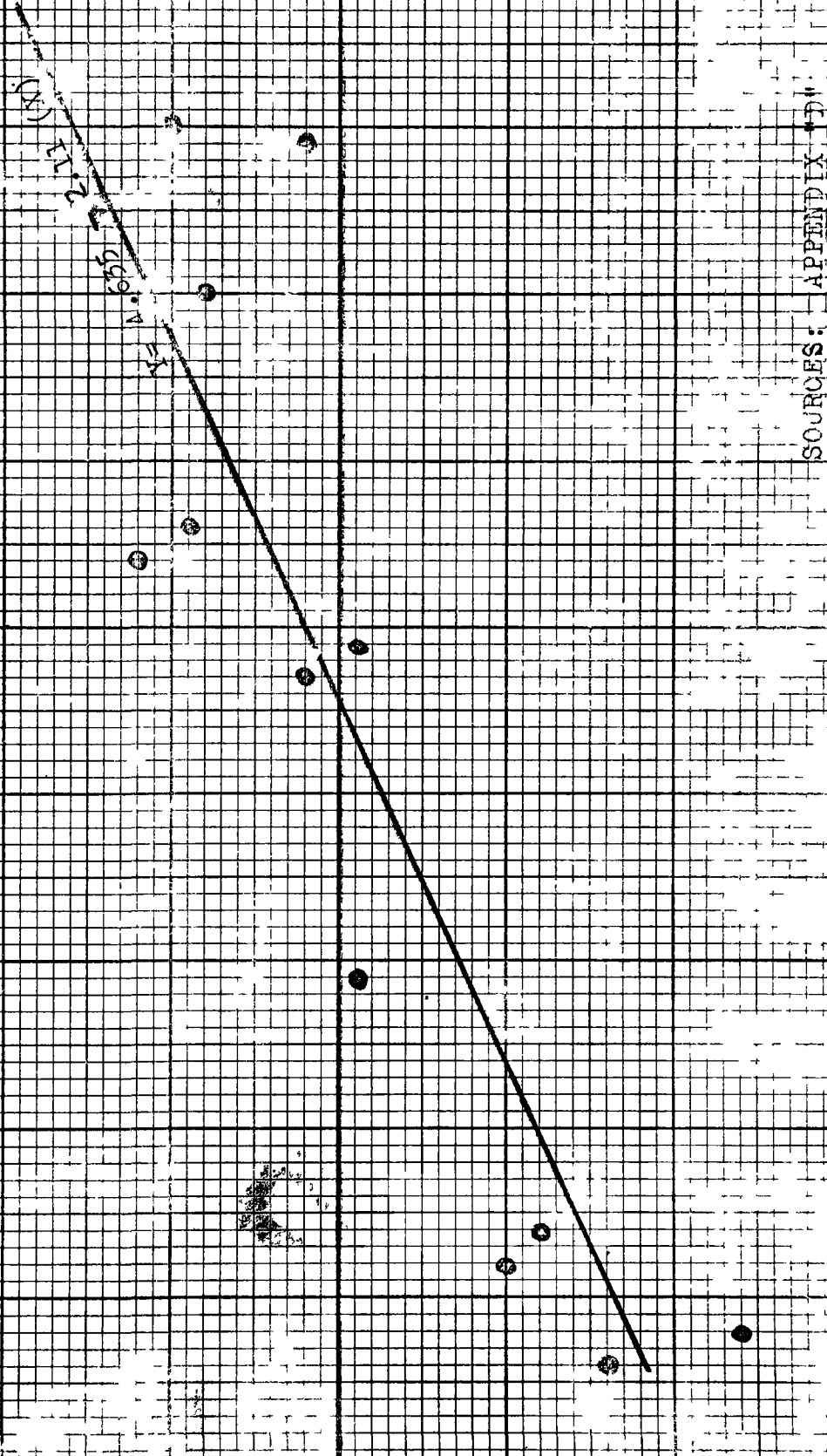
-2.0

-1.0

0.0

+1.0

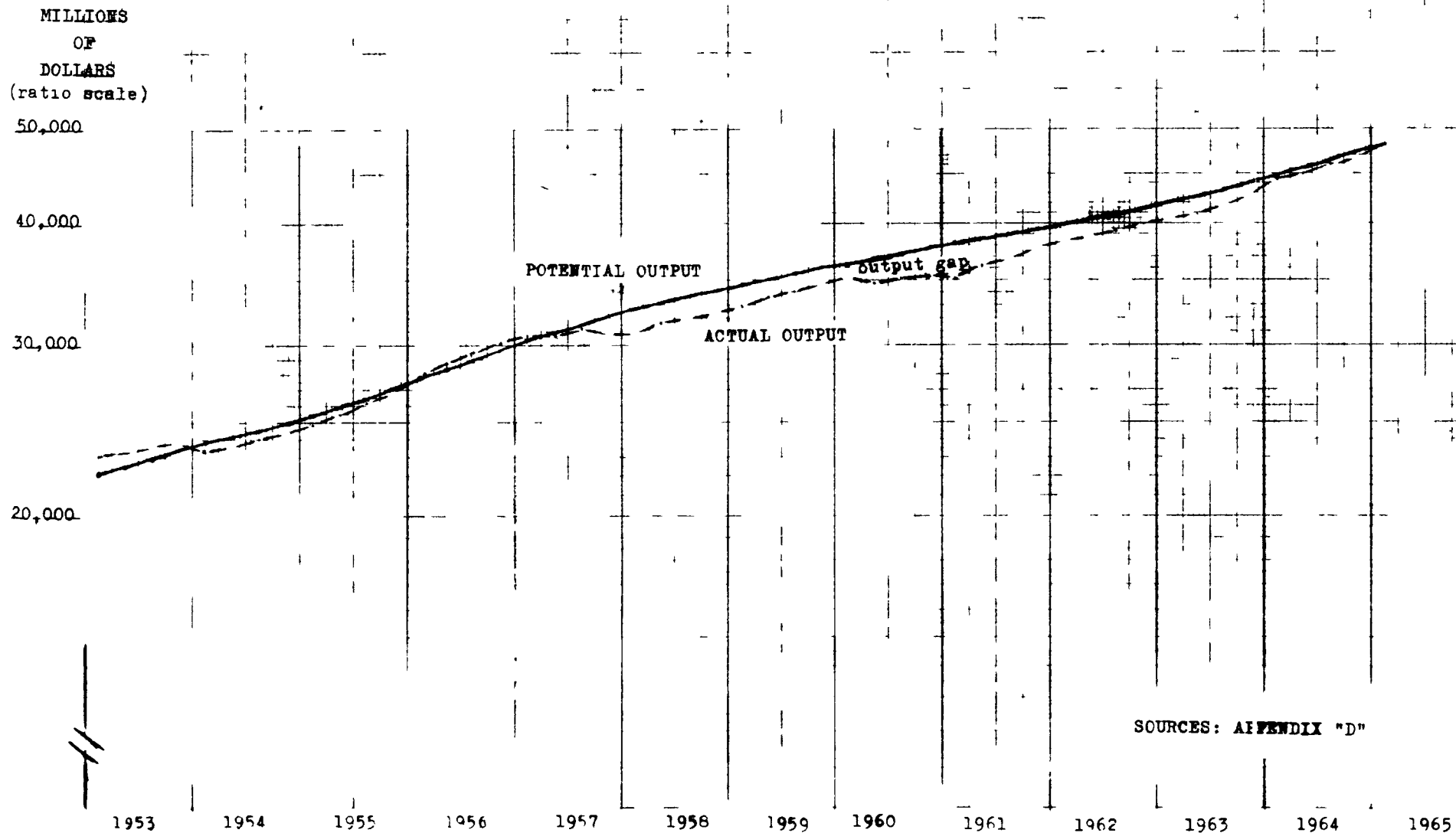
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SOURCES: APPENDIX D

FIGURE 5.2

POTENTIAL OUTPUT IN THE NON AGRICULTURAL
ECONOMY (1953-65)



C H A P T E R VIELASTICITIES OF NON-DISCRETIONARY
BUDGET ITEMS

The purpose of this chapter is to throw some light on the behavior of the built-in non-discretionary budget items as their bases vary. This knowledge is necessary for the estimation of full employment surpluses.

Elasticity of the Personal Income Tax

The procedure employed was to compute total tax payable by year at the 1961 standardized rate for the period 1949 to 1961. Then various elasticities of the standardized tax were derived.

The methodology used for the computation of the tax payable at the 1961 standard rate can be summarized in three steps.

- (a) The 1961 effective percentage yields by income class were derived by dividing the 1961 tax payable by the 1961 income assessed in each income class.
- (b) The annual tax payable by income class for the period 1949 to 1961 were derived by multiplying the income assessed in each income class by the 1961 effective yield for each income class.
- (c) Total tax payable at the 1961 standard rate were calculated by summing the tax payable in each income class for each year.

This method assumes:

- (a) no change in basic exemptions;

(b) for each income class, the ratio of taxable to total income is constant.

Assumption (a) is required and evidently well suited for the analysis. Assumption (b) however, was questioned and careful examination of the trend of taxable income and total income for each income bracket lead to the conclusion that the assumption was not very far from reality.

The graph 6.1 on page 51 shows actual tax payable and tax payable at the 1961 standard rate. The standard tax payable shows a very smooth trend compared with the actual tax payable. This fact suggests that much of past variations in yields was due to changes in tax rates.

On this exercise on elasticity measurement, theory controls much of the results and it is believed that the present deductive method is consistent.

The rationale of the complex causes of why total personal income tax payable changes is shown on illustration 6.2 on page 52.¹

During the period 1949 to 1961, the total standard tax payable has increased, on the average, at 11.3 per cent per annum. This increase in tax payable was due to (a) an annual increase of 10.9 per cent in total taxable income and (b) an increase in average yield of 0.4 per cent per annum.

The average annual increase of 10.9 per cent in total taxable income was due to (a) an annual increase of 6.0 per cent in taxpayers and (b) an annual increase of 4.6 per cent in average taxable income per taxpayer.

¹ It is to be noted that the same complex of causes are at play in the short-run as well as in the long-run.

GRAPH 6.1

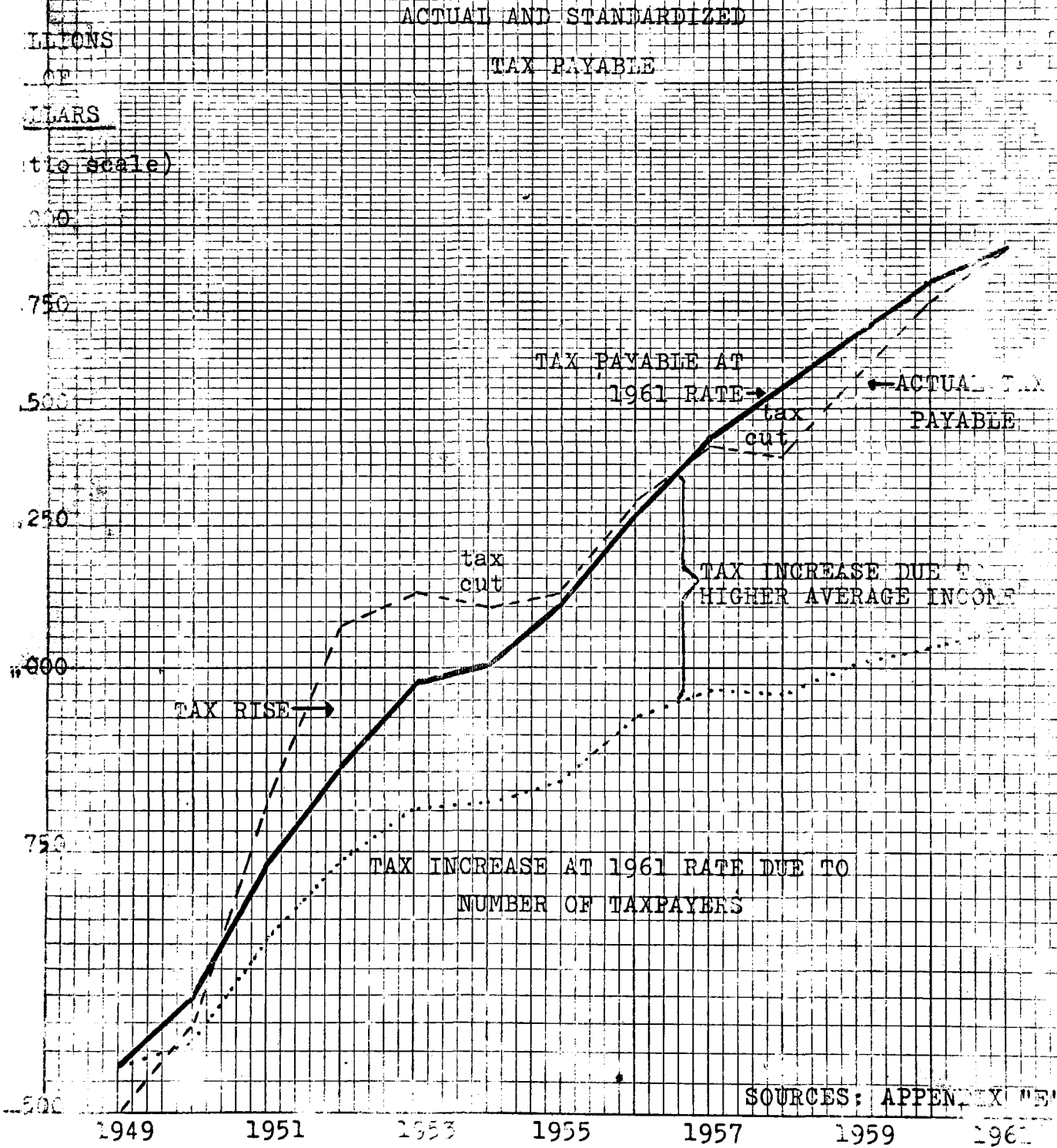
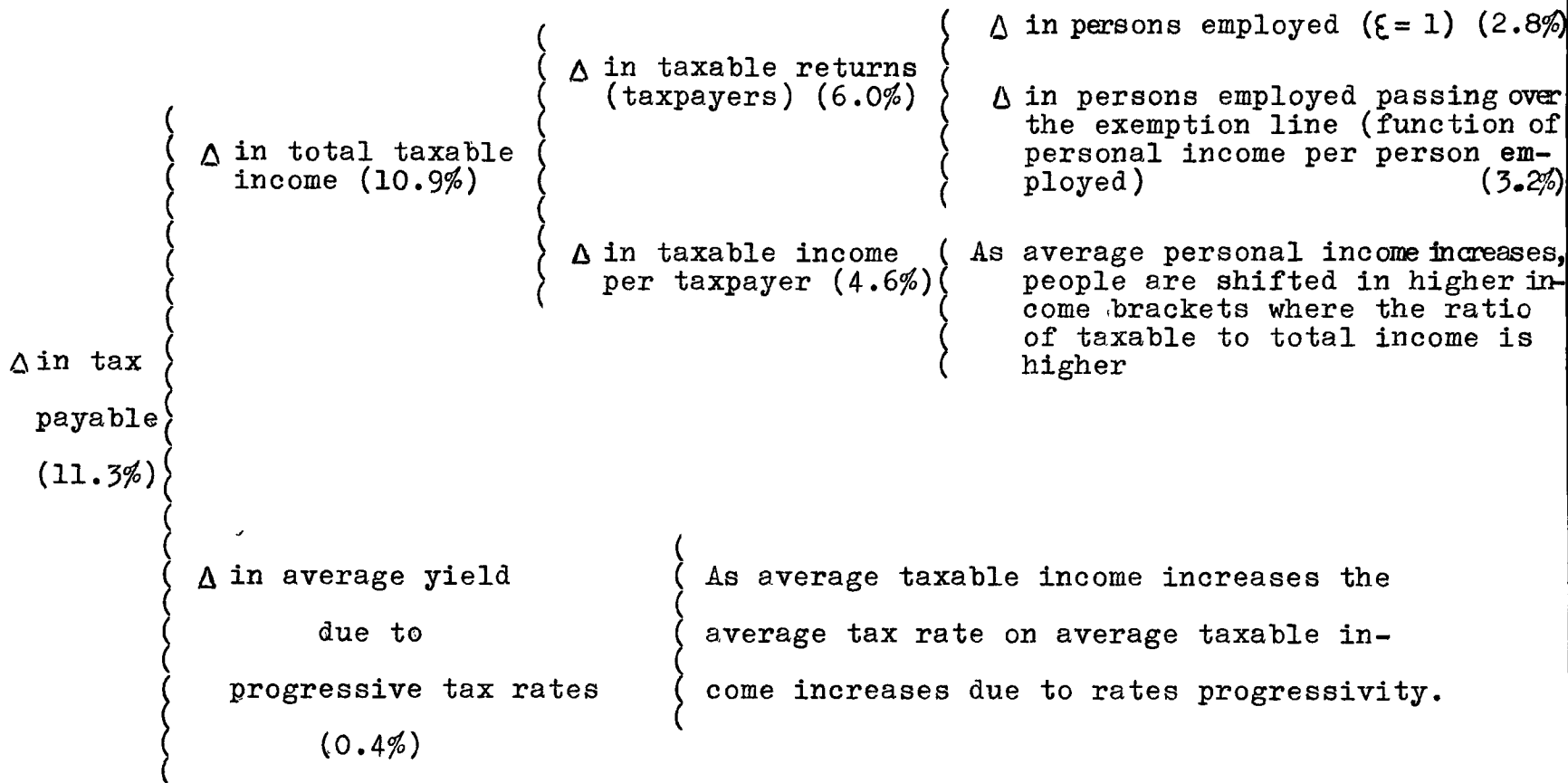


ILLUSTRATION 6.2



The 6.0 per cent increase in taxpayers was due to (a) an annual increase of 2.8 per cent in persons employed in the non-agricultural sector of the economy and (b) an annual increase of 3.2 per cent in taxpayers due to the passing of exemptions limits by persons whose income was previously too low for them to be taxable.

