GLOBAL FINANCIAL INTEGRITY

# The Drivers and Dynamics of Illicit Financial Flows from India: 1948-2008

**Dev Kar**
**November 2010**

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*Global Financial Integrity Wishes to Thank*
*The Ford Foundation for Supporting this Project*

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# Contents

## Graphs and Charts within Paper

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*In December 2008 Global Financial Integrity released its analysis of **Illicit Financial Flows from Developing Countries: 2002 – 2006**, estimating such shifts at $859 billion to $1.06 trillion a year. This analysis is currently being updated, with revised figures extending to 2008 showing further growth in illicit outflows from poorer countries.*

*We are now pleased to release our analysis of **The Drivers and Dynamics of Illicit Financial Flows from India: 1948-2008.** Utilizing the World Bank Residual Method and IMF Direction of Trade Statistics, the hard data indicates outflows over this 61-year period of $213 billion. Adjusting this for accumulated interest on gross illicit outflows increases the figure to $462 billion. We regard this as a conservative estimate. It does not include smuggling, certain forms of trade mispricing, and gaps in available statistics. Taking these into consideration, it is entirely reasonable to estimate that more than a half-trillion dollars have drained from India since independence.*

*Budget deficits and inflation are often seen as drivers of illicit money across borders. We do not find this to be true for India. While the licit component of financial flows—foreign direct investment and portfolio investment by Indian citizens—may have reacted to such conditions, our historical analysis indicates that these conditions were of little importance in the movement of the illicit component.*

*What is clear is that, during the post-reform period of 1991-2008, deregulation and trade liberalization have accelerated the outflow of illicit money from the Indian economy. Opportunities for trade mispricing have grown, and expansion of the global shadow financial system accommodates hot money, particularly in island tax havens. Disguised corporations situated in secrecy jurisdictions enable billions of dollars shifting out of India to "round trip," coming back into short- and long-term investments, often with the intention of generating unrecorded transfers again in a self-reinforcing cycle.*

*Illicit outflows drain hard currency reserves and reduce tax collection, harming India's poor and widening income gaps. Global Financial Integrity, through its Policy Advisory Program for governments, urges that forthright steps be taken to address these realities. We note and applaud the very impressive growth of the Indian economy in recent years. We wish to encourage that this growth accrue to the benefit of all citizens of India—the world's largest democracy and an emerging power exerting enormous influence across the globe.*

*We especially thank Dev Kar and Karly Curcio for producing this analysis. The Ford Foundation has generously supported this work, for which we are most grateful.*

**Raymond W. Baker**
Director, Global Financial Integrity

# Abstract

This study examines the magnitude of illicit financial flows from India, analyzing the drivers and dynamics of these flows in the context of far-ranging reform. In the process, it represents perhaps the most comprehensive study on the subject matter, both in terms of the range of issues involved and the time span covered. At its heart is a dynamic simulation model which seeks to capture the interaction of economic, structural, and governance issues that underlie the generation and cross-border transfer of illicit capital. Due to the random nature of illicit flows, this model cannot be used to forecast such flows. Apart from the fact that illicit flows are unrecorded, primary motivations that drive them such as the desire for the hidden accumulation of wealth are not easy to test empirically. Nevertheless, a formal model can help us think systematically about the important drivers of illicit flows and how they are likely to interact. An important finding in this study is that illicit flows from India are more likely to have been driven by a complex interplay of structural factors and governance issues than they are by poor macroeconomic policies. Hence, in order to curtail such flows policymakers must address these entrenched issues through a combination of tax reform and other redistributive policies to ensure more inclusive growth. They must ensure that customs reform and other regulatory oversight lead to significant improvements in governance necessary to shrink the underground economy. For their part, developed countries must hold banks and offshore financial centers to greater accountability regarding transparency so as not to facilitate the absorption of illicit funds.

# Executive Summary

The economic history of India since independence on August 15, 1947, can be characterized as a transition from a controlled economy to one embracing progressive liberalization. A foreign exchange crisis amidst political instability in 1991 provided the impetus for policymakers to reform the socialist economy under the leadership of P.V. Narasimha Rao, the twelfth Prime Minister of India. He has since been seen as the father of Indian economic reforms. The then Finance Minister Dr. Manmohan Singh, the present Prime Minister of India, launched India's free market reforms that saved the country from financial ruin and placed it on a path to sustained economic growth.

This report presents an in-depth study of the issue of illicit financial flows (or illegal capital flight) from India using the World Bank Residual model adjusted for gross trade misinvoicing which excludes illicit inflows through export over-invoicing and import under-invoicing. For reasons enumerated (Section III, paragraphs 36-41), the method used in this study estimates gross illicit outflows without netting out illicit inflows as in the Traditional method used by economists. As discussed in greater detail in this report, netting out illicit inflows seriously understates the problem of illegal capital flight which worsens income distribution, reduces the effectiveness of external aid, and hampers economic development.

According to the estimates provided in this study, India lost a total of US$213 billion dollars due to illicit flows, the present value of which is at least US$462 billion based on the short-term U.S. Treasury bill rate as a proxy for the rate of return on those assets (Section III A (i), and Appendix Table 11). In all likelihood, this estimate is significantly understated because economic models can neither capture all the channels through which illicit capital can be generated nor the myriad ways in which the capital can be transferred. While this estimated stockpile of illicit assets held abroad by resident Indian nationals falls far short of the US$1.4 trillion reported by the Indian news media in the run-up to the General Elections in April-May 2009, the figure still represents a staggering loss of capital. If India would have avoided the flight of capital over such a long period, it would have enabled the country to either contract less debt or pay off the existing debt at the time. A country that is still struggling to eradicate poverty with a shortage of capital relative to its development needs can ill-afford to lose funds of such magnitude.

The total value of illicit assets held abroad represents about 72 percent of the size of India's underground economy which has been estimated at 50 percent of India's GDP (or about US$640 billion at end 2008) by several researchers (see Chart 2). This implies that only about 28 percent of illicit assets of India's underground economy are held domestically, buttressing arguments that the desire to amass wealth without attracting government attention is one of the primary motivations behind the cross-border transfer of illicit capital. While the relative proportion of foreign to domestic illicit assets that make up the underground economy can be expected to vary across countries depending upon a number of economic, legal, and political factors, efforts to hide illicit wealth leads to what we call the "iceberg effect," wherein the visible domestic portion of illicit assets represents only a sliver of the vast portion, mostly foreign, that is hidden from view.

In an effort to identify the root cause of illicit flows from India, we formulate a block-recursive dynamic simulation model that incorporates three sets of complex drivers—macroeconomic factors like government deficits, inflation and inflationary expectations, structural factors such as increasing trade openness and faster rates of economic growth and their impact on income distribution, and overall governance as captured by a measure of the underground economy. As complex as these factors are, illicit flows are also driven by the desire to hide ill-gotten wealth, a motivation that is extremely difficult to model and test. Keeping these caveats in mind, model simulations provide some interesting insights into the drivers and dynamics of illicit flows from India.

We find scant evidence that imprudent macroeconomic policies drove illicit flows from the country. After all, the central government budget deficits have been rather limited as has been the impact of deficit financing on inflation (Table 1). This finding is subject to two caveats. First, lack of comprehensive data on consolidated government revenue and expenditure (i.e., including state and local governments and not merely the central government) did not allow an assessment of larger deficit financing on inflation and the impact of larger deficits themselves on driving illicit flows. Second, the shifting list of items subject to price controls and the varying intensity of implementation detracts from the quality of the wholesale price index as a measure of inflation. On balance, the report supports the IMF, Panagariya (2008), and others who observe that macroeconomic policies in India have been prudently managed and played a stabilizing role. The reason that changes in the deficit and inflation do not adequately explain illicit flows is probably because macroeconomic drivers have a far stronger influence on *licit* capital movements (involving private portfolios) than on flows that are illicit.

Model simulations strongly indicate that the cause of illicit outflows from India lie in a complex web of structural and governance issues. The results show that reform itself had a negative impact on illicit flows in that liberalization of trade and general deregulation led to an increase in illicit flows rather than their curtailment (Section IV, paragraph 72). The result is counterintuitive in that one would typically expect economic reform to dampen illicit transfers as economic agents gain more confidence in the domestic economy. In order to explain this result, it is necessary to analyze how the "by-products" of reform, namely economic growth and income distribution, and increasing trade openness relate to illicit flows. Because these structural by-products of reform behaved quite differently during the pre- (1948-1990) and post-reform (1991-2008) periods, the report examines their relationship to illicit flows by splitting the sample period into those two phases. Collapsing the two periods and simulating the model over the entire period 1948-2008 obscured the effects of the variables so that they no longer seem significant in explaining capital flight. At the same time, the longer sample period was imperative for testing the robustness of the model.

There was no statistically significant link between trade openness and misinvoicing (captured in the GER estimates of trade misinvoicing) in the years prior to reform. However, in the years since 1991, when economic reform led to increasing trade openness (as the size of external trade to GDP more than doubled from 10.8 percent in the pre-reform period to 21.7 percent after reform), results

show openness to be statistically significant and positively related to trade misinvoicing (Section IV, paragraph 73-74).

It seems that trade liberalization merely provided more opportunities to related and unrelated companies to misinvoice trade, lending support to the contention that economic reform and liberalization need to be dovetailed with strengthened institutions and governance if governments are to curtail capital flight. Otherwise, deregulation will merely provide an added incentive for those seeking to transfer illicit capital abroad. That deregulation needs to be accompanied by stricter oversight is nothing new—we now know that deregulation without adequate oversight of financial institutions on Wall Street has helped, not hindered, their abuse.

Data also confirm that economic reform since 1991 has fostered a faster pace of economic growth. However, analysis shows that more rapid economic growth in the post-reform period has actually led to deterioration in income distribution (Section IV, paragraphs 75-80 and Charts 6 and 7). The rising trend towards greater income inequality during a period of rapid economic growth is corroborated by Sarkar and Mehta (2010), Sengupta et. al. (2008) and others.

A more skewed distribution of income implies that there are many more high net-worth individuals (HNWIs) in India now than ever before. Based on the capacity to transfer substantial capital, it is the HNWIs and private companies that are the primary drivers of illicit flows from the private sector in India (rather than the common man). This is a possible explanation behind our findings that the faster rates of growth in the post-reform period have not been inclusive in that the income distribution is more skewed today, which in turn has driven illicit flows from the country. This result does not hold in the pre-reform period when growth rates were low and income distribution was more equitable.

While a great deal of information is available with respect to structural factors, governance indicators for the period 1948-2008 are scarce. For example, traditional governance indicators compiled by the World Bank or Transparency International (Corruption Perceptions Index) only cover a fraction of this period. A review of the literature suggests that the underground economy not only acts as a proxy for governance, it grows by absorbing illicit inflows and provides the funds for cross-border transfers of illicit capital. While the underground economy the world over often involves illegal activities, in India even legal businesses and the government contribute to it. According to the Indian Council for Research on International Economic Relations, legal businesses controlled by the government, government expenditures and taxes have also contributed to the creation of illicit funds.

A time series on the size of the underground economy was developed assuming that it was zero percent at independence and grew to 50 percent of GDP by the end of 2008, as found by a number of researchers. The series was subject to spline interpolation using these boundary conditions and ensuring that estimates for intervening years, 1967/68-1978/79, correspond to those found by Gupta and Gupta (1982) using the monetary approach. According to this measure, the post-reform period

is characterized by a much larger underground economy (averaging 42.8 percent of official GDP compared to just 27.4 percent in the pre-reform period). The one period lag, rather than the current size of the underground economy, was found to be more statistically significant in explaining larger illicit flows from the country since reform (Section IV, paragraphs 70-71).

We also analyzed the absorption of illicit financial flows from the Indian non-bank private sector into developed country banks (henceforth 'banks') and offshore financial centers (OFCs) for the period 1995-2009 (Section V). This is the longest period for which cross-border deposit data are available from the Bank for International Settlements (BIS) which offer some useful insights into investor behavior regarding illicit flows.

For the period as a whole, there is an unmistakable trend showing that the Indian private sector shifted away from bank deposits to deposits in OFCs. As the share of OFC deposits increased from 36.4 percent of total deposits in 1995 to 54.2 percent in 2009, deposits in banks fell commensurately to 45.8 percent in the last year (Appendix Table 14). As OFCs are subject to even less oversight than banks and typically hold a larger share of illicit funds, the increasing recourse to OFC deposits relative to banks could be symptomatic of the burgeoning underground economy in India from which such funds emanate.

Following the terrorist attacks on the United States in September 2001, private sector deposits from India into banks in the United States, United Kingdom, and other developed countries fell in 2001 and further in 2002. In the next year, there was a modest increase which was followed by steady increases in 2004-05 and a jump in 2006. But the growth in external bank deposits was short-lived. After the collapse of Lehman Brothers and other Wall Street investment banks in 2007 and the beginning of the global financial crisis later that year, private sector deposits from India into banks in developed countries declined, followed by a modest rise in 2008-2009 when there was a large increase in illicit flows.

A number of policy implications arise out of this study (Section VI). For instance, given that growth of the underground economy is a major driver of illegal capital flight, it follows naturally that policy measures that shrink the underground economy can be expected to curtail illicit flows. Since tax evasion is a major driver of the underground economy, efforts to expand the tax base and improve tax collection can be expected to curtail illicit flows. Moreover, the finding that faster growth by itself is not sufficient in curbing illicit flows implies that redistributive policy measures are needed to ensure that growth remains inclusive so as not to leave the poor behind or, worse still, generate many HNWIs who drive illicit flows. In order to curtail illicit flows, the government would need to (i) ensure that the rule of law is applied fairly and swiftly, (ii) strengthen regulatory and legal institutions, and (iii) adopt a host of policy measures to improve both public and corporate governance such as improving tax compliance and collection. These domestic measures need to be complemented by tighter regulatory oversight of banks and OFCs by developed countries in order to ensure that financial institutions do not facilitate the absorption of illicit capital.

# I. Introduction

1. **The present study provides an in-depth analysis of the drivers and dynamics of illicit financial flows from India since the first full year after independence on August 15, 1947 until 2008, the latest year for which complete data are available.** Specifically, the paper will analyze the long-term evolution of illicit flows in the context of the country's transition from a centrally planned socialist economy to one embracing economic reform and enjoying faster rates of growth. Can the dynamics of illicit flows be adequately represented by a simulation model and can the model capture complex factors such as macroeconomic imbalances, structural changes, and poor overall governance that drive capital flight? Hence, one of the main objectives of the paper is to shed light on the extent to which these factors drive illicit flows from India.

2. **It is difficult to capture possible drivers of illicit outflows.** For instance, past studies posit, and some have found, that corruption is one of the main drivers of illicit financial flows. While corruption is not a new phenomenon, there are serious problems measuring it, particularly when we are covering a long time period. For instance, neither the World Bank database on governance indicators nor Transparency International's Corruption Perceptions Index cover the length of period (1948-2008) in this study. We therefore attempt to capture the state of governance in India using a measure of India's underground economy, given that one is almost a mirror image of the other. To our knowledge, this is the first study that uses a measure of the underground economy as a driver of illicit flows.

3. **According to a recent study by Kar and Cartwright-Smith (2008), India lost between US$23.7-$27.3 billion annually in illicit financial flows (IFFs) during 2002-2006, making it one of the top exporters of such capital.** Since that report was published in December 2008, there have been significant revisions to balance of payments data reported by India to the IMF as a result of which average illicit flows are now estimated at US$16 billion per year over that same period (see Appendix Table 6). Substantial as these outflows are, they are likely to be understated given that economic models cannot capture all channels through which illicit capital can leave the country. The report received significant media attention in India in the run up to the 2009 general elections as political parties jostled to take the initiative on this long-festering issue in a country where economic growth has left many behind in entrenched poverty. Indian newspapers ran articles claiming that Indians held close to US$1.4 trillion in illicit funds in foreign accounts. We present a systematic study of whether such claims can be supported in light of model estimates and available data on cross-border, non-bank private sector deposits from India in foreign banks and offshore financial centers as reported by the Bank for International Settlements (BIS).

4. **It should be recognized at the outset that illicit flows differ from the broadest definition of capital flight which also includes "normal" or "legal" outflows due to investors' portfolio choices.** Specifically, illicit flows are comprised of funds that are illegally earned, transferred, or utilized—if laws were broken in the origin, movement, or use of the funds then they are illicit. The transfer of these funds is not recorded anywhere in the country of origin for they typically violate the national criminal and civil codes, tax laws, customs regulations, VAT assessments, exchange controls, or banking regulations of that country.

5. **Apart from this difference in definition, the term illicit flows does a better job of capturing the essence of the transfer as a problem that requires the cooperation of both developing and developed countries.** While developing countries need to implement appropriate economic and governance-related policy measures to curtail illicit flows, developed countries need to make the absorption of such flows in mainly Western financial institutions much more difficult. It was in recognition of the two-prong approach to curbing capital flight that the United Nations and other international organizations finally started to adopt the term *illicit financial flows* in official documents on the subject. It would be useful to keep the difference in mind when comparing estimates of capital flight from India found in previous studies with those on illicit flows presented here.

6. **Unrecorded illicit flows from a country, driven by the interplay of complex drivers that are economic, structural, and governance-related, are likely to be unstable or non-stationary over time.** In order to test this hypothesis, we subject alternative estimates of illicit flows to the Augmented Dickey-Fuller test for stationarity (see Section IV, Tables 10, 11 and 12). Given that drivers of illicit flows such as poor governance, political instability, weak institutions, and lack of macroeconomic reform are notoriously difficult to simulate, achieving model convergence can be very difficult. In fact, we are unaware of any study analyzing the behavior of illicit flows in the context of a dynamic simulation model. If estimates of illicit flows are found to be non-stationary such as in this paper, it implies that even if the model converges, it cannot be used to make long-range forecasts of illicit flows because in the long run, estimates of illicit flows exhibit a random-walk pattern.

7. **The paper is organized as follows.** Section II provides a brief overview of the Indian economy since independence in order to see how illicit flows have evolved in the context of main economic developments during the four intervening fiscal-year phases identified by Panagariya (2008), 1951/52-1964/65, 1965/66-1980/81, 1981/82- 1987/88, and 1988/89-2005/06. In order to conform to calendar year data and to extend the period of study to latest available data, we modify these four phases to 1951-65, 1966-81, 1982-88, and 1989-2008, adding the immediate post-independence period of 1947-1950. Section III presents the methodology underlying the estimation of illicit flows bringing out the differences in treatment of estimates used in this paper versus those adopted in previous studies which we call the

Traditional method. We then develop a model of illicit financial flows in Section IV in order to identify the main drivers of these flows pointing out the reasons behind the strong empirical support or lack thereof in light of both economic theory and intuitive appeal. Section V of the paper discusses why it is extremely difficult to relate cumulative capital flight to absorption, which is the stock of foreign assets held by India's private sector. Section VI presents the policy implications for curtailing illicit flows in light of the main findings of the paper which are summarized in Section VII.

# II. Salient Developments in the Indian Economy Since Independence

8. **This section provides a brief overview of the evolution of the Indian economy with reference to key macroeconomic indicators (Table 1) and possible implications for illicit flows.** The discussion provides a synopsis of prominent developments in the Indian economy over more than 60 years with reference to key economic indicators used in this study.

## 1947-1950 (Between Independence and the Creation of a Republic)

9. **At independence, India was mainly an agrarian economy, with more than 70 percent of its population deriving a livelihood from agriculture which accounted for about 50 percent of GDP.** The country faced serious balance of payments difficulties in the years immediately following independence as it ran sizable trade deficits with major trading partners. This forced the country to limit the current account deficit to the amount of foreign exchange reserves held. Although India had accumulated a large sterling balance, much of it was blocked because withdrawals were limited by agreements. A low level of usable reserves meant that India had to control imports which had to be paid in hard currency. Thus, import policy alternated between liberalization and increased restrictions depending upon the availability of foreign exchange. This led to exchange rationing and strict controls limiting imports to bare necessities. The Five-Year Plans, which provided the context to such policy measures, were developed, executed, and monitored by the Indian Planning Commission established in March 1950 with the Prime Minister as Chairman.

### Table 1. India: Key Macroeconomic Data and Selected Indicators, 1948-2008 (in millions of U.S. dollars unless otherwise indicated)

| Year | Fiscal Deficit† | Fiscal Deficit† | Trade Openness | Average Inflation | Underground Economy | Growth Rate of Real GDP | Gini Coefficient‡ | Cumulative CED+GER | Average CED+GER | CED+GER |
|---|---|---|---|---|---|---|---|---|---|---|
| Averages over Period | US Million Dollars | as percent of GDP | [(Exp+Imp)/ GDP] in percent | (WPI) in percent | as percent of GDP | | Income Inequality Index | (Illicit Outflows) | (Illicit Outflows) | as percent of Exports |
| 1948-1950† | 31.50 | 0.2 | 11.5 | 10.8 | 8.8 | -4.4 | … | 389.1 | 194.53 | 15.66 |
| 1951-1965† | 1,366.32 | 3.9 | 10.9 | 3.1 | 12.2 | 3.9 | 37.0 | 2,670.9 | 205.45 | 15.15 |
| 1966-1981 | 4,187.96 | 4.2 | 10.1 | 9.2 | 31.9 | 3.7 | 32.4 | 23,388.0 | 1,461.75 | 33.32 |
| 1982-1988 | 17,726.74 | 7.7 | 11.5 | 6.2 | 52.3 | 4.2 | 32.1 | 24,275.9 | 3,467.99 | 35.38 |
| 1989-2008 | 23,566.95 | 4.6 | 20.8 | 6.8 | 43.2 | 6.4 | 33.1 | 162,463.2 | 8,123.16 | 15.66 |
| Entire Sample 1948-2008 | **11,751.61** | **4.6** | **14.0** | **6.6** | **32.0** | **4.3** | **33.8** | **213,187.0** | **3,675.64** | **22.80** |
| **Pre-Reform** 1948-1990 | 6,426.13 | 4.8 | 10.8 | 6.6 | 27.4 | 3.4 | 34.0 | 66,547.6 | 1,663.69 | 27.60 |
| **Post-Reform** 1991-2008 | 23,586.01 | 4.3 | 21.7 | 6.7 | 42.8 | 6.5 | 33.4 | 146,639.4 | 8,146.63 | 12.13 |

† Fiscal position was in surplus 1948-1949 and zero 1951, and are excluded from the averages.
‡ Gini Coefficient series are only available for 1951-2005.

10. **Despite strict economic controls in the years following the birth of the nation, illegal economic activities and opportunities were limited so that the size of the underground economy amounted to less than 9 percent of official GDP (Table 1).** Furthermore, a nascent economy struggling to get up on its feet meant that official GDP was also relatively small. In fact, the average size of the external trade sector was around 11.5 percent of GDP in the period 1948-1950 and economic difficulties resulted in a contraction of real GDP by an average of about 4.4 percent. Limited access to foreign and domestic financing constrained the fiscal deficit to just 0.2 percent of GDP (in fact the fiscal position was in surplus during 1948-1949) although average inflation was running high at 10.8 percent per annum due to progressive decontrol of prices which were becoming difficult to administer.

## 1951-1965 (Phase I)

11. **The First Five-Year Plan covered the period April 1951-March 1956. It should be noted at the outset that in formulating the Plans, public discussion was facilitated at various stages and the means for implementing them was broadly in accord with the political system of parliamentary democracy.** The First Plan's objective was to lift the country from the cycle of poverty and in doing so it focused on the agrarian sector, including investments in dams and irrigation. The Plan was a success in that the economy grew at a faster rate than the target which prompted more ambitious goals and a bolder approach in formulating the Second Plan (April 1956-March 1961) targeting an increase in real national income of 25 percent over the five-year fiscal period ending 1960/61, a large expansion of employment opportunities, rapid industrial growth, and reduction of income inequalities. However, its credibility took a beating when unforeseen defense expenditures (following armed conflicts with China and Pakistan) and the leveling off of foreign assistance placed a heavy burden on the economy, all within the short span of three years, 1962-1965. In fact, all aid to India, including food aid, was cut off by donor countries in the wake of the 1965 war with Pakistan leading to a virtual collapse of the economy. Mainly as a result of higher defense expenditures and the war effort, the central government fiscal deficit widened to 3.9 percent of GDP on average during the period 1951-1965 even as GDP growth reached nearly 4 percent. As the trade sector failed to keep pace with the growth of the economy, trade openness declined from 11.5 percent of GDP in the previous period to 10.9 percent of GDP in the period 1951-1965.

12. **Although the government made an effort to increase tax revenues by widening and deepening the tax structure under the Third Five-Year Plan (April 1961-March 1966), these measures had a limited payoff.** Import restrictions, which were already severe, were progressively intensified. There were reports of large profits by some importers and the illegal sale of import licenses linked to corruption and governance issues. Among other developments, the domestic price of gold rose significantly above the world price which drove smuggling of the precious metal into the country. As a result, the government estimated

that it lost between US$60-100 million in foreign exchange annually, and it adopted several measures to curb the illicit smuggling which met with limited success. Higher taxes led to greater tax evasion which contributed to an expansion of the underground economy and average illicit flows from the country nudged up to US$205 million per year from about US$195 million per annum in the wake of independence (1948-1950).

