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An Empirical Investigation of Capital Flight from Zimbabwe

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Title **: An Empirical Investigation of Capital Flight from Zimbabwe**

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Abstract

This paper investigates the causes of capital flight from Zimbabwe for the period 1980 to 2005. The results show external debt, foreign direct investment inflows, and foreign reserves to be the major causers of capital flight. Economic growth is negatively correlated with capital flight. The calculations estimate Zimbabwean capital flight at US $10.1 billion over the 1980 to 2005 period, with capital flight-to-GDP ratio roughly 5.4 per cent. In other words, for every US dollar of GDP accumulated by Zimbabwe annual from 1980 to 2005, private Zimbabwean residents accumulated (US) 5.4 cents of external assets annually during the same period.

1 INTRODUCTION

Although capital flight has been a problem as early as the seventeenth century in Europe and in the early twentieth century in Europe and United States of America (see, e.g., Kindleberger, 1987), the subject matter in the contemporary world latter gained momentum again since the early 1980s. This renewed interest in the study of flight capital flight is a result of at least two reasons: the important role that external assets stored away in foreign lands can play if left in the domestic economy, and the dwindling resources from international creditors in the past two to three decades (Ajayi, 1992, 1995). The paradox and severity of this problem is that in most developing countries which are riddled with heavy debt burdens, foreign exchange shortages, transient and chronic poverty, capital flight amounts to a substantial proportion of the very resources which are essential for financing economic growth and reversing the perverse economic trends (Hermes et al, 2002).

The long-term effects arising from lost resources due to capital flight are many. Firstly, capital outflow exacerbates the capital scarcity problem, that is, it compounds the lack of financial resources and infrastructure[1]. Thus, the availability of resources for domestic investment is reduced, causing a decline in capital formation, which in turn mean a reduction in the country's current and future developmental prospects. Similarly, it

[1] Infrastructure refers to both physical (e.g., machines and transportation, communication, utilities) as well as social (e.g., education, health and public services, legal framework and institutions of financial and labour markets) capital. A country with a low level of infrastructural development can thus be called capital scarce. It is constrained in attracting capital or will be unable to fully exploit the potential of additional resources; hence it will likely remain a capital scarce country.

restricts the capacity and ability of the affected country to mobilize its domestic assets and access foreign resources. Consequently, capital flight retards economic growth and development and contributes to underdevelopment (Beja, Jr. 2006). The fact that income and wealth generated are outside the purview of relevant authorities means that they can not be taxed and the end result will be a reduction in government revenue as well as its debt servicing capacity. Evidence also shows that capital flight normally exacerbates balance of payment (BOPs) crisis during the time capital outflows are takes place. At the same time capital flight may also augment the foreign finance problems of heavily indebted poor countries if potential creditors and donors are de-motivated give further assistance as a result of capital outflows (Ajayi, 1995).

Literature enumerates multitudes of reasons as possible causes of capital flight. These causes are broadly dichotomized into economic (both domestic macroeconomic conditions and favourable foreign economic incentives) and political reasons. The major causes therefore includes large public sector deficits, exchange rate misalignment, financial repression, accelerating inflation, slowing economic growth, capital availability (revolving door), political instability, overvalued exchange rate, and rising taxes (Pastor, 1989; Hermes and Lensink, 1992; and Ajayi, 1995)

Given the historical development of capital flight in the contemporary world beginning the 1980s, most studies on the subject matter until the early 1990s treated “capital flight as an exclusively Latin America problem” (Hermes and Lensink, 1992, p. 1). Nevertheless, since the mid-1990s, research on capital flight extended even to the African

continent. However, among the African countries that were done, Zimbabwe has not been extensively studied especially using recent data. For instance, in their first study Nidkumana and Boyce (2001, p. 13), Zimbabwe was not included for the sole reason that it was not severely indebted, while in their second study (Ndikumana and Boyce, 2002) covering 30 sub-Saharan countries for the period 1970 to 1996, the country was however included. Nevertheless, the fact that a lot of changes in the country took place since then, it becomes imperative for another empirical study. To this end, the research therefore seeks to add to the current literature on capital flight in the African context, with specific references to Zimbabwe using recent data.

The study is also motivated by the fact that the country has, of late experienced massive capital flight, especially since 1997 following a multitude of reasons ranging from macroeconomic instability (higher inflation, unsustainable government budget deficits and foreign debt) to political induced uncertainties (polarized political environment since the coming in of resilient opposition political party in September 1999, the controversial land reform since February 2000, and the government's intentions to compulsorily have nearly 50 percent share ownership in all mining since 2006).

In this economic study of capital flight, the approach adopted is three-fold. The first is a discussion at the definitional/conceptual level, the rationale and the basis for classifying domestic outflows as capital flight instead of normal flows. The second approach involves a discussion and analyses of the conduits and economic determinants of capital flight. The third part is strictly empirical and deals with econometric estimation of the

determinants of capital flight from Zimbabwe, taking cognizance of the country-specific factors.

1.2 Objectives of the study

In summary, the study focuses on the following:

1. Examine the size of capital flight from Zimbabwe for the period 1980-2005 using the residual method.
2. Determinants of capital flight analyzed within the context of economic, socio-economic and other factors.
3. An econometric investigation of the determinants of capital flight.
4. Finally, provide policy conclusions drawn from the findings of the study.

