LOAN PRODUCTS TO MANAGE LIQUIDITY STRESS WHEN BROAD-BASED BLACK ECONOMIC EMPOWERMENT (BEE) ENTERPRISES INVEST IN PRODUCTIVE ASSETS

By

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DECLARATION

I herby certify that, unless specifically indicated to the contrary in the text, the work reported in this dissertation is the result of my own original work, which has not already been accepted in substance for any degree and is not being submitted in candidature for any other degree:
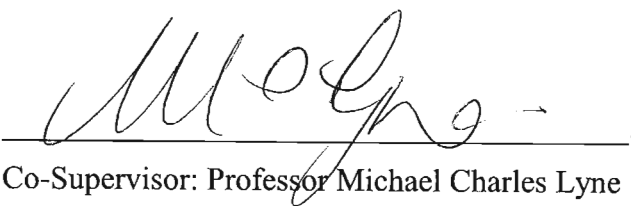
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DEDICATION

This thesis is dedicated to my grandfather, Dr L Finnemore.

ABSTRACT

Investments in productive assets by broad-based black economic empowerment (BEE) enterprises in South Africa (SA) during the 1990s have been constrained, in part, by a lack of access to capital. Even if capital can be sourced, BEE businesses often face a liquidity problem, as conventional, equally amortized loan repayment plans do not take into account the size and timing of investment returns, or there are lags in the adjustment of management to such new investments. The aim of this dissertation, therefore, is to compare five alternative loan products to the conventional fixed repayment (equally amortized) loan (FRL) that lenders could offer to finance BEE investments in productive assets that are faced with liquidity stress, namely: the single payment non-amortized loan (SPL); the decreasing payment loan (DP); the partial payment loan (PPL); the graduated payment loan (GPL); and the deferred payment loan (DEFPL0-2). This is done firstly by comparing loan repayment schedules for the six loans using a loan principal of R200 000, repaid over 20 years at a nominal contractual annual interest rate of 10%. Secondly, data from five *actual* BEE loan applications to ABSA Bank and Ithala in KwaZulu-Natal (KZN) during 2003 are used to compare how the FRL, SPL, DP, GPL, and DEFPL0-1, affect investment profitability, and both the borrower's and the lender's cash-flows, assuming that the lender sources funds from a development finance wholesaler.

Results for the first part of the study show that the SPL has smaller initial annual repayments than the FRL (R20 000 versus R23 492) that ease liquidity stress in the early years after asset purchase, but requires a nominal balloon repayment of both interest and principal in year 20 of R220 000. The SPL is also the most costly loan, with total nominal and real repayments that are R130 162 and R43 821, respectively, more than the FRL. The PPL has the lowest total nominal and real repayments assuming that the borrower can make the nominal balloon repayment in year 5 of R202 173. If not, the ending balance of the loan in year 4 would have to be refinanced at current market interest rates. In this situation, the PPL uses very similar financing terms to that of the variable rate long-term loans already used in SA, and thus may not be a useful option to consider for BEE investments facing a liquidity problem. Interest rates may have risen over the last four years of the loan, encouraging lenders to add a premium into the interest rate for the refinanced loan, which could worsen the liquidity position of the BEE enterprise. The DP requires higher initial nominal annual loan repayments (R6 508 more than the FRL) that do not ease the liquidity problem in the early years of operation. The DP loan, however, has

total nominal and real repayments that are R59 838 and R23 118, respectively, less than the FRL. A GPL with diminishing, finite interest-rate subsidy seems to have the most potential to ease the BEE investment's liquidity stress. The 17YRGPL used to buy land had total nominal and real repayments that were R84 634 and R67 726 (after subsidy), respectively, less than the FRL. If the GPL was used to purchase machinery-type assets, then the 6YRGPL would have required total nominal and real repayments of R13 957 and R12 596, respectively, less than the FRL. Finally, the DEFPL0-2 loan required a total nominal repayment of R531 128 (R61 290 more than the FRL) and a total real repayment of R345 358 (R26 095 more than the FRL). Clearly, the GPL and DEFPL0-2 loan repayment schedules can partly resolve the liquidity problem in the early years (assuming no major income shocks), although the DEFPL0-2 plan requires higher total repayments than the FRL. The question remains whether lenders would be prepared to implement these two financing plans for BEE investments in productive assets, where the funds to finance the diminishing, finite interest-rate subsidy or the deferment would be sourced, and how the interest-rate subsidy would affect asset values.

In the second part of the study, the profitability of the five proposed BEE investments in KZN during 2003 was compared for the five loan products using the Net Present Value (NPV) and the Internal Rate-of-return (IRR) capital budgeting procedures. The loan terms, interest rates, principal and characteristics of each BEE firm are different with current rates of return on equity varying by business type. Companies A (five-year loan) and C (10-year loan) are agribusinesses with a higher expected current rate of return of 8% on machinery investments, while companies B (eight-year loan), D (15-year loan), and E (20-year loan) invest in farmland with a lower expected current annual rate of return of 5%. The five business plans may not be representative in a statistical sense of all BEE firms in KZN, but were used because they were readily available. Initially it was assumed that donor/grant funds from a development finance wholesaler were lent to an intermediary (like a commercial bank), which in turn, could finance the five investments using any of the five alternative loans, with the lender's repayment to the wholesaler being via a FRL. It was then assumed that the lender could repay its borrowed funds using the same loans, or combinations of them, that it had granted to these companies. Results show that GPLs and DEFPLs can resolve the liquidity problem associated with investments like land in the early years after purchase provided that projected business performance is adequate, while the SPL and GPL are preferred for BEE projects with stronger initial cash-flows like machinery investments. The study also shows that the loan product that best improves the borrower's liquidity is not always best suited to the lender. In most cases, the GPL suited the borrower, but in four of the five cases, the lender would

prefer the SPL and to repay the wholesaler using the SPL. The SPL, however, is unlikely to be used, given the large negative real net cash-flows that it generates when the final payments are due.

Recent SA experience with the GPLs (interest rate subsidies funded by private sector sugar millers via Ithala) and the DEFPLs (via the Land Reform Empowerment Facility (LREF) which is a wholesaler of funds in SA) suggests that there is scope to alleviate the liquidity problem if a wholesaler of funds can offer such terms to private banks and venture capital investors who then on-lend to finance BEE asset investments that are otherwise considered relatively high credit risks. This would shift the liquidity problem away from the client to the wholesaler of the funds, but requires access to capital at favourable interest rates. Such capital could be sourced from dedicated empowerment funds earmarked by the private sector, donors and the SA government.

