AVE Trends in Intelligent Technoprise Letters

Corruption, Rule of Law, and Capital Flight: A Panel Data Analysis of Global Economies

Gioia Arnone*
Department of Private and Economic Law, Vrije Universiteit Brussel, Ixelles, Belgium.
gioia.arnone@vub.be

*Corresponding author

Abstract: The purpose of this paper is to investigate the impact of corruption on capital flight. This paper uses panel data from 41 developed and developing countries from 2010 to 2020 to investigate the paper. This paper models capital flight by employing the residual-based approach to measure capital flight. The generalized Method of Moment estimation technique is used as the base estimation. Corruption, the variable of interest, retains its expected positive sign and is statistically significant across all estimations. Even when other equally important variables, such as lack of rule of law, regime durability, and executive constraint decision rules, are considered, the relationship remains very strong. The findings also show that the lack of rule of law, regime durability, and executive constraint decision rules are statistically significant across all estimations after controlling for the regular determinants of the capital flight. The majority of the literature is divided into two types: country-specific and region-specific studies. Previous studies conducted research only on a few developing countries. This paper covers developing and developed countries across all world regions for a panel of 41 countries for 2010-2020.

Keywords: Capital Flight; Corruption and Panel Data; Residual Capital Flight; Non-Residents and Economic Crisis; Income Distribution; Capital Controls; Financial Assets; Economic Growth; Currency Crisis.

Cite as: G. Arnone, "Corruption, Rule of Law, and Capital Flight: A Panel Data Analysis of Global Economies," *AVE Trends In Intelligent Technoprise Letters*, vol. 1, no. 4, pp. 212–225, 2024.

Journal Homepage: https://avepubs.com/user/journals/details/ATITP

Received on: 27/06/2024, **Revised on:** 01/09/2024, **Accepted on:** 16/10/2024, **Published on:** 03/12/2024

1. Introduction

Capital flight is defined differently by different authors in the existing literature, indicating that there is no single definition. According to Osei-Assibey et al. [10], capital flight is "a large-scale outflow of financial assets and capital from a nation as a result of events such as political or economic instability, currency devaluation, or the imposition of capital controls." It is also defined as "the acquisition or retention of a claim of non-residents motivated by the owner's concern that the value of his asset would be subject to discrete losses or impairment if his claims were held domestically [13]. Capital flight as we know it today dates back to the 1970s and 1980s. Capital flight requires serious consideration due to its negative impact on macroeconomic stability, economic growth, income distribution, and people's well-being. It is widely accepted that political instability and poor governance contribute to a domestic environment that discourages investment and encourages capital flight. For example, we have recently seen an increasing trend of capital flight from Russia due to the ongoing Russia-Ukraine war, which has significantly made the ruble depreciate. According to Federal Reserve History, then-US President Richard Nixon decided to unpeg the US Dollar from gold in 1971. Many countries around the world followed suit and unpegged their currencies from gold. Following this, many countries began pegging their currencies to the US dollar to maintain a stable exchange rate, which aided their global trade. In the age of globalization, it is critical to have a stable currency in which global investors can place their trust. We witnessed major currency crisis events in the late twentieth and early twenty-first centuries. Capital flight has

played a critical role in these events, which have caused economic distress in several countries. In 1995, the International Monetary Fund (IMF) researched the world's most heavily indebted countries and discovered that capital flight accounted for roughly half of those countries' outstanding foreign debt.

Many East and South East Asian countries were in an economic crisis in 1997. The Asian economic crisis is the name given to this period of economic downturn. Thailand was the epicentre of the crisis. Thailand's currency was once pegged to the US dollar. They incurred significant debt on the international market and could not repay it when the time came. This was followed by a massive capital flight from Thailand, further exacerbating their situation. Thailand experienced a currency crisis as a result of this. Soon after, confidence in other Asian countries, such as South Korea, Japan, and Hong Kong, plummeted, and the value of their currencies plummeted as well. Argentina experienced an economic crisis in 2001. It all started with the events of 1998. Argentina kept its national interest rate low, and its currency pegged to the US dollar. On the other hand, their competitor, Brazil, allowed their currency to depreciate to keep their export competitive. Argentina experienced significant capital flight and eventually experienced a currency and economic crisis. Countries with low interest rates, such as Russia and Argentina, have seen capital flight to countries with higher interest rates, such as China.

According to a Sky News report from 2016, because of the BREXIT referendum, the UK experienced net capital outflows of £77 billion in the two quarters preceding the referendum, £65 billion in the quarter immediately preceding the referendum, and £59 billion in March, when the referendum campaign began. As a result, the GBP has fallen in value relative to the EUR and USD. Though we have seen that China has benefited from inward capital flight, according to a 2017 Forbes report, they lost trillions of dollars due to capital flight in the decade between 2010 and 2020. Capital flight is also a significant phenomenon in Bangladesh. According to the Global Financial Integrity 2020 report, Bangladesh experienced a 'value gap' of $7.53 billion in its exports and imports on an annual basis from 2008 to 2017 due to mis-invoicing. During the same period, the country's average value gap in trade with 36 developed countries, including the United States, the United Kingdom, Germany, France, Italy, Japan, Australia, and New Zealand, was $3.29 billion. In this paper, we model capital flight as a portfolio choice influenced by return differentials and other risk differentials. Over 11 years, we use a panel of 41 countries, including developing and developed countries, to demonstrate how corruption, along with other risk differentials such as lack of rule of law, regime durability, and so on, affects capital flight. This paper, which focuses on corruption, poses the following research question: Is there a significant relationship between corruption and capital flight? Corruption is inferred as an investment risk in this paper and is explicitly included in a domestic investment risk function.

2. Literature Review

Capital flight is one of the key problems in developing countries that resulted in slow economic growth. However, capital flight is quite elusive concept. It's difficult to distinguish between normal transitional and illicit capital outflow. Different studies examined the various aspects of capital flight. The literature on capital flight can be categorized into three groups: measurement and definition of capital flight, determinants of capital flight, and effects of capital flight on economy. Determinants and effects of capital flight on the economy were examined in both a country and a region. A summary table will be helpful in this respect (Table 1).