## 1966-1981 (Phase II)

13. **Following a few years of Plan holiday, the Fourth Plan (1969-1974) was marked by India's recourse to financing from the IMF.** Two consecutive droughts which hit the country in 1966 and 1967, brought into focus the main weaknesses of the plan strategy— neglect of agriculture relative to industry and India's continued reliance on concessional external assistance which, incidentally, was higher than planned. The government was forced to launch an additional tax effort in order to fund its public sector program which turned out to be larger than originally anticipated. The expected surplus from tax earnings did not materialize primarily because the surpluses from public enterprises did not contribute as much as expected. In fact, the government had to rely more heavily on deficit financing in the early years which expanded the money supply significantly and expanded bank credit to the government and the private sector. Monetary expansion accelerated the rate of inflation to 9.2 percent during this period (Table 1).

14. **As a result of growing political demands for nationalization of banks, the government began considering measures to secure greater "social control" of banks, including the establishment of a National Credit Council to synchronize credit policies and development priorities.** There was an agreement among policymakers that larger capital expenditures by the government would stimulate a faster rate of economic growth and allow the Indian economy greater resilience to adverse weather which dampened agricultural production and overall economic growth. While the balance of payments position improved, import policy was still driven by foreign exchange scarcity and imports of commodities with well established domestic production were banned.

15. **Indira Gandhi launched the "Garibi Hatao" or Remove Poverty policies as part of her 1971 election bid, and the Fifth Plan's (1974-1979) stress on poverty alleviation and employment followed directly from this agenda.** In effect, these policies did precious little to actually alleviate poverty. Instead, they acted in combination with poor revenue collection to worsen the consolidated deficits of the central and state governments. The difficulties for fiscal policies were further exacerbated in 1971-72 due to the influx of 10 million Bangladeshi refugees, natural disasters in many parts of the country, and a conflict with Pakistan in December 1971. These developments brought about significant budgetary pressures and the average annual fiscal deficit deteriorated during the period 1966-1981 to 4.2 percent of GDP. The government's continued recourse to credit from the Reserve Bank of India as

well as cost-push factors led to a significant rise in average inflation to 9.2 percent per year. Meanwhile, higher rates of taxation to relieve budgetary pressures and higher inflation sharply increased outflows of illicit capital, which jumped to US$1.5 billion per annum on average from around US$205 million per year in the previous period. Given continued controls on the economy and anti-private sector policies, the economy chugged along at the 3-4 percent "Hindu rate of growth."

## 1982-1988 (Phase III)

16. **Economic policy during this period was governed by the Sixth Five-Year Plan (1980-1985), and it marked a reversal of the socialist model of economic development.** When Rajiv Gandhi was elected as prime minister, he aimed for rapid industrial development, especially in the area of information technology. Progress was slow, however, partly because of caution on the part of labor unions and the communist political parties. The Sixth Plan also marked the beginning of economic liberalization.

17. **In the second half of the 1980s, wholesale price inflation was well below the trend during the earlier decades.** The fall in wholesale prices mirrored a decline in world oil prices in 1986. But there was a subsequent buildup of inflationary pressures mainly due to record high central government fiscal deficits which drove growth in high-powered money (or monetary base). Moreover, the depreciation of the Indian rupee translated into an increase in import costs, and because the government absorbed the higher costs by not passing them to domestic prices, the central government budget deficit shot up to an average of 7.7 percent of GDP. In response to the buildup of inflationary pressures, the government implemented restrictive monetary and credit policy to dampen inflationary expectations. As a result, average inflation actually declined to 6.2 percent per annum from 9.2 percent in the previous period. However, partly in response to the higher deficits and inflationary expectations, illicit financial flows surged to US$3.5 billion per year or about 35.4 percent of exports as the underground economy expanded to more than 50 percent of GDP on average. Meanwhile, weighed down by controls and low productivity of labor, the official economy grew barely more than 4 percent per year.

## 1989-2008 (Phase IV)

18. **The first two years in this period were marked by political instability and were covered by an Annual Plan rather than the usual medium-term 5-year Planning model.** The country faced a foreign exchange crisis in 1991 when reserves sank to only about US$1 billion. The crisis forced a two-year Plan holiday during which policymakers reevaluated the planning model. In that sense, the Eighth Plan marked the beginning of planning for a market-oriented economy.

19. **Under pressure, policymakers took the risk of reforming the socialist economy under the leadership of P.V. Narasimha Rao, the twelfth Prime Minister of India.** He has since been seen as the father of Indian economic reforms. At that time Dr. Manmohan Singh, the present Prime Minister of India, launched India's free-market reforms that saved the country from bankruptcy and placed it on a path to sustained economic growth. The government announced that its import policy for 1988-91 would include tariff and nontariff barriers, as well as import licenses or customs clearance permits unless the goods in question were exempt. At the same time, it outlined a systematic and sustained effort to promote exports. There were no major policy changes regarding FDI.

20. **Significant financial liberalization was implemented in May 1989 as interest rate ceilings on money market instruments were removed and two new financial instruments (certificates of deposits and commercial paper) were established in order to allow companies to obtain financing at more favorable interest rates.** Increasing import prices and trade liberalization led to a significant deterioration in India's current account balance but increased trade openness to 20.8 percent of GDP on average during the most recent period, 1989-2008.

21. **In 1992, India's Securities and Exchange Board (SEBI) implemented some capital market reforms aimed at improving firms' efficiency, making market transactions more transparent, curbing unfair trading practices, and establishing effective regulations to oversee capital markets.** Significant trade liberalization was introduced in April, but the trade regime continued to be highly restrictive as exports of certain commodities were subject to quantitative restrictions while import of most consumer goods was banned. Industrial growth recovered in 1993, which reduced the public sector deficit, and gross foreign reserves increased. The government removed barriers to entry for domestic and foreign firms, and concrete steps were taken to increase FDI. As a result of wide and far-reaching economic reform policies that started in 1991, foreign capital inflows increased sharply and the Reserve Bank of India (RBI) had to intervene in order to prevent an appreciation of the rupee. Further liberalization of exchange restrictions on current account transactions were introduced in stages in the coming years which attracted large foreign direct and portfolio investments during 1993-95 and lower external debt. In 1998, the government adopted further policy measures to open the capital account and to liberalize the trade and exchange regimes. Policy measures were also introduced to boost exports which reduced red tape to make it easier to export and for companies in key export sectors to import capital goods. Under trade liberalization policies, the maximum tariff rate was lowered and a national mineral policy was revised to allow more private participation in the industry. These measures helped to further expand the traded sector while economic reform in general provided a lasting boost to economic growth which accelerated to 6.4 percent per annum on average, finally breaking free of the sluggish growth registered in the previous periods.

22. **A defining feature of the later period is that the government progressively introduced a fiscal stabilization package which relied on tight financial policies, structural reforms, abolition of budgetary export subsidies and reducing peak tariffs.** As a result of strong adjustment policies, the average fiscal deficit was brought down from 7.7 percent of GDP in the previous period to just 4.6 percent of GDP during 1989-2008. The lower fiscal deficit, greater recourse to non-inflationary financing, and a series of mild and favorable monsoon rains helped to boost agricultural production and temper the rate of inflation to 6.8 percent per annum. However, in the absence of credible and lasting improvements in governance, illicit financial flows from the country surged to an all time high of US$8.1 billion per year from US$3.5 billion in the previous period. The concluding observation is that while reform has actually facilitated more illicit flows, ratios of illicit flows to either GDP or exports misrepresent this disturbing trend. Table 1 shows that the ratio of illicit flows to exports declined from 35.4 percent in the previous period to just 15.7 percent during 1989-2008.

## 1991 Reform in the historical context

23. **The piecemeal liberalization that had already begun in the early 1980s was placed on a firmer, more broad-based, footing when the Narasimha Rao government came to power in June 1991.** The impetus for sustainable economic reform got a further boost following the macroeconomic crisis of 1991 which was driven by past policies of heavy public sector borrowing abroad and fiscal profligacy. However, the economic reform that followed was implemented slowly and only after much discussion within the government and between the government and major economic agents including the private sector. Policy changes were therefore largely anticipated and came in the wake of economy-wide deliberations that fully involved India's complex democratic process. As Panagariya (2008) notes, the Indian government "exhibited the capacity to implement the policies" although "endemic corruption…often led to distortions in the implementation" which in his opinion, distinguished India from Africa where reform was often imposed from outside by agencies like the IMF and the World Bank without being fully embraced by civil society or where the government did not have the capacity or the will to implement the reform and strong institutions to ensure follow-through.

24. **The other key feature of Indian economic reforms was that India never experienced macroeconomic instability of the kind that gripped Latin American countries from time to time.** Relative economic stability is marked by the fact that since independence, only rarely did run-away inflation, complete economic decline, or severe balance of payments crisis threaten to derail the Indian economy. This is largely corroborated by the key macroeconomic data presented in Table 1. What are the underlying reasons for macroeconomic stability? For instance, the relatively low (mostly single digit) rates of inflation can be traced to three factors. First, the Reserve Bank of India did not monetize the central government budget deficits to the extent prevalent in high-inflation countries. On the contrary, India's high domestic

savings rate and a deepening financial sector helped bond financing of government deficits particularly in the latter years. Second, the trade openness indicator presented in Table 1 shows that barring the most recent period 1989-2008, the Indian economy was never very open to trade with the ratio to GDP in the 10-11 percent range. This implies that the pass-through effect of exogenous shocks like oil price increases is much weaker in the case of India than in more open economies. Finally, policymakers, in their overall development strategy, accorded a high priority to maintaining inflation at a moderate level, even at the cost of over-burdening monetary policy instruments like reserve requirements, restrictive open-market operations, and selective credit control measures.

25. **The pre-versus post-reform indicators presented in Table 1 show that average inflation has barely changed, and the average annual fiscal deficit actually declined to 4.3 percent of GDP in the post-reform period compared to 4.8 percent before.** The dynamic simulation model developed and tested in Section IV will seek to explain how deficits and inflation interact and whether they drive illicit flows. We show that in order to correctly gage the impact of structural and governance factors on illicit flows, it is necessary to split the sample into pre- and post- reform phases.

26. **Data presented in Table 1 also show that while economic growth picked up significantly after reform to 6.5 percent per annum on average from just 3.4 percent in the pre-reform period, the faster pace created greater income inequality—in fact, at 37.0 the Gini was higher in 2005 than the average of 34.0 registered in the pre-reform period.** When the 2006 - 2008 Gini data are available, we will be able to determine if the trend of rising income inequality continues. From the existing data, unmistakably the post-reform period is characterized by a much larger underground economy (averaging 42.8 percent of official GDP compared to 27.4 percent in the pre-reform period) which contributed to the nearly five-fold increase in illicit outflows to US $8.1 billion per annum. These issues are examined in more detail in Section IV.

# III. The Evolution of Illicit Financial Flows

## Methods to Estimate Illicit Financial Flows

27. **Economists have used various models to estimate illicit financial flows, or illegal capital flight, and a review of these models was provided in the Kar and Cartwright-Smith (henceforth KC) study.**[2] The conclusion of that review was that the World Bank Residual Model (based on change in external debt or CED) adjusted for trade misinvoicing (based on the IMF *Direction of Trade Statistics* or DOTS database) provided the best method for estimating illicit flows. This section provides a synopsis of this method for ease of reference.

28. **The KC study used two well-established economic models to estimate illicit outflows— the World Bank Residual model and the Trade Mispricing model.** The World Bank model is intuitively appealing—sources of funds exceeding recorded uses of funds reflect unrecorded outflows. Sources of funds include increases in net external indebtedness of the public sector and the net inflow of foreign direct investment. Uses of funds include financing the current account deficit and additions to reserves. In this broad macroeconomic framework, illicit outflows (inflows) exist when the source of funds exceeds (falls short of) the uses of funds. Thus:

$$\leftarrow \text{Source of Funds} \rightarrow \qquad \text{Minus} \qquad \leftarrow \text{Use of Funds} \rightarrow$$
$$K = [\Delta \text{ External Debt} + \text{FDI (net)}] \quad - \quad [\text{CA Balance} + \Delta \text{ Reserves}]$$

For reasons explained in paragraphs 36-41, the CED and the GER methods used in the *KC study only considers gross illicit outflows.* Thus, when the use of funds exceeds the source, that is when there are inward transfers of illicit capital, the CED method sets illicit flows to zero for that year. In contrast, economists have typically netted out illicit inflows from outflows under the Traditional method.

29. **The CED model estimates are then adjusted for trade mispricing, which has been long recognized as a major conduit for capital flight.** The underlying rationale is that residents can shift money abroad illicitly by over-invoicing imports and under-invoicing exports. In order to capture such illegal transactions, a developing country's exports to the world (valued free-on-board (f.o.b.) in US dollars) are compared to what the world reports as having imported from that country, after adjusting for the cost of insurance and freight. Similarly, a country's imports from the world net of freight and insurance are compared to what the world reports it has exported to that country. The CED estimates are adjusted by trade misinvoicing estimates derived according to the following formula:

$$K = [X_i - M_j/\beta] + [M_i/\beta - X_j]$$

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[2] See *Illicit Financial Flows from Developing Countries: 2002-2006* (Dev Kar and Devon Cartwright-Smith, Global Financial Integrity, December 2008, Washington DC).

30. **Misinvoicing is assumed to take place through both exports (X) and imports (M). Specifically, the exports of goods f.o.b. from country i ($X_i$) is compared to the imports recorded by country j ($M_j$) after adjusting for the cost of insurance and freight; the factor $\beta$ adjusts the c.i.f. value to f.o.b. value which we take to be 10 percent.** On the import side, imports of country ($M_i$) are converted to f.o.b. value and then compared to what country (j) reports as having exported to country i ($X_j$). Illicit outflows from country (i) will be indicated if the exports of country (i) are understated relative to the reporting of partner country's (j's) imports and/or if country i's imports are overstated with respect to partner country j's exports to country i, after adjusting for the cost of freight and insurance.

31. **Comparisons based on bilateral trade data may well indicate export overstatement or import understatement.** That is, the discrepancies have the "wrong" signs and reflect "inward" capital flight. Researchers have tended to net out such inflows from the gross figures, thus reducing gross capital outflows by the amount of inward capital flight indicated by the data. In contrast, GFI's estimates of trade mispricing are based on the gross excluding reversals (GER) method. In this method, only periods with export under-invoicing and import over-invoicing are considered to be illicit outflows. *Periods of illicit inflows are set to zero as in the CED method discussed above.* After pointing out the limitations of economic models in capturing the totality of illicit flows, we discuss the reasons for rejecting the traditional approach to estimating capital flight in paragraphs 36-41.

32. **As both the World Bank Residual and the Trade Misinvoicing model based on Direction of Trade Statistics yield estimates of illicit inflows as well as outflows, the 2008 KC study uses two conditional filters on CED and GER estimates in order to capture likely cases of illicit financial outflows.** This process of filtering, or normalization, yields a conservative estimate of illicit flows from a country, while estimates that do not pass through the filters provide the robust end of the range of possible values. The first filter excludes countries with illicit inflows in most years of the five-year period. So if model estimates indicate outflows of illicit capital from a country in just two out of the five years, that country is rejected as a likely exporter of illicit capital. Once the first filter accepts a country as an exporter of illicit capital, the second filter tests whether estimates of illicit outflows are greater than or equal to 10 percent of that country's exports valued f.o.b. The second filter's minimum threshold on size ensures that illicit flows less than 10 percent of exports are attributed to spurious data issues while those passing the threshold are counted as capital flight.

33. **These filters are not used in this study of India where the question of frequency of outflows or the size of outflows is no longer used to classify the country as a probable exporter of illicit capital.** The normalization filters discussed above proved useful in classifying the 160 developing countries which were covered in the KC study as likely exporters of illicit capital, and are not relevant in a country case study.

## Limitations of Economic Models

34. **A common feature of economic models is that they rely on official statistics which cannot capture illicit transfers of capital occurring through drug and other contraband trade, smuggling, same-invoice faking, hawala or currency swap transactions, and other illicit activities such as human trafficking and sex trade.** For instance, the GER adjustment method attempts to capture trade mispricing by comparing customs invoices filed by trading partners in partner countries. The DOTS method of estimating export under-invoicing and import over-invoicing cannot capture mispricing within the same invoice which allow these discrepancies to remain hidden within an invoice through word-of-mouth collusion among buyers and sellers. The adjustment method based on bilateral trade data comparisons cannot pick up illicit flows resulting from same-invoice faking. Several studies, such as Baker (2005), have found that illicit flows through same-invoice faking are at least as large if not larger than those involving mispricing between invoices.

35. **Apart from the difficulty of capturing illicit flows generated through a host of illegal activities discussed above, the adjustments for trade misinvoicing remains incomplete.** This is because the DOTS maintained by the IMF which permit such adjustments to be made do not cover trade in services on a bilateral basis. Hence, misinvoicing adjustments pertain strictly to goods only. Yet, we are aware that trade in services offer much larger incentives to misinvoicing due mainly to the difficulty of pricing services across different countries on a comparable basis. In sum, economic models cannot capture all illicit flows due to a variety of reasons and therefore significantly understate their volume. The extent of understatement will vary depending upon the importance of the latent factors that drive illicit flows to and from a country. For instance, there may be sizeable illicit inflows into a country that has become a major corridor for drug trafficking which requires large infusions of cash to finance transactions.

## Reasons for Rejecting Traditional Models of Capital Flight

**In this section, we will present strong arguments why the traditional models of capital flight which automatically net out so-called "inflows" from outflows should be rejected.**

36. **The recent Euro zone crisis and media reports on capital flight from Greece and other Club Med countries raise a number of questions on how illicit flows are estimated using economic models.** Estimates of capital flight according to the Traditional method (World Bank Residual model adjusted for trade misinvoicing and netting out inflows from outflows) indicate that Greece and other Club Med countries have received huge illicit *inflows* running into billions of dollars (see paragraph 39 for specific estimates on Greece). Yet, the governments facing the financial crisis could not tap one dollar of these so-called inflows to

stave off the crisis. While there is nothing new about the flight of capital from countries that are politically unstable, poorly governed or badly managed, economists have been quixotic in their approach to estimating these flows. Scores of research papers on capital flight published in prestigious academic journals have this recurrent theme—outward transfers of illicit capital are offset by inward illicit flows without asking whether that is warranted. The underlying rationale for netting out inflows is seriously flawed for several other reasons.

37. **First, the traditional models of capital flight cannot capture genuine reversals of capital flight.** Netting out inflows from outflows is only warranted if inflows represent a return of flight capital such that a subsequent gain in capital offsets the original loss. A return of flight capital typically follows credible economic reform on a sustained basis and may be detected in a significant increase in *recorded* FDI or *recorded* inflows of private portfolio capital. In contrast, the inflows indicated by the World Bank Residual model whether adjusted for trade misinvoicing or not, are also *unrecorded*. Why would an investor smuggle in capital from abroad if that capital in fact represents a genuine return of flight capital? As the Indian and Chinese experience shows, outward transfers of illicit capital could come back to a country through a process known as "round tripping". But these inflows would *not* be captured by the capital flight models as estimates with a negative sign. Instead, round tripping would show up as an uptick in *recorded* FDI. While intuitively it may make sense to net out the return of flight capital from outflows, it would be practically impossible to implement because we cannot apportion recorded aggregate inflows between new investments and the return of flight capital. Economists may be able to discern flight reversal if recorded inflows increase after economic reform or improved governance but they cannot estimate how much of those inflows are actual reversals.

38. **Second, as the inflows indicated by models of illicit flows are unrecorded, they cannot be taxed or utilized for economic development.** Often, these so-called inflows are themselves driven by illicit activities such as smuggling to evade import duties or value-added tax (VAT). Moreover, illicit inflows can also be generated by the over-invoicing of exports to collect on VAT refunds as in some Latin American countries. It is hard to see how the loss of applicable customs tax revenues can be beneficial to a country. Moreover, we found that the Residual model adjusted for trade misinvoicing on a net basis (i.e., under- and over-invoicing on the export and import side are simply added to arrive at a net figure, which is the Traditional method) shows that illicit flows in recent years are insignificant for certain Latin American countries with a serious drug-trafficking problem. Does that mean economists can advise the Colombian or Guatemalan governments that they need not worry about illicit flows because they are so small on a net basis? On the contrary, illicit flows are harmful in *both* directions—outflows represent a near-permanent loss of scarce capital while inflows stimulate growth of the underground economy. Indeed, we should be adding illicit flows rather than netting them out if we were interested in gauging their adverse impact on an economy.

39. **The crisis in Greece, a developed country, further illustrates the problem of netting out illicit flows.** We found that over the decade ending 2009, Greece lost an estimated US$160 billion in unrecorded transfers through its balance of payments while illicit inflows, mainly as a result of the misinvoicing in customs declarations, totaled around US$96 billion. The Greek financial crisis offers a stark illustration of the folly of the traditional method of estimating capital flight. Even as Greece "enjoyed" illicit inflows every year from 2000-2009 through trade misinvoicing, the country was being pushed to the verge of bankruptcy. Little, if any, of those massive illicit inflows could be used by the Greek government to stave off the financial crisis.

40. **Finally, economists need to study illicit inflows in more depth.** For instance, we also found significant illicit inflows into countries with large black markets and underground economy (such as Russia) or where "hawala" transactions (such as in the Indian subcontinent and some Middle East countries like the United Arab Emirates) are popular. The reason could be that the smooth operation of these markets requires the infusion of large amounts of illicit funds which are in turn channeled through the misinvoicing of trade transactions. In fact, there have been a number of studies, such as Nayak (1991) and the IMF (2005), exploring the link between "hawala" transactions and illicit flows. The implication is clear. Illicit inflows do not constitute a reversal of capital flight but reflect the need to finance illicit activities on a large scale.

41. **Apart from the reasons already discussed, the Traditional method of netting out illicit inflows from outflows is totally unsuited to analyzing the evolution of capital flight from the country over a long time span.** Large inflows due to either trade misinvoicing or those captured through the World Bank Residual method can easily swamp equally large outflows in the following years so that for the period as a whole, the net flows may be misleadingly small. Appendix Table 6 shows that using the Traditional method over the 61-year period of 1948-2008, illicit flows cumulated into a net *inflow* of US$25.8 billion which cannot be related to available data on foreign assets held by Indian nationals abroad.

## How Illicit Flows Have Evolved

42. **The evolution of illicit financial flows from India is examined in two parts.** Section A traces how these flows have behaved over a 61-year period 1948-2008, the last year for which complete macroeconomic data are available for India. Section B analyzes the impact on capital flight of the economic reform policies that were launched in earnest in June 1991 following the election of P. Narasimha Rao as Prime Minister.

**Chart 1. Cumulative Illicit Financial Flows and as Percent of GDP: 1948-2008**
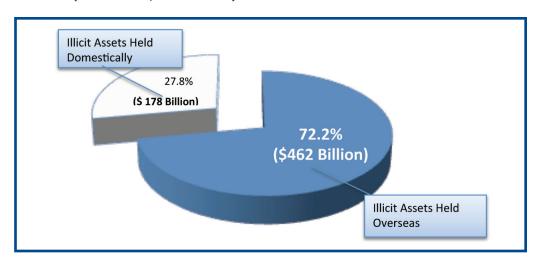


## A. 1948-2008 (Entire Sample Period)

**(i) A total of US$213.2 billion was shifted out of India over 61-years between the first full year of India's independence (1948) and 2008 (See Appendix Table 11).** This gross transfer of illicit external assets (a term that is more accurate than the stock of capital flight since the stock is net of withdrawals on which no data are available) needs to be revalued taking account of rates of return. A common proxy for the rate of return on external assets has been the United States Treasury bill rate (short-term). In calculating the compound interest on these assets, the current period's interest rate is applied to the sum of the preceding years' accumulated illicit flows and half of this year's flows. The rationale is that all illicit flows do not arrive at the same time at the beginning of the year; rather, we assume that illicit flows are evenly spread out so that only half of the current year's flows earns interest at the current rate. Using this method, results show that the adjusted gross transfer of illicit assets by residents of India amount to about US$462 billion as of end-December 2008 (Appendix Table 11). This is a huge loss of capital which, if it were retained, could have liquidated all of India's external debt totaling US$230.6 billion at the end of 2008 (See Appendix Table 2B), and provided another half for poverty alleviation and economic development.

**(ii) Illicit assets transferred abroad are significantly understated.** For one, the rates of return based on short-term U.S. Treasury bill rates fall far short of the rates of return on many types of assets such as hedge funds, real estate, precious metals, and art objects. For another, the principal itself is understated because as we pointed out earlier (see paragraphs 34-35), economic models can neither capture all sources for the generation of illicit income nor the myriad ways the proceeds can be transferred abroad.

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[3] See, for example, Press Trust of India. "Black-money debate: Cong terms BJP claim bogus." **The Times of India**. The Times of India Group, 20 April 2009. Web. 14 October 2010. <http://timesofindia.indiatimes.com/india/Black-money-debate-Cong-terms-BJP-claim-bogus/articleshow/4424198.cms>.

**(iii) As it turns out, media reports circulating in India that Indian nationals held around US$1.4 trillion[3] in illicit external assets are widely off the mark compared to the estimates found in this study.** The back-of-the-envelope method used to derive the US$1.4 trillion was flawed—the figure was based on GFI's estimated average illicit outflows of US$22.7 billion per annum (over the period 2002-2006) multiplied by 61 years since independence. It is erroneous to apply annual averages to a long time series when illicit flows are fluctuating sharply from one year to the next.