The lesson for policymakers is that broad-based BEE could be promoted in *other farm and non-farm* sectors in SA using similar innovative loan products to complement cash grant funds via financial intermediaries, bearing in mind the limitations of the GPL and DEFPL - such as how to finance the subsidy or deferment, and the impact of income shocks. Donor and National Empowerment Fund capital could be used to allocate grants to provide previously disadvantaged individuals with own equity and also to fund *finite, diminishing* interest-rate subsidies via GPLs, or to fund DEFPLs (many LREF loans have been leveraged by a cash grant component). This could create an incentive for public/private partnerships, as public/donor funds could be then used to attract private sector funds to finance broad-based BEE investments in SA that satisfy empowerment criteria. The five case studies did not show how the GPLs and DEFPLs could make all profitable (positive net present value) but financially infeasible (returns do not match the size and timing of the lender's financing plan) BEE investments in productive assets under the FRL feasible, except for Company E that showed a positive NPV and IRR when the 19YRGPL was used. They did, however, show how the alternative loans could improve liquidity for investments with either strong or poor cash-flows. The financiers consulted to source case studies in KZN in 2003 at the time of the study could not provide the researcher with any profitable, but financially infeasible, BEE business plans. This raises some concern about how effective these empowerment loan products could be in the future as there is uncertainty over how many potential BEE investments in productive assets in SA are likely to be profitable but financially infeasible. Further research is thus needed to assess the impact of these alternative loans on a wider range of broad-based BEE investments, particularly non-farm projects, than considered in this dissertation.

ACKNOWLEDGEMENTS

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INTRODUCTION

Broad-based black economic empowerment (BEE) is a key policy objective in South Africa (SA) aimed at addressing the past lack of access to resources, like capital, by previously disadvantaged individuals (PDIs) (The Brenthurst Initiative, 2003). The concept of BEE is defined in the Broad-Based Black Economic Empowerment Act recently signed into law by President Mbeki (Mantu, 2003) as "the economic empowerment of *all* black people including women, workers, youth, people with disabilities and people living in rural areas through diverse but integrated socio-economic strategies". This Act intends to establish an overall "scorecard" for the transfer of ownership, control and skills in the private sector to PDIs, the procurement of goods and services from black-empowered firms, and black representation at different levels of the workforce. The Act will encourage industries to develop BEE Charters that detail their own specific targets and deadlines for these components. The SA mining and financial services sectors have already released Charters, while the cotton, grain, red meat and poultry sectors are close to finalising Charters (SA Government, 2003).

Setting targets and deadlines helps to focus BEE strategies, but does not address the issue of *how* transfers of wealth and future income streams to PDIs will be encouraged and financed. During the late 1990's, black empowerment groups in SA like New African Investments used special purpose vehicles (SPVs) to help undercapitalised BEE investors to acquire shares in established companies (Trade & Industrial Policy Research in South Africa (TIPS), 1999). The empowerment groups owned the ordinary shares in these SPVs, while institutional investors were offered preference shares redeemable after three to five years. The limitations of these SPVs became apparent after 1998 when share prices fell markedly and nominal interest rates increased in SA. These factors caused major cash-flow stress for the SPVs when they had to sell ordinary shares, or borrow funds, to redeem the preference shares. In addition, the SPVs empowered an elitist few shareholders, and not a broad range of PDIs (TIPS, 1999). About 9% of the total capitalisation of the JSE was directly black-owned by 2003, with 22 companies listed (Black Economic Empowerment, 2003).

In 2003, SA businessman Mr Nicholas Oppenheimer proposed that BEE could be promoted if companies that achieved higher levels of BEE (in equity ownership, human resource development and input procurement) were given the incentive of paying lower corporate tax rates (The Brenthurst Initiative, 2003). This proposal resembles the tax incentives available in the United States (US) since

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1974 to businesses and employees that participated in Employee Stock Ownership Plans (ESOPs) as a way to motivate employees to improve company profitability. Lenders in the US that financed companies in which ESOPs are the majority shareholders also qualified for tax benefits (DiMarzio *et al.*, 2002:67). The SA government recognises that broad-based BEE will require partnerships between the private sector and the public sector, with the latter providing funds to help finance the transfer of skills and asset ownership (Zille & Lyne, 2002). To this end, the SA Minister of Finance Mr Trevor Manuel allocated R10 billion to the National Empowerment Fund (NEF) in 2003 to support the funding of new ventures and business expansions that meet agreed empowerment criteria (Africapulse, 2003). These public funds could be profitably applied to programmes that leverage additional finance from the private sector for investment by BEE firms.

This raises the key question: what alternative *loan products* could be used to draw public and private funds into financing the purchase of productive assets (land, machinery, equipment, etc.) by broad-based BEE projects so that *more people benefit than only a limited number of shareholders who acquire ownership in established companies*? Past development finance programmes in SA have charged relatively low nominal interest rates (sometimes negative in real terms) in order to encourage BEE (Coetzee, 1994). Low interest rates, however, discourage deposits, make it harder for banks to screen borrowers, encourage rent seeking, and reduce the sustainability of financial institutions (Adams, 1987:12). While commercial banks are also unlikely to finance the purchase of equity by unskilled workers who are not creditworthy and lack collateral to secure loans (Krafft, 1996:213), they may be prepared to co-operate in public-private efforts to develop new loan products if there is the incentive that these products would finance the purchase of productive assets to help empowered firms to grow.

Conventional long-term loans in SA are repaid in a series of equal annual, semi-annual, quarterly or monthly payments (hence the name fixed repayment loan, or FRL) that may not match the repayment capacity of BEE projects, particularly in the early years of operation. Profitable agribusiness investments often have relatively high development costs followed by a period of gradual growth in nominal cash flows (Barry *et al.*, 1995). This creates a temporary liquidity problem in the early years, particularly when inflation is relatively high. Inflation raises current costs (the nominal interest rate exceeds the current annual rate of return to land or to other assets like machinery) and defers returns (nominal cash flows grow over time and improve repayment capacity) (Tweeten, 1989; Mueller &

Hinton, 1975). Liquidity stress may also arise due to lags in adjustment by the managers of BEE firms to new investments. These lags may be caused by a lack of management experience and/or the need to develop new skills in machinery, labour and marketing management (Barry *et al.*, 1995:176). Naude (1998:133) identified a lack of business and administrative skills as the key issue affecting the performance of entrepreneurs in the small business sector in SA. In addition, Rogerson (1998; 1999) found that the lack of management, marketing skills and access to finance in the Free State and Mpumalanga provinces in SA constrained the development of small, medium and micro-enterprises (SMMEs). Policymakers in SA thus need to find ways to encourage financiers to fund potentially creditworthy BEE projects using loan products that alleviate the liquidity problem and make the projects financially feasible in the long-term.

The aim of this dissertation, therefore, is to examine alternative loan products to the conventional equal payment (equally amortized) long-term loan in SA that lenders could offer to finance the growth of BEE firms faced with liquidity stress. Chapter One first reviews literature on the loan repayment problem under inflation, and outlines recent trends in inflation in SA. It also describes factors affecting the cost of credit, and past share financing plans to transfer ownership to employees in the US, and to PDIs in SA. Chapter Two then describes the repayment terms for conventional long-term loans in SA, and discusses five alternative loan products to the conventional loan (FRL): the single payment non-amortized loan (SPL); the decreasing payment loan (DP); the partial payment loan (PPL); the graduated payment loan (GPL); and the deferred payment loan (DEFPL). A loan principal of R200 000 amortized over 20 years at a contractual nominal annual interest rate of 10% is used to compare the cash-flow effects of all of these loans. Chapter Two concludes with a discussion of recent experiences in SA with some of these alternative loan products in trying to promote broad-based BEE via investment in productive assets. Chapter Three then uses data from five *actual* BEE company loan applications in KwaZulu-Natal, SA to analyze four of the five alternative loan products mentioned in Chapter Two that wholesalers of funds could offer to lenders that, in turn, could on-lend these funds to broad-based BEE projects to make them financially feasible. This will show which of the loans would be preferred from either the borrower's or the lender's perspective. Chapter Three also describes the five BEE companies, the capital budgeting procedures used to assess the impact of the different loans on their profitability, and how the different loans impact on the companies' and the lender's cash flows. Finally, a concluding section discusses some management and policy implications of the analysis.