Table 1: Summary for Literature Review

Citation	Estimation Technique	Findings
Tarawalie and Jalloh [1]	ARDL estimates for Sierra Leone in 2000-2019	The real effective exchange rate, corruption, and accumulation of external debt raise capital flight in the short and long run.
Egbulonu and Bhattarai [4]	GMM estimation technique for Sub-Saharan Africa for 1986-2010	External debt raises capital flight
Mwangi [15]	ARDL estimates for Kenya in 1998-2018	Exchange rates and corruption raise capital flight significantly.
Mnif et al. [5]	OLS estimation technique for Tunisia for 1984-2014	An increase in corruption, political instability, oil rent rate, and exchange rate enhances capital flight
Geda and Yimer [2]	ARDL estimation technique for Ethiopia for 1970-2012	Corruption, political instability, debt-creating flows, and export and interest rate differentials are highly significant for capital flight
Ramiandrisoa and Rakotomanana [19]	VAR estimation Technique for Madagascar for 1972-2012	External debt has a positive correlation with capital flight
Liew et al., [22]	ARDL estimates for Malaysia from 1975 to 2010	Political risk, financial crisis raises, FDI, external debt, and the stock market have

		significantly lowered capital flight in Malaysia.
Thomas [8]	OLS estimation technique for Nigeria for 1991-2010	Capital Flight has a positive correlation with GDP
Aziz et al. [16]	OLS estimates for Bangladesh in 1973-2013	External debt corruption raises the Capital Flight.
Henry [3]	OLS estimation to analyze the effects of capital flight on Economic growth for Nigeria for 1980-2011	Capital flight relates positively to high exchange rates, inflation, political instability, and fiscal deficit.
Cheung and Qian [24]	GMM estimates for China in 1999- 2008	Economic openness, exchange rate, and risk factors positively related to capital flight.
Yalta [6]	Fixed-effects and GMM estimation to examine the effects of capital flight on investment for emerging economies from 1975 to 2000	Investment has a negative relation with capital flight. Per capita GDP has a positive relation with capital flight.
Ljungwall and Wang [7]	VAR estimation technique for China for 1993-2003	GDP growth, foreign investors' confidence, and external debt are the main causes of capital flight.
Beja [9]	Qualitative analysis	Capital flight has an inverse relation with capital inflow. Economic crisis and financial liberalization increase capital flight.
Quazi [20]	OLS estimation technique for Bangladesh for 1979-1999	The inflow of Foreign aid enhances capital flight.
Alam and Quazi [11]	Bound testing and ARDL estimation technique for Bangladesh for 1973-1999	Interest rate differentials, political stability, corporate tax rate, and FDI positively affect capital flight.

2.1. Measurement and Definition of Capital Flight

Formulating an acceptable definition of capital flight is difficult because the motivation behind it is widely different and hard to distinguish empirically. According to Williamson and Michael [17], one common motivation behind all capital flights is to maximize return on capital at a given rate of risk, which is the interest rate. The intuition is that if residents send their capital abroad through illicit channels, they can earn more than they would in a domestic country. Measuring capital flight is difficult because it can happen in many different ways. Different ways of measuring capital flight are discussed in the literature. In the literature, three measures of capital flight were discussed: (i) the Residual Method, (ii) the Hot Money Method, and (iii) Dooley's Method. Among these, the residual method is the most used.

2.1.1. Residual Method

The residual method was introduced by the World Bank (WB). It is defined as the difference between capital inflows, the sum of current account deficits, and changes in official reserve. The residual method has been widely used [11]; [18]; [8]; [2].

2.1.2. Hot Money Method

Cuddington [12] introduced the hot money method of measuring capital flight. This approach uses errors and omissions, as well as private short-term capital flows from the balance of payment, to calculate the private capital flows. The limitation of this approach is that it only includes short-run capital inflow from the non-bank private sector. It excludes many capital inflows through the bank or government sector. This is a narrow measure of capital flight and thus excludes a large proportion. Very few studies used the hot money approach to calculate capital flight. This approach is used more as a control to compare the findings using the Residual Method. Cheung and Qian [24] used the hot money method to calculate the amount of capital flight and the residual method to compare the results.

2.1.3. Dooley's Method

Dooley [14] introduced Dooley's approach to measuring capital flight. This method measures the stock of privately held foreign assets that do not generate income reported to the domestic authorities. It does so by cumulating the identified capital outflows in the balance-of-payments accounts and making three adjustments to capture unreported capital flow. Dooley only uses this approach.

2.2. Determinants of Capital Flight

In literature, various models were used to identify the determinants of capital flight. However, five estimation methods were mostly used. They are (i) OLS, (ii) Fixed and Random Effects, (iii) Autoregressive Distributed Lag (ARDL), (iv) Generalized Methods of Moments (GMM), (v) Vector Autoregressive (VAR)

2.2.1. OLS Estimation

Quazi [20] analyzed the relationship between foreign aid and capital flight in Bangladesh using the Engel-Granger co-integration estimation technique and data from 1979-1999. The study found that the inflow of foreign aid significantly contributes to the flight of domestic capital. Thomas [8] studied how capital flight affects the economic growth of Nigeria over the period 1991-2010. The empirical finding shows a positive correlation between GDP and Capital flight in Nigeria. Mnif et al. [5]. studied the relationship between capital flight, government institutions, and macroeconomic variables in Tunisia for the period 1984 - 2014. The study results show that increased corruption, political instability, oil rent rate, exchange rate, external debt, decreased stock market and interest rate differentials encourage capital flight.

2.2.2. Fixed-effects and Random-effects Estimation

Al-Fayoumi et al. [18] studied seven Middle East and North African (MENA) countries to find the determinants of capital flight in that region. Panel data from 1981-2008 were used to conduct the study, which included capital flight, external debt, FDI, and political uncertainty. To avoid biases caused by OLS, additional econometrics Panel data analysis and SUR were used. In the study, the lag of capital flight is positive and significant, which indicates capital flight has a habit formation effect. External debt, FDI, and political uncertainty were found to be positive and significant. This indicates they all fuel capital flight. GDP growth has a negative effect and is significant. This postulates that economic growth discourages capital flight. Other variables in the model, such as interest rate differential, real interest rate, and inflation rate, are found to be insignificant. Kossele and Mbai-Akem [23] conducted a similar study and identified similar determinants. His work also found that rent from natural resources and exchange rate differences significantly positively impact capital flight. Eshete [21] only used the fixed effect technique to conduct a study on five East African countries and found that the government's poor regulatory quality, political instability, and ineffectiveness of government have a positive relation with capital flight. His study covers periods from 1996 to 2010.

2.2.3. ARDL Estimation

Alam and Quazi [11] studied the determinants of capital flight in Bangladesh. The study used BBS, NBR, and IMF data covering 1973 to 1999. The study adopted the Bound testing method and ARDL technique. The study found that in the long run, the rate of interest rate differential, FDI, corporate tax rate, and political stability have positive and significant relations with capital. Geda and Yimer [2] analyzed the determinants of capital flight in Ethiopia using data from 1970 through 2012. The empirical evidence shows that macroeconomic instability, the degree of consolidation of the financial market on exports, interest rate differentials, political instability, corruption, and debt-creating flows are the most significant determinants of capital flight in Ethiopia.

