Economic Growth Determinants and Foreign Direct Investment Causality in Canada

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Abstract

This study assesses the determinants of economic growth in Canada over time, and finds out if there is any time-series support for FDI-led growth hypothesis in Canada. To achieve these goals the study uses a model that is based on the postulates of de Mello. Employing a 33-year period of annual data, the model is estimated by using the Beach-Mackinnon technique, which corrects for autocorrelation. The estimation results suggest: (1) the major determinants of economic growth in Canada are total factor productivity, and domestic investment growth; (2) there is no time-series support for FDI-led growth hypothesis in Canada.

Key Words: International Business, International Trade, Foreign Direct Investment, Economic Growth, Canada

I. Introduction

The rapid expansion of globalization marked by enhanced economic integration and trade liberalization has given rise to ever expanding investment around the world. The immense growth in the computer and telecommunications industries, and lowering of transportation costs has made it possible for each state of production to be located in any place that proves to be more conducive to efficiency. This situation has significantly increased the inflow of foreign direct investment (FDI) in the world which has risen to the second highest level ever recorded in 2006. As a result, developed countries, developing countries, and transition economies all experienced growth in FDI inflows. However, among developed nations, Canada having recovered from its FDI inflow slump in the period 2002-2004, has continued to experience significant decline over its long-term global share of FDI (see Table 1 and Chart 1).

Given that the bulk of FDI in Canada is in the manufacturing sector, its share of FDI declined from 48.4 percent in 2000 to 35.5 percent in 2009. However, the mining and oil and gas extraction industries' share of FDI stock rose from 9 percent in 2000 to 19 per cent in 2009. The finance and insurance industries' share of FDI stock rose from 11.7 percent in 2000 to 13.1 percent in 2009. All other industries share of FDI stock rose from 30.5 percent in 2000 to 32.4 percent in 2009.[1] Today, the bulk of FDI stock in Canada is in the manufacturing sector, followed by mining and oil and gas extraction, finance and insurance, and services and retailing. However, the manufacturing sector's growth is diminishing, whereas FDI in mining and oil and gas extraction, services and retailing, and finance and insurance is growing fast.

There has been debate in Canada over what position the nation should take with regard to the regulation of FDI. Those in favor of increasing the promotion of FDI argue that the host country benefits from both the new capital as well as positive spillovers that the presence of the new capital produces (Morris, 2008, p. 4.)

According to Görg and Greenaway (2002), given that foreign firms investing in the domestic economy possess some type of technological advantage, local firms may benefit from positive spillovers through the following channels:

1. One possible channel is for the local firm to imitate the technology employed by the foreign firms. This may result in technological improvements for domestic firms by means of indirect transfers as they attempt to imitate the new methods into their own production process.
2. Another possible channel is skill acquisition where indigenous workers may benefit from the labor training that is provided by technologically advanced firms. This would enhance human capital in the host nation.

[1] Derived by the author from UNCTAD: Interactive Database on Foreign Direct Investment

3. A third possible channel is enhancedcompetition, resulting from the entry of advanced foreign firms which forces domestic firms to compete and therefore are thought to become more efficient.

Those against FDI argue that there will be future outflows of profits and a decrease in domestic control of assets (Morris, 2008, p. 4). Additionally, as Görg and Greenaway (2002, pp. 2-3) suggest, if the foreign firm causes a shift in demand from domestic firms towards itself, the competition spillover channel, mentioned above, could decrease the productivity of domestic firms. This happens because the entry of a foreign firm with lower marginal costs than domestic competitors could "force domestic firms to reduce production and move up their average cost curve". These arguments have led to a growing interest in examining the impact of FDI on economic growth and its determinants in Canada.

This study has two purposes: (1) to examine the determinants of economic growth in Canada over time, and (2) to see if there is any time-series support for FDI-led growth hypothesis in the Canada.