CHAPTER ONE

REVIEW OF LITERATURE

This chapter reviews literature on the loan repayment problem under inflation, recent trends in inflation in SA, factors affecting the cost of credit, and share financing plans used to transfer ownership in companies to employees in the US, and to PDIs in SA.

1.1 The loan repayment problem under inflation

Past studies in developing countries show that high nominal interest rates associated with inflation led to poor liquidity, which caused many (20 to 30 % of) emerging agribusinesses to default on loans (Boakye-Dankwa, 1979:236). Lack of profitable technology, poor managerial ability, weather conditions, lack of records and inadequate collection procedures also contributed to the repayment problem. Inflation - an increase in the general level of prices for all goods and services in the economy - causes prices to increase with an equal decrease in the value of fixed money claims. Inflation is difficult to predict and thus uncertainty about inflation creates uncertainty over future prices (Baldwin & Ruback, 1986:657).

Financial feasibility refers to the ability of an investment to satisfy the financing terms and performance criteria that are agreed upon by both the borrower and the lender (Barry *et al.*, 1995: 360). A profitable investment may not always be financially feasible if the financing plan does not account for the size and timing of the investment's returns, and the effects of capital gains. This problem occurs particularly in farmland investments due to the liquidity stress that arises when investors purchase farmland with debt finance. Farmland earns a real annual current return (rent), and nominal capital gains if nominal land values increase. Nieuwoudt (1987:10) reported that the average real annual current (cash) rate of return to land in the United Kingdom, US and SA is about 5% of its market value. Capital gains on land generate no cash flow for servicing debt unless that land is sold or used as collateral for refinancing (Melichar, 1979:1082).

Lenders expect loan repayments to include both principal and interest that are paid in cash - of which part is a real return and part is the Fisherian "inflation premium" to reimburse lenders for the expected loss in purchasing power (Friedman, 1978:833). Given that borrowers only receive part of their return

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as cash, a financing gap occurs if they have considerable debt and the annual inflation rate is relatively high. Borrowers will not be able to make full debt repayments from the cash that is generated from earnings in the early years after land purchase, and thus only after several years will the financing gap be reduced. This problem occurs with conventional long-term loans that are repaid in equal instalments (principal plus interest) that make no allowance for variable cash flows (Barry *et al.*, 1995:361). If alternative loan financing methods could alleviate the cash-flow stress in the early years, then after several years, the combined effects of inflation in nominal returns, technology advances and improved managerial skills could increase cash flows and thus close the financing gap (Von Pishke, 1977, as cited in Boakye-Dankwa, 1979:249).

Webb (1982:169) showed that borrowers in the US housing market experienced liquidity problems due to a combination of inflation and the terms of the traditional mortgage instruments. Cohn & Fischer (cited in Vandell, 1978:1279) proposed that Alternative Mortgage Instruments (AMIs), with payments that can vary, could be a solution to these problems. The prospect of the widespread use of mortgages with variable repayments has not been met with universal enthusiasm (Webb, 1982; Colwell & Dehring, 1997), as lenders would be more reluctant to grant such mortgages to borrowers that are more prone to income fluctuations. Webb (1982:182) reported that a borrower with relatively higher income variations would be likely to have a potentially delinquent loan, whether or not the mortgage has highly variable repayments.

In SA, Mostert & van Zyl (1989) found that droughts, relatively high inflation and relatively high nominal interest rates had severely reduced the liquidity of many farmers in the summer rainfall regions. They concluded that income injections without obligations best alleviated the liquidity constraint, followed by interest-rate subsidies and debt standstill, for farmers that had to repay medium- and long-term loans. Lyne *et al.* (2000) compared the liquidity effects of cash grants and finite, diminishing interest-rate subsidies, and presented evidence from KwaZulu-Natal suggesting that cash grants have performed poorly in terms of helping to redistribute farmland to PDIs. This work supported Nieuwoudt & Vink's (1995) finding that interest-rate subsidies that diminish at the expected rate of inflation can help to alleviate the cash-flow problem in the first few critical years after land purchase, while cash grants were *less effective per rand* of subsidy. Although Nieuwoudt & Vink's work showed that an interest-rate subsidy could help ease the cash-flow problem, they did not state how principal repayments would be made, and how such payments would affect the borrower's liquidity. This

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dissertation thus builds on the Nieuwoudt & Vink analysis by considering alternative loan repayment schedules under inflation that *fully account for the effects of principal repayments*. Mashatola & Darroch (2003) also presented evidence in KwaZulu-Natal that an interest-rate subsidy on mortgage loans administered by The Ithala Development Finance Corporation (Ithala) has helped to partly alleviate the cash-flow problem associated with financing the purchase of sugarcane farms by medium-scale black commercial farmers from sugar millers (the millers paid for the subsidy by depositing 18% of the purchase price of the farmland with Ithala for this purpose).

Although research on alternative loan products to deal with the cash-flow problem under inflation has been conducted in the US since the early 1970's, this study *differs from past research on loan products to manage liquidity stress associated with inflation* by comparing the liquidity effects of a range of alternative loan products to the conventional loan. It also *differs from past research on BEE* in SA by analysing how these loans could be used to finance the purchase of new productive assets, and not equity. These alternative loan products are described and compared for the same loan principal of R200 000, with a loan term of 20 years, and nominal annual interest rate of 10% in Chapter Two. The next two sections describe recent inflation trends in SA, factors affecting the cost of credit, financing plans used to transfer ownership in companies in the US, and BEE financing plans used in SA.

1.2   Recent trends in inflation in South Africa

In the mid 1980s, SA, like many other countries, used the M3 money supply target as its main monetary policy tool to try and reduce inflation rates (M3 refers to the amount of cash in circulation, the amount in checking or demand-deposit accounts plus savings accounts, money market accounts, certificate of deposits and foreign-currency holdings (Your Encyclopaedia, 2004)). Although this form of monetary policy succeeded in reducing the annual inflation rate on average to below 10% in 1997 (see Figure 1 on page 8), its usefulness decreased when international financial markets were liberalized and volumes in money and capital transactions rose significantly. The SA Reserve Bank (SARB) replaced the M3 money supply-target policy in 1998 with an informal inflation targeting (IT) monetary policy that involved setting guidelines for intermediate objectives such as money supply and bank credit extensions (Agri Review, 2003). In 2000, the SARB finally opted for a formal monetary policy within an IT framework and the current target is for the average consumer price inflation rate less mortgage interest rates (CPIX) to be within the target range of 3-6% in 2002, 2003, and 2004

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(Mboweni, 2002). According to Mboweni (2002), a number of factors show that SA could be close to a period when inflationary pressures could start to decrease, such as:

- A significant reduction in the annual rate of increase in the production prices of goods, which generally precedes changes in consumer price inflation, in 2003.
- A strengthening in the external value of the rand by over 35% since October 2002.
- Slower growth in bank credit extension to households and firms; and ongoing fiscal discipline (considerable increases in revenue collections from taxes on income), and
- Lower inflation in the rest of the world due to slower world economic performance and reduced household demand (global inflation in developed economies was expected to be at an average of 2% in 2003).