2.2.4. GMM Estimation

Osei-Assibey et al. [10] studied the determinants of capital flight in Sub-Saharan Africa (SSA) using secondary panel data from 2000 to 2012. Their study included the corruption index, Rule of Law, Regime Durability, and Independence of the Executive Authority as independent variables. The study found corruption has a significant positive impact on capital flight. However, capital flight had a significant negative relation with the rate of return differential and rule of law. Other variables were found positive but insignificant. Egbulonu and Bhattarai [4] studied the determinants of capital flight in Sub-Saharan Africa and found that external debt fuels capital flight. Liberalized economy and deregulated capital movement encourage capital flight on high-return, low-risk, or high-return high-risk destinations.

2.2.5. Vector Autoregressive (VAR) Estimation

Ramiandrisoa and Rakotomanana [19] obtained a descriptive analysis of the Capital flight in Madagascar from 1972 to 2012. According to the econometric analysis, the price responds positively to an exchange rate shock. In contrast, production responds negatively to a shock on capital flight, even though this response had a low significance level. The estimation results show that external debt is the principal determinant of capital flight. Ljungwall and Wang [7] examine the determinants of capital flight in China, using quarterly data for the periods 1993-Q1 to 2003-Q4. Employing co-integration and innovation accounting

techniques, the result shows that external debt, real GDP growth, and foreign investors' confidence are the main causes of capital flight. The study also finds that diplomatic relations among countries affect capital flight.

2.3. Research Gap in the existing literature

The existing literature on this topic focuses on a particular country or region, notably Sub-Saharan Africa. The existing literature only includes developing countries. Though the magnitude is quite low compared to developing countries, capital flight is also a problem in developed countries. According to our study, capital flight amounted to 1.96%, 1.84%, and 1.12% of GDP in the USA, Japan, and Germany in 2020. In developing countries like Morocco and Tunisia, the capital flight amounted to 3.27% and 4.22% of GDP in 2020. Most papers focus on a specific region or country in the existing literature. Papers that took multiple countries or multiple regions used old data. In this paper, we include both developing and developed countries. We include a total of 41 countries covering periods from 2010-2020. In the existing literature, the maximum number of countries included is 25, and our paper includes 41 countries from different regions and different economic positions.

3. Theory on Determinants of Capital Flight

Many scholars have linked the concept of the causes and the determinants of capital flight to four main hypotheses. These are the portfolio choice framework, the debt-driven flight paper, the investment diversion paper, and the tax–tax-depressing paper. However, in taking a critical look at the relationship between capital flight and corruption, this paper uses the Portfolio Choice framework, also used by Osei-Assibey et al. [10], to explain how corruption affects capital flight. The paper considers an economy with many identical agents with infinite lives. Economic agents optimize their consumption patterns based on the return on the wealth they allocate to one-time investments in the domestic economy or a foreign country. It is assumed that in each country, there is only one investment, so agents' consumption from the return on wealth is allocated to a single period of investment in the domestic country or a single foreign country. The assumption of a single homogeneous commodity produced in both countries normalizes wealth to unity, and the U.S. T-Bills are used for risk-free returns. We use portfolio choice theory, in which a representative agent maximizes lifetime utility by solving problems.

$\text{Max}_{Ct}\, E\sum_{t=0}^{\infty} \beta' U(Ct)$…, (1)
s.t.
$C_t = (1+r_1)\, a_t + (1+r^f)\, a_t^f - a_{t+1} - a_{t+1}^f$…, (2)

Where U(C) is strictly increasing.
a_t denotes assets invested in the domestic market at time t
$i_{t\ \text{denotes}}$ the rate of return earned from a_t
a_t^f denotes investment by agents in a foreign country
r^f denotes risk-free time invariant rate of return earned from a_t^f

$a_{t+1}^{*} = \frac{E(r_{t+1}-r^f)}{\theta VAR(r_{t+1})}$…, (3)

VAR (r_{t+1}) represents the variance of the return on domestic investment.

$\boldsymbol{\theta} = -(E\,[U''\,(C_{t+1})] / E[U'(C_{t+1})])$ measures risk aversion, which is assumed to be constant.

We denote the amount of capital flight as a_{t-1}^{f*} and capital flows from the foreign country to the domestic country as a_{t+1}^f
Net capital flight in the developing country as

$A_{t+1}^f = a_{t+1}^{f*} + a_{t+1}^f$…, (4)

Then aggregate capital K invested in the domestic country from time t to time t-1 is

$K_{t-1} = a_{t+1}^{*} + A_{t+1}^f$…, (5)

This shows that in equilibrium, the capital stock is formed from domestic and net foreign investments, which depend on the characteristics of the foreign and domestic markets. After rearranging and substituting domestic investment at+1* using equation 3,

$A_{t+1}^f = K_{t-1} - \frac{E(r_{t+1}-r^f)}{\theta VAR(r_{t+1})}$ …, (6)

It should be noted that the model does not include money, so there is no exchange rate risk. A risk-free foreign return exists in a monetary model if exchange rate risk can be hedged. Capital flight is more likely when the expected domestic return is low, domestic investment risk is high, and risk aversion is high, according to Equation 6. The equilibrium capital flight variance is decomposed. Concentrating on three sources of variation in returns.

- Economic risk
- Political instability
- Policy uncertainty

Assuming that each type of risk is independently distributed, the risk of domestic investment is given as

$$\text{VAR}(r_t) = \sigma^2_{e,t} + \sigma^2_{p,t} + \sigma^2_{u,t} + CORR_t \quad \ldots, (7)$$

The capital flight in equation 6 at time t is more easily estimable by dividing both sides by K_t.

$$\frac{A^f_t}{K_t} = 1 - \frac{E(r_{t+1} - r^f)}{\theta VAR(r_{t+1})} \quad \ldots, (8)$$

Equation 7 shows that the variance of inflation measures the domestic economic risk. We added corruption as a contributor to domestic economic risk. The lack of rule of law, regime durability, and executive constraint decision rules measures political risk and policy uncertainty. The decomposed variance of returns in equation 7 is fixed with equation 8 to estimate the capital flight equation.

$$CF_t = \beta_0 + \beta_1(r_t - r^f) + \beta_2\sigma^2_{e,t} + \beta_3\sigma^2_{p,t} + \beta_4\sigma^2_{u,t} + \beta_5 CORR_t + \varepsilon_t \ldots, (9)$$

Given the return differential, economic risk factors, political and policy risk factors, and uncertainties, corruption can influence capital flight by raising the domestic investment risk. The above theoretical analysis of portfolio choice theory shows that a higher capital flight occurs when expected returns are low domestically, and domestic economic risk is high. That is, corruption-driven funds move from a country because corrupt governments fear they will not provide a stable and conducive environment for investment. This paper will investigate which countries have higher flights and lower flights of capital. This study also employs the banking channel-based theory known as the interest rate parity condition to compensate for discrepancies. This condition states that the rate of return on risk-free financial investments should be equalized across countries. Movement of capital across national borders will tend to eliminate differences in interest rates if the interest rate differentials across countries persist over time. Then, it is the case that in some countries, restrictions on international capital flows are in place. Interest rates across countries are not directly comparable if they relate to investments in different currencies. This shows that even in the absence of capital controls, differences in interest rates might exist due to expectations of changes in the exchange rate. We should consider the exchange rate factor to measure this interest rate differential. For this reason, the uncovered interest rate is incorporated into the model, which does not cover any risk. Corruption and other risk differentials, such as lack of rule of law, regime durability, etc., cover the risk part in the model.

