Estimation of the Size of the Black Economy in India, 1996–2012

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This article attempts to make an advance in the estimation of the size of the black economy in India by bringing in the institutional aspects of black income generation and taking the macroeconomic variables they affect into consideration. The fiscal approach recognises that black incomes are generated through many different ways in various sectors. The size of the black economy is projected on the basis of the share of the services sector and trade in gross domestic product, with the crime rate representing the extent of illegality.

1 Introduction

The black economy is often discussed for political, social, and economic reasons because of its deleterious effect on the nation and its leadership. This is visible in institutions such as legislatures, the judiciary, the services, and in education and health. It affects policymaking, directly and also by making it difficult to obtain correct data, thereby leading to policy failure. All macroeconomic variables such as the rate of growth, savings, and investment, and microeconomic variables such as the quality of education and health are affected by the black economy (Kumar 1999). Since the black economy vititates data, it affects analyses carried out by experts who rely on official data.

The extent of the effect of a black economy on a nation’s life depends on its size. If the black economy is small—as in the Scandinavian countries—its societal ramifications would be negligible. However, if it is large—as in many developing countries—its impact will be large and cannot be ignored. Thus, estimating the size of the black economy, especially in recent years, is important for analysis.

Unfortunately, few estimates of the size of the black economy are available in India and in other countries (Kumar 1999) due to difficulties in estimation, lack of data, and, above all, the lack of interest among economists to do research in this area. Some experts argue that given the scarcity of data, carrying out research on the black economy is futile. This argument is flawed for two reasons. First, it is a catch-22 situation. If research is not done, data will not become available, and so research will not be done. Second, even if data are sketchy, theoretical work can be done, and that can spur empirical work. If data are not available, does it mean one can shut one’s eyes to the all-round consequences of the black economy? Treating the economy as only consisting of the white economy ignores reality and leads to erroneous results. Theoretically, the black economy results in missing and mis-specified variables, which lead to incorrect empirical analysis.

The argument is akin to the response Baran gave in reply to Kaldor’s criticism of his concept of “potential economic surplus” (1973). Baran argued that brandy consists of water and alcohol, and if we cannot separate the two, we cannot say it is only water or only alcohol. Similarly, if we cannot measure the size of the black economy accurately, it does not mean that we can treat the economy as only consisting of the white economy. Even a crude estimate is worth it. After all, even the white economy is estimated and it has had many kinds

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Measuring the size of the black economy is important. Finally, if the black economy is large, it cannot be ignored. Source: GOI (2014).

The government has not shown much keenness in estimating the size of the black economy. The last published semi-official study was by the National Institute of Public Finance and Policy (NIPFP 1985). It had many lacunae (Kumar 1985) and it was not published as a government document. In 2010, under pressure from ongoing movements, the government commissioned three studies on the black economy (GoI 2012) but these reports have not been made public. Apparently, there are contradictions in the reports and they have not been ironed out in spite of many attempts by the Ministry of Finance.

It is only the government that has the resources to do a detailed study of the black economy, which could lead to greater clarity about it. Individual analysts are greatly hampered due to official apathy. Internal studies of the government on this topic are not available to outside experts. Thus, analysts have had to resort to creative ways of studying the subject to come out with some analysis and estimates (Chopra 1982; Basu 1995; Kumar 1999).

The government has perhaps not made the necessary effort because acknowledging a large black economy would require answers to questions such as how it has become so large and why steps have not been taken to check its growth. Even the Reserve Bank of India (RBI), a semi-autonomous body, has not acknowledged its existence even though it affects all monetary variables and vitiates analysis (Kumar 1999). For instance, control of inflation by monetary policy changes is not feasible if a large black liquidity exists beyond the control of the RBI. The effect of tightening money supply is countered by the flow of black liquidity looking for opportunities to invest in commodities in short supply. Smuggling and hawala have been rampant in India and affect money supply (Chattopadhyay 2012), but the RBI has not published any studies on these activities and their effect on the economy. It has ignored them in its official pronouncements.

2 Definition Aspects

To measure the size of the black economy, one needs to first analytically define it. Unfortunately, in earlier studies, no analytical definition is given/derived before the estimation is undertaken. Something was measured, and it was declared to be the size of the black economy. Thus, comparing the numbers from such studies is like comparing oranges with apples (Kumar 1985). Kumar (1988a) gave a definition of the black economy in the Indian context and used it to measure the size of the black economy (1999). Some critical definitional issues are presented below.