II. Survey of the Literature

The existing empirical research in the area of FDI reaches conflicting results with regard to its impact on the economy of the host country. Studies range from proposing that there is a significant relationship between FDI growth and GDP growth to suggesting that there is not a significant relationship between these two variables. In this section we review several of these studies and present their conflicting results. Cave (1974) was probably the first researcher to report empirical results about spillover effect stemming from the presence of foreign firms in domestic market. He used cross-sectional data for Canada and Australia and found evidence of positive spillovers affecting domestic firms. His work has since been extended from a number of researchers. Goberman (1979) used cross-sectional data and obtained estimate of labor productivity for domestically owned plants in Canada. He found that labor productivity differences across Canadian owned plants are positively related to capital intensity, plant scale economies, labor quality, average hours per employee, and foreign ownership. The differences in labor productivity are derived partly form spillover efficiency benefits associated with foreign investment.

Caves (1974) appears to be the first researcher who presents empirical study about spillover effect resulting from the operation of foreign firms in domestic market. Using cross-sectional data for Canada and Australia he examines the benefits of FDI in the manufacturing sectors of Canada and Australia and finds evidence of positive spillovers affecting domestic firms. He explains that FDI increases the productivity of host nations' resources by improving their allocation through competition among firms. FDI may also elevate the level of technology in domestic enterprise which compete with it, supply to it or buy from it. Caves also confirms that FDI accelerates the transfer of technology and innovation to domestic firms. For Canada, he finds that the correlation between the subsidiary shares and productivity levels of local manufacturing industries is unclear. However, for Australia, he learns that this correlation is unambiguous and positive.

Goberman (1979) uses cross-sectional data and obtains estimate of labor productivity for domestically owned plants in Canada. He finds that labor productivity differentials across Canadian-owned plants are positively correlated with capital intensity, plant scale economies, labor quality, average hours per employee, and foreign ownership. The differences in labor productivity are derived partly from spillover efficiency benefits emanating from FDI investment. Loo (1977) measures the impact of foreign direct investment on total investment in Canada by formulating an empirical model that accounts for both direct and indirect effects of FDI. He estimates direct effect first by fitting ordinary least squares to a single equation model, and then comparing it with the total effect obtained by fitting two-stage least squares to a simultaneous equation model. His analysis suggests that $1 of foreign investment generates an increase of roughly $1.40 of total investment via the direct effect;however, the total impact is probably notably smaller as a result of a negative indirect effect.

Morris (2008) develops a model and examines the effect of FDI on total factor productivity.The OLS regressions that include between two and five lags of the growth rate of FDI stock shows that same-period growth in FDI stock has a significant positive effect on economic growth. The other coefficients associated with FDI are mostly positive but are statistically insignificant. Maria Carkovic and Ross Levine (2002, 2004) examine the impact of FDI on economic growth. They use two different estimation methods in their analysis. First, they use OLS estimation to regress economic growth on inflows of FDI as a share of GDP and other control variables employing cross-sectionaldata. Their data is averaged over the 36 year period from 1960 to 1995 and include both wealthy and poor nations. Their analysis shows that "FDI does not enter these growth regressions significantly". Second, they use a Generalized Method of Moments (GMM) dynamic panel estimator with the data averaged over five-year periods. For this model, their analysis shows that the coefficient for FDI is positive and significant in three of the seven regressions.

Bruce A. Blonigen and Miao Grace Wang (2004) examine the effect of FDI on economic growth by using a growth accounting model that lets the coefficients for poor and wealthy nations differ. They use two different estimation methods in their analysis: USR estimation and random effects estimation. Their panel data covers the period from 1970 to1989 and is averaged over two ten-year periods. The variable for FDI is the sum of FDI flows during each of the two periods. Employing SUR estimation, first they a run a base regression by pooling wealthy and poor nations together. Their results show that coefficient associated with FDI is positive and insignificant. Second, they divide a sample of countries into two groups – developed countries (DCs) and less developed countries (LDCs). Their results indicate that for the LDCs, FDI had a significantly positive effect on economic growth when educational attainment reaches a certain level. For the DCs, however, a significant relationship between FDI and economic growth is not detected.