4. Econometric Model, Data, and Variables

The econometric model to be estimated in the light of Osei-Assibey et al. [10] can be written as:

$$CF_{it} = \beta_0 + \beta_1(r_t - r^f)E + \beta_2 LRL_{it} + \beta_3 RD_{it} + \beta_4 ECDR_{it} + \beta_5 CORR_{it} + \beta_6 X_{it} + \varepsilon_{it} \ldots, (10)$$

Equation (10) is used to test the goal of this study, where i = 1,2,3……,41 and t = 2010...2020

CF_{it} is the Capital flight; LRL_{it} is the lack of rule of law; RD_{it} is the Regime durability; $ECDR_{it}$ is the Executive constraint decision rules; $CORR_{it}$ is the Corruption; X_{it} covers the macroeconomic environment proxied by GDP growth, inflation, and capital control. ε represents the error term representing unexplained factors in determining the capital flight. The expected sign of the coefficients is: $\beta_1>0$, $\beta_2>0$, $\beta_3>0$, $\beta_4>0$, $\beta_5>0$, $\beta_6<0$ for growth and inflation and $\beta_6>0$ for capital control. Capital flight is the dependent variable, and the independent variables are corruption, absence of rule of law, regime durability, executive constraint decision rules, GDP growth, inflation, uncovered interest rate parity, and capital control (Table 2).

Table 2: Definition and Sources of Data

Variable	Definition	Data source
Corruption	It is the measure of the amount of corruption in the public sector.	Transparency International Corruption Perceptions Index (CPI), (2010-2020)
Lack of rule of law	It covers the extent to which the people have confidence in the government and follow the rules.	World Bank GovData 360 (2010-2020), Polity IV database
Regime durability	It measures the duration of political rulers.	World Bank GovData 360 (2010-2020), Polity IV database
Executive constraint decision rules	This indicates the extent to which the chief executive has freedom in decision-making.	World Bank GovData 360 (2010-2020), Polity IV database
Inflation (CPI)	This shows the annual percentage change in the average consumer's cost of acquiring a basket of goods and services.	World Bank Inflation CPI) (2010-2020), Polity IV database
GDP growth	This measures the sum of gross value added by all resident producers in the economy at the purchaser's price.	World Bank GDP Growth (2010-2020), Polity IV database
Uncovered interest rate	This is the estimated differential between the domestic and foreign interest rates adjusted for depreciation.	IMF Macroeconomic & Financial Data, (2010-2020)

4.1. Measurement of Capital Flight

In 1985, the World Bank's residual method, a broad measure, calculates capital flight in this paper. The residual difference between capital inflows and recorded foreign exchange outflows calculates capital flight. The following equation is used to estimate capital flight for country i in year t:

$$CF_{it} = \Delta Debt_{it} + NetFDI_{it} + CAS_{it} + \Delta RES_{it}$$

Where: CF_{it} Is Capital Flight; $\Delta Debt_{it}$Is the change in the country's stock of external debt; $NetFDI_{it}$ is a net direct foreign investment; $CAS_{it}$is the current account surplus; ΔRES_{it} It is the change in the net stock of foreign reserves (Table 3).

Table 3: Variables used to measure dependent variable and source

Measure Variables	Source
External debt	World Bank GovData 360 (2010-2020), Polity IV database
Foreign Direct Investment	World Bank GovData 360 (2010-2020), Polity IV database
Current account surplus	World Bank GovData 360 (2010-2020), Polity IV database
Foreign Reserves	World Bank GovData 360 (2010-2020), Polity IV database

Developed and developing countries are represented in the panel data set. Between 2010 and 2020, there are 41 countries (yearly data). The list of countries and their respective regions may shed some light on the paper (Table 4).

Table 4: Name of Countries and Regions

Countries	Regions	Countries	Regions
Afghanistan	Asia	Maldives	Asia
Algeria	Africa, MENA	Mexico	Latin America
Argentina	Latin America	Morocco	Africa
Australia	Australia	Nepal	Asia
Bangladesh	Asia	Nigeria	Africa, Sub-Saharan Africa
Brazil	Latin America	Pakistan	Asia
Cameroon	Africa, Sub-Saharan Africa	Qatar	MENA
Canada	North America	Russia	Asia
China	Asia	Rwanda	Africa, Sub-Saharan Africa
Colombia	Latin America	Singapore	Asia
Egypt	Africa	South Africa	Africa
Germany	Europe	Sri Lanka	Asia

Ghana	Sub Saharan Africa	Thailand	Asia
India	Asia	Tunisia	Africa, MENA
Indonesia	Asia	Turkey	Europe
Iraq	Asia	Uganda	Africa, Sub-Saharan Africa
Japan	Asia	UK	Europe
Kenya	Africa, Sub-Saharan Africa	Uruguay	Latin America
Lebanon	Africa, MENA	US	North America
Malaysia	Asia	Venezuela	Latin America

Corruption is one of the major risk factors for capital flight. Now, we show the scatterplots and visualize the relationship between capital flight and corruption in the 41 countries we are conducting research in this paper (Figures 1 to 3).