An economy generates factor and transfer incomes. In the national accounts, the former are counted but not the latter. Transfer incomes are not linked to production, but often to paper gains, such as in the case of capital gains in real estate. Counting them results in multiple counting and to a larger size, as is often the case with monetarist methods (Kumar 1985). Unfortunately, a lot of illegal incomes are transfer incomes such as bribes or undeclared capital gains in the sale of real estate but these are counted by experts in estimating the size of the black economy. It is argued that real estate in India is the biggest generator of black incomes (GoI 2012; NIPFP 1985) whereas analytically it is only the circulator of black incomes. The generation takes place elsewhere and the money is circulated via real estate transactions. To avoid multiple counting in measuring the size of the black economy, only factor incomes should be counted.

Further, there is a tendency to count factor incomes several times (multiply) when counting evasion of different taxes (as in Gupta 1992). This is to be avoided. Finally, it has been argued that in the developing countries black incomes are property incomes and not wage incomes (Kumar 1999). Wages are a cost in production and are inflated, and that generates an extra profit (Kumar 2006). So, in India, mis-estimation of wages results in black profits. Thus, in the official data, wages are shown to be higher, while profits are shown to be lower. For these reasons, in Kumar (1999), black incomes generated in legal activities in India are defined as “factor incomes, property incomes here, that are not reported to direct tax authorities. The entire income produced in illegal activities is counted as black incomes.”

3 Existing Methods for Estimating the Size and Their Critique

Methods used for estimating the size of the black economy are called “trace methods.” They depend on the black economy leaving a trace on the white economy. The black economy...
distorts the input–output ratio of the economy, and that has given rise to the input–output approach. Similarly, the black economy requires liquidity to circulate, and that has led to monetarist approaches.


The definition given earlier implies that distribution in the economy is crucial for measuring the size of the black economy. Aggregative methods such as the monetarist are therefore inadequate for measuring the size of the black economy. This method has been widely used, but it is essentially based on the estimation of transactions in the economy and linking them to other variables. So, all incomes, factor as well as transfer, get counted. It also counts the unmeasured incomes in the informal sectors, which may not be black. Thus, in terms of a definition, there are major problems with the use of this method.

A new method called multiple indicators, multiple causes (MIMIC) has, of late, been widely used, but it does not define what it measures. Further, it assumes that structurally the black economy is the same across all countries, which is not the case. For instance, there are major differences between the nature of the black economy in advanced and developing countries. Further, there are institutional differences within developing countries that need to be taken into account (Chattopadhyay 2005). Hence, this method is also not appropriate to measure the size of the black economy.

The fiscal approach, which can distinguish between different sectors, differentiate between profits and wages, and also transfer and factor income, is the appropriate method to use for an estimation of the size of the black economy (Kumar 1999). Even S B Gupta, a monetary economist, used the fiscal approach (1992).

In this article, data from studies that have used the fiscal approach to measure the size of the black economy are used. Fortunately, starting from 1955, a number of such studies have come out and they are listed in Table 1. There are some differences among them but they are broadly compatible.

### 4 Crucial Factors Determining the Size of the Black Economy

The black economy, like the white economy, is dependent on many economic and institutional factors, and they determine its size. In this article, statistical techniques are used for estimating the size, and that requires identifying some key factors from the many on which it depends. The method used here is to project the size of the black economy using these variables, along with the estimates available for India (Table 1).

Definitionally, as pointed out, black incomes are factor incomes and property incomes, or what in the National Income Accounts are listed as surplus income—profit, interest, rent, and dividend. Kumar (1988b) argued that the black economy, surplus income, and the services sector in India are mutually interlinked. Using a set of coupled differential equations, it was shown that they move together, and this was confirmed by the data. Hence, the size of the black economy not only depends on the surplus generated in the economy, but also leads to its underestimation. Further, in India, there is a substantial category of mixed income, which consists of a mix of surplus and wages. Thus, data on the surplus in the white economy is incomplete and underestimated.

Kumar (1988b) argued that black income generation is concentrated in the services sector because the methods of making black incomes are based on a manipulation of accounts (Kumar 2006), and that leads to generating black incomes through trade, finance, transportation, and so on, which are all services. Further, Kumar (1999) has shown that a small amount of output underreporting leads to a large black income...
because the cost of production of the black output is loaded on the declared output via mispricing of services. Consequently, black income generation in the secondary sector is small. Kumar (1985) argued that black incomes are not generated in the agricultural sector (though it is used to circulate black incomes and mis-declare incomes). The reason is that (a) there is no income tax on agricultural incomes, and (b) the contribution of this sector to national income is based on the “crop cutting experiment,” which is independent of reporting data to the tax authorities. Thus, the role of the services sector becomes even more crucial.