Employing random effect estimators leads to similar results. More specifically, the authors learn that for LDCs the effect is positive and significant after a certain educational attainment was achieved. For DCs the authors report that there is not a significant relationship between FDI and economic growth. Benhua Yang (2007) conducts a similar study but ends up with conflicting conclusions. This study also measures the effect of FDI on economic growth by regressing economic growth on FDI inflows as a percentage of GDP and other control variables. However, unlike the previous study, the author lets the coefficients for the explanatory variables differ for up to seven different regions. Using panel data, the study employs a large sample of nations and covers 1973 and 2002 time-period, with the data averaging over five year periods.

First, a base regression on all regions is estimated. The results show that the coefficient on the FDI variable is positive but statistically insignificant.

Second, the effect of FDI on economic growth is allowed to differ between OECD countries and developing countries and between OECD countries and six other regions. His results show that, unlike the previous study, the coefficient associated with FDI for the OECD countries is positive and significant.

Third, the data is divided into two fifteen-year periods to see if the effect has changed over time. For the OECD nations, he learns that the coefficient for the first period (1973-1987) is negative and insignificant, but the coefficient for the second period (1988-2002) is positive and significant.

Jong IlChoe (2003) employs a Granger causality test to find out if foreign direct investment promotes economic growth.The author uses a sample of 80 countries that includes both developed and developing countries. His data spans 1971-1995 and is averaged over five-year periods. To conduct his analysis, Choe uses two samples. The first sample includes the entire data. The second is formed by removing the outliers from the first sample. Given these two samples, Choe tests whether FDI Granger-causes economic growth as well as whether economic growth Granger-causes FDI. For the first sample, he finds that FDI does Granger-cause economic growth and that economic growth Granger-causes FDI. For the second sample, however, he finds that FDI does not Granger-cause economic growth and that economic growth does Granger-cause FDI. The author concludes that "causality seems to run in either direction, but the effects are more apparent from growth to FDI than from FDI to growth". (Choe 2003, p. 52)

Robert Lensink and Oliver Morrissey (2006) also examine the relationship between FDI and economic growth; however, they add another aspect to the analysis –volatility. Their analysis indicates that there is not a significant relationship beween FDI and economic growth.

As the review of empirical studies indicates, most of the existing researches in the area of FDI are very limited in their scope by examining only the impact of FDI either on economic growth or on one of the variables that affect economic growth. This is especially true in the case of Canada.

This research differs from the existing empirical studies by taking a boarder approach, examining the causal relationship between economic growth and its determinants in Canada.

III. Theoretical Considerations

Neoclassicists assumed that capital is a function of the highest risk adjusted rate of return. This assumption provided the main theoretical framework that was used by postwar neoclassical theory in the analysis of FDI. One of the main inferences of the neoclassical growth theory is that all nations eventually will approach the same level of productivity. The lack of evidence that this might take place sparked the development of "new growth theories" (see Grossman and Helpman, 1991). One of the main features of these new theories is to make technology as an endogenous variable. Additionally, according to new theories, technology is considered to have both "private good" characteristics and "public good" characteristics (Wakelin, 1997). This connotes that the gains of innovations can be partially appropriated.

Assuming that technological diffusion occurs more easily within a nation than between nations, a technological gap between nations persists. In another words, no nation can completely depend on "imitation" to approach the technological frontier (Lundvall, 1992). The traditional neo-classical growth models postulate that long-run economic growth arises from both technological progress and labor force growth, which are both exogenously determined. In these models, FDI is considered to only have a short-run effect on the growth of output. However, the recent acceptance of endogenous growth theory has promoted research into channels through which FDI can be expected to encourage economic growth in the long-run (Grossman and Helpman, 1991; Barro and Sala-i-Martin, 1995). This has led to the prevailing view that multinational corporations (MNCs) can complement the local industry and stimulates growth and welfare in the host nations.

The merit of endogenous growth models is the assumption that long-run growth is not affected by technological changes alone, but also by institutional and nation-specific factors. The host country's economic environment portrayed by its rate of economic growth, trade policy, political stability, legislation, domestic market size, and balance of payments constraints, can have significant effect on FDI inflows. (Dunning, 1993, Caves, 1996, de Mello, 1996, 1997, 1999). Thus, a host country government can stimulate economic growth by devising policies that are more conducive to FDI. Additionally, FDI may intensify competition, altering the structure of imperfectly competitive industries. This, in turn, may generate demand for local output, stimulating supply industries.