From 2003 to late 2004, the Monetary Policy Committee in SA allowed the SARB to cut prime lending rates by 5.5 percentage points up to 12 November, lowering the repo rate to 8% and prime overdraft lending rates to 11.5% (Mboweni, 2004). Whilst IT has only been in place for a few years, available studies suggest that countries that have adopted IT strategies have experienced significant success in bringing down inflation rates, with the added advantage of increasing the countries' financial credibility, accountability, and transparency, increased public understanding about inflation, and reduced uncertainty about future inflation rates - thus contributing to more accurate expectations that benefit private sector planning (Agri Review, 2003). By the end of 2004, prime lending rates had been reduced by a further 0.5 percentage points, lowering the repo rate to 7.5% and prime overdraft lending rates to 11%, with 2004 average annual inflation being 4.3% (Mboweni, 2004).

Critics have challenged the use of IT policies and argue that many non-IT countries have experienced a general world trend of a disinflation period over the last decade. Their concern is that countries using an IT policy create a temporary loss of output and employment (Real gross domestic product (GDP) growth in SA for the first and second quarters of 2003 slowed down by 1.5% and 1.1%, respectively, after achieving a GDP growth of 2.4% in the fourth quarter of 2002), and exclude other important policy goals like full employment (AgreReview, 2003).
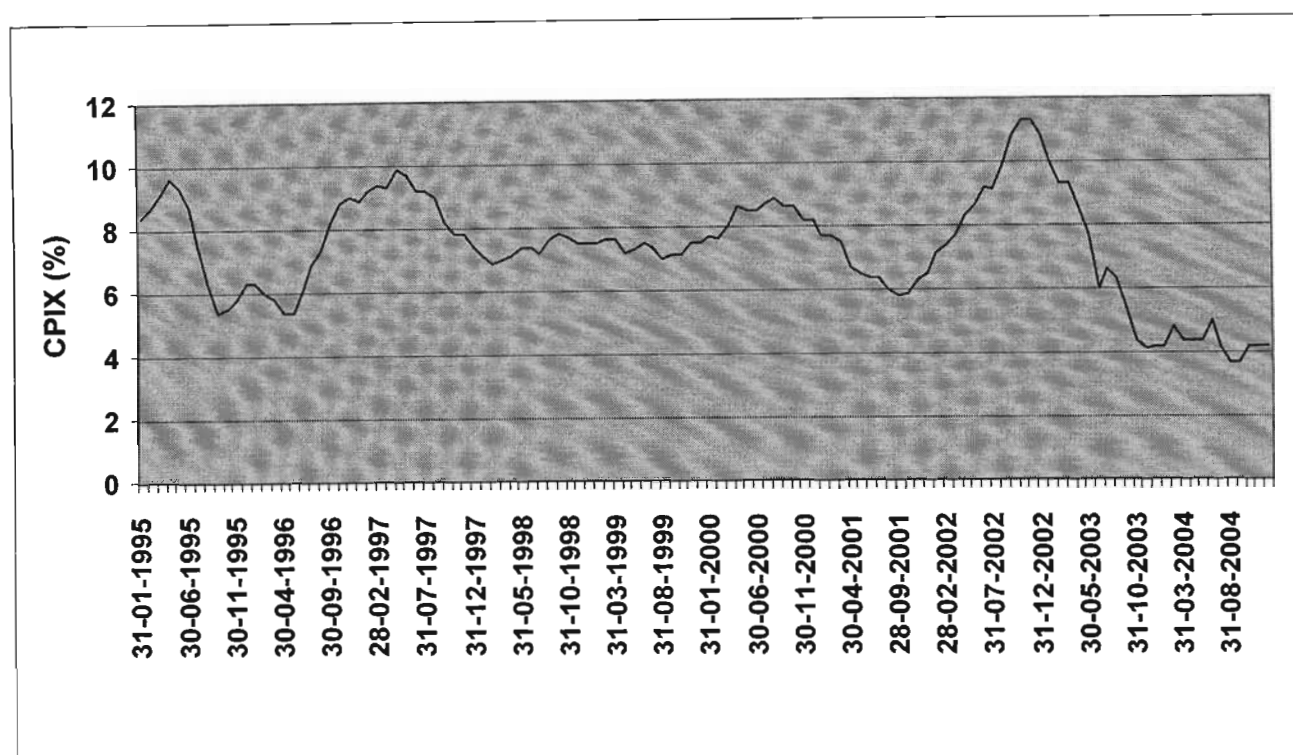
Figure 1: The CPIX inflation trend in South Africa from 1995-2004

Source: EasySoft's Market Master Programme (2004).

Although the trend toward lower annual rates of inflation in SA should partly ease the liquidity problem that borrowers face when using debt during periods of inflation, this problem still remains for those broad-based BEE projects that are more highly indebted, have lower initial annual cash flows, or experience management lags in bringing different types of new assets into full production. Chapter Two shows why the conventional long-term loan with a series of equal annual repayments may not be appropriate to finance such projects. The next section outlines the factors that affect the cost of credit and, hence, the interest rates paid by borrowers.

1.3 Factors affecting the cost of credit

In credit transactions, the nominal interest rate charged by the lender must cover the cost of the funds, a risk premium to compensate the lender for the perceived credit risk posed by the borrower, an expected inflation premium, and a loan administration and servicing cost (including a profit for the owners) (Lee

et al., 1980:117). Interest rates, risk, transaction costs and information are the main factors affecting the demand for, and supply of, finance (Food and Agricultural Organization of the United Nations (FAO), 2003:20).

1.3.1 The lender's cost of funds

The cost of credit will vary between lenders and over time depending on the source of the funds, their risk exposure and general monetary conditions (the demand for and supply of funds) (Lee *et al.*, 1980:117). In SA, SMMEs have trouble in accessing capital due to two primary reasons: current financial structures, and relationship problems that hamper BEE (Rogerson, 1998; 1999; Financial Mail, 2000:50). The SA Government has thus called for the creation of more loan products for providing debt to SMMEs. Commercial banks have argued that the term SMME is artificial and includes a wide range of businesses, and emphasise that many medium-size firms do have access to finance. The problem arises when micro- or very small firms need financing, as they are higher credit risks and generate higher transaction costs to administer such loans. Granting finance to the smallest of businesses means that commercial banks require a larger return on loans.

1.3.2 The loan risk premium

Lenders face two types of risk, namely default risk and market or interest rate risk. Risk in this context relates to the lack of full knowledge about the future outcomes of parameters affecting the economic and financial viability of a particular investment (FAO, 2003:20). Default risk is the risk that the loan will not be paid in full at the end of the loan contract. Interest rates are based on the average riskiness of the loan applicant pool, rather than the riskiness of each individual client. This provides an incentive for relatively high-risk borrowers to apply for loans, because the cost is borne by the entire borrower group and thus all interest rates must include a margin to try and cover all anticipated loan losses (Akerlof, 1970:488). The borrower's past repayment record, collateral offered, and the purpose of the loan are all primary determinants of default risk.