**Chart 2. India: Composition of Underground Economy at 50% of GDP (as of 2008, US Dollars)**



Illicit Assets Held Domestically

27.8%
($ 178 Billion)

72.2%
($462 Billion)

Illicit Assets Held Overseas

**(iv) Extrapolating from the estimates provided in Gupta and Gupta (1982), the size of India's underground economy should be at least 50 percent of GDP or about US$640 billion based on a GDP of US$1.28 trillion in 2008.** This means roughly 72.2 percent of the illicit assets comprising the underground economy is held abroad while illicit assets held domestically account for only 27.8 percent of the underground economy. We assume that although illicit assets held abroad can be brought back to the country, a substantial portion is again transferred abroad once gains from "investments" are realized. In any case, draw downs are offset by the transfer of new illicit capital so that, on balance, the share of accumulated transfers abroad is not too far off our estimate. The larger share of illicit assets held abroad confirms Baker's (2005) contention that illicit flows are basically driven by a desire for the hidden accumulation of wealth.

**(v) One would expect the underground economy's relative share of foreign and domestic illicit assets to vary from one country to the next.** For instance, in certain Latin American countries drug traffickers use the proceeds of illicit capital to acquire vast swaths of real estate with little fear of confiscation given pervasive corruption in the government and the judiciary. However, as long as the corrupt fear

seizure of illicit assets and the payment of punitive taxes and fines, the desire for the hidden accumulation of wealth will continue to drive the cross-border transfer of illicit capital. This leads to what we call the "iceberg effect" wherein the visible portion of illicit assets represents only a sliver of the vast majority that is hidden from view.

(vi) **On an average per annum basis, illicit flows from the country over the period 1948-2008 amounted to about 1.5 percent of India's GDP or 22.8 percent of its exports.** Over this period, illicit flows grew at a compound nominal rate of 11.5 percent per annum while in real terms they grew by 6.4 percent per annum. The growth rates per annum were calculated based on the coefficient of the log linear trend line fitted for the period in question. We will now consider developments in capital flight from India before and after the major economic reform policies which were implemented starting in June 1991.

## B. Illicit Flows During the Pre- and Post-reform periods

(i) **Ascertaining where economic reform actually started is difficult because reform in this sense represents the totality of policies devoted to freeing up markets from government controls and are typically undertaken in phases.** For instance, certain aspects of economic reform such as import liberalization were a salient feature of India's economic policies shortly after independence. Nevertheless, the slew of policies aimed at freeing up markets from government controls that started with the Narasimha Rao government in May 1991 still stands out as a landmark in India's economic history. We will examine whether it is possible to discern the impact of economic reform (as reflected in key macroeconomic indicators) on capital flight from India, given the difficulties of clearly demarcating a pre- and post-reform period.

(ii) **The marginal decline of IFFs on both an average per annum and a cumulative to end-period GDP basis in the post-reform period belies the fact that illicit flows grew faster after reform than before (nearly 19.0 per annum compared to 15.8 percent).** The faster pace of GDP growth in the post-reform period is the only reason why average or cumulative IFF-to-GDP ratios declined during this period. In other words, reform succeeded in boosting economic growth much more than it did illicit flows. In real terms, outflows of illicit capital accelerated from an average annual rate of 9.1 percent before reform to 16.4 percent in the period after (Appendix Table 7).

# IV. A Block Recursive Dynamic Simulation Model of Illicit Flows

## Overview of the Model

43. **This section sets forth a dynamic simulation model to examine the complex interactions between macroeconomic, structural, and governance factors that drive illicit flows from India.** The model has two parts—an upper block of five equations that examines the interactions between fiscal and monetary policies and a single-equation lower block that seeks to explain the behavior of illicit outflows from India. The upper block presents a test of the thesis that government expenditures tend to respond faster to inflation than do government revenues because government outlays are typically subject to inflation adjustment while taxpayers seek to defer tax liabilities in an inflationary environment (thereby allowing inflation to reduce tax burdens). If the resulting deficits are largely financed through central bank credits (or quantitative easing), this leads to an expansion of the money supply which not only generates further inflation but widens the fiscal deficit in a vicious cycle. The purpose of the upper block of equations is to examine whether interactions between fiscal and monetary policies resulted in government deficits and inflation which help to explain illicit flows from India.

44. **The simulated inflation and the fiscal deficit resulting from dynamic simulation in the upper block of the model are then used in conjunction with certain structural and governance variables to explain the behavior of illicit flows in the lower block.** The model as a whole is block-recursive in that it seeks to explain only the macroeconomic portion in a fully endogenous upper block of equations while it treats structural and governance factors as exogenous. This is because structural factors like income inequality, faster growth rates and overall governance as represented by a measure of the underground economy, are almost impossible to model endogenously.

**The complete model represented below will be developed and tested equation by equation.**

$$\log P_t = - \propto \beta_0 - \propto \beta_1 \log Y_t + \propto \beta_2 \pi_t - (1-\propto) \log \left(\frac{M}{P}\right)_{t-1} + \log M_t$$

$$\log G_t = a_0 + a_1 \log Y_t + a_2 \log P_t$$

$$\log R_t = \lambda_0 + \lambda_1 \log GDP_t$$

$$\log M_t = b_0 + b_1 \log(G\text{-}R)_t$$

$$\pi_t = \mu \Delta \log P_t - (1 - \mu)\pi_{t-1}$$

$$\psi_t = f([\,\widehat{G}_t - \widehat{R}_t\,], \widehat{\Delta P}_t, \text{Reform}, \text{Underground}_{t-1}, \text{Trade Openness}, \dot{Y}_t, \text{Gini})$$

The variables in the above model are P, the price level (based on WPI), Y, the real GDP, G and R the central government expenditures and revenues respectively, M the money supply, $\pi_t$ the expected rate of inflation, Reform, a dummy variable (with zero for the pre-reform period 1952-1990, and one for the post-reform years, 1991-2005), $\psi_t$ are illicit outflows based on the CED+GER method, $\widehat{G}_t - \widehat{R}_t$ and $\widehat{\Delta P}_t$ are the simulated government expenditures, simulated government revenues, and simulated inflation respectively so that $[\widehat{G}_t - \widehat{R}_t]$ is the simulated fiscal deficit. The other variables in the model are $\dot{Y}_t$, the real rate of growth, TradeOpenness (defined as the ratio of exports and imports of goods and services to GDP which captures the impact of trade liberalization on growth of the traded sector), Gini, a measure of income distribution, and Underground, a measure of the size of the Underground economy which serves as a proxy for the overall state of governance in the country.

**45. The upper block of equations analyzing the relationship between government deficits and the inflationary process is based on an earlier version developed by Bijan Aghevli and Moshin Khan of the IMF (A-K model). We modify the model significantly so that it is applicable to India where capital flight is a significant and continuing issue.** The fully endogenous upper block of the model consist of five equations explaining the behavior of the price level, government expenditures, government revenues, money supply, and inflationary expectations. We now develop and test each equation of the model drawing attention to various modifications to the A-K model as applicable to the case of India.

## Estimating the System of Equations

**46. Ordinary least squares (OLS) method of estimating the individual equations of the system results in inconsistent estimates of the coefficients of a dynamic simulation model.** This is because in a general or even sectoral equilibrium model, the explanatory variables in one equation are themselves determined by another equation of the system. A system of equations where a number of variables are simultaneously determined requires an estimation method that yields consistent and, preferably, asymptotically efficient parameters. Hence, OLS was rejected in favor of the two-stage least squares (2SLS) method of estimation.

**47. The 2SLS method estimates each equation separately using a list of instrument variables which take into account all exogenous variables in the system including lagged endogenous variables.** While the 2SLS method uses available information about the other equations in the system, it does not include all inter-dependencies in the same way a three-stage least squares or 3SLS estimation method does. However, given that the sample size is not very large and that the error terms of the 2SLS estimates of the individual equations were found to be mutually independent (with zero or low correlation), the gain in asymptotic efficiency in using 3SLS would likely have been marginal.

48. **Before estimating this interdependent system of equations, individual equations were first tested in OLS for autocorrelation.** The Durbin-Watson (DW) tests, which are strictly applicable only for the money supply, government expenditure, and government revenue equations in OLS estimation, showed no sign of autocorrelation. In the case of the equation for the price level which contains a lagged endogenous variable, the Durbin h-test was used, which reported no autocorrelation with 95 percent confidence. Note that the DW statistic is not applicable in the context of two-stage least squares.

## The Determination of Prices

49. **The equation for prices is derived from the assumption that the current actual stock of real money balances adjusts proportionately to the difference between the demand for real money balances and the actual stock in the previous period.** That is:

$$\Delta \log \left(\frac{M}{P}\right)_t = \propto \left[\log \left(\frac{M}{P}\right)_t^D - \log \left(\left(\frac{M}{P}\right)_{t-1}\right)\right], \qquad 1 > \alpha > 0$$

where $\alpha$ is the coefficient of adjustment. The demand for real money balances in a developing country like India is postulated to be:

$$\Delta \log \left(\frac{M}{P}\right)_t = b_0 + b_1 \log Y_t - b_2 \pi_t, \qquad b_1, b_2 > 0$$

where $\pi_t$ the expected rate of inflation serves as a proxy for the opportunity cost of holding money in an economy with underdeveloped financial markets. The demand for money is eliminated by substitution and $\pi_t$ the expected rate of inflation is linked to the current rate of inflation. This yields:

$$\log \left(\frac{M}{P}\right)_t = \propto b_0 + \propto b_1 \log Y_t - \propto b_2 \pi_t + (1-\propto) \log \left(\frac{M}{P}\right)_{t-1}$$

Solving for the price level obtains:

$$\log P_t = - \propto b_0 - \propto b_1 \log Y_t + \propto b_2 \pi_t - (1-\propto) \log \left(\frac{M}{P}\right)_{t-1} + \log M_t, \ 1 > \propto > 0$$

The results of the 2SLS for each equation of the system are presented below:

### Table 2. Price Level – 2SLS – estimation output

Dependent Variable: LOGP
Method: Two-Stage Least Squares

Date: 09/17/10   Time: 11:51
Sample: 1952 2008
Included observations: 57
Instrument specification: LOGY LOGLAGREALMONEY  LOGP(-1)  LOGGDP
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LOGY | -0.038383 | 0.052832 | -0.726502 | 0.4708 |
| INFEXP | 0.916166 | 0.082175 | 11.14891 | 0.0000 |
| LOGLAGREALMONEY | -0.857882 | 0.051717 | -16.58790 | 0.0000 |
| LOGMONEYSUPPLY | 0.930449 | 0.018635 | 49.92930 | 0.0000 |
| C | -0.231728 | 0.275369 | -0.841517 | 0.4039 |
| R-squared | 0.999365 | Mean dependent var | | 2.896352 |
| Adjusted R-squared | 0.999317 | S.D. dependent var | | 1.190262 |
| S.E. of regression | 0.031114 | Sum squared resid | | 0.050342 |
| F-statistic | 20487.52 | Durbin-Watson stat | | 1.138346 |
| Prob(F-statistic) | 0.000000 | Second-Stage SSR | | 5.68E-13 |
| J-statistic | 0.000000 | Instrument rank | | 5 |

50. **All explanatory variables have the right sign, and are significant at the 5 percent confidence level, except the level of real income; the $R^2$ adjusted for degrees of freedom confirms a good fit.** The results confirm that higher expectations of inflation would translate into significantly higher actual rates of inflation with better than 95 percent confidence. Moreover, the results show that the higher the previous period's real money balances, the lower would be the current price level. Notably, the impact of changes in broad money on the price level is strongly positive.

## Government Expenditures

51. **The behavioral equation for government expenditures assumes that, in an inflationary environment, the government strives to maintain the real value of its budgetary outlays.**

Hence, $\left(\frac{G}{P}\right) \alpha\, Y$
i.e., real expenditures are directly proportional to real income, Y. Taking logs,
$$\log \left( G/P \right)_t = a_0 + a_1 \log Y_t \quad a_1 > 0$$

We will not impose a constraint on $a_1$; however, in the long run we would expect $a_1$, the real income elasticity of government expenditures, to equal 1. Rearranging,

$$\log G_t = a_0 + a_1 \log Y_t + \log P_t$$

52. **In OLS regression, we found no evidence that actual real expenditures in the current period adjusts to those in the previous period and therefore the specification of the government expenditure equation differs from the A-K version in that we impose no such adjustment process between the actual and desired real expenditures.** Instead, we postulate that the government simply desires to maintain the real value of its budgetary outlays or else budgetary policies will be unnecessarily contractionary.

Results of the tests involving government expenditures are provided below:

### Table 3. Government Expenditures – 2SLS – estimation output

Dependent Variable: LOGG
Method: Two-Stage Least Squares

Sample: 1952- 2008
Included observations: 57
Instrument specification: LOGY LOGLAGREALMONEY LOGP(-1) LOGGDP
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LOGY | 0.301268 | 0.158593 | 1.899628 | 0.0628 |
| LOGP | 1.638057 | 0.107703 | 15.20903 | 0.0000 |
| C | 4.213909 | 1.512708 | 2.785672 | 0.0074 |
| R-squared | 0.991923 | Mean dependent var | | 12.40816 |
| Adjusted R-squared | 0.991623 | S.D. dependent var | | 2.197316 |
| S.E. of regression | 0.201106 | Sum squared resid | | 2.183958 |
| F-statistic | 3315.663 | Durbin-Watson stat | | 0.361312 |
| Prob(F-statistic) | 0.000000 | Second-Stage SSR | | 2.183958 |
| J-statistic | 3.558737 | Instrument rank | | 5 |
| Prob(J-statistic) | 0.168745 | | | |

## Government Revenues

53. **In formulating the behavior of government revenues, we start with the basic postulate that the desired nominal revenue of the government is a function of the level of nominal income and prices.** That is:

$$\log R_t = \lambda_0 + \lambda_1 \log GDP + \lambda_2 \log P_t$$

Here again, we modify the A-K formulation to do away with the need to have actual revenues adjust to the difference between desired revenue and the actual revenue obtained in the

previous period. We found that such an adjustment process is unlikely to operate on the revenue side because significant outflows of illicit capital will have reduced actual tax revenues relative to the desired level. Results of 2SLS for the government revenue function are presented below:

### Table 4. Government Revenues – 2SLS – estimation output

Dependent Variable: LOGR
Method: Two-Stage Least Squares

Sample (adjusted): 1952- 2008
Included observations: 57 after adjustments
Instrument specification: LOGY LOGLAGREALMONEY LOGP(-1) LOGGDP
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LOGGDP | 0.235766 | 0.127926 | 1.842980 | 0.0708 |
| LOGP | 1.486220 | 0.213650 | 6.956324 | 0.0000 |
| C | 4.342376 | 1.220200 | 3.558742 | 0.0008 |
| R-squared | 0.994952 | Mean dependent var | | 12.02964 |
| Adjusted R-squared | 0.994765 | S.D. dependent var | | 2.241979 |
| S.E. of regression | 0.162219 | Sum squared resid | | 1.421006 |
| F-statistic | 5321.338 | Durbin-Watson stat | | 0.452659 |
| Prob(F-statistic) | 0.000000 | Second-Stage SSR | | 1.421006 |
| J-statistic | 1.559351 | Instrument rank | | 5 |
| Prob(J-statistic) | 0.458555 | | | |

54. **The results in Table 4 show that income has a significant and positive impact on both government expenditures and revenue.** The results confirm those found in the A-K study in that government expenditures adjust faster to inflation than revenues (coeffecients of log P in the expenditure and revenue equations of 1.64 versus 1.49, respectively). The important point is that because expenditures adjust faster than revenues to inflation, there seems to be some evidence that government budgetary policies created fiscal deficits. When financed through central bank credits, these fiscal deficits generated inflation, which in turn generated further deficits. However, in light of the fact that the speed of adjustment of expenditures is not significantly larger than revenue to inflation and the fact that the Reserve Bank took increasing recourse to domestic bond financing as bond markets deepened and domestic savings rates rose, any circular interaction between inflation and fiscal deficits was largely contained, and possibly short-lived.

## The Money Supply Process

55. **In the A-K model, the starting point in the money supply process defines the money supply as a product of the money multiplier $m_t$ and the monetary base, $B_t$.** Hence:
$$M_t = m_t B_t$$

Now changes in the monetary base are influenced by government budgetary operations, changes in unencumbered international reserves, and changes in the RBI's claims on the private and public sectors, subsumed in $E_t$ i.e.,

$$M_t = m_t(G_t - R_t + E_t)$$

This is a non-linear function which when linearized using a computer program yields:

$$\log M_t = \log m_t + c_0 + c_1 \log G_t - c_2 \log R_t + c_3 \log E_t$$

56. **The A-K model was not proposed as a useful characterization for times and places.** The question explored by this paper is whether it adequately represents the inflationary process in India during the period 1948 to 2008. The answer rests in two parts—(i) modification of the time period to take account of budgetary surplus—the model will not work if we try to take logs of a negative deficit (or periods of budgetary surplus), and (ii) examining the strength of their formulation of the money supply process.

57. **Our main criticism of the A-K model arises from the fact that it casts the money supply as a product of the money multiplier and the monetary base.** According to their formulation, the residual captures all deviations between government fiscal operations and reserve money so that they are not really testing any hypothesis regarding the impact of fiscal operations on the money supply. Rather, they are simply testing whether the errors due to linearization are small. If that is the case, the goodness-of-fit can be expected to be close to unity, which was what they found. But such a formulation does not prove that the money supply is unambiguously driven by the fiscal deficit.

58. **In light of this observation, a re-specification of the money supply equation is warranted as it is no longer reasonable to assume independence of the deficit from other components of the monetary base.** Since it is the fiscal deficit that affects the monetary base, it does not matter whether the deficit is widened due to an increase in expenditures or a fall in revenue. Thus, G and R are not entered separately but together as (G-R). This represents the first modification to the equation. The second modification leaves out both E and the money multiplier as explanatory variables. Hence, we have the following modified equation for the money supply:

$$\log M_t = b_0 + b_1 \log (G-R)_t$$

59. **Hence, a much stronger test of the hypothesis that the money supply is driven mainly by the fiscal deficit (and that E and M, the money multiplier, are insignificant in explaining the money supply) simply involves regressing the log of the money supply on the log of the deficit only.**

The results of the 2SLS test for the money supply function are as follows:

### Table 5. Money Supply – 2SLS – estimation output

Dependent Variable: LOGMONEYSUPPLY
Method: Two-Stage Least Squares

Sample: 1952 2008
Included observations: 57
Instrument specification: LOGY LOGLAGREALMONEY LOGP(-1) LOGGDP
Constant added to instrument list

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LOGFISCDEFICIT | 1.132187 | 0.028491 | 39.73857 | 0.0000 |
| C | 0.599993 | 0.324892 | 1.846747 | 0.0702 |
| R-squared | 0.965384 | Mean dependent var | | 13.29515 |
| Adjusted R-squared | 0.964755 | S.D. dependent var | | 2.377692 |
| S.E. of regression | 0.446381 | Sum squared resid | | 10.95906 |
| F-statistic | 1579.154 | Durbin-Watson stat | | 0.492946 |
| Prob(F-statistic) | 0.000000 | Second-Stage SSR | | 1.936105 |
| J-statistic | 9.421659 | Instrument rank | | 5 |
| Prob(J-statistic) | 0.024180 | | | |

The money supply equation strongly confirms that the fiscal deficit largely drives changes in the money supply which is then simultaneously determined with the rest of the model.

## The Evolution of Inflationary Expectations

60. **Inflationary expectations are formulated as a behavioral equation.** The assumption here is that expectations are formed according to the adaptive, or error-learning, process. Thus, an increase in the actual rate of inflation gets transmitted into an increase in the anticipated rate of inflation. The relationship formulated along the lines proposed by Cagan (1956) is:

$$\Delta\pi_t = \mu[\Delta\log P_t - \pi_{t-1}] \text{ or,}$$

$$\pi_t = \mu\Delta\log P_t - (1-\mu)\pi_{t-1}$$

where $\mu$ is the weight assigned to current experience.

61. **The value of the coefficient of expectations ($\mu = 0.9$) was determined in the process of maximizing the likelihood function of the price level equation using ordinary least squares estimation technique.** This was found to be 0.9 and it probably has to do with the volatility of the inflationary experience during the period 1952-2008. The volatility of the inflationary experience would suggest the assignment of a rather high weight to the current rate of inflation as economic units rely less on their previous period's inflationary experience.

The following system of equations achieved convergence in dynamic simulation using the Newtonian method in E-Views:

$$\log P_t = -0.232 - 0.038\log Y_t + 0.916\pi_t - 0.858\log\left(\frac{M}{P}\right)_{t-1} + 0.930\log M_t$$

$$\log G_t = 4.213 + 0.301\log Y_t + 1.638\log P_t$$

$$\log R_t = 4.342 + 0.236\log GDP_t + 1.486\log P_t$$

$$\log M_t = 0.599 + 1.132\log(G_t - R_t)$$

$$\pi_t = 0.9\Delta\log P_t + 0.1\pi_{t-1}$$

**62. The simulated values from the model were then fed into the illicit flows equation in the lower block.** Note that as the Gini coefficient is only available for the period 1951 to 2005, and the fiscal balance was continuously in deficit since 1952, the sample period of the regression was confined to 1953-2005.

### Table 6. Illicit Flows (CED+GER) – OLS – estimation output

Dependent Variable: CED+GER
Method: Least Squares
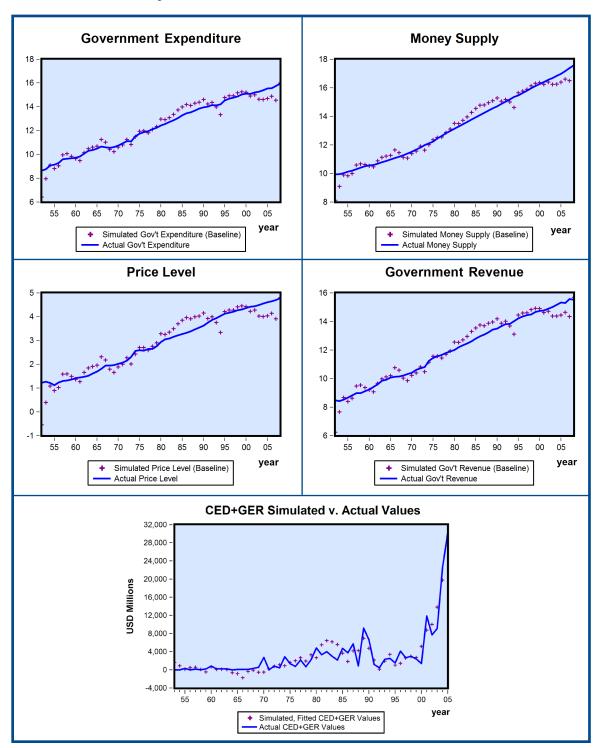
Sample (adjusted): 1953 2005
Included observations: 53 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| SIMFISCDEFICIT | -0.269705 | 0.041149 | -6.554308 | 0.0000 |
| SIMINFLATION | 737.5830 | 813.0559 | 0.907174 | 0.3691 |
| REFORM | -9644.987 | 1147.821 | -8.402869 | 0.0000 |
| TRADEOPEN | 7615.464 | 19103.63 | 0.398640 | 0.6920 |
| GROWTH | 1796.196 | 3150.289 | 0.570169 | 0.5714 |
| GINI | 155.4495 | 78.02956 | 1.992187 | 0.0524 |
| LAGUNDERGROUND | 0.121471 | 0.014132 | 8.595482 | 0.0000 |
| C | -6720.995 | 3078.589 | -2.183141 | 0.0343 |
| R-squared | 0.886799 | Mean dependent var | | 3187.360 |
| Adjusted R-squared | 0.869190 | S.D. dependent var | | 5408.162 |
| S.E. of regression | 1956.006 | Akaike info criterion | | 18.13345 |
| Sum squared resid | 1.72E+08 | Schwarz criterion | | 18.43086 |
| Log likelihood | -472.5365 | Hannan-Quinn criter. | | 18.24782 |
| F-statistic | 50.36043 | Durbin-Watson stat | | 1.863307 |
| Prob(F-statistic) | 0.000000 | | | |

63. **The actual and simulated variables are plotted in the following charts. Convergence of the model in dynamic simulation meant that the necessary and sufficient conditions for stability of the model were met for the period 1952 to 2008.** The following charts tracking the simulated government expenditures, government revenues, price level, and money supply against actual values show that the model performed very well.

### Chart 3. Results of Dynamic Simulation: 1952-2008

## Detailed Analysis of Results

64. **The upper-block of the model captured dynamic interactions between central government expenditures, central government revenues, the money supply, and the overall price level.** Model simulations confirm that government fiscal operations led to persistent deficits which were largely financed through central bank credits (quantitative easing) causing an expansion of high-powered money. Monetary expansion resulted in inflation which further widened the deficit due to the faster speed of adjustment of expenditures than revenues to inflation.

65. **It should be noted that the monetary impact of financing the deficit would probably have been higher in the earlier periods when the private financial markets, including the market for government bonds, were shallow and the government had to rely more on credits from the monetary authorities to finance its budgetary deficits which fueled inflation.** In the latter period, particularly after reform policies launched in 1991 were well underway, liberalization would have fostered financial deepening, thereby offering the monetary authorities a viable alternative to inflationary finance. To the extent that the government was able to take recourse to private markets to finance its deficits, the link between changes in deficits and high-powered money would be broken.

66. **There are two reasons why we did not find evidence of a strong vicious cycle interaction between government deficits and inflation in India.** First, the increasing recourse of the government to financing its budget deficit through bond finance rather than quantitative easing particularly in the post-reform period, effectively short-circuited the deficit-inflation cycle to some extent. Second, model simulations confirm that the speed of adjustment of expenditures to inflation was not that much higher than revenues and this limited their asymmetrical response to inflation.