The study's outline is as follows. Section 2 is devoted to the various definitions of capital flight. The alterative measures of capital flight are discussed in section 3 with one measure being selected and the amount of capital flight estimated using the selected measure. The determinants (causes) of capital flight and the empirical analysis are the themes of sections 4 and 5 respectively. Section 6 provides summary findings and policy conclusions.

2 DEFINITION OF CAPITAL FLIGHT

It is important to note that there is no generally accepted definition of capital flight, even though its activities have been identified for periods dating back to the seventeenth

century. As Harrigan et al (2007) puts it, the variety of capital flight definitions (Cuddington 1986; World Bank 1985; Morgan Guaranty Trust Company 1986; Cline 1987; Dooley 1986; Lessard and Williamson 1987) makes it difficult to separate normal capital outflows and flight capital outflows[2]. Also these variety definitions mean that estimates of capital flight using different definitions yields different results.

Before presenting the various definitions, it is paramount to provide a brief rationale of the basis that has been used in literature to try (although the distinction is still controversial) and dichotomize domestic capital outflows as either capital flight or normal flows. Generally, capital from developing (poor) countries has been viewed as a symptom of a 'sick society'. Some economists consider capital flight as a result of heavily indebted countries' inability to recover from debt problems. Other views it as a derogatory description of natural, economically rational responses to the portfolio choices that have confronted wealthy residents of some debtor poor countries (Lessard and Williamson, 1987, p 201). As has been alluded to earlier, this controversy surrounding the term is partially due to absence of a precise and universally accepted definition and partly because of the way the term has been asymmetrically applied between developed and developing countries. As a result of that some economists refer to capital outflows from developed countries as foreign direct investment while the same activity is referred

[2] Capital outflows occur as domestic residents engage in international transactions. These transactions lead domestic residents (banking and non-banking private sectors as well as public sector) to acquire financial claims against nonresidents which may include reported as well as unreported foreign assets such as financial assets, real estate and foreign direct investment. These transactions consist of non-flight and flight capital outflows.

to as capital flight when it is undertaken by residents of a developing country (Ajayi, 1995).

The above dichotomy is premised on the belief that investors from the developed countries are responding to better opportunities abroad, while investors from developing countries are assumed to be escaping the perceived high risk (for instance, expropriation), which is a characteristic of some developing countries. In general, however, it is believed that all investors (both from developed and developing countries) are rational and will thus base their decisions on the relative returns and risks of investment at home and abroad.

Another subtle distinction being made in literature is between legal and illegal transactions as a means to try and distinguish between capital flight and normal capital outflow. Given the fact that illegal transactions by virtue of their activity are normally not reported to compliers of balance of payments (BOPs) statistics, it therefore becomes difficult to know the extent to which they constitute capital flight. Walter (1987) defines capital flight as 'capital which flees' involving international asset redeployments or portfolio adjustments due to significant perceived deterioration in risk–return profiles associated with assets located in a particular country. Although the legality or illegality of the activity might be debatable, the key issue is that there is a conflict between the objectives of asset holders and society[3] (Harrigan, 2007). Alternately, capital outflows in response to economic or political crises are considered as capital flight.

[3] As discussed by Cuddington (1986), there are several reasons why capital movements might reduce domestic social welfare: (1) hot-money flows may destabilize financial markets; (2) social returns on

Cuddington (1986,p.2) refers to capital flight as short-term capital outflows involving hot money that response to political or financial crises, burdensome taxes, a prospective tightening of capital controls or a major domestic currency devaluation as well as actual or developing hyperinflation. On the other hand, Morgan Guaranty Trust Company (1986, p. 13) defines capital flight to constitute the reported and unreported acquisition of foreign assets by the non-bank private sector and elements of the public sector.

Deppler and Williamson (1987) considers that capital flight to be motivated by residents' fears of capital loss which tend to arise from risks of expropriation, debt repudiation or exchange rate depreciation, and from market distortions such as capital control, taxation and financial repression that would reduce the value of an asset as compared with its value if invested abroad. Conversely they also stressed that the non-flight capital outflows are generally not motivated by the intention to avoid large losses, but are prompted by attempts at maximizing returns through international portfolio diversification. Thus in their definition, for an outflow to be categorized as capital flight, the transfer of capital must be a response to losses and risks that are considered to be 'large' in relation to capital deployed.

In Khan and Haque (1985) defined capital flight in terms of domestic and foreign investors' response to an asymmetric risk of expropriation. Assuming that there is no cost related to foreign investment, a two-way capital flow is observed where domestic

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domestic projects may exceed private domestic returns; (3) increases in a country's gross borrowing needs due to capital flight might raise the marginal cost of foreign debt; and (4) capital might never return resulting in lower domestic investment and lower tax base.

investors invest abroad in order to avoid higher risk of expropriation while using foreign funds to finance domestic investment.

The above survey of literature on capital flight testifies to the fact that there are different views amongst economists regarding the concept and definition of capital flight. Nevertheless, it can be generally agreed that capital flight refers to capital that is running away from the domestic financial market in order to avoid losses and is in conflict with the interests, goals and objectives of the domestic society (Harrigan, 2007). To this end, this paper's working definition interprets capital flight as consisting of private capital outflows of any kind motivated by the residents' (of any country) desire to reduce the actual and potential level of government control (including risk of expropriation) over such capital, as well to acquire foreign assets.

