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## COMPUTING INTEREST REBATES UNDER THE RULE OF 78THS: A FORMULA FOR USURY UPON DEFAULT IN MAXIMUM-INTEREST PRECOMPUTED CREDIT TRANSACTIONS

MICHAEL R. PERNA

*He who increases his wealth by usury and interest amasses it for someone else who will bestow it on the poor.\**

The extension of consumer credit in Texas has traditionally raised unique problems concerning usury<sup>1</sup> and the various methods of rebating unearned interest pursuant to default of precomputed consumer credit transactions.<sup>2</sup> A "precomputed" consumer credit transaction, occasionally referred to as an "add-on loan,"<sup>3</sup> consists of an arrangement whereby the finance charge is added to the principal amount financed, resulting in a

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\* *Proverbs 28:8* (Jerusalem Bible).

1. "Usury" is defined as any charge of interest in excess of the amount permitted by law. TEX. REV. CIV. STAT. ANN. art. 5069-1.01(d) (Vernon 1971); see 8 ST. MARY'S L.J. 204, 205 (1976). The essential elements of usury consist of a loan or forbearance of money, coupled with an agreement to repay such money at a rate of interest higher than the legal amount. Seebold v. Eustermann, 13 N.W.2d 739, 743 (Minn. 1944).

2. This same problem also comes into focus upon voluntary prepayment, refinancing, and consolidation of precomputed consumer credit transactions. See Hunt, *The Rule of 78: Hidden Penalty For Prepayment in Consumer Credit Transactions*, 55 B.U.L. REV. 331, 332 (1975) [hereinafter cited as Hunt]. Prepayment occurs when the debtor chooses to accelerate the final payment date, thereby paying off the loan in full, and rendering it necessary to compute the unearned interest as of that date, though already paid in full. This interest must then be rebated. TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Vernon 1971); see Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 16 (1977); Hunt, *supra* at 331.

A refinancing occurs where the creditor extends the term over which the remaining payments are to be made, thereby reducing the debtor's monthly payment. No new cash is advanced by the creditor in a refinancing. See UNIFORM CONSUMER CREDIT CODE § 2.504; Hunt, *supra* at 332. A consolidation exists where new credit is extended pursuant to refinancing of the old debt. See UNIFORM CONSUMER CREDIT CODE § 2.502(2); Hunt, *supra* at 332. A small loan debtor, for example, seeking additional capital prior to the final payment date of the loan would enter into a consolidation. Hunt, *supra* at 332. In both a refinancing and a consolidation, the prior debt is in effect prepaid by a portion of the subsequent credit extended. See UNIFORM CONSUMER CREDIT CODE §§ 2.504 (official comment), .505; Hunt, *supra* at 332. "Flipping" is the popular name given to the creditor's practice of encouraging their debtors to repeatedly consolidate their debts. See UNIFORM CONSUMER CREDIT CODE § 2.504 (official comment); Comment, *Consumer Protection: Truth in Lending Disclosure of the Rule of 78ths*, 59 IOWA L. REV. 164, 176 (1973). See generally B. CLARK & J. FONSECA, *HANDLING CONSUMER CREDIT CASES* § 20(c), at 70 (1972).

3. Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 251 (1976).

sum which represents the total amount of the debt.<sup>4</sup> This amount is then divided into periodic installments, without allocation between principal and interest.<sup>5</sup> Upon default of such a precomputed credit transaction, the remaining payments are frequently accelerated,<sup>6</sup> which necessitates the refund of all unearned interest.<sup>7</sup>

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4. Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16 (1977). A "precomputed" credit transaction is possible whether in the form of a loan or a sales-financing agreement. "Interest" has been defined as the compensation which the law permits to be charged for the use, forbearance, or detention of money. *First State Bank v. Miller*, 563 S.W.2d 572, 574 (Tex. 1978); TEX. REV. CIV. STAT. ANN. art. 5069-1.01(a) (Vernon 1971). "Time-price differential" is distinct from the term "interest." I. MICHAELMAN, *CONSUMER FINANCE: A CASE HISTORY IN AMERICAN BUSINESS* 207 (1966); 8 ST. MARY'S L.J. 204, 205 (1976). In a sales-financing agreement, the "time-price differential" is the term that represents the difference between the cash price and much larger deferred payment price. The time-price differential is generally treated as an exception to the usury statutes, such charge being considered part of the price rather than interest. 8 ST. MARY'S L.J. 204, 205 (1976); see *Avant v. Gulf Coast Inv. Corp.*, 457 S.W.2d 134, 136 (Tex. Civ. App.—Dallas 1970, no writ); *Hernandez v. United States Fin. Co.*, 441 S.W.2d 859, 861-62 (Tex. Civ. App.—Waco 1969, writ dismissed). See generally I. MICHAELMAN, *CONSUMER FINANCE: A CASE HISTORY IN AMERICAN BUSINESS* 207 (1966); W. MORS, *CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION* 4, 19 (1965). The Texas Legislature has incorporated both interest and time-price differential into the general usury statute, however, by its prohibition of charging, receiving, or contracting for amounts exceeding the statutory rates for interest or time-price differential. TEX. REV. CIV. STAT. ANN. arts. 5069-6.02(9) (Vernon 1971), -7.03(1) (Vernon 1971), -8.01 (Vernon Supp. 1978), -8.02 (Vernon Supp. 1978).

An example of a precomputed credit transaction would be a 12 month loan of \$1200 financed at 10% per annum, where the finance charge of \$120 (10% of \$1200) is added to the principal of \$1200, to arrive at the total sum of the debt—\$1320. This sum is then divided by the number of monthly payments to compute the amount of each payment. In this example, the debtor would pay \$110 per month, the precomputed amount of principal and interest. See W. MORS, *CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION* 28-33 (1965).

5. See Hunt, *supra* note 2, at 331. A precomputed loan differs from a nonprecomputed loan. In a nonprecomputed loan, the interest is computed after each installment. According to the example set out in note 4, *supra*, a nonprecomputed loan would result in monthly payments of \$100, with the interest computed separately at the end of each month. Pursuant to this method, the amount of the installment which represents interest is kept separate from that amount which represents principal. For a discussion of how interest is allocated in nonprecomputed credit transactions, see FINANCIAL PUBLISHING CO., *COST OF PERSONAL BORROWING IN THE UNITED STATES* 18-21 (1978).

6. "Acceleration" refers to the mechanism whereby the final due date of the loan is pushed forward to the date of default, thus obliging the debtor to prematurely pay the entire amount of the debt. *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ refused n.r.e.). Acceleration is usually exercised at the complete option of the creditor, such right being reserved in the loan contract under an "acceleration clause." See 8 ST. MARY'S L.J. 204, 206 (1976).

7. See, e.g., *Southwestern Inv. Co. v. Mannix*, 557 S.W.2d 755, 765 (Tex. 1977); *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ refused n.r.e.); *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ refused n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978); *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211 (Tex. Civ. App.—Austin 1975, writ refused n.r.e.). These cases mandate

A problem arises, however, in selecting one of several varying methods of computing unearned interest. Three of the more common methods are the sum of the digits method, popularly known as the rule of 78ths (the rule),<sup>8</sup> the actuarial method,<sup>9</sup> and the pro rata method.<sup>10</sup> Each of these methods produces a different amount of unearned interest, clearly suggest-

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the refund of all unearned interest in maximum-interest credit transactions. Other jurisdictions have suggested that unearned interest must be rebated even in credit transactions where the maximum rate is not charged. *See, e.g.*, *Barksdale v. People's Fin. Corp.*, 393 F. Supp. 112, 114 (N.D. Ga. 1975) (only earned portions of finance charge may be collected pursuant to default and acceleration); *Block v. Ford Motor Credit Co.*, 286 A.2d 228, 234 (D.C. 1972) (retention of unearned interest disallowed as unconscionable); *Hinsley v. Liberty Loan Corp.*, 211 S.E.2d 3, 4 (Ga. Ct. App. 1974) (loan agreement which sought to accelerate and collect unearned interest upon default was null and void on its face); *New Jersey Mortgage & Inv. Corp. v. Young*, 341 A.2d 360, 363-64 (N.J. Super. 1975) (assignee of creditor could not recover from debtor any unearned finance charge upon default and acceleration); *Berman v. Schwartz*, 298 N.Y.S.2d 185, 187 (Sup. Ct. 1968) (upon default and acceleration creditor must remit all unearned finance charge).

The \$1200, 10% per annum hypothetical loan introduced in note 4, *supra*, illustrates this point. If default of this 12 month loan were to occur after 6 months, then the outstanding portion of the loan— $6 \times \$110$ , or \$660—would become due upon acceleration of the payment date. This \$660, however, includes 6 months unearned interest which must be rebated. *Dyl & Joehnk, Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 16 (1977).

8. *Bone v. Hibernia Bank*, 493 F.2d 135, 137 (9th Cir. 1974). It has been said that there is but a "paucity of authority" concerning the rule of 78ths. *Bone v. Hibernia Bank*, [1969-1973 Transfer Binder] CONS. CRED. GUIDE (CCH) ¶ 99,025, at 88,807 (N.D. Cal. Dec. 15, 1972), *rev'd*, 493 F.2d 135, 137 (9th Cir. 1974); *Hunt, supra* note 2, at 356. For a thorough discussion of the rule of the 78ths see W. MINRATH, *HANDBOOK OF BUSINESS MATHEMATICS* 506-10 (2d ed. 1969); Donaldson, *An Analysis of Retail Installment Sales Legislation*, 19 ROCKY MTN. L. REV. 135, 151-52 (1947); Neifeld, *The Rule of 78ths—The Sum of the Digits Method for Computing Refunds*, 13 PERSONAL FIN. L.Q. 8, 8-10 (1958).