67. **The results confirm that neither the simulated fiscal deficit nor the simulated inflation was a significant factor driving illicit flows. In other words, we cannot say that capital flight from India was partly driven by imprudent macroeconomic policies (see also paragraph 24).** However, two caveats tend to detract the veracity with which this conclusion can be made. First, the central government deficit is not indicative of the overall fiscal balance of the public sector. While the central government deficit has averaged around 4-5 percent of GDP, the consolidated fiscal deficit arising from general government expenditure and revenue has been more than twice as large. In other words, it is possible that even though fiscal deficits of this size may not drive illicit flows, those amounting to 8-10 percent of GDP may well have driven them. However, consistent time series on general government expenditure and revenue are not available for the period 1948-2008. Hence, the model could not be tested using consolidated data on general government operations.

68.  **Second, an explanation of inflation in the Indian context is complicated by the policy of administered prices, which varied in terms of the range of goods and services covered since independence.** The main items subject to administrative control have included crude oil and natural gas, oil products, coal, electricity, fertilizer, iron and steel and nonferrous metals. Manufacturing items subject to administrative control account for about 20 percent of the weight in the wholesale price index. While according to the IMF, it is unlikely that administered prices seriously distort the reliability of the wholesale price index as a measure of inflation in India, this is an empirical question which is not easy to answer. It is reasonable to say that administered prices do detract from the quality of the index as a true measure of inflation. Perhaps a more reliable WPI that fully reflected market prices could have confirmed the significance of inflation in driving illicit flows, but we will never know the answer.

69. **Another limitation of data is the lack of a time series on a consistent deposit rate of interest for the period 1948-2008. The result of this limitation is that it is not possible to test how interest differentials impact the volume of illicit outflows.** By the same token, a consistent time series on the real effective exchange rate (REER) which could have acted as a proxy for the expected rate of depreciation (indicated by a real effective exchange rate that is out of alignment with international competitiveness) could not be included. Want of a comprehensive measure of unit labor costs is the main reason why there is no REER series for 1948-2008 (a CPI or WPI is not the best measure to capture unit labor costs).

70. **We needed to develop a proxy measure to capture the state of overall governance in the country because governance indicators compiled by the World Bank or the Corruption Perceptions Index compiled by Transparency International do not cover the period 1948-2008.** The underground economy not only acts as a proxy for governance, it grows by absorbing illicit inflows and provides the funds for cross-border transfers of illicit capital. In India even legal businesses and the government contribute to the underground economy. According to the Indian Council for Research on International Economic Relations (ICRIER), legal businesses controlled by the government, government expenditures and taxes have also contributed to the creation of illicit funds.

71. **A time series on the size of the underground economy was developed assuming that it was zero percent of GDP at independence and reaching 50 percent of GDP by the end of 2008.** The series was subject to cubic spline interpolation using these boundary conditions and ensuring that estimates for intervening years, 1968-1979, correspond to those estimated by Gupta and Gupta (1982) using the monetary approach. We developed a variable series on the underground economy using different assumptions regarding its growth but ensuring that the intervening years' estimates correspond to the estimates found by previous researchers. Lagging this series by one period, rather than using the current size of the underground economy, was more significant in explaining illicit flows from the country.

72. **The dummy variable Reform (0 pre-reform 1948-1990; 1 post-reform 1991-2008) was found to be significant at the 5 percent level indicating that liberalization of financial markets and general deregulation led to an increase in illicit flows rather than a curtailment.** Reform led to increasing trade and financial sector openness as well as higher rates of economic growth. However, while the results confirm that both trade openness as well as growth contributed positively to illicit outflows, the variables were not statistically significant for the entire period 1948-2008. In order to understand why, it is necessary to examine the link between these variables and illicit flows in the pre- and post-reform periods. Collapsing the two periods and simulating the model over 1948-2008 obscures the effects of the variable so that they are no longer significant in explaining illicit flows.

73. **For the entire sample period 1953-2005 (See Paragraph 62 for explanation of illicit flow estimation sample size), trade openness was not found to be significant in explaining illicit flows.** However, once we separate the samples into a pre- and post-reform period, a clearer picture emerges. Increasing trade openness through economic reform led to an expansion of the traded sector relative to GDP—Table 1 shows that the ratio more than doubled from 10.8 percent in the pre-reform period to 21.7 percent after reform. The following charts show that the trade sector has grown much faster (i.e., the time trend line has a higher slope) in the post- compared to the pre-reform period.

## Chart 4. Trade Openness and GER (Trade Mispricing outflows): 1948-1990



$y = 8E\text{-}05x + 0.1059$
$R^2 = 0.0027$
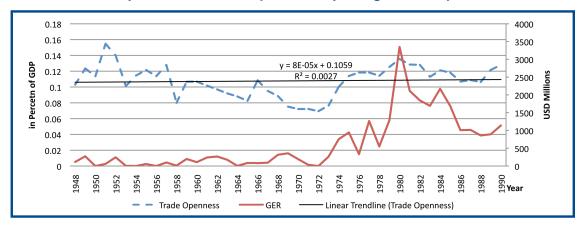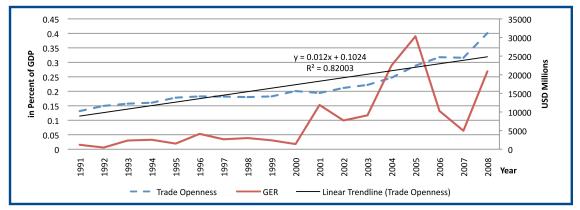
## Chart 5. Trade Openness and GER (Trade Mispricing outflows): 1991-2008



$y = 0.012x + 0.1024$
$R^2 = 0.82003$

74. **As the size of India's traded sector increased relative to GDP in the post-reform period, this seems to have encouraged more trade mispricing, not less.** The following regression shows that, in the post-reform period 1991-2008, the explanatory variable TRADEOPEN (defined as the ratio of exports plus imports of goods and services to nominal GDP) is statistically significant and positively related to trade misinvoicing represented by the Gross Excluding Reversals (GER) method.

### Table 7. GER to Trade Openness Regression Estimation Output: 1991-2008

Dependent Variable: GER
Method: Least Squares

Sample: 1991 2008
Included observations: 18

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| TRADEOPEN | 39974.44 | 7301.677 | 5.474693 | 0.0000 |
| R-squared | 0.327351 | Mean dependent var | | 7738.613 |
| Adjusted R-squared | 0.327351 | S.D. dependent var | | 8593.796 |
| S.E. of regression | 7048.215 | Akaike info criterion | | 20.61289 |
| Sum squared resid | 8.45E+08 | Schwarz criterion | | 20.66235 |
| Log likelihood | -184.5160 | Hannan-Quinn criter. | | 20.61971 |
| Durbin-Watson stat | 1.167870 | | | |

The results lend support to the contention that economic reform and liberalization need to be dovetailed with strengthened institutions and governance if governments are to curtail illicit flows. Otherwise, deregulation will merely provide an added incentive for those seeking to transfer illicit capital abroad. As we now know, deregulation of financial institutions on Wall Street has helped, not hindered, their abuse.

## Growth, Inequality, and Illicit Flows

75. **Economic reform also led to a faster pace of GDP growth.** While growth did not turn out to be significant in driving illicit flows, the complex relationship between economic growth, income distribution, and capital flight needs to be studied in the context of the pre- and post-reform periods. Collapsing the two periods into one again obscures the impact of the variable so that the growth variable no longer turns out to be significant in driving illicit flows. The purpose here is not to provide an exhaustive study of the issues within a rigorous methodological framework but to make certain preliminary but useful observations. The results of this study seem to support recent findings by economists who have researched these issues in more depth.

76. **For instance, the latest data from the United States Congressional Budget Office show that in the United States in 2007, the top 20 percent of the households at the top of the income ladder took home 52 percent of the nation's after-tax income, with the top 1 percent of households earning 17 percent.** By another measure, from 1997 to 2007, while the average after-tax, inflation-adjusted income of households in the middle of the ladder increased by just 25 percent, it grew by 281 percent for the top 1 percent of households. These trends portray a gradual hollowing out of the middle of the U.S. economy as beginning in the 1990s, all the growth in employment and pay has come at the top and bottom of the skills ladder, while demand for middle-skill, middle-wage labor in both manufacturing and service companies has declined. This "polarization" of the labor force is an international phenomenon, not unique to the United States, and is driven largely by globalization and new technology. **What we are witnessing in the case of India—that faster economic growth has actually led to a deterioration of income distribution—has been corroborated by a number of researchers (see paragraph 80).**

77. **Simple correlations between growth rates, income distribution, and illicit flows were run for the pre- and post-reform periods, that is, 1951-1990 and 1991-2008 (1951 is the earliest year for which data on Gini are available).** Following is a matrix supported by charts showing the relationship between growth in real GDP, income distribution as measured by the Gini coefficient, and illicit flows in the pre- and post-reform periods.

78. **In order to examine the impact of growth and distribution on illicit flows, we need to look at the pre- and post-reform period given the profound structural changes from a closed to a more open economy.** While the truncated periods 1952-1991 (40 observations) and 1992-2008 (17 observations) do not allow model simulation with enough degrees of freedom for the latter period, the following correlation matrix sheds some light into the relationship among these variables.

79. **In the post-reform period, there are clear indications that faster economic growth seemed to go hand-in-hand with larger, not lower, illicit flows and a worsening of income distribution.** In fact, we find a statistically significant correlation between larger volumes of illicit flows and deteriorating income distribution.

**Table 8. Correlation Matrix between CED+GER, Growth and GINI; 1991-2005**

|  | CED+GER | GROWTH | GINI |
|---|---|---|---|
| CED+GER | 1.000000 | 0.595706 | 0.853060 |
| GROWTH | 0.595706 | 1.000000 | 0.640499 |
| GINI | 0.853060 | 0.640499 | 1.000000 |
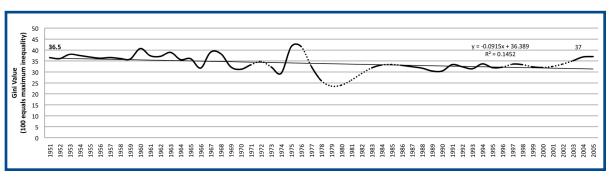
In the pre-reform period, no significant relationships emerge except that more illicit flows from the country seem to happen in tandem with an improvement in income distribution, which is clearly counter-intuitive.

### Table 9. Correlation Matrix between CED+GER, Growth and GINI; 1951-1990

|  | CED+GER | GROWTH | GINI |
|---|---|---|---|
| CED+GER | 1.000000 | 0.002300 | -0.533717 |
| GROWTH | 0.002300 | 1.000000 | -0.211549 |
| GINI | -0.533717 | -0.211549 | 1.000000 |

A possible explanation is that worsening income distribution creates many high net-worth individuals (HNWIs) who are the driving force behind illicit flows. Of course, correlation does not imply causation but the relationship between growth, illicit flows, and income inequality should be studied in more depth.
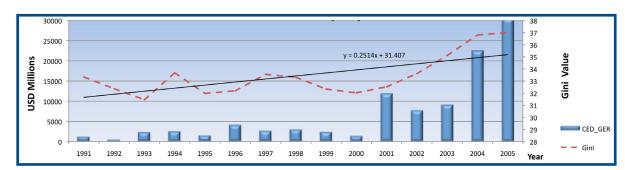
### Chart 6. Gini Coefficient Over Time: 1951 - 2005



Source:    UNU/WIDER World Income Inequality Database (WIID) at  http://www.wider.unu.edu/
research/Database/en_GB/wiid/, World Bank, Washington DC;
broken line represents interpolated Gini coefficients for years with missing estimates.

80. **Chart 6 shows that the slope of the Gini has a slight downward trend over the sample period 1951-2005**. However, one can see that in the post-reform period, 1991-2005, there is an unmistakable upward trend (Chart 7). The rising trend towards greater income inequality during a period of rapid economic growth is corroborated by Sarkar and Mehta (2010), Sengupta et al (2008) and others. Thus while reform has fostered a faster pace of economic expansion, the resulting growth has not been inclusive and the higher income inequality has driven larger illicit flows from India particularly since 2000.

### Chart 7. Illicit Flows and Income Inequality: Post-reform 1991-2005

## Limitations of the Model

81. **As previously stated, the block recursive model performed very well in explaining illicit financial flows from India based on certain macroeconomic, structural, and governance factors.** However, as we shall see, this does not imply that the model can be used to forecast illicit flows except perhaps one year forward. Typically, a dynamic simulation model that converges can be used for making reasonably reliable forecasts provided that the key series being forecast are stable. Thus, two conditions need to be met for reliable forecasts—the series must be mean-reverting, or stationary, (as opposed to exhibiting random-walk or non-stationary behavior) and the series should perform well in a regression— that is the series need to be explained in terms of independent variables with reasonably strong goodness of fit. One does not imply the other; we may well have a situation where the series is stationary but performs poorly in a regression or is non-stationary but can be well explained in terms of explanatory variables in a multiple linear regression. The former cannot be used in a simulation model while the latter series can be used in a model to simply explain past behavior but not to forecast.

## Augmented Dickey-Fuller Test for Unit Root

**The Augmented Dickey-Fuller (ADF) test was used to determine whether the various estimates of illicit flows from India over the period 1948 to 2008, based on the CED+GER and its first difference, and the World Bank Residual method adjusted for net trade misinvoicing (Traditional method) are stationary.**

82. **Prior to using the estimates of illicit flows in the block-recursive model, the CED and Traditional series were subjected to the ADF test for a unit root.** The presence of a unit root in a time series confirms that the series is non-stationary or exhibits a random-walk when observed over a sufficient time span. In contrast, an exogenous shock to a stationary series will exhibit time decay and the series will tend to revert to a mean. Hence, a stationary series will tend to be mean-reverting. The ADF test statistic is a negative number—the more negative it is, the greater the confidence with which we can reject the null hypothesis that the series has a unit root. Rejecting the null hypothesis implies that the series is stationary.

83. **As noted earlier, part of the problem is that a series that is stationary need not perform well in a simulation model.** For instance, while a series on illicit flows provided by the Traditional method is stationary, it performs very poorly in a regression equation. On the other hand, while the CED+GER turned out to be non-stationary, it performed relatively well compared to the Traditional model estimates in a regression equation or in model simulation. In short, we show that just because a series is stationary does not mean that we can help explain its behavior through a multiple regression. In order to demonstrate this, we will present the results of ADF tests involving both the CED+GER, and the Traditional estimates

of capital flight from India as well as the first difference of the non-stationary series CED+GER. We include the trend and the intercept in the ADF tests because a simple plot against the CED+GER series reveals both.

## (A) ADF Test on CED+GER (including a trend and intercept).

Result: Fail to reject null hypothesis of presence of a unit root at the 1 percent or 5 percent confidence level as the ADF test statistic of -0.9916 falls within the corresponding critical values shown in the table below. Acceptance of the null hypothesis would have required an ADF test statistic that is more negative than the t-statistic at the 1 percent or 5 percent critical values. **Hence, the CED+GER series is not stable.**

### Table 10. Augmented Dickey Fuller Test of CED+GER Series

Null Hypothesis: CED+GER has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Automatic - based on SIC, maxlag=10)

|  |  |  | t-Statistic | Prob.* |
|---|---|---|---|---|
| Augmented Dickey-Fuller test statistic |  |  | -0.991624 | 0.9370 |
| Test critical values: | 1% level |  | -4.124265 |  |
|  | 5% level |  | -3.489228 |  |
|  | 10% level |  | -3.173114 |  |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CED+GER)
Method: Least Squares
Date: 08/19/10   Time: 10:38
Sample (adjusted): 1951 2008
Included observations: 58 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| CED+GER(-1) | -0.152172 | 0.153457 | -0.991624 | 0.3259 |
| D(CED+GER(-1)) | -0.183028 | 0.141969 | -1.289214 | 0.2029 |
| D(CED+GER(-2)) | -0.812381 | 0.137160 | -5.922852 | 0.0000 |
| C | -1171.275 | 1106.154 | -1.058872 | 0.2945 |
| @TREND(1948) | 73.01368 | 40.44401 | 1.805303 | 0.0767 |
| R-squared | 0.540646 | Mean dependent var |  | 487.2697 |
| Adjusted R-squared | 0.505978 | S.D. dependent var |  | 5173.718 |
| S.E. of regression | 3636.435 | Akaike info criterion |  | 19.31766 |
| Sum squared resid | 7.01E+08 | Schwarz criterion |  | 19.49528 |
| Log likelihood | -555.2121 | Hannan-Quinn criter. |  | 19.38685 |
| F-statistic | 15.59488 | Durbin-Watson stat |  | 2.154474 |
| Prob(F-statistic) | 0.000000 |  |  |  |

## (B) CED+GER taken at 1st difference with trend and intercept.

A unit root process is also called difference-stationary or integrated of order 1 or I(1) because its first difference is a stationary, or an I(0), process. The following table presents the results of an ADF test of the first difference of the CED+GER estimates of illicit flows.

Result: Reject null hypothesis of presence of a unit root. The unit root t-statistic falls outside the corresponding t-statistics at the 1 percent and 5 percent critical values. Both the lags are significant. **As postulated by unit-root econometrics, the results confirm that such a series is stationary.**

### Table 11. Augmented Dickey Fuller Test of the First Difference of CED+GER

Null Hypothesis: D(CED+GER) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=10)

|  |  | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -12.57868 | 0.0000 |
| Test critical values: | 1% level | -4.124265 | |
| | 5% level | -3.489228 | |
| | 10% level | -3.173114 | |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CED+GER,2)
Method: Least Squares
Date: 08/19/10   Time: 10:45
Sample (adjusted): 1951 2008
Included observations: 58 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(CED+GER(-1)) | -2.147686 | 0.170740 | -12.57868 | 0.0000 |
| D(CED+GER(-1),2) | 0.882824 | 0.117313 | 7.525386 | 0.0000 |
| C | -741.2698 | 1017.455 | -0.728553 | 0.4694 |
| @TREND(1948) | 44.59493 | 28.53315 | 1.562917 | 0.1239 |
| R-squared | 0.755666 | Mean dependent var | | 406.3065 |
| Adjusted R-squared | 0.742092 | S.D. dependent var | | 7159.397 |
| S.E. of regression | 3635.873 | Akaike info criterion | | 19.30156 |
| Sum squared resid | 7.14E+08 | Schwarz criterion | | 19.44366 |
| Log likelihood | -555.7452 | Hannan-Quinn criter. | | 19.35691 |
| F-statistic | 55.66972 | Durbin-Watson stat | | 2.271828 |
| Prob(F-statistic) | 0.000000 | | | |

## (C ) Traditional IFF Estimates (with a trend and intercept).

Finally, we run the ADF tests for unit root in the illicit flows series provided under the Traditional method (that is netting out illicit inflows from outflows). The results reject the null hypothesis of the presence of a unit root. Hence, the series is stationary.

### Table 12. Augmented Dickey Fuller Test of Traditional Method IFF Series

Null Hypothesis: TRADITIONAL_TOTAL has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

|  |  | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic |  | -6.757930 | 0.0000 |
| Test critical values: | 1% level | -4.118444 |  |
|  | 5% level | -3.486509 |  |
|  | 10% level | -3.171541 |  |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TRADITIONAL_TOTAL)
Method: Least Squares
Date: 08/19/10 Time: 10:49
Sample (adjusted): 1949 2008
Included observations: 60 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| TRADITIONAL_(-1) | -0.895511 | 0.132513 | -6.757930 | 0.0000 |
| C | 840.4568 | 1516.336 | 0.554268 | 0.5816 |
| @TREND(1948) | -39.20953 | 43.55404 | -0.900250 | 0.3718 |
| R-squared | 0.444889 | Mean dependent var |  | 82.06737 |
| Adjusted R-squared | 0.425412 | S.D. dependent var |  | 7620.908 |
| S.E. of regression | 5776.769 | Akaike info criterion |  | 20.20978 |
| Sum squared residual | 1.90E+09 | Schwarz criterion |  | 20.31450 |
| Log likelihood | -603.2935 | Hannan-Quinn criter. |  | 20.25074 |
| F-statistic | 22.84113 | Durbin-Watson stat |  | 1.957352 |
| Prob(F-statistic) | 0.000000 |  |  |  |

84. **The ADF test results confirm that although the block recursive model can be used to study the drivers and dynamics of illicit flows from India over the time period 1948-2008, it cannot be used to forecast illicit outflows with any reasonable degree of confidence as the series are inherently unstable.** The non-stationary character of the series is directly related to the fact that both the generation of illicit funds and their transfer abroad are illicit and unrecorded so that one should not expect such a series to exhibit any degree of stability over time.

# V. The Absorption of Illicit Flows from India

85. **In this section, we seek to shed light on the destination of illicit flows from India.** This is an important question on which existing economic literature has little to say. Here, we analyze the BIS data on non-bank private sector deposits from India in developed country banks and OFCs keeping certain data limitations in mind. Developed countries are broken down in two groups—DCB Group1 comprising the major industrial countries (the United States, United Kingdom, France, Germany, Japan, Canada, and Australia) and DCB Group2 comprising the other, mostly smaller, countries. Offshore financial centers are also broken down into two groups—OFC Group1 containing the major OFCs such as the Cayman Islands and Switzerland, while OFC Group2 covers a few smaller, Asain OFCs (see Appendix Table 13A for a complete list).
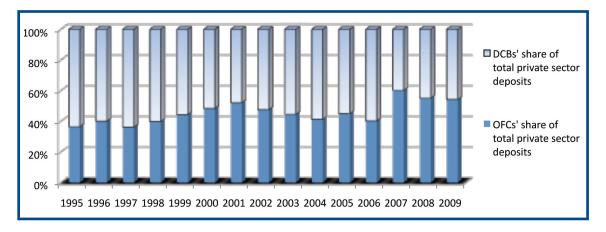
## Limitations of BIS Data on Non-Bank Private Sector Deposits

86. **The Bank for International Settlements (BIS) publishes the most comprehensive dataset on cross-border international banking statistics currently available. The deposit data are at an aggregated level so that it is not possible to trace illicit outflows from India to specific countries like Switzerland, let alone specific financial institutions.** The BIS collects and disseminates two different sets of international banking data, based on information provided by member country banks. The first set of data, locational statistics, comprises of quarterly data on the gross international financial claims and liabilities of banks for residents from a given country. The second set, known as the consolidated statistics, report banks' on-balance sheet financial claims vis-à-vis the rest of the world and provides a measure of the risk exposures of lenders' national banking systems. That is to say, consolidated statistics show reporting countries' claims on the rest of the world.

87. **BIS locational statistics provide information on the role of banks and financial centers in the intermediation of international capital flows.** The key organizational criteria in these statistics are the country of residence of the reporting banks and their counterparties, as well as the recording of all positions on a gross basis. Locational statistics can be used to present the combined cross-border positions of reporting banks in all the BIS reporting countries vis-à-vis individual countries listed on the locational tables. There are currently 42 countries providing these statistics (Appendix Table 12a).

88. **Some of the locational banking statistics are restricted for use by reporting countries.** The BIS needs specific approval from each reporting country for release of individual country data to third parties. Since country-level data are not available from the BIS without permission from those individual countries, the data used herein are aggregated regional-level data. This dataset, which does not show cross-border bank positions on a bilateral basis, could not be used to determine one or more reporting country's deposits vis-à-vis one or a sub aggregate of counterparties.

89. **If bilateral deposit data were available, researchers would be able to track the pattern of deposit holdings by residents of any developing country into any individual bank or offshore center.** Ideally, the distribution of such holdings would account for the totality of all foreign assets held by the private sector of a particular developing country in those points of absorption. Even at the most detailed level, however, locational data refer only to the external deposits of the 42 reporting jurisdictions vis-à-vis the non-bank sector. These data are not further broken down by private and public sectors. The consolidated statistics, however, do provide a split between public and private sector deposits. Although consolidated statistics report these banks' claims on the rest of the world, we assume each country's claims on the world have the same public/private split as other country's claims on them. In this way, we use this split in conjunction with the consolidated statistics in order to derive a proxy for the deposits of India's non-bank private sector holdings in these points of absorption.

90. **While the BIS data on OFCs include Ireland and Switzerland, there are several countries that are classified as offshore financial centers by the IMF for which we did not receive deposit information from the BIS.** However, the missing OFCs are not expected to significantly understate total OFC deposits as it is well known that only a few of them dominate the market for OFC services.

91. **There are other limitations of the BIS data which make mapping illicit flows to absorption impossible for individual countries.** First, the BIS only reports deposit and not withdrawal data. The flow data derived by taking the year-to-year change in the stock of deposits will therefore not reflect withdrawals during the year. This implies that one cannot simply cumulate the BIS data to arrive at a stock position at the end of any given year without information on (i) total withdrawals from banks and OFCs and (ii) interest earned on deposit balances. Second, as pointed out in GFI's earlier study on absorption, the BIS data does not cover all banks or OFCs—only the ones that report to the BIS. However, as noted previously, the understatement due to incomplete coverage is not expected to be large. Third, the public/private split based on consolidated banking statistics may not exactly correspond to the locational banking statistics on deposits. To the extent they do not, this will introduce an error in splitting the private sector from the total deposits reported by the BIS on a locational basis.

92. **We were able to map gross illicit flows from developing countries on to absorption in banks and OFCs with some measure of success but this exercise could not be performed on capital flight from India.** The main limitation of the absorption data we received from the BIS for this study is that they do not reflect withdrawals. The lack of withdrawal data for all developing countries was not such a serious problem when it came to the mapping exercise on a global level because withdrawals are negligible compared to gross outflows at that level.