To summaries the various thoughts on capital flight, Table 1 presents taxonomy of factors explaining international capital flows utilized by Lessard and Williamson (1987). Upper left quadrant of the table identifies various factors based on differences in economic returns across countries. The upper right quadrant constitutes those additional factors that deal with the two-way flows-'normal' portfolio diversification. Of important to this study is the fact that most of the theoretical and empirical studies of capital flight place emphasis on the lower left and right quadrants. The factors emphasized are those that create a 'wedge between economic and financial returns' regardless of 'whether they operate across the board or asymmetrically among residents or nonresidents' (Lessard and Williamson, 1987 p.2 17).

To this end, it can be argued that normal capital outflows are the ones that take place in order to maximize economic returns and opportunities between countries. Normal portfolio diversification takes place on the basis of differentials in economic returns. Capital flight on the other hand as seen from this analysis is that subset of capital outflows that are propelled by source country policies (Lessard and Williamson 1987, p. 217.)

Table 1: Taxonomy of factors explaining international capital flows

	One-way flows	**Two-way flows**
Economic risks and returns	Natural resources endowments Terms of trade Technological changes Demographic shifts General economic managements	Differences in absolute riskiness of economies Low correlation of risky outcome across country Differences in investor risk preferences
Financial risks and returns	Taxes (deviations form world levels) Inflation Default on government obligations Devaluation Financial repression Taxes on financial intermediation Political instability, potential	Differences in taxes and their incidence between residents and non-residents Differences in nature and incidence of country Asymmetric application of guarantees Different interest ceilings for residents ad non-residents

	confiscation	Different access to foreign exchange denomination claims.

Source: Lessard and Williamson, 1987, p. 216

3 MEASUREMENT OF CAPITAL FLIGHT

In as much as there are a plethora of definitions of capital flight, the same is true with regards to its measurement. As such literature on the subject matter is abounding with several capital flight measures. Not surprisingly, this leads to differences in capital flight estimates for the same country. Some authors (e.g., Harrigan et al, 2007) dichotomize between direct[4] and indirect[5] approaches to the measurement of capital flight. The direct approach chooses certain variables that constitute capital flight and attains data directly for the variables. The indirect approach measures capital flight indirectly using a residual of some other variables. In general the indirect measure defines capital flight more broadly than the direct measure[6].

In general, the following measures of capital flight can be distinguished in the literature (Claessens and Naudé 1993: 2-9): (i) the residual (or broad) method; (ii) the Morgan Guaranty; (iii) the Dooley method; (iv) the hot money method; (v) the trade misinvoicing

[4] Cuddington (1986), Arellano and Ramos (1987) and Bank of England (1989) employed the direct approach of measuring capital flight.

[5] The indirect approach was used by World Bank (1985). Morgan Guaranty Trust Company (1986) and Cline (1987) put forward a variation of the World Bank's indirect measure.

6 Cumby and Levich (1987) concluded that significant differences in results of capital flight studies may be attributed to differences in data used as well as differences in the definition and measurement of capital flight adopted by various researchers.

method; and (vi) the asset method. Below, we will briefly describe these different methods of measurement.

i. Residual Method

The World Bank's (1985) broad approach measures capital flight indirectly by comparing the sources of capital inflows (i.e., net increases in external debt and the net inflow of foreign investment) with the uses of these inflows (i.e., the current account deficit and additions to foreign reserves).

Algebraically, this method expresses capital flight as follows:

$$KF_r = \Delta ED + FDI - CAD - \Delta FR \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where KF_r is capital flight according to the residual method, Δ denotes change, *ED* is stock of gross external debt reported in the World Bank or IMF data, *FDI* is the net foreign investment inflows, *CAD* is the current account deficit/surplus and *FR* is the stock of official foreign reserves.

This broadest definition of capital flight has the advantage of that it incorporates all the reported as well as unreported build-up of foreign assets for both public and private sectors (World Bank 1985; Erbe 1985) and thus would seem to be appropriate if one thinks that most of the funds used for capital flight would have been utilized for more productive and beneficial domestic investment activities. This definition therefore

postulates that foreign asset increase is mostly associated with national disutility due to capital flight.

ii. The Morgan Guaranty Method

Morgan Guaranty (1986) takes into account an additional item, i.e. the change in the short-term foreign assets of the domestic banking system (ΔB). This modification is introduced to focus on non-bank capital flight. This method therefore implies that the banking system is not involved in capital flight. Thus, capital flight according to the Morgan Guaranty variant of the residual method (KF_m) can be calculated as:

$KF_m = \Delta ED + FI – CAD – \Delta FR – \Delta B$ ………………………………(2)

iii. The Dooley method

This method aims at distinguishing normal from abnormal or illegal capital flows. Dooley (1986) sees capital flight all capital outflows based on the desire to place wealth beyond the control of the domestic authorities. In this scenario, capital flight outflows refer to the increase in that part of the foreign stock that does not yield a recorded investment income.

Following Hermes et al (2002, p. 2), the Dooley method of measuring capital flight can be derived as follows:

$$TKO = FB + FDI – CAD – \Delta FR – EO – \Delta WBIMF \quad \text{……..(3)}$$

where *TKO* is total capital outflows, *FB* is foreign borrowing as reported in the balance of payments statistics, *EO* is net errors and omissions (debit entry), and *WBIMF* is the difference between the change in the stock of external debt reported by the World Bank and foreign borrowing reported in the balance of payments statistics published by the IMF.