Foreign trade is an important factor in both generating black incomes and siphoning them abroad (capital flight). Siphoning black incomes out makes it easier to escape detection, and encourages their generation. This is done by misvoicing trade. India’s trade regime has gone through various phases. The economy was open till the 1955 balance of payments (BOP) crisis. There was a tightening after that. An import substitution strategy was followed from 1955 to 1980. Consumerism based on liberalised imports was initiated after 1980 when India, facing a BOP crisis, went to the International Monetary Fund (IMF) for assistance. One of the conditionalities imposed was import liberalisation. Concessions were offered to the software sector after 1985 and that led to a boom in services sector exports. This facilitated under- and over-invoicing of trade, which is easier in the case of services than goods.

The ratio of trade to gross domestic product (GDP) rose after 1972, and again after 1992 (Table 2). After 1972, petroleum

Table 2: Data for Calculation of Size of the Black Economy

<table>
<thead>
<tr>
<th>Year</th>
<th>Black Economy Share (%)</th>
<th>Service Sector Share</th>
<th>Crime Rate</th>
<th>Trade Share</th>
<th>Black Economy Share (%)</th>
<th>GDP (Rs Crore)</th>
<th>Market Price (Rs Crore)</th>
<th>Black GDP (Rs Crore)</th>
<th>Rog of Black GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947</td>
<td>0</td>
<td>0.00</td>
<td>2.00</td>
<td>19.50</td>
<td>14.00</td>
<td>84,729</td>
<td>6,142</td>
<td>23.12</td>
<td>7.50</td>
</tr>
<tr>
<td>1948</td>
<td>0</td>
<td>0.00</td>
<td>2.00</td>
<td>18.50</td>
<td>13.00</td>
<td>78,629</td>
<td>5,012</td>
<td>19.72</td>
<td>6.60</td>
</tr>
<tr>
<td>1949</td>
<td>0</td>
<td>0.00</td>
<td>2.00</td>
<td>17.50</td>
<td>12.00</td>
<td>73,529</td>
<td>4,002</td>
<td>16.92</td>
<td>5.60</td>
</tr>
<tr>
<td>1950</td>
<td>0.25</td>
<td>0.25</td>
<td>2.00</td>
<td>16.50</td>
<td>11.00</td>
<td>68,429</td>
<td>3,002</td>
<td>14.12</td>
<td>4.70</td>
</tr>
<tr>
<td>1951</td>
<td>0.25</td>
<td>0.25</td>
<td>2.00</td>
<td>15.50</td>
<td>10.00</td>
<td>63,329</td>
<td>2,002</td>
<td>11.32</td>
<td>3.80</td>
</tr>
<tr>
<td>1952</td>
<td>0.25</td>
<td>0.25</td>
<td>2.00</td>
<td>14.50</td>
<td>9.00</td>
<td>58,229</td>
<td>1,002</td>
<td>9.52</td>
<td>2.90</td>
</tr>
<tr>
<td>1953</td>
<td>0.25</td>
<td>0.25</td>
<td>2.00</td>
<td>13.50</td>
<td>8.00</td>
<td>53,129</td>
<td>702</td>
<td>7.72</td>
<td>2.00</td>
</tr>
<tr>
<td>1954</td>
<td>0.25</td>
<td>0.25</td>
<td>2.00</td>
<td>12.50</td>
<td>7.00</td>
<td>48,029</td>
<td>402</td>
<td>5.92</td>
<td>1.10</td>
</tr>
<tr>
<td>1955</td>
<td>0.25</td>
<td>0.25</td>
<td>2.00</td>
<td>11.50</td>
<td>6.00</td>
<td>42,929</td>
<td>202</td>
<td>4.12</td>
<td>0.30</td>
</tr>
<tr>
<td>1956</td>
<td>0.25</td>
<td>0.25</td>
<td>2.00</td>
<td>10.50</td>
<td>5.00</td>
<td>37,829</td>
<td>102</td>
<td>2.32</td>
<td>0.00</td>
</tr>
</tbody>
</table>

1 Trade share is calculated by dividing the sum of total imports and exports by GDP.
2 Regressed black economy share on service share, crime rate and trade share for 1955 to 1995.
3 Results are then used to estimate the size of black economy from 1996 to 2012.