Interest rate or market risk, refers to general changes in the level of interest rates that may occur after the loan is made. Market risk can thus either lead to a capital gain or loss because of the tendency of fixed income assets such as loans to work inversely with the general level of interest rates (Lee *et al.*,

1980:117). Borrowers should expect to pay higher interest rates on longer-term loans because lenders would require a larger premium for market risk (Bodie *et al.*, 1998). Most borrowers prefer longer maturities and grace periods, even though this leads to an overall higher lending cost, since these arrangements more easily match with their cash flows (FAO, 2003:55). Lee *et al.* (1980:118) showed that some commercial banks may charge the same interest rates on long-term and short-term loans because, while the loan term may be longer, the default risk may be considerably lower because the cash-flow (liquidity) problem is relative less severe for the borrower.

Lenders may also have imperfect (asymmetric) information on the quality of the loan applicant, distribution of investment returns, borrowers' actions, and on the states of nature that affect those actions (Hoff & Stiglitz, 1990:34). Asymmetric information leads to two major problems associated with agent-client relationships, namely adverse selection and moral hazard. Adverse selection occurs when lenders do not know the particular characteristics of loan applicants, or are unable to adequately assess the distribution of returns of the investment available to loan applicants, and thus extend loans to both high- and low-risk individuals. Moral hazard occurs when borrowers use funds on riskier projects than originally agreed upon, or credit is used for personal consumption instead of productive purposes (Barry *et al.*, 1995).

Long-term loans with grace periods pose specific challenges to the asset/liability management of financial institutions as the cost and availability of loanable funds changes over time, while long-term loans may have predetermined fixed repayment schedules or variable interest rates. This can affect the profitability and liquidity of financial institutions in terms of both interest rate risk and liquidity risk. Hence it is important that financial institutions avoid mismatching their assets and liabilities, especially if long-term funds are borrowed from abroad, because currency devaluations (added element of foreign exchange rate risk) can severely increase a financial institution's liabilities (FAO, 2003:21).

1.3.3   Loan administration and servicing costs

Controlling loan administration costs is important, as it is a determinant of the interest rate that institutions must charge in order to break-even. Loan size and term to maturity require different overhead costs and thus the servicing of shorter-term loans generally involves a higher unit cost (higher average fixed costs and higher average variable costs imply higher average total costs for shorter-term

loans) (Lee *et al.*, 1980:118). The initial costs of loans are similar (application processing, credit investigation, completion of loan papers and closing loans), but short-term loans with frequent payments such as monthly instalments involve more service expenses (accounting, postage, management, etc.) than long-term loans that may only have two payments a year (FAO, 2003:54). Riley (1996) reported that rural credit programmes designed to service the poor in developing countries are notorious for their high unit administration costs owing to the relatively small loan size, frequent nature of transactions and staff training requirements. These added administration costs are a major reason why interest rates on such short-term loans tend to be higher than the interest rates charged on long-term loans (Lee *et al.*, 1980).

Yaron *et al.* (1997) showed that higher staff productivity, offering larger, standardised loans, reducing the amount of paper work, and a well-functioning management information system (MIS) have contributed to reducing the administration and servicing costs for rural financial institutions. The Bank for Agriculture and Agricultural Cooperatives (BAAC) in Thailand, for example, uses simple cash flow analyses for small term loans below US$12 000, and more comprehensive cash flow analyses for loans between US$12 000 and US$24 000. For loans over US$24 000, additional indicators are calculated (like Net Present Value) and a sensitivity analysis is carried out (FAO, 2003:53). Thus by grouping loan amounts, the BAAC cuts its administration and servicing costs, and can screen clients more accurately in less time. The BAAC has also often been described as one of the main success stories in terms of offering innovative financial schemes with flexible interest rates (Krafft, 1996:215).

1.3.4   The importance of market research

The Land Bank of South Africa, which used to be the main supplier of finance to commercial farmers in SA, was given a mandate in 1997 to start providing finance to black farmers who had been previously denied access to credit. Initially in 1997, the Land Bank was under considerable pressure to issue loans and thus started approving loans using its mainstream loan products. All of the black borrowers were classed into a homogenous group and put into one risk category. As a result, the Land Bank experienced large losses due to borrowers defaulting on loans. The Land Bank then carried out market research and was able to identify six major categories of potential borrowers, who were ranked by different resource endowments, income sources, degree of commercialisation, and access to financial services. The Bank's personnel were then able to identify the potential needs of different

segments of this market and thus are now trying to develop specific lending products to meet the needs of each segment (FAO, 2003:38).

1.3.5 Dealing with loan default

Most commercial financial institutions apply a zero-tolerance policy for loans that are overdue or in arrears, enforcing stringent loan recovery. A zero-tolerance policy allows lenders (especially new institutions that diversify into agricultural finance) to show that they have the ability and willingness to enforce loan repayments. However, the high exposure of agriculture to external risk, which is often beyond the borrower's control, calls for the establishment of more differentiated treatment of loan arrears. External factors such as droughts, floods, and price fluctuations may justify loan rescheduling. The BAAC has one of the most borrower-friendly policies when dealing with loan defaults. It allows loans to be postponed if the reason for the default is outside of the client's control, and loans are only written-off after 10 years. The BAAC has nearly recovered all of its due loans because borrowers have to repay previous loans in full before new loans are issued. Financial institutions like the Mulukandoor Cooperative Rural Bank and the Rural Bank of Panabo, Philipines, have also reduced borrowing risk by encouraging clients to diversify by offering different financial services that include savings and insurance schemes (FAO, 2003:58).

In the Ivory Coast, the Banque Nationale pour le Developement Agricole (BNDA) controls delinquency of payments by charging an additional 0.7% interest rate for the delay of monthly payments, followed by legal action after a 60 day grace period. Baker and Dia (1993:170) found that default at BNDA decreased as these penalty costs increased. Boakye-Dankwa (1979:248) believes that unrealistically low interest rates offered by some credit agencies in low-income developing countries encouraged poor repayment rates because low interest rates encourage the use of borrowed funds for personal use and not productive use.

1.4 Employee stock ownership plans used in the United States, and Black economic empowerment financing plans used in South Africa

1.4.1 Employee stock ownership plans (ESOPs) in the United States

Employee Stock Ownership Plans (ESOPs) began in Louisiana, and are primarily used in the US to transfer part of the ownership of businesses to employees. The ESOPs legislation contains tax benefits to employees, former stockholders who sell their shares, lending institutions that fund the ESOP, and employees (DiMarzio *et al.*, 2002:67). Contributions by employees to ESOPs are tax deductible, while lenders that finance ESOPs that own 50% of a company's stock are exempt from paying tax on half of the interest they earn, thus allowing lending institutions to loan money at below market rates (DiMarzio *et al.*, 2002:67). Dividends paid on shares are not tax deductible, but legislation allows firms that have established ESOPs a tax deduction. The ESOPs allow owners to sell part or all of their company on a tax-deferred or tax-free basis, and allow them to purchase other company shares without paying tax on the gains of those shares (Frish, 2003:52). The main advantages for companies that have established ESOPs is that when ESOPs are set up by buying out 50% of a company's shares, firms can deduct both interest and principal payments of the loan from taxable income, and thus cash flow over time is considerably improved. On ordinary business loans, only the interest expense is tax deductible (Posne, 1992:126).