The 4.6 per cent average annual increase in taxable income per taxpayer is due to the fact that as average personal income increases, employed persons are shifted in higher income brackets where the ratio of taxable to total income is higher.¹

As average taxable income per taxpayer increases, the effective yield (average tax rate) increases due to the built-in progressivity of the tax schedule. It is worth noting that the effective yield raises much more slowly than average taxable income per taxpayer. In fact, during the whole period 1949 to 1961, the increase in the effective yield accounted only for an annual increase of 0.4 per cent in the total tax payable whereas average taxable income per taxpayer accounted for about 4.6 per cent per annum in the annual total tax increase of 11.3 per cent.

Table 6.3 below shows average annual growth rates (compound interest rates) of different related variables for the period 1949 to 1961 as well as different derived elasticities.

Careful examination of illustration 6.2 on page 52 shows that only two variables control the changes in tax payable. They are the number of persons employed on the one hand and

¹ From 1952 to 1963, this factor has accounted for an increase in the ratio of total taxable to total income from 40 per cent to just above 60 per cent.

Table 6.3

Trend Elasticities and Average Annual Growth Rates
of Different Related Variables for the Period 1949-61

Index	Variables	Growth Rates and Elasticities
(a)	Standard tax payable -----	11.3 %
(b)	Total taxable income -----	10.9 %
(c)	Effective yield -----	0.4 %
(d)	Taxpayers -----	6.0 %
(e)	Non-farm persons employed -----	2.8 %
(f)	Taxpayers due to persons passing the exemptions limits -----	3.2 %
(g)	Taxable income per taxpayer -----	4.6 %
(h)	Personal income ex. farm -----	7.7 %
(i)	Personal income ex. farm per person employed in the non-farm sector -----	4.8 %
(j)	Elasticity of taxpayers to average personal income ex. farm: (f) ÷ (i) -----	.67
(k)	Elasticity of taxable income per taxpayer to average personal income ex. farm: (g) ÷ (i) -----	.96
(l)	Elasticity of tax yield to average personal income ex. farm: (c) ÷ (i) -----	.08
(m)	Elasticity of tax to number of persons employed (by assumption) -----	1.0
(n)	Elasticity of tax to average personal income: $\frac{(a) - (e)}{(i)}$ -----	1.77
(o)	Elasticity of tax to personal income ex. farm: (a) ÷ (h) -----	1.5

Sources: See Appendix "E" .

the average personal income on the other hand. For practical purposes, we can assume that the elasticity of taxpayers and/or taxable income to the number of persons employed is unity. Then, by deduction, all the tax increase that is not due to the increase in the number of persons employed, (11.3% - 2.8% = 8.5%) must be due to the increase in average personal income. Elasticity of the tax to the average personal income is then computed as follows: $8.5 \div 4.8 = 1.77$

Elasticity of Corporate Income Tax

Careful examination of corporate tax yields lead to the conclusion that the yield changes very little overtime and has no direct link to the business cycle. The elasticity of the corporate income tax to its base is thus assumed to be unity. The G N P elasticity of the corporate tax is however very volatile due to the erratic elasticity of corporation profits to G N P.

Elasticity of Customs Import Duties

No a priori reason can throw any doubt about the unitary elasticity of import duties to merchandise imports. No a posteriori analysis can justify the use of any other elasticity since standardization of rates are difficult to make.

Elasticity of Indirect Taxes (less import duties)

This elasticity was estimated by regressing the quarterly percentage changes in indirect taxes (less import duties) with the quarterly percentage changes in non-farm G N P.

The regression yielded the following equation:

$$Y = -.47 + 1.00 (X)$$

where,

Y equals the percent change in indirect taxes and

X equals the percent change in non-farm G N P.

The unitary slope of the equation was accepted as being the elasticity.

Unemployment Insurance Contributions and Benefits

Unemployment insurance contributions may be assumed to have a unitary elasticity to non-agricultural employment whereas benefits may be assumed to have a unitary elasticity to unemployment.

Elasticity of Federal Transfers to other Levels of Governments

This elasticity was estimated through a linear regression between quarterly percentage changes in transfers and quarterly percentage changes in non-farm G N P. The slope of the equation (0.2) is taken as the output elasticity of transfers.

Short-Run versus Long-Run Output Elasticities of Taxes

In the short-run, the government tax "take" varies with the number of persons employed, changes in personal income per capita and cyclical variations of various tax bases. Because of the proportionately greater short-run variations in corporation profits and imports than in G N P, the short-run G N P elasticity of all taxes combined is bound to be very erratic and greater than the long-run elasticity of the same taxes.

In the long-run, tax bases such as corporation profits and imports increase more or less pari passu with G N P. Unless these tax bases show any trend decline in their pro-

portion to G N P¹, all taxes except the personal income tax may be assumed to have a long-run G N P elasticity of unity.

Assuming that the long-term growth rate of G N P is 6.0 per cent and, that it is subdivided into 2.5 per cent for employment, 2.0 per cent for productivity and 1.5 per cent for prices; thus the growth rate of personal income tax may be determined as follows:

	<u>ε</u>	<u>gr. r.</u>	
Δ in employment	1.0	x 2.5	: 2.5
Δ in personal income per capita	1.8	x 3.5	: <u>6.3</u>
			8.8

Now, the long-term elasticity for the total revenue system may be estimated by weighting the growth rates of revenues from different sources by their respective importance. In doing so the personal income tax is given a weight of .30 since 30 per cent of revenues are derived from this source. The long-run elasticity of the tax system is computed as follows:

	<u>weights</u>	<u>gr. rate</u>	
personal Income tax	.30	x 8.8	= 2.64
other revenue	.70	x 6.0	= <u>4.20</u>
	<u>1.00</u>		<u>6.84</u>

Thus, at a 6.0 per cent G N P growth rate, the elasticity of the federal revenue system is around 1.14. It would be greater with a higher G N P growth rate because of the behavior of the personal income tax.

Elasticity and Marginal Analysis

The income elasticity of tax is defined as the ratio of

¹ It is possible that such a declining trend exists for example, in the ratio of profits to G N P due to the increasing ratio of corporate capital consumption allowances to profits.

the marginal tax rate over the average tax rate:

$$\xi = \frac{\text{Marginal tax rate}}{\text{Average tax rate}}$$

thus,

$$\text{Marginal rate} : \xi \cdot \text{Average rate}$$

$$\text{Average rate} : \frac{\text{Marginal rate}}{\xi}$$

One can easily shift from one approach to the other. Given the average rate, the marginal rate is determined by the elasticity. The higher this elasticity, the higher the marginal rate. In some cases, like when dealing with the personal income tax, it is much better to use the elasticity approach, because the income elasticity of the personal income tax is variable, depending on the change in the number of persons employed and growth of personal income per capita. This finding involves a rather erratic marginal rate.

C H A P T E R VIIPOTENTIAL OUTPUT — BUILT-IN NON-DISCRETIONARY
BUDGET ITEMS LINKAGE PROCEDURES

This Chapter shows how the various elasticities calculated in Chapter VI have been associated with the potential output and output gap estimates of Chapter V in order to derive the full employment surplus.¹

The general linkage procedures adopted are the following:

On the Revenue Side

1. Personal Income Tax

$$T_P = N + 1.8 \frac{Y}{N}$$

$$\frac{Y}{N} = .8 \cdot \frac{O}{N}$$

$$T_P = T_A \left(1 + N + 1.8 \cdot 0.8 \cdot \frac{O}{N} \right)$$

where,

T_P : Per cent change of tax to potential

N : Per cent change in non-agricultural employment to potential.

$\frac{Y}{N}$: Per cent change in personal income ex. farm per person employed to potential

1

As revised quarterly estimates of the labour force go back to 1953 only, it was decided to start the calculations with that particular year.

$\frac{O}{N}$: Per cent change in G N P per person employed to potential

T_A : Actual personal income tax

T_P : Potential personal income tax

1.8 : Elasticity of the tax to non-farm personal income per capita

.8 : Elasticity of the non-farm personal income per person employed to the non-farm G N P per person employed.

2. Corporate Income Tax

$$B_P = .107 \cdot O_P$$

$$T_P = T_A \cdot \frac{B_P}{B_A}$$

where,

B_P : Tax base at potential (corporate profits)

.107 : Average ratio of corporate profits to non-farm G N P for full employment quarters

O_P : Potential non-farm G N P

T_A : Actual corporate income tax

T_P : Potential corporate income tax

B_A : Actual tax base (corporate profits)

3. Customs Import Duties

$$B_P = .174 \cdot O_P$$

$$T_P = T_A \cdot \frac{B_P}{B_A}$$

where,

B_P : Potential tax base (merchandise imports)

.174 : Average ratio of merchandise imports to non-farm G N P for full employment quarters

O_P : Potential non-farm G N P

T_P : Potential import duties

T_A : Actual import duties

B_A : Actual merchandise imports.

4. Indirect Taxes (less Import Duties)

$$T_P = T_A \cdot \frac{O_P}{O_A}$$

where,

T_P : Potential indirect taxes

T_A : Actual indirect taxes

$\frac{O_P}{O_A}$: Ratio of potential to actual non-farm G N P.

5. Unemployment Insurance Contributions

$$T_P = T_A \cdot \frac{N_P}{N_A}$$

where,

T_P : Potential contributions

T_A : Actual contributions

$\frac{N_P}{N_A}$: Ratio of potential to actual non-farm employment.

On the Expenditure Side

6. Unemployment Insurance Benefits

$$E_P = E_A \cdot \frac{U_P}{U_A}$$

where,

E_P : Potential benefits

E_A : Actual benefits

$\frac{U_P}{U_A}$: Ratio of potential to actual unemployment

7. Transfers to Other Levels of Government

$$E_P = E_A \left(1 + .2 \left(1 - \frac{O_P}{O_A} \right) \right)$$

where,

E_P : Potential transfers

E_A : Actual transfers

$\frac{O_P}{O_A}$: Ratio of potential to actual non-farm G N P

.2 : Elasticity of transfers to non-farm G N P.

Detailed linkage procedures and calculations are presented in Appendix "F". All computations are presented in the form of indexed time series seasonally adjusted at annual rate. See series # 51 for full employment surpluses and series # 52 for relative surpluses.

C H A P T E R VIII

ASSESSMENT OF THE CANADIAN
FISCAL POLICY IN THE LIGHT OF THE
FULL EMPLOYMENT SURPLUS THEORY
(1953 - 1965)

It might be appropriate at this point to refresh our memory on the particular uses to which estimates of the potential surplus can be put ¹ :

1. It is a measure of discretionary changes in fiscal policy i.e., changes in potential surpluses represent shifts up and down in the budget line.
2. The relative surplus is a measure of the fiscal impact of the budget on the economy at any time.
3. The surplus gap (potential minus actual surplus) over the output gap (potential minus actual output) provides a measure of the built-in stabilizers.

Discretionary Changes in Canadian Fiscal Policy, 1953-1965.

Discretionary changes in fiscal policy represent the true multiplicands to which the multiplier principle is applied. But it is well known that short-run and long-run multipliers differ and, that the government expenditure multiplier may be different from the tax-cut multiplier.

In fact, it is almost generally recognized today in

¹See the three first chapters on theory.

Canada that the first round or impact (or first year) tax-cut government multiplier is worth about fifty per cent the expenditure multiplier and, that over the longer term their numerical values tend to be the same.¹

Now, as changes in the full employment surpluses represent aggregate changes in discretionary policy without specifying whether these changes come from changes in revenues or expenditures, we conclude that changes in the surpluses can be accepted as true multiplicands only if the government tax-cut and expenditure multipliers are the same. Thus, changes in potential surpluses can be taken as true multiplicands only when one has in mind a long-run perspective.

When considering a short-run time-span, we are accustomed to look at the tax-cut multiplier as being smaller than the expenditure multiplier; this is inherited from the crude countercyclical fiscal policy we discussed in the first Chapter. Here we shall adopt a different proposition by saying that both the short-run government tax-cut and expenditure multipliers are the same but that the government revenue multiplicand is half the expenditure multiplicand. Thus, to obtain the true short-run multiplicands we take the changes in potential expenditures and subtract from it 50 per cent of the changes in potential revenues.²

Chart 8.1 on page 65 presents the author's quarterly estimates of potential surpluses for the period 1953 to the first quarter of 1965 included.³

¹See Appendix "C".

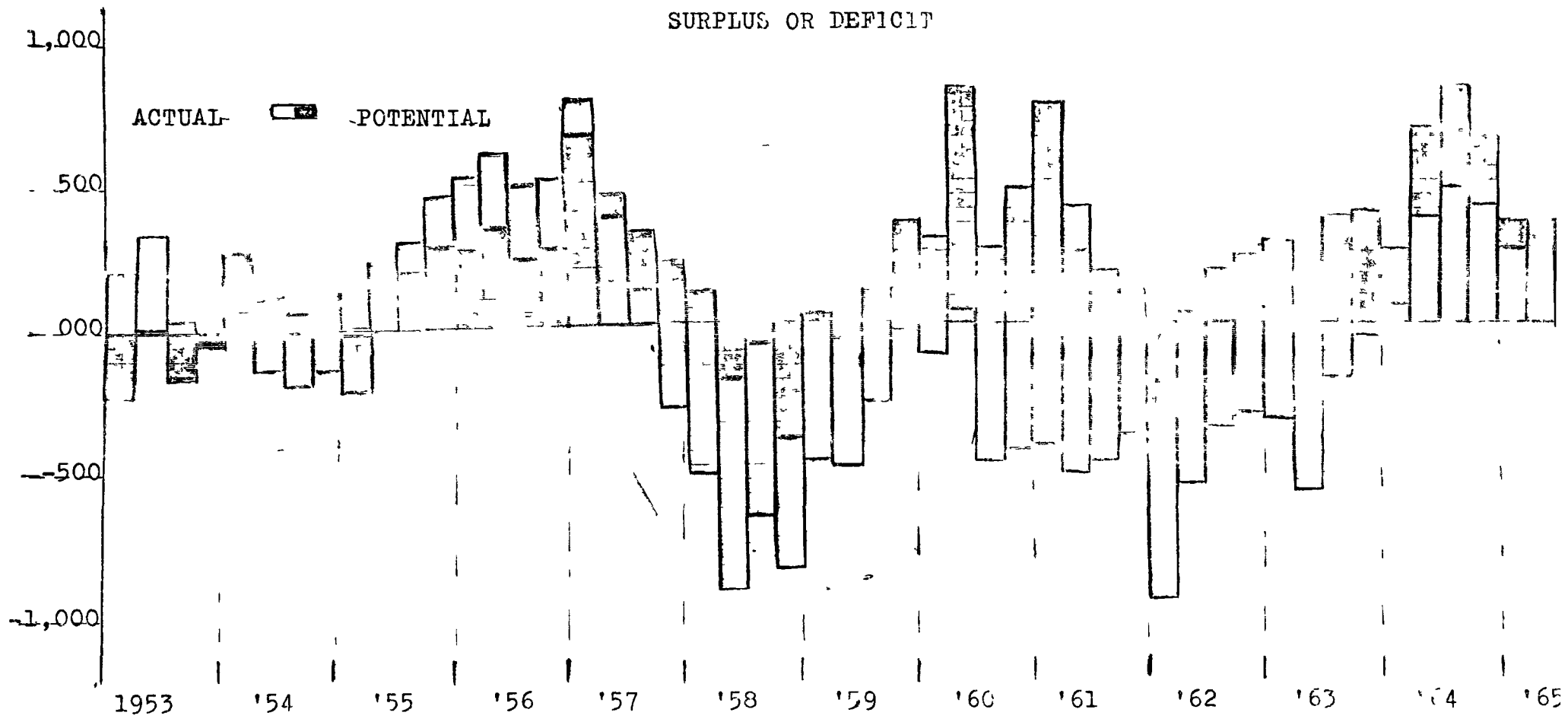
²Positive changes in potential expenditures are expansionary whereas positive changes in potential revenues are contractionary. Thus positive changes in potential expenditures plus 50 per cent of the negative changes in potential revenues gives us the short-run multiplicands.

³For actual figures, see serie #51 in Appendix "F".

CHART 8.1

MILLIONS
OF DOLLARS

POTENTIAL AND ACTUAL FEDERAL GOVERNMENT
SURPLUS OR DEFICIT



SOURCES: APPENDIX "F"

As mentioned above, unadjusted changes in potential surplus estimates should be looked at from a long-run perspective.

Over the period 1953 to 1965, as shown on Chart 8.1 potential surpluses outnumbered potential deficits by a proportion of five to one. From the first quarter of 1957 to the fourth quarter of 1958, the potential surplus was reduced by over one billion of dollars and raised again by more than one billion in just a bit more than a year.

The Chart 8.2 on page 67 presents the short-term quarterly multiplicands or discretionary changes in fiscal policy. Some facts are worth mentioning.

First, a major restrictive discretionary fiscal change took place in the first quarter of 1957 and coincided with the downturn of the business cycle. This move was quite perverse.

Second, three out of four quarters in 1959 experienced restrictive moves. These took place when the economy was still operating far below potential output and undoubtedly contributed to the so-called 1958-60 abortive expansion.

Third, a major restrictive change came by in the second quarter of 1960; just after the downturn.