4 Column F: RBI, “Key Components of India’s BOP”, 2015
5 Column F: Taken as linear between 1947 and 1955 and again linear between 1956 and 1996. Post 1996, estimated using Equation 5, See Figure 4.
6 Column H: Column G x Column F.
7 Column I: Calculated from Column H.
prices rose sharply, and after 1991, the economy was forced to open up a lot more due to the conditionalities imposed by the IMF and the World Bank. From 1995, with the creation of World Trade Organization (WTO), there was an acceleration of this trend.

As trade restrictions have been relaxed after 1991, both black income generation and flight of capital have increased (Kumar and Chattopadhyay 2013). Globally, a large number of tax havens have come up (Palan et al 2010; Tax Haven Team 2014), which aid capital flight through “layering” and facilitate its return (round tripping) to the country. Thus, with an expansion of trade and easing of regulations, it has become easier to generate black incomes because they can be more easily camouflaged or laundered into white using foreign trade.

Kumar (1999) argued that black income generation requires committing an illegality in a legal activity. Further, the entire income from illegal activities is black income. Thus, the size of the black economy would depend on the extent of illegality in the country, and a proxy for that could be annual crime data. The Right to Information Act, 2005 (RTI) helps to bring about transparency and curb illegality. However, data is not available for the earlier period since the RTI came into force after 2005.

Crony capitalism increased after 1991, leading to greater manipulation of policies and generation of black incomes. It was there even before 1991, but its intensity increased with an increased role given to markets and the private sector. Something similar happened in Russia after the collapse of the Soviet Union, which led to the rise of the oligarchs.

Based on the above discussion, it may be taken that the size of the black economy, as a share of GDP, would depend on:
(a) the share of the services sector (S/Y),
(b) the share of the private sector’s property incomes in GDP (O_p/Y),
(c) the extent of mispricing in foreign trade captured by the share of trade in GDP (T/Y), and finally,
(d) the extent of registered crime per person (C/P).

So, B/Y may be written as
B/Y = f (S/Y, C/P, T/Y, O_p/Y).

Assuming a linear function, we may write
B/Y = a_0 + a_1 (S/Y) + a_2 (C/P) + a_3 (T/Y) + a_4 (O_p/Y) .... (1)

It is expected that a_i for i = 1, 2, 3 will be positive.

No consistent series is available for an operating surplus of the private sector for the period being considered (1947 to 1996). Further, this variable is already incorporated in B/Y. As such, this variable was dropped, and the equation taken for testing is
B/Y = a_0 + a_1 (S/Y) + a_2 (C/P) + a_3 (T/Y).

It is expected that a_i for i = 1, 2, 3 will be positive.

The following caveats need to be entered with regard to the equation.
(i) The independent variables are themselves affected by the black economy. The official data on the services sector, crime rate, and trade are underestimated because of the black economy. Effectively, the independent variables can be said to be mis-specified.
(ii) For instance, in India, crime data are under-reported (Kumar 2002). Many crimes are not reported at all or not registered. No wonder India’s crime rates are far lower than those of advanced countries. In India itself, the crime figures of Bihar are lower than those of Kerala’s, possibly because of non-registration. Where the population is more alert, many more crimes are reported and registered.
(iii) It should be noted that the number of major scams grew exponentially after 1980 (Kumar 1999). Crony capitalism also increased after 1991. Further, the amount of money involved per scam has also gone up sharply after 1990. None of this is reflected in annual crime data.
(iv) Trade data is misinvoiced to take capital out of the country, so the correct estimate of India’s trade with the rest of the
world is not captured by official figures. Kumar (2013a) has studied the various ways in which BOP data are vitiated by the black economy. Nayak (1977) attempted to capture some of this in the Indian context using partner country data. Kumar (2002) points out that only 3% of the gold smuggled in 2001 was caught by the customs authorities and reported in the official data. Thus, we cannot depend on the official data on smuggled gold to tell us how much smuggling is going on. This would also be true of other illegal activities.

(v) Further, it cannot be assumed that the percentage of under-reporting of each of these variables (S, C, and \( T \)) remains the same over time. It may rise as the black economy expands and governance deteriorates.

(vi) The percentage of under-reporting of each of the independent variables is likely to be different. So, one cannot assume that the variables on the right hand side of the Equation (2) can be taken to be multiplied by the same factor; something that could have simplified the analysis.

In spite of these difficulties, there is no option but to use the official data. If the correct data on these variables were available, then the size of the black economy could have been directly calculated. But that is a chicken and egg question.

What is clear from the above is that the results derived and presented in the next section, based on Equation (2), pose severe challenges.