Brown & Schaffer (2002:9) concluded that a weak US economy and regulatory pressures in recent times had placed severe stress on many financial services companies' lending activities, yet opportunities still existed to lend to ESOPs. Godfrey (2000:13) quantified the success that ESOPs have experienced in the US by studying the financial performance of 382 companies for a period of two years before, and four years after the adoption of ESOPs. He showed that the return on assets was 2.7% higher for these companies, when compared to their peers that had not adopted ESOPs; Total shareholders return in an ESOP company was 6.7% higher; and stock market reaction was positive (higher share prices) for more than 60% of the ESOP companies. Leonard's (2001:32) study supported Godfrey's work and concluded that ESOPs improve sales and financial performance. Kruse & Blasi (1999) as cited in Leonard (2001:32) examined 343 firms that had ESOPs against similar firms that did not. They showed that 70% of all firms that used ESOPs survived, while only 55% of non-ESOP firms were still in business at the financial year-end of 1999. The ESOP firms also performed better on

average with a 2.4% increase in annual sales growth, 2.3% increase in annual employment growth, and a 2.3% increase in annual sales per employee.

Although ESOPs have helped in alleviating the cash-flow problem, they are associated with expensive legal and tax issues that may take several months to set up, while accounting costs may range from $10 000 to $100 000 (Posne, 1992:126). Many US politicians have also supported legislation to be passed over the restriction of the portion of retirement funds that employees may invest in ESOPs (DiMarzio et al., 2002:67). This was made evident when the energy company Enron was declared insolvent and many Enron employees consequently lost almost all of their pension contributions (Franklin, 2002:26).

1.4.2   Black empowerment financing plans on the Johannesburg Stock Exchange

Since 1994, the private sector in SA has given less attention to the development of small black entrepreneurs, and rather tended towards minority investments for black shareholders in larger, established white-owned companies. This resulted in black empowerment groups in SA like New African Investments using SPVs to help undercapitalised BEE investors to acquire shares in established companies (TIPS, 1999). The empowerment groups owned the ordinary shares in these SPVs, while institutional investors were offered preference shares redeemable after three to five years. The SPVs also encouraged white-owned companies to increase investments in these black businesses, without considering the real value and business potentials of the black companies, in order to make short-term profits and win State bids with the added advantage of claiming back certain tax levies (e.g. the Skills Development Levy which obligates companies to pay 1% of their payroll to the Department of Labour), with the assumption that value would be created over time as profits grew and share prices rose (Black Economic Empowerment, 2003; Financial Mail, 2004:44)).

The limitations of these SPVs became apparent after the 1998 financial crisis in Asia (investors sold Asian currencies on expectations that they might be devalued, in turn causing the very devaluation that was anticipated) when share prices fell markedly and nominal interest rates increased in SA. These factors caused major cash-flow stress for the SPVs when they had to sell ordinary shares, or borrow funds, to redeem the preference shares. Prior to the 1998 financial crisis in Asia, black entrepreneurs held seven percent of the JSE total market capitalisation, but this was reduced to 3% following the

crisis (Black Economic Empowerment, 2003). In addition, the SPVs empowered an elitist few shareholders, as once empowerment partner contracts were signed and State tender bids won, many black partners were bought out, benefiting a few black individuals, and not a broad range of PDIs (TIPS, 1999). In 2000, it was estimated that most black-owned listed companies were experiencing financial stress, with only two out of 17 black-owned firms showing a positive share price rise and market capitalisation during 1998-2000. About 9% of the total capitalisation of the JSE was directly black-owned by 2003, with 22 companies listed (Black Economic Empowerment, 2003). This has led to the search for new financing models for BEE, with an increased emphasis to improve the availability of capital from the NEF to promote broad-based BEE (Financial Mail 2000:45).

This review of literature has shown how inflation creates financing gaps, and discussed the factors affecting the cost of credit, ESOPs used to transfer share ownership to employees in the US, and black empowerment share financing plans used in SA. It highlights the liquidity problem that highly-indebted firms face under relatively high inflation and/or management lags, and the need for new financing models to finance BEE projects in SA. Chapter Two focuses on such models by comparing the liquidity effects of the conventional long-term loan with those of alternative loans, and then reviewing recent experience with two of these alternatives - graduated and deferred payment loan schemes - used to finance BEE in the farmland market in SA.

CHAPTER TWO

COMPARISON OF THE LIQUIDITY EFFECTS OF THE CONVENTIONAL LONG-TERM LOAN AND ALTERNATIVE LOAN PRODUCTS

This chapter first compares the liquidity effects of the conventional long-term loan repaid in equal repayments with those of alternative loan products that could be used to manage the cash-flow problem faced by BEE investments in productive assets, using a loan principal of R200 000 amortized over 20 years at a contractual nominal annual interest rate of 10%. It then discusses recent SA experience with using alternative graduated and deferred payment loans to manage this problem for BEE investments in farmland.

2.1   Conventional long-term loan repayment terms

2.1.1   Fixed (FRL) and variable rate (VRL) long-term loans

Fixed rate long-term loans (FRLs) allow for equal total payments each year, with a larger proportion of each succeeding payment representing principal and a smaller portion comprising of interest. The nominal contract interest rate is set at the time the loan is made and does not change over the life of the loan. The maturity term and size of the monthly payments on the loan are usually also fixed (Rose, 1989:481). In SA, fixed and capped mortgage loans have been available since 1996, and can be set for a fixed term, usually six, 12 or 24 months. The level at which interest rates are fixed varies between commercial banks, and depends on the period and size of the loan - most commercial banks offer fixed rates up to 1.5 percentage points lower than the prime overdraft rate. Finance charges are levied against borrowers who decide to exit early from their FRL. By paying an interest premium the borrower can have the interest rate capped at a ceiling level, whilst still benefiting from any drop in the interest rate below the capped rate (ABSA Current Rates, 2003). Lending institutions in SA also offer VRLs that have mortgage interest rates that vary in line with changes in prime overdraft interest rates. Clients choosing VRLs can obviously benefit from expected reductions in interest rates, and *vice versa*. ABSA Bank also offers a facility whereby clients can fix the interest rates for a portion of their mortgage bonds, while leaving the balance at a variable rate (ABSA Current Rates, 2003). For illustration purposes, this dissertation assumes that, while the conventional loan is a VRL, it can be treated as a FRL for an assumed constant nominal annual interest rate level (10% in this case).

An example of the FRL for a R200 000 loan at a nominal 10% annual interest rate over 20 years is given in Appendix 1, section 1a, on page 74 of this dissertation. Following Barry *et al.* (1995: 619), equation (1) for the present value of a uniform series of payments (an annuity) was manipulated to calculate the total equal annual nominal loan repayment (A) by dividing the loan size (V_0 = R200 000) by the annuity factor for a uniform series given in the square brackets, where i = the contractual nominal annual interest rate of 10% and N = 20 years:

$$V_0 = A \, [\{1 - (1+i)^{-N}\} \,) \, i] \qquad\qquad (1)$$

The interest portion of A was calculated by multiplying the loan balance after annual repayment by the nominal interest rate on the loan, while the principal portion was the difference between the total nominal payment and the interest payment in each specific year.