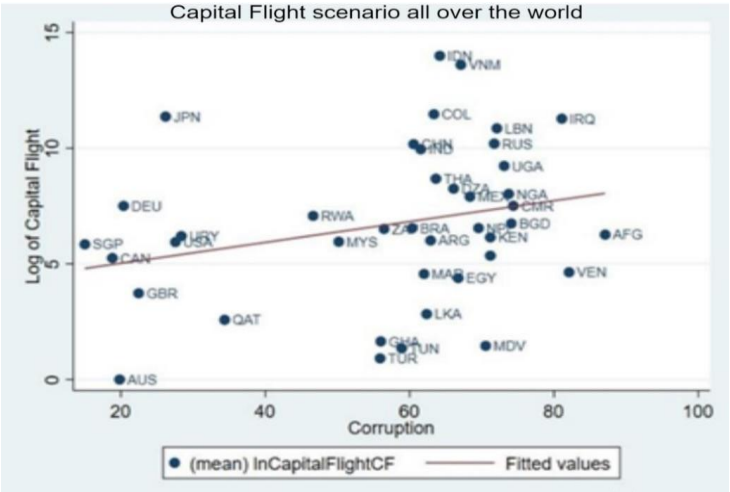

Figure 1: Bivariate Scatter Plot of Capital Flight and Corruption in All the Countries

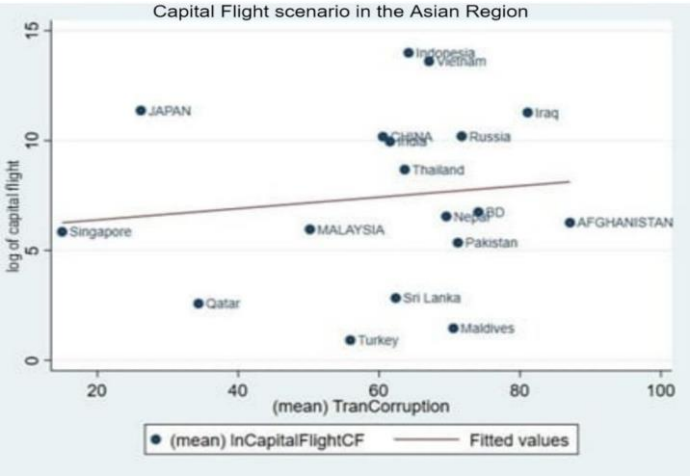

Figure 2: Bivariate Scatter Plot of Capital Flight and Corruption in Asian Countries

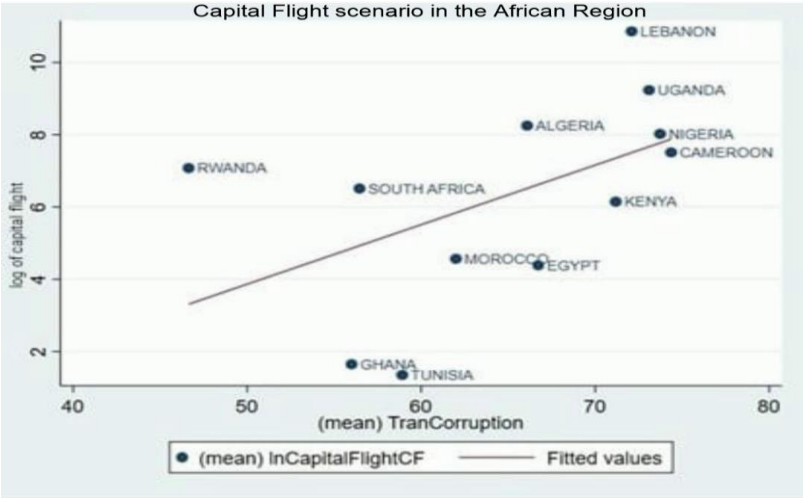

Figure 3: Bivariate Scatter Plot of Capital Flight and Corruption in African Countries

The scatterplots are found to be positive, which indicates that if a country is more corrupt, there is a higher chance of capital flight. We find similar results when we run the correlation for Asian countries only and African countries only. We run a pairwise correlation to get another bivariate pattern (Table 5).

Table 5: Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) CF	1.000								
(2) CORR	0.230	1.000							
(3) LRL	0.137	0.399	1.000						
(4) RD	-0.038	-0.650	-0.318	1.000					
(5) ECDR	0.114	-0.180	-0.002	0.169	1.000				
(6) GDPG	0.004	0.090	0.304	-0.015	-0.031	1.000			
(7) ICPI	-0.090	0.202	-0.007	-0.154	-0.003	-0.227	1.000		
(8) UIRP	0.412	0.180	0.026	-0.103	0.027	-0.056	-0.033	1.000	
(9) CC	0.109	0.484	0.303	-0.264	-0.019	0.099	0.083	-0.022	1.000

5. Estimation Results (Static System-GMM)

The econometric model's eight specifications were put to the test. In this case, the main variable of interest is corruption, which was specified in the model (2). The goal is to examine the singular effect of corruption on capital flight when all other variables in the model are held constant. Specifications (3), (4), and (5), respectively, capture a lack of rule of law, regime durability, and executive constraint decision rules. Specifications (3), (4), and (5) were designed to determine whether the other equally important institutional governance indicators have a single effect on capital flight in both developed and developing countries. Furthermore, specification (2) includes the full model, which includes the variable of interest and all other institutional and control variables used in the model. This aims to determine the combined significance and effects of the institutional and control variables used in the model on capital flight. Specification (6), on the other hand, includes the entire model, including all explanatory variables and their combined significance. Before proceeding with the estimation, we performed the multicollinearity test to see if there was any correlation between the independent variables. The multicollinearity test results show no multicollinearity in the independent variables.

5.1. GMM system estimation without regional dummies results

The system GMM is used as part of the robustness check to perform these diagnostic tests to ensure that the data fits the model and that the results of the system GMM estimation are valid and reliable. The GMM procedure is the best because it solves the dynamic panel bias problem caused by endogeneity in such models. The GMM technique is preferable because it employs the lags of the endogenous variables as instruments; in this case, the endogenous variables are predetermined and thus unrelated to the stochastic error term. Because of the possibility of endogeneity, the above econometric exercise was performed using the System GMM, as shown in Table 6.

Table 6: SYS-GMM Estimation Result (without dummy)

