Paper 45 – Business and Governance

DIMINISHING BALANCE INTEREST RATE: A MATHEMATICAL MODEL OF LOANS

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ABSTRACT

Lending and borrowing of money are part of business transactions. The borrower will use the money for a purpose and the lender will earn profit through the interest charged. The repayment of the borrowed money with the interest has many schemes. In this paper, two models of repaying borrowed money namely, *Equal Principal Payment* and *Equal Installment Payment* are presented using the diminishing balance interest rate. The simulated results of the two developed models were compared with the data provided by a private credit cooperative. The Equal Installment Payment Model is more realistic than the Equal Principal Payment Model when applied to loan repayment. The interest charged using the two models declined continuously until the end of the term of the loan. However, the interest charged by the Credit Cooperative has fluctuations but is in declining pattern. Though the two developed models have lesser total interest charged of the loan, the difference is not significant. Model 2 which is Equal Installment Payment is more realistic than model 1 because it has comparable amount paid to a loan with a Credit Cooperative. Also, the Model 2: Equal Installment Payment is easy to remember than Model 1: Equal Principal Payment in repaying a loan.

Keywords: Mathematical Model, Interest, Equal Installment Payment, Equal Principal Payment