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# Fiscal Policy in Mexico: The FitzGerald Thesis Reexamined

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**Summary.** — Interest continues in the Mexican government's finance and expenditure policy due to the severity and length of fiscal crises. According to FitzGerald, Mexican deficits were financed through increased savings crowding out consumption but not private investment. Using official IMF data this paper attempts to verify the FitzGerald thesis. By and large our results suggest the Mexican economy is best depicted along Keynesian lines and not FitzGerald's Kaleckian interpretation. This conclusion is further substantiated by the prolonged nature of the country's current economic crisis associated with record high central government deficits and subdued levels of private sector investment. If his thesis were valid for an earlier time (1951-65), many of these relationships disappeared between 1965 and 1981.

## 1. INTRODUCTION

Interest in the economic impacts associated with the Mexican government's finance and expenditure patterns continues not only because of the severity of ongoing fiscal crises but also because of the slowdown in private investment and overall growth.<sup>1</sup> One issue that has attracted particular attention in Mexico has been the issue of "crowding out" — the extent to which government expenditures displace equal amounts of private spending. FitzGerald's work<sup>2</sup> suggests that for Mexico, government deficits tend to displace or crowd out private consumption. His empirical results indicated that private savings increased to pay for the deficit. However, according to FitzGerald, the increase in savings came at the expense of decreases in private consumption rather than private investment. Thus government deficits had a stimulating effect on growth — mobilizing savings for increased levels of investment. Whatever caused the slowdown in private investment does not appear to be related to government deficits.

Since these results have important policy implications for Mexican efforts to combat the current economic crisis, this paper attempts to verify FitzGerald's results. Regression equations are estimated to examine the government's impact on various measures of private sector activity such as private consumption, savings and investment.

## 2. CROWDING OUT HYPOTHESES<sup>3</sup>

The different aspects of crowding out can be explained within a national account framework which links private savings ( $S$ ), investment ( $I$ ), exports ( $X$ ), and imports ( $M$ ) as follows:

$$I + X = S + M. \quad (1)$$

Adding government expenditures ( $G$ ) and revenue ( $T$ ) we obtain:

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

which can be rearranged as follows:

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

$$\text{or} \quad D + (S - I) = B \quad (4)$$

where, following FitzGerald,  $D$  is the deficit and  $B$  the current account balance. Three different types of crowding out may occur and can be expressed in terms of identity (4).<sup>4</sup>

### (a) *Conventional crowding out*

"Conventional" crowding out<sup>5</sup> occurs when the deficit is financed by selling bonds. The price of bonds is bid down (due to oversupply) which is equivalent to an increase in interest rates. The higher interest rate causes investment to decline or to be crowded out as a result of the higher deficit. Neither savings ( $S$ ) nor the external

balance ( $B$ ) is affected since these depend on income and relative price levels, respectively.

(b) *The monetary approach*

Under the monetary approach, the deficit is monetized which creates an excess supply of money. Since interest rates are (for this country at least) determined internationally, savings and investment are unchanged. Thus there is either a capital outflow or an increase in imports — the full effect of the deficit is felt by the worsening of the external balance ( $B$ ).<sup>6</sup>

(c) *Keynesian crowding out*

Under the Keynesian approach, any increase in the deficit is paid for through increases in private savings. This is the same as a decrease in, or the crowding out of, private consumption.

In summary, we should therefore expect to find statistically significant relationships between  $D$  and  $I$  in Case (a), between  $D$  and  $B$  in Case (b), and between  $D$  and  $S$  and between  $D$  and  $C$  in Case (c).