93. **The total lack of information on withdrawals from banks and OFCs mean that illicit outflows from India cannot be mapped on to abosprtion or deposits at a point in time.** The Traditional model of capital flight indicates that there were substantial inflows of illicit capital into India in recent years which seem to have fueled the growth of the underground economy.

94. **Nevertheless, the BIS deposit data offer some useful insights into how gross deposits from the private sector in India behaved during the period 1995 to 2009.** For the period as a whole, there is an unmistakable trend showing that deposits from the Indian private sector shifted away from developed country banks to offshore financial centers. Chart 8 and Appendix Table 14 shows that as the share of OFC deposits increased from 36.4 percent of total deposits in 1995 to 54.2 percent in 2009, deposits in banks fell commensurately to 45.8 percent in the last year. As OFCs are subject to even less oversight than banks and typically hold a larger share of illicit funds, the increasing recourse to OFC deposits relative to banks could be symptomatic of the burgeoning underground economy in India from which such funds emanate.

**Chart 8. India: Absorption of Non-bank Private Sector Deposits in Offshore Financial Centers and Developed Country Banks: 1996-2009 (in percent)**
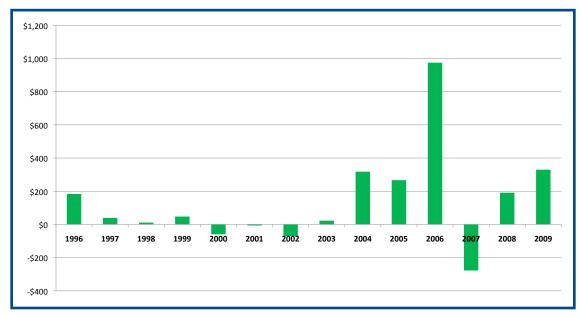


95. **Analyzing detailed BIS data reveals that following the terrorist attacks on the United States in September 2001, private sector deposits from India into banks in the United States, United Kingdom, and other developed countries fell in 2001 and further in 2002.** In the next year, there was a modest increase which was followed by steady increases in 2004-05 and a jump in 2006.

However, the recovery in bank deposits was short-lived. Following the continued weakening of investment banks and other financial institutions and the beginning of the global financial crisis, private sector deposits from India into banks in these countries declined followed by a modest increase in 2008-2009 as a result of a large increase in illicit flows in those years.

## Chart 9a. Deposits from Non-Bank Private Sector in India to Developed Country Banks: DCB Group 1
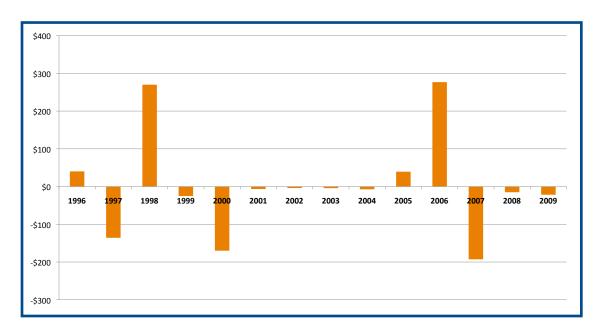
### (in USD Millions. See Appendix Table 13A for country break down)



Source: Bank for International Settlements, Basel, Switzerland. Consolidated banking statistics estimated on a locational basis by GFI.

## Chart 9b. Deposits from Non-Bank Private Sector in India to Developed Country Banks: DCB Group 2

### (in USD Millions. See Appendix Table 13A for country break down)
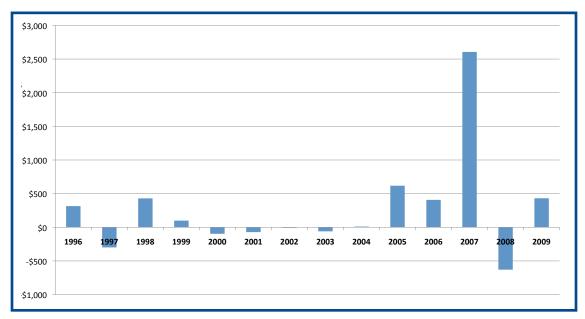


Source: Bank for International Settlements, Basel, Switzerland. Consolidated banking statistics estimated on a locational basis by GFI.

The BIS data show that the decline in private sector deposits into developed country banks following the financial crisis in 2007 was offset to a large extent by the growth in deposits in Cayman Islands and other OFCs and only slightly in Asian OFCs (e.g., Hong Kong and Singapore).

**Chart 10a. Deposits from Non-Bank Private Sector in India to Offshore Financial Centers: OFC Group 1**
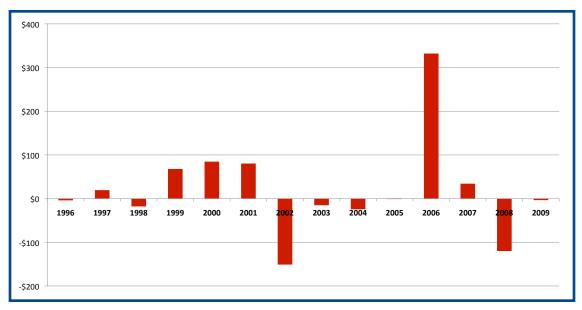
**(in USD Millions. See Appendix Table 13B for country break down)**



Source: Bank for International Settlements, Basel, Switzerland. Consolidated banking statistics estimated on a locational basis by GFI.

**Chart 10b. Deposits from Non-Bank Private Sector in India to Offshore Financial Centers: OFC Group 2**

**(in USD Millions. See Appendix Table 13B for country break down)**



Source:  Bank for International Settlements, Basel, Switzerland. Consolidated banking statistics estimated on a locational basis by GFI.

# VI. Policy Implications for Curtailing Illicit Financial Flows

96. **India is a country that badly requires massive new investment in infrastructure and poverty alleviation.** On balance, it lacks adequate capital relative to its development needs. The recent significant additions to reserves as a result of India's liberalization policies, while no mean achievement, are a drop in the proverbial bucket compared to the country's need for capital. It is unfortunate that a country with an acute need for capital should be one of the world's largest exporters of illicit capital, amounting to some US$213 billion over the period 1948-2008. The gross outflows do not include compounded interest on these assets which would push the gross transfers of illicit assets by Indian residents to about US$462 billion as of end 2008 (see Appendix Table 11).

97. **There are strong reasons to believe that even this staggering amount is significantly understated, despite the fact that the CED+GER method used in this report only includes gross outflows.** The main reason is that economic models can neither capture all the channels through which illicit capital are generated nor reflect the myriad channels through which the funds are transferred. For instance, the CED+GER models do not capture illicit funds generated through trafficking in drugs and other contraband items, human trafficking, cross-border and other smuggling activities, sex trade, illegal trade involving intellectual property rights, and more. The models also cannot capture the transfer of illicit funds through word-of-mouth hawala transactions, "same-invoice" faking involving collusion among traders who misinvoice trade on the same customs invoice, and trade misinvoicing involving services which are not captured by the IMF Direction of Trade Statistics. Preliminary estimates obtained in a recent study on illicit flows from Africa indicate that just two factors, same-invoice faking and mispricing involving trade in services, increase illicit outflows by 46 percent. [4]

98. **It is not just the magnitude of illicit flows that present a challenge for economic development.** As we have seen, economic growth can well finance more outflows of illicit capital if growth is not accompanied by the strengthening of institutions, rule of law, and overall improvements in governance. For instance, we found that while trade liberalization has led to more trade openness in the post-reform period, a larger trade sector has also provided increasing opportunities to traders to misinvoice trade. In fact, transfers of illicit capital through trade mispricing account for 77.6 percent of total outflows from India over the period 1948-2008 (see Appendix Table 6). There is evidence that growth in the post-reform period 1991-2008 has not been inclusive in that the faster pace has actually worsened income distribution to some extent. As income distribution worsens, there are a larger number of high net worth individuals who are the main drivers of illicit financial flows. In this way, faster economic growth can actually drive capital flight.

[4] Reference Illicit Financial Flows from Africa: Hidden Resource for Development, Global Financial Integrity, March 2010, Washington DC.

99. **The economic model used in this study found that government expenditure and revenue policies resulted in a widening fiscal deficit during the period 1948-2008. The deficits were mainly financed through central bank credits leading to an expansion in the money supply which generated moderately high rates of inflation.** However, there was no evidence that the central government deficits were large enough or resulted in runaway inflation which drove illicit flows. This finding is qualified with a caveat that perhaps more comprehensive data on consolidated general government expenditures and revenues as well as better quality WPI data could have indicated a link between macroeconomic instability and outflows of illicit capital.

100. **Illicit flows not only present a challenge for economic development, but also pose grave national security issues. A June 2010 report by the Paris-based Financial Action Task Force (FATF), of which India is a full member, has recently noted that anti-money laundering (AML)/combating the financing of terrorism (CFT) regime in India is "relatively young" and the country faces many risks emanating from such activities.** According to the FATF, the main sources of money laundering in India result from illegal activities carried on both within and outside the country such as drug trafficking, fraud, counterfeiting of Indian currency, transnational organized crime, human trafficking, and corruption. As we noted earlier, economic models can neither capture all means of generating illicit funds nor the myriad ways those funds could be transferred abroad. For instance, a few recent studies have found that hawala transactions in India are used to launder the proceeds of trade mispricing, or that the two work in conjunction in a self-sustaining cycle.

101. **The FATF report notes that money-laundering techniques in India are diverse, ranging all the way from opening multiple bank accounts to mixing criminal proceeds with assets of a legal origin.** For transnational organized crimes, the FATF recognizes that such syndicates typically disguise their criminal proceeds through the use of offshore corporations and trade-based money laundering. There are some continuing issues which have hampered the implementation of a stronger AML/CFT regime including the need to resolve the threshold condition for domestic predicate offences. As India continues to be "a significant target for terrorist groups", the authorities would need to strengthen the AML/CFT provisions as a matter of the highest priority.

102. **Collection and dissemination of relevant data is vital to combating trade mispricing.** India should be utilizing available international data on banks and collecting additional data on pricing of both imports and exports, in an increasingly interactive and comparative format, and using that data more aggressively to detect patterns of abusive transfer pricing (ATP) by commodity and by exporter and importer. The enhanced information should be made available to customs authorities on-site at ports of entry so that current reference prices are available and real-time decisions can be made about identifying and examining suspect shipments for additional assessment.

**103. The systemic collection of beneficial ownership information is equally important.**
The use of tax havens and secrecy jurisdictions for accumulating or transferring illicit funds prevents detection of tax evasion, abusive transfer pricing, money laundering and other illicit activities. In addition, financial institutions should be required to identify in their records the natural (real) persons who are the beneficial owners of a) any financial account, or b) any legal entity that owns a financial account.

**104. India is one of the few developing countries that has the skilled manpower necessary to combat ATP.** Customs and other regulatory agencies need to be able to distinguish between trade transactions involving related and unrelated parties. The transactions between related parties cannot necessarily be considered as market transactions because book-keeping practices between related units of a multinational may not reflect market-related prices. When deviations between book values of transactions between related parties and transaction prices involving independent parties (i.e., market prices) are large, the IMF Balance of Payments Manual recommends that book values be replaced by market value equivalents. In determining how far a transfer price deviates from or approximates a market price, the IMF recommends that the transfer between affiliates be evaluated with reference to the relative position of the goods in the chain of production up to the point of actual sale to an independent party—that is the costs embodied up to that stage of production. A transfer price that does not seem to be consistent with the cost of production would probably not be an adequate proxy for a market price. Without going into further details on transfer pricing as they are outside the scope of the present study, it will suffice to note that mechanisms to strengthen Customs, Tax and other government agencies are needed to identify and reduce fiscal termites like ATP that gnaw away at the country's tax base.

**105. The results of this report indicate that in addition to identifying new methods of capturing illicit financial flows, India also needs to do more to enforce existing laws.**
Income tax is currently collected from only a fraction of the population, with the wealthiest corporations and individuals often avoiding or evading taxation. The tax base should be broadened, and the exhaustive system of appeals from notices of tax liability should be addressed. Legal presumptions can be adopted to help decrease the burden on Government in tax cases. India may wish to consider the American approach of requiring payment of assessed tax liability, to be held by Government pending the outcome of the appeals process.

**106. As far as economic reform is concerned, we echo Buiter (2002) that policies aimed at curtailing capital flight must improve the general investment climate of the country. Where we see things a bit differently is that illicit financial flows cannot be curtailed without the collaborative effort of developing *and* developed countries.** Developing countries need to adopt a range of policy measures including sound macroeconomic policies and improved governance through strengthened institutions and implementing the rule of law. At the same time, developed country regulators must ensure that banks and offshore

financial centers do not undermine the efforts of developing countries by holding their financial institutions to high standards of corporate governance and greater accountability and transparency regarding the services they provide.

# VII. Conclusions

**107. The paper reviewed the salient economic developments over the period 1948-2008 with reference to a set of economic indicators including the central government fiscal deficits and inflation.** India has followed a planning model for economic development that declined in importance as a policy tool as the country progressively embraced economic liberalization and reform. The reform policies implemented in 1991 represent a watershed in Indian economic history. The government removed barriers to the entry for domestic and foreign firms, and concrete steps were taken to increase FDI. As a result of wide and far-reaching economic reform policies, there began a surge in foreign capital inflows and the RBI had to intervene in order to prevent an appreciation of the rupee. Under trade liberalization policies, the maximum tariff rate was lowered and a national mineral policy was revised to allow more private participation in the industry.

**108. Using the World Bank Residual model adjusted for gross trade mispricing (i.e., illicit inflows through export over-invoicing and import under-invoicing are set to zero), we found that a total of US$213.2 billion was shifted out of India over 61-years between the first full year of India's independence (1948) and 2008, or about 16.6 percent of India's GDP at end-2008.** If we apply rates of return on these assets based on the short-term U.S. Treasury bill rate, we estimate that the total gross transfers of illicit assets by Indian residents amount to US$462 billion at the end of 2008. Had India managed to avoid this staggering loss of capital, the country could have paid off its outstanding external debt of US$230.6 billion (as of end 2008) and have another half left over for poverty alleviation and economic development. Over this period, illicit flows grew at a rate of 11.5 percent per annum while in real terms, they grew by 6.4 percent per annum (Appendix Table 7). There are reasons to believe that the cumulative loss of capital is significantly understated because economic models can neither capture all sources for the generation of illicit funds nor the various means for their transfer.

**109. While the CED+GER method of estimating gross illicit outflows cannot capture all illicit outflows, this paper points out various reasons why the Traditional method of netting out illicit inflows from outflows used by economists to estimate flight capital makes little sense.** Traditional models of capital flight cannot capture the genuine return of those funds. Netting out inflows from outflows is only warranted if inflows represent a return of flight capital such that a subsequent gain in capital offsets the original loss. A return of flight capital typically follows credible economic reform on a sustained basis and may be detected in a significant increase in *recorded* FDI or *recorded* inflows of private portfolio capital. In contrast, the inflows indicated by the World Bank Residual model whether adjusted for trade misinvoicing or not, are also *unrecorded* and therefore cannot be taxed or used by the government for economic development. Hence, illicit inflows are more likely to boost

the growth of the underground, rather than the official, economy. For another, a genuine reversal of flight capital such as an increase in foreign direct investment would be recorded in the balance of payments. If the inflows go unrecorded, how can we say those are FDI? Hence, economists have misplaced their faith in traditional models of capital flight to capture reversals of capital flight and have thereby understated the problem severely.

110. **The CED+GER as well as the Traditional netting out method of estimating illicit flows were then subjected to the ADF tests to determine whether the two series were stationary. The ADF confirm that only the first difference of the CED+GER and the Traditional series were stationary at the 95 percent confidence level.** Given the mean-reverting nature of a stationary time series, researchers are able to make long-term forecasts of the series. However, the fact that a series is stationary does not mean that its underlying behavior can be explained by a multiple regression equation. If a stationary series performs poorly in a multiple regression, we cannot include it in a simulation model.

111. **As neither the Traditional model estimates of illicit flows nor the first difference of the CED+GER estimates could be explained by a behavioral equation, they could not be used in the dynamic simulation regardless of their stationarity.** We therefore used the non-stationary CED+GER series in order to obtain a better understanding of the drivers and dynamics of capital flight from India over the period in question.

112. **A dynamic simulation model was developed to capture how monetary and fiscal policies interact to generate inflation and how the simulated inflation and the fiscal deficit, along with a number of exogenous variables, help explain illicit financial flows from India. The model finds no support for the thesis that central government deficits or their financing through credits from the Reserve Bank of India generated macroeconomic instability (as measured either by the deficits or inflation) which drove illicit flows from India.** There is some likelihood that data limitations on the fiscal side (such as the lack of general government expenditure and revenue) or the quality of the WPI may have been responsible for their lack of significance in explaining illicit flows. Apart from this caveat, it seems that illicit flows are much more responsive to structural and governance issues than they are to macroeconomic drivers like the deficit and inflation. **It may well be that macroeconomic drivers have a stronger influence on legal capital flight rather than illicit flows which tend to be mainly driven by structural and governance issues.**

113. **The dummy variable Reform (0 pre-reform 1948-1990; 1 post-reform 1991-2008) had a negative sign and was found to be significant at the 5 percent level indicating that liberalization of financial markets and general deregulation led to an increase in illicit flows rather than a curtailment.** This result is consistent with those found for the Tradeopen (exports plus imports as a share of GDP in current prices) variable. As the size of India's traded sector increased relative to GDP, this seems to have encouraged more

trade mispricing, not less. The results lend support to the contention that economic reform and liberalization need to be dovetailed with strengthened institutions and governance if governments are to curtail capital flight. Otherwise, deregulation will merely provide an added incentive for those seeking to transfer illicit capital abroad. As we now know, deregulation of financial institutions on Wall Street has helped, not hindered, their abuse.

114. **This is the first study that seeks to relate the size of the underground economy to illicit flows.** Starting with the assumption that, immediately following independence, the size of India's underground economy was zero, it grew progressively over time to account for 50 percent of official GDP in 2008 as estimated by some researchers.

115. **We used the cubic spline interpolation technique to interpolate the underground series starting at 5 percent of GDP in 1948 and ending at 50 percent of GDP in 2008 with the caveat that the interpolated line corresponds to the size of the underground economy estimated using the demand for money approach by Gupta and Gupta (1982) for the period 1967-1978 (9.5 percent of GDP in 1967/68 and 48.8 percent in 1978/79).** Going by these estimates, it is very conservative to assume that the size of the underground economy in India is 50 percent of GDP in 2008. One could use alternative estimates of the underground economy in a regression equation to explain illicit flows. The one-period lagged variable Underground was found to be statistically significant and strongly suggest that illicit flows are positively related to the size of the underground economy.

116. **Both growth in GDP at constant prices as well as income distribution as measured by the Gini coefficient were found to be positively related to illicit flows, although for the sample period 1952-2008, they were not statistically significant. In order to examine the impact of growth and distribution on capital flight in more detail, we reexamined the issue in the context of the pre- and post-reform periods, given the profound structural changes from a closed to a more open economy.** We found that the faster pace of economic growth in the post-reform period did not lead to a more equitable distribution of income—in fact income disparity increased somewhat. The increase in income disparity means there are a larger number of high net-worth individuals in the post- compared to the pre-reform period. Because HNWIs are the main drivers of capital flight, this may explain why faster economic growth in the post-reform period has spurred more flight capital rather than less.

117. **There are a number of policy implications arising out of this study. We found that the underground economy is an important driver of illicit financial flows.** The growth of the underground economy is indicative of the state of overall governance in the country. Generally, one would expect a high correlation between the state of overall governance and the size of the underground economy—countries with strong governance (such as Norway) typically have a small underground economy whereas those with poor governance (such as Nigeria) have a large underground economy. The policy implication is that measures that

shrink the underground economy can be expected to curtail illicit flows while those than expand it would drive such outflows. As tax evasion is a major driver of the underground economy, efforts to expand the tax base and improve tax collection can be expected to curtail illicit flows. But this is not as easy as it sounds. Improving tax compliance requires a sustained and credible effort by the government whereby economic agents are convinced that the tax burden is distributed fairly and that they are getting their money's worth in terms of the services that the government provides. Tax payers then become true stakeholders of the economy and tax evasion loses much of its appeal.

118. **As Buiter (2002) notes, policies aimed at curtailing capital flight must improve the general investment climate of the country.** While this is true, illicit financial flows cannot be curtailed without the collaborative effort of both developing as well as developed countries. Developing countries need to adopt a whole range of policy measures including sound macroeconomic policies and improved governance through strengthened institutions and implementing the rule of law. At the same time, developed country regulators must ensure that banks and offshore financial centers do not undermine the efforts of developing countries. Advanced industrial countries must hold their financial institutions to high standards of corporate governance and greater accountability and transparency regarding the services they provide. Absorbing illicit flows from developing countries without regard to the illegal manner in which the capital was generated and facilitating the transfer of this capital should not be acceptable as a business model to any government or regulatory agency.

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# Appendix

## Table 1: Trade Variables

| Year | Trade (INR Millions) | | Trade Openess |
|---|---|---|---|
| | Exports | Imports (cif) | Trade (exports + imports) /GDP |
| 1948 | 4,286 | 4,720 | 10.39 |
| 1949 | 4,396 | 6,757 | 12.35 |
| 1950 | 5,452 | 5,196 | 11.36 |
| 1951 | 7,630 | 7,805 | 15.48 |
| 1952 | 5,918 | 7,749 | 13.99 |
| 1953 | 5,245 | 5,526 | 10.12 |
| 1954 | 5,568 | 5,960 | 11.45 |
| 1955 | 6,016 | 6,458 | 12.16 |
| 1956 | 5,985 | 7,909 | 11.37 |
| 1957 | 6,572 | 9,548 | 12.79 |
| 1958 | 5,792 | 7,826 | 8.00 |
| 1959 | 6,300 | 9,477 | 10.67 |
| 1960 | 6,341 | 10,968 | 10.68 |
| 1961 | 6,601 | 10,884 | 10.18 |
| 1962 | 6,682 | 11,248 | 9.70 |
| 1963 | 7,741 | 11,796 | 9.20 |
| 1964 | 8,118 | 13,693 | 8.81 |
| 1965 | 8,032 | 13,516 | 8.24 |
| 1966 | 11,714 | 20,373 | 10.85 |
| 1967 | 12,097 | 20,796 | 9.50 |
| 1968 | 13,209 | 19,273 | 8.86 |
| 1969 | 13,763 | 16,589 | 7.51 |
| 1970 | 15,198 | 15,933 | 7.21 |
| 1971 | 15,256 | 18,155 | 7.22 |
| 1972 | 18,568 | 16,844 | 6.94 |
| 1973 | 22,591 | 24,893 | 7.66 |
| 1974 | 31,786 | 41,596 | 10.02 |
| 1975 | 36,412 | 53,388 | 11.40 |
| 1976 | 49,702 | 50,738 | 11.83 |
| 1977 | 55,734 | 57,937 | 11.83 |
| 1978 | 54,564 | 64,387 | 11.42 |
| 1979 | 63,445 | 79,820 | 12.53 |
| 1980 | 67,517 | 116,771 | 13.55 |
| 1981 | 71,780 | 133,379 | 12.84 |
| 1982 | 88,416 | 139,691 | 12.81 |
| 1983 | 92,430 | 142,012 | 11.29 |
| 1984 | 107,464 | 172,799 | 12.11 |
| 1985 | 113,192 | 196,768 | 11.82 |
| 1986 | 118,524 | 194,502 | 10.69 |
| 1987 | 146,417 | 216,134 | 10.88 |
| 1988 | 184,099 | 266,059 | 10.63 |
| 1989 | 257,553 | 334,011 | 12.17 |
| 1990 | 314,394 | 413,566 | 12.80 |
| 1991 | 401,230 | 459,378 | 13.18 |
| 1992 | 508,706 | 611,131 | 14.96 |
| 1993 | 656,894 | 694,463 | 15.73 |
| 1994 | 785,033 | 842,168 | 16.07 |
| 1995 | 994,546 | 1,127,480 | 17.81 |
| 1996 | 1,171,920 | 1,344,060 | 18.25 |
| 1997 | 1,270,700 | 1,505,430 | 18.18 |
| 1998 | 1,379,290 | 1,772,310 | 18.00 |
| 1999 | 1,536,150 | 2,024,180 | 18.24 |
| 2000 | 1,906,530 | 2,316,550 | 20.09 |
| 2001 | 2,045,160 | 2,378,120 | 19.41 |
| 2002 | 2,448,390 | 2,746,720 | 21.17 |
| 2003 | 2,743,190 | 3,374,760 | 22.21 |
| 2004 | 3,472,670 | 4,521,180 | 24.68 |
| 2005 | 4,393,450 | 6,300,170 | 28.85 |
| 2006 | 5,521,660 | 8,091,050 | 31.78 |
| 2007 | 6,190,170 | 9,435,340 | 31.58 |
| 2008 | 8,412,340 | 13,939,400 | 40.10 |

## References:

**Exports**
**1947** IMF International Financial Statistics Yearbook 1950

**1948-2008** IMF International Financial Statistics online Database. (53470...ZF…)

**Imports**
**1947** IMF International Financial Statistics Yearbook 1950

**1948-2008** IMF International Financial Statistics online Database. (53471...ZF…)

**GDP**
**1947** "The National Income of India" Oxford University Press. Appendix Table 8(b)

**1948-49** "Net domestic product" from Estimates of National Income, published by the Indian Central Statistical Organization March 1955