9. The actuarial method is the system of calculations used to find the annual percentage rate (APR), whereby unearned interest can be calculated, and is defined in the Federal Truth-In-Lending Act (TIL), 15 U.S.C.A. §§ 1601-1691f (1974 & Supp. 1977) as follows:

The annual percentage rate [is] . . . that nominal annual percentage rate which will yield a sum equal to the amount of the finance charge when it is applied to the unpaid balances of the amount financed, calculated according to the actuarial method of allocating payments made on a debt between the amount financed and the amount of the finance charge, pursuant to which a payment is applied first to the accumulated finance charge and the balance is applied to the unpaid amount financed.

*Id.* § 1606. For another definition of the actuarial method, see UNIFORM CONSUMER CREDIT CODE § 1.301(1).

10. As the term is used to describe the arithmetical rebating formula, "pro rata" suggests an attempt to discover the average, proportional amount of periodic interest. On an amount of \$1200 financed at a precomputed 10% interest rate over a twelve month period, the finance charge per month according to a pro rata allocation would be \$10. *See W. MORS, CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION* 12-13 (1965). *See also* TEX. REV. CIV. STAT. ANN. art. 5069-5.02(3) (Vernon 1971) (use of pro rata method for refunding interest in refinancings). For a case where the pro rata method was used to compute the allocation of interest between creditor and debtor pursuant to default, see *Garrett v. G.A.C. Fin. Corp.*, 198 S.E.2d 717 (Ga. Ct. App. 1973).

ing that two of the computations are not as accurate as the third.

When a maximum-interest credit transaction is accelerated pursuant to default and the unearned interest rebated is less than the true amount due the debtor, the charge is necessarily usurious to the extent it exceeds the maximum rate prescribed by statute.<sup>11</sup> This point, as well as the manner and degree to which the respective methods inaccurately state the true unearned interest rebate, become evident upon mathematical analysis of the various formulae governing the computation of precomputed unearned interest.

#### REBATE OF UNEARNED INTEREST UPON DEFAULT

It has been argued that the creditor's alleged obligation to avoid violation of the Texas usury laws by rebating unearned interest upon default is not explicitly imposed upon the lender by the statutes.<sup>12</sup> Instead, the duty to rebate is mentioned specifically only in the instance of voluntary prepayment.<sup>13</sup> Accordingly, the absence of such an expressly imposed legal

11. See *Southwestern Inv. Co. v. Mannix*, 557 S.W.2d 755, 765 (Tex. 1977); *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.); *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978); *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 212-13 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.). In discussing possible usury violations, the court in *Moore* held that when the maximum legal annual percentage rate is exceeded by any amount, the result is usury. *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 213 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.); accord, *Harris v. AVCO Fin. Corp.*, 218 S.E.2d 83, 84 (Ga. Ct. App. 1975) (acknowledgment that use of rule of 78ths with regard to default and acceleration could be usurious); *Cook v. First Nat'l Bank*, 203 S.E.2d 870, 871 (Ga. Ct. App. 1974) (rule of 78ths not permitted for computation of interest rebates where it results in excess of prescribed ceiling under Motor Vehicle Sales Finance Act); *Garrett v. G.A.C. Fin. Corp.*, 198 S.E.2d 717, 718 (Ga. Ct. App. 1973) (use of rule of 78ths pursuant to default and acceleration and consequent higher effective annual percentage rate due to error in rule is usurious).

12. Cases indicative of a situation wherein the creditor alleged that default and acceleration do not fall within the purview of the Texas Consumer Credit statutes are: *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.); *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978); and *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.). In *Chavez* the plaintiff unsuccessfully contended that the Texas usury statutes do not prohibit a usurious rate of interest where the loan is defaulted since nothing in the statute in terms requires such a rebate. *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978). In *Uresti*, General Motors Acceptance Corporation relied unsuccessfully on *Imperial Thrift & Loan v. Ferguson*, 318 P.2d 566 (Cal. Dist. Ct. App. 1957), a case which held that a provision requiring rebate upon prepayment does not apply to acceleration of the note by the creditor subsequent to default. Brief for Appellee at 12, *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.).

13. TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Ver-non 1971). A typical provision within article 5069 governing the rebate of unearned interest upon prepayment provides in pertinent part:

obligation to rebate unearned interest upon default of precomputed credit transactions<sup>14</sup> suggests that the discrepancies among the various methods usually invoked for such rebating purposes are irrelevant. Such reasoning is further bolstered when a strict construction is given to the provisions of the Texas Consumer Credit Code.<sup>15</sup> Consequently, usury would be impossible upon default of a loan wherein the initial interest charged does not exceed the maximum permitted by law, regardless of whether or in what manner unearned interest is rebated.<sup>16</sup>

The present trend, however, indicates a rejection of this view in favor of a broader interpretation of the statutes.<sup>17</sup> Although the particular statutes governing the rebate of unearned interest do not expressly mention "default,"<sup>18</sup> the all-encompassing penalty chapter of the usury article does prohibit "contracting for, charging, or receiving interest" greater than the amount authorized by law.<sup>19</sup> Thus, when a note providing for the maximum legal amount of interest is accelerated due to default, Texas courts recently have held that the rebate of any amount short of the actual unearned interest due the debtor constitutes a usurious "charge" within the

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When any loan contract is prepaid in full by cash, a new loan, renewal, or otherwise, after the first installment due date but before the final installment due date, the licensee shall refund or credit the borrower with an amount which shall be as great a proportion of the total interest contracted for under Section (1) of this Article as the sum of the periodic balances scheduled to follow the installment date after the date of prepayment in full bears to the sum of all the periodic time balances under the schedule of payments set out in the loan contract.

*Id.* art. 5069-3.15(6).

14. *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ *ref'd n.r.e. per curiam*, 561 S.W.2d 799 (Tex. 1978).

15. *See Tenneco Oil Co. v. Padre Drilling Co.*, 453 S.W.2d 814, 818 (Tex. 1970) (one who seeks to recover penalty must bring himself clearly within the terms of the statute); *Hight v. Jim Bass Ford, Inc.*, 552 S.W.2d 490, 491 (Tex. Civ. App.—Austin 1977, writ *ref'd n.r.e.*) (Texas Consumer Credit Code to be strictly construed).

16. *See Burley v. Bastrop Loan Co.*, 407 F. Supp. 773, 775 (W.D. La. 1976) (under Louisiana law, clause providing for acceleration of unearned interest upon default enforceable and nonusurious).

17. *See Southwestern Inv. Co. v. Mannix*, 557 S.W.2d 755, 769 (Tex. 1977) (construction of article 5069 to prevent abusive credit practices reasonable); *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 212 (Tex. Civ. App.—Austin 1975, writ *ref'd n.r.e.*) (in construing Texas Consumer Credit Code "charging" prohibition to be given effect if possible). *See generally* Comment, *The Judicial Avoidance of Liberal Statutory Construction: Is Article 10, Section 8 Lost and Forgotten?*, 10 ST. MARY'S L.J. 163 (1978). *But see First State Bank v. Miller*, 563 S.W.2d 572, 577 (Tex. 1978) (particular provision for forfeiture in article 5069-1.06(1) is of a penal nature and to be strictly construed).

18. *See* TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Vernon 1971).

19. *Id.* arts. 5069-8.01, -8.02. Other chapters prohibiting such "charging" are found in articles 5069-3.15(8), -4.01(7), -5.02(5).

purview of the Texas consumer credit statutes.<sup>20</sup> Other Texas appellate courts have reached the same conclusion by alternatively reasoning that where a creditor exercises his right to accelerate upon default, the date of acceleration is considered to be the date of maturity of the note, thus requiring a rebate of interest<sup>21</sup> as in the case of prepayment.<sup>22</sup> In those situations where unearned interest is rebated pursuant to default and acceleration, the charge of interest must accordingly remain within the maximum statutory limit.<sup>23</sup> Consequently, any discrepancies among the various methods for determining such a rebate that result in a misstatement of interest so that the charge exceeds the maximum legal rate are necessarily pertinent to a discussion of possible usury violations.

In recognition of this fact, and particularly with regard to the propriety of the use of the rule of 78ths for computing interest rebates upon default and acceleration, the Texas Supreme Court has recently intimated that a

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20. See, e.g., *Southwestern Inv. Co. v. Mannix*, 557 S.W.2d 755, 765 (Tex. 1977); *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.); *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978); *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211-12 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.). These cases are cited for the proposition that if, upon default and acceleration, anything short of the unearned interest due is rebated, it is a usurious charge within the ambit of article 5069's broad "charging" prohibitions where the charge exceeds the maximum annual percentage rate set by the statute. In *Chavez* the court went on to hold that the amount of interest charged did not exceed the true amount due. *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978). In *Moore*, however, the court held an excessive amount of interest was charged. *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211-13 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.). Some older Texas cases support the proposition that a rate of interest charged upon default and acceleration which exceeds the maximum legal rate is a usurious rate. See *Shropshire v. Commerce Farm Credit Co.*, 30 S.W.2d 282, 284-87 (Tex. 1930), reh. denied, 39 S.W.2d 11 (Tex. 1931); *Hewitt v. Citizen's Sav. Bank & Trust Co.*, 119 S.W.2d 1073, 1075 (Tex. Civ. App.—Austin 1937, writ dismissed). See generally 45 AM. JUR. 2d *Interest and Usury* §§ 183-85, at 145-48 (1969); see also FEDERAL RES. BD. OP. LETTER NO. 851 (Oct. 22, 1974) (directed to each of the fourteen Federal Reserve Branch Banks).

For a recent supreme court case recognizing that the contracting-charging prohibitions of article 5069 penalize the charge of excessive interest at the inception of the loan agreement, see *First State Bank v. Miller*, 563 S.W.2d 572, 574-75 (Tex. 1978).

21. *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.); *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978); *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211-13 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.). See generally 5 CONS. CRED. GUIDE (CCH) ¶ 98,510, at 87,981 (1975); 5 CONS. CRED. GUIDE (CCH) ¶ 98,553, at 88,040 (1975).

22. See generally B. CLARK & J. FONSECA, *HANDLING CONSUMER CREDIT CASES* § 20(b), at 66-67 (1972). The Uniform Consumer Credit Code provides that if the maturity date of an installment credit transaction is accelerated pursuant to default, the consumer is entitled to the same rebate as if the loan had been prepaid. UNIFORM CONSUMER CREDIT CODE § 2.510(7).