Using data for 1940–76, FitzGerald found no statistical correlation between the deficit and investment levels which led him to reject the existence of “conventional” crowding out in Mexico.<sup>7</sup> Investment did not suffer as a result of increased deficits. As a next step, he estimated the following equation for 1960–76 by means of ordinary least squares (variables measured as a percent of Gross Domestic Product and  $t$ -statistics in parentheses):

$$S = 3.302 + 0.754D + 0.592I; R^2 = 0.96.$$

(2.9)            (14.5)            (5.4)

He concluded that:

These results seem promising, and “explain” very well over the whole period . . . The implication is that the greater part of any changes in the budget deficit ( $D$ ) are met by adjustments in private savings — about three-quarters in the 1960–76 period — and thus a quarter comes (substituting into the identity) from the balance of payments as “external savings.”<sup>8</sup>

This result broadly supports Case (c) above with “tinges” of Case (b). FitzGerald went on to conclude that:

There seems to be some evidence, then, that private consumption was adjusting (declining) so as to generate the required private savings to finance that part of the PSBR (public sector borrowing require-

ment) financed locally while official external debt was used to finance the increased imports . . .<sup>9</sup>

FitzGerald was quick to point out that the decline in consumption was not a typical Keynesian effect. Instead the banks reduce the volume of credit available to consumers causing consumption to be crowded out.

The results obtained by FitzGerald led him to conclude that development finance in Mexico was unlike the orthodox view.<sup>10</sup> Under this view, savings is the constraint on investment. If the government finances the deficit through the use of savings, investment is crowded out. Savings, being the residual after consumption, thus determines investment. In the Mexican case, FitzGerald concludes that consumption and savings are residuals after investment and deficit levels have been met. Thus, investment and the deficit determine the levels of consumption and savings.<sup>11</sup>

It should be noted that FitzGerald provides no statistical tests other than several regression equations to validate the savings/investment process in Mexico. While we have no particular quarrel with his interpretation of the process in Mexico,<sup>12</sup> it is quite possible that more orthodox interpretations may be on firmer empirical grounds.

### 3. ADDITIONAL EMPIRICAL RESULTS

As a first step towards a clearer identification of the impact of public sector fiscal activity on the private sector, a number of equations commonly suggested as affecting private consumption, investment, and savings were estimated. The data were taken from International Monetary Fund published statistics<sup>13</sup> and used the concept of a central government deficit as opposed to the whole public sector deficit. As such, we recognize that our work is not directly comparable with that of FitzGerald. We employed IMF data and the central government deficit for two reasons. First, since the IMF is so directly involved in Mexican stabilization programs, we decided their data were by and large the most appropriate for gauging the impacts of government deficits. Second, by using a standardized set of data, we hope that future comparisons can be made with the experiences of other developing countries.

As will be noted below, perhaps the most significant difference between our functional form and the form adopted by FitzGerald is that the latter excluded GDP as an independent variable. In our case, estimates are for the

1951-81 period, and were estimated by the least-squares technique utilizing a Cochrane-Orcutt estimation procedure to correct for possible serial correlation.

(a) *Changes in private consumption and the level of consumption*

Our estimates indicate that changes in consumption are determined largely by changes in GDP and increases in the consumer price index (CPI) (Table 1, equation 1). Changes in the government deficit were not statistically significant in determining changes in consumption when changes in GDP were included in the model (equation 2). When the deficit is regressed on changes in consumption without changes in GDP in the equation there appeared to be little direct effect of government financing requirements on consumption. The crowding out effect of consumption is absent. Instead, the impact of the deficit is more likely to be indirect — stimulating *increases* in consumption through the Keynesian multiplier process (equation 3).

The level of consumption is also largely a function of the level of GDP and changes in the CPI. Once again, there is no indication that consumption is reduced concomitantly with increases in government borrowing or increased credit to the government. In fact we found that consumption was negatively related to increases in current government revenue (equation 4). When government expenditures and changes in the CPI are regressed separately on personal consumption, the coefficients are negative and statistically significant. This suggests that while government expenditures increase income in Mexico, they may act as substitutes for private consumption. As the government has increased its role in the economy, especially in the 1970s, the private sector has accepted the provision of publicly provided goods and services by reducing their demand for privately produced substitutes.

(b) *Changes in savings and the level of savings*

Both changes in savings and the level of savings were closely related to changes in GDP and the level of GDP, respectively. Contrary to FitzGerald, we found that increases in savings were associated with *decreases* in the deficit — again if changes in GDP were included in the estimating equation (equation 5). Without this variable included, declines in the deficit had a negative impact on savings — a result in agreement with FitzGerald (equation 6). In addition

we found that increases in government expenditures reduced private savings. Inflation increased savings since it tended to reduce consumption.