**1950-2008** IMF International Financial Statistics online database. (53499B..ZF...)

## Table 2A: Balance of Payments Variables (INR Millions)

| Year | Balance of Payments (INR Millions) | | | |
| | Current Account: Net | Direct Investments: Net | Reserve Assets: Net | External Debt |
|---|---|---|---|---|
| 1948 | -962 | 163 | -4,540 | 135 |
| 1949 | -1,780 | 201 | 66 | 537 |
| 1950 | 439 | 81 | -533 | 426 |
| 1951 | -916 | 29 | 489 | 348 |
| 1952 | -558 | 38 | 608 | 485 |
| 1953 | 100 | 38 | -251 | 395 |
| 1954 | -248 | 75 | -13 | 238 |
| 1955 | -465 | 75 | -179 | 2,069 |
| 1956 | -3,217 | 368 | 2,014 | 2,191 |
| 1957 | -4,078 | 488 | 3,333 | 2,737 |
| 1958 | -3,691 | 270 | 1,157 | 4,520 |
| 1959 | -1,719 | 102 | -424 | 5,792 |
| 1960 | -3,491 | 518 | 267 | 11,961 |
| 1961 | -3,329 | 281 | 633 | 13,153 |
| 1962 | -3,691 | 296 | 690 | 14,272 |
| 1963 | -3,176 | 262 | -171 | 16,732 |
| 1964 | -4,481 | 471 | -124 | 20,682 |
| 1965 | -6,419 | 181 | 148 | 18,121 |
| 1966 | -5,914 | 324 | 178 | 35,335 |
| 1967 | -8,408 | 368 | 308 | 40,544 |
| 1968 | -4,980 | 278 | -773 | 46,284 |
| 1969 | -1,725 | 240 | -2,828 | 51,733 |
| 1970 | -3,083 | 360 | -2,333 | 76,101 |
| 1971 | -4,892 | 435 | -1,416 | 75,825 |
| 1972 | -1,268 | 304 | 197 | 91,732 |
| 1973 | -4,227 | 519 | 526 | 97,780 |
| 1974 | 9,779 | 705 | 567 | 103,480 |
| 1975 | -1,236 | -86 | -4,998 | 123,990 |
| 1976 | 14,147 | -69 | -16,855 | 129,632 |
| 1977 | 18,520 | -105 | -18,263 | 127,059 |
| 1978 | 5,673 | 246 | -14,518 | 136,801 |
| 1979 | 409 | 699 | -6,785 | 145,913 |
| 1980 | -14,036 | 0 | 4,904 | 167,220 |
| 1981 | -23,365 | 0 | 15,792 | 211,027 |
| 1982 | -23,860 | 0 | 402 | 267,921 |
| 1983 | -19,561 | 0 | -8,485 | 334,724 |
| 1984 | -26,261 | 0 | -18,123 | 423,172 |
| 1985 | -51,215 | 0 | 6,650 | 494,308 |
| 1986 | -57,603 | 2,459 | 11,236 | 617,756 |
| 1987 | -67,029 | 5,626 | 10,370 | 723,452 |
| 1988 | -99,412 | 4,968 | 16,474 | 921,739 |
| 1989 | -110,544 | 6,653 | 13,568 | 1,293,660 |
| 1990 | -123,152 | 1,803 | 48,977 | 1,548,159 |
| 1991 | -97,603 | 1,672 | -46,398 | 2,244,049 |
| 1992 | -116,248 | 7,167 | -58,396 | 2,349,138 |
| 1993 | -57,199 | 16,772 | -142,182 | 2,920,078 |
| 1994 | -52,592 | 27,944 | -289,818 | 3,125,704 |
| 1995 | -180,399 | 65,711 | 63,413 | 3,348,207 |
| 1996 | -211,044 | 77,482 | -94,818 | 3,410,129 |
| 1997 | -107,675 | 125,803 | -168,401 | 3,719,854 |
| 1998 | -284,815 | 106,740 | -109,704 | 4,195,929 |
| 1999 | -138,982 | 89,952 | -272,407 | 4,311,084 |
| 2000 | -206,789 | 138,182 | -270,353 | 4,686,355 |
| 2001 | 66,541 | 192,234 | -410,234 | 4,752,621 |
| 2002 | 343,162 | 191,907 | -916,503 | 5,034,291 |
| 2003 | 408,650 | 113,855 | -1,221,490 | 5,375,625 |
| 2004 | 35,356 | 162,787 | -1,071,711 | 5,343,010 |
| 2005 | -453,502 | 204,123 | -641,836 | 5,417,892 |
| 2006 | -421,313 | 271,493 | -1,321,601 | 6,344,835 |
| 2007 | -466,578 | 324,460 | -3,617,550 | 8,079,749 |
| 2008 | -1,570,021 | 992,219 | -217,234 | 11,174,242 |

## References:

**Current Account (Net)**

**1947-49** IMF Balance of Payments Yearbook 1954

**1950-56** IMF Balance of Payments Yearbook 1959

**1957** IMF Article IV Consultations 1960

**1958-74** IMF International Financial Statistics Yearbook 1986

**1975-2008** BoP IMF online database (BoP 5344993..9...)

**Direct Investment (Net)**

**1947-51** "Private Long-Term Capital" from IMF Balance of Payments Yearbook Vol. 4, 1950-51

**1952-53** (226 INR Mil./6 years) from Reserve Bank of India Balance of Payments Book July 1993

**1954-55** (149 INR Mil./2 years) from Reserve Bank of India Balance of Payments Book July 1993

**1956-1958** IMF Article IV Consultations in International Financial Statistics Yearbook 1960

**1959-62** Reserve Bank of India Balance of Payments Book July 1993

**1963-74** Reserve Bank of India Balance of Payments Document (Table 144) from dbie.rbi.org.in

**1975-76** IMF Balance of Payments online database (BoP 5344500..9…)

**1977-90** Reserve Bank of India Balance of Payments Document (Table 144) from dbie.rbi.org.in

**1991-2008** IMF Balance of Payments online database (BoP 5344500..9…)

**Reserve Assets (Net)**

**1948-1950** "Report of the Fund Mission to India" 1953

**1951-1953** IMF Article IV Consultation in International Financial Statistics Yearbook 1955

**1954-1955** IMF Article IV Consultation in International Financial Statistics Yearbook 1960

**1956-1957** IMF International Financial Statistics Yearbook 1981 (line 79k.d)

**1958-1974** IMF International Financial Statistics Yearbook 1981 (line 79c.d)

**1975-2008** IMF Balance of Payments online database (BoP 5344802..9…)

**External Debt**

**1947** BoP yearbook, Volume 4, 1950-1951, IMF. "private long-term capital"

**1948-1954** IMF and WB recorded loans to India IFS online database and (World Bank fully re-paid debt: http://web.worldbank.org/WBSITE/EXTERNAL/PUBLICATION/INFOSHOP1/0,,contentMDK:20144232~pagePK:162350~piPK:165575~theSitePK:225714,00.html).

**1956-1964** CHANGE (added to 1955 figure) in Public and Publicly guaranteed debt USD Mil. Collected from Slater paper.

**1955, 1960, 1970-1973** (Medium and Long-Term External Debt) from India BoP book of the Reserve Bank of India.

**1965-1969** IMF PDF's of Article IV BoP data.

**1970-2008** World Bank Global Development Finance databank.

## Table 2B. Balance of Payments Variables (USD Millions)

| | Balance of Payments (USD Millions) | | | |
|---|---|---|---|---|
| Year | Current Account: Net | Direct Investments: Net | Reserve Assets: Net | External Debt |
| 1948 | -291 | 49 | -1,372 | 41 |
| 1949 | -485 | 55 | 18 | 112 |
| 1950 | 92 | 17 | -112 | 89 |
| 1951 | -192 | 6 | 103 | 72 |
| 1952 | -117 | 8 | 128 | 102 |
| 1953 | 21 | 8 | -53 | 83 |
| 1954 | -52 | 16 | -3 | 49 |
| 1955 | -98 | 16 | -38 | 433 |
| 1956 | -676 | 77 | 423 | 456 |
| 1957 | -856 | 102 | 700 | 574 |
| 1958 | -775 | 57 | 243 | 946 |
| 1959 | -361 | 21 | -89 | 1,211 |
| 1960 | -733 | 109 | 56 | 2,506 |
| 1961 | -699 | 59 | 133 | 2,760 |
| 1962 | -775 | 62 | 145 | 2,989 |
| 1963 | -667 | 55 | -36 | 3,497 |
| 1964 | -941 | 99 | -26 | 4,313 |
| 1965 | -1,348 | 38 | 31 | 3,795 |
| 1966 | -930 | 51 | 28 | 4,664 |
| 1967 | -1,121 | 49 | 41 | 5,372 |
| 1968 | -664 | 37 | -103 | 6,068 |
| 1969 | -230 | 32 | -377 | 6,844 |
| 1970 | -411 | 48 | -311 | 10,045 |
| 1971 | -653 | 58 | -189 | 10,417 |
| 1972 | -167 | 40 | 26 | 11,353 |
| 1973 | -546 | 67 | 68 | 11,920 |
| 1974 | 1,207 | 87 | 70 | 12,697 |
| 1975 | -148 | -10 | -597 | 13,874 |
| 1976 | 1,579 | -8 | -1,881 | 14,597 |
| 1977 | 2,119 | -12 | -2,090 | 15,478 |
| 1978 | 692 | 30 | -1,772 | 16,707 |
| 1979 | 50 | 86 | -835 | 18,454 |
| 1980 | -1,785 | 0 | 624 | 21,087 |
| 1981 | -2,698 | 0 | 1,824 | 23,192 |
| 1982 | -2,524 | 0 | 43 | 27,810 |
| 1983 | -1,937 | 0 | -840 | 31,900 |
| 1984 | -2,311 | 0 | -1,595 | 33,987 |
| 1985 | -4,141 | 0 | 538 | 40,630 |
| 1986 | -4,568 | 195 | 891 | 47,078 |
| 1987 | -5,171 | 434 | 800 | 56,182 |
| 1988 | -7,143 | 357 | 1,184 | 61,659 |
| 1989 | -6,813 | 410 | 836 | 75,941 |
| 1990 | -7,036 | 103 | 2,798 | 85,661 |
| 1991 | -4,292 | 74 | -2,040 | 86,864 |
| 1992 | -4,485 | 277 | -2,253 | 89,662 |
| 1993 | -1,876 | 550 | -4,663 | 93,055 |
| 1994 | -1,676 | 891 | -9,238 | 99,608 |
| 1995 | -5,563 | 2,026 | 1,956 | 95,174 |
| 1996 | -5,956 | 2,187 | -2,676 | 94,910 |
| 1997 | -2,965 | 3,464 | -4,637 | 94,701 |
| 1998 | -6,903 | 2,587 | -2,659 | 98,774 |
| 1999 | -3,228 | 2,089 | -6,327 | 99,128 |
| 2000 | -4,601 | 3,075 | -6,016 | 100,243 |
| 2001 | 1,410 | 4,074 | -8,694 | 98,643 |
| 2002 | 7,060 | 3,948 | -18,854 | 104,816 |
| 2003 | 8,773 | 2,444 | -26,222 | 117,874 |
| 2004 | 780 | 3,592 | -23,649 | 122,588 |
| 2005 | -10,284 | 4,629 | -14,554 | 120,224 |
| 2006 | -9,299 | 5,992 | -29,170 | 143,402 |
| 2007 | -11,284 | 7,847 | -87,488 | 204,992 |
| 2008 | -36,088 | 22,807 | -4,993 | 230,611 |

## References:

Period Average Exchange Rate INR/ USD used for Current Account Net, Direct Investments Net, Reserve Assets Net. From IMF IFS Database (534..RF.ZF...)

End of Period Exchange Rate INR/USD used for External Debt. From IMF IFS Database (534..AE.ZF...)

## Table 3: Fiscal Variables

| | Fiscal (INR Millions) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Sub Government Revenue line | Grants Received | Total Government Revenue | Sub Government Expenditures | Lending Minus Repayments | Total Government Expenditure | Fiscal Balance = Total Rev - Total Expend | Fiscal Deficit as percent of GDP |
| 1948 | 3,717 | 0 | 3,717 | 3,209 | … | 3,209 | 508 | 0.00 |
| 1949 | 3,504 | 0 | 3,504 | 3,171 | … | 3,171 | 333 | 0.00 |
| 1950 | 4,710 | 0 | 4,710 | 4,360 | 500 | 4,860 | -150 | 0.16 |
| 1951 | 5,890 | 0 | 5,890 | 5,210 | 680 | 5,890 | 0 | 0.00 |
| 1952 | 4,850 | 0 | 4,850 | 4,630 | 980 | 5,610 | -760 | 0.78 |
| 1953 | 4,540 | 0 | 4,540 | 4,860 | 1,490 | 6,350 | -1,810 | 1.70 |
| 1954 | 5,070 | 0 | 5,070 | 6,600 | 2,140 | 8,740 | -3,670 | 3.64 |
| 1955 | 5,840 | 0 | 5,840 | 6,760 | 2,590 | 9,350 | -3,510 | 3.42 |
| 1956 | 6,770 | 0 | 6,770 | 8,350 | 2,400 | 10,750 | -3,980 | 3.26 |
| 1957 | 8,000 | 0 | 8,000 | 11,840 | 2,930 | 14,770 | -6,770 | 5.37 |
| 1958 | 7,930 | 0 | 7,930 | 12,500 | 2,770 | 15,270 | -7,340 | 4.31 |
| 1959 | 9,130 | 0 | 9,130 | 11,180 | 4,920 | 16,100 | -6,970 | 4.71 |
| 1960 | 10,350 | 0 | 10,350 | 13,120 | 3,720 | 16,840 | -6,490 | 4.01 |
| 1961 | 12,390 | 0 | 12,390 | 14,370 | 4,050 | 18,420 | -6,030 | 3.51 |
| 1962 | 14,870 | 0 | 14,870 | 18,570 | 5,050 | 23,620 | -8,750 | 4.73 |
| 1963 | 19,000 | 0 | 19,000 | 23,890 | 6,050 | 29,940 | -10,940 | 5.15 |
| 1964 | 20,270 | 0 | 20,270 | 25,370 | 6,610 | 31,980 | -11,710 | 4.73 |
| 1965 | 23,840 | 0 | 23,840 | 26,550 | 9,650 | 36,200 | -12,360 | 4.73 |
| 1966 | 25,300 | 0 | 25,300 | 30,400 | 12,100 | 42,500 | -17,200 | 5.82 |
| 1967 | 25,500 | 0 | 25,500 | 31,500 | 8,600 | 40,100 | -14,600 | 4.22 |
| 1968 | 27,500 | 0 | 27,500 | 30,400 | 8,000 | 38,400 | -10,900 | 2.97 |
| 1969 | 30,500 | 0 | 30,500 | 35,300 | 5,500 | 40,800 | -10,300 | 2.55 |
| 1970 | 33,300 | 0 | 33,300 | 39,300 | 7,600 | 46,900 | -13,600 | 3.15 |
| 1971 | 40,600 | 0 | 40,600 | 49,300 | 7,200 | 56,500 | -15,900 | 3.44 |
| 1972 | 45,700 | 0 | 45,700 | 55,200 | 12,300 | 67,500 | -21,800 | 4.27 |
| 1973 | 49,700 | 0 | 49,700 | 58,100 | 8,600 | 66,700 | -17,000 | 2.74 |
| 1974 | 75,300 | 1,000 | 76,300 | 77,000 | 22,900 | 99,900 | -23,600 | 3.22 |
| 1975 | 91,700 | 2,800 | 94,500 | 93,300 | 33,300 | 126,600 | -32,100 | 4.08 |
| 1976 | 102,600 | 2,700 | 105,300 | 104,100 | 38,100 | 142,200 | -36,900 | 4.35 |
| 1977 | 113,500 | 3,200 | 116,700 | 114,800 | 39,900 | 154,700 | -38,000 | 3.96 |
| 1978 | 129,600 | 2,700 | 132,300 | 133,500 | 49,600 | 183,100 | -50,800 | 4.88 |
| 1979 | 144,000 | 3,900 | 147,900 | 159,000 | 51,800 | 210,800 | -62,900 | 5.50 |
| 1980 | 161,100 | 4,400 | 165,500 | 180,300 | 73,900 | 254,200 | -88,700 | 6.52 |
| 1981 | 195,900 | 3,800 | 199,700 | 208,400 | 78,700 | 287,100 | -87,400 | 5.47 |
| 1982 | 225,100 | 4,000 | 229,100 | 244,200 | 92,100 | 336,300 | -107,200 | 6.02 |
| 1983 | 255,200 | 3,300 | 258,500 | 287,200 | 104,600 | 391,800 | -133,300 | 6.42 |
| 1984 | 296,100 | 4,800 | 300,900 | 351,300 | 125,300 | 476,600 | -175,700 | 7.59 |
| 1985 | 361,200 | 4,900 | 366,100 | 430,700 | 157,900 | 588,600 | -222,500 | 8.48 |
| 1986 | 420,700 | 4,400 | 425,100 | 518,100 | 178,900 | 697,000 | -271,900 | 9.28 |
| 1987 | 480,800 | 4,900 | 485,700 | 597,100 | 167,400 | 764,500 | -278,800 | 8.37 |
| 1988 | 557,400 | 6,000 | 563,400 | 694,900 | 189,000 | 883,900 | -320,500 | 7.57 |
| 1989 | 675,400 | 7,500 | 682,900 | 818,300 | 226,400 | 1,044,700 | -361,800 | 7.44 |
| 1990 | 721,730 | 5,860 | 727,590 | 916,820 | 239,500 | 1,156,320 | -428,730 | 7.54 |
| 1991 | 862,790 | 9,470 | 872,260 | 1,011,760 | 209,300 | 1,221,060 | -348,800 | 5.34 |
| 1992 | 984,920 | 9,190 | 994,110 | 1,160,500 | 223,500 | 1,384,000 | -389,890 | 5.21 |
| 1993 | 1,015,180 | 9,930 | 1,025,110 | 1,357,200 | … | 1,357,200 | -332,090 | 3.87 |
| 1994 | 1,232,400 | 10,380 | 1,242,780 | 1,479,420 | … | 1,479,420 | -236,640 | 2.34 |
| 1995 | 1,477,860 | 11,380 | 1,489,240 | 1,740,760 | 335,600 | 2,076,360 | -587,120 | 4.93 |
| 1996 | 1,718,910 | 11,900 | 1,730,810 | 2,000,480 | 387,200 | 2,387,680 | -656,870 | 4.76 |
| 1997 | 1,858,370 | 10,180 | 1,868,550 | 2,289,550 | 310,700 | 2,600,250 | -731,700 | 4.79 |
| 1998 | 1,957,690 | 9,870 | 1,967,560 | 2,543,060 | 331,900 | 2,874,960 | -907,400 | 5.18 |
| 1999 | 2,337,990 | 11,070 | 2,349,060 | 2,990,350 | 409,100 | 3,399,450 | -1,050,390 | 5.38 |
| 2000 | 2,512,540 | 8,140 | 2,520,680 | 3,327,900 | 304,500 | 3,632,400 | -1,111,720 | 5.29 |
| 2001 | 2,573,560 | 17,520 | 2,591,080 | 3,580,240 | … | 3,580,240 | -989,160 | 4.34 |
| 2002 | 2,908,650 | 18,680 | 2,927,330 | 4,070,620 | … | 4,070,620 | -1,143,290 | 4.66 |
| 2003 | 3,323,580 | 28,570 | 3,352,150 | 4,338,980 | … | 4,338,980 | -986,830 | 3.58 |
| 2004 | 3,875,640 | 25,620 | 3,901,260 | 4,913,160 | … | 4,913,160 | -1,011,900 | 3.12 |
| 2005 | 4,510,490 | 30,230 | 4,540,720 | 5,684,210 | … | 5,684,210 | -1,143,490 | 3.08 |
| 2006 | 4,337,210 | 25,303 | 4,362,513 | 5,734,730 | … | 5,734,730 | -1,372,217 | 3.20 |
| 2007 | 5,743,020 | 27,217 | 5,770,237 | 7,023,570 | … | 7,023,570 | -1,253,333 | 2.53 |
| 2008 | 5,446,950 | 27,941 | 5,474,891 | 8,663,480 | … | 8,663,480 | -3,188,589 | 5.72 |

## References:

### Sub Government Revenue

**1947** IMF Article IV Consultation in International Financial Statistics Yearbook 1948

**1948-49** IMF Article IV Consultation in International Financial Statistics Yearbook 1952

**1950** IMF International Financial Statistics Yearbook 1986

**1951-57** IMF International Financial Statistics Yearbook 1981

**1958-65** IMF International Financial Statistics Yearbook 1986

**1966-89** IMF International Financial Statistics Yearbook 1996

**1990-2008** IMF International Financial Statistics online database (534c1…BA…)

### Grants Received

**1947-89** IMF International Financial Statistics Yearbook 1996 (534…BA…)

**1990-2008** IMF International Financial Statistics online database (534…c13.BA)

*NB. Grants received as a concept was not recorded until 1974

### Sub Government Expenditures

**1947** IMF Article IV Consultation in International Financial Statistics Yearbook 1948

**1948-49** IMF Article IV Consultation in International Financial Statistics Yearbook 1952

**1950** IMF International Financial Statistics Yearbook 1986

**1951-57** IMF International Financial Statistics Yearbook 1981

**1958-65** IMF International Financial Statistics Yearbook 1986

**1966-89** IMF International Financial Statistics Yearbook 1996

**1990-2008** IMF International Financial Statistics online database (534c1…BA…)*

*Calculated as 'Total Expenditures=Cash Payments for Operating Activities'

### Lending Minus Repayments

**1951-57** IMF International Financial Statistics Yearbook 1981

**1958-65** IMF International Financial Statistics Yearbook 1986

**1966-92** IMF International Financial Statistics Yearbook 1996

**1995-2000** IMF International Financial Statistics Yearbook 2007

## Table 4: Monetary Variables

| Monetary (INR Millions) | | | | | |
|---|---|---|---|---|---|
| Year | Broad Money | Base narrow | Exchange Rate Period Average | Exchange Rate End of Period | WPI |
| 1948 | 21,650 | 18,780 | 3.31 | 3.32 | 3.25 |
| 1949 | 20,520 | 17,620 | 3.67 | 4.78 | 3.38 |
| 1950 | 21,640 | 18,520 | 4.76 | 4.78 | 3.56 |
| 1951 | 21,070 | 17,900 | 4.76 | 4.81 | 3.89 |
| 1952 | 20,600 | 17,060 | 4.76 | 4.77 | 3.43 |
| 1953 | 21,090 | 17,400 | 4.76 | 4.77 | 3.57 |
| 1954 | 22,660 | 18,580 | 4.76 | 4.81 | 3.37 |
| 1955 | 25,260 | 20,650 | 4.76 | 4.78 | 3.09 |
| 1956 | 27,120 | 22,020 | 4.76 | 4.81 | 3.47 |
| 1957 | 29,870 | 22,960 | 4.76 | 4.77 | 3.67 |
| 1958 | 32,900 | 23,690 | 4.76 | 4.78 | 3.75 |
| 1959 | 36,940 | 25,360 | 4.76 | 4.78 | 3.90 |
| 1960 | 38,920 | 27,400 | 4.76 | 4.77 | 4.15 |
| 1961 | 40,170 | 28,420 | 4.76 | 4.77 | 4.25 |
| 1962 | 44,030 | 31,120 | 4.76 | 4.78 | 4.40 |
| 1963 | 48,690 | 35,410 | 4.76 | 4.79 | 4.56 |
| 1964 | 53,270 | 39,050 | 4.76 | 4.80 | 5.03 |
| 1965 | 59,070 | 43,010 | 4.76 | 4.78 | 5.45 |
| 1966 | 65,690 | 46,810 | 6.36 | 7.58 | 6.10 |
| 1967 | 71,840 | 51,030 | 7.50 | 7.55 | 7.02 |
| 1968 | 78,680 | 53,890 | 7.50 | 7.63 | 6.98 |
| 1969 | 89,315 | 60,378 | 7.50 | 7.56 | 7.13 |
| 1970 | 100,062 | 67,649 | 7.50 | 7.58 | 7.57 |
| 1971 | 117,133 | 76,477 | 7.49 | 7.28 | 7.95 |
| 1972 | 135,165 | 86,150 | 7.59 | 8.08 | 8.65 |
| 1973 | 161,517 | 101,040 | 7.74 | 8.20 | 10.07 |
| 1974 | 181,263 | 111,280 | 8.10 | 8.15 | 12.94 |
| 1975 | 206,734 | 122,343 | 8.38 | 8.94 | 13.45 |
| 1976 | 257,354 | 152,774 | 8.96 | 8.88 | 13.18 |
| 1977 | 306,673 | 178,499 | 8.74 | 8.21 | 14.18 |
| 1978 | 371,543 | 157,633 | 8.19 | 8.19 | 14.15 |
| 1979 | 437,347 | 176,857 | 8.13 | 7.91 | 15.80 |
| 1980 | 506,875 | 204,582 | 7.86 | 7.93 | 18.97 |
| 1981 | 595,329 | 232,469 | 8.66 | 9.10 | 21.29 |
| 1982 | 697,749 | 273,712 | 9.46 | 9.63 | 21.81 |
| 1983 | 815,579 | 308,553 | 10.10 | 10.49 | 23.53 |
| 1984 | 962,256 | 365,578 | 11.36 | 12.45 | 25.16 |
| 1985 | 1,124,720 | 412,414 | 12.37 | 12.17 | 26.33 |
| 1986 | 1,326,350 | 478,669 | 12.61 | 13.12 | 27.79 |
| 1987 | 1,542,780 | 543,174 | 12.96 | 12.88 | 29.73 |
| 1988 | 1,824,960 | 632,754 | 13.92 | 14.95 | 32.32 |
| 1989 | 2,112,030 | 746,893 | 16.23 | 17.04 | 34.51 |
| 1990 | 2,430,250 | 853,556 | 17.50 | 18.07 | 37.62 |
| 1991 | 2,875,390 | 1,046,100 | 22.74 | 25.83 | 42.70 |
| 1992 | 3,360,260 | 1,120,900 | 25.92 | 26.20 | 47.77 |
| 1993 | 3,931,760 | 1,330,250 | 30.49 | 31.38 | 51.34 |
| 1994 | 4,729,030 | 1,695,050 | 31.37 | 31.38 | 56.75 |
| 1995 | 5,249,750 | 1,883,550 | 32.43 | 35.18 | 62.05 |
| 1996 | 6,233,350 | 2,148,910 | 35.43 | 35.93 | 64.83 |
| 1997 | 7,333,960 | 2,419,250 | 36.31 | 39.28 | 67.77 |
| 1998 | 8,666,760 | 2,703,490 | 41.26 | 42.48 | 71.75 |
| 1999 | 10,153,000 | 3,161,180 | 43.06 | 43.49 | 74.22 |
| 2000 | 11,693,400 | 3,495,890 | 44.94 | 46.75 | 79.09 |
| 2001 | 13,368,000 | 3,845,990 | 47.19 | 48.18 | 82.90 |
| 2002 | 15,608,600 | 4,324,940 | 48.61 | 48.03 | 84.99 |
| 2003 | 17,643,000 | 5,025,980 | 46.58 | 45.61 | 89.60 |
| 2004 | 20,595,100 | 6,067,650 | 45.32 | 43.59 | 95.49 |
| 2005 | 23,807,900 | 7,212,930 | 44.10 | 45.07 | 100.00 |
| 2006 | 28,958,300 | 8,597,170 | 45.31 | 44.25 | 104.74 |
| 2007 | 35,407,700 | 9,889,890 | 41.35 | 39.42 | 109.77 |
| 2008 | 42,664,600 | 11,030,200 | 43.51 | 48.46 | 119.77 |