The nominal annual payments (A = R23 492) are constant over the life of the loan. The annual principal payments increase, while the annual interest payments fall. Each year the loan balance diminishes, until year 20 when the loan has been fully amortized (Nelson *et al.*, 1973:169). This FRL would require total nominal and real repayments of R469 838 and R319 263, respectively, over the 20-year loan. Since the real burden of the nominal annual payments declines over time with inflation, each successive payment over the 20-year loan period was adjusted to real terms assuming an expected annual inflation rate of 4%, in line with the November 2003 CPIX in SA (Mboweni, 2003). Following Gittinger (1982), the nominal A for each year was expressed in real terms by dividing it by the *compounding* inflation factor for that year. For example, the real value of A = R23 492 in year 1 after an expected annual inflation rate of 4% is R22 588 (nominal R23 492 ÷ 1.04), the real value of A = R23 492 in year 2 is R21 720 (R23 492 ÷ $(1.04)^2$) and so on. This equal payment loan amortization plan may not be suitable for highly indebted BEE projects faced with the liquidity problem. Alternative loan products for such projects are considered in section 2.2.

2.2   Alternative loan products

The main problem with most conventional loan contracts is that the borrower is committed to fixed repayment schedules at a particular level of nominal interest rate, while net income may vary widely from year to year. Some borrowers may want to make pre-payments in relatively high-income years,

while those borrowers whose repayment ability is jeopardized by low yields or prices, or large unanticipated business expenses, may have little choice but to default on debt repayments when a FRL is used (Lee *et al.*, 1980:126). As noted in section 2.1.1, loan contracts that allow for repayments to vary with incomes could be a solution to such repayment difficulties. The main advantage of such loans is their responsiveness to unexpected changes in market interest rates (Tucker, 1976:427). Stansell & Millar (cited in Tucker, 1976:427) concluded that the variable rate, variable payment mortgage did not constitute an undue burden on the mortgagor. Rather the lender (commercial bank) experiences the cash-flow problem, and thus its shareholders bear the cash-flow burden and are reluctant to offer these products. In the US, variable payment loans are also usually interest rate-capped, which prevents the borrower from paying significantly higher interest rates than originally agreed upon during the loan term. Most rate caps increase or decrease by two percentage points per year, and no more than six percentage points over the life of the loan. Similarly, a payment cap on adjustable interest rate mortgages keeps payments on loans at a given level and thus limits the amount by which the stream of constant nominal payments can increase (Kapoor *et al.*, 1991:269).

Edelstein (cited in Tucker, 1976:443) suggested that the ideal mortgage loan would be a combination of a fixed rate and a non-standard mortgage, and he opted for a loan instrument that precisely corresponds to the proportion of income sources (including rents) that were nominally fixed and variable over time, respectively. By using a combination of different mortgage instruments, borrowers could diversify against any income-stream risk. While Edelstein argued that the income of the typical mortgager will grow at least by the rate of inflation on average in the long-run, he felt that this was not true for all households that hold mortgages, and thus the analysis of variable repayment plans needed to take into account possible distribution effects across each household, and income shocks.

Alternative loan products that differ widely in the composition of their variable repayments include: the single payment non-amortized loan; the decreasing payment loan; the partial payment loan; the graduated payment loan; and the deferred payment loan. These loans are described and compared in the next six sections of this dissertation.

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2.2.1 Single payment non-amortized loan (SPL)

The SPL requires repayment of the entire loan principal at the end of the loan term. Traditionally, most farm mortgage loans in the US were five-year single payment loans. These loans required borrowers to pay interest each year, and then after the five-year period, borrowers had the option to extend, renew, refinance or repay the loan. Loans were either renewed or refinanced for greater or smaller amounts depending on the losses or profits experienced in the past five years. As credit services increased in US agriculture, the five-year single payment loan was replaced by longer, more modified end-payment plans. These new loans included partial payment loans and they became particularly common in life insurance companies (Nelson *et al.*, 1973:167). An example of a SPL is shown in Appendix 1, section 1b, on page 74. For a loan of R200 000 at a nominal annual interest rate of 10% over 20 years, the interest payment would be R20 000 each year until year 20, when both the annual interest (R20 000) and the total principal (R200 000) are repaid (R220 000 in all). This SPL would require total nominal and real repayments of R600 000 and R363 084, respectively, over the 20-year loan (real payments calculated by the same method followed as for the FRL).

2.2.2 Decreasing payment loan (DP)

The DP allows for a fixed annual principal payment and a declining interest payment on the outstanding principal balance. This payment plan is easy to use and has a psychological advantage as the loan has a declining total annual payment which gives the borrower a definite sense of progress as each total payment is less than the previous one (Lee *et al.*, 1980:124). An example of a DP is given in Appendix 1, section 1c, on page 75, where in year 1 the annual nominal principal is R10 000, while the nominal interest is R20 000. As the loan progresses, so the interest portion decreases from R20 000 in year 1 to R19 000 in year 2, and the total annual repayment falls from R30 000 in year 1 to R29 000 in year 2 and so on, while the nominal principal payment remains fixed at R10 000 per year. This DP would require total nominal and real repayments of R410 000 and R296 145, respectively, over the 20 years (real payments again calculated by the same method as used for the FRL). Although this is less costly overall in nominal non-discounted Rand terms than the 20-year FRL and SPL from the borrower's perspective, it *aggravates rather than alleviates* the cash-flow problem for BEE investments in productive assets, as the total annual repayments are higher than for these loans over years 1-7 and 1-10, respectively.

2.2.3 Partial payment loan (PPL)

The PPL (also known as a balloon payment loan) allows for small principal payments each year during the term of the loan, with the unpaid balance of the principal due as a lump sum or balloon payment at the end of the term (Lee *et al.*, 1980:122). The balloon payment reflects the entire remaining balance of shorter-term loans (e.g. five years) that is amortized over the longer-term (10 to 20 years) (Barry *et al.*, 1995:635). An example of the PPL is given in Appendix 1, section 1d, on page 75, where the principal and interest payments are calculated by the same method as used for the FRL. The payments for years 1-4 are identical to a 20-year FRL, but in year 5 the outstanding principal amount of R183 794 plus an interest balance of R18 379, gives a total balloon payment of R202 173. This amount must either be refinanced at the current terms prevailing in year 5, or paid up in full. If interest rates fall and credit conditions improve, a borrower could negotiate more favourable loan terms at renewal. If interest rates rise, the loan terms may become less favourable. This PPL would require total nominal and real repayments of R296 141 and R251 445, respectively, over five years. If balloon payments are expected in year 5, the PPL will worsen the liquidity problem facing BEE investments relative to a longer-term FRL. Alternatively, if the PPL terms allow interest rates to be assessed every five years over the 20-year period, then the financing terms of the PPL are similar to that of the 20-year VRL already offered by financial institutions in SA, and thus there would be no need to test this option.