23. See cases cited note 11 *supra*.

ruling will be forthcoming should the issue be properly presented.<sup>24</sup> In anticipation of this inevitable adjudication of the applicability of the rule of 78ths to the situation of default and acceleration, it becomes evident that a discussion of the alternative methods for computing interest rebates, as well as their respective inclinations toward error and possible usury violations, is in order.

#### REBATING UNEARNED INTEREST UNDER THE RULE OF 78THS

The rule of 78ths (the rule), or "sum of the digits" method, is the formula commonly invoked to compute the rebate of unearned interest,<sup>25</sup> whether pursuant to prepayment, default, or consolidation of precomputed credit transactions.<sup>26</sup> Although it has been proposed that the "true" amount of the unearned finance charge can be derived only through the use of the actuarial method,<sup>27</sup> the traditional view has recognized the rule's remarkably close approximation of the result obtained via the actuarial method.<sup>28</sup> This notion, however, has not prevailed without attack.<sup>29</sup> Growing criti-

24. See *Chavez v. Aetna Fin. Co.*, 561 S.W.2d 799 (Tex. 1978) (refusing writ n.r.e. per curiam). In denying the writ, the court noted the failure of the issue of the rule of 78ths to be properly presented, providing in pertinent part: "The applicability of the so-called Rule of 78ths . . . to the situation of default and acceleration was not directly considered by the lower courts. We express no opinion as to its applicability in the event the question is raised in the second trial." *Id.*

25. See *Bone v. Hibernia Bank*, 493 F.2d 135, 137 (9th Cir. 1974); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 251 (1976); Hunt, *supra* note 2, at 331; Jordan & Warren, *Disclosure of Finance Charges: A Rationale*, 64 MICH. L. REV. 1285, 1288 n.5 (1966).

26. See Hunt, *supra* note 2, at 332. The rule of 78ths is usually invoked where the total finance charge is known and is quoted in the initial statement of indebtedness, and where the loan is amortized by periodic payments which are equal in amount and made at equal intervals. These conditions constitute a "precomputed" credit transaction and explain the wide use of the rule. Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 18-19 (1977).

27. FINANCIAL PUBLISHING CO., *FINANCIAL RATE TRANSLATOR AND GUIDE TO LEGAL INSTALLMENT SALES RATES* 2 (1977); Hunt, *supra* note 2, at 331-32. The Financial Publishing Company, the prominent publisher of financial tables for the consumer finance and banking industries, was recognized and relied upon by the drafters of the Uniform Consumer Credit Code for complex calculations. Hunt, *supra* note 2, at 331 n.4.

28. *Bone v. Hibernia Bank*, 493 F.2d 135, 137 (9th Cir. 1974); see B. CLARK & J. FONSECA, *HANDLING CONSUMER CREDIT CASES* § 20(c), at 68 (1972); R. JOHNSON, *METHODS OF STATING CONSUMER FINANCE CHARGES* 115-16 (1961); W. MORS, *CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION* 112-15 (1965); NATIONAL COMMISSION ON CONSUMER FINANCE, *CONSUMER CREDIT IN THE UNITED STATES* 41 (1972); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 251 (1976); Kripke, *Consumer Credit Regulation: A Creditor-Oriented Viewpoint*, 68 COLUM. L. REV. 445, 455 (1968).

29. See W. MORS, *CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION* 30 (1965); Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 16 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 253 (1976); La Porte, *ABC's of Figuring Interest*, BUS. CONDITIONS 3, 9 (Sept. 1973). Certain commentators have gone so far as to declare: "[W]e



cism centers on the arithmetical fact that the longer the term of the loan and the larger the amount financed, the greater the error in the rule of 78ths.<sup>30</sup> A verbal representation of the rule in "somewhat terrifying form"<sup>31</sup> is contained in several chapters of the Texas Consumer Credit Code.<sup>32</sup> Succinctly stated, the rule of 78ths dictates that the amount of the unearned interest rebate must represent at least as great a proportion of the finance charge as the sum of the periodic monthly time balances *not yet due* bears to the sum of *all* the periodic monthly balances under the schedule of installments in the loan contract.<sup>33</sup> This syntactical jungle of arithmetical expression is most productively illustrated by the following hypothetical credit transaction.

Borrowed Principal .....	\$1200
Finance Charge .....	\$ 120
Maximum "Add-On" Rate Permitted by Statute <sup>34</sup> . . . . .	10% per annum, or, \$10 per \$100 per year
Term of Loan .....	1 year (12 months)
Total Precomputed Debt .....	\$1320 or (\$1200 + \$120)
Each Precomputed Monthly Installment .....	\$110

For purpose of illustration, assume that the \$1200 borrowed principal is repaid in 12 *equal* installments of \$100. Without regard to any interest due, scheduled repayments of the *principal* of the loan then could be visualized from Table 1.

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are convinced that if the Rule of 78's were biased against the lender instead of the borrower it would have ceased to exist long ago." Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 254 (1976). The Uniform Consumer Credit Code, the leading model consumer credit law, reflects the contemporary avoidance of the rule of 78ths by prohibiting its use, and endorsing the actuarial method as the proper formula for calculating refunds pursuant to prepayment of certain credit transactions. UNIFORM CONSUMER CREDIT CODE, Prefatory Note at XXXIII.

30. See Dyl & Joehnk, *Prepayment Penalties Inherent In the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 19-20 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 252-53 (1976).

31. Chavez v. Aetna Fin. Co., 553 S.W.2d 174, 179 n.1 (Tex. Civ. App.—San Antonio 1977) (Cadena, J., dissenting), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978).

32. TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Vernon 1971). For a description of the rule of 78ths as set out in the statutes, see note 13 *supra*, wherein article 5069-3.15(6) is quoted in pertinent part.

33. TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Vernon 1971).

34. Assume for illustrative purposes, a statute which permits an add-on rate of \$10 per \$100 per year, or 10% per annum, as the maximum interest which can be charged on a loan of this amount. The add-on rate refers to this maximum legal interest, and may vary with each particular statute according to the nature, amount, and term of the credit transaction. See TEX. REV. CIV. STAT. ANN. art. 5069-3.15(1) (Vernon 1971).

TABLE 1<sup>35</sup>

## Repayment Schedule of Principal

(A)	(B) Month of Loan	(C) Balance of Cash Advance
1	1st month	$12 \times \$100 = \$1200$
2	2nd month	$11 \times \$100 = \$1100$ after 1 payment of \$100
3	3rd month	$10 \times \$100 = \$1000$ after 2 payments/\$200
4	4th month	$9 \times \$100 = \$ 900$ after 3 payments/\$300
5	5th month	$8 \times \$100 = \$ 800$ after 4 payments/\$400
6	6th month	$7 \times \$100 = \$ 700$ after 5 payments/\$500
7	7th month	$6 \times \$100 = \$ 600$ after 6 payments/\$600
8	8th month	$5 \times \$100 = \$ 500$ after 7 payments/\$700
9	9th month	$4 \times \$100 = \$ 400$ after 8 payments/\$800
10	10th month	$3 \times \$100 = \$ 300$ after 9 payments/\$900
11	11th month	$2 \times \$100 = \$ 200$ after 10 payments/\$1000
12	12th month	$1 \times \$100 = \$ 100$ after 11 payments/\$1100
78	(sum)	$78 \times \$100 = \$7800$

The sum of the digits (column A) 1 through 12 equals 78, a number whose mathematical import will presently become apparent.<sup>36</sup> The figures under column C—"Balance of Cash Advance"—indicate the cash amount the debtor has at his disposal after each month.<sup>37</sup> For example, after the first month the debtor has use of \$1100, after the second month \$1000, and so on. If the debtor were to default after six months, the allocation of the finance charge between creditor and debtor should be in the same proportion that the sum of the monthly amounts the debtor *has had* use of bears to the sum of monthly amounts that he *would have had* use of had the loan run to maturity.<sup>38</sup> In this case that proportion would be:

$$\frac{(\$1200 + \$1100 + \$1000 + \$900 + \$800 + \$700)}{(\$1200 + \$1100 + \dots + \$200 + \$100)} = \frac{\$5700}{\$7800} = \frac{57}{78}$$

By applying this ratio to the total amount of the finance charge, the amount of finance charge actually earned is found to be 57/78 of \$120

35. The tables appearing in this comment have been based in form on tables appearing in Hunt, *supra* note 2. In substance these tables are unique, however, in that the figures are peculiar to the hypothetical upon which they are based.

36. The method is therefore designated the "rule of 78ths." The sum of the digits of a twenty-four month loan, however, would of course result in a different number, thus the more appropriate designation "sum of the digits" method. Chavez v. Aetna Fin. Co., 553 S.W.2d 174, 179 n.1 (Tex. Civ. App.—San Antonio 1977) (Cadena, J., dissenting), *writ ref'd n.r.e. per curiam*, 561 S.W.2d 799 (Tex. 1978).

37. As will be discovered later in the analysis of the more accurate "actuarial method" of computing unearned interest, these figures are mere approximations of the actual amount of principal the debtor has at his disposal. See text accompanying notes 50-52 *infra*.

38. Hunt, *supra* note 2, at 334; see TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Vernon 1971).

which equals \$87.69. The difference between this amount and the total amount of the finance charge, or \$32.31, is the amount of rebate owing to the debtor. This point is further illustrated by Table 2.