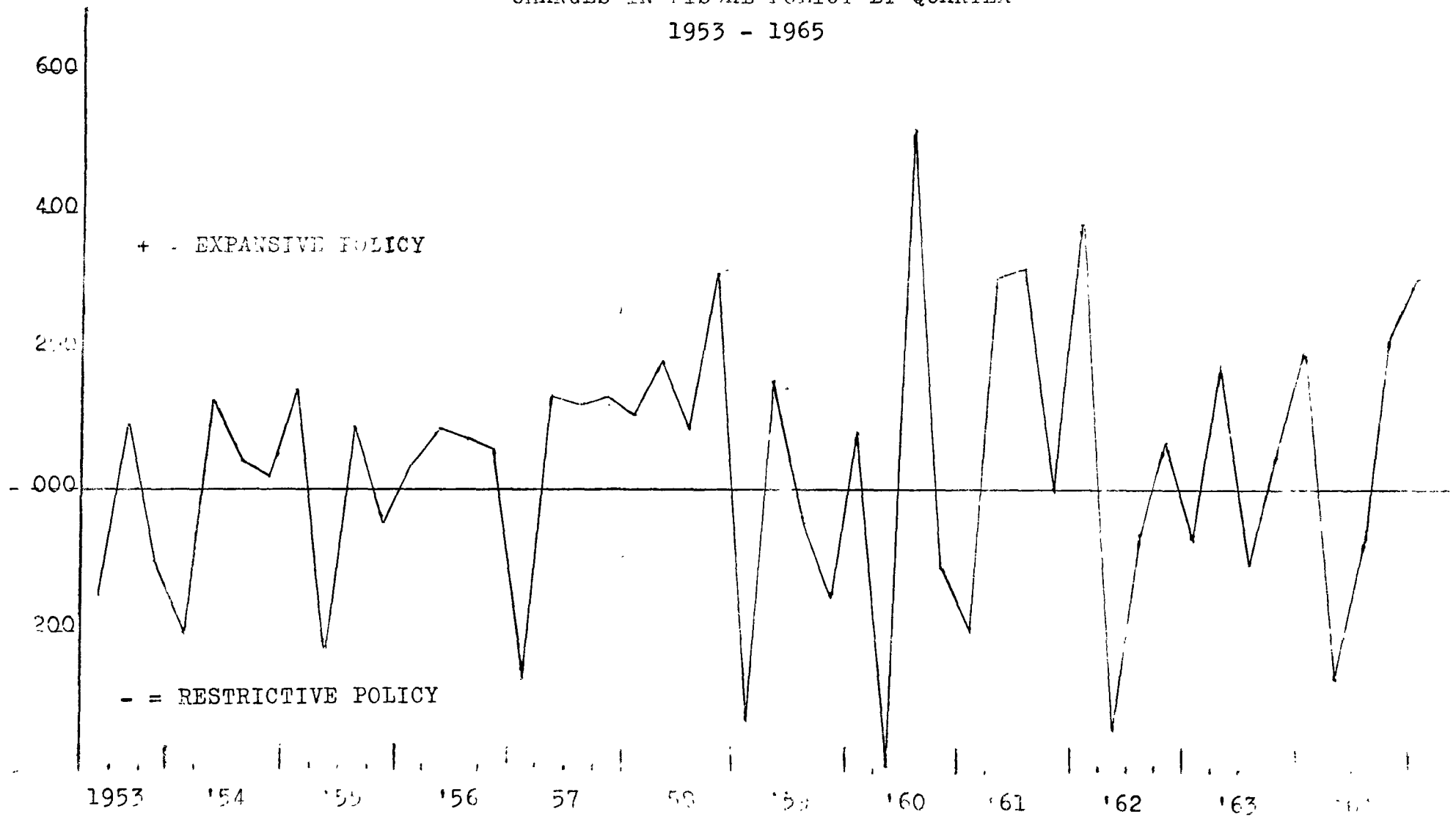
Fourth, the 1962 first quarter expansionary move came about as a result of the Tax Collection Agreement between the federal and provincial governments.

Fiscal Impact of the Budget

The Chart 8.3 shows the author's Canadian relative full employment budget surpluses on a national accounts basis for

MILLIONS
OF DOLLARS

CHART 8.2
ADJUSTED DISCRETIONARY
CHANGES IN FISCAL POLICY BY QUARTER
1953 - 1965



SOURCE: BUREAU OF ECONOMIC ANALYSIS

the period 1953 to 1965. As can be seen from the chart, the two most restrictive budgets came about in the first quarter of 1957 and second quarter of 1960. Both coincided or almost coincided with downturns in business activity.

After the first quarter of 1957, the budget became gradually less "high saving" and therefore more expansionary contributing undoubtedly to early recovery. The budget structure remained of a "high saving" nature throughout the 1960-61 contraction.

The Structure of Built-In Stabilizers

Economists have been accustomed to refer to the built-in stabilizers as the stabilization-oriented devices instituted by the government for the specific purpose of increasing stability. These devices are the progressive tax rates, the unemployment insurance programs. However these measures have very small weights in the system and as regard the progressive rates of the personal income tax, they have no stabilizing influence at all in depression since personal income per person employed usually does not fall during contraction¹. Thus the personal income tax "take" of the government only falls in proportion to employment².

This is not to say that the Canadian economy works without built-in stabilizers; stabilizers exist and they are due to the income structure of the economy and the fact that profits are its main spring.

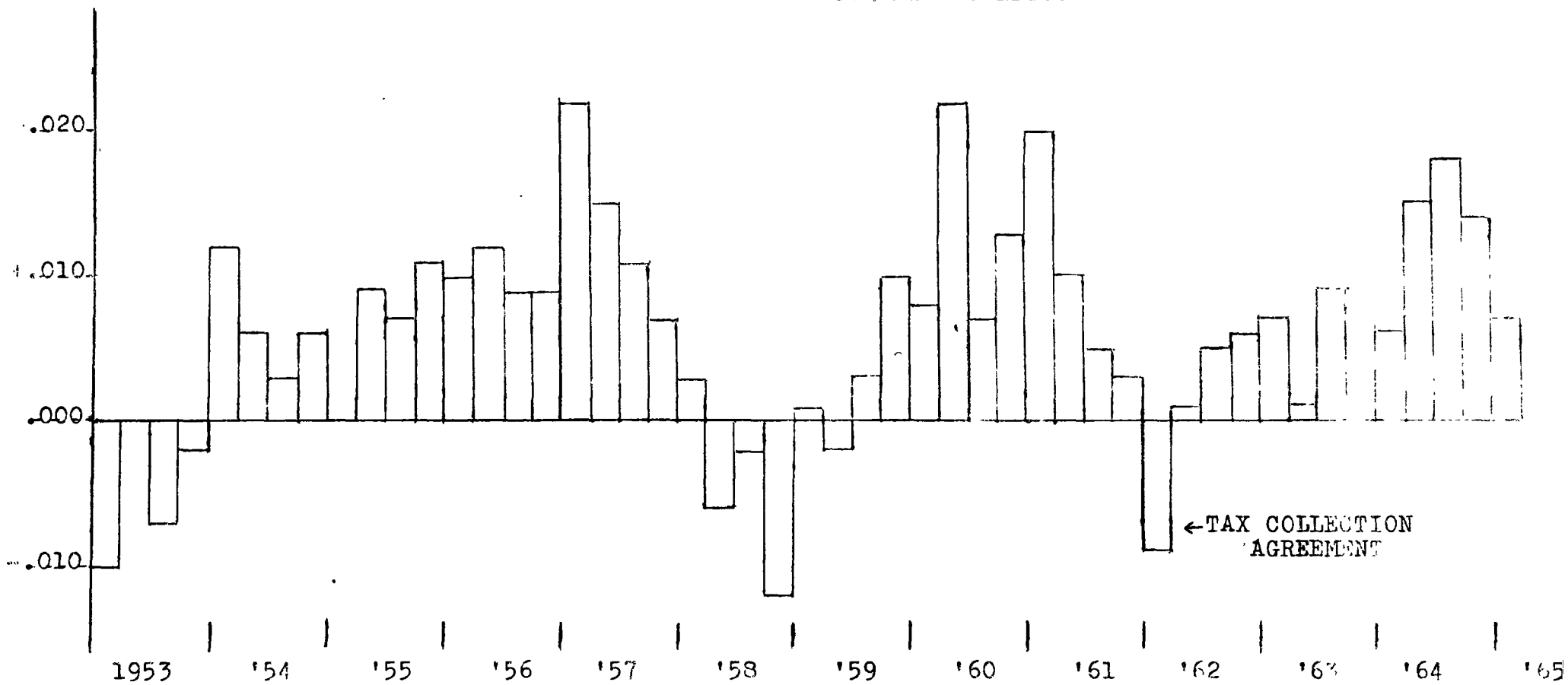
Stabilizers are mainly due to the fact that certain taxes such as customs import duties and corporate taxes are

¹ See Series No. 60 in Appendix "F".

² See the elasticity of the personal income tax in Chapter VI.

CHART 8.3

RELATIVE FULL EMPLOYMENT - SURPLUS



SOURCES: APPENDIX "F"

levied on tax bases whose behavior is very sensitive to business cycles. The bases of these taxes have greater average specific cycle amplitudes than either the aggregate production, prices or employment. Due mainly to the specific behavior of these tax bases, in the short-run, when output increases by one per cent, government revenues from non-discretionary budget items rise by about two per cent.¹

Concluding Remarks

The Economic Council of Canada, in its First Annual Review, suggested that fiscal policy should be geared to long-term growth target requirements and recommended that government expenditure and tax structure and levels be so devised so as to yield a rough budget balance at full employment on a national accounts basis.

What this means in fact is that the Council is recommending not to use discretionary fiscal action as a counter-cyclical policy instrument. My point of view is totally different from that of the Council. In fact, there could exist only two reasons for accepting the Council's argument: (a) setting the budget so as to yield a rough balance at full employment will eliminate the business cycle and, (b) economic forecasting is still too fallible for effective anticipatory economic policy.

The writer believes that we have not yet done away with the business cycle, that we should not take too much comfort in the fact that the economy is now entering in its sixth consecutive year of business expansion. There is still room for short-term policy adjustments. United States fiscal policy makers continuously carry a close watch on American economic developments and according to financial press the Administration is always ready to intervene with its power-

¹See Appendix "F" the regression = $Y = .48 + 1.465 (X)$.

ful discretionary fiscal policy. Why should not Canada do the same?

Another interesting implication for long-term policy planning is the fact that the government revenue system has a built-in long-run elasticity of 1.14 to G N P.¹ This means that if in the long-run government expenditures grow *pari passu* with G N P, then a substantial potential government budget surplus is built up unless proper discretionary changes in tax rates are implemented. Thus over the long-term, government has the choice between increasing its own share in total G N P or cut taxes. These decisions must be based on value judgments for the near future and on expressed needs for more education, general health and other community services requirements. However there need to be restraints on demands coming from competitive provincial governments, municipalities and other groups. For this I am sure there must be a point where government cannot impinge any more on the proportion of G N E it gets. Then at this particular point, long-run fiscal policy will call for tax reductions year after year.

¹Refers to Appendix "C".

A P P E N D I C E S

A P P E N D I X "A"

THE NATIONAL - INCOME - ACCOUNTS
BUDGET

Fiscal policy involves the setting up of a particular budget program. This in turn, implies that a choice has to be made among various budget presentations. One has the choice among three sets of budget accounts: the administrative budget, the cash budget and the national income accounts budget.

The administrative and cash budget presentations are included within the framework of the "public accounts". The "Public Accounts of Canada" are designed to permit parliamentary and administrative controls over the manifold items of government expenditures, to show the government cash position and requirements and to disclose the amount of the net debt.

The major differences between the three budget presentations are schematically summarized in the table below.

Major Differences Among the Three Concepts
of Federal Budget *

Items	Budget Concept		
	Administrative	Consolidated Cash	National Income Accounts
Timing of receipts....	Collections	Collections	Accruals
Treatment of net loans and other credit trans- actions.....	Included	Included	Excluded
Treatment of trust fund transactions.....	Excluded	Included	Included

* Source: 1962 Report of the Council of Economic Advisors.

Today, there exists a general consensus of opinion among economists that the national income accounts budget presentation is best suited for assessing the impact of government revenue and expenditure flows on the economy. The main arguments in favor of this particular set of accounts are summarized in the following paragraphs.

First, the national income accounts presentation includes the transactions of a number of extra-budgetary accounts such as the government employee pensions funds, the old age security fund and the unemployment insurance fund. These transactions should be considered in assessing the fiscal impact of government transactions since they involve intersectoral flows of income and expenditures. Furthermore, the national income accounts budget excludes transactions which are of internal significance and do not involve intersectoral income flows.

Second, the national accounts excludes government transactions in financial and already existing capital assets. These transactions, while having important effects on the economy are properly viewed as an aspect of monetary rather than fiscal policy. Furthermore, the exclusion of purchases and sales of existing capital assets is in agreement with the generally accepted concept of production.

Third, national accounts items are recorded when they accrue, that is, the national accounts method of recording transactions is in line with general business accounting; transactions are recorded at the time the economic impact is felt on the economy.

Fourth, the national income accounts budget is already inserted into the much larger framework of the national accounts which represents the most comprehensive presentation of intersectoral flows of income and expenditure.

A P P E N D I X "B"

TRENDS IN ABSOLUTE AND RELATIVE
'POTENTIAL SURPLUSES

It was stated in Chapter II that, in the absence of any discretionary change in fiscal policy, the relative surplus would increase at a decelerating rate below that of the absolute surplus. This fact, as will be demonstrated, is due to a long-run decline in the all-comprehensive elasticity of taxes to G N P. The latter hypothesis in turn is dependent upon a long-run decline in the elasticity of the personal income tax to personal income.

In Chapter VI, the long-run elasticity of the federal revenue system to G N P was established at 1.14 under the assumption of a 6.0 per cent growth rate of potential G N P in current dollars. This overall 1.14 elasticity implicitly included an income elasticity of the personal income tax of 1.47. Noting was mentioned about the declining trend of this latter elasticity as average income increases so as to avoid complicating a subject already confusing enough.

Definition of Elasticity

Before entering the crux of the matter, certain definitions are in order.

The marginal rate of tax is defined as the ratio of the change in tax over the change in income $\frac{\Delta T}{\Delta Y}$.

The average rate of tax is defined as the ratio of the tax to income $\frac{T}{Y}$.

The income elasticity of the tax is defined as the ratio of the percentage change in tax over the percentage

change in income:

$$\xi = \frac{\Delta T}{T} / \frac{\Delta Y}{Y}$$

Through transformation, $\xi = \frac{\Delta T}{T} \times \frac{Y}{\Delta Y}$

$$\xi = \frac{\Delta T}{\Delta Y} \times \frac{Y}{T}$$

$$\xi = \frac{\Delta T}{\Delta Y} / \frac{T}{Y}$$

Thus, as the last transformation shows, the income elasticity of the tax is equal to the ratio of the marginal to the average tax rate.

The Long Trend Decline in Personal Income Tax Elasticity

Using the formula given above for the income elasticity of tax, it is possible to look at the income elasticity of the personal income tax for an average person in any income group.¹ Then, it is possible to draw some general conclusions.

The 1963 federal basic personal income tax rate schedule has been used in setting up table B.1. This table shows, for each assessed and taxable income group:²

¹ This is basically Daly's method though conclusions differ. See D.J. Daly, Federal Tax Revenues at Potential Output, 1960 and 1970, [Staff Study #9 Prepared for the Economic Council of Canada; Ottawa: Queen's Printer, 1964].

² The table is set up for the average married men having two dependents and hence having minimum exemptions of .2,600.

TABLE B.1

Elasticities of the Personal Income Tax
by Income Groups

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Assessed Income	Taxable Income	Tax	Margin- al Rate (%)	% Change in Assessed Income (%)	% Change in Taxable Income (%)	Elas- ticity of Taxable Income to Assessed Income	Aver- age Rate on Income Assessed C ÷ A (%)	Aver- age Rate on Taxa- ble In- come C ÷ B (%)	Elas- ticity of Tax to Income Assessed D ÷ H	Elas- ticity of Tax to Taxable Income D ÷ I
2,600	0	0	11				0	0		
3,600	1,000	110	14	38.5			3.1	11.0	4.5	1.3
4,600	2,000	250	17	27.8	100.0	3.6	5.4	12.5	3.1	1.4
5,600	3,000	420	19	21.7	50.0	2.3	7.5	14.0	2.5	1.4
6,600	4,000	610	22	17.9	33.3	1.9	9.2	15.2	2.4	1.4
8,600	6,000	1,050	26	30.3	50.0	1.6	12.2	17.5	2.1	1.5
10,600	8,000	1,570	30	23.3	33.3	1.4	14.8	19.6	2.0	1.5
12,600	10,000	2,170	35	18.9	25.0	1.3	17.2	21.7	2.0	1.6
14,600	12,000	2,870	40	15.9	20.0	1.3	19.7	23.9	2.0	1.7
17,600	15,000	4,070	45	20.5	25.0	1.2	23.1	27.1	1.9	1.7
27,600	25,000	8,570	50	56.8	66.6	1.2	31.1	34.3	1.6	1.5
42,600	40,000	16,070	55	54.3	60.0	1.1	37.7	40.2	1.5	1.4
62,600	60,000	27,070	60	46.9	50.0	1.1	43.2	45.1	1.4	1.3
92,600	90,000	45,070	65	47.9	50.0	1.0	48.7	50.1	1.3	1.3
127,600	125,000	67,820	70	37.8	38.9	1.0	53.2	54.3	1.3	1.3
227,600	225,000	137,820	75	78.4	80.0	1.0	60.6	61.3	1.2	1.2
402,600	400,000	269,070	80	76.9	77.8	1.0	66.8	67.3	1.2	1.2

Column (d) : The marginal tax rate which is the same on both assessed and taxable income since once over the exemptions limit all income is deemed to be taxable.

Column (g) : The elasticity of taxable to assessed income.

Column (h) : The average rate on assessed income.

Column (i) : The average rate on taxable income.

Column (j) : The elasticity of tax to assessed income.

Column (k) : The elasticity of tax to taxable income.

The Chart B.2 on page 79 shows the elasticity of the personal income tax to the income assessed of an hypothetical taxpayer in each income class. The elasticity is very high in low income class and drops gradually approaching asymptotically the unitary elasticity.