The stock of external assets corresponding to reported interest earnings is:

$$ES = INTEAR / r_{us} \text{…….(4)}$$

where *ES* is external assets, r_{us} is the US deposit rate (assumed to be a representative international market interest rate), and *INTEAR* is reported interest earnings. Capital flight according to the Dooley method is then measured as:

$$KF_d = TKO – \Delta ES \text{…….(5)}$$

iv. The hot money method

Cuddington's (1986) narrow (or Balance of Payments) measure assumes that the typical meaning of capital flight is the running away of short-term capital rather than all private sector acquisition of external claims. This method proposes that capital flight goes

unrecorded due to the illegal nature of these capital movements. It is defined as the sum of net short-term capital outflows of the non-bank private sector plus recorded errors and omissions (statistical discrepancy) in the balance of payment statistics. Cuddington's capital flight is calculated by adding the errors and omissions to selected short-term capital items and can be written as:

$KF_h = SKONB + EO$……..(6)

where *SKONB is* short-term capital outflows by the non-bank public; *EO* are errors and omissions, representing unrecorded capital outflow.

v. The trade misinvoicing method

Capital flight under this methodology is determined by comparing trade data from both the importing and exporting country. The assumption is that importers are assumed to be involved in capital flight when they report higher values of imported goods as compared to the reported value of the same goods by exporters. In turn, exporters are involved in capital flight when they report lower values of exported goods as compared to the reported value of the same goods by importers. According to Hermes et al (2002) proponents of this measure stress the fact that abnormal capital outflows of residents may be included in export underinvoicing and/or import overinvoicing.

vi. The asset method

Some authors take the total stock of assets of non-bank residents held at foreign banks as a measure of capital flight. This is the so-called asset method (Hermes and Lensink 1992; Collier et al. 2001). This method is considered to be a short-cut measure of capital flight. This measure may be seen as an indication of the minimum amount of assets held abroad, since residents may hold their assets in other forms next to bank accounts, for example, in foreign equity holdings (Hermes et al 2002).

Given the fact that most empirical studies favoured the residual method this study will from henceforth analysis capital flight from Zimbabwe using the residual method.

3.2 The magnitude of capital flight

This section estimates the magnitude of capital flight from Zimbabwe for the period 1980-2005. As has been pointed above, the estimates are based on the residual measure: change in debt + net foreign direct investment inflow —(current account deficit + change in reserves). In terms of interpretation, positive KF_r means capital flight while negative KF_r means "reverse" capital flight. The study follows the convention in the literature by which capital flight is denoted with a positive notation, because capital flight is a form of foreign private assets accumulation. Thus "reverse" capital flight is like reducing foreign private assets, thus a negative notation. Note further that because the right hand side of Equation 1 contains variables that are considered officially recorded transactions, positive

KF_r implies net unrecorded capital outflows and negative KF_r net unrecorded capital inflows.

All data series, except for data on foreign direct investment, are from International Monetary Fund (IMF)'s World Economic Outlook (WEO) and International Financial Statistics (IFS). Foreign direct investment series is from United Nations Conference on Trade ad Development (UNCTAD). To avoid the effects of exchange rate shocks, all data series are measured in United States of America dollars (USD/US$).

Table 2: Capital Flight from Zimbabwe: 1980 – 2005 (US$ million)

Year	Change in external debt outstanding (ΔED)	Net Foreign Direct Investment (FDI)	Current Account Surplus CAD)	Changes in official foreign reserves (ΔFR)	Capital Flight (KF_r)	KF_r as % of real GDP
1980	46	2	-243	18	273	5.1
1981	110	4	-583	-58	755	11.7
1982	115	1	-704	-45	865	12.6
1983	-23	2	-449	-37	466	7.5
1984	64	3	-82	-31	181	3.5
1985	1 275	3	-99	65	1 311	23.2
1986	108	8	7	-5	114	1.8
1987	255	31	79	48	158	2.4
1988	-221	19	117	-7	-312	-4.0
1989	56	10	0	-81	146	1.8
1990	94	12	-149	42	213	2.4
1991	613	3	-452	-1	1 069	13.1
1992	661	19	-600	93	1 187	17.6
1993	192	38	-138	201	167	2.5
1994	298	41	-137	-16	492	7.1
1995	132	118	-201	240	211	3.0
1996	272	81	-94	-19	466	5.3
1997	276	135	-716	-500	1 626	18.1
1998	-475	444	-295	-3	267	4.3
1999	-430	59	148	160	-679	-11.4
2000	-536	23	33	-135	-411	-5.1
2001	-103	4	-42	-146	89	0.7

2002	89	26	-175	14	276	0.9
2003	314	4	-308	7	620	5.9
2004	246	9	-392	159	488	10.4
2005	-500	103	-500	51	52	1.2
Total	2 927	1 202	-5 975	14	10 090	5.4

Estimates from Table 2 shows that capital flight totaled US $10.1 billion in this 26-year period. For the same period capital flight-to-GDP ratio is roughly 5.4 per cent. In other words, for every US dollar of GDP accumulated by Zimbabwe annual from 1980 to 2005, private Zimbabwean residents accumulated (US) 5.4 cents of external assets annual during the same period.