## References:

**Broad Money**

**1947**   IMF International Financial Statistics Yearbook 1950

**1948-2008**   IMF International Financial Statistics online database (53435L..ZF…)

**Narrow Base Money**

**1947**   IMF International Financial Statistics Yearbook 1950

**1948-2008**   IMF International Financial Statistics online database (53434…ZF…)

**Exchange Rate (Period Average)**

**1947-2008**   IMF International Financial Statistics online database (534..RF.ZF...)

**Exchange Rate (End of Period)**

**1947-2008**   IMF International Financial Statistics online database (534..AE.ZF...)

**India's Wholesale Price Index**

**1947-2008**   IMF International Financial Statistics online database (2005=100) (53463…ZF…)

## Table 5: National Accounts Variables

| Year | National Accounts Variable | | |
|---|---|---|---|
| | Nominal GDP (Billions of Rupees) | Constant GDP (Billions of Rupees) | Nominal GDP (USD Millions) |
| 1948 | 87 | 27 | 26,201 |
| 1949 | 90 | 27 | 24,592 |
| 1950 | 94 | 26 | 19,677 |
| 1951 | 100 | 26 | 20,937 |
| 1952 | 98 | 29 | 20,517 |
| 1953 | 106 | 30 | 22,344 |
| 1954 | 101 | 30 | 21,147 |
| 1955 | 103 | 33 | 21,548 |
| 1956 | 122 | 35 | 25,661 |
| 1957 | 126 | 34 | 26,459 |
| 1958 | 170 | 45 | 35,762 |
| 1959 | 148 | 38 | 31,058 |
| 1960 | 162 | 39 | 34,019 |
| 1961 | 172 | 40 | 36,077 |
| 1962 | 185 | 42 | 38,807 |
| 1963 | 212 | 47 | 44,603 |
| 1964 | 248 | 49 | 52,016 |
| 1965 | 262 | 48 | 54,914 |
| 1966 | 296 | 48 | 46,501 |
| 1967 | 346 | 49 | 46,147 |
| 1968 | 367 | 53 | 48,893 |
| 1969 | 404 | 57 | 53,853 |
| 1970 | 432 | 57 | 57,547 |
| 1971 | 463 | 58 | 61,746 |
| 1972 | 510 | 59 | 67,171 |
| 1973 | 620 | 62 | 80,096 |
| 1974 | 732 | 57 | 90,397 |
| 1975 | 788 | 59 | 94,031 |
| 1976 | 849 | 64 | 94,743 |
| 1977 | 961 | 68 | 109,932 |
| 1978 | 1,042 | 74 | 127,170 |
| 1979 | 1,144 | 72 | 140,729 |
| 1980 | 1,360 | 72 | 172,979 |
| 1981 | 1,598 | 75 | 184,502 |
| 1982 | 1,781 | 82 | 188,400 |
| 1983 | 2,076 | 88 | 205,554 |
| 1984 | 2,313 | 92 | 203,591 |
| 1985 | 2,622 | 100 | 212,014 |
| 1986 | 2,930 | 105 | 232,297 |
| 1987 | 3,332 | 112 | 257,059 |
| 1988 | 4,235 | 131 | 304,304 |
| 1989 | 4,862 | 141 | 299,630 |
| 1990 | 5,687 | 151 | 324,880 |
| 1991 | 6,531 | 153 | 287,187 |
| 1992 | 7,484 | 157 | 288,745 |
| 1993 | 8,592 | 167 | 281,776 |
| 1994 | 10,128 | 178 | 322,806 |
| 1995 | 11,918 | 192 | 367,536 |
| 1996 | 13,786 | 213 | 389,078 |
| 1997 | 15,272 | 225 | 420,555 |
| 1998 | 17,512 | 244 | 424,441 |
| 1999 | 19,520 | 263 | 453,383 |
| 2000 | 21,023 | 266 | 467,783 |
| 2001 | 22,790 | 275 | 482,972 |
| 2002 | 24,546 | 289 | 504,950 |
| 2003 | 27,546 | 307 | 591,336 |
| 2004 | 32,392 | 339 | 714,791 |
| 2005 | 37,065 | 371 | 840,469 |
| 2006 | 42,840 | 409 | 945,545 |
| 2007 | 49,479 | 451 | 1,196,609 |
| 2008 | 55,745 | 465 | 1,281,335 |

## References:

**GDP**

**1947** "The National Income of India" Oxford University Press. Appendix Table 8(b)

**1948-49** "Net domestic product" from Estimates of National Income, published by the India Central Statistical Organization

**March 1955**

**1950-2008** IMF International Financial Statistics online database. (53499B..ZF...)

**Constant GDP = Nominal GDP/WPI**

**Wholesale Price Index**

**1948-2008**   IMF International Financial Statistics online database. Index (2005=100) (53463…ZF…)

**Exchange Rate**

**1948-2008** IMF International Financial Statistics online database. INR/USD period average (534..RF.ZF…)

## Table 6: Illicit Financial Flow Calculations

| Illicit Financial Flow Calculations (USD Millions) /1 | | | |
|---|---|---|---|
| Year | CED | GER | CED+GER | Traditional (Total) |
| 1948 | 0 | 115 | 115 | -1,457 |
| 1949 | 0 | 274 | 274 | -130 |
| 1950 | 0 | 0 | 0 | -51 |
| 1951 | 0 | 61 | 61 | -184 |
| 1952 | 48 | 245 | 293 | 293 |
| 1953 | 0 | 8 | 8 | -65 |
| 1954 | 0 | 0 | 0 | -126 |
| 1955 | 264 | 58 | 322 | 283 |
| 1956 | 0 | 0 | 0 | -385 |
| 1957 | 64 | 100 | 164 | 122 |
| 1958 | 0 | 12 | 12 | -127 |
| 1959 | 0 | 199 | 199 | -112 |
| 1960 | 727 | 109 | 836 | 753 |
| 1961 | 0 | 240 | 240 | -126 |
| 1962 | 0 | 268 | 268 | -164 |
| 1963 | 0 | 177 | 177 | -132 |
| 1964 | 0 | 5 | 5 | -323 |
| 1965 | 0 | 86 | 86 | -1,937 |
| 1966 | 18 | 83 | 102 | -135 |
| 1967 | 0 | 93 | 93 | -440 |
| 1968 | 0 | 317 | 317 | 25 |
| 1969 | 201 | 359 | 560 | 329 |
| 1970 | 2,527 | 194 | 2,721 | 2,381 |
| 1971 | 0 | 34 | 34 | -722 |
| 1972 | 835 | 0 | 835 | 247 |
| 1973 | 156 | 265 | 421 | 44 |
| 1974 | 2,141 | 755 | 2,895 | 2,367 |
| 1975 | 422 | 945 | 1,367 | 836 |
| 1976 | 413 | 333 | 746 | 746 |
| 1977 | 911 | 1,267 | 2,178 | 1,864 |
| 1978 | 150 | 550 | 700 | 122 |
| 1979 | 962 | 1,290 | 2,251 | 1,516 |
| 1980 | 1,472 | 3,350 | 4,822 | 3,363 |
| 1981 | 1,231 | 2,115 | 3,345 | 558 |
| 1982 | 2,137 | 1,845 | 3,982 | 2,186 |
| 1983 | 1,313 | 1,693 | 3,006 | 402 |
| 1984 | 0 | 2,171 | 2,171 | -2,263 |
| 1985 | 3,040 | 1,688 | 4,728 | 3,306 |
| 1986 | 2,771 | 1,009 | 3,780 | 1,334 |
| 1987 | 4,733 | 1,016 | 5,749 | 2,882 |
| 1988 | 0 | 860 | 860 | -3,285 |
| 1989 | 8,306 | 894 | 9,199 | 4,958 |
| 1990 | 5,483 | 1,142 | 6,624 | 5,668 |
| 1991 | 0 | 1,185 | 1,185 | -5,197 |
| 1992 | 0 | 454 | 454 | -3,216 |
| 1993 | 0 | 2,341 | 2,341 | -5,129 |
| 1994 | 0 | 2,542 | 2,542 | -5,269 |
| 1995 | 0 | 1,514 | 1,514 | -8,490 |
| 1996 | 0 | 4,125 | 4,125 | -9,005 |
| 1997 | 0 | 2,666 | 2,666 | -4,928 |
| 1998 | 0 | 3,000 | 3,000 | -226 |
| 1999 | 0 | 2,394 | 2,394 | -6,101 |
| 2000 | 0 | 1,384 | 1,384 | -5,043 |
| 2001 | 0 | 11,885 | 11,885 | 5,440 |
| 2002 | 0 | 7,722 | 7,722 | 5,109 |
| 2003 | 0 | 9,108 | 9,108 | 7,161 |
| 2004 | 0 | 22,477 | 22,477 | 7,914 |
| 2005 | 0 | 30,329 | 30,329 | 7,756 |
| 2006 | 0 | 10,283 | 10,283 | 984 |
| 2007 | 0 | 4,970 | 4,970 | -35,490 |
| 2008 | 7,344 | 20,917 | 28,262 | 3,467 |
| Total | 47,667 | 165,520 | 213,187 | -25,846 |
| Average | 1,907 | 2,904 | 3,676 | -424 |

## References:

Direction of Trade Statistic, Balance of Payments, International Financial Statistics databases of the IMF, Global Development Finance database of the World Bank. All estimates are accurate as of October 2010. See Balance of Payment References in Appendix X for specific sources of raw data inputs.

1. Estimates for 2002-2006 differ from those published in *Illicit Financial Flows from Developing Countries: 2002-2006*, Global Financial Integrity, December 2008, due to revisions in balance of payments data and Direction of Trade Statistics reported by India to the International Monetary Fund.

## Table 7: India: Nominal and Real Growth Rates of Illicit Flows

| India: Nominal And Real Growth Rates of Illicit Flows, 1948 - 2008 (USD Millions) | | | |
|---|---|---|---|
| Year | Nominal IFF (CED+GER) | Real IFF (CED+ GER) /1 | US PPI |
| 1948 | 115 | 7 | 17.58 |
| 1949 | 274 | 16 | 16.70 |
| 1950 | 0 | 0 | 17.36 |
| 1951 | 61 | 3 | 19.34 |
| 1952 | 293 | 16 | 18.80 |
| 1953 | 8 | 0 | 18.54 |
| 1954 | 0 | 0 | 18.58 |
| 1955 | 322 | 17 | 18.64 |
| 1956 | 0 | 0 | 19.24 |
| 1957 | 164 | 8 | 19.81 |
| 1958 | 12 | 1 | 20.07 |
| 1959 | 199 | 10 | 20.11 |
| 1960 | 836 | 42 | 20.13 |
| 1961 | 240 | 12 | 20.06 |
| 1962 | 268 | 13 | 20.11 |
| 1963 | 177 | 9 | 20.06 |
| 1964 | 5 | 0 | 20.10 |
| 1965 | 86 | 4 | 20.50 |
| 1966 | 102 | 5 | 21.17 |
| 1967 | 93 | 4 | 21.22 |
| 1968 | 317 | 15 | 21.76 |
| 1969 | 560 | 25 | 22.61 |
| 1970 | 2,721 | 116 | 23.42 |
| 1971 | 34 | 1 | 24.20 |
| 1972 | 835 | 33 | 25.27 |
| 1973 | 421 | 15 | 28.59 |
| 1974 | 2,895 | 85 | 33.97 |
| 1975 | 1,367 | 37 | 37.11 |
| 1976 | 746 | 19 | 38.84 |
| 1977 | 2,178 | 53 | 41.22 |
| 1978 | 700 | 16 | 44.42 |
| 1979 | 2,251 | 45 | 49.99 |
| 1980 | 4,822 | 85 | 57.06 |
| 1981 | 3,345 | 54 | 62.27 |
| 1982 | 3,982 | 63 | 63.52 |
| 1983 | 3,006 | 47 | 64.32 |
| 1984 | 2,171 | 33 | 65.85 |
| 1985 | 4,728 | 72 | 65.53 |
| 1986 | 3,780 | 59 | 63.64 |
| 1987 | 5,749 | 88 | 65.32 |
| 1988 | 860 | 13 | 67.94 |
| 1989 | 9,199 | 129 | 71.31 |
| 1990 | 6,624 | 90 | 73.85 |
| 1991 | 1,185 | 16 | 74.02 |
| 1992 | 454 | 6 | 74.46 |
| 1993 | 2,341 | 31 | 75.55 |
| 1994 | 2,542 | 33 | 76.53 |
| 1995 | 1,514 | 19 | 79.26 |
| 1996 | 4,125 | 51 | 81.12 |
| 1997 | 2,666 | 33 | 81.07 |
| 1998 | 3,000 | 38 | 79.06 |
| 1999 | 2,394 | 30 | 79.72 |
| 2000 | 1,384 | 16 | 84.32 |
| 2001 | 11,885 | 139 | 85.26 |
| 2002 | 7,722 | 93 | 83.30 |
| 2003 | 9,108 | 104 | 87.75 |
| 2004 | 22,477 | 241 | 93.18 |
| 2005 | 30,329 | 303 | 100.00 |
| 2006 | 10,283 | 98 | 104.67 |
| 2007 | 4,970 | 45 | 109.69 |
| 2008 | 28,262 | 235 | 120.45 |

| Periods | Growth Rate of Nominal Illicit Flow (CED+GER) | Growth Rate of Real Illicit Flows (CED+GER) |
|---|---|---|
| 1948-2008 | 11.50% | 6.38% |
| 1948-1990 | 15.80% | 9.08% |
| 1991-2008 | 18.96% | 16.40% |

Growth rates calculated as slope of the logarithmic trend line of each series by time periods.

1. Nominal CED+GER estimates deflated by the US producer price index, line (IFS…11163…ZF…)

## Table 8: India Underground Economy as Share of GDP

| India: Underground Economy as Share of GDP | | |
|---|---|---|
| Year | Underground Economy Share of GDP /1 | Underground Economy volume (in USD Millions) |
| 1947 | 0.00% | 0 |
| 1948 | 5.00% | 1,355 |
| 1949 | 9.10% | 2,238 |
| 1950 | 12.20% | 2,401 |
| 1951 | 14.40% | 3,015 |
| 1952 | 15.80% | 3,242 |
| 1953 | 16.51% | 3,689 |
| 1954 | 16.62% | 3,514 |
| 1955 | 16.23% | 3,497 |
| 1956 | 15.45% | 3,964 |
| 1957 | 14.37% | 3,801 |
| 1958 | 13.09% | 4,683 |
| 1959 | 11.73% | 3,642 |
| 1960 | 10.37% | 3,527 |
| 1961 | 9.11% | 3,288 |
| 1962 | 8.07% | 3,132 |
| 1963 | 7.34% | 3,272 |
| 1964 | 7.01% | 3,647 |
| 1965 | 7.20% | 3,952 |
| 1966 | 7.99% | 3,716 |
| 1967 | 9.50% | 4,384 |
| 1968 | 13.64% | 6,669 |
| 1969 | 14.92% | 8,035 |
| 1970 | 22.15% | 12,747 |
| 1971 | 28.56% | 17,635 |
| 1972 | 31.82% | 21,374 |
| 1973 | 27.00% | 21,626 |
| 1974 | 20.81% | 18,812 |
| 1975 | 25.39% | 23,874 |
| 1976 | 39.01% | 36,959 |
| 1977 | 39.53% | 43,456 |
| 1978 | 48.78% | 62,033 |
| 1979 | 51.17% | 72,012 |
| 1980 | 52.70% | 91,161 |
| 1981 | 53.65% | 98,988 |
| 1982 | 54.08% | 101,893 |
| 1983 | 54.06% | 111,115 |
| 1984 | 53.63% | 109,189 |
| 1985 | 52.87% | 112,090 |
| 1986 | 51.83% | 120,399 |
| 1987 | 50.57% | 130,004 |
| 1988 | 49.16% | 149,602 |
| 1989 | 47.65% | 142,789 |
| 1990 | 46.11% | 149,812 |
| 1991 | 44.60% | 128,076 |
| 1992 | 43.17% | 124,642 |
| 1993 | 41.88% | 118,018 |
| 1994 | 40.81% | 131,730 |
| 1995 | 40.00% | 147,015 |
| 1996 | 39.51% | 153,710 |
| 1997 | 39.32% | 165,343 |
| 1998 | 39.40% | 167,241 |
| 1999 | 39.74% | 180,185 |
| 2000 | 40.31% | 188,561 |
| 2001 | 41.08% | 198,399 |
| 2002 | 42.02% | 212,204 |
| 2003 | 43.12% | 254,999 |
| 2004 | 44.35% | 316,984 |
| 2005 | 45.67% | 383,854 |
| 2006 | 47.07% | 445,088 |
| 2007 | 48.52% | 580,636 |
| 2008 | 50.00% | 640,668 |

### References:

1. Underground Economy as share of GDP calculated using a cubic spline interpolation with the fixed figures (1967=9.5%, 1973=27%, 1995=40%, 2008=50%) taken from Gupta and Gupta paper and assuming 1947=0% and 1948=5%

Gupta, Poonam, and Sanjeev Gupta, 1982, *Estimates of the Unreported Economy in India*, Economic and Political Weekly, pp. 69-75, January 16, 1982

## Table 9: Data Series for Capital Flight Regression

| | | | | Data Series for Capital Flight Regression | | |
|---|---|---|---|---|---|---|
| Year | GINI/1 | GROWTH/2 | INFEXP/3 | LAGUNDERGROUND (USD Millions)/4 | REFORM/5 | TRADEOPEN/6 |
| 1948 | … | 8.70 | 0.21 | 0 | 0 | 10.29 |
| 1949 | … | -6.14 | 0.06 | 1,355 | 0 | 12.35 |
| 1950 | … | -19.99 | 0.05 | 2,238 | 0 | 11.36 |
| 1951 | 36.50 | 6.40 | 0.09 | 2,401 | 0 | 15.48 |
| 1952 | 36.07 | -2.01 | -0.11 | 3,015 | 0 | 13.99 |
| 1953 | 38.04 | 8.90 | 0.02 | 3,242 | 0 | 10.12 |
| 1954 | 37.45 | -5.36 | -0.05 | 3,689 | 0 | 11.45 |
| 1955 | 36.78 | 1.90 | -0.08 | 3,514 | 0 | 12.16 |
| 1956 | 36.25 | 19.09 | 0.09 | 3,497 | 0 | 11.37 |
| 1957 | 36.55 | 3.11 | 0.06 | 3,964 | 0 | 12.79 |
| 1958 | 36.12 | 35.16 | 0.02 | 3,801 | 0 | 8.00 |
| 1959 | 35.86 | -13.15 | 0.04 | 4,683 | 0 | 10.67 |
| 1960 | 40.71 | 9.53 | 0.06 | 3,642 | 0 | 10.68 |
| 1961 | 37.38 | 6.05 | 0.03 | 3,527 | 0 | 10.18 |
| 1962 | 37.10 | 7.57 | 0.03 | 3,288 | 0 | 9.70 |
| 1963 | 38.95 | 14.94 | 0.04 | 3,132 | 0 | 9.20 |
| 1964 | 35.63 | 16.62 | 0.09 | 3,272 | 0 | 8.81 |
| 1965 | 36.03 | 5.57 | 0.08 | 3,647 | 0 | 8.24 |
| 1966 | 31.79 | -15.32 | 0.11 | 3,952 | 0 | 10.85 |
| 1967 | 39.05 | -0.76 | 0.14 | 3,716 | 0 | 9.50 |
| 1968 | 38.34 | 5.95 | 0.01 | 4,384 | 0 | 8.86 |
| 1969 | 32.29 | 10.14 | 0.02 | 6,669 | 0 | 7.51 |
| 1970 | 31.22 | 6.86 | 0.06 | 8,035 | 0 | 7.21 |
| 1971 | 33.27 | 7.30 | 0.05 | 12,747 | 0 | 7.22 |
| 1972 | 34.76 | 8.79 | 0.08 | 17,635 | 0 | 6.94 |
| 1973 | 32.32 | 19.24 | 0.14 | 21,374 | 0 | 7.66 |
| 1974 | 29.41 | 12.86 | 0.24 | 21,626 | 0 | 10.02 |
| 1975 | 41.52 | 4.02 | 0.06 | 18,812 | 0 | 11.40 |
| 1976 | 41.57 | 0.76 | -0.01 | 23,874 | 0 | 11.83 |
| 1977 | 32.51 | 16.03 | 0.06 | 36,959 | 0 | 11.83 |
| 1978 | 26.03 | 15.68 | 0.00 | 43,456 | 0 | 11.42 |
| 1979 | 23.58 | 10.66 | 0.10 | 62,033 | 0 | 12.53 |
| 1980 | 24.04 | 22.92 | 0.17 | 72,012 | 0 | 13.55 |
| 1981 | 26.32 | 6.66 | 0.12 | 91,161 | 0 | 12.84 |
| 1982 | 29.30 | 2.11 | 0.03 | 98,988 | 0 | 12.81 |
| 1983 | 31.86 | 9.11 | 0.07 | 101,893 | 0 | 11.29 |
| 1984 | 33.16 | -0.96 | 0.07 | 111,115 | 0 | 12.11 |
| 1985 | 33.39 | 4.14 | 0.05 | 109,189 | 0 | 11.82 |
| 1986 | 32.99 | 9.57 | 0.05 | 112,090 | 0 | 10.69 |
| 1987 | 32.40 | 10.66 | 0.07 | 120,399 | 0 | 10.88 |
| 1988 | 31.74 | 18.38 | 0.08 | 130,004 | 0 | 10.63 |
| 1989 | 30.43 | -1.54 | 0.07 | 149,602 | 0 | 12.17 |
| 1990 | 30.43 | 8.43 | 0.08 | 142,789 | 0 | 12.80 |
| 1991 | 33.33 | -11.60 | 0.12 | 149,812 | 1 | 13.18 |
| 1992 | 32.36 | 0.54 | 0.11 | 128,076 | 1 | 14.96 |
| 1993 | 31.46 | -2.41 | 0.08 | 124,642 | 1 | 15.73 |
| 1994 | 33.67 | 14.56 | 0.10 | 118,018 | 1 | 16.07 |
| 1995 | 31.98 | 13.86 | 0.09 | 131,730 | 1 | 17.81 |
| 1996 | 32.19 | 5.86 | 0.05 | 147,015 | 1 | 18.25 |
| 1997 | 33.55 | 8.09 | 0.04 | 153,710 | 1 | 18.18 |
| 1998 | 33.31 | 0.92 | 0.06 | 165,343 | 1 | 18.00 |
| 1999 | 32.33 | 6.82 | 0.04 | 167,241 | 1 | 18.24 |
| 2000 | 32.03 | 3.18 | 0.06 | 180,185 | 1 | 20.09 |
| 2001 | 32.52 | 3.25 | 0.05 | 188,561 | 1 | 19.41 |
| 2002 | 33.61 | 4.55 | 0.03 | 198,399 | 1 | 21.17 |
| 2003 | 35.11 | 17.11 | 0.05 | 212,204 | 1 | 22.21 |
| 2004 | 36.80 | 20.88 | 0.06 | 254,999 | 1 | 24.68 |
| 2005 | 37.00 | 17.58 | 0.05 | 316,984 | 1 | 28.85 |
| 2006 | … | 12.50 | 0.05 | 383,854 | 1 | 31.78 |
| 2007 | … | 26.55 | 0.05 | 445,088 | 1 | 31.58 |
| 2008 | … | 7.08 | 0.08 | 580,636 | 1 | 40.10 |

## References:

**1. Gini Coefficient** data from UNU/WIDER World Income Inequality Database (WIID) at http://www.wider.unu.edu/research/Database/en_GB/wiid/

Note: For years with multiple World Bank observations due to multiple sources, a simple average is taken over the observations.