With regard to the level of savings, the government deficit had a minor negative impact, whereas increases in the price level had a major positive impact. Government borrowing, as to be expected, was strongly related to the level of saving (equation 7). In sum then, the picture that develops from these results is one of little direct crowding out. Private savings seems to be undertaken primarily to finance investment — the orthodox view of savings. While not tested directly, there is some evidence to suggest that increased access to credit through the banking system stimulates savings and in turn private investment. The only crowding out seems to be the increased savings (decreased consumption) through the inflation effect of expansionary fiscal policy.

(c) *The level of investment*

As with consumption and savings, the level of investment appears largely to be determined by changes in GDP. In addition, increases in the price level reduce investment. Importantly, it does not seem that government financial actions have significantly crowded out investment. Government credit from the banking system is *positively* related to investment, as were increases in the deficit when changes in GDP were included in the estimating equation (equation 8). In addition, the deficit individually was positively related to private investment (equation 9). Both private and public investment were strongly correlated to each other which indicates the complementarity between government expenditures and private sector profitability. In general, government activities (both on the expenditure and financial side) do not appear to have crowded out investment, other than through the adverse effect of inflation diverting funds away from capital formation.

Table 2 compares the theoretical predictions of the three cases with the results which we obtained for the entire 1951-81 period.<sup>15</sup> In general, the results fail to prove or disprove any one of the major theories. The Keynesian multiplier process model performed fairly well while the FitzGerald variant (savings pays for the deficit while consumption declines) performed poorly. There is in fact only limited evidence for his thesis — savings actually increased with the government's revenue-expenditure gap ( $T-G$ ). There is some evidence for forced savings — a strong positive correlation existed between the

Table 1. Supporting regression equations†

| Equation number | Dependent variable‡ | Independent variables |                        |   |                          |   |                          | R <sup>2</sup> |                      |      |                      |      |
|-----------------|---------------------|-----------------------|------------------------|---|--------------------------|---|--------------------------|----------------|----------------------|------|----------------------|------|
| (1)             | ΔC                  | =                     | 1.93 ΔGDP<br>(11.2)*** | - | 16.5 ΔCPI<br>(-5.4)***   | + | 1.23 ΔMSDC<br>(3.9)***   | 0.92           |                      |      |                      |      |
| (2)             | ΔC                  | =                     | 0.58 ΔGDP<br>(40.7)*** | - | 0.13 ΔD<br>(-1.3)        |   |                          | 0.99           |                      |      |                      |      |
| (3)             | ΔC                  | =                     | -4.33 ΔD<br>(-19.9)*** |   |                          |   |                          | 0.93           |                      |      |                      |      |
| (4)             | C                   | =                     | 0.80 GDP<br>(9.2)***   | - | 2.19 ΔCPI<br>(-3.2)***   | + | 0.63 D<br>(1.86)*        | -              | 0.83 GT<br>(-2.3)**  | 0.99 |                      |      |
| (5)             | ΔS                  | =                     | 0.46 ΔGDP<br>(9.8)***  | - | 54.31 DUMEX<br>(-8.4)*** | - | 0.59 GX<br>(-2.9)***     | +              | 0.15 ΔD<br>(2.3)**   | 0.99 |                      |      |
| (6)             | ΔS                  | =                     | -1.78 ΔD<br>(-14.3)*** |   |                          |   |                          |                | 0.89                 |      |                      |      |
| (7)             | S                   | =                     | 0.15 GDP<br>(20.07)*** | + | 2.39 ΔWPI<br>(6.1)***    | - | 42.67 DUMEX<br>(-3.9)*** | +              | 0.37 GBT<br>(9.1)*** | -    | 0.75 GS<br>(-6.1)*** | 0.99 |
| (8)             | I                   | =                     | 0.32 ΔGDP<br>(6.0)***  | - | 1.92 ΔWPI<br>(-4.4)***   | + | 0.45 MSGC<br>(5.7)***    |                |                      |      | 0.99                 |      |
| (9)             | I                   | =                     | -3.44 ΔD<br>(-18.1)    |   |                          |   |                          |                |                      | 0.92 |                      |      |

†t-values in parentheses. \*indicates statistical significance at the 90% level of confidence, \*\*at the 95% level, and \*\*\*at the 99% level.