4 THE DETERMINANTS OF CAPITAL FLIGHT

In summary capital flight is directly related to the behaviour of a risk-averse individual who diversifies his wealth in order to maximize asset returns. This emphasizes the decision to hold assets abroad as part of the process of portfolio diversification (Cuddington 1986; Gibson and Tsakalotos 1993; Lensink *et al.* 1998). Differences in rates of return between domestic and foreign asset holdings, the amount of wealth, and risk and uncertainty aspects normally influence this decision (Hermes et al. 2002). Although a multitude of determinants are found in literature, the following main factors will be discussed: (i) external debt; (ii) macroeconomic instability; (ii) political instability; (iii) rate of return differentials; (iv) capital inflows; (v) stock of capital flight; and (vi) public policy uncertainty. These determinants have a direct influence on portfolio decisions of individuals and most of them are closely interwoven.

4.1.1 External Debt

The causality between external debt and capital flight has many facets, though all the possible relationships results in capital flight. Ajayi (1995, p 21-22) and Boyce (1992, p. 337-338) distinguishes four possible linkages between the two: i) debt-driven capital flight; ii) debt-fuelled capital flight; flight-driven external borrowing; and flight fuelled external borrowing. Beja (2006, p.1) analyzed the relationship between the two using what he termed 'revolving door model'. Beja's model posits direct and indirect linkages between external debt and capital flight. One of the linkages posits a direct causal effect, whereby external debt provides the fuel and/or motivation for capital flight, and vice versa. Thus, external borrowings are transformed—sometimes instantaneously from capital inflow to capital flight, ultimately ending up abroad, usually in a private foreign account. Hence a positive relationship between the two variables is expected.

4.1.2 Macroeconomic instability

Macroeconomic instability occurs when there is a mismatch between aggregate domestic demand and aggregate domestic supply. The causes of this instability may be diverse, for example, political tensions and instability, wrong or lacking incentive structures and institutions to let markets efficiently coordinate demand and supply, and heavy government involvement, which may put markets at the sideline. The symptoms of macroeconomic instability thus may become manifest in a number of ways: budget deficits will rise, current account deficits increase, exchange rate overvaluation occurs

and inflation is growing. Variables describing such factors are often found in studies on the determinants of capital flight.

4.1.3 Exchange rate overvaluation

Overvalued exchange rate is often found to be an important variable in studies of capital flight and its underlying determinants. An overvalued exchange rate leads to increasing expectations of depreciation in the near future (Harrigan et al. 2007). Thus to avoid impending future welfare losses, residents will be motivated to hold at least part of their assets abroad. Another offshoot of exchange rate overvaluation is foreign exchange the black market premium. The presence of high black market premium is normally interpreted as a symptom of 'sick' economy. Zimbabwe is one of the countries whose domestic currency has been overvalued for nearly the whole duration since her independence in 1980 and black market premium has also been very high since 2000 to date. A positive relationship between capital flight is exchange rate is expected.

4.1.4 Inflation

High inflation directly erodes the real value of domestic assets, stimulating residents to hold assets outside the country. Moreover, inflation rates and the exchange rate are closely connected, since high inflation may lead to increasing expectations of depreciation in the future. Inflation can also be perceived as a signal for how much the government has resorted to taxing domestic financial assets through money creation (inflation tax). For Zimbabwe, the higher inflation has also resulted in the vicious circle

of money printing and further increase in inflation. In this case, higher inflation will result increased capital flight.

4.1.5 GDP Growth rate

GDP growth is normally used as a barometer for inferring economic performance as well as a measure for real rate of return of the economy (Mikkelsen, 1991). A negative correlation is therefore expected between capital flight and domestic GDP growth rate.

4.1.6 Political instability

Perceived ill institutional variables in any economy may give rise to capital flight. Public sector behaviour may have an impact on the risks and uncertainty regarding the policy environment and its outcomes. More specifically, residents may decide to hold their assets abroad based on lack of confidence in the domestic political situation, perceived high levels of corruption, and the consequences of these factors for the future value of the assets. In these cases, perceived political instability may generate capital flight (Hermes et al. 2002). In the Zimbabwean context, political instability has been very tense since September 1999 to date.

4.1.7 Rate of return differentials

Relatively low and unattractive domestic real interest rates can be a reflection of domestic financial repression that can stimulate outflows, especially when they are at

levels that create significant interest rate differential (after making adjustments for exchange rate changes and taxes). In this case capital flight may occur simply because the returns on assets are higher abroad as compared to assets held domestically.

4.1.8 Capital inflows/FDI

The simultaneous occurrence of capital inflows and capital outflow has caused some authors to argue that capital inflows in the form of aid disbursements/FDI to developing countries are a major cause of capital flight (Ajay, 1995). If the case involves public sector borrowing, the availability of foreign exchange increases the potential for graft and corruption. Anecdotal evidence shows that over the years, significant proportions of aid inflows which were managed by Zimbabwean government ended up roughly half the aid amounts reaching the intended beneficiaries while the other portion was 'lost' within the government structures.