Variables	lnCF (1)	lnCF (2)	lnCF (3)	lnCF (4)	lnCF (5)	lnCF (6)	lnCF (7)
corr	0.056***		0.059***	0.034***	0.027***	0.078***	0.057***
	(0.006)		(0.006)	(0.005)	(0.004)	(0.006)	(0.005)
RL	0.115***	0.177***		0.086**	0.105***	0.102***	0.118***
	(0.034)	(0.033)		(0.034)	(0.033)	(0.034)	(0.034)
RD	0.015***	0.003*	0.014***			0.016***	0.015***
	(0.002)	(0.002)	(0.002)			(0.002)	(0.002)
ECDR	0.043***	0.033***	0.044***	0.046***		0.052***	0.043***
	(0.007)	(0.006)	(0.007)	(0.007)		(0.007)	(0.007)
GDPG	-0.048**	-0.036*	-0.028	-0.036*	-0.040*	-0.079***	-0.048**
	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)	(0.021)	(0.021)
ICPI	-	-0.009***	-0.013***	-0.013***	-0.012***	-0.016***	-0.013***
	0.013***	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
	(0.002)						
UIRP	0.003***	0.003***	0.003***	0.003***	0.003***		0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)
CC	0.178	1.194***	0.284	0.328	0.469*	-0.420	
	(0.255)	(0.231)	(0.254)	(0.254)	(0.247)	(0.256)	
Constant	0.742	2.882***	2.128***	2.900***	3.115***	0.556	0.696
	(0.538)	(0.487)	(0.352)	(0.441)	(0.428)	(0.545)	(0.534)
No. of Obs	451	451	451	451	451	451	451
No. Of. Groups	41	41	41	41	41	41	41352
No. of Instru	367	352	353	351	352	352	352
AR1	-7.66	-8.54	-7.81	-7.31	-8.43	-8.01	-7.99
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR2	3.17	3.20	3.08	3.22	3.52	2.96	3.29
	(0.002)	(0.001)	(0.002)	(0.001)	(0.000)	(0.003)	(0.001)
Sargan	423.95	409.09	402.27	397.79	430.87	405.31	413.26
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Null H	1280.40	1355.71	1201.30	1284.35	1407.46	1453.42	222.60
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

*Notes: The dependent variable is capital flight. The figures in parentheses are the standard error of the estimates. *, **, *** represent the statistical significance of the estimates at 10, 5, and 1 per cent levels, respectively. The values in parenthesis corresponding to AR1, AR2, and Sargan are the p-values.*

The GMM estimation results are shown in Table 1. The GMM model results indicate that the uncovered interest rate differential is positive and statistically significant to capital flight at the 1% level of significance in specifications (1), (2), (3), (4), (5), and (7). Furthermore, the variable of interest, thus corruption, appeared in almost all of the specifications (except specification (2)), and it was discovered to explain the occurrence of capital flight. At the 1% significance level, the coefficient is positive and statistically significant, indicating that economies with high levels of corruption experience more capital flight. The coefficient of corruption in the specification (1), which is the full model, implies that a one-unit increase in corruption is associated with a 5.6 per cent increase in capital flight. This result demonstrates the magnitude of corruption's threat to capital flight in these economies. They found that corruption has a positive and significant effect on capital flight. Their econometric analysis revealed that when other determinants of capital flight are held constant, corruption has a positive and significant impact on capital flight.

Furthermore, the empirical findings show a statistically significant relationship between a lack of rule of law and capital flight, as well as a relationship between executive constraint decision rules and capital flight. Their parameter's expected signs were preserved. This implies that using the GMM estimation, these two institutional and governance indicators play a critical role in explaining capital flight. This also implies that the fewer people follow the rule, the more executives have less decision-making freedom, and the greater the capital flight. Another institutional variable, regime durability, is found to be positive and statistically significant to capital flight at the 10% level of significance in specification (2) and at the 1% level of significance in specifications (1), (3), (6), and (7). This implies that the longer the ruler is in power, the less trust people have in the government, which increases capital flight.

Furthermore, the controlled macroeconomic variables of inflation and GDP growth had a statistically significant effect on the specifications in which they were included. This finding explains why the macroeconomic indicators used in this study are important in explaining capital flight in developed and developing countries. However, capital control appeared to be insignificant across all specifications. This suggests that variable capital control does not play an important role in explaining capital flight (Table 7).

Table 7: Sys-GMM Estimation Results (with all Regional Dummies)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Corr	0.058*** (0.006)	0.048*** (0.006)	0.057*** (0.006)	0.057*** (0.006)	0.061*** (0.006)	0.047*** (0.006)	0.048*** (0.006)	0.036*** (0.006)
RL	0.119*** (0.034)	0.241*** (0.036)	0.059 (0.036)	0.116*** (0.034)	0.165*** (0.035)	0.104*** (0.034)	0.096*** (0.034)	0.160*** (0.040)
RD	0.014*** (0.002)	0.013*** (0.002)	0.016*** (0.002)	0.019*** (0.003)	0.012*** (0.002)	0.013*** (0.002)	0.011*** (0.002)	0.008** (0.003)
ECDR	0.042*** (0.007)	0.046*** (0.007)	0.040*** (0.007)	0.042*** (0.007)	0.049*** (0.007)	0.043*** (0.007)	0.030*** (0.007)	0.036*** (0.007)
GDPG	-0.044** (0.021)	-1.340*** (0.023)	-0.019 (0.022)	-0.053** (0.021)	-0.035* (0.021)	-0.045** (0.021)	-0.063*** (0.021)	-0.087*** (0.023)
ICPI	-0.013*** (0.002)	-0.011*** (0.002)	-0.015*** (0.002)	-0.012*** (0.002)	-0.013*** (0.002)	-0.012*** (0.002)	-0.014*** (0.002)	-0.013*** (0.002)
UIRP	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
CC	0.223 (0.256)	-0.734*** (0.273)	0.272 (0.255)	0.061 (0.260)	-0.772*** (0.294)	0.226 (0.255)	0.527** (0.256)	-0.776** (0.311)
OECDD	0.331 (0.220)							1.248*** (0.294)
AD		1.774*** (0.173)						2.591*** (0.442)
LAD			1.048*** (0.233)					1.639*** (0.495)
NAD				-1.066** (0.445)				-0.363 (0.511)
SSAD					-1.564*** (0.236)			-1.97*** (0.455)
ED						-1.299*** (0.298)		-2.073*** (0.405)
MENA							-2.039*** (0.231)	-2.584*** (0.394)
Constant	0.489 (0.564)	-0.628 (0.561)	1.191 (0.547)	0.603 (0.542)	0.515 (0.542)	1.520 (0.570)	1.823 (0.548)	0.640 (0.693)
No. of Obs	451	451	451	451	451	451	451	451
No. of Groups	41	41	41	41	41	41	41	41
No. of Instr	372	372	372	372	372	373	372	372
AR1 (p)	-7.69 (0.000)	-7.45 (0.000)	-7.52 (0.000)	-7.67 (0.000)	-7.18 (0.000)	-7.86 (0.000)	-7.75 (0.000)	-7.31 (0.000)
AR2 (p)	3.14 (0.002)	3.10 (0.002)	3.27 (0.000)	3.48 (0.001)	3.02 (0.003)	3.36 (0.001)	3.30 (0.001)	3.29 (0.001)
Sargan (p)	1711.72 (0.000)	1585.20 (0.000)	428.15 (0.000)	1707.44 (0.000)	1649.93 (0.000)	1704.55 (0.000)	1670.45 (0.000)	1589.07 (0.000)
Null H (p)	1267.82 (0.000)							