D.J. Daly in his study for the Economic Council¹ has developed a good method of deriving the elasticity of the personal income tax to average income for the whole economy. His method consists in weighting the individual elasticities of various assessed income groups by the percentage of total taxes collected in heterogeneous ranges of elasticities.

¹ Daly, loc. cit.

CHART B.2

ELASTICITY OF PERSONAL INCOME
TAX TO INCOME ASSESSED FOR AN HYPOTHETICAL
TAXPAYER

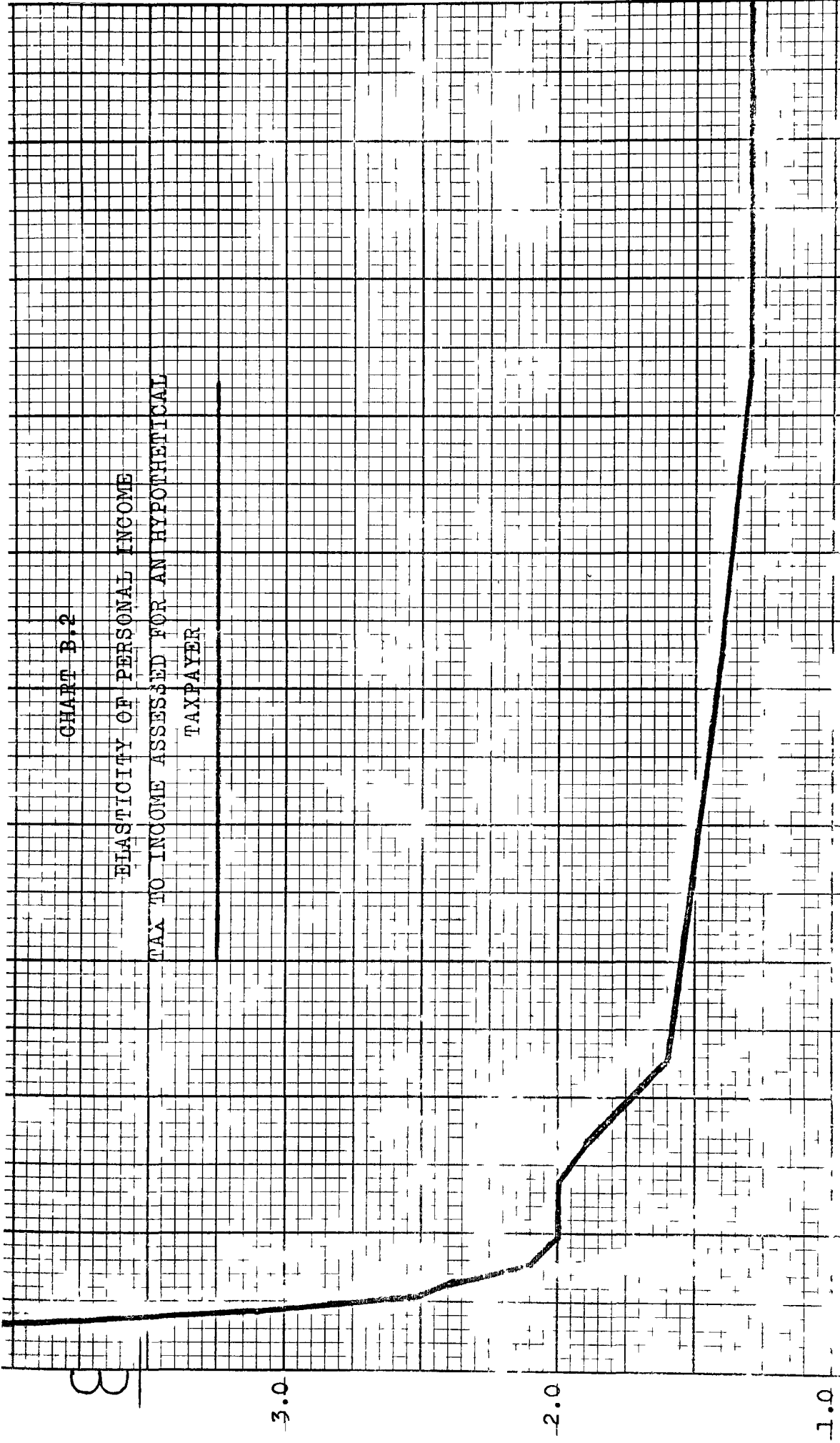


Chart B.3 on page 81 shows the elasticity of taxable to assessed income. The elasticity is seen to be very high when an individual just passes the exemptions limit and approaches gradually the unitary elasticity at high income levels.

Chart B.4 on page 82 shows the elasticity of the tax to taxable income as an individual shifts toward higher income levels. The elasticity at first very large drops abruptly to 1.3 and then increases gradually to 1.7 due to the retarding effect of exemptions and the given structure of rates, whereafter the elasticity falls toward unity.

Some general conclusions for the economy can be derived from these observations.

First, when the average income per taxpayer of the economy is relatively low, the elasticity of the personal income tax to average assessed income is high due to both the progressive rate schedule and the high elasticity of taxable to assessed income.

Second, as the average income of the community is increased, the elasticity of the tax falls due to the gradually vanishing effects of exemptions and decelerating growth rate of the marginal tax rate both absolutely and relatively to the average tax rate.

On the very long-run, both the marginal and average personal income tax rates would approach the limit of 80 per cent i.e., the highest marginal rate in the tax schedule. Thereon, the elasticity of the whole federal tax revenue system to G N P would be unitary and the relative surplus would remain constant.

As we are not yet close to such fantastic income levels such that the overall elasticity of the federal revenue

CHART B.3

ELASTICITY OF TAXABLE
INCOME TO ASSESSED INCOME FOR AN
HYPOTHETICAL TAXPAYER

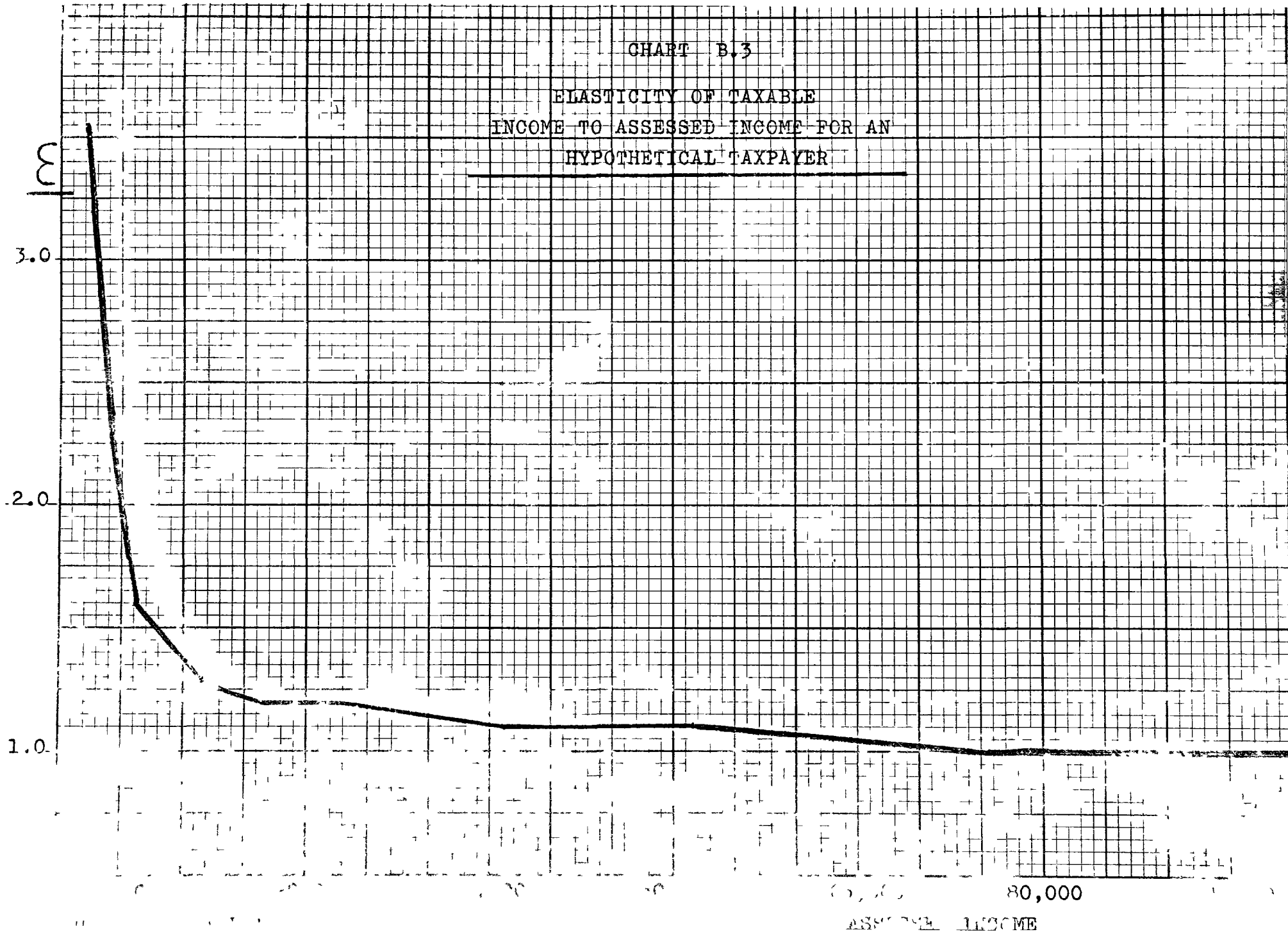
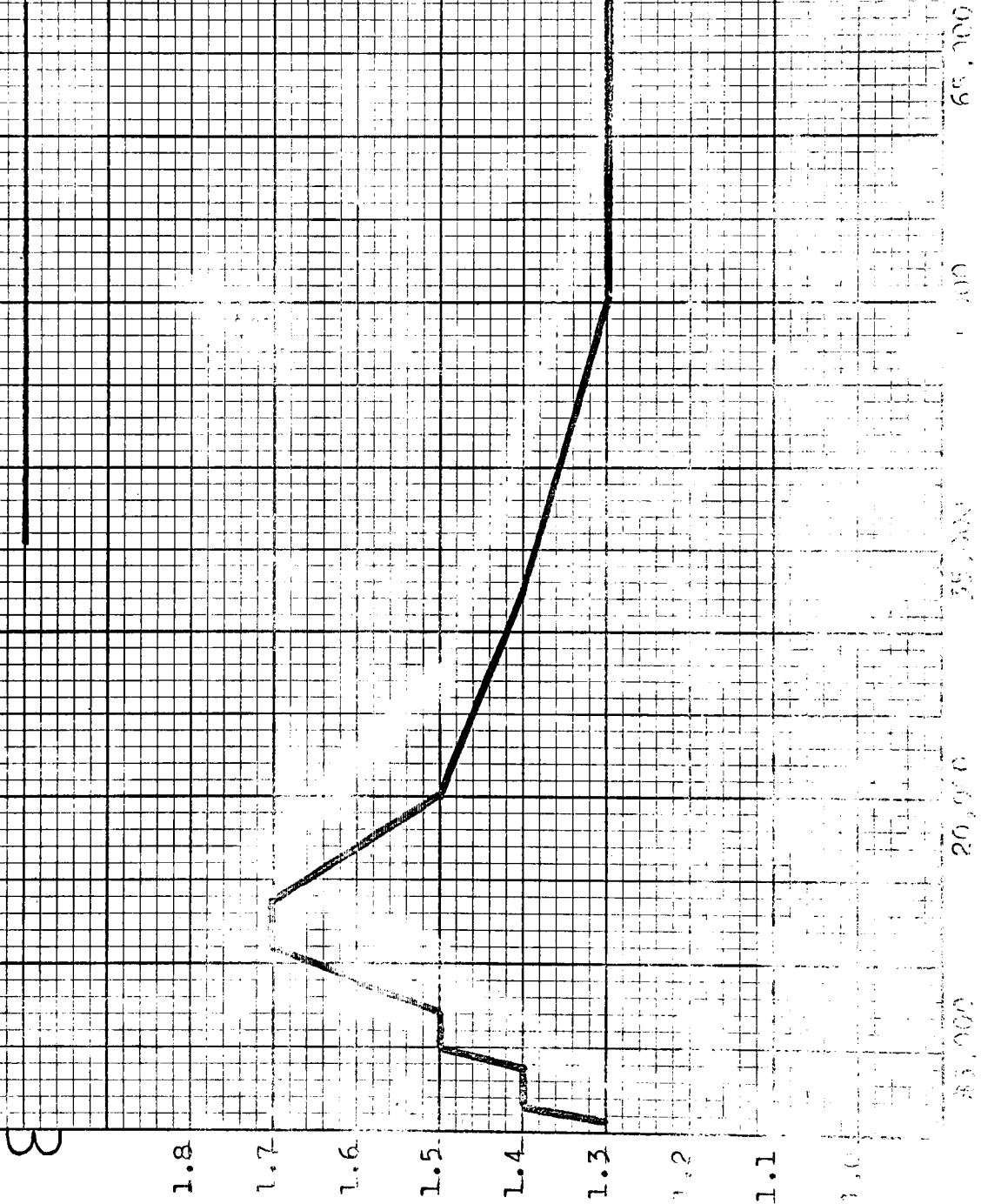


CHART B.4

ELASTICITY OF THE PERSONAL
INCOME TAX TO TAXABLE INCOME FOR
AN HYPOTHETICAL TAXPAYER



system to G N P gets to unity, we may think, at least for the next decade, of a federal revenue system having an elasticity of 1.14 to G N P. Thus, without any discretionary change in fiscal policy, the revenues would grow at a rate 1.14 times the G N P growth rate.

Taking 1964 at a starting point with potential G N P equal to \$46,200 millions, potential revenues \$8,450 millions and potential expenditures \$7,700 millions, the absolute increase in the surplus would be equal to the increase in revenues i.e.,

$$\$8,450 \text{ millions } (1.0684)^n - (1.0684)^{n-1}$$

The rate of growth in the absolute surplus would decline approaching a limit of:

$$\lim_{n \rightarrow \infty} \frac{\$8,450 (1.0684)^n - (1.0684)^{n-1}}{8,450 (1.0684)^{n-1} - 7,700} = 6.84\%$$

The relative surplus at any time would be:

$$\frac{8,450 (1.0684)^n - 7,700}{46,200 (1.06)^n}$$

and the rate of growth of the relative surplus would gradually decline approaching a limit of:

$$\lim_{n \rightarrow \infty} \frac{.1829 (1.0079)^n - .1666}{.1829 (1.0079)^{n-1} - .1666} = 0.79\%$$

From the practical point of view, it is better to assume that "no discretionary change in fiscal policy" is compatible with a growth rate of expenditures equal to that of G N P and to consider a period of only a few years ahead.

The table B.5 on page 84 shows the trends in potential revenues, expenditures, absolute and relative surpluses for

the period 1964 to 1970 ¹ assuming that expenditures grow at the same rate as potential G N P i.e., at 6.0% per annum.

TABLE B.5
Trends in Revenues, Expenditures, Absolute and Relative Surpluses, 1964 - 1970 *

Years	Poten- tial Revenues	Poten- tial Expend- itures	Poten- tial Surplus	Poten- tial G N P	Poten- tial Rela- tive Surplus
1964	8,450	7,700	750	46,200	.0162
1965	9,028	8,162	866	48,972	.0177
1966	9,645	8,652	993	51,910	.0191
1967	10,305	9,171	1,134	55,025	.0206
1968	11,010	9,721	1,289	58,326	.0221
1969	11,763	10,304	1,459	61,826	.0236
1970	12,567	10,922	1,645	65,535	.0252

growth rates: 6.84% 6.0% 14.0% 6.0% 7.6%

* The hypotheses are that potential G N P and expenditures both grow at 6.0 per cent per annum.

Years.	65	66	67	68	69	70
Per cent change in surplus.15.5	14.7	14.1	13.7	13.2	12.7
Per cent change in relative surplus.	9.2	7.9	7.8	7.3	6.8	6.8

¹ Abstraction is made here of the 3.0 per cent increase in January 1965 in the tax on construction and building materials as well as of the personal income tax cut effective July 65. Likewise, the Canada Pension Plan is excluded from the analysis.

A P P E N D I X "C"TAX-CUTS VERSUS INCREASES IN
GOVERNMENT EXPENDITURES

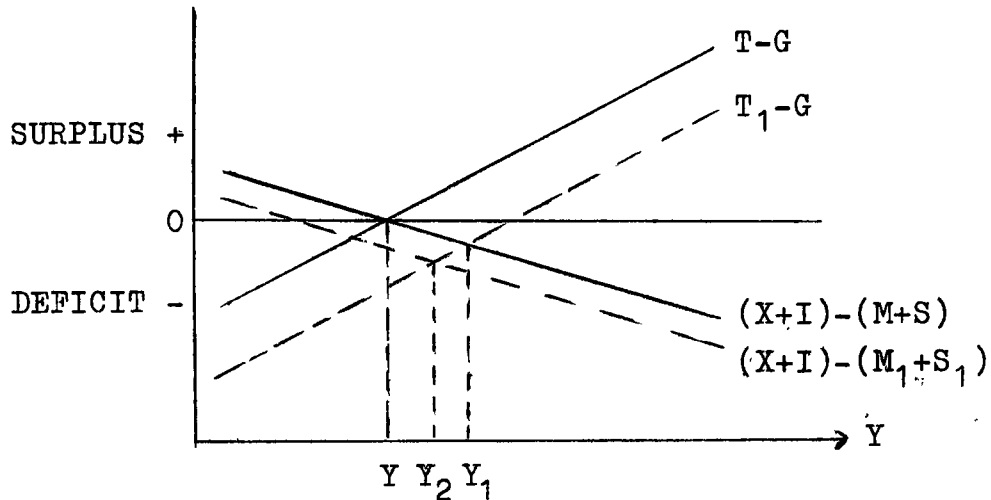
The reader has to refer to the three first Chapters of this thesis before he can understand the conceptual framework within which is built the following analysis.