TABLE 2

Month of Loan	Monthly Finance Charge Sum of Digits Method		=	Monthly Allocation of Interest
	Allocation Fraction	Total Finance Charge		
1st month	$1200/7800$	$\times \$120 = 12/78$	$\times \$120 =$	\$ 18.46
2nd month	$1100/7800$	$\times \$120 = 11/78$	$\times \$120 =$	\$ 16.92
3rd month	$1000/7800$	$\times \$120 = 10/78$	$\times \$120 =$	\$ 15.38
4th month	$900/7800$	$\times \$120 = 9/78$	$\times \$120 =$	\$ 13.85
5th month	$800/7800$	$\times \$120 = 8/78$	$\times \$120 =$	\$ 12.31
6th month	$700/7800$	$\times \$120 = 7/78$	$\times \$120 =$	\$ 10.77
7th month	$600/7800$	$\times \$120 = 6/78$	$\times \$120 =$	\$ 9.23
8th month	$500/7800$	$\times \$120 = 5/78$	$\times \$120 =$	\$ 7.69
9th month	$400/7800$	$\times \$120 = 4/78$	$\times \$120 =$	\$ 6.15
10th month	$300/7800$	$\times \$120 = 3/78$	$\times \$120 =$	\$ 4.62
11th month	$200/7800$	$\times \$120 = 2/78$	$\times \$120 =$	\$ 3.08
12th month	$100/7800$	$\times \$120 = 1/78$	$\times \$120 =$	\$ 1.54
totals	$7800/7800$	$\times \$120 = 78/78$	$\times \$120 =$	\$120.00

Thus, were the debtor to default during any given month, the creditor would be entitled to a finance charge represented by the sum of the interest allocations up to the month of default. The debtor would be entitled to a rebate of finance charges represented by the sum of the interest allocations from the month of default to the last scheduled month of the loan. In keeping with the sixth-month default example of the \$1200 loan set out above, it will be noted that the earned finance charge equals:

$$\$18.46 + \$16.92 + \$15.38 + \$13.85 + \$12.31 + \$10.77 = \$87.69$$

or

$$57/78 \times \$120 = \$87.69,$$

and that the interest rebate equals:

$$\$9.23 + \$7.69 + \$6.15 + \$4.62 + \$3.08 + \$1.54 = \$32.31$$

or

$$21/78 \times \$120 = \$32.31.$$

The fraction 21/78, or .2692, represents the sum of the numerators of the allocation fractions from the default month to the last month of the loan—6+5+4+3+2+1—over the sum of the numerators of all the allocation fractions, or 78. This figure is commonly referred to as the refund factor, and is constant for all twelve-month loans defaulted on the sixth

month, regardless of the annual percentage rate.<sup>39</sup> The refund factor is more easily determined through the use of the following formula, or "rule of 78ths":

$$\text{Refund Factor} = \frac{p(p+1)}{n(n+1)}$$

In the formula, "p" represents the number of installments remaining at the time of default, and "n" represents the total number of installments originally scheduled. Applying this formula to the hypothetical, the refund factor is found to be:

$$(6)(7)/(12)(13) = (42)/(156) = 21/78 = .2692.$$

Alternatively, the refund factor may be most easily arrived at by reference to a rule of 78ths refund chart.<sup>40</sup>

Once the term of the loan and the month of default are known, the only other variable is the total finance charge,<sup>41</sup> which is then multiplied by the refund factor. For example,

$$\text{Refund Factor} \times \text{Finance Charge} = .2692 \times \$120 = \$32.30.$$

This formula provides the creditor with a traditionally accepted method of calculating unearned interest rebates.<sup>42</sup>

Upon default, in order to ascertain the actual amount of interest due the creditor, the rebate is subtracted from the sum of the total amounts of precomputed monthly payments outstanding. When the \$1200 hypothetical loan was defaulted after six installments had been paid, there remained six payments of \$110 each to satisfy the debt, or \$660. According to the present statutes that have incorporated the rule of 78ths, this amount minus the \$32.30 rebate, or \$627.70, would be the maximum legal amount of principal and interest the creditor may charge.<sup>43</sup>

39. This factor is constant for all loans of equal duration defaulted in the same month. See generally [1970] 1 CONS. CRED. GUIDE (CCH) ¶ 530, at 1501-09.

40. These charts are published by the Financial Publishing Company of Boston, Massachusetts. The chart is arranged so that the "y" axis represents the total term of the loan, while the "x" axis represents the number of months the loan has run prior to default. Thus by cross-reference the refund factor is easily ascertainable. See [1970] 1 CONS. CRED. GUIDE (CCH) ¶ 530, at 1501-09.

41. This finance charge is calculated according to the statutorily set add-on rate. See TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(1), -4.01(1), -5.02(1), -6.02(9), -7.03(1) (Vernon 1971). In the hypothetical the add-on rate was 10% and the finance charge was \$120, or 10% of \$1200.

42. The legislature has incorporated the rule of 78ths within several provisions of the Texas Consumer Credit Code. See TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Vernon 1971).

43. See TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(6), -4.01(6), -5.02(4), -6.02(10), -7.04 (Vernon 1971).

## THE ACTUARIAL METHOD OF REBATING UNEARNED INTEREST

The actuarial method has been designated the "standard against which the accuracy of the Rule of 78 is measured."<sup>44</sup> The actuarial method is defined in the Uniform Consumer Credit Code as the method of allocating debt payments between principal and interest in such manner that a given payment is applied first to the accumulated finance charge, while the balance of such payment is thereafter applied to the unpaid principal.<sup>45</sup> The hypothetical credit transaction will serve to illustrate the dynamics of the actuarial method.

Computing interest according to the actuarial method necessitates reference to computer tables,<sup>46</sup> which translate "add-on" rates to "actuarial" rates.<sup>47</sup> According to the tables, the coinciding annual percentage rate (APR)<sup>48</sup> for the hypothetical 10% add-on introduced above is 18%.<sup>49</sup> Since

44. Hunt, *supra* note 2, at 336.

45. UNIFORM CONSUMER CREDIT CODE § 1.301(1).

A mathematical analysis of the actuarial method, culminating in the actuarial equation for determining interest on an indebtedness at any given month within the term of the loan, may be found in Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 17-18 (1977). The actuarial method will produce the actual amount necessary to extinguish the entire debt after a given month, and is represented by the following formula:

$$L_m = L_0 (1 + i)^m - \sum_{t=0}^{m-1} P (1 + i)^t$$

where  $L_m$ =the exact amount necessary to extinguish the debt after the  $m$ th monthly payment,

where  $L_0$ =the initial loan balance,

where  $P$ =the monthly payment,

where  $i$ =the monthly interest rate,

where  $m$ =the month after which the true amount necessary to extinguish the debt is computed,

where  $t$ =the term of the loan in months.

*Id.* at 18. For a similar actuarial formula see FINANCIAL PUBLISHING CO., THE COMPUTATION OF CHARGES ON INSTALLMENT TRANSACTIONS 19.

46. See 1 BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, TRUTH IN LENDING REGULATION Z ANNUAL PERCENTAGE RATE TABLE.

47. Without the use of these computer tables or a suitably programmed calculator, derivation of coinciding actuarial rates is extremely laborious, in that it is essentially a process of trial and error. Hunt, *supra* note 2, at 336 n.30.

48. The APR is the actuarial rate, or annual percentage rate. The APR and the "add-on" rate do not refer to the same number. The "add-on" rate, or rate of finance charge (10% in the hypothetical) is merely that number which is inserted into the actuarial computer tables, along with the term of the loan, to find the APR. TEX. REV. CIV. STAT. ANN. art. 5069-14.05 (Vernon Supp. 1978). See generally FINANCIAL PUBLISHING CO., THE COMPUTATION OF CHARGES ON INSTALLMENT TRANSACTIONS 2; Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 16-17 (1977).

49. 1 BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, TRUTH IN LENDING REGULATION Z ANNUAL PERCENTAGE RATE TABLE at FRB-105-M. If the "add-on" rate were not known,

the term of the loan is one year, this APR can be converted to a monthly basis by dividing by 12, or  $.1800/12 = .015$ . Accordingly, this monthly interest rate will then reduce a \$1200 loan to zero at the end of twelve months, where the precomputed monthly installments are \$110.<sup>50</sup> The interest allocable to the first month is determined by multiplying the monthly rate, or .015, by the principal amount of the loan, producing an amount of \$18 as the initial monthly, actuarially determined interest charge. This figure, it should be noted, is somewhat less than the \$18.46 produced by the rule of 78ths (Table 2). Thus, the new balance after receipt of the precomputed installment for the first month of the loan will be  $\$1200 + \$18 - \$110$ , or \$1108. Table 3 illustrates the true successive monthly balances computed according to the actuarial method.

TABLE 3

**Monthly Finance Charge  
Actuarial Method**

(A) Month of Loan	(B) Beginning Balance	(C) Monthly Finance Charge	(D) Monthly Payment	(E) Ending Balance (B) + (C) — (D)
1	\$1200.00	\$ 18.00	\$110	\$1108.00
2	\$1108.00	\$ 16.62	\$110	\$1014.62
3	\$1014.62	\$ 15.22	\$110	\$ 919.84
4	\$ 919.84	\$ 13.80	\$110	\$ 823.64
5	\$ 823.64	\$ 12.35	\$110	\$ 725.99
6	\$ 725.99	\$ 10.89	\$110	\$ 626.88
7	\$ 626.88	\$ 9.40	\$110	\$ 526.28
8	\$ 526.28	\$ 7.89	\$110	\$ 424.17
9	\$ 424.17	\$ 6.36	\$110	\$ 320.53
10	\$ 320.53	\$ 4.81	\$110	\$ 215.34
11	\$ 215.34	\$ 3.23	\$110	\$ 108.57
12	\$ 108.57	\$ 1.63	\$110	\$ 0.00
<u>\$120.00*</u> (Total Finance Charge)				

but rather the amount of the finance charge and the principal were known, then the add-on rate could be computed by the following formula:

$$\text{"Add-On" Rate} = \frac{\text{finance charge} \times 100}{\text{principal}} \div \text{years of loan.}$$

*Id.* at 1. In the hypothetical, the add-on rate equals  $\frac{\$120 \times 100}{\$1200} \div 1$ , or 10%.

50. See Hunt, *supra* note 2, at 337.

\* The exact sum of the monthly actuarial finance charges indicated under column (C) of Table 3 is \$120.20. Part of the \$.20 difference is due to the rounding of figures to the nearest cent. A greater part of this \$.20 discrepancy, however, is a direct result of the APR computer tables' approximation of annual percentage rates. These tables approximate the APR only to the nearest .25%. See 1 BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, TRUTH IN

Upon default, the true amount necessary to extinguish the debt is indicated under column (E) of Table 3. Hence, where the debtor defaults at the end of the sixth month, the balance due is \$626.88. A comparison of this sum with the balance due after interest is calculated under the rule of 78ths, \$627.70, reveals that in this particular example,<sup>51</sup> the difference of \$.82 is the amount by which the rule of 78ths favors the creditor.