**2. Growth values** calculated as the rate of change of India's GDP in constant USD dollars.

**3. Inflationary Expectations** variable calculated by the equation $INFEXP(t)=0.9\Delta logP + 0.1 INFEXP(t-1)$, where P is WPI collected from the International Financial Statistics, IMF online database (May 2010).

**4. Lagunderground** calculated as underground economy share * GDP (current USD). The underground economy share is generated by using estimates from Gupta and Gupta and using a cubic spline to interpolate the rest.

Gupta, Poonam, and Sanjeev Gupta, 1982, *Estimates of the Unreported Economy in India*, Economic and Political Weekly, pp. 69-75, January 16, 1982.

**5. Reform**, dummy variable generated as pre-reform, 0; post-reform,1.

**6. Trade Openness** is calculated as (imports (c.i.f) + exports f.o.b))/GDP all in current USD. Data collected from the IMF International Financial Statistics Yearbook 1950 and the IMF IFS online database.

# Table 10: Simulated vs. Actual G, M, P, R, CED+GER

| Simulated vs. Actual Outputs from Block Recursive model | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Sim log G | log G | Sim log M | log M | Sim log P | log P | Sim log R | log R |
| 1952 | 6.40 | 8.63 | 8.11 | 9.93 | -0.55 | 1.23 | 6.23 | 8.49 |
| 1953 | 7.96 | 8.76 | 9.09 | 9.96 | 0.39 | 1.27 | 7.65 | 8.42 |
| 1954 | 9.09 | 9.08 | 9.89 | 10.03 | 1.08 | 1.21 | 8.67 | 8.53 |
| 1955 | 8.81 | 9.14 | 9.84 | 10.14 | 0.89 | 1.13 | 8.38 | 8.67 |
| 1956 | 9.03 | 9.28 | 9.98 | 10.21 | 1.02 | 1.24 | 8.61 | 8.82 |
| 1957 | 9.95 | 9.60 | 10.59 | 10.30 | 1.58 | 1.30 | 9.46 | 8.99 |
| 1958 | 10.05 | 9.63 | 10.68 | 10.40 | 1.59 | 1.32 | 9.55 | 8.98 |
| 1959 | 9.83 | 9.69 | 10.62 | 10.52 | 1.49 | 1.36 | 9.36 | 9.12 |
| 1960 | 9.64 | 9.73 | 10.54 | 10.57 | 1.37 | 1.42 | 9.20 | 9.24 |
| 1961 | 9.48 | 9.82 | 10.46 | 10.60 | 1.27 | 1.45 | 9.07 | 9.42 |
| 1962 | 10.14 | 10.07 | 10.88 | 10.69 | 1.66 | 1.48 | 9.66 | 9.61 |
| 1963 | 10.47 | 10.31 | 11.13 | 10.79 | 1.84 | 1.52 | 9.97 | 9.85 |
| 1964 | 10.59 | 10.37 | 11.21 | 10.88 | 1.91 | 1.62 | 10.11 | 9.92 |
| 1965 | 10.68 | 10.50 | 11.27 | 10.99 | 1.96 | 1.69 | 10.20 | 10.08 |
| 1966 | 11.26 | 10.66 | 11.64 | 11.09 | 2.32 | 1.81 | 10.75 | 10.14 |
| 1967 | 11.03 | 10.60 | 11.46 | 11.18 | 2.17 | 1.95 | 10.58 | 10.15 |
| 1968 | 10.42 | 10.56 | 11.13 | 11.27 | 1.79 | 1.94 | 10.02 | 10.22 |
| 1969 | 10.22 | 10.62 | 11.06 | 11.40 | 1.65 | 1.96 | 9.84 | 10.33 |
| 1970 | 10.61 | 10.76 | 11.38 | 11.51 | 1.89 | 2.02 | 10.21 | 10.41 |
| 1971 | 10.80 | 10.94 | 11.55 | 11.67 | 2.00 | 2.07 | 10.39 | 10.61 |
| 1972 | 11.24 | 11.12 | 11.91 | 11.81 | 2.27 | 2.16 | 10.81 | 10.73 |
| 1973 | 10.83 | 11.11 | 11.63 | 11.99 | 2.01 | 2.31 | 10.48 | 10.81 |
| 1974 | 11.49 | 11.51 | 12.00 | 12.11 | 2.43 | 2.56 | 11.13 | 11.24 |
| 1975 | 11.94 | 11.75 | 12.35 | 12.24 | 2.70 | 2.60 | 11.56 | 11.46 |
| 1976 | 11.97 | 11.86 | 12.51 | 12.46 | 2.70 | 2.58 | 11.57 | 11.56 |
| 1977 | 11.81 | 11.95 | 12.54 | 12.63 | 2.59 | 2.65 | 11.44 | 11.67 |
| 1978 | 12.10 | 12.12 | 12.87 | 12.83 | 2.75 | 2.65 | 11.70 | 11.79 |
| 1979 | 12.33 | 12.26 | 13.11 | 12.99 | 2.90 | 2.76 | 11.94 | 11.90 |
| 1980 | 12.96 | 12.45 | 13.50 | 13.14 | 3.28 | 2.94 | 12.55 | 12.02 |
| 1981 | 12.92 | 12.57 | 13.48 | 13.30 | 3.25 | 3.06 | 12.54 | 12.20 |
| 1982 | 13.09 | 12.73 | 13.71 | 13.46 | 3.34 | 3.08 | 12.70 | 12.34 |
| 1983 | 13.36 | 12.88 | 13.96 | 13.61 | 3.49 | 3.16 | 12.95 | 12.46 |
| 1984 | 13.72 | 13.07 | 14.27 | 13.78 | 3.70 | 3.23 | 13.30 | 12.61 |
| 1985 | 13.98 | 13.29 | 14.54 | 13.93 | 3.85 | 3.27 | 13.54 | 12.81 |
| 1986 | 14.20 | 13.45 | 14.77 | 14.10 | 3.97 | 3.32 | 13.75 | 12.96 |
| 1987 | 14.12 | 13.55 | 14.80 | 14.25 | 3.91 | 3.39 | 13.69 | 13.09 |
| 1988 | 14.30 | 13.69 | 14.95 | 14.42 | 3.99 | 3.48 | 13.87 | 13.24 |
| 1989 | 14.39 | 13.86 | 15.09 | 14.56 | 4.03 | 3.54 | 13.96 | 13.43 |
| 1990 | 14.61 | 13.96 | 15.28 | 14.70 | 4.15 | 3.63 | 14.18 | 13.50 |
| 1991 | 14.24 | 14.02 | 15.05 | 14.87 | 3.92 | 3.75 | 13.87 | 13.68 |
| 1992 | 14.36 | 14.14 | 15.18 | 15.03 | 4.00 | 3.87 | 14.01 | 13.81 |
| 1993 | 13.98 | 14.12 | 14.99 | 15.18 | 3.75 | 3.94 | 13.68 | 13.84 |
| 1994 | 13.33 | 14.21 | 14.61 | 15.37 | 3.34 | 4.04 | 13.11 | 14.03 |
| 1995 | 14.78 | 14.55 | 15.64 | 15.47 | 4.21 | 4.13 | 14.45 | 14.21 |
| 1996 | 14.92 | 14.69 | 15.77 | 15.65 | 4.28 | 4.17 | 14.58 | 14.36 |
| 1997 | 14.93 | 14.77 | 15.89 | 15.81 | 4.28 | 4.22 | 14.60 | 14.44 |
| 1998 | 15.17 | 14.87 | 16.13 | 15.98 | 4.41 | 4.27 | 14.83 | 14.49 |
| 1999 | 15.26 | 15.04 | 16.30 | 16.13 | 4.45 | 4.31 | 14.91 | 14.67 |
| 2000 | 15.22 | 15.11 | 16.36 | 16.27 | 4.42 | 4.37 | 14.89 | 14.74 |
| 2001 | 14.90 | 15.09 | 16.23 | 16.41 | 4.22 | 4.42 | 14.61 | 14.77 |
| 2002 | 15.01 | 15.22 | 16.39 | 16.56 | 4.28 | 4.44 | 14.71 | 14.89 |
| 2003 | 14.62 | 15.28 | 16.23 | 16.69 | 4.03 | 4.50 | 14.37 | 15.03 |
| 2004 | 14.61 | 15.41 | 16.26 | 16.84 | 4.00 | 4.56 | 14.37 | 15.18 |
| 2005 | 14.69 | 15.55 | 16.39 | 16.99 | 4.04 | 4.61 | 14.45 | 15.33 |
| 2006 | 14.89 | 15.56 | 16.60 | 17.18 | 4.14 | 4.65 | 14.64 | 15.29 |
| 2007 | 14.54 | 15.76 | 16.50 | 17.38 | 3.91 | 4.70 | 14.33 | 15.57 |
| 2008 | 16.00 | 15.97 | 17.55 | 17.57 | 4.80 | 4.79 | 15.68 | 15.52 |

| Simulated vs. Actual CED+GER Values | | |
|---|---|---|
| Year | Actual | Fitted |
| 1953 | 8 | 1,629 |
| 1954 | 0 | 884 |
| 1955 | 322 | 124 |
| 1956 | 0 | 484 |
| 1957 | 164 | 575 |
| 1958 | 12 | 83 |
| 1959 | 199 | -465 |
| 1960 | 836 | 642 |
| 1961 | 240 | 77 |
| 1962 | 268 | 135 |
| 1963 | 177 | 51 |
| 1964 | 5 | -637 |
| 1965 | 86 | -837 |
| 1966 | 102 | -1,735 |
| 1967 | 93 | -391 |
| 1968 | 317 | -76 |
| 1969 | 560 | -540 |
| 1970 | 2,721 | -503 |
| 1971 | 34 | 182 |
| 1972 | 835 | 799 |
| 1973 | 421 | 1,135 |
| 1974 | 2,895 | 885 |
| 1975 | 1,367 | 1,598 |
| 1976 | 746 | 1,993 |
| 1977 | 2,178 | 2,655 |
| 1978 | 700 | 1,939 |
| 1979 | 2,251 | 3,287 |
| 1980 | 4,822 | 2,653 |
| 1981 | 3,345 | 5,514 |
| 1982 | 3,982 | 6,434 |
| 1983 | 3,006 | 6,158 |
| 1984 | 2,171 | 5,556 |
| 1985 | 4,728 | 3,673 |
| 1986 | 3,780 | 1,819 |
| 1987 | 5,749 | 4,156 |
| 1988 | 860 | 4,216 |
| 1989 | 9,199 | 6,929 |
| 1990 | 6,624 | 4,722 |
| 1991 | 1,185 | 2,145 |
| 1992 | 454 | 118 |
| 1993 | 2,341 | 1,943 |
| 1994 | 2,542 | 3,405 |
| 1995 | 1,514 | 1,012 |
| 1996 | 4,125 | 1,422 |
| 1997 | 2,666 | 2,608 |
| 1998 | 3,000 | 2,961 |
| 1999 | 2,394 | 2,704 |
| 2000 | 1,384 | 5,173 |
| 2001 | 11,885 | 8,724 |
| 2002 | 7,722 | 9,995 |
| 2003 | 9,108 | 13,828 |
| 2004 | 22,477 | 19,775 |
| 2005 | 30,329 | 27,315 |

## Table 11: Compound Interest on CED+GER

| Year | Illicit Financial Flows (Total) | Carry Forward | 1/2 IFF + Carry Forward | TREASURY BILL RATE (11160C..ZF...) | Interest Earned | Total Carry Forward | Total IFF with Compound Interest | Total IFF without compounding |
|---|---|---|---|---|---|---|---|---|
| | | Figures in USD Millions unless otherwise indicated. | | | | | Figures in USD Millions | |
| 1948 | 115 | 0 | 58 | 1.04 | 1 | 116 | 462,077 | 213,187 |
| 1949 | 274 | 116 | 253 | 1.10 | 3 | 392 | | |
| 1950 | 0 | 392 | 392 | 1.22 | 5 | 397 | | |
| 1951 | 61 | 397 | 428 | 1.55 | 7 | 465 | | |
| 1952 | 293 | 465 | 612 | 1.77 | 11 | 769 | | |
| 1953 | 8 | 769 | 772 | 1.94 | 15 | 791 | | |
| 1954 | 0 | 791 | 791 | 0.95 | 8 | 799 | | |
| 1955 | 322 | 799 | 960 | 1.75 | 17 | 1,137 | | |
| 1956 | 0 | 1,137 | 1,137 | 2.66 | 30 | 1,167 | | |
| 1957 | 164 | 1,167 | 1,249 | 3.26 | 41 | 1,372 | | |
| 1958 | 12 | 1,372 | 1,378 | 1.84 | 25 | 1,410 | | |
| 1959 | 199 | 1,410 | 1,509 | 3.41 | 52 | 1,660 | | |
| 1960 | 836 | 1,660 | 2,078 | 2.95 | 61 | 2,557 | | |
| 1961 | 240 | 2,557 | 2,677 | 2.38 | 64 | 2,861 | | |
| 1962 | 268 | 2,861 | 2,995 | 2.78 | 83 | 3,213 | | |
| 1963 | 177 | 3,213 | 3,301 | 3.16 | 104 | 3,494 | | |
| 1964 | 5 | 3,494 | 3,496 | 3.55 | 124 | 3,623 | | |
| 1965 | 86 | 3,623 | 3,666 | 3.95 | 145 | 3,854 | | |
| 1966 | 102 | 3,854 | 3,905 | 4.88 | 191 | 4,146 | | |
| 1967 | 93 | 4,146 | 4,193 | 4.33 | 182 | 4,421 | | |
| 1968 | 317 | 4,421 | 4,580 | 5.35 | 245 | 4,983 | | |
| 1969 | 560 | 4,983 | 5,263 | 6.69 | 352 | 5,895 | | |
| 1970 | 2,721 | 5,895 | 7,255 | 6.44 | 467 | 9,083 | | |
| 1971 | 34 | 9,083 | 9,100 | 4.34 | 395 | 9,512 | | |
| 1972 | 835 | 9,512 | 9,930 | 4.07 | 404 | 10,751 | | |
| 1973 | 421 | 10,751 | 10,962 | 7.03 | 770 | 11,943 | | |
| 1974 | 2,895 | 11,943 | 13,390 | 7.88 | 1,054 | 15,893 | | |
| 1975 | 1,367 | 15,893 | 16,576 | 5.83 | 966 | 18,226 | | |
| 1976 | 746 | 18,226 | 18,599 | 5.00 | 930 | 19,901 | | |
| 1977 | 2,178 | 19,901 | 20,990 | 5.26 | 1,105 | 23,184 | | |
| 1978 | 700 | 23,184 | 23,534 | 7.22 | 1,700 | 25,584 | | |
| 1979 | 2,251 | 25,584 | 26,709 | 10.04 | 2,682 | 30,517 | | |
| 1980 | 4,822 | 30,517 | 32,928 | 11.62 | 3,825 | 39,164 | | |
| 1981 | 3,345 | 39,164 | 40,836 | 14.08 | 5,749 | 48,258 | | |
| 1982 | 3,982 | 48,258 | 50,249 | 10.73 | 5,389 | 57,629 | | |
| 1983 | 3,006 | 57,629 | 59,132 | 8.62 | 5,097 | 65,732 | | |
| 1984 | 2,171 | 65,732 | 66,817 | 9.57 | 6,396 | 74,299 | | |
| 1985 | 4,728 | 74,299 | 76,664 | 7.49 | 5,741 | 84,769 | | |
| 1986 | 3,780 | 84,769 | 86,659 | 5.97 | 5,176 | 93,725 | | |
| 1987 | 5,749 | 93,725 | 96,600 | 5.83 | 5,628 | 105,102 | | |
| 1988 | 860 | 105,102 | 105,532 | 6.67 | 7,041 | 113,003 | | |
| 1989 | 9,199 | 113,003 | 117,603 | 8.11 | 9,542 | 131,745 | | |
| 1990 | 6,624 | 131,745 | 135,057 | 7.51 | 10,143 | 148,512 | | |
| 1991 | 1,185 | 148,512 | 149,104 | 5.41 | 8,065 | 157,762 | | |
| 1992 | 454 | 157,762 | 157,989 | 3.46 | 5,466 | 163,683 | | |
| 1993 | 2,341 | 163,683 | 164,853 | 3.02 | 4,977 | 171,001 | | |
| 1994 | 2,542 | 171,001 | 172,272 | 4.27 | 7,356 | 180,899 | | |
| 1995 | 1,514 | 180,899 | 181,656 | 5.51 | 10,015 | 192,428 | | |
| 1996 | 4,125 | 192,428 | 194,490 | 5.02 | 9,771 | 206,324 | | |
| 1997 | 2,666 | 206,324 | 207,656 | 5.07 | 10,528 | 219,517 | | |
| 1998 | 3,000 | 219,517 | 221,017 | 4.82 | 10,651 | 233,168 | | |
| 1999 | 2,394 | 233,168 | 234,365 | 4.66 | 10,917 | 246,479 | | |
| 2000 | 1,384 | 246,479 | 247,171 | 5.84 | 14,432 | 262,295 | | |
| 2001 | 11,885 | 262,295 | 268,238 | 3.45 | 9,260 | 283,440 | | |
| 2002 | 7,722 | 283,440 | 287,301 | 1.61 | 4,634 | 295,796 | | |
| 2003 | 9,108 | 295,796 | 300,350 | 1.01 | 3,043 | 307,946 | | |
| 2004 | 22,477 | 307,946 | 319,185 | 1.37 | 4,382 | 334,805 | | |
| 2005 | 30,329 | 334,805 | 349,970 | 3.15 | 11,031 | 376,166 | | |
| 2006 | 10,283 | 376,166 | 381,307 | 4.72 | 18,005 | 404,454 | | |
| 2007 | 4,970 | 404,454 | 406,938 | 4.41 | 17,946 | 427,369 | | |
| 2008 | 28,262 | 427,369 | 441,500 | 1.46 | 6,446 | **462,077** | | |

Note: Treasury Bill rate (line 60c) is the rate at which short-term lending securities are issued or traded in the market.

# Table 12: Absorption of Illicit Financial Flows

| Table 12A. Countries that Report Locational Banking Statistics | | |
|---|---|---|
| Australia | France | Malaysia |
| Austria | Germany | Mexico |
| Bahamas | Greece | Netherlands |
| Bahrain | Guernsey | Netherlands Antilles |
| Belgium | Hong Kong | Norway |
| Bermuda | India | Panama |
| Brazil | Ireland | Portugal |
| Canada | Isle of Man | Singapore |
| Cayman Islands | Italy | Spain |
| Chile | Japan | Sweden |
| Chinese Taipei | Jersey | Switzerland |
| Cyprus | Korea | Turkey |
| Denmark | Luxembourg | United Kingdom |
| Finland | Macao | United States |

Source: Bank for International Settlements

| Table 12B. Secrecy Jurisdictions | | |
|---|---|---|
| Andorra | Isle of Man | Russia |
| Anguilla | Israel | Samoa |
| Antigua and Barbuda | Italy | San Marino |
| Aruba | Japan* | Sao Tome e Principe |
| Australia* | Jersey | Seychelles |
| Bahamas | Lebanon | St. Lucia |
| Bahrain | Liberia | St. Kitts and Nevis |
| Barbados | Liechtenstein | St. Vincent |
| Belgium | Luxembourg | Singapore |
| Belize | Macao SAR | Somalia |
| Bermuda | Malaysia | South Africa |
| British Virgin Islands | Maldives | Spain |
| Cayman Islands | Malta | Switzerland |
| Cook Islands | Marshall Islands | Taiwan |
| Costa Rica | Mauritius | Tonga |
| Cyprus | Monaco | Turks and Caicos Islands |
| Dominica | Montserrat | United Arab Emirates |
| Germany | Nauru | United Kingdom |
| Gibraltar | Netherlands | United States |
| Grenada | Netherlands Antilles | Uruguay |
| Guernsey | Niue | US Virgin Islands |
| Hong Kong SAR | Northern Mariana Islands | Vanuatu |
| Hungary | Palau | |
| Iceland | Panama | |
| Ireland | Portugal | |

*Australia and Japan are not Secrecy Jurisdictions according to TJN, however since they are both used in the 2009 GFI study on Absorption, we include estimates of their non-resident deposits in this study. Source: Tax Justice Network, 2007, Identifying Tax Havens and Offshore Finance Centers

| Table 12C. Offshore Centers, Classifications | | | | |
|---|---|---|---|---|
| Jurisdiction | IMF: OFC | OECD: Tax Haven | IMF: Member | BIS: Member |
| Andorra | X | X (uncooperative) | | |
| Anguilla | X | X | | |
| Antigua and Barbuda | X | X | X | |
| Aruba | X | X | | |
| Bahamas, The | X | X | X | |
| Bahrain | X | X | | |
| Barbados | X | | X | |
| Belize | X | X | X | |
| Bermuda | X | X | | |
| British Virgin Islands | X | X | | |
| Cayman Islands | X | X | | |
| Cook Islands | X | X | | |
| Costa Rica | X | | X | |
| Cyprus | X | X | X | |
| Dominica | X | X | X | |
| Gibraltar | X | X | | |
| Grenada | X | X | X | |
| Guernsey | X | X | | |
| Hong Kong SAR China | X | | | X |
| Ireland | X | | X | X |
| Isle of Man | X | X | | |
| Jersey | X | X | | |
| Lebanon | X | | X | |
| Liberia | | X | X | |
| Liechtenstein | X | X (uncooperative) | | |
| Luxembourg | X | | X | |
| Malaysia | X | | X | X |
| Malta | X | X | X | |
| Marshall Islands | X | X | X | |
| Mauritius | X | X | X | |
| Macao SAR of China | X | | | |
| Monaco | X | X (uncooperative) | | |
| Montserrat | X | X | | |
| Nauru | X | X | | |
| Netherlands Antilles | X | X | | |
| Niue | X | X | | |
| Palau | X | | X | |
| Panama | X | X | X | |
| St. Lucia | X | X | X | |
| St. Kitts and Nevis | X | X | X | |
| St. Vincent & the Grenadines | X | X | | |
| San Marino | | X | X | |
| Samoa | X | X | X | |
| Seychelles | X | X | X | |
| Singapore | X | | X | X |
| Switzerland | X | | X | X |
| Turks and Caicos Islands | X | X | | |
| US Virgin Islands | | X | | |
| Vanuatu | X | X | X | |
| TOTAL | 46 | 38 | 26 | 5 |

## Table 13: Deposits from Non-Bank Private Sector in India to Developed Country Banks and Offshore Financial Centers

| Table 13A: Deposits from Non-Bank Private Sector in India to Developed Country Banks | | |
|---|---|---|
| DCB Group 1 | DCB Group 2 | |
| US | Austria | Netherlands |
| UK | Belgium | Portugal |
| France | Cyprus | Spain |
| Germany | Finland | Denmark |
| Japan | Greece | Norway |
| Canada | Italy | Sweden |
| Australia | Luxembourg | Turkey |

| Table 13B: Deposits from Non-Bank Private Sector in India to Offshore Financial Centers | | |
|---|---|---|
| OFC Group 1 | | OFC Group 2 |
| Bahamas | Bahrain | Hong Kong |
| Bermuda | Switzerland | Macao |
| Cayman Islands | Ireland | Singapore |
| Netherland Antilles | Korea | Taipei |
| Panama | Malaysia | |
| Guernsey | Brazil | |
| Isle of Man | Chile | |
| Jersey | Mexico | |

## Table 14: Share of Private Sector Deposits in Banks and Offshore Financial Centers (in USD Millions and in percents)

| Share of Private Sector Deposits in Banks and Offshore Financial Centers (in percent) | | | | |
|---|---|---|---|---|
| | Offshore Financial Centers | | Developed Country Banks | |
| Year | OFC Total Liablities to Non-Banks USD | OFC share of total(OFC+DCB) per year % | DCB Total Liablities to Non-Banks USD | DCB share of total(OFC+DCB) per year % |
| 1995 | 1,372 | 36 | 2,396 | 64 |
| 1996 | 1,946 | 40 | 2,918 | 60 |
| 1997 | 1,496 | 36 | 2,645 | 64 |
| 1998 | 2,225 | 40 | 3,357 | 60 |
| 1999 | 2,670 | 44 | 3,352 | 56 |
| 2000 | 2,434 | 48 | 2,598 | 52 |
| 2001 | 2,744 | 52 | 2,520 | 48 |
| 2002 | 2,238 | 48 | 2,468 | 52 |
| 2003 | 2,155 | 45 | 2,683 | 55 |
| 2004 | 2,560 | 41 | 3,634 | 59 |
| 2005 | 3,516 | 45 | 4,304 | 55 |
| 2006 | 5,282 | 40 | 7,861 | 60 |
| 2007 | 10,100 | 60 | 6,699 | 40 |
| 2008 | 8,387 | 55 | 6,822 | 45 |
| 2009 | 9,186 | 54 | 7,749 | 46 |

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