No mention was made in Chapters II or III, of the effects of tax changes versus government expenditure changes.

You will remember from Chapter III that increased expenditures shifts down the whole budget line without affecting its slope. This does not by itself affect either the level or slope of the $(X + I) - (M + S)$ curve (apart from possible incentive or other effects). It is not so for tax changes as will be illustrated below.

The figure C.1 shows the conventional budget line $T - G$ and the $(X + I) - (M + S)$ curve. The level of income is originally set at Y , the income level where the two curves intersect. Now, suppose there is a tax-cut. The budget line is shifted down to $T_1 - G$ and if this policy decision had no further effect on the $(X + I) - (M + S)$ curve, the new level of income would be set at Y_1 . But, in fact what happens is that the tax-cut affects the level of the $(X + I) - (M + S)$ curve, shifting it downward. This is due to some additional savings and imports being generated by the tax-cut. The new level of income is thus set at Y_2 .

FIGURE C.1
Effects of Tax-Cuts



When the government spends one additional dollar, the multiplier works on a one dollar multiplicand since one dollar was originally spent. But, when the government cuts taxes by one dollar, the disposable income of the community is immediately increased by that amount. The community may then chose to spend half of it within the domestic economy, to save one-quarter and to spend the rest abroad. In these conditions, the multiplier works on only 50 per cent of the tax-cut. Since economists do not talk much about the multiplicand and do not allow it to vary when considering different policy decisions, we rather allow the multiplier value to differ. That is why we say that the tax-cut multiplier is smaller than the government expenditure multiplier.

In Canada, it is generally agreed that the tax-cut impact or short-run multiplier (one year) is worth about 50 per cent the expenditure multiplier. Over the longer term, as successive rounds effects get into play, the tax-cut equilibrium multiplier is more in line with the expenditure multiplier.

A P P E N D I X "D"

SHORT-TERM POTENTIAL OUTPUT

CALCULATIONS

(Appendix to Chapter V)

Time Series (All Seasonally Adjusted)

<u>#</u>	
D.1	: Labour force by quarter
D.2	: Potential employment (D.1 x .96) by quarter
D.3	: Actual employment in the agricultural sector by quarter
D.4	: Potential employment in the non-farm sector (D.2 - D.3) by quarter
D.5	: Actual employment in the non-farm sector by quarter
D.6	: Employment gap in the non-farm sector (gap: +) by quarter
D.7	: Unemployment rate by year
D.8	: Yearly changes in the unemployment rate (changes in D.7)
D.9	: Annual per cent changes in non-farm G D P in constant \$
D.10	: Quarterly indexes of real domestic product less agriculture (1949 = 100)

- D.11 : Quarterly per cent changes in non-farm G D P
(changes in D.10)
- D.12 : Quarterly unemployment rates
- D.13 : Quarterly changes in the unemployment rate
(changes in D.12)
- D.14 : $u - .04$
- D.15 : $2 (u - 4.0)$
- D.16 : $100 + 2 (u - 4.0)$
- D.17 : Actual G N P ex. agriculture in current mil-
lions of dollars by quarter
- D.18 : Preliminary quarterly estimates of potential
G N P in current dollars:
$$\frac{D.17 \cdot D.16}{100}$$
- D.19 : Nine-quarter-moving average of D.18: Final
quarterly potential output estimates.

A linear regression between D.8 (X) and D.9 (Y) yielded the following equation:

$$Y = +4.635 - 2.1104 (X)$$

Another regression between D.11 (Y) and D.13 (X) yielded:

$$Y = +1.101 - 1.878 (X)$$

Sources of Data for Appendix "D"

Dominion Bureau of Statistics, Canadian Statistical Review, Weekly Supplement, April 21, Ottawa, 1965. (Catalogue No. 11-004). This source was used to compute series D.1, D.5, D.7.

_____, Indexes of Real Domestic Product by Industry of Origin 1935-61, (Catalogue No. 61-505 Annual, and Catalogue No. 61-005 Monthly). This source was used to compute series D.9 and D.10. All other series are derived series as described in the listing.

SHORT-TERM POTENTIAL OUTPUT CALCULATIONS

Year	Q	D.1	D.2	D.3	D.4	D.5	D.6	D.7
1953	1	5,406	5,190	871	4,319	4,385	-1.5	
	2	5,391	5,175	869	4,306	4,379	-1.7	
	3	5,389	5,173	851	4,322	4,379	-1.3	3.0
	4	5,415	5,198	834	4,364	4,372	-0.2	
54	1	5,457	5,239	866	4,373	4,374	0.0	
	2	5,484	5,265	864	4,401	4,359	1.0	
	3	5,525	5,304	884	4,420	4,357	1.4	4.6
	4	5,548	5,326	896	4,430	4,376	1.2	
55	1	5,537	5,315	844	4,471	4,428	1.0	
	2	5,595	5,371	840	4,531	4,504	0.6	
	3	5,625	5,400	821	4,579	4,576	0.1	4.4
	4	5,660	5,434	773	4,661	4,670	-0.2	
56	1	5,739	5,509	782	4,727	4,744	-0.4	
	2	5,750	5,520	782	4,738	4,773	-0.7	
	3	5,774	5,543	787	4,756	4,812	-0.2	3.4
	4	5,840	5,606	760	4,846	4,899	-1.1	
57	1	5,943	5,705	767	4,938	4,944	-0.1	
	2	5,975	5,736	738	4,998	4,989	0.2	
	3	6,049	5,807	748	5,059	5,003	1.1	4.6
	4	6,095	5,851	740	5,111	4,990	2.4	
58	1	6,064	5,821	720	5,101	4,940	3.3	
	2	6,149	5,903	715	5,188	4,987	4.0	
	3	6,169	5,922	719	5,203	4,996	4.1	7.0
	4	6,187	5,940	711	5,229	5,027	4.0	
59	1	6,202	5,954	711	5,243	5,106	2.7	
	2	6,207	5,959	698	5,261	5,143	2.3	
	3	6,247	5,997	694	5,303	5,202	1.9	6.0
	4	6,281	6,030	690	5,340	5,227	2.2	
60	1	6,347	6,093	681	5,412	5,264	2.8	
	2	6,378	6,123	663	5,460	5,276	3.5	
	3	6,450	6,192	691	5,501	5,280	4.2	7.0
	4	6,495	6,235	688	5,547	5,311	4.4	
61	1	6,466	6,207	678	5,529	5,297	4.4	
	2	6,529	6,268	689	5,579	5,346	4.4	
	3	6,527	6,266	672	5,594	5,400	3.6	7.1
	4	6,536	6,275	678	5,597	5,453	2.6	
62	1	6,577	6,314	671	5,643	5,511	2.4	
	2	6,620	6,355	664	5,691	5,572	2.1	
	3	6,632	6,367	661	5,706	5,583	2.2	5.9
	4	6,626	6,361	646	5,715	5,590	2.2	
63	1	6,662	6,396	637	5,759	5,639	2.1	
	2	6,703	6,435	651	5,784	5,668	2.0	
	3	6,782	6,511	651	5,860	5,758	1.8	5.5
	4	6,829	6,556	651	5,905	5,833	1.2	
64	1	6,898	6,622	660	5,962	5,910	0.9	
	2	6,925	6,648	642	6,006	5,945	1.0	
	3	6,942	6,664	600	6,064	6,011	0.9	4.7
	4	6,957	6,679	608	6,071	6,046	0.4	
65	1	7,087	6,804	608	6,196	6,195	0.0	

Year	Q	D.8	D.9	D.10	D.11	D.12	D.13	D.14
1953	1			124.5		2.8		-1.2
	2			125.7	1.0	2.6	0.2	-1.4
	3	0.1	4.9	125.8	0.1	2.9	0.3	-1.1
	4			125.3	-0.4	3.8	0.9	-0.2
54	1			124.6	-0.6	4.0	0.2	0.0
	2			124.0	-0.5	4.8	0.8	0.8
	3	1.6	0.6	126.7	2.2	5.1	0.3	1.1
	4			128.7	1.6	5.0	-0.1	1.0
55	1			131.9	2.5	4.8	-0.2	0.8
	2			135.4	2.7	4.5	-0.3	0.5
	3	-0.2	8.4	138.8	2.5	4.1	-0.4	0.1
	4			140.3	1.1	3.9	-0.2	-0.1
56	1			143.9	2.6	3.7	-0.2	-0.3
	2			147.9	2.8	3.4	-0.3	-0.6
	3	-1.0	8.5	150.0	1.4	3.0	-0.4	-1.0
	4			151.5	1.0	3.1	0.1	-0.9
57	1			152.0	0.3	3.9	0.3	-0.1
	2			151.9	-0.1	4.1	0.2	0.1
	3	1.2	1.4	151.2	-0.5	4.9	0.8	0.9
	4			148.4	-1.9	6.0	1.1	2.0
58	1			149.4	0.7	6.7	0.7	2.7
	2			151.4	1.3	7.2	0.5	3.2
	3	2.4	0.8	150.8	-0.4	7.4	0.2	3.4
	4			154.2	2.3	7.2	-0.2	3.2
59	1			157.7	2.3	6.2	-1.0	1.2
	2			159.9	1.4	5.9	-0.3	1.9
	3	-1.0	5.6	160.5	0.4	5.6	-0.3	1.6
	4			162.4	1.2	5.8	0.2	1.8
60	1			163.4	0.6	6.3	0.5	2.3
	2			161.5	-1.2	6.9	0.3	2.9
	3	1.0	1.2	161.5	0.0	7.4	0.5	3.4
	4			162.2	0.4	7.6	0.2	3.6
61	1			162.2	0.0	7.6	0.0	3.6
	2			165.3	1.9	7.6	0.0	3.6
	3	0.1	2.9	169.2	2.3	6.9	-0.7	2.9
	4			170.8	0.9	6.2	-0.7	2.2
62	1			173.5	1.6	6.0	-0.2	2.0
	2			175.5	1.2	5.8	-0.2	1.8
	3	-1.2	5.4	176.8	0.7	5.9	0.1	1.9
	4			178.0	0.7	5.9	0.0	1.9
63	1			180.9	1.6	5.8	-0.1	1.8
	2			182.4	0.8	5.7	-0.1	1.7
	3	-0.2	4.7	183.3	0.5	5.5	-0.2	1.5
	4			190.0	3.6	5.1	-0.4	1.1
64	1			195.7	3.0	4.8	-0.3	0.8
	2			194.9	-0.4	4.9	0.1	0.9
	3	-0.8	7.0	196.9	1.0	4.8	-0.1	0.8
	4			200.9	2.0	4.4	-0.4	0.4
65	1			205.4	2.2	4.0	-0.4	0.0

Year	Q	D.15	D.16	D.17	D.18	D.19
1953	1	-2.4	97.6	23,116	22,561	22,198
	2	-2.8	97.2	23,280	22,628	22,582
	3	-2.2	97.8	23,556	23,038	22,973
	4	-0.4	99.6	23,828	23,733	23,370
54	1	0.0	100.0	23,376	23,376	23,771
	2	1.6	101.6	23,612	23,990	24,132
	3	2.2	102.2	24,032	24,561	24,546
	4	2.0	102.0	24,396	24,884	24,963
55	1	1.6	101.6	24,800	25,197	25,434
	2	1.0	101.0	25,524	25,779	25,984
	3	0.2	100.2	26,304	26,357	26,529
	4	-0.2	99.8	26,844	26,790	27,100
56	1	-0.6	99.4	28,140	27,971	27,717
	2	-1.2	98.8	28,672	28,328	28,346
	3	-2.0	98.0	29,484	28,894	29,014
	4	-1.8	98.2	30,244	29,700	29,633
57	1	-0.2	98.8	30,812	30,442	30,273
	2	0.2	100.2	30,792	30,854	30,905
	3	1.8	101.8	31,228	31,790	31,547
	4	4.0	104.0	30,700	31,928	32,158
58	1	5.4	105.4	30,884	32,552	32,611
	2	6.4	106.4	31,632	33,656	33,102
	3	6.8	106.8	31,936	34,108	33,576
	4	6.4	106.4	32,324	34,393	34,023
59	1	2.4	102.4	32,988	33,780	34,583
	2	3.8	103.8	33,584	34,860	35,044
	3	3.2	103.2	34,036	35,125	35,467
	4	3.6	103.6	34,568	35,812	35,882
60	1	4.6	104.6	35,340	36,966	36,241
	2	5.8	105.8	34,684	36,696	36,800
	3	6.8	106.8	35,084	37,470	37,250
	4	7.2	107.2	35,296	37,837	37,729
61	1	7.2	107.2	35,096	37,623	38,173
	2	7.2	107.2	36,212	38,819	38,520
	3	5.8	105.8	36,772	38,905	38,977
	4	4.4	104.4	37,772	39,434	39,423
62	1	4.0	104.0	38,284	39,815	39,874
	2	3.6	103.6	38,688	40,081	40,387
	3	3.8	103.8	39,316	40,810	40,849
	4	3.8	103.8	39,964	41,483	41,386
63	1	3.6	103.6	40,440	41,896	42,034
	2	3.4	103.4	40,852	42,241	42,700
	3	3.0	103.0	41,724	42,976	43,435
	4	2.2	102.2	42,804	43,746	44,121
64	1	1.6	101.6	44,548	45,261	44,881
	2	1.8	101.8	45,004	45,814	45,734
	3	1.6	101.6	45,960	46,695	46,604
	4	0.8	100.8	46,612	46,985	47,489
65	1	0.0	100.0	48,312	48,312	48,312

A P P E N D I X "E"

(Appendix to Chapter VI)

Time Series
and Table number

- E.1 : Annual total income assessed by income class for the period 1949-61
- E.2 : Tax payable at 1961 standard rate
- E.3 : Computation of taxable income in 1949 at 1961 rates and exemptions
- E.4 : Computation of increase in tax due to the increase in the number of taxpayers (1949-61)
- E.5 : Custom duties not seasonally adjusted by quarters
- E.6 : Seasonally adjusted import duties
- E.7 : Percentage changes in Indirect Taxes less customs duties
- E.8 : Percentage changes in non-farm G N P
- E.9 : Federal transfers to other levels of government
- E.10 : Percentage changes in E.9

A regression between E.7 (Y) and E.8 (X) yielded the following equation:

$$Y = -.47 + 1.00 (X)$$

Another regression between E.10 (Y) and E.9 (X) yielded:

$$Y = +3.3 + .2024 (X)$$

Sources of Data for Appendix "E"

Bank of Canada, Statistical Summary, (Ottawa), Monthly and Annuals, various issues. This source was used to derive raw import duties which the author adjusted for seasons in order to derive serie E.6.

Department of National Revenue, Taxation Statistics, Queen's Printer, Ottawa. Various annual issues. This source was used for tables E.1, E.2, E.3, E.4.

Dominion Bureau of Statistics, Canadian Statistical Review, (Catalogue #11-003) Ottawa. Various issues. Also Annual Supplement to the Canadian Statistical Review (Catalogue #11-206), 1963. This source was used for series E.6.

_____, National Accounts, Income and Expenditure, (Catalogue #15-519 containing quarterly data for the years 1947 to 1961 and Catalogue #13-001, various quarterly issues). This source was used in connection with series E.7, E.8, E.9.