*Notes: The dependent variable is capital flight. The figures in parenthesis are the standard error of the estimates *, **, *** represent the statistical significance of the estimates at 10, 5, and 1 per cent levels, respectively. The values in parenthesis corresponding to AR1, AR2, and Sargan are the p- values.*

5.2. GMM system estimation with regional dummies results

Table 2 shows the results of the GMM estimation with the regional dummies. In specification (2), the OECD dummy is 0.331, which shows that the average capital flight in OECD countries is 33.1% higher than that of non-OECD countries. The result was statistically insignificant, implying that the dummy is unimportant in this study. All the other regional dummies were statistically significant. Specification 3 includes the African dummy, which shows that the average capital flight in African countries is 1.77% higher than non-African countries. Specification 4 includes the Latin American dummy, which indicates that the average capital flight in Latin American countries is 1.05% higher in those countries than in other countries. Specification 5 includes the North American dummy, which shows that the average capital flight in those countries is --1.06 % less than in other countries. Specification 6 includes the Sub-Saharan African dummy, which shows that the average capital flight in those countries is -1.56% less than other countries. Specification 7 includes the European dummy in the model, which shows that the average capital flight in those countries is -1.299% less than in other countries. Specification 8 includes the MENA dummy, which shows that the average capital flight in those countries is -2.039% less than in other countries. We also included all the dummies in specification 9, and we found significance in all the regional dummies except for the North American dummy (Table 8).

Table 8: Summary of the Results

Variables	Sign of Parameters	Meaning
Corruption	+	Higher the corruption, higher capital flight
Lack of Rule of Law	+	Higher the lack of rule of law, higher capital flight
Regime Durability	+	The longer the regime, the higher the capital flight.
Executive Constraints Decision Rules	+	The higher the constraints in decision-making, the higher the capital flight
GDP Growth	-	The higher the growth of GDP, the lower the capital flight.
Inflation CPI	-	Higher inflation lowers the capital flight.
Capital control	+	The higher the capital control, the higher the capital flight

6. Conclusion and Policy Recommendations

Capital flight may bring several negative consequences to an economy. It destroys the economic stability of a nation and may lead to lower living standards. In this paper, we have done comprehensive research on how corruption affects Capital Flight. We have found the impact positive and significant. Alongside corruption, we have also found significant and positive impacts of high regime durability, rule of law, executive constraints, and decision rules, and we have uncovered interest rate parity on Capital Flight.

On the other hand, GDP growth rate and inflation are negatively correlated with Capital Flight. Governments and policymakers must develop a more complex approach to the problem to prevent legal and illegal capital outflows. It may include establishing well-functioning political and judicial institutions that will ensure political stability within a country. Also, the government must implement steps to reduce corruption, which usually contributes to illegal capital outflows. We expect to conduct more comprehensive research on this topic, including in more countries, with greater variation in the future. That is the way forward of this whole work. Table 5 shows the summary table of the results.

The government has to have a strong political commitment to uproot corruption. Institutions such as the Anti-Corruption Commission, respective ministries, departments, and law enforcement agencies must be strengthened enough to take timely action against people who are involved in illegally transferring money abroad. Illicit capital flight is very harmful, especially for the least developed nations. This acts as a one-way traffic from LDCs to developed economies, benefiting the latter disproportionately. Combating this national adversity requires identifying the perpetrators and understanding why and how they do it. The government needs to have a strong set of laws in place to prevent this high-end corruption. More importantly, the laws must be executed boldly wherever and whenever applicable. For the greater interest of the nation's future, no government should give any space to this corruption in the form of nepotism and ignorance.

Eradicating corruption is not easy since it is inherent in many societies. With the help of development organizations, the private sector, and experts, the government should create a knowledge-based environment that would change society's perception to its core against corruption and its adverse effects. There should be a highly effective cell for monitoring and evaluating public

work. Accountability must be ensured in every place. Honesty should be rewarded regularly. Above all, the government should make the situation easy for someone who wants to dedicate themself to the betterment of the people and the country with full honesty. The overall system should promote meritocracy, not corruption at all. Keeping the interest rate high can create an incentive to hold the domestic currency strong, which can control capital flight. Introducing higher tax rates in risk-free financial instruments, such as government bonds, would help investors keep more trust in investment in a particular economy. People trust more on the local banks and would hardly find incentive to take money out of the land. Higher interest rates also encourage greater foreign currency inflow, which boosts local currency. Having said all this, the government should keep an eye on the balance of payment so that leveraging interest rates cannot create a high debt position.

High regime durability may occur because of the lack of democracy. So, it is highly advisable to institute a parliamentary democratic political system reflecting the reduction of capital flight. Most autocrat-ruled and military-ruled countries suffer from Capital Flight as no elected government has existed for a long time. These countries experience a lack of accountability in every sector. The institutions are mostly ill-functioned and manipulate laws in various ways. These anomalies create a lot of loopholes in the system through which money can be transferred easily through improper channels. Ultimately, people start losing trust in the economy to be able to recover. Hence, a rule of constitution must be in place where a government needs to be elected through regular public voting within a specified time. Although a parliamentary form of government may not necessarily ensure the ultimate closure of capital flight, it would surely present a situation where the authority can be held responsible and accountable. Executive constraints and decision rules cause Capital Flight significantly. Flexibility should be encouraged and provisioned in the public service, and red tape bureaucracy should be reduced as much as possible.

Rigidity is a common problem in public service in most of the countries. The placement of too many rules and regulations creates a hindrance to efficiency. A simple decision, which could otherwise be executed briefly, would go through many files and paperwork in a public office. Some government officials also lack the intent to remove this barrier of red tape bureaucracy. The reasons are mostly corruption, lack of digital knowledge, lack of accountability, training, and adept human resources. The government must recruit eligible and efficient individuals with proper remuneration and incentives to fix this issue. Once given proper and adequate training, they should be brought under full surveillance and regular monitoring. The whole system should be digitalized as quickly as possible. The job of public service employees should not be over-secured as guaranteed jobs may significantly reduce efficiency and commitment towards people. Central Bank and the respective government think-tank must ensure a sustainable exchange rate policy for its domestic currency that minimizes the impact of uncovered interest rate parity. Capital flight is an outflow of capital from a country due to negative monetary policies, such as currency depreciation, or carry trades in which low-interest rate currencies are exchanged for higher-return assets. This results in uncovered interest rate parity, which is positively significant with increased capital flight. The exchange rate policy varies from country to country. The government may intervene in the policy as and where required. For example, Exchange rate practices in Bangladesh are run by a managed floating system. The objective is to refrain the local currency from an over-evaluation or over-devaluation. In this regard, the government should involve scholars, economic experts, and researchers in prudent actions to reduce the impact of uncovered interest rate parity.