The discrepancies between the results produced by the rule of 78ths and those derived through the actuarial method may be attributed to the inaccurate assumption in the rule that the successive amounts in column (C) of Table 1 decrease by equal amounts, that is, by \$100 per month.<sup>52</sup> This assumption necessarily embraces the notion that the finance charge for each month is \$10.<sup>53</sup> The interest allocable to the first month in the hypothetical is in fact larger than \$10, however, regardless of which of the alternative methods is employed for such calculation.<sup>54</sup> The indicated balance of cash advance under column (C) of Table 1 for the second month, then, is understated, since an amount less than \$100, or \$110 - \$18 = \$92, is the true amount available to reduce the principal balance.<sup>55</sup> Accordingly, under the rule of 78ths, all successive balances in column (C) of Table 1 represent amounts lower than the true balance of cash advance,<sup>56</sup> which in turn accounts for the overstatement of interest allocation

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LENDING REGULATION Z ANNUAL PERCENTAGE RATE TABLE. If the exact APR for the hypothetical loan were used to perform the actuarial calculations, the monthly APR would be .014975 instead of .015000. Barring any rounding error, the exact monthly actuarial rate will accordingly result in the exact monthly finance charges, which in turn will, when added, produce the exact total finance charge (\$120.00).

All computations based upon the rounded figures in Tables 3, 4, and 5 will be likewise approximated to the same degree. For purposes of this comment and with a view towards ease in performing calculations, however, the errors resulting from these approximations are insignificant.

51. In this particular example, the difference by which the rule favors the lender is \$.82. However, such difference will increase proportionately as the term of the loan and the amount of the principal increase. See Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 19-20 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 252-53 (1976); Hunt, *supra* note 2, at 349. In recognition of this proposition, one authority has commented: "[W]hen the term gets long the 78ths procedure becomes absurd and should not be used." FINANCIAL PUBLISHING CO., *YIELDS IF PREPAID* at vi (1970).

52. See Hunt, *supra* note 2, at 337.

53. *Id.* at 337. The assumption of the monthly finance charge of \$10 is deduced by subtracting from the monthly payment of \$110 the \$100 applied to the previous cash balance.

54. *Id.* at 338. According to the rule of 78ths, interest allocable to the first month of the loan is \$18.46; according to the actuarial method, \$18.00. Obviously, both numbers are greater than \$10.00. The \$10.00 is the average monthly interest.

55. *Id.* at 338.

56. *Id.* at 338. In commenting on the understatement of the balance of cash advance after each payment according to the rule of 78ths, Professor Hunt notes that the debtor has actually had use of more of the cash advance in the later months of the loan (compare Table 3, column B with Table 1, column C) than is postulated by the rule, and argues: "A greater proportion of the finance charge should therefore be allocated to the later months of the loan. The rule

in the early months of the loan.<sup>57</sup>

#### PRO RATA METHOD OF DETERMINING INTEREST REBATES

Under the pro rata method, or "annuity method,"<sup>58</sup> calculations of interest earned by the principal upon default of a precomputed credit transaction are made pursuant to the mathematical fiction that the loan had been originally scheduled for a term of months equal to the number of installments paid prior to default.<sup>59</sup> In the hypothetical loan set out above, where default occurs after the sixth month, interest is computed as if the loan was originally scheduled for six months at a 10% add-on rate.

Borrowed Principal .....	\$1200
Term of Loan .....	6 months (1/2 year)
Add-On Rate .....	10% per annum
Finance Charge .....	\$120 per year × 1/2 year = \$60
Precomputed Monthly Installments ..	\$210

Upon default, the creditor is entitled to 6 times \$210, or \$1260. Since six installments of \$110, or \$660, have already been paid, the creditor is entitled to \$1260-\$660, or \$600. Assuming equal principal payments of \$100 per month, the \$600 represents the outstanding principal at the time of default, without any allocation of interest.

In comparing the three methods of computing interest in precomputed credit transactions discussed so far, the alternative amounts of interest due the creditor upon the hypothetical sixth-month default are found to be:

\$87.70 according to the rule of 78ths,  
 \$86.88 according to the actuarial method, and  
 \$60.00 according to the pro rata method.

Similarly, the alternative total amounts the creditor may charge the debtor become:

\$627.70 according to the rule of 78ths,  
 \$626.88 according to the actuarial method, and  
 \$600.00 according to the pro rata method.

These figures indicate that although the rule of 78ths favors the creditor, the pro rata method favors the debtor to a greater extent.<sup>60</sup> Remembering

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of 78 allocates too much of the finance charge to the creditor in the early months of the credit transactions." *Id.* at 338. See also Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 251 (1976).

AFF. 251, 251 (1976).

57. See Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 251 (1976); La Porte, *ABC's of Figuring Interest*, BUS. CONDITIONS 3, 9-10 (Sept. 1973).

58. W. MORS, *CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION* 113 (1965).

59. See *id.* at 12-13. For an example of interest computed under the pro rata method, see *Garrett v. G.A.C. Fin. Corp.*, 198 S.E.2d 717, 718 (Ga. Ct. App. 1973).

60. For a comprehensive comparison of the rule of 78ths with the pro rata method, see M. AYERS, *INSTALLMENT MATHEMATICS* 164-70 (1946).



that the traditional reasons espoused for disregarding the "true" actuarial method as a viable tool for computing unearned interest rebates are that it is too complex, expensive, and time-consuming,<sup>61</sup> it is logical to assume that the legislature's adoption of an alternative rule was premised on the paramount consideration of simplicity.<sup>62</sup> When the "simple" rule of 78ths was endorsed by the legislature for prepayment transactions over the even simpler pro rata method, the greater disparity from the true interest pursuant to use of the pro rata method may have been a determining factor negating the pro rata method's simplicity.<sup>63</sup> Consequently, reason dictates that if the rule of 78ths is judicially or legislatively spurned as mathematically inaccurate, its replacement will be realized through a method at least as, if not more, accurate.<sup>64</sup> Since the pro rata method is therefore theoretically undesirable as a practical alternative, and since the actuarial method is mathematically the most viable alternative, a comparison of the actuarial method and the rule of 78ths is most appropriate.

#### ACTUARIAL METHOD VS RULE OF 78THS

##### *Arithmetical Contrasts*

The contention that in view of the debtor's access to more of the cash advance in the early months of the loan, a greater portion of the finance charge should be likewise allocated, is logically irrefutable. Nonetheless, the rule of 78ths distributes such finance charge in amounts disproportionately greater than that of the debtor's actual use of the principal in the respective months of the loan. Table 4 illustrates this point.

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61. Hunt, *supra* note 2, at 356.

62. See generally Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 21 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 253 (1976).

63. The fact that this deviation favors the debtor rather than the creditor, as well as the degree of deviation, was probably a factor considered by the legislature in deciding to adopt the rule of 78ths over the pro rata method. See Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16 (1977), wherein it was stated, in reference to the rule's advantage to the creditor, that "if the bias favored the borrower rather than the lender, we suspect that this 'rule of thumb' would be dropped very quickly indeed." *Id.* at 21.

64. The Uniform Consumer Credit Code has adopted the true actuarial method over the rule of 78ths as the proper method of computing unearned interest rebates in certain credit transactions. UNIFORM CONSUMER CREDIT CODE, Prefatory Note at XXXIII. The pro rata method of determining interest rebates has been adopted in only a few jurisdictions. W. MORS, CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION 113 (1965).

**TABLE 4**  
**Interest Refund Comparisons**

Month of Loan (A)	Amount Debtor Has Actual Use of (B)	Interest Calculations Using Rule of 78ths			Interest Calculations Using Actuarial Method		
		Earned in Month (C)	Cum. Amount Earned (D)	Refund: \$120-(D) (E)	Earned in Month (F)	Cum. Amount Earned (G)	Refund: \$120-(G) (H)
1	\$1200.00	\$18.46	\$ 18.46	\$101.54	\$18.00	\$ 18.00	\$102.00
2	\$1108.00	\$16.92	\$ 35.38	\$ 84.62	\$16.62	\$ 34.62	\$ 85.38
3	\$1014.62	\$15.38	\$ 50.76	\$ 69.24	\$15.22	\$ 49.84	\$ 70.16
4	\$ 919.84	\$13.85	\$ 64.61	\$ 55.39	\$13.80	\$ 63.64	\$ 56.36
5	\$ 823.64	\$12.31	\$ 76.92	\$ 43.08	\$12.35	\$ 75.99	\$ 44.01
6	\$ 725.99	\$10.77	\$ 87.69	\$ 32.31	\$10.89	\$ 86.88	\$ 33.12
7	\$ 626.88	\$ 9.23	\$ 96.92	\$ 23.08	\$ 9.40	\$ 96.28	\$ 23.72
8	\$ 526.28	\$ 7.69	\$104.61	\$ 15.39	\$ 7.89	\$104.17	\$ 15.83
9	\$ 424.17	\$ 6.15	\$110.76	\$ 9.24	\$ 6.36	\$110.53	\$ 9.47
10	\$ 320.53	\$ 4.62	\$115.38	\$ 4.62	\$ 4.81	\$115.34	\$ 4.66
11	\$ 215.34	\$ 3.08	\$118.46	\$ 1.54	\$ 3.23	\$118.57	\$ 1.43
12	\$ 108.57	\$ 1.54	\$120.00	\$ 0.00	\$ 1.63	\$120.00	\$ 0.00

This table illustrates that almost all rebates calculated according to the rule of 78ths are less than the "true" rebate which can only be derived through adherence to the actuarial method.<sup>65</sup> According to the rule of 78ths, where the loan is defaulted in the early months, the creditor receives more than the share of the interest for these months preceding default than they would have actually earned had the debtor made good on his obligation.<sup>66</sup>

Commentators have labeled the monetary difference between rebates under the rule of 78ths and the actuarial method as negligible.<sup>67</sup> The discrepancies between these rebates become more pronounced, however, as the amount of the principal and the term of the loan increase.<sup>68</sup> Under the

65. See Hunt, *supra* note 2, at 338.

66. *Id.* at 338. The Uniform Consumer Credit Code has recognized this fact, as evidenced by the Code's prohibition of the rule, with its inherent higher cost to consumers, as a procedure for calculating unearned interest rebates in certain credit transactions. UNIFORM CONSUMER CREDIT CODE, Prefatory Note at XXXIII.