‡C = Consumption, GDP = Gross Domestic Product, CPI = Consumer Price Index, MSDC = Monetary System Domestic Credit, D = Tax Revenue - Government Spending, GT = Government Revenues, DUMEX = Dummy Variable (0 for 1951-76, 1 for 1977-81), GX = Government Expenditures, WPI = Wholesale Price Index, GBT = Government Borrowing, GS = Government Savings, MSGC = Monetary System Credit to the Government.

Table 2. Comparison of theoretical predictions and empirical results, conventional, monetarist and Keynesian crowding out, 1951-81, 1951-65, 1951-70, 1960-81 and 1965-81

| Theoretical predictions             | Empirical results |         |         |         |         |
|-------------------------------------|-------------------|---------|---------|---------|---------|
|                                     | 1951-81           | 1951-65 | 1951-70 | 1960-81 | 1965-81 |
| <b>A. Conventional crowding out</b> |                   |         |         |         |         |
| $\Delta D = I$                      | -                 | -       | -       | ?       | ?       |
| $\Delta D \neq \Delta B$            | -                 | -       | -       | -       | -       |
| $\Delta S \neq \Delta D$            | +                 | -       | -       | ?       | ?       |
| $\Delta S = \Delta GDP$             | +                 | ?       | +       | +       | +       |
| <b>B. Monetarist crowding out</b>   |                   |         |         |         |         |
| $\Delta D = \Delta B$               | +                 | +       | +       | +       | +       |
| $\Delta D \neq \Delta S$            | +                 | -       | -       | ?       | ?       |
| $\Delta D \neq I$                   | -                 | +       | +       | ?       | ?       |
| $\Delta B = \Delta GDP$             | +                 | -       | -       | ?       | ?       |
| <b>C. Keynesian crowding out</b>    |                   |         |         |         |         |
| $\Delta D = \Delta S$               | -                 | +       | +       | ?       | ?       |
| $\Delta D = \Delta C$               | -                 | +       | +       | ?       | ?       |
| $\Delta D \neq I$                   | -                 | +       | +       | ?       | ?       |
| $\Delta D \neq \Delta B$            | -                 | -       | -       | -       | -       |
| $\Delta S = \Delta GDP$             | +                 | ?       | +       | +       | +       |
| $\Delta C = \Delta GDP$             | +                 | +       | +       | +       | +       |
| $I = \Delta GDP$                    | +                 | -       | ?       | +       | +       |
| $\Delta B = \Delta GDP$             | ?                 | -       | +       | ?       | ?       |

Note: + indicates sign as predicted and coefficient statistically significant;  
 - indicates sign as opposite to predicted and coefficient statistically significant;  
 ? statistically insignificant result, or result depends on functional form or model.

wholesale price index and savings, on the one hand, and a negative correlation between inflation and consumption, on the other hand.

#### 4. ALTERNATIVE SUB-PERIODS

In an attempt to further clarify the impact of government fiscal policy on consumption, savings and investment, regression equations were estimated for four sub-periods: 1951-65, 1951-70, 1960-81, and 1965-81. The independent variables considered were changes in the fiscal position ( $T-G$ ) and changes in GDP. The theoretical predictions are compared with the empirical results for each period (Table 2).

The estimated equations indicate that between 1951-65 and 1951-70, changes in the deficit, when regressed separately or with changes in GDP, had the correct sign in line with FitzGerald. This pattern shifted in later periods with mixed results depending for the most part on whether the change in GDP was included in the estimating equation. With regard to consumption, increases in the surplus tended to increase

consumption in 1951-65 and 1951-70 (as with FitzGerald) but reduced private consumption in later periods. The results for private investment indicate that changes in GDP are clearly more important than changes in the government's fiscal position for all periods. If there is any impact, it is most likely to have been through the Keynesian accelerator process.