4.1.9 Capital flight

Countries that have experienced high levels of capital flight in the recent past are likely to experience higher capital flight in subsequent years (Ndikumana et al 2002). This is mainly due in part to the momentum created by capital flight itself. In most cases, for a given level of government expenditure, the presence of high capital flight may lead private agents to expect higher tax rates by virtue of the resulting lower tax base. Thus in such a case the consequent decline in expected after-tax returns discourages domestic investment and induces private agents to seek higher returns abroad (Collier, Hoeffler

and Pattillo 2001). Moreover, capital flight may be 'habit-forming,' making investors unlikely to respond rapidly to any improvements in the investment climate (Ndikumana et al 2002).

4.1.10 Public policy uncertainty

An environment where the content and direction of current and future public policies are uncertain and/or unstable, domestic investors will be uncertain about the impact of these policies on the real value of domestically held assets in the future (Hermes et al 2002). This uncertainty may stimulate investors to sell their domestic and buy foreign assets. Sheets (1995) present a theoretical analysis of policy uncertainty and its influence on capital flight. The study argues that the shock therapy implemented by some transition economies led to substantial capital flight, since the policy reforms initially generated increased uncertainty about policies and their outcomes. Uncertainty has been the environment under which economic activities in Zimbabwe has been operating especially since 2000 when government started the compulsory land reform programme. Most government policies since then have been driven by some 'gimmicks' which have been intended to ameliorate the economic meltdown trend as well as voter 'buying' among other objectives.

4.2 Evaluating empirical studies of the determinants of capital flight

Whilst Latin American studies of the 1980s opened the Pandora box of the empirical studies of capital flight in recent years mainly as a result of the fact that 'capital flight

was viewed as an exclusively Latin American problem' (Hermes and Lensink, 1992), since the 1990s studies on the African continent has however been done. Although results vary mainly as a result of differences in the measurement of capital flight and differences in econometric techniques and specifications, some important empirical findings can be pointed out.

4.2.1 External Debt

Several studies find that external debts are positively related to capital flight; that is, a higher external debt is associated with greater capital flight. Chipalkatti and Rishi's (2001) results on India validate the hypothesis of a bi-directional, contemporaneous relationship between debt and capital flight. The authors concluded that India's case was characterized by a financial revolving door, where external debt and capital flight fuel each other by providing capital for the reverse flow.

4.2.2 Political Instability

Some studies, for instance Nyoni (2000) and Lensink et al (2000) considered political instability, political rights and civil liberties as determinants of capital flight. Lensink et al (2000) results showed that civil liberties were one of the factors propagating capital flight from most of the 84 least developed countries (LDCs) that the paper investigated. In general, most research investigations support the view that political instability, measured in various ways and capital flight are positively related.

4.2.3 Capital Inflow

In many studies capital inflow variables have been taken into account. FDI, aid and other forms of proxies have represented this variable. Among others, Bauer (1981) argues that development aid would be used to finance capital flight. Other studies also indicate long-term debt inflows to have a statistically significant influence on capital flight. The hypothesis put forward by Bauer on the relationship between aid and capital flight is thus supported in most of the studies.

4.2.4 Interest rate differential

Interest rate differentials have been used in some studies to measure the relative attractiveness of domestic assets as compared to foreign assets. In most cases, researchers have calculated some kind of exchange rate differential between the domestic interest rate on deposits and a foreign deposit rate, normally the US deposit rate. Another measure proxying for the attractiveness of different assets used is the growth rate of GDP or GNP. Nevertheless, measures of the interest rate differential do not always have a statistically significant relation to capital flight. This may indicate that other determinants, such as macroeconomic and political instability, are more important to explain capital flight (Hermes et al. 2002).

5 MODELING CAPITAL FLIGHT FROM ZIMBABWE

5.1 Methodology

The econometric analysis in this study is three-fold: test for stationarity of the series used in the econometric model; test of the existence of static long-run equilibrium relationship between capital flight and its determinants; and development of a parsimonious dynamic model of the short-run relationship between capital flight and its determinants, which could used as the basis for design and assessment of capital flight reverse policy.

5.2 Model Specification

Along the lines of the above discussion regarding the various capital flight determinants, the study proposes the following model of capital flight (with expected signs beneath the respective variables):

$KF_r = f(\Delta ED, FDIF, FRES, GDPGR)$…….(7)

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where KF_r = capital flight using the residual method; ΔED = change in the external debt; FDIF= foreign direct investment flow; FRES = foreign exchange reserves; and GDPGR = real gross domestic product growth rates.

5.3 Data Analysis

The study employs annual time series data covering the period 1980 to 2005 to investigate the statistical significance of the variables that relate to capital flight. All data series, with the exception of FDI, are from IMF's WEO and IFS. FDI is from UNCTAD database.

5.4 Stationarity Tests

The drawback to using non-stationary economic series in the study would be that the presence of deterministic time trends in any of the two rates could lead one to misinterpret what is essentially a pro-cyclical movement of the series over time for a deeper relationship between them. Thus to avoid inappropriate model specification and to increase the confidence of the results, time series properties of the data are investigated. Although there are a number of methods used to test for stationarity and the presence of unit roots, the methods used here are the Augmented Dickey-Fuller (ADF) and the Philips Peron (PP) tests. By definition a series is stationary if it has a constant mean and a constant finite variance. On the contrary, a non-stationary series contains a clear time trend and has a variance that is not constant overtime. If a series is non-stationary, it will display a high degree of persistence i.e. shocks do not die out. A series X_t is said to be integrated of order *d*, denoted as I(*d*), if it must be differenced *d* times for it to become stationary. For example, a variable is said to be integrated of order one, or I(1), if it is stationary after differencing once, or of order two, I(2) if differenced twice. If the

variable is stationary without differencing, then it is integrated of order zero, I(0). The ADF regression test can be written as:

$$\Delta\chi_t = \beta_0 + \lambda\chi_{t-1} + \beta_1 t + \sum_{t=2}^{p} \gamma_i \Delta\chi_{t-1} + \varepsilon_t \quad \text{..... (8)}$$