67. Indeed, the National Commission on Consumer Finance labeled the difference as such, when it concluded: "In view of the negligible difference between results of the two methods, and in view of the existing extensive use of the balance of the digits refund tables, the Commission recommends the use of either method." NATIONAL COMMISSION ON CONSUMER FINANCE, CONSUMER CREDIT IN THE UNITED STATES 41 (Dec. 1972).

68. W. MORS, CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION 31 (1965); Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 19-20 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 252-53 (1976); Hunt, *supra* note 2, at 349; La Porte, *ABC's of Figuring Interest*, BUS. CONDITIONS 3, 9 (Sept. 1973). In commenting on the rule of 78ths' approximation of the true interest rebate, one authority has noted that in

rule of 78ths, for example, a \$10,000 cash advance financed over ten years at an 8% add-on rate, and defaulted on at a critical time,<sup>69</sup> results in a rebate favoring the creditor by approximately \$460.<sup>70</sup>

Quite frequently maximum interest rates contained in small-loan statutes are "graduated" according to amount of outstanding loan balance.<sup>71</sup> This procedure effects some interesting results when the alternative methods of computing unearned interest rebates in precomputed credit transactions are involved. For instance, applying the maximum add-on interest charge permitted under article 5069-3.15 of the Texas Consumer Credit Code to the \$1200 hypothetical loan, the corresponding interest rates are found to be \$18 per \$100 per annum for the first \$300, and \$8 per \$100 per annum for the remaining \$900. Accordingly, the total precomputed finance charge is \$126<sup>72</sup> and the annual percentage rate is 18.75%.<sup>73</sup> If a default were to occur at the end of the first month, then the permitted retention of interest by the creditor would be as indicated in the following example.

spite of what is usually a "close enough approximation," when "the term gets long the 78ths procedure becomes absurd and should not be used." FINANCIAL PUBLISHING CO., YIELDS IF PREPAID at vi (1970).

69. The phrase "critical time" refers to that point in the term of the credit transaction where, if default and acceleration were to occur, the rule's overstatement of interest allegedly due the creditor is the largest. See generally Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 251 (1976).

70. See Hunt, *supra* note 2, at 357. Loans of this great a duration and large amount financed are not uncommon within the realm of consumer credit transactions in Texas. See, e.g., *Ford Motor Credit Co. v. Blocker*, 558 S.W.2d 493 (Tex. Civ. App.—El Paso 1977, writ ref'd n.r.e.) (\$24,580.43 financed at 11.41 APR); *Mobile American Sales Corp. v. Rivers*, 556 S.W.2d 378 (Tex. Civ. App.—San Antonio 1977, writ ref'd n.r.e.) (12 year time-price differential of \$12,889.26); *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.) (\$27,843.84 financed over 4 years).

71. Hunt, *supra* note 2, at 340; see FINANCIAL PUBLISHING CO., COST OF PERSONAL BORROWING IN THE UNITED STATES 19 (1978). Interest rates are "graduated" when different add-on rates are applied to different portions of the amount financed. See, e.g., TEX. REV. CIV. STAT. ANN. arts. 5069-3.15(1), -6.02(9)(a), -7.03(1) (Vernon 1971). For example article 5069-3.15(1) of the Code permits an add-on rate computed according to the following graduated schedule: "Eighteen Dollars per One Hundred Dollars per annum on that part of the cash advance not in excess of Three Hundred Dollars, and Eight Dollars per One Hundred Dollars per annum on that part of the cash advance in excess of Three Hundred Dollars but not in excess of Twenty-Five Hundred Dollars." *Id.* art. 5069-3.15(1).

$$\begin{aligned}
 72. \quad & (.18)(\$300) = \$54.00 \\
 & (.08)(\$900) = \$72.00 \\
 & \quad \quad \quad \underline{\$126.00} \text{ Finance Charge}
 \end{aligned}$$

73.	Finance Charge	.....	\$126
	Amount Financed	.....	\$1200
	Term of Loan	.....	12 months

$$\frac{(\text{finance charge}) (100)}{\text{amount financed}} = \frac{(\$126) (100)}{\$1200} = 10.50$$

Taking 10.50 to the actuarial tables, the APR is found to be 18.75%. See 1 BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, TRUTH IN LENDING REGULATION Z ANNUAL PERCENTAGE RATE TABLE at FRB-105-M.

(1) Under the rule of 78ths:

$$\begin{aligned} \text{Rebate} &= \text{Refund Factor} \times \text{Finance Charge (FC)} \\ &= \frac{p(p+1)}{n(n+1)} \times \text{FC} \\ &= \frac{(11)(12)}{(12)(13)} \times \$126 \\ &= .8462 \times \$126 \\ &= \$106.62 \end{aligned}$$

Creditor retains \$126 - \$106.62, or \$19.38.

(2) Under the actuarial method:

$$\begin{aligned} \text{Amount creditor retains} &= \frac{\text{APR}}{12 \text{ Months}} \times \text{Amount borrowed} \\ &= \frac{.1875}{12} \times \$1200 \\ &= \$18.75 \end{aligned}$$

(3) Without precomputation the creditor retains:

$$\begin{aligned} \frac{18\%}{12 \text{ Months}} \times \$300 + \frac{8\%}{12 \text{ Months}} \times \$900 &= \\ \$4.50 + \$6.00 &= \$10.50 \end{aligned}$$

From this example it becomes apparent that where graduated rates are charged, and where the loan is precomputed and defaulted in the first month, the use of the rule of 78ths over no precomputation favors the creditor by \$8.88.<sup>74</sup> Only \$.63 of this overcharge,<sup>75</sup> however, is due to the difference between the rule of 78ths and actuarial methods of apportioning interest.<sup>76</sup> The balance, or \$8.25, can be attributed to the idiosyncracies of graduated finance charges.<sup>77</sup> Thus, where graduated interest rates are concerned, precomputation and use of the actuarial method to determine rebates of unearned interest also favors the creditor, albeit to a lesser extent than the rule of 78ths.

### *Policy Considerations*

Traditional reasons propounded by supporters of the continued use of the rule of 78ths have been that it is easy to calculate,<sup>78</sup> closely approximates the true rebate,<sup>79</sup> and has been so uniformly acquiesced in<sup>80</sup> that a

74. \$19.38 - \$10.50 = \$8.88.

75. \$19.38 - \$18.75 = \$.63.

76. Hunt, *supra* note 2, at 341.

77. *Id.* at 341. "A similar pattern would occur in subsequent months, although the dollar amounts would increase for a few months before the cumulative earned finance charges began to merge under all three accounting techniques as the loan approached maturity." *Id.* at 341.

78. *See id.* at 356.

79. Bone v. Hibernia Bank, 493 F.2d 135, 137 (9th Cir. 1974); Burrell v. City Dodge, Inc., 5 CONS. CRED. GUIDE (CCH) ¶ 98,764, at 88,386 (N.D. Ga. June 21, 1974); *see* B. CLARK & J. FONSECA, HANDLING CONSUMER CREDIT CASES § 20, at 68 (1972); R. JOHNSON, METHODS OF

change would cause undue expense.<sup>81</sup> Reasons proposed supporting replacement of the rule, preferably with the actuarial method, have been that the rule is inaccurate and misleading in that it does not even closely approximate the true rebate.<sup>82</sup> Moreover, advocates of the actuarial method urge that with the modern availability of computers and computer tables, the rule of 78ths is no longer easier or less expensive than the true method for computing interest on an indebtedness.<sup>83</sup> In any event, prospects of replacing the rule of 78ths initially should include a consideration of the precisional aspects of the "true" actuarial method for determining interest rebates.

#### MATHEMATICAL SYNOPSIS AND RECENT TEXAS DECISIONS

The preceding mathematical calculations illustrate that use of the rule of 78ths to compute rebates unequivocally results in a higher effective APR than that disclosed at the inception of the loan agreement.<sup>84</sup> Where

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STATING CONSUMER FINANCE CHARGES, 115-16 (1961). See generally W. MORS, CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION 112-15 (1965); NATIONAL COMMISSION ON CONSUMER FINANCE, CONSUMER CREDIT IN THE UNITED STATES 41 (1972); Kripke, *Consumer Credit Regulation: A Creditor-Oriented Viewpoint*, 68 COLUM. L. REV. 445, 455 (1968).

80. See W. MORS, CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION 113 (1965). The Texas Consumer Credit Code has embraced the rule as the proper method for determining unearned interest rebates pursuant to prepayment. TEX. REV. CIV. STAT. ANN. art. 5069 (Vernon 1971 & Supp. 1978).

81. Cf. *Hamilton v. G.A.C. Fin. Corp.*, 5 CONS. CRED. GUIDE (CCH) ¶ 98,804, at 88,480 (N.D. Ga. Feb. 26, 1974) (use of actuarial method results in greater expense).

82. See Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 16 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 251 (1976); Hunt, *supra* note 2, at 357. In commenting on the National Commission on Consumer Finance Report, NATIONAL COMMISSION ON CONSUMER FINANCE, CONSUMER CREDIT IN THE UNITED STATES 41 (Dec. 1972), which supports the rule on the grounds of its "negligible error," Professor Hunt has noted:

[T]he Commission's review of the Rule of 78 was superficial; indeed, it appears to have been based on a single example supportive of the Commission's recommendation.