TABLE E.1: Total Income Assessed (thousands of \$)

Income class	1961	1960	1959	1958	1957	1956	1955
Under \$1,000.	344,017	342,989	346,569	346,205	324,060	356,476	355,639
1,000 - 1,100	103,682	106,663	107,703	104,219	109,776	102,627	109,027
1,100 - 1,200	113,770	113,273	116,117	112,903	119,897	112,447	114,412
1,200 - 1,300	124,105	124,647	123,462	125,245	130,671	127,829	132,153
1,300 - 1,400	137,249	138,880	138,303	143,440	146,234	142,857	145,148
1,400 - 1,500	143,747	148,054	148,507	151,693	153,818	151,907	156,139
1,500 - 1,600	169,729	159,152	165,705	169,356	173,728	169,895	173,385
1,600 - 1,700	172,290	179,768	177,246	175,448	181,256	183,279	186,645
1,700 - 1,800	182,526	183,419	183,957	187,106	198,217	191,576	195,153
1,800 - 1,900	206,196	208,573	209,230	210,398	219,657	221,804	226,746
1,900 - 2,000	210,362	216,605	218,574	221,767	233,171	236,215	239,251
2,000 - 2,100	238,440	236,334	237,434	242,082	256,456	255,023	254,331
2,100 - 2,200	247,991	251,567	252,790	259,266	271,626	261,789	267,413
2,200 - 2,300	250,605	259,037	261,404	260,243	278,853	270,634	275,985
2,300 - 2,400	270,664	273,955	273,067	284,636	292,402	291,848	289,982
2,400 - 2,500	287,108	282,624	291,710	295,597	302,683	296,818	305,478
2,500 - 2,600	290,683	291,308	298,774	301,227	307,491	304,372	316,917
2,600 - 2,700	313,808	311,032	310,859	318,587	325,412	328,064	331,084
2,700 - 2,800	306,249	306,010	308,368	322,005	325,638	344,628	344,657
2,800 - 2,900	324,865	316,995	327,109	332,485	361,126	347,646	339,895
2,900 - 3,000	306,370	319,592	331,696	348,903	347,629	355,525	334,225
3,000 - 4,000	3,638,098	3,728,457	3,781,420	3,817,318	3,760,267	3,612,426	3,363,497
4,000 - 5,000	3,735,415	3,644,562	3,365,545	3,087,286	2,836,745	2,537,565	2,030,845
5,000 - 6,000	2,673,155	2,468,555	2,159,147	1,848,201	1,648,439	1,365,457	1,013,387
6,000 - 7,000	1,660,498	1,458,049	1,260,465	1,062,430	950,424	768,010	541,472
7,000 - 8,000	1,015,639	912,213	791,360	661,975	564,987	450,986	334,838
8,000 - 9,000	661,578	588,968	505,245	416,871	383,541	300,887	222,538
9,000-10,000	481,835	430,619	360,122	305,347	261,033	221,620	170,621
10,000-15,000	1,161,771	1,024,223	913,982	815,693	704,886	586,390	516,838
15,000-20,000	529,068	460,358	416,981	391,916	337,234	298,557	271,564
20,000-25,000	279,796	252,967	222,448	207,335	180,509	163,578	149,491
25,000-50,000	520,042	478,069	437,095	402,770	351,839	316,360	277,921
50,000- +	290,549	266,802	247,456	240,377	217,466	204,530	201,923

TABLE E.1: Total Income Assessed (thousands of \$)

Income class	1954	1953	1952	1951	1950	1949
Under \$1,000.	361,476	355,189	338,668	339,713	378,549	363,208
1,000 - 1,100	110,135	106,954	102,062	105,935	121,447	122,280
1,100 - 1,200	116,719	112,442	115,092	114,591	140,387	134,333
1,200 - 1,300	133,837	129,919	130,136	134,290	153,430	160,028
1,300 - 1,400	148,444	143,921	143,439	150,713	179,404	175,964
1,400 - 1,500	159,083	155,215	158,368	169,378	180,827	186,170
1,500 - 1,600	177,956	176,464	179,531	183,160	203,924	208,784
1,600 - 1,700	189,853	187,842	189,360	200,741	210,451	216,161
1,700 - 1,800	208,452	207,540	207,757	214,860	228,741	230,840
1,800 - 1,900	232,010	229,667	232,815	234,418	266,516	260,032
1,900 - 2,000	240,310	247,046	240,302	246,208	274,671	275,214
2,000 - 2,100	263,227	258,424	252,293	272,826	306,349	289,410
2,100 - 2,200	269,713	270,210	270,918	284,218	313,340	302,071
2,200 - 2,300	276,000	283,737	287,865	294,109	313,595	310,351
2,300 - 2,400	288,190	291,347	295,541	323,394	315,379	314,466
2,400 - 2,500	306,922	315,671	323,199	315,267	321,828	311,200
2,500 - 2,600	313,695	314,592	323,933	325,075	310,764	302,709
2,600 - 2,700	329,226	332,290	331,050	316,010	311,636	291,393
2,700 - 2,800	343,462	332,390	334,134	328,236	288,675	268,830
2,800 - 2,900	338,292	336,967	332,174	317,712	264,288	243,174
2,900 - 3,000	336,959	349,272	329,774	308,547	247,815	217,288
3,000 - 4,000	3,248,548	3,193,309	2,841,905	2,254,630	1,513,139	1,279,567
4,000 - 5,000	1,752,716	1,682,930	1,336,590	934,034	593,282	516,696
5,000 - 6,000	861,187	809,882	617,618	459,439	298,143	266,366
6,000 - 7,000	459,161	431,741	352,817	266,971	196,333	173,227
7,000 - 8,000	283,558	274,806	220,593	175,648	135,935	129,683
8,000 - 9,000	198,306	192,137	156,228	138,924	107,450	98,400
9,000-10,000	152,252	153,847	128,644	105,404	86,096	80,854
10,000-15,000	458,059	436,854	406,292	339,645	281,634	260,963
15,000-20,000	240,863	225,118	203,799	171,948	161,696	134,822
20,000-25,000	139,932	128,077	121,548	100,603	90,714	86,648
25,000-50,000	272,692	240,046	220,039	221,746	169,399	138,600
50,000 - +	157,993	154,645	143,015	120,123	103,858	81,105

1961

TABLE E.2

Income Class	Total income assessed	Tax payable	Effective yield (%)	Tax Payable at 1961 Standard Rate (thousands of \$)				
				1949	1950	1951	1952	1953
Under \$1,000.	344,017	1,780	0.52	1,889	1,968	1,766	1,761	1,847
1,000 - 1,100	103,682	154	.15	183	182	159	153	160
1,100 - 1,200	113,770	516	.45	604	632	516	518	506
1,200 - 1,300	124,105	1,389	1.12	1,792	1,718	1,504	1,457	1,455
1,300 - 1,400	137,249	2,215	1.61	2,833	2,888	2,426	2,309	2,317
1,400 - 1,500	143,747	2,784	1.94	3,612	3,508	3,286	3,072	3,011
1,500 - 1,600	169,729	4,038	2.38	4,969	4,853	4,369	4,273	4,200
1,600 - 1,700	172,290	4,588	2.66	5,750	5,598	5,340	5,037	4,996
1,700 - 1,800	182,526	5,389	2.95	6,810	6,748	6,338	6,129	6,122
1,800 - 1,900	206,196	6,703	3.25	8,451	8,662	7,618	7,566	7,464
1,900 - 2,000	210,362	7,197	3.42	9,412	9,394	8,420	8,218	8,449
2,000 - 2,100	238,440	8,158	3.42	9,898	10,477	9,331	8,628	8,838
2,100 - 2,200	247,991	9,259	3.73	11,267	11,688	10,601	10,105	10,079
2,200 - 2,300	250,605	10,181	4.06	12,600	12,732	11,941	11,687	11,520
2,300 - 2,400	270,664	11,484	4.24	13,333	13,372	13,712	12,531	12,353
2,400 - 2,500	287,108	13,024	4.54	14,128	14,611	14,313	14,673	14,331
2,500 - 2,600	290,683	13,060	4.49	13,592	13,953	14,596	14,544	14,125
2,600 - 2,700	313,808	14,698	4.68	13,637	14,585	14,789	15,493	15,551
2,700 - 2,800	306,249	15,252	4.98	13,388	14,376	16,346	16,640	16,557
2,800 - 2,900	324,865	16,418	5.05	12,280	13,346	16,044	16,775	17,017
2,900 - 3,000	306,370	16,272	5.31	11,538	13,159	16,384	17,510	18,516
3,000 - 4,000	3,638,098	222,775	6.1234	78,353	92,656	138,060	174,021	195,539
4,000 - 5,000	3,735,415	279,011	7.4693	38,593	44,314	69,766	99,834	125,703
5,000 - 6,000	2,673,155	231,899	8.675	23,107	25,864	39,856	57,578	70,257
6,000 - 7,000	1,660,498	163,984	9.875	17,106	19,388	26,363	34,841	42,634
7,000 - 8,000	1,015,639	111,089	10.938	14,185	14,869	19,212	24,128	30,058
8,000 - 9,000	661,578	79,027	11.945	11,754	12,835	16,594	18,661	22,950
9,000-10,000	481,835	61,618	12.79	10,341	11,012	13,481	16,454	19,677
10,000-15,000	1,161,771	172,970	14.89	38,857	41,935	50,573	60,497	65,048
15,000-20,000	529,068	103,557	19.573	26,389	36,649	33,655	39,889	44,062
20,000-25,000	279,796	64,960	23.22	30,609	37,546	39,926	47,322	52,272
25,000-50,000	520,042	147,359	28.336	39,274	48,000	62,834	62,350	68,013
50,000 - +	290,549	94,785	32.62	26,456	33,878	39,184	46,651	50,445

TABLE E.2: Tax Payable at 1961 Standard Rate (thousands of \$)

Income class	1954	1955	1956	1957	1958	1959	1960	1961
Under \$1,000.	1,880	1,849	1,854	1,685	1,800	1,802	1,783	1,788
1,000 - 1,100	165	163	154	165	156	162	160	155
1,100 - 1,200	525	515	506	540	508	523	510	512
1,200 - 1,300	1,499	1,480	1,432	1,464	1,403	1,383	1,396	1,390
1,300 - 1,400	2,390	2,337	2,300	2,354	2,309	2,227	2,236	2,210
1,400 - 1,500	3,086	3,029	2,947	2,984	2,943	2,881	2,872	2,789
1,500 - 1,600	4,235	4,127	4,043	4,135	4,031	3,944	3,788	4,040
1,600 - 1,700	5,050	4,965	4,875	4,821	4,667	4,715	4,782	4,583
1,700 - 1,800	6,149	5,757	5,651	5,847	5,520	5,427	5,411	4,384
1,800 - 1,900	7,540	7,369	7,209	7,139	6,838	6,800	6,779	6,701
1,900 - 2,000	8,219	8,182	8,078	7,974	7,584	7,475	7,408	7,194
2,000 - 2,100	9,002	8,698	8,722	8,771	8,279	8,120	8,083	8,155
2,100 - 2,200	10,060	9,975	9,765	10,132	9,671	9,429	9,383	9,250
2,200 - 2,300	11,206	11,205	10,988	11,321	10,565	10,613	10,517	10,174
2,300 - 2,400	12,219	12,295	12,374	12,392	12,068	11,578	11,616	11,476
2,400 - 2,500	13,934	13,869	13,476	13,742	13,420	13,244	12,831	13,035
2,500 - 2,600	14,085	14,229	13,666	13,806	13,525	13,415	13,080	13,052
2,600 - 2,700	15,407	15,495	15,353	15,229	14,910	14,548	14,556	14,686
2,700 - 2,800	17,104	17,164	17,162	16,217	16,036	15,357	15,239	15,251
2,800 - 2,900	17,084	17,165	17,556	18,237	16,790	16,519	16,008	16,406
2,900 - 3,000	17,892	17,747	18,878	18,459	18,527	17,613	16,970	16,268
3,000 - 4,000	198,922	205,960	221,203	230,256	233,750	231,551	228,308	222,775
4,000 - 5,000	130,916	151,690	189,538	211,885	230,599	251,383	272,223	279,009
5,000 - 6,000	74,708	87,911	118,453	143,002	160,331	187,306	214,147	231,896
6,000 - 7,000	45,342	53,470	75,841	93,854	104,915	124,471	143,982	163,974
7,000 - 8,000	31,015	36,625	49,329	61,798	72,407	86,559	99,778	111,090
8,000 - 9,000	23,688	26,582	35,940	45,814	49,795	60,351	70,352	79,025
9,000-10,000	19,473	21,822	28,345	33,386	39,054	46,060	55,076	61,626
10,000-15,000	68,205	76,957	87,313	104,958	121,457	136,092	152,507	172,988
15,000-20,000	47,144	53,153	58,436	66,006	76,710	81,616	90,106	103,554
20,000-25,000	55,928	63,057	69,325	78,306	91,003	96,823	106,895	64,968
25,000-50,000	77,270	78,752	89,644	99,697	114,129	123,855	135,466	147,359
50,000- +	51,537	65,867	66,718	70,937	78,410	80,720	87,030	94,777

TABLE E.3: Computation of the Theoretical Growth Rate of Taxable Income

Income Class	1961			1949	
	Total Income Assessed	Taxable Income	Ratio of Taxable to Total Income	Total Income Assessed	Taxable Income
Under \$1,000.	344,017	138	.04	363,208	146
1,000 2,000	1,563,656	254,213	16.26	1,969,806	320,290
2,000 3,000	2,836,583	896,441	31.60	2,850,892	900,881
3,000 4,000	3,638,098	1,476,768	40.59	1,279,567	519,376
4,000 5,000	3,735,415	1,775,613	47.53	516,696	245,585
5,000 6,000	2,673,155	1,416,185	52.98	266,366	141,120
6,000 7,000	1,660,498	968,426	58.32	173,227	101,025
7,000 8,000	1,015,639	636,342	62.65	129,683	81,246
8,000 9,000	661,578	439,082	66.37	98,400	65,308
9,000 10,000	481,835	333,013	69.11	80,854	55,878
10,000-15,000	1,161,771	859,584	73.99	260,963	193,086
15,000-20,000	529,068	423,670	80.08	134,822	107,965
20,000-25,000	279,796	231,718	82.82	86,648	71,761
25,000-50,000	520,042	449,398	86.42	138,600	119,778
50,000- +	290,549	262,427	90.32	81,105	73,254
Total Taxable Income		10,423,018			2,996,699

Annual growth rate of taxable income (1949-1961): 10.9%

TABLE E.2

Total Actual And 1961 Standardized Tax Payable

By Years, 1949-1963.

<u>Years</u>	<u>Actual Tax</u> <u>Payable</u>	<u>Tax Payable at</u> <u>1961 Rate</u>
	(Millions of Dollars)	(Millions of Dollars)
1949	501	531
1950	575	596
1951	812	734
1952	1,072	863
1953	1,147	973
1954	1,097	1,001
1955	1,149	1,107
1956	1,291	1,276
1957	1,415	1,427
1958	1,383	1,554
1959	1,580	1,686
1960	1,784	1,834
1961	1,910	1,910
1962*		2,063
1963		2,241

*Although the previous tables do not show the 1962 and 1963 income assessed and standardized tax by income groups, figures are given here for these two years as the author derive them for purposes outside the present content.

TABLE E.4

Increase in Tax Due to Number of Taxpayers

Years	Number of taxpayers	Tax increase 1949 - 61 due to number of tax- payers, at 1961 standard rate
1949	2,231,970	530,527
50	2,374,240	564,344
51	2,777,950	660,303
52	3,125,100	742,819
53	3,389,530	805,673
54	3,410,160	810,576
55	3,558,650	845,872
56	3,908,176	928,952
57	4,076,465	968,953
58	4,048,252	962,247
59	4,242,490	1,008,417
60	4,389,766	1,043,423
61	4,507,567	1,071,471

* 1949 average tax payable $\frac{530,527}{2,231,970} = 237.69$ times
number of taxpayers each year.

Growth rate of taxpayers (1949 - 61) = 6.0 per cent
per year.

Year	Q	N.5	E.6	E.7	E.8	E.9	E.10
1953	1	109.5	106.5			388	
	2	102.0	105.6	6.5	0.7	440	13.0
	3	105.9	106.5	-1.8	1.2	420	- 4.6
	4	98.1	96.7	-0.1	1.2	400	- 4.8
54	1	100.8	98.0	-3.2	-1.9	432	8.0
	2	92.7	95.9	0.3	1.0	432	0.0
	3	93.0	93.6	-3.3	1.8	432	0.0
	4	100.2	98.8	0.6	1.5	424	1.9
55	1	111.0	107.9	1.9	1.7	480	13.2
	2	101.7	105.3	3.5	2.9	436	9.2
	3	112.5	113.2	5.4	3.1	448	2.8
	4	126.0	124.2	-0.3	2.1	436	- 2.7
56	1	140.4	136.5	2.0	4.8	428	- 1.8
	2	133.8	138.5	5.9	1.9	528	23.0
	3	130.2	131.0	-0.1	2.8	500	- 5.3
	4	140.1	138.1	1.9	2.6	484	- 3.2
57	1	144.6	140.6	2.3	1.9	528	9.0
	2	124.8	129.2	-2.1	-0.1	496	- 7.1
	3	132.9	133.7	-0.7	1.4	520	4.8
	4	120.3	118.6	-1.6	1.7	540	3.8
58	1	119.4	116.1	0.7	0.6	608	12.5
	2	113.7	117.7	-0.3	2.4	624	2.6
	3	114.9	115.6	3.2	1.0	660	5.8
	4	129.0	127.1	-0.7	1.2	760	15.1
59	1	128.4	124.8	2.8	2.1	760	0.0
	2	126.6	131.0	8.3	1.8	836	10.0
	3	129.6	130.4	3.4	1.3	968	15.8
	4	135.6	135.6	1.2	1.6	956	- 1.2
60	1	133.8	130.1	-0.8	2.2	984	2.9
	2	128.7	135.2	1.4	-1.9	976	- 0.8
	3	123.0	123.7	-2.3	1.2	1,004	2.8
	4	129.0	127.1	0.9	0.6	1,012	0.8
61	1	117.6	114.3	2.8	-0.6	1,016	0.4
	2	123.0	127.3	-3.0	3.2	1,176	15.7
	3	130.8	131.6	1.1	1.4	1,172	- 0.3
	4	143.4	141.3	-1.4	2.7	1,148	- 0.2
62	1	137.1	133.3	7.4	1.4	1,172	2.1
	2	144.0	149.0	-2.4	1.1	1,016	-13.3
	3	182.4	183.5	3.1	1.6	1,144	12.5
	4	171.9	169.4	-1.8	1.6	1,204	5.2
63	1	146.1	142.1			1,196	- 0.7
	2	136.5	141.2			1,232	3.0
	3	138.6	139.4			1,100	-10.7
	4	155.1	152.9			1,148	4.4
64	1	150.9	146.7			1,164	1.4
	2	153.0	158.4			1,300	11.7
	3	152.1	153.0			1,264	- 2.8
	4	168.0	165.6			1,288	1.9
65	1	141.0	137.1			1,524	18.3

A P P E N D I X "F"

(Appendix to Chapter VII)

Calculations of Potential Surpluses

Series # (current \$, seasonally adjusted series otherwise stated)

- (1) : Potential output in current \$ (non-farm G N P)
- (2) : Actual output in current \$ (non-farm G N P)
- (3) : Output gap ... $(1) \div (2)$
- (4) : Employment gap: potential \div actual employment
- (5) : Per cent changes in output per non-farm person employed to potential:
$$1 - \left(1 + (3)\right) \div \left(1 + (4)\right)$$
- (6) : Per cent changes in non-farm personal income per non-farm person employed to potential: $(5) \cdot .798$ where .798 is the elasticity of the personal income ex. farm per person employed to non-farm G N P per person employed. (See below the regression equation for the derivation of the elasticity.)
- (7) : Per cent changes in personal income tax due to per cent changes in personal income ex. farm per person employed: $(6) \cdot 1.8$ where 1.8 is the personal income tax elasticity to the personal income ex. farm per person employed.