Where t is the time trend, p is the number of lags; ε_t is a stationary disturbance error term. The null hypothesis that x_t is non-stationary is rejected if λ_1 is significantly negative. The number of lags (n) of Δx_t is normally chosen to ensure that regression residual is approximately white noise. To this end, Table A1 of the Appendix provides unit root test results (ADF and PP tests) and the tests indicate that all the variables are stationary at first difference, that is, they are I(1) variables.

5.5.1 Estimation Results

The estimated results of the parsimonious long-run cointegration static equation presented in Table 3 (only for variables which were significant) reveal that changes in external debt and foreign direct inflows are the main significant determinants of capital flight in Zimbabwe. Thus the results obtained quite clearly support the believed notion that external debt pushes capital flight.

In order to interpret the economic meaning of the coefficients, elasticities have also been computed[7]. Elasticities are useful in interpreting the effect of a percentage change of an independent variable on the dependent variable, especially because they are unit-free

[7] Elasticities are calculated as the coefficient of the independent variable times the mean of the independent variable divided by the mean of the dependent variable (Pindyck & Rubinfeld, 1981, p. 91).

measures. From Table 3 it is apparent that a percent increase in external debt changes is associated with approximately a 0.34% increase in real capital flight. This provides support for the hypothesis that external borrowing can directly cause capital flight by providing the necessary liquidity. Same elasticity calculation for foreign direct investment inflows indicates that a percent increase in FDI inflow is significantly associated with a 0.20% increase in capital flight.

Table 3: OLS Long-run Cointegrated Equilibrium Model of Capital Flight

Dependent Variable: KF_r [Sample 1980 – 2005]

Variable	Coefficient	Standard Error	t-statistic	Probability
EDC	1.165079	0.180772	6.445016	0.0000
FDI_F	1.653792	0.775369	2.132910	0.0438
C	180.4750	79.16078	2.279854	0.0322
R^2	0.644	F-statistic	20.79	
Adjusted R^2	0.613	Prob(F-statistic)	0.0000	

The long-run estimation indicates that the model fits the data well as evidenced by relatively high values of both R^2 (adjusted R^2) which is above 61 per cent, and *F*-statistic tests whose significant values is above 20 per cent. The adjusted R^2 which measures the "goodness of fit" of the equation (after taking account of degrees of freedom) is satisfactory high at 61 per cent, indicating that 61 per cent of the variations in capital flight from Zimbabwe is explained by variations in the changes in external debt and FDI inflows. The F-test statistic of 20.79, with a p-value of 0.00, indicates that the two variables jointly determine capital flight from Zimbabwe in the long run.

5.2.2 Short Run Error Correction Modeling (ECM)

The existence of at least one cointegrating vector among the variables implies that an ECM can be estimated. The ECM approach used here is useful for the formulation of a short term capital flight reverse adjustment model, which models changes in Zimbabwe capital flight in terms of changes in the other variables in the model, and the adjustment towards the long run equilibrium in each time period. This draws upon the error correction formulation, which is the counterpart of every long run cointegrating relationship.

To avoid any estimations bias from the results, the ECM model was tested for such econometric assumptions as normality, heteroskedasticity, serial correction and mis-specification and these tests are presented in the appendix Table A2. Generally, the tests confirm that the shot-run model is statistically good.

The results from the parsimonious error correction model (ECM) are presented in Table 4. All variables in the ECM are entered in first difference form. In this equation, (ECM_{t-1}) is the lagged error correction factor, given by the residuals from the static cointegration Equation 1. In other words, (ECM_{t-1}) is the long run information set, represented by what economic theory posits as the equilibrium hyperinflation behaviour. It is a stationary linear combination of the variables postulated in theory. It is a cointegrating vector. The coefficient of (ECM_{t-1}) shows the speed of adjustment to long run solution that enters to influence short run movements in hyperinflation. The results show that the coefficient of the error term (ECM_{t-1}) has a negative sign, which is significant at one percent level of

significance. This is in line with theory, which expects it to be negative and less than unity in absolute terms, since we do not expect a 100 per cent or instantaneous adjustment. Thus this significant negative sign on the ECM ensures that the all the explanatory variables in ECM work together for capital flight to get to equilibrium in the short run.

The statistical fit for the short run dynamic reduced form equation for capital flight from Zimbabwe appears to be relatively good as indicated by adjusted R^2 value of 84 per cent and a high F-statistic value of 30.5. Thus the ECM results confirm the appropriateness of the error correction approach framework and that it should be used in conjunction with the long run equilibrium relationship for better policy recommendations.