That example . . . is hardly representative of the range of consumer credit transactions to which the Rule of 78 is applied. Had [different] rates been applied over a more representative . . . period, the "negligible difference" would have increased . . .

[possibly] more than 1,000 times that shown in the NCCF example.

Hunt, *supra* note 2, at 357. See generally N. GENDEL, BREAK THE BANKS! (1973); W. MORS, CONSUMER CREDIT FINANCE CHARGES: RATE INFORMATION AND QUOTATION (1965); La Porte, *ABC's of Figuring Interest*, BUS. CONDITIONS 3-11 (Sept. 1973).

83. See Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 21 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 253 (1976); Hunt, *supra* note 2, at 360.

84. This fact has also been recognized from the perspective of truth-in-lending disclosure principles and within the context of prepayment. See FEDERAL RES. BD. OP. LETTER No. 851 (October 22, 1974). But see *Martin v. Commercial Sec. Co.*, 539 F.2d 521, 528-29 (5th Cir. 1976) (default not to be treated the same as prepayment in spite of Federal Reserve Board Opinion Letter No. 851); 5 CONS. CRED. GUIDE (CCH) ¶ 98,553, at 88,040 (1975) (summary

the interest is for the maximum amount permitted by law and the rebate is computed under the rule of 78ths, the invariable result is an effective add-on rate and coinciding APR which exceeds the maximum amount permitted to the extent that the error in the rule overstates the interest in favor of the creditor.<sup>85</sup> This overstatement of interest and consequent excess over the maximum legal APR may be negligible or devastating, depending on the amount of cash advanced and the term of the loan.<sup>86</sup> The Austin Court of Civil Appeals held in *Moore v. Sabine National Bank*,<sup>87</sup> however, that pursuant to default and acceleration, any "charge" of interest which exceeds the maximum statutory APR is usurious.<sup>88</sup> In that case, the default and subsequent acceleration followed the precomputation of an \$11,242.80 credit transaction which financed a \$6,425 mobile home over a 120 month term at a total finance charge of \$4,817.86. The court did not consider whether the error in the rule of 78ths was significant enough to constitute an excess over the legal APR in borderline cases, nor did it even acknowledge the error in the rule. Instead, the court routinely held that since under all of the rebating methods proposed therein the interest exceeded an amount double the maximum APR, the charge was necessarily usurious.<sup>89</sup>

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of case holding that Federal Reserve Board overstepped its bounds in issuing Opinion Letter No. 851).

In recent years challenges of the rule of 78ths concerning prepayment have been premised on alleged violations of Regulation Z, 12 C.F.R. § 226.8(b)(7) (1977) and the Federal Truth-In-Lending Act, 15 U.S.C.A. §§ 1601-1691f (1974 & Supp. 1977). Courts entertaining these challenges have recognized that use of the rule of 78ths to compute rebates results in an understatement of the true interest rebate, which in turn inevitably results in the overstatement of the finance charge, resulting in a higher effective APR than that disclosed. These courts have nonetheless deemed this misstatement insignificant for disclosure purposes. See *Bone v. Hibernia Bank*, 493 F.2d 135, 140 (9th Cir. 1974) (nominal prepayment penalty charge pursuant to use of the rule insufficient to warrant disclosure); *Burrell v. City Dodge, Inc.*, 5 CONS. CRED. GUIDE (CCH) ¶ 98,764, at 88,386-87 (N.D. Ga. June 21, 1974) (negligible difference between the rule and actuarial method not sufficient to warrant prepayment penalty disclosure); 5 CONS. CRED. GUIDE (CCH) ¶ 98,678, at 88,254 (1975) (summary of case holding that rebate under rule lower than that actuarially determined not penalty which must be disclosed). See also Hunt, *supra* note 2, at 350; NATIONAL COMMISSION ON CONSUMER CREDIT, CONSUMER CREDIT IN THE UNITED STATES 41 (1972).

85. *Garrett v. G.A.C. Fin. Corp.*, 198 S.E.2d 717, 718 (Ga. Civ. App. 1973) (use of rule of 78ths usurious where its error results in rate exceeding the maximum legal add-on rate in default and acceleration situation).

86. See FINANCIAL PUBLISHING CO., YIELDS IF PREPAID at vi (1970); Dyl & Joehnk, *Prepayment Penalties Inherent in the Rule of 78s—A Truth-In-Lending Issue*, 8 J. BANK RESEARCH 16, 19-20 (1977); Dyl & Joehnk, *The Rule of 78's: Bias Against the Borrower*, 10 J. CONSUMER AFF. 251, 252-53 (1976).

87. 527 S.W.2d 209 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.).

88. See *id.* at 212-13.

89. *Id.* at 212-13. Under the varying methods relied upon to compute the interest charged to the debtor, the APR oscillated from 25.68% to 128.59%. The legal charge applicable to the debtor's contract was 12.40%. The court was primarily concerned with what constituted a "charge" within the meaning of articles 5069-8.01 and 8.02 of the Texas Consumer Credit

The principle announced in *Moore* was adopted by the Tyler Court of Civil Appeals in *General Motors Acceptance Corp. v. Uresti*,<sup>90</sup> likewise without consideration of the error in the rule of 78ths in borderline cases.<sup>91</sup> In *Chavez v. Aetna Finance Co.*,<sup>92</sup> however, the San Antonio Court of Civil Appeals acquiesced in a use of the rule that resulted in an effective APR higher than the maximum permitted by statute.<sup>93</sup> In that case interest was charged on a loan of \$482.14 at the maximum legal amount, resulting in a precomputed total debt of \$625 financed over twenty-five months. The court held that upon default and acceleration in the nineteenth month, where the rebate was computed according to the rule of 78ths, a usurious charge did not result.<sup>94</sup> In spite of its inferential holding that use of the rule to compute the rebate did not constitute usury where the loan in question was for the maximum rate of interest, the court nonetheless acknowledged the principle announced in *Moore* that where acceleration of a note upon default results in a charge of interest exceeding the maximum prescribed legal rate by *any* amount, the result is a demand for usurious interest.<sup>95</sup>

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Code, TEX. REV. CIV. STAT. ANN. arts. 5069-8.01, -8.02 (Vernon Supp. 1978), and held that where the creditor's notice of intention to repossess, original petition, and sequestration affidavit showed a demand by the creditor that the debtor pay a sum which included both earned and unearned finance charge, statements by the creditor constituted, as a matter of law, a "charging" of unearned time-price differential within the contemplation of the statute. *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.).

90. 553 S.W.2d 660 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.).

91. *See id.* at 663. When the debtor in *Uresti* became disabled and ceased payments, the outstanding debt with unearned interest was \$25,523.52. The total interest charged was \$6,306.50. The interest which the creditor was in fact entitled to was \$1,082.25. This was a usurious charge according to *Moore* in that it resulted in an APR higher than that permitted by statute. When the debtor accordingly alleged usury in his counterclaim, the creditor amended his petition to provide for a rebate of any unearned interest due the debtor upon prepayment. The court held that this was nonetheless a usurious "charge" within the meaning of the Texas usury statutes, recognizing that the creditor had accelerated the note thereby making it impossible to prepay. *Id.* at 663. Thus, the demand was for unearned interest with a qualifying promise to rebate the unearned interest upon a condition which was legally impossible. *See id.* at 663.

92. 553 S.W.2d 174 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978).

93. The APR in *Chavez* was the maximum permitted by statute. Therefore when the rule of 78ths was invoked to compute the rebate, its consequent higher effective APR necessarily exceeded the maximum statutory interest rate. *Id.* at 175. Additional late payment penalties were applied which more than neutralized the refund, however, and precluded the debtor's realization of the rebate. *Id.* at 177.

94. *Id.* at 177.

95. *See id.* at 176. Although the rebate was calculated according to the rule of 78ths, its neutralization via outstanding late payment penalties precluded the debtor's recovery of usury penalties. Nevertheless, computations of the rebate under the rule produced an amount less than the true amount of unearned interest. The dissent, while admitting the inaccuracy of the rule of 78ths, declined to find that any rebate had been computed, and merely discerned that a rebate should have been given, regardless of by what rule it was computed, or to what extent the rebating method erred. *Id.* at 178-79 (dissenting opinion).

Accordingly, since the APR in *Chavez* was the maximum legally permissible for the type of transaction involved, the higher effective APR due to the error in the rule of 78ths, coupled with the consequent retention of unearned interest by the creditor, produced a usurious result under the *Moore* rationale.<sup>96</sup> The *Chavez* court, however, declined to avail itself of the opportunity to apply the *Moore* doctrine in this manner. Thus, it becomes evident that while certain Texas courts have forbidden the charging of *any* interest exceeding the maximum legal APR upon default and acceleration of precomputed credit transactions,<sup>97</sup> another court has indirectly endorsed such an excessive charge by permitting a method of computing interest rebates which results in an effective APR higher than the legal amount in maximum interest loans.<sup>98</sup> The Texas Supreme Court has reserved consideration of this matter for a more judicially appropriate hour.<sup>99</sup>

The situation presented in the \$1200 loan hypothetical can be profitably compared with the *Chavez* case for the purpose of showing by percentages how the rule of 78ths results in an effective APR higher than the legal amount set by statute. In both instances the loan is precomputed, defaulted, and the payment date accelerated. The maximum interest permitted by statute is thereafter charged, and the rebate of any unearned interest is computed under the rule of 78ths. Acknowledging the proposition that pursuant to default and acceleration *any* charge which exceeds the maximum APR is a usurious charge,<sup>100</sup> the following calculations indicate that the aforementioned facts will always result in usury.

In the \$1200 hypothetical, the maximum add-on rate permitted by statute was 10%, and the comparable maximum APR was 18.<sup>101</sup> The average monthly percentage rate in the hypothetical was accordingly .1800/12, or .015. Multiplying this monthly rate by the principal amount of the loan the debtor *actually* had use of after each month, the true actuarially determined monthly interest charges were found.<sup>102</sup> These respective monthly

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96. See *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211-13 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.).

97. See, e.g., *Southwestern Inv. Co. v. Mannix*, 557 S.W.2d 755, 765 (Tex. 1977); *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.); *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211-13 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.).