5 Estimation of Black Economy

In a nutshell, the available estimates at various points of time (Table 1) based on the fiscal approach are used to generate a continuous series from 1947 to 1996. Next, this series is used along with the data on the independent variables in Equation 2 to estimate the coefficients \( a_i \). These coefficients, along with the data on the independent variables, are used to estimate (project) the size of the black economy for 1996 to 2012. The following steps are taken for the estimation:

(i) The fiscal approach's point data are used to fit a timeline to depict the growth of the black economy in India. It is taken that the series may be linear in parts but overall non-linear. The reason for this was spelt out in Section 4.

(ii) The extent and nature of illegality keeps changing with changes in laws, and that changes the size of the black economy. For instance, up to 1992, import of gold was banned, and any import was called smuggling. After 1992, gold inflow increased rapidly, but it did not count in black income generation. Similarly, after 1991, the Foreign Exchange Regulation Act (FERA) was diluted and the Monopolies and Restrictive Trade Practices (MRTP) eliminated. So, what was illegal earlier was no more illegal (Kumar 2013b).

(iii) Greater opening up after 1991 led to easing of pressure on businesses, which made it easier to generate black incomes and resulted in its more rapid increase.

(iv) A straight line was fitted to data for 1947 to 1955 by connecting the two points, assuming that the black economy was zero in 1947 (Figure 4, p 38).

\[ Y_T/Y_w = 0.5t \cdot 973.5 \]  

\[ Y_T/Y_w = 0.5t \cdot 973.5 \]  

(3)

(v) These two series provided the continuous time series of black economy. This data was then used in Equation 2 for estimation of the coefficients \( a_i \).

(vi) Data for the crime rate was available only from 1953 to 2012. So a regression analysis was carried out for Equation (2) from 1953 to 1995. The data are given in Table 2 and shown in Figures 1 to 3.

The results of regression analysis for estimating the coefficients in Equation 2 are:

\[ B/Y = 2.01593 S/Y + 0.01994 C/P + 17.4183 T/Y - 102.13 \]  

\[ B/Y = 2.01593 S/Y + 0.01994 C/P + 17.4183 T/Y - 102.13 \]  

\[ t = 5.44 \]  

\[ 5.92 \]  

\[ 0.81 \]  

\[ -8.16837 \]  

R square = 0.8730  Adj. R square = 0.8627

The signs of the coefficients for the variables have the expected sign. However, the trade share does not turn out to be a significant explanatory variable. It is retained for theoretical reasons (It is important even though statistical analysis does not show that). Other points to note regarding the estimation are, (i) In the regression analysis, it was assumed that the nature of trade remained unchanged. However, this was not the case, as discussed earlier and evident from the data. Perhaps these changes need to be incorporated in this variable. However, for simplicity and statistical reasons, this was not done.

(ii) With the coefficients obtained (Equation 5) and using the data in Table 2, a projection was made for the period from 1996 to 2012 for estimating the size (as a ratio of GDP) of the black economy (Figure 4 and Table 2, Column i).

(iii) Using this estimate, and the official GDP data, the absolute size of the black economy for the different years was calculated (Table 2, Column h).

(iv) This was used to calculate the annual rate of growth of the black economy in India (Table 2, Column i).

6 Conclusions

This article attempts to make an advance in the estimation of the size of the black economy in India by bringing in the institutional aspects of black income generation and taking the macroeconomic variables they affect into consideration. It is not a one-point study, as earlier studies based on the fiscal approach have been. Unlike studies based on the monetarist approach, the fiscal approach recognises that black incomes are generated through many different ways in different sectors of the economy. Hence, the size of the black economy in India is projected on the basis of data on the share of the services sector and trade in GDP and the crime rate representing the extent of illegality. Finally, after 1995–96, estimates based on the fiscal approach are not available, and this article therefore estimates the size beyond that year.

The analysis points to two major difficulties in estimating the size of the black economy. First, the lack of official studies that can provide additional data points. Second, the lack of proper econometric techniques to incorporate the missing or
mis-specified variables required to carry out the estimation. All the official data series are in error due to the existence of the black economy, and all the studies using such official data suffer from this.

Given the many limitations concerning data mentioned, the relative size of the black economy in 2012 turns out to be 62.02% of the GDP. The average rate of growth of the black economy in the five-year period up to 2012 was about 20%. Clearly, since projections have been made from 1996 onwards, the further out in time one goes, the larger is the likely error in the estimate. New methods of estimation of the size of the black economy are needed, and this article has made one such attempt.

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