- (8) : Total per cent changes in personal income tax to potential (4) + (7)
- (9) : Actual federal personal direct tax (less successions duties and miscellaneous)
- (10) : Federal accrued personal income tax at potential output: $(9) \cdot (1 + (8))$
- (11) : Corporate profits at potential output: $(1) \cdot .107$ where .107 is the average ratio of profits to G N P ex. farm at full employment quarters; full employment being defined here as 3.5 to 4.5 per cent unemployment. (See computation below)
- (12) : Actual corporate profits
- (13) : Profit gap: $1 - \frac{(11)}{(12)}$
- (14) : Actual accrued federal corporate tax
- (15) : Corporate tax liabilities at potential output:
 $(14) \cdot (1 + (13))$
(note: the elasticity of the corporate tax to corporate profits is unity)
- (16) : Actual imports of goods
- (17) : Potential imports of goods: $(1) \cdot .174$ where .174 is the average ratio of merchandise imports to G N P ex. farm for full employment quarters. (Detailed calculation below.)
- (18) : Per cent changes of merchandise imports to potential: $1 - \frac{(17)}{(16)}$

- (19) : Actual customs import duties
- (20) : Potential customs import duties:
 $(19) \cdot (1 + (18))$
(note: the elasticity of customs duties to merchandise imports is assumed to be unity)
- (21) : Indirect taxes including import duties (Federal only)
- (22) : Indirect taxes less import duties: $(21) - (19)$
- (23) : Indirect taxes excluding import duties at potential output: $(22) \cdot (3)$ (note: the elasticity of indirect taxes to G N P ex. farm is unity)
- (24) : Actual (not seasonally adjusted) contributions to the unemployment insurance funds at annual rate
- (25) : Actual (not seasonally adjusted) non-agricultural employment
- (26) : Average contribution per person employed:
 $(24) \div (25)$
- (27) : Actual seasonally adjusted contributions to the unemployment insurance funds: (26) times actual seasonally adjusted number of persons employed in the non-agricultural sector
- (28) : Contributions to U . I . F . at full employment (26) times number of persons employed in the non-agricultural sector at full employment or,
 $(27) \cdot (1 + (4))$

- (29) : Total actual revenues from considered taxes:
 $(19) + (14) + (21) + (27)$
- (30) : Potential revenues from considered taxes:
 $(10) + (15) + (20) + (23) + (28)$
- (31) : Potential minus actual revenues from considered tax sources: $(30) - (29)$
- (32) : Actual total federal government revenues
- (33) : Potential federal tax revenues: $(32) + (31)$
- (34) : Revenue gap: $(33) \div (32)$
- (35) : Actual (not seasonally adjusted) unemployment insurance benefits at annual rate
- (36) : Actual (not seasonally adjusted) unemployed labour force
- (37) : Average benefits from U . I . F . : $(35) \div (36)$
- (38) : Actual seasonally adjusted labour force unemployed
- (39) : Seasonally adjusted unemployed labour force at potential
- (40) : Actual seasonally adjusted total benefits from U . I . F . : $(37) \cdot (38)$
- (41) : Total benefits from U . I . F . at full employment: $(37) \cdot (39)$

- (42) : Actual federal transfers to other levels of governments
- (43) : Per cent changes in transfers to potential:
(3) • .2 where .2 is the elasticity of transfers to G N P ex. farm
- (44) : Potential transfers: $(42) \cdot (1 + (43))$
- (45) : Actual total expenditures considered: $(40) + (42)$
- (46) : Potential expenditures considered: $(41) + (44)$
- (47) : Potential minus actual expenditures considered:
 $(46) - (45)$
- (48) : Actual total federal government expenditures
- (49) : Potential total government expenditures:
 $(48) + (47)$
- (50) : Actual federal government surplus
- (51) : Potential federal government surplus
- (52) : Relative federal government surplus
- (53) : Changes in potential government revenues: changes in series # (33)
- (54) : Changes in potential government expenditures: changes in series # (49)
- (55) : Adjusted discretionary changes in fiscal policy:
 $(54) - .5 (53)$

- (56) : Annual non-farm G N P figures
- (57) : Annual personal income ex. farm income
- (58) : Persons employed by year in the non-agricultural sector
- (59) : G N P ex. ag. per person employed: $(56) \div (58)$
- (60) : Personal income ex. ag. per person employed:
 $(57) \div (58)$
- (61) : Per cent changes in non-farm G N P per person employed
- (62) : Per cent changes in personal income ex. farm cash income per person employed

A linear regression between series #61 (X) and #62 (Y) yielded the following equation:

$$Y = 2.4654 + .79788 (X)$$

Another regression between series #3 (X) and #34 (Y) yielded:

$$Y = +.48 + 1.465 (X)$$

Table F.1 shows the average ratio of merchandise imports to non-farm G N P at full employment quarters. Table F.2 shows the same for corporation profits.

Sources of Data for Appendix "F"

Dominion Bureau of Statistics, Canadian Statistical Review, (Catalogue #11-003) Ottawa. Various issues. Also Annual Supplement, (Catalogue #11-206), 1963. For Series 16, 24, 35 and Table F.1.

_____, National Accounts, Income and Expenditures (Catalogue #15-519 and various issues of Catalogue #13-001). For Table F.2 and series 9, 12, 14, 21, 42, 48, 56, 57, 62.

_____, Canadian Statistical Review, Weekly Supplement, April 21, Ottawa, 1965. (Catalogue #11-004). For series 25, 27, 36, 38. All other series were derived from other appendices or consist of internal calculations.

CALCULATIONS OF POTENTIAL SURPLUSES

Year	Q	(1)	(2)	(3)	(4)	(5)	(6)
1953	1	22,198	23,116	-.040	-.015	-.025	-.020
	2	22,582	23,280	-.030	-.017	-.013	-.010
	3	22,973	23,556	-.035	-.013	-.022	-.018
	4	23,370	23,828	-.019	-.002	-.017	-.014
54	1	23,774	23,376	.017	.000	.017	.014
	2	24,132	23,612	.022	.010	.012	.010
	3	24,546	24,032	.021	.014	.007	.006
	4	24,963	24,396	.023	.012	.011	.009
55	1	25,434	24,800	.026	.010	.016	.013
	2	25,984	25,524	.018	.006	.012	.010
	3	26,529	26,304	.009	.001	.008	.006
	4	27,100	26,844	.010	-.002	.012	.010
56	1	27,717	28,140	-.015	-.004	-.011	-.009
	2	28,346	28,672	-.011	-.007	-.004	-.003
	3	29,014	29,484	-.016	-.012	-.004	-.003
	4	29,633	30,244	-.020	-.011	-.009	-.007
57	1	30,273	30,812	-.017	-.001	-.016	-.013
	2	30,905	30,792	.004	.002	.002	.002
	3	31,547	31,228	.010	.011	-.001	-.001
	4	32,158	30,700	.047	.024	.022	.018
58	1	32,611	30,884	.056	.033	.022	.018
	2	33,102	31,632	.046	.040	.006	.005
	3	33,576	31,936	.051	.041	.010	.008
	4	34,023	32,324	.053	.040	.013	.010
59	1	34,583	32,988	.048	.027	.020	.016
	2	35,044	33,584	.043	.023	.020	.016
	3	35,467	34,036	.042	.019	.023	.018
	4	35,882	34,568	.038	.022	.016	.013
60	1	36,241	35,340	.025	.028	-.003	-.002
	2	36,800	34,684	.061	.035	.025	.020
	3	37,250	35,084	.062	.042	.019	.015
	4	37,729	35,296	.069	.044	.024	.019
61	1	38,173	35,096	.088	.044	.042	.034
	2	38,520	36,212	.064	.044	.019	.015
	3	38,977	36,772	.060	.036	.023	.018
	4	39,423	37,772	.044	.026	.018	.014
62	1	39,874	38,284	.042	.024	.018	.014
	2	40,387	38,688	.044	.021	.023	.018
	3	40,849	39,316	.039	.022	.017	.014
	4	41,386	39,964	.036	.022	.014	.011
63	1	42,034	40,440	.039	.021	.018	.014
	2	42,700	40,852	.045	.020	.025	.020
	3	43,435	41,724	.041	.018	.023	.018
	4	44,121	42,804	.031	.012	.019	.015
64	1	44,881	44,548	.007	.009	-.002	-.002
	2	45,734	45,004	.016	.010	.006	.005
	3	46,604	45,960	.014	.009	.005	.004
	4	47,489	46,612	.019	.004	.015	.012
65	1	48,312	48,312	.000	.000	.000	.000

Year	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1953	1	-.036	-.051	1,310	1,243	2,375	2,780
	2	-.018	-.035	1,312	1,314	2,416	2,736
	3	-.032	-.045	1,226	1,171	2,452	2,516
	4	-.025	-.027	1,250	1,216	2,500	2,412
54	1	.025	.025	1,247	1,270	2,544	2,240
	2	.018	.023	1,271	1,307	2,582	2,252
	3	.011	.025	1,271	1,303	2,626	2,320
	4	.016	.023	1,307	1,344	2,671	2,348
55	1	.023	.033	1,272	1,314	2,721	2,592
	2	.018	.024	1,224	1,257	2,780	2,808
	3	.011	.012	1,224	1,239	2,839	3,140
	4	.013	.016	1,296	1,317	2,900	3,320
56	1	-.016	-.020	1,371	1,343	2,966	3,532
	2	-.005	-.012	1,423	1,465	3,033	3,343
	3	-.005	-.017	1,475	1,450	3,104	3,300
	4	-.015	-.044	1,515	1,410	3,171	3,340
57	1	-.023	-.024	1,617	1,573	3,259	3,256
	2	.004	.006	1,653	1,663	3,307	3,184
	3	-.002	.009	1,661	1,676	3,376	3,000
	4	.032	.056	1,677	1,771	3,441	2,784
58	1	.032	.065	1,592	1,605	3,439	2,928
	2	.009	.049	1,340	1,406	3,542	2,880
	3	.014	.055	1,520	1,604	3,595	3,052
	4	.018	.058	1,584	1,670	3,640	3,400
59	1	.029	.056	1,594	1,633	3,700	3,396
	2	.029	.052	1,590	1,673	3,750	3,434
	3	.032	.051	1,750	1,839	3,795	3,516
	4	.023	.045	1,834	1,917	3,839	3,620
60	1	-.004	.024	1,896	1,942	3,878	3,612
	2	.036	.071	1,956	2,073	3,938	3,352
	3	.027	.069	1,916	2,048	3,986	3,320
	4	.034	.073	1,920	2,070	4,077	3,038
61	1	.061	.105	1,974	2,181	4,085	2,956
	2	.027	.071	2,042	2,187	4,122	3,384
	3	.032	.068	2,076	2,217	4,170	3,603
	4	.025	.051	2,100	2,213	4,210	3,760
62	1	.025	.049	1,986	2,033	4,267	3,636
	2	.032	.053	1,902	2,066	4,321	3,752
	3	.025	.047	1,998	2,092	4,371	3,724
	4	.020	.040	2,050	2,115	4,420	3,888
63	1	.025	.040	2,031	2,177	4,490	3,900
	2	.036	.056	1,993	2,105	4,569	3,960
	3	.032	.050	2,113	2,219	4,648	3,940
	4	.027	.039	2,221	2,307	4,721	4,184
64	1	-.004	.005	2,355	2,367	4,802	4,596
	2	.009	.019	2,450	2,506	4,893	4,468
	3	.007	.016	2,427	2,527	4,987	4,276
	4	.022	.020	2,559	2,625	5,081	4,580
65	1	.000	.000	2,625	2,625	5,160	4,940

Year	Q	(13)	(14)	(15)	(16)	(17)	(18)
1953	1	-.165	1,284	1,072	4,145	3,862	-.067
	2	-.117	1,168	1,031	4,384	3,929	-.104
	3	-.023	1,084	1,059	4,355	3,997	-.082
	4	.036	1,040	1,077	4,121	4,066	-.013
54	1	.136	1,052	1,195	3,916	4,137	.056
	2	.146	972	1,114	3,992	4,199	.052
	3	.132	996	1,127	3,904	4,271	.094
	4	.138	1,052	1,197	4,051	4,344	.072
55	1	.050	1,072	1,126	4,189	4,426	.057
	2	-.010	1,164	1,152	4,313	4,521	.048
	3	-.096	1,280	1,157	4,739	4,616	-.026
	4	-.127	1,324	1,156	5,037	4,715	-.064
56	1	-.110	1,308	1,164	5,419	4,823	-.110
	2	-.094	1,328	1,203	5,562	4,932	-.113
	3	-.077	1,348	1,244	5,584	5,048	-.096
	4	-.051	1,352	1,283	5,592	5,156	-.078
57	1	-.005	1,380	1,373	5,791	5,268	-.090
	2	.039	1,128	1,172	5,534	5,377	-.028
	3	.125	1,064	1,197	5,485	5,489	.001
	4	.236	956	1,182	5,098	5,595	.097
58	1	.192	1,016	1,211	4,996	5,674	.136
	2	.230	1,032	1,269	4,964	5,760	.160
	3	.162	1,124	1,306	4,954	5,842	.179
	4	.071	1,128	1,208	5,294	5,920	.118
59	1	.090	1,236	1,347	5,264	6,017	.143
	2	.076	1,356	1,459	5,697	6,098	.070
	3	.079	1,308	1,411	5,568	6,171	.108
	4	.060	1,340	1,420	5,496	6,243	.136
60	1	.074	1,328	1,426	5,645	6,306	.118
	2	.182	1,296	1,532	5,508	6,403	.162
	3	.200	1,240	1,488	5,307	6,482	.221
	4	.307	1,200	1,568	5,476	6,565	.199
61	1	.382	1,164	1,609	5,542	6,642	.198
	2	.218	1,288	1,569	5,446	6,702	.231
	3	.156	1,376	1,591	5,822	6,782	.165
	4	.122	1,416	1,589	6,264	6,860	.095
62	1	.173	1,264	1,483	6,283	6,938	.104
	2	.151	1,268	1,459	6,289	7,027	.117
	3	.174	1,268	1,489	6,375	7,108	.115
	4	.139	1,284	1,462	6,042	7,201	.192
63	1	.153	1,352	1,559	6,142	7,314	.191
	2	.154	1,352	1,560	6,436	7,430	.154
	3	.180	1,344	1,586	6,621	7,558	.142
	4	.128	1,376	1,552	6,994	7,677	.098
64	1	.045	1,484	1,551	7,352	7,809	.062
	2	.095	1,480	1,621	7,595	7,958	.048
	3	.140	1,468	1,674	7,380	8,109	.099
	4	.041	1,496	1,557	7,614	8,263	.085
65	1	.046	1,548	1,619	8,058	8,406	.043

Year	Q	(19)	(20)	(21)	(22)	(23)	(24)	(25)
1953	1	426	397	1,660	1,234	1,185	154	4,236
	2	422	378	1,736	1,314	1,275	156	4,354
	3	426	391	1,716	1,290	1,245	162	4,479
	4	387	382	1,676	1,289	1,265	166	4,423
54	1	392	414	1,640	1,248	1,269	151	4,226
	2	384	404	1,636	1,252	1,280	157	4,334
	3	374	409	1,572	1,198	1,223	161	4,456
	4	395	423	1,600	1,205	1,233	163	4,427
55	1	432	457	1,660	1,228	1,260	154	4,277
	2	421	441	1,692	1,271	1,294	158	4,479
	3	453	441	1,792	1,339	1,351	167	4,683
	4	497	465	1,832	1,335	1,348	181	4,727
56	1	546	486	1,908	1,362	1,342	173	4,576
	2	554	491	1,996	1,442	1,426	179	4,751
	3	524	474	1,964	1,440	1,417	191	4,927
	4	552	509	2,020	1,468	1,439	192	4,960
57	1	562	511	2,064	1,502	1,476	190	4,763
	2	517	503	1,988	1,471	1,477	181	4,971
	3	535	536	1,996	1,461	1,476	196	5,126
	4	474	520	1,912	1,438	1,506	196	5,050
58	1	464	527	1,912	1,448	1,529	192	4,749
	2	471	546	1,876	1,405	1,470	177	4,976
	3	462	545	1,912	1,450	1,524	190	5,125
	4	508	568	1,948	1,440	1,516	184	5,082
59	1	499	570	1,980	1,481	1,552	196	4,903
	2	524	561	2,128	1,604	1,673	164	5,134
	3	522	578	2,180	1,658	1,728	195	5,341
	4	534	607	2,212	1,678	1,742	259	5,281
60	1	520	581	2,184	1,664	1,706	297	5,050
	2	533	619	2,220	1,687	1,790	246	5,271
	3	495	604	2,144	1,649	1,751	284	5,424
	4	508	609	2,172	1,664	1,779	286	5,364
61	1	457	547	2,168	1,711	1,862	285	5,077
	2	509	627	2,168	1,659	1,765	249	5,340
	3	526	613	2,204	1,678	1,779	284	5,554
	4	565	619	2,220	1,655	1,728	290	5,502
62	1	533	588	2,312	1,779	1,854	289	5,285
	2	596	666	2,332	1,736	1,812	259	5,567
	3	734	818	2,524	1,790	1,860	298	5,747
	4	678	808	2,436	1,758	1,821	294	5,638
63	1	568	676	2,416	1,848	1,920	295	5,412
	2	565	652	2,316	1,751	1,830	268	5,659
	3	558	637	2,464	1,906	1,984	304	5,930
	4	612	672	2,608	1,996	2,058	308	5,880
64	1	587	623	2,696	2,109	2,124	306	5,676
	2	634	664	2,824	2,190	2,225	286	5,931
	3	612	673	2,928	2,316	2,348	311	6,189
	4	662	718	2,940	2,278	2,321	316	6,094
65	1	548	572	3,000	2,452	2,452	310	5,952