GDP growth is shown to be significantly negatively related to Capital Flight. The government can adopt a few policies to retain sustainable GDP growth**,** such as investment in infrastructure, e.g., new roads, railways lines, and broadband internet – which increases productive capacity and reduces congestion. Privatization and deregulation of certain industries also help boost productivity. Economic growth can be boosted by creating an environment conducive to consumer spending. Governments worldwide use tax cuts and rebates to boost spending. Businesses also drive the economy by hiring workers, raising wages, and investing in growing their businesses. A company that buys a new manufacturing plant or invests in new technologies creates jobs spending, leading to economic growth. So, the more business-friendly the ecology can get, the easier it is for the economy to grow. Deregulation is also often used to relax the rules imposed on businesses. This paves the way for the economy's growth to a great extent by embracing new investments. Another effective measure is infrastructure spending, which aims to create construction jobs and increase productivity by enabling businesses to operate more efficiently.

Acknowledgment: I would like to express my sincere gratitude to the Department of Private and Economic Law, Vrije Universiteit Brussel, Ixelles, Belgium, for their invaluable support and academic resources that greatly contributed to the success of this research. Their guidance and encouragement provided a strong foundation for the development of my work.

Data Availability Statement: The author affirms that the data supporting the findings of this study are available within the article and its supplementary materials. Raw datasets underlying the results presented in this work are available from the corresponding author upon reasonable request.

Funding Statement: No funding has been incurred in the preparation and conduct of this research work.

Conflicts of Interest Statement: No conflicts of interest have been proclaimed by the author. Citations and references are mentioned in the information used.

Ethics and Consent Statement: The consent has been obtained from the concerned entity during the data collection and has received ethical approval and participant consent.

References

1. A. B. Tarawalie and T. Jalloh, "Determinants of capital flight in post-war Sierra Leone: An empirical analysis," Int. J. Econ. Financ. Issues, vol. 11, no. 2, pp. 108–116, 2021.
2. A. Geda and A. Yimer, "Capital Flight and its Determinants: The Case of Ethiopia: Capital Flight and its Determinants: The Case of Ethiopia," Afr. Dev. Rev., vol. 28, no. S1, pp. 39–49, 2016.
3. A. Henry, "Analysis of the Effects of Capital Flight on Economic Growth: Evidence from Nigerian Economy (1980 – 2011)," European Journal of Business and Management, vol. 5, no. 17, pp. 21-32, 2013.
4. A. J. Egbulonu and K. Bhattarai, "Determinants of capital flight: new panel evidence from Sub-Saharan Africa (SSA)," Journal of Development Economics and Finance, vol. 1, no. 2, pp. 255–287, 2018.
5. A. Mnif, O. Kharrat, and R. Feki, "The Root Cause of Capital Flight in Tunisia: An Empirical Investigation," International Journal of Social Science and Economic Research, vol. 3, no. 9, pp. 5270-5294, 2018.
6. A. Y. Yalta, "Effect of capital flight on investment: Evidence from emerging markets," Emerg. Mark. Fin. Trade, vol. 46, no. 6, pp. 40–54, 2010.
7. C. Ljungwall and Z. Wang, "Why is capital flowing out of China?" China Econ. Rev., vol. 19, no. 3, pp. 359–372, 2008.
8. D. Thomas, "Capital Flight and the Nigerian Economy: An Empirical Reassessment," Information and Knowledge Management". vol. 4, no. 4, pp. 1-8, 2014.
9. E. J. Beja, "Capital Flight, and Economic Performance: Growth Projections for the Philippines". Economics Department Faculty Publications, Quezon City, Philippines, 2007.
10. E. Osei-Assibey, K. O. Domfeh, and M. Danquah, "Corruption, institutions, and capital flight: evidence from Sub-Saharan Africa," J. Econ. Stud., vol. 45, no. 1, pp. 59–76, 2018.
11. I. Alam and R. Quazi, "Determinants of Capital Flight: An econometric case study of Bangladesh," Int. Rev. Appl. Econ., vol. 17, no. 1, pp. 85–103, 2003.
12. J. T. Cuddington, "Capital Flight: Estimates, Issues and Explanations." Princeton Studies in International Finance, United States of America, 1986.
13. M. Deppler and M. Williamson, "Capital Flight: Concepts, Measurement, and Issues, Staff Studies for the World Economic Outlook". International Monetary Fund, Washington, D.C., United States of America, 1987.
14. M. Dooley, "Country-Specific Risk Premiums, Capital Flight and Net Investment Income Payments in Selected Developing Countries". International Monetary Fund, Washington, D.C., United States of America, 1986.
15. M. Mwangi, A. Njuguna, and G. Achoki, "Relationship between corruption and capital flight in Kenya: 1998-2018," Int. J. Res. Bus. Soc. Sci. (2147-4478), vol. 8, no. 5, pp. 237–250, 2019.
16. M. S. Aziz, M. O. Khayyam, and M. M. Uddin, "Determinants of capital flight in Bangladesh: an econometric estimation," vol. 4, no. 25, pp. 121–134, 2014.
17. M. Williamson and D. Michael, "II Capital Flight: Concepts, Measurement, and Issues," in Staff Studies for the World Econ Outlook, International Monetary Fund, Washington, D.C., United States of America, 1987.
18. N. A. Al-Fayoumi, M. S. AlZoubi, and B. M. Abuzayed, "The determinants of capital flight: Evidence from MENA countries," Int. Bus. Econ. Res. J. (IBER), vol. 11, no. 1, p. 1, 2011.
19. O. T. Ramiandrisoa and E. J. M. Rakotomanana, "Why is there capital flight from developing countries? The case of Madagascar: The case of Madagascar," Afr. Dev. Rev., vol. 28, no. S1, pp. 22–38, 2016.
20. R. Quazi, "Foreign aid and capital flight," J. Asia Pac. Econ., vol. 9, no. 3, pp. 370–393, 2004.
21. S. Eshete, "The Political Economy of Capital Flight: Governance Quality and Capital Flight in the East Africa Community," International Journal of African and Asian Studies, vol. 49, no. 1, pp. 22-34, 2018.
22. S. Liew, S. Mansor, and C. Puah, "Macroeconomic Determinants of Capital Flight: An Empirical Study in Malaysia." International Business Management, vol. 10, no. 13, pp. 2526-2534, 2016.
23. T. Kossele and M. Mbai-Akem, "Capital Flight and Extent of Corruption Control in The Least Corrupt African Countries," Indian Growth and Development Review, vol. 13, no. 3, pp. 469–483, 2018.
24. Y.-W. Cheung and X. Qian, "Capital flight: China's experience," Rev. Dev. Econ., vol. 14, no. 2, pp. 227–247, 2010.