Table 4: Parsimonious ECM of capital flight from in Zimbabwe: Dependent DKF_r

Variable	**Coefficient**	**Standard Error**	**t-statistic**	**Probability**
ECM_{t-1}	-0.53	0.18	-2.90	0.0091
DEDC	1.14	0.12	9.39	0.0000
DFRES(-1)	1.68	0.41	4.15	0.0005
DGDPGR	-19.26	8.98	-2.15	0.0451
C	-8.75	55.61	-0.156	0.8766
R^2	0.87	F-statistic	30.5	
Adjusted – R^2	0.84	Prob(F-statistic)	0.0000	

Note: DEDC means differenced external debt changes series.

6 CONCLUSION

This paper has investigated the causes of capital flight from Zimbabwe for the period 1980 to 2005. The study found external debt and foreign direct investment flows to be the most important determinant of capital flight in the long run. The significance and importance of external debt in fuelling capital flight suggests that the phenomenon of

revolving door model whereby external debt provides the fuel and/or motivation for capital flight has been presence in Zimbabwe. Foreign reserves and economic growth are the other determinants of capital flight and are significant in the short run. The results also estimate Zimbabwean capital flight at US $10.1 billion over the 1980 to 2005 period, with capital flight-to-GDP ratio roughly 5.4 per cent. In other words, for every US dollar of GDP accumulated by Zimbabwe annual from 1980 to 2005, private Zimbabwean residents accumulated (US) 5.4 cents of external assets annually during the same period.

These findings imply that debt relief strategies will bring long-term benefits to Zimbabwe only if accompanied by measures to prevent a new cycle of external borrowing and capital flight. This will require substantial reforms on the part of both creditors and debtors to promote responsible lending and accountable debt management. On the other hand, better management of foreign direct investment inflow transactions is needed to avoid possible leakages of the same money going out as capital flight. Lastly, the significance of economic growth suggests the need for policies, which stimulates economic growth, since economic growth reduce capital flight.

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APPENDIX

Table A1: Univariate characteristics of all the variables

Series	Model	ADF			PP		Conclusion
		Lags	$\tau\ \tau_\mu\ \tau_\tau$	$\phi_3\ \phi_1$	Lags		
KF_r	τ_τ	0	-1.88	4.59	2	-2.85**	Non-Stationary
	τ_μ	1	-1.78	5.32	2	-2.76	
	τ	0	-0.81	------	2	-1.77	
EDC	τ_τ	2	-3.69**	7.01***	2	-2.68	Non-Stationary
	τ_μ	0	-2.38	11.33***	2	-1.42	
	τ	0	-1.27	----------	2	-0.31	
FDI_F	τ_τ	1	-3.59	3.93	2	-2.58	Non-Stationary
	τ_μ	0	-1.87	4.08	2	-1.39	
	τ	1	-1.54	-----	2	-0.78	
FRES	τ_τ	3	-2.46	2.20	2	-2.23	Non-Stationary
	τ_μ	3	-2.44	2.76	2	-2.27	
	τ	0	-1.09	--------	2	-1.02	
GDPGR	τ_τ	3	-2.83	4.31	2	-4.34**	Non-Stationary
	τ_μ	4	-0.08	3.33	2	-2.93**	
	τ	0	-3.17***		2	-3.08***	
DKF_r	τ_τ	0	-5.72***	16.34***	2	-6.16***	Stationary
	τ_μ	0	-5.85***	34.29***	2	-6.00***	
	τ	0	-5.99***		2	-6.31***	
DEDC	τ_τ	0	-6.33***	-20.2***	2	-6.45***	Stationary
	τ_μ	0	-6.44***	41.5***	2	-6.57***	
	τ	0	-6.59***	-------	2	-6.72***	
DFDI_F	τ_τ	0	-6.55***	21.49***	2	-7.03	Stationary
	τ_μ	0	-6.71***	45.02***	2	-7.22***	
	τ	0	-6.85***	----	2	-7.39***	
DFRES	τ_τ	1	-4.44***	7.72***	2	-4.23**	Stationary
	τ_μ	1	-4.56***	12.12***	2	-4.39***	
	τ	1	-4.67***	-----	2	-4.50***	
DGDPGR	τ_τ	3	-4.5***	17.83***	2	-8.21***	Stationary
	τ_μ	3	-4.32***	21.24***	2	-8.43***	
	τ	3	-4.25***	------	2	-8.25***	

*(**)[***] Statistically significant at a 10(5)[1] % level

Key: τ_τ: Means Trend and Intercept

τ_μ Means intercept

τ Means None

(KF_r = capital flight; EDC = external debt changes; FDI_F = FDI inflow; FRES = foreign reserves and GDPGR = GDP growth rate).

The univariate ADF and PP tests indicates that all the variable are stationary after first difference, that is they are I(1).

Table A2: ECM's Diagnostic Tests

Test	H_0	Test Statistic	p-Value	Conclusion
Jarque-Bera	Normally distributed	JB = 0.08	0.96	Normally distributed
Ljung-Box Q	No Serial Correlation	$LB_Q = 10.34$	0.11	No Serial Correlation
Breusch-Godfrey	No Serial Correlation	$nR^2 = 3.44$	0.18	No Serial Correlation
ARCH LM	No Heteroskedasticity	$nR^2 = 3.81$	0.15	No Heteroskedasticity
White	No Heteroskedasticity	$nR^2 = 14.61$	0.07	No Heteroskedasticity at 5%

Stability Test

Test	H_0	Test Statistic	p-Value	Conclusion
Ramsey RESET	No Misspecification	LR = 0.17	0.94	No Misspecification