Year	Q	(26)	(27)	(28)	(29)	(30)	(31)
1953	1	36.35	159	157	4,413	4,054	359
	2	35.82	157	154	4,423	4,152	271
	3	36.16	158	156	4,184	4,022	162
	4	37.53	164	164	4,130	4,104	26
54	1	35.73	156	156	4,095	4,312	217
	2	36.22	158	159	4,037	4,264	227
	3	36.13	157	160	3,996	4,222	226
	4	36.81	161	163	4,120	4,360	240
55	1	36.00	159	161	4,163	4,318	155
	2	35.27	159	160	4,239	4,300	61
	3	35.66	163	163	4,519	4,411	108
	4	38.29	179	178	4,631	4,464	167
56	1	37.80	179	179	4,766	4,514	252
	2	37.67	178	180	4,985	4,765	220
	3	38.76	187	184	4,974	4,769	205
	4	38.70	190	188	5,077	4,923	210
57	1	39.89	197	197	5,258	5,135	123
	2	36.41	182	182	4,951	4,997	46
	3	38.23	191	193	4,912	5,078	166
	4	38.81	194	194	4,739	5,173	434
58	1	40.42	200	206	4,720	5,168	448
	2	35.57	177	185	4,425	4,876	451
	3	37.07	185	193	4,741	5,172	431
	4	36.20	182	189	4,842	5,157	315
59	1	39.97	204	210	5,014	5,352	348
	2	31.94	164	168	5,238	5,534	296
	3	36.51	190	194	5,428	5,750	322
	4	49.04	256	262	5,642	5,948	306
60	1	58.81	310	318	5,718	5,973	255
	2	46.67	246	255	5,698	6,269	571
	3	52.35	276	288	5,576	6,179	603
	4	53.31	283	296	5,575	6,322	747
61	1	56.13	297	310	5,603	6,509	906
	2	46.62	249	260	5,747	6,408	661
	3	51.13	276	286	5,932	6,486	554
	4	52.70	287	295	6,029	6,444	415
62	1	54.68	301	309	5,863	6,317	454
	2	46.52	259	265	5,821	6,268	447
	3	51.85	289	296	6,079	6,555	476
	4	52.14	291	298	6,041	6,504	463
63	1	54.50	307	314	6,156	6,646	490
	2	47.35	268	274	5,929	6,421	492
	3	51.26	295	300	6,216	6,726	510
	4	52.38	306	309	6,511	6,898	387
64	1	53.91	319	321	6,854	6,986	132
	2	48.22	287	290	7,050	7,306	256
	3	50.25	302	305	7,185	7,527	342
	4	51.85	313	315	7,308	7,536	228
65	1	52.08	323	323	7,496	7,591	95

Year	Q	(32)	(33)	(34)	(35)	(36)	(37)	(38)
1953	1	4,848	4,489	-.084	252	227	1,110	149
	2	4,880	4,609	-.056	159	141	1,128	143
	3	4,640	4,478	-.035	81	104	779	159
	4	4,536	4,510	-.006	139	176	790	209
54	1	4,560	4,777	.048	368	332	1,108	217
	2	4,492	4,719	.051	268	252	1,064	261
	3	4,460	4,686	.051	148	185	800	284
	4	4,600	4,840	.052	180	230	783	276
55	1	4,668	4,823	.033	436	405	1,077	264
	2	4,784	4,845	.013	264	245	1,078	251
	3	5,068	4,960	-.021	104	149	698	228
	4	5,228	5,061	-.032	112	182	615	216
56	1	5,360	5,108	-.047	380	325	1,169	213
	2	5,640	5,420	-.039	249	191	1,304	195
	3	5,568	5,363	-.037	93	114	816	175
	4	5,744	5,534	-.037	120	157	764	180
57	1	5,920	5,797	-.021	465	352	1,321	232
	2	5,608	5,654	.008	648	240	2,700	247
	3	5,520	5,686	.030	163	196	832	298
	4	5,304	5,738	.082	269	321	838	365
58	1	5,284	5,732	.085	786	604	1,300	404
	2	5,024	5,475	.090	621	426	1,458	446
	3	5,476	5,907	.079	265	303	875	453
	4	5,552	5,867	.057	300	390	769	448
59	1	5,732	6,080	.061	730	566	1,290	385
	2	5,932	6,228	.050	474	356	1,331	366
	3	6,148	6,470	.052	164	240	683	351
	4	6,360	6,666	.048	256	323	793	364
60	1	6,488	6,743	.039	767	702	1,093	401
	2	6,444	7,015	.089	563	480	1,173	439
	3	6,336	6,939	.095	249	325	766	478
	4	6,376	7,123	.117	348	439	793	495
61	1	6,400	7,306	.142	895	702	1,275	491
	2	6,536	7,197	.101	597	480	1,244	493
	3	6,852	7,406	.081	214	325	658	455
	4	6,884	7,299	.060	270	357	756	405
62	1	6,660	7,114	.068	738	561	1,316	395
	2	6,720	7,167	.067	463	372	1,245	383
	3	6,888	7,364	.069	172	281	612	389
	4	7,136	7,599	.065	263	346	760	389
63	1	7,072	7,562	.069	714	545	1,310	385
	2	6,920	7,412	.071	456	371	1,229	384
	3	7,196	7,706	.071	168	272	618	372
	4	7,404	7,851	.052	235	305	770	345
64	1	7,876	8,008	.017	600	463	1,296	327
	2	8,088	8,344	.032	409	326	1,254	338
	3	8,188	8,530	.042	160	242	661	331
	4	8,376	8,604	.027	208	266	782	303
65	1	8,524	8,619	.011	563	397	1,418	281

Year	Q	(39)	(40)	(41)	(42)	(43)	(44)	(45)
1953	1	216	165	240	388	-.008	385	553
	2	216	161	244	440	-.006	437	601
	3	216	124	168	420	-.007	417	544
	4	217	165	171	400	-.004	398	565
54	1	218	240	241	432	.003	433	672
	2	219	278	233	432	.004	434	710
	3	221	227	177	432	.004	434	659
	4	222	216	174	424	.005	426	640
55	1	222	284	239	480	.005	482	764
	2	224	271	241	436	.004	438	707
	3	225	159	157	448	.002	449	607
	4	226	133	139	436	.002	437	569
56	1	230	249	269	428	-.003	427	677
	2	230	254	300	528	-.002	527	782
	3	231	143	188	500	-.003	499	643
	4	234	138	179	484	-.004	482	622
57	1	238	306	314	528	-.003	526	834
	2	239	667	645	496	.001	496	1,163
	3	242	248	201	520	.002	521	768
	4	244	306	204	540	.009	545	846
58	1	243	525	316	608	.011	615	1,133
	2	240	650	350	624	.009	630	1,274
	3	247	396	216	660	.010	667	1,056
	4	247	345	190	760	.011	768	1,105
59	1	248	497	320	760	.010	768	1,257
	2	248	487	330	836	.009	843	1,323
	3	250	240	171	968	.008	976	1,208
	4	251	289	199	956	.008	964	1,245
60	1	254	438	278	984	.005	989	1,422
	2	255	515	299	976	.012	988	1,491
	3	258	366	198	1,004	.012	1,016	1,370
	4	260	393	206	1,012	.014	1,026	1,405
61	1	259	626	330	1,016	.018	1,034	1,642
	2	261	613	325	1,176	.013	1,191	1,789
	3	261	299	172	1,172	.012	1,186	1,471
	4	261	314	197	1,148	.009	1,158	1,462
62	1	263	520	346	1,172	.008	1,181	1,692
	2	265	477	330	1,016	.009	1,025	1,493
	3	265	238	162	1,144	.008	1,153	1,382
	4	265	296	201	1,204	.007	1,212	1,500
63	1	266	504	348	1,196	.008	1,206	1,700
	2	268	472	329	1,232	.009	1,243	1,704
	3	271	230	167	1,100	.008	1,108	1,330
	4	273	266	210	1,148	.006	1,155	1,414
64	1	276	424	358	1,164	.001	1,165	1,588
	2	277	424	347	1,300	.003	1,304	1,724
	3	278	219	184	1,264	.002	1,267	1,483
	4	278	237	217	1,288	.004	1,293	1,525
65	1	283	398	401	1,524	.000	1,524	1,922

Year	Q	(46)	(47)	(48)	(49)	(50)	(51)	(52)
1953	1	625	72	4,636	4,708	212	-219	-.010
	2	681	80	4,540	4,620	340	11	.000
	3	585	41	4,604	4,645	36	-167	-.007
	4	569	4	4,556	4,560	-20	-50	-.002
54	1	674	2	4,488	4,490	72	287	.012
	2	667	-43	4,628	4,585	-136	134	.006
	3	611	-48	4,656	4,608	-196	78	.003
	4	600	-40	4,740	4,700	-140	140	.006
55	1	721	-43	4,876	4,833	-208	-10	.000
	2	679	-28	4,640	4,612	144	233	.009
	3	606	-1	4,764	4,763	304	197	.007
	4	576	7	4,764	4,771	464	290	.011
56	1	696	19	4,816	4,835	544	273	.010
	2	827	45	5,024	5,069	616	351	.012
	3	687	44	5,072	5,116	496	247	.009
	4	661	39	5,224	5,263	520	271	.009
57	1	840	6	5,128	5,134	792	663	.022
	2	1,141	-22	5,224	5,202	384	452	.015
	3	722	-46	5,396	5,350	124	336	.011
	4	749	-97	5,608	5,511	-304	227	.007
58	1	931	-202	5,820	5,618	-536	114	.003
	2	980	-294	5,968	5,674	-944	-199	-.006
	3	883	-173	6,156	5,983	-680	-76	-.002
	4	958	-147	6,420	6,273	-868	-406	-.012
59	1	1,088	-169	6,224	6,055	-492	25	.001
	2	1,173	-150	6,436	6,286	-504	-58	-.002
	3	1,147	-61	6,424	6,363	-276	107	.003
	4	1,163	-82	6,396	6,314	-36	352	.010
60	1	1,267	-155	6,600	6,445	-112	298	.008
	2	1,287	-204	6,396	6,192	48	823	.022
	3	1,214	-156	6,828	6,672	-492	267	.007
	4	1,232	-173	6,824	6,651	-448	472	.013
61	1	1,364	-278	6,820	6,542	-420	764	.020
	2	1,516	-273	7,068	6,795	-532	402	.010
	3	1,358	-113	7,332	7,219	-480	187	.005
	4	1,355	-107	7,272	7,165	-388	134	.003
62	1	1,527	-165	7,620	7,455	-960	-341	-.009
	2	1,355	-138	7,276	7,138	-556	29	.001
	3	1,315	-67	7,240	7,173	-352	191	.005
	4	1,413	-87	7,444	7,357	-308	242	.006
63	1	1,554	-146	7,416	7,270	-344	292	.007
	2	1,572	-132	7,508	7,376	-588	36	.001
	3	1,275	-55	7,384	7,329	-188	377	.009
	4	1,365	-49	7,512	7,463	-48	388	.009
64	1	1,523	-65	7,812	7,747	64	261	.006
	2	1,651	-73	7,728	7,655	360	689	.015
	3	1,451	-32	7,716	7,684	472	846	.018
	4	1,510	-15	7,960	7,945	416	659	.014
65	1	1,925	3	8,256	8,259	268	360	.007

Year	Q	(53)	(54)	(55)
1953	1			
	2	120	- 88	-148
	3	-131	25	90
	4	32	- 85	-101
54	1	267	- 70	-203
	2	- 58	95	124
	3	- 33	23	40
	4	154	92	15
55	1	- 17	133	142
	2	22	-221	-232
	3	115	151	94
	4	101	8	- 42
56	1	47	64	40
	2	312	234	78
	3	57	47	76
	4	171	147	62
57	1	263	-129	-261
	2	143	68	139
	3	32	148	132
	4	52	161	135
58	1	- 6	107	110
	2	-257	56	184
	3	432	309	93
	4	- 40	290	310
59	1	213	-218	-325
	2	148	231	157
	3	242	77	- 44
	4	196	- 49	-147
60	1	77	131	82
	2	272	-253	-389
	3	- 76	480	518
	4	184	- 21	-113
61	1	183	-109	-201
	2	-109	253	308
	3	209	424	319
	4	-107	- 54	0
62	1	-185	290	383
	2	53	-317	-339
	3	197	35	- 63
	4	235	184	66
63	1	- 37	- 87	- 68
	2	-150	106	181
	3	294	- 47	-100
	4	145	134	61
64	1	157	284	205
	2	336	- 92	-260
	3	186	29	- 64
	4	74	261	224
65	1	15	314	306

Year	(56)	(57)	(58)	(59)	(60)	(61)	(62)
1950	16,684	12,272	3,958	4,215	3,100		
51	19,896	13,879	4,158	4,785	3,338	13.5	10.8
52	22,036	15,479	4,278	5,151	3,618	7.6	8.4
53	23,445	16,737	4,377	5,356	3,824	4.0	5.7
54	23,854	17,412	4,365	5,465	3,989	2.0	4.3
55	25,868	18,538	4,546	5,690	4,078	4.1	2.2
56	29,135	20,455	4,808	6,060	4,254	6.5	4.3
57	30,883	22,165	4,983	6,198	4,448	2.3	4.6
58	31,694	23,474	4,988	6,354	4,706	2.5	5.8
59	33,794	24,910	5,170	6,537	4,818	2.9	2.4
60	35,101	26,258	5,282	6,645	4,971	1.7	3.2
61	36,463	27,544	5,374	6,785	5,125	2.1	3.0
62	39,063	29,464	5,565	7,019	5,295	3.4	3.3
63	41,455	31,206	5,726	7,240	5,450	3.1	2.9
64	45,531	33,657	5,979	7,615	5,629	5.2	3.3

TABLE F.1

Imports of Goods as a Per Cent of Non-Farm G N P
at Full Employment Quarters (3.5 - 4.5% unemployed)

Full Employment Quarters	G N P ex. farm	Merchandise Imports	Imports as a per cent of G N P
1954 Q 1	23,376	3,916	16.75
55 Q 2	25,524	4,313	16.90
55 Q 3	26,304	4,739	18.01
55 Q 4	26,844	5,037	18.76
56 Q 1	28,140	5,419	19.26
57 Q 1	30,812	5,791	18.79
57 Q 2	30,792	5,534	17.97
64 Q 1	44,548	7,352	16.50
64 Q 2	45,004	7,595	16.88
64 Q 3	45,960	7,380	16.06
64 Q 4	46,612	7,614	16.33
65 Q 1	48,312	8,058	16.68
Σ			208.89

$$\frac{\Sigma}{N} = 17.4\%$$

TABLE F.2
 Corporate Profits as a Per Cent of Non-Farm G N P
 at Potential Output
 (Full employment defined for the purpose
 as 3.5 to 4.5% unemployment)

Full employment quarters	G N P ex. farm	Corporate profits	Profits as a per cent of G N P ex. farm
1954 Q 1	23,376	2,240	9.58
55 Q 2	25,524	2,808	11.00
55 Q 3	26,304	3,140	11.94
55 Q 4	26,844	3,320	12.37
56 Q 1	28,140	3,332	11.84
57 Q 1	30,812	3,256	10.57
57 Q 2	30,792	3,184	10.34
64 Q 1	44,548	4,596	10.31
64 Q 2	45,004	4,468	9.93
64 Q 3	45,960	4,376	9.52
64 Q 4	46,612	4,880	10.47
65 Q 1	48,312	4,940	10.23

$$\frac{\Sigma}{N} = 10.7$$

B I B L I O G R A P H Y

BOOKS

Chambers, Edward J. Economic Fluctuations and Forecasting. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961.

Due, John F. Government Finance. Revised Edition; Homewood, Illinois: Richard D. Irwin, Inc., 1959.

Estey, James Arthur. Business Cycles. Third Edition. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960.

Keynes, John Maynard. The General Theory of Employment, Interest and Money. London: Macmillan & Co. Ltd., 1961.

Levy, Michael E. Fiscal Policy, Cycles and Growth. New York: The National Industrial Conference Board, Inc., 1963.

Musgrave, Richard A. The Theory of Public Finance. Toronto: McGraw-Hill Book Company, Inc., 1959.

REPORTS

Economic Council of Canada. First Annual Review: Economic Goals for Canada to 1970. Ottawa: Queen's Printer, December 1964.

Daly, D.J. Federal Tax Revenues at Potential Output, 1960 and 1970. Staff Study #9 Prepared for the Economic Council of Canada; Ottawa: Queen's Printer, 1964.

Denton, Frank T., Ostry, Silvia. An Analysis of Postwar Unemployment. Staff Study #3 Prepared for the Economic Council of Canada; Ottawa: Queen's Printer, 1964.

Drabble, B.J. Potential Output 1946 to 1970. Staff Study #2 Prepared for the Economic Council of Canada; Ottawa: Queen's Printer, 1964.

Wildgen, Frank. National Saving at Potential Output to 1970. Staff Study #10 Prepared for the Economic Council of Canada; Ottawa: Queen's Printer, 1964.

Economic Report of the President Transmitted to the Congress Together with the Report of the Council of Economic Advisors. Washington: United States Government Printing Office, 1962, 1963, 1964, 1965.

United Nations, Department of Economic Affairs. National and International Measures for Full Employment. New York, 1949.

ARTICLES

Burns, Arthur F. "Examining the New Stagnation Theory," The Morgan Guaranty Survey, New York: Morgan Guaranty Trust Company, May 1961.

Burns, Arthur F. "A Second Look at the Council's Economic Theory," The Morgan Guaranty Survey, New York: Morgan Guaranty Trust Company, August 1961.

_____. "Economics and Our Public Policy of Full Employment," The Morgan Guaranty Survey, New York: Morgan Guaranty Trust Company, July 1963.

Robertson, Ronald. "Fiscal Factors Affecting Economic Goals," Canadian Tax Journal, Vol. XIII, No 3, Toronto: Canadian Tax Foundation, May - June 1965.

Solomon, Robert. "The Full Employment Budget Surplus as an Analytical Concept," Papers and Proceeding of the American Statistical Association, Mimeoapolis: American Stastistical Association, 1962.