#### 5. SUMMARY AND CONCLUSIONS

By and large, the results which we obtained cast doubt on the validity of the FitzGerald thesis. This conclusion appears to hold for whatever period is examined. The functional form of the equations estimated by FitzGerald excluded GDP as an independent variable. In our opinion this biased the model against the more orthodox Keynesian model. As noted above, the results are very sensitive to the inclusion of GDP as an independent variable.

It appears that Mexico is typical of the Keynesian case. Increases in the deficit were accompanied by increases in consumption.

Apparently enough slack existed in the economy so that as deficit spending increased, the available resources were more fully utilized. There were subsequent increases in national income and consumption, i.e., the multiplier effect. Consumption was not crowded out.

The results also indicate that private investment is adversely affected by inflation (the latter presumably stemming from government deficits). In addition, investment is largely a function of overall economic growth and not the deficit *per se*. This result casts some doubt on the FitzGerald thesis concerning the strength of government deficits in stimulating private investment. If

his thesis was valid it was for an earlier period (1951–65) but many of the relationships found by FitzGerald appear to have disappeared or weakened between 1965 and 1981.

In general, the results for the later periods suggest, contrary to FitzGerald, that the government deficit may over time be weakening in its impact on expanding the GDP. If so, the impact of the deficit on investment and growth in Mexico may now be a net negative. The implication is that Mexico will not be able to overcome its current economic crisis until the government's fiscal position is under control.

#### NOTES

1. See for example Ofie (1979).
2. FitzGerald (1979; 1980).
3. Buitter (1977).
4. Reynolds (1978).
5. Summarized from FitzGerald (1979).
6. Spencer and Yohe (1970).
7. FitzGerald (1979), p. 7.
8. FitzGerald (1979), p. 8.
9. FitzGerald (1979), p. 11, parentheses added.
10. While the mainstream of the FitzGerald model is non-Keynesian, he did demonstrate for at least one variable and one time period (non-housing private investment net of depreciation at 1963 prices for 1960–76) the presence of a Keynesian relationship. He also confirmed the result using Hacienda data and model. See FitzGerald (1980), ff. 12, p. 412.
11. FitzGerald (1979), pp. 14–15.
12. One critic is Keating (1979).
13. International Monetary Fund (various issues).
14. Since  $D$  is defined as  $(T - G)$ , a negative  $D$  reflects an increase in the deficit (or a lower surplus).
15. Not all the regression equations have been reported in Table 1 for this period. None have been reported for the four sub-periods. They can be obtained from the authors on request.

#### REFERENCES

- Buitter, W., "Crowding out and the effectiveness of fiscal policy," *Journal of Public Economics*, Vol. 8, No. 3 (September 1977), pp. 309–310.
- FitzGerald, E. V. K., "The fiscal deficit and development finance: A note on the accumulation balance in Mexico," Working Paper No. 35 (Cambridge: Cambridge University Centre of Latin American Studies, 1979).
- FitzGerald, E. V. K., "A note on capital accumulation in Mexico: The budget deficit and investment in finance," *Development and Change*, Vol. 11, No. 3 (July 1980), pp. 391–417.
- International Monetary Fund, *International Financial Statistics* (Washington, DC: IMF, 1979).
- Keating, M., "The fiscal crisis in Mexico," Paper presented at the Annual Meetings of the Atlantic Economic Association (Washington, DC: 1979).
- Opie, R., *Mexican Industrialization and Petroleum* (Mexico City: ECANAL, 1979).
- Reynolds, C., "Why Mexico's stabilizing development was actually destabilizing (with some implications for the future)," *World Development*, Vol. 6, No. 7/8 (July/August 1978), pp. 1005–1018.
- Spencer, R., and William Yohe, "The crowding out of private expenditures by fiscal actions," in Federal Reserve Bank of St. Louis, *Review* (St. Louis: Federal Reserve Bank, October 1970).