98. See *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 177 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978).

99. See *Chavez v. Aetna Fin. Co.*, 561 S.W.2d 799 (Tex. 1978) (refusing writ n.r.e. per curiam).

100. See *Southwestern Inv. Co. v. Mannix*, 557 S.W.2d 755, 765 (Tex. 1977); *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660, 663 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.); *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 176 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978); *Moore v. Sabine Nat'l Bank*, 527 S.W.2d 209, 211-13 (Tex. Civ. App.—Austin 1975, writ ref'd n.r.e.).

101. See text accompanying notes 46-49 *supra*.

102. Hunt, *supra* note 2, at 337; see text accompanying notes 50-51 *supra*.



charges for the entire term of the loan are indicated under column (C) of Table 3. The *annual* percentage rate of 18, from which the *monthly* percentage rate of .015 was computed, was found by applying the statutory maximum add-on rate to the Federal Reserve Board computer tables.<sup>103</sup> If the add-on rate was not known, however, the APR could nonetheless be derived by applying the amount of the finance charge and the principal amount of the loan to the following formula:<sup>104</sup>

$$\frac{(\text{Finance Charge}) (100)}{(\text{Principal})} \div \text{years of loan} = X\%.$$

The variable "X," or 10% in this hypothetical,<sup>105</sup> indicates the *annual* add-on rate. The add-on rate for a given month in this example could also be discovered by applying that *month's* finance charge as derived via the actuarial method to the same formula, but dropping the divisor. Thus, in the first month the add-on rate would be  $\frac{(\$18) (100)}{(\$1200)}$  or .01500, in the second month  $\frac{(\$16.62) (100)}{(\$1200)}$  or .01385, and so on. These monthly add-on rates are based on the true actuarially determined monthly finance charges. By applying the rule of 78ths' monthly finance charges, however, the respective monthly add-on rates are found to be  $\frac{(\$18.46) (100)}{(\$1200)}$  or .01538 in the first month,  $\frac{(\$16.92) (100)}{(\$1200)}$  or .01410 in the second month, and so on. Table 5 indicates the respective monthly add-on rates for the entire term of the loan where computations are based both on the true actuarial monthly finance charges and on the comparable rule of 78ths charges.

In both cases, the sum of the monthly add-on rates equals 10%, the hypothetical maximum annual add-on rate permitted by statute. Where the loan is defaulted after the sixth month, however, the percentage of interest charged according to the rule of 78ths, .01538 + .01410 + .01282 + .01154 + .01026 + .00898, or .07308, exceeds the maximum permitted by statute, .01500 + .01385 + .01268 + .01150 + .01029 + .00908, or .07240. This difference of .00068<sup>106</sup> is the percent by which the loan is usurious when defaulted after the sixth month, a conclusion which follows from the

103. 1 BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, TRUTH IN LENDING REGULATION Z ANNUAL PERCENTAGE RATE TABLE at FRB-105-M.

104. *Id.* at 1.

105.  $\frac{(\$120) (100)}{(\$1200)} \div 1 = 10.00$

106.  $.07308 - .07240 = .00068.$

TABLE 5  
Monthly Add-on Rate Tabulation

Month of Loan	Principal Amount	78ths Monthly Finance Charge	78ths Monthly Add-On	Actuarial Monthly Finance Charge	Actuarial Monthly Add-On
1	\$1200	\$18.46	.01538	\$18.00	.01500
2	\$1200	\$16.92	.01410	\$16.62	.01385
3	\$1200	\$15.38	.01282	\$15.22	.01268
4	\$1200	\$13.85	.01154	\$13.80	.01154
5	\$1200	\$12.31	.01026	\$12.35	.01029
6	\$1200	\$10.77	.00898	\$10.89	.00908
7	\$1200	\$ 9.23	.00769	\$ 9.40	.00783
8	\$1200	\$ 7.69	.00641	\$ 7.89	.00658
9	\$1200	\$ 6.15	.00513	\$ 6.36	.00530
10	\$1200	\$ 4.62	.00385	\$ 4.81	.00401
11	\$1200	\$ 3.08	.00257	\$ 3.23	.00269
12	\$1200	\$ 1.54	.00128	\$ 1.63	.00136
			.10000(10%)		.10000(10%)

Rule 78ths average monthly add-on = .00833

Actuarial average monthly add-on = .00833

computations even though the average monthly add-on rate is equal under both methods.<sup>107</sup> In terms of cash dollars, the percent difference of .00068 in this example amounts to \$.82.<sup>108</sup> Note that this figure equals the difference between the sixth-month rebates computed under the rule of 78ths and the actuarial method.<sup>109</sup> This phenomenon is a direct result of the rule's over-statement of interest in the early months of the loan.<sup>110</sup> A loan for a longer term and a larger principal would of course result in a more significant difference between rebates under the rule of 78ths and the actuarial method,<sup>111</sup> a fact which could ultimately bestow upon the creditor hundreds of usurious dollars.<sup>112</sup>

The preceding computations indicate that where interest was rebated under the rule of 78ths in the hypothetical after a sixth-month default, the add-on rate charged the debtor exceeded the interest ceiling. This conclusion unavoidably exposes the statute's internal inconsistencies. While prescribing an interest ceiling for certain consumer credit transactions, the legislature, in adopting the rule, concurrently endorses a method of computing such interest in a manner which defeats the ceiling and permits an

107. The average monthly add-on rate under both methods is .00833 (see Table 5).

108.  $(.00068) (\$1200) = \$.82$ .

109.  $\$33.12 - \$32.30 = \$.82$ .

110. See cases and materials cited note 56 *supra* and accompanying text.

111. See cases and materials cited note 68 *supra* and accompanying text.

112. See cases and materials cited notes 69-70 *supra* and accompanying text.

interest charge exceeding the maximum rate.<sup>113</sup> Texas courts to date have been reluctant to acknowledge this dichotomy within the consumer credit protection statutes.

#### CONCLUSION

Although the rule of 78ths is but an approximate technique, it dominates the alternative methods for computing interest on an indebtedness in Texas. A study of the rule of 78ths and its mathematical effects as a method of computing interest rebates exposes some interesting phenomena. The formula itself is arithmetical evidence supporting the proposition that as the term of the loan increases, or the amount financed increases, or particularly, as both increase, the accuracy of the rule diminishes rapidly. Redeemingly, the dramatic effect upon default of precomputed graduated interest rate transactions produced by the rule is more an elucidation of the peculiar properties of graduated rates than it is a criticism of the rule of 78ths. The fact remains, however, that where the loan defaulted on is for the maximum legal interest, use of the rule and its consequent higher effective APR necessarily results in usury. The judicial declaration that *any* excess of the maximum legal APR is a usurious excess compels this undeniable conclusion. The existence of usury in this situation has not been considered by the Texas courts of civil appeals, let alone acknowledged. Similarly, the Texas Supreme Court has not considered the question, though it has intimated that the issue is ripe for adjudication. The tone of this intimation could be interpreted by the astute creditor as a warning of a forthcoming resolution in favor of the debtor.

Upon judicial rejection of the rule of 78ths as the dominant method of computing interest rebates in maximum-interest precomputed credit transactions, the preferable alternative to be considered by the legislature should be the actuarial method. Though this method has been tradition-

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113. See TEX. REV. CIV. STAT. ANN. art. 5069-3.15(1)-(3) (Vernon 1971). This statute sets limitations on finance charges in conjunction with regulated consumer loans. Article 5069-3.15(6) provides for the rebate of unearned interest in precomputed loans according to the rule of 78ths. The rule results in an effective APR which is higher than the APR disclosed at the inception of the loan agreement; where the APR disclosed is the maximum permitted under article 5069-3.15(1)-(3), the effective APR is necessarily higher than the maximum permitted by statute. See *Garrett v. G.A.C. Fin. Corp.*, 198 S.E.2d 717, 718 (Ga. Civ. App. 1973). Although the endorsement of the rule of 78ths in article 5069-3.15(6) is expressly applied to prepayment situations, such endorsement has also been held to apply to the situation of default and acceleration under the general "charging" prohibitions of article 5069-3.15(8). *Chavez v. Aetna Fin. Co.*, 553 S.W.2d 174, 175-76 (Tex. Civ. App.—San Antonio 1977), writ ref'd n.r.e. per curiam, 561 S.W.2d 799 (Tex. 1978). In *General Motors Acceptance Corp. v. Uresti*, 553 S.W.2d 660 (Tex. Civ. App.—Tyler 1977, writ ref'd n.r.e.), the appellate court affirmed the lower court's summary judgment which held that article 5069-7.04, expressly mandating rebates according to the rule of 78ths pursuant to prepayment, also applies to the situation of default and acceleration. *Id.* at 662-63; see FEDERAL RES. Bd. OP. LETTER No. 851 (Oct. 22, 1974).

ally rebuffed for its alleged operational and theoretical complexity, these anachronistic considerations have been neutralized in view of modern accessibility to computers and computer tables. The most attractive attribute of the actuarial method is, of course, that it is the "true" method for computing interest on an indebtedness. The pro rata method of computing interest rebates, admittedly the simplest of the three, misstates the interest earned in favor of the debtor to a greater degree than does the rule of 78ths in favor of the creditor. As such, it has not been seriously considered as a viable alternative to the rule.

Whether the rule of 78ths is judicially or legislatively spurned, its perpetuation as the legally endorsed method of computing interest rebates upon default of maximum-interest precomputed credit transactions is at best dubious. To comport with prior judicial reprimands branding as usurious *any* charge of interest exceeding the statutory annual percentage rate, the rule of 78ths should be disavowed by the judiciary and discarded by the legislature in certain maximum-interest credit transactions wherein its use results in a higher effective APR than permitted by law. The rule's suggested replacement with the actuarial method for computing rebates would render usury impossible upon default of maximum-interest precomputed credit transactions as long as the initial APR is within the statutory ceiling. Furthermore, it would provide all parties to a credit transaction with an arithmetically superior and equitable means for determining interest on an indebtedness.