In various theoretical frameworks, a lot of attention has been paid to technological differences as the determinants of international competitiveness and growth of advanced nations. Modern growth theories accentuate the significance of innovative endeavors in the context of imperfect competition models of trade and growth (Grossman and Helpman, 1991). Dosi and his colleagues introduced neotechnology or evolutionary approaches to technological change and growth in 1990 (Dosi, G., Pavitt, K., and Soete, 1990). In their theoretical framework, absolute gaps in technology are perceived to be more significant than endowments-based comparative advantage in exemplifying trade flow and growth. Traditionally, given the assumption of perfect competition, the neoclassical trade and growth theory considers FDI as a form of international capital movement. Accordingly, international capital movements, and hence FDI, are explained in terms of *differential profit*, or *differential interest rates* found in different countries. However, following the earlier Hymer insights into the determinants of FDI, the inadequacy of the assumption of perfect competition in the analysis of FDI is well established. Today, given the assumption of imperfect competition, the eclectic theory of Dunning implies that firm-specific advantages and their interaction with location and internationalization advantages must also be incorporated into the formulation of international trade and growth theory (Dunning 1993b; Caves 1996).

FDI affects the economy of a host country in a variety of ways. First, it brings with it the needed capital, and modern technology that enhances economic growth in the recipient country (Blomstrom et al., 1996; Bransztein et al., 1988; Dunning 1993). Second, through managerial and labor training it augments the knowledge of the host country, stimulating economic growth (de Mello, 1996,1997,1999). Third, it promotes technological upgrading, in the case of start-up, marketing, and licensing arrangements (de Mello and Sinclair, 1995, Markusen and Venables 1999). Thus, FDI can be considered as an instrument in promoting industrial development and technological upgrading. As such, FDI may enhance productivity and technological progress in the host country, contributing to its economic growth.

Not only does FDI affect the economy of a host country, the economy of the host country has also some bearing on FDI. More specifically, the absorptive capacity of the host country impacts the volume and type of FDI that flows into that country. The absorptive capacity of a host country, in turn, depends on the country's trade regime, legislation and political stability. It also hinges upon scale factors, such as balance of payments constraints, and size of domestic market for the goods produced through FDI. The consideration of such nation-specific factors allows for examination of such FDI-induced externalities or "spillovers."(de Mello, 1999). The approaches taken in empirical studies in the area of FDI-led growth can be divided into two groups. The first group uses cross-sectional data. The second group applies time series data. Unfortunately, both of these approaches have met with problems.

Potential problems with cross-sectional analysis stem from the assumption that nations share common characteristics. However, in practice such an assumption is not valid due to the fact that nations differ not only in their political, economic, and institutional structure, but also in their response to external shocks. In a nut shell, estimates from cross sectional data are misleading because they do not take into considerations nation-specific features. Potential problems with time-series analysis have been noted by a number of researchers. (Bewley and Yang 1996; Blomstrom et al., 1996; Giles and Mirza, 1998; Giles and William, 1999;

Toda, 1994; Toda and Yammoto, 1998), and is related to the inappropriateness of applying F-test statistics to causality tests. It is now well established that the F-test statistics is not valid if time series are integrated (Toda and Yamamoto, 1995; Zapata and Rambaldi, 1997) and causality tests are sensitive to model selection (Giles and Williams, 1999).

This article examines the causal relationship between economic growth and its determinants by examining unit root properties and the new Granger non-causality tests.

IV. The Model

The theoretical model employed in this study is based on the postulates of de Mello (1996, 1997, and 1999), and was set forth in Ericsson and Irandoust (2001). Consider the following production function, depicting an economy that produces a single consumption good:

$$(1) \quad Y = Ef(K, L, FDI)$$

where Y is real GDP, E represents the state of economic environment, K stands for physical capital, L depicts labor, and FDI symbolizes foreign direct investment. In this formulation, E, the state of economic environment encompasses different control and policy variables that affect the economy's productivity level.

Assume that production is performed in the recipient country by combining physical capital and labor. Further suppose that the physical capital is composed of domestic capital (K_d) and foreign-owned capital (K_f) that is generated from FDI.

