



भारतीय रिज़र्व बैंक

RESERVE BANK OF INDIA

वेबसाइट : www.rbi.org.in/hindiWebsite : www.rbi.org.inइ-मेल email: helpdoc@rbi.org.in

संचार विभाग, केंद्रीय कार्यालय, एस.बी.एस.मार्ग, मुंबई-400001

DEPARTMENT OF COMMUNICATION, Central Office, S.B.S.Marg, Mumbai-400001

फोन/Phone: 91 22 2266 0502 फैक्स/Fax: 91 22 22660358

March 19, 2013

RBI Working Paper Series 3 / 2013

Estimation of Counterfeit Currency Notes in India – Alternative Methodologies

The Reserve Bank today placed on its website a Working Paper titled "[Estimation of Counterfeit Currency Notes in India – Alternative Methodologies](#)" under the RBI Working Paper Series. The paper has been written by Shri Sanjoy Bose and Dr. Abhiman Das.

Counterfeiting poses increasing challenges to currencies all over the world, including India. Recent advances in printing technology have only aided production of counterfeit notes. Despite the extent of counterfeiting being apparently small in India, it poses serious threats to the currency and financial system. The Government and the Reserve Bank have responded to this threat by redesigning notes as also by attempting to improve public understanding about authenticity of currency through awareness campaigns. To assess the effectiveness of various measures to deter counterfeiting, however, one needs to understand the exact nature of the threat that counterfeiting poses on economic activity. It is necessary to examine the level of counterfeiting on a regular basis. Such examination is critical both from theoretical and empirical points of view.

The extent of counterfeiting is usually judged by observing the current flow of recoveries, or by estimating the outstanding stock of counterfeits as a ratio against total notes in circulation. However, the flow of recovery as well as seizure of counterfeits is directly observable, whereas the total stock of counterfeits cannot be measured directly. To fill this lacuna, the paper has proposed a probability model based methodology that could potentially provide a scientific and practical solution in obtaining credible statistical estimates of counterfeits in an enduring way.

This technical paper examines certain feasible methodologies for estimating counterfeit notes in India. This includes adopting inverse sampling technique at various stages of currency detection system and also exploring the procedures adopted by other central banks to understand the incidence of counterfeiting in India. Adoption of standard inverse sampling, however, demands data on notes processed at each and every intervening stage of the first, second and subsequent fake notes detected. This process is difficult to implement and is impractical. As such, the paper has proposed the following:

- Instead of adopting standard inverse sampling, one can use an equivalent model based version in which the data collection can be planned in a practical manner.

- In order to reduce regional bias, such exercise could be extended across states and the results pooled in a way that would provide state-wise picture on intensity of counterfeiting along with an error estimate.
- In order to examine the robustness of the estimates derived from the inverse sampling exercise, there is a need to undertake estimation based on parts-found-in-processing (PFP) approach also. PFP estimates, though biased, could be obtained across states by denomination, preferably with shorter periodicity (at least quarterly) based on available counterfeit data detected by seizures and banking channel, including the central bank.
- Finally, the estimates produced from these alternative methodologies could be compared so as to achieve high degree of confidence on the estimated proportion of counterfeit notes.

Note: The Reserve Bank of India introduced the RBI Working Papers series in March 2011. These papers present research in progress of the staff members of RBI and are disseminated to elicit comments and further debate. The views expressed in these papers are those of authors and not that of the Reserve Bank of India. Comments and observations may kindly be forwarded to authors. Citation and use of such papers should take into account its provisional character.

Press Release : 2012-2013/1568

Sangeeta Das
Director