Let H stand for human capital in the recipient nation. Given a Cobb-Douglass production function, equation (1) can be represented as:

$$(2) \quad Y = Ef(K_d, H) = EK_d^{\beta} H^{1-\beta}$$

where, β is the share of domestic physical capital. To ensure the existence of diminishing returns to domestic capital, assume that $\beta < 1$. Assume that H depends on domestic-owned and foreign-owned capital, and is represented by a Cobb-Douglass function of the following type:

$$(3) \quad H = (K_d K_f^{\lambda})^{\eta}$$

where, λ and η are marginal and the intertemporalelasticities of substitution between foreign and domestically-owned capital stock, respectively. If we merge equation (2) and (3) we get the following equation:

$$(4) \quad Y = EK_d^{\beta+\eta(1-\beta)} K_f^{\lambda\eta(1-\beta)}$$

Taking logarithms of equation (4), we get:

$$(5) \quad \ln Y = \ln E + [\beta + \eta(1-\beta)] \ln K_d + \lambda\eta(1-\beta) \ln K_f$$

Taking time derivatives of equation (5) we get:

$$(6) \quad \frac{1}{Y}\frac{dY}{dt} = \frac{1}{E}\frac{dE}{dt} + [\beta + \eta(1-\beta)]\frac{1}{K_d}\frac{dK_d}{dt} + \lambda\eta(1-\beta)\frac{1}{K_f}\frac{dK_f}{dt}$$

or

$$(7) \quad G_Y = G_{TFP} + [\beta + \eta(1-\beta)]G_{DI} + [\lambda\eta(1-\beta)]G_{FDI}$$

where, G_Y represents the growth rate of GDP, G_{TFP} stands for the growth rate of TFP, G_{DI} is the growth rate of DI, and G_{FDI} represents the growth rate of FDI.

V. Data and Estimation Results

The study employs annual data and spans 1976 -2008 period. This provides us with a 33-year observation on all of the variables included in the model. The raw data for all the variables were derived from the website of *Statistics Canada*. Given the raw data, all of the variables were converted to real values and were used to calculate the growth rate for each variable under consideration.

Equation 7 was estimated by using the Beach Mackinnon technique which corrects for the autocorrelation. The estimation results are presented in Table 2. The value of 0.5577 reported for R^2 suggests that the model has significant explanatory power. As the table indicates, all the variables have the expected signs. More specifically, the estimation results suggest the following:

a) G_{TFP} is positive and significant, suggesting that TFP growth has a significant impact on the rate of growth of Y.
b) GDI is positive and highly significant, suggesting that DI growth has a significant impact on the rate of growth of Y.
c) FDI is positive and insignificant, suggesting that FDI growth has no significant impact on the rate of growth of Y.

Having estimated equation 7, the next task was to determine if there is any time-series support for FDI-led growth hypothesis in Canada, more specifically to answer the following questions:

1. Does any causality exist between G_Y and G_{FDI}?
2. Does any causality exist between G_{FDI} and G_{TFP}?

To answer these questions, a Granger non-causality test is performed in each case. To examine the direction of causation between G_Y and G_{FDI}, the following unrestricted models are set up:

$$(8) \quad G_Y^t = \sum_{i=1}^{6} a_i G_Y^{t-i} + \sum_{J=1}^{6} b_j G_{TFP}^{t-J} + \sum_{K=1}^{6} c_k G_{DI}^{t-k} + \sum_{d=1}^{6} d_l G_{FDI}^{t-l} + \varepsilon_t$$

$$(9) \quad G_{FDI}^t = \sum_{i=1}^{6} a_i G_Y^{t-i} + \sum_{J=1}^{6} b_j G_{TFP}^{t-J} + \sum_{K=1}^{6} c_k G_{DI}^{t-k} + \sum_{d=1}^{6} d_l G_{FDI}^{t-l} + \varepsilon_t$$

where, t stands for time, ξ_t and is white noise.

To examine the direction of causation between G_{FDI} and G_{TFP} the following unrestricted models are set up:

$$(10) \quad G_{FDI}^t = \sum_{i=1}^{6} a_i G_Y^{t-i} + \sum_{J=1}^{6} b_j G_{TFP}^{t-J} + \sum_{K=1}^{6} c_k G_{DI}^{t-k} + \sum_{d=1}^{6} d_l G_{FDI}^{t-l} + \varepsilon_t$$

$$(11) \quad G_{TFP}^t = \sum_{i=1}^{6} a_i G_Y^{t-i} + \sum_{J=1}^{6} b_j G_{TFP}^{t-J} + \sum_{K=1}^{6} c_k G_{DI}^{t-k} + \sum_{d=1}^{6} d_l G_{FDI}^{t-l} + \varepsilon_t$$

The estimation results, as shown in Table 3, suggest the following:

1. The null hypothesis that G_{FDI} does not Granger causes G_Y. cannot be rejected at 5 percent significance level. This means that the growth of FDI does not have any significant impact on Canada's economic growth.
2. The null hypothesis that G_Y does not Granger causes G_{FDI} cannot be rejected at 5 percent level of significance. This implies that Canada's economic growth does not have a significant impact on the growth of FDI.
3. The null hypothesis that G_{FDI} does not Granger causes G_{TFP} cannot be rejected at 5 percent level of significance. This means that the growth of FDI does not have any significant impact on the growth of TFP in Canada.
4. The null hypothesis that G_{TFP} does not Granger causes G_{FDI} cannot be rejected at 5 percent level of significance. This implies that the growth of TFP has no significant impact on the growth of FDI in Canada.

VI. Concluding Remarks

The purpose of this study was to examine the determinants of economic growth in Canada and to see if there is any time-series support of FDI-led growth hypothesis in this nation. To achieve these goals the study used a model that is based on postulates of de Mello. Employing a 33-year annual data, the model was estimated by using the Beach Mackinnon technique which corrects for autocorrelation. The estimation results suggest the following conclusions:

1. The major determinants of economic growth in Canada are total factor productivity, and domestic investment growth.
2. There is no causal relationship between foreign direct investment growth and economic growth in either direction.
3. There is no causal relationship between foreign direct investment growth and total factor productivity growth in either direction.

In summary, the findings of this study suggest that foreign direct investment growth has no significant impact on Canada's economic growth. Additionally, foreign direct investment has no significant impact on the total factor productivity in Canada. In his study, Globerman (1979) finds evidence of the existence of positive spillover effect from FDI in the manufacturing sector of the Canadian economy. In a more recent study, Alfaro (2003) uses a sample of 47 countries, including Canada, and employs cross-sectional analysis for the period 1981-1999 to examine the impact of FDI on growth across economic sectors.

Her analysis suggests that although the impact of FDI on growth in manufacturing sector tends to be positive, its effect on the primary sector tends to be negative. Additionally, she concludes that the impact of FDI on service sector is ambiguous. Given the fact that only about one-third of FDI in Canada is in manufacturing sector and the rest is in mainly in the service industry and extractive industry, it seems that the positive impact of FDI on growth of the manufacturing sector could have been nullified by its negative impact on the other sectors. This is alarming for the Canadian policy maker since the manufacturing sector's share of FDI has continued to diminish over time, whereas FDI in mining and oil and gas extraction, services and retailing, and finance and insurance is growing fast. This suggests that Canada should pursue FDI policies that target FDI in the manufacturing sector and address problems that discourage FDI inflow in the manufacturing sector. Such problems encompass those related to business tax environment, excessive FDI regulations, and weak labor productivity. Recognizing these hurdles, in their report, Sharpe and Banerjee (2008) identify a number of areas that could potentially improve Canada's attractiveness to FDI. These variables include a more comprehensive tax system, better infrastructure, improvement in human capital, and changes in FDI regulation . It remains to be seen if such improvements enhance Canada's FDI inflow and if such an increase leads to a higher economic growth in Canada. This calls for further research in the future.

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Table 1: FDI Inflows in G7 Countries, 2000-20009 (millions of USD)

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Canada	66795.05	27663.42	22155.46	7482.25	-445.04	25691.56	59761.45	108414.49	55269.72	18657.16
France	43252.26	50476.82	49034.97	42498.37	32560.39	84948.76	71848.02	96221.38	62256.56	59628.28
Germany	198276.51	26414.072	53523	32367.8	-10188.8	47438.91	55626.11	76543.186	24434.63	35606.4
Italy	13374.79	14870.56	14545.20	16414.72	16814.74	19974.63	39238.98	40201.85	17031.26	30538.21
Japan	8322.74	6242.95	9240.12	6324.34	7815.66	2775.41	-6506.50	22549.55	24425.55	11938.64
United Kingdom	118764.29	52623.24	24029.45	16777.91	55963.24	176006.09	156185.89	186380.99	91487.34	45675.54
United States	313997.19	159477.64	74500.56	53140.50	135849.80	104809.31	237136.00	265957.00	324560.00	129883.00

Source: UNCTAD: Interactive Database on Foreign Direct Investment

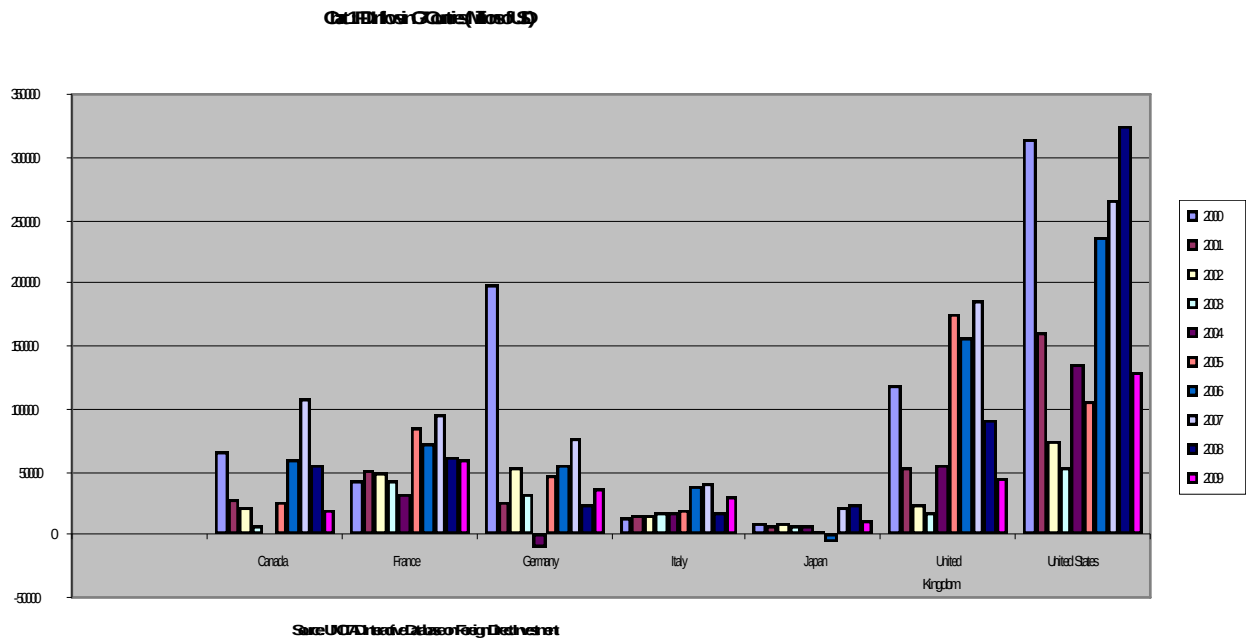

Table 2: **Determinants of Economic Growth**

Variables	Coefficient	Standard Error	T-Ratio	P- value
TFP	0.32310	0.1480	2.183	0.029
DI	0.15237	0. 02669	5.710	0.000
FDI	0.00021374	0.0002250	0.9499	0.342

Table 3: Granger non-causality Test

Ho	Wald Chi-Square Statistics	P-Value
FDI does not Granger-cause growth	1.6627163	0.94769
Growth does not Granger-cause FDI	2.2781323	0.89243
FDI does not Granger-cause TFP	5.6147537	0.46770
TFP does not Granger-cause FDI	3.3609777	0.76236