2.2.4 Graduated payment loan (GPL)

The GPL was primarily developed for the US residential mortgage market in response to relatively high inflation rates in the US in the early 1970's (Lee *et al.*, 1980:127). Under the GPL, earlier payments are lower than if a FRL were used - the borrower's initial interest rate is stated as a percentage below the standard (i.e. market) rate. This percentage, or the interest rate differential, changes each year, so that the difference between the borrower rate and the standard rate gradually decreases. After a pre-determined period, the borrower will pay the standard rate, and thus the loan ultimately becomes a conventional amortized loan (Introducing the Graduated Payment Plan, 2003). In the US, the GPL repayments are structured so that the early repayments are lower than they would be on a corresponding FRL, but the later repayments (after the borrower's annual incomes are expected to have risen by the expected annual inflation rate) are higher than they would be on a corresponding FRL. Lenders are indifferent between the FRL and this GPL from the point of view of the present

value of the cash-inflows from these repayments (the respective initial principal amounts and future debt service amounts), but not from a risk perspective. The GPL has the same rate of return for the lender as the FRL, but a different default risk due to negative amortization - early nominal repayments may be so low that they do not cover interest payments, thus principal payments owed actually increase, rather than falling in the early stage of the loan (Colwell & Dehring, 1997). Due to such negative amortization, this type of loan can carry a higher down payment and higher interest rate to compensate lenders for the cash-flow problem that it paradoxically creates for them.

To date, most GPLs in the US have been used for student loans as an incentive for graduates to bank with the issuing financial institutions in the future. More recently, GPLs were introduced in the US motor industry to help increase car sales. In SA, the Ithala Development Finance Corporation (Ithala) has used a GPL since 1996 that starts with a *lower* interest rate than would be charged on a conventional VRL to finance the purchase of sugarcane farms by medium-scale black commercial farmers. This was made possible as the sugar millers who sold these farms deposited 18% of the purchase price with Ithala in order to finance an interest-rate subsidy (Mashatola & Darroch, 2003). Once the graduated interest rate equals the market interest rate after about seven years, the loan becomes a conventional VRL. Some pros and cons of this scheme are discussed in more detail in section 2.3. If the GPL attracts subsidy, lenders would be less reluctant to finance a GPL than a VRL, even though the GPL has the added risk that the borrower's repayment capacity may not increase in line with anticipated inflation (and, like the VRL, may be subject to unanticipated income shocks).

An example of a 20-year loan of R200 000 that has 17 years of subsidized graduated payments (17YRGPL) is shown in Appendix 1, section 1e, on page 76 for a nominal annual interest rate of 10%. The initial borrower annual interest rate of 5% (corresponding to the assumed expected real current annual rate of return on land (Nieuwoudt, 1987)) is gradually increased at a plausible annual expected inflation rate of 4%. The nominal interest rate paid, therefore, rises from 5% in year 1, to 5.21% in year 2 and so on each year, until it equals 10% after 18 years. Since the initial interest rate is five percentage points below the standard rate of 10%, the first year interest payment falls from R20 000 to R10 000 (a reduction of R10 000). This 17YRGPL requires total nominal and real repayments of R385 204 and R251 537, respectively, and a nominal interest subsidy of R84 634. Adding this interest subsidy of R84 634 to the total nominal repayment of R385 204 gives the total nominal repayment of R469 838 required for the conventional FRL. The six-year GPL (6YRGPL) presented in Appendix 1, section 1e1,

on page 77, shows that a higher initial borrower rate of 8% could be used on machinery-type assets that yield a higher real current annual rate of return than land is expected to generate (Griliches, 1963; Mueller & Hinton, 1975; Hoffman & Gustafson, 1983). In this scenario graduation would only be for six years, with a nominal interest rate subsidy of R13 957, and total nominal and real repayments of R455 882 and R306 667, respectively. Again, adding the total nominal repayments and the nominal interest rate subsidy gives the R469 838 total nominal repayment for the conventional FRL.

2.2.5 Deferred payment loan (DEFPL)

The DEFPL is an extreme form of the GPL where no principal or interest payments are made for a specified period of time. Deferred payments improve the borrower's cash flow and allow for retained cash surpluses to supplement dividends in future years when reinvestment is expected to reduce liquidity. Different projects might require longer periods of deferment to overcome cash-flow problems (Graham & Lyne, 1999). The trade-off from having a longer deferment period is that future profits from BEE investments in productive assets will decline. Projects that might not have been approved thus become feasible, but at the expense of a lower net present value of future income streams to the borrower (Zille & Lyne, 2002). If lenders offering DEFPLs can also defer their loan repayments to the wholesalers that provided their funds, they may charge a lower nominal interest rate than that charged on the FRL, because the default risk profile of the borrower improves with the DEFPL. The borrower must, however, reimburse the lender for any accumulated interest or principal that is postponed during the term of the loan, plus a small additional fee. This reimbursement may be through the refinancing of the loan (Rose, 1989:483). Appendix 1, section 1f, on page 78, shows a two-year DEFPL (DEFPL0-2) repayment schedule, where neither interest or principal are repaid in the first two years of the R200 000 loan. From year 3, the interest portion of the loan is fully capitalized using the simple compound interest formula (Lee *et al.*, 1980:50) in equation (2):

$$S = s (1 + i)^n \tag{2}$$

where S = capitalized loan size (R242 000), s = initial loan size (R200 000), i = nominal annual interest rate of 10%, and n = two years.

At the start of year 3, the total loan amount outstanding is (200 000) (1.10)^2, or R242 000. The nominal total annual repayments are calculated using equation (1) as for the FRL on page 17, on the R242 000 loan for 18 years, and equal R29 507. The interest portion and principal payments are calculated in the same way as for the FRL. The present value of the loan is the same for the lender, whether or not a deferred or conventional loan scheme is utilized, with the only difference being *a shift in the cash-flow problem* from the borrower to the lender (or to the wholesaler of funds if the lender can defer repayments on the funds that it sources). The DEFPL0-2 would require total nominal and real repayments of R531 126 and R345 359, respectively, over the 20 years (real payments again calculated by the same method as for the FRL).

In SA, the Land Reform Empowerment Facility (LREF) was established in 1999 as a wholesale lending facility that offers DEFPLs (and hence shifts the cash-flow problem from the client to the LREF, rather than to the intermediary) to commercial banks and credit-rated investors, who wish to finance land and farm-worker equity-share schemes (ESSs). The LREF charges, and bears the costs of, a *lower* interest rate than would be charged on a conventional FRL, with the discount (between one to three percentage points below the three-month Johannesburg Interbank Agreed Rate (Jibar)) depending on the empowerment content of the end-borrower (Khula Enterprise Finance Limited, 2003). The facility is funded primarily by the SA Department of Land Affairs (DLA) and the European Union (through the DLA) and is, therefore, dedicated to financing land and ESSs including pack sheds and wineries. ABSA Bank is currently the main commercial bank in SA that is involved with the LREF. Experiences with this loan product in SA are discussed in section 2.3.

2.2.6   Summary of the alternative loan products

Figure 2 overleaf shows the differences in the time patterns of the annual series of nominal loan repayments for the R200 000 loan repaid over 20 years at a nominal annual interest rate of 10% for the FRL compared to the SPL, DP, PPL, 17YRGPL, 6YRGPL and DEFPL0-2. The SPL has smaller initial repayments (R20 000 versus R23 492) that ease liquidity stress in the early years after asset purchase, but requires a nominal balloon repayment of both interest and principal in year 20 of R220 000. The SPL is also the most costly loan, with total nominal and real repayments that are R130 162 and R43 821, respectively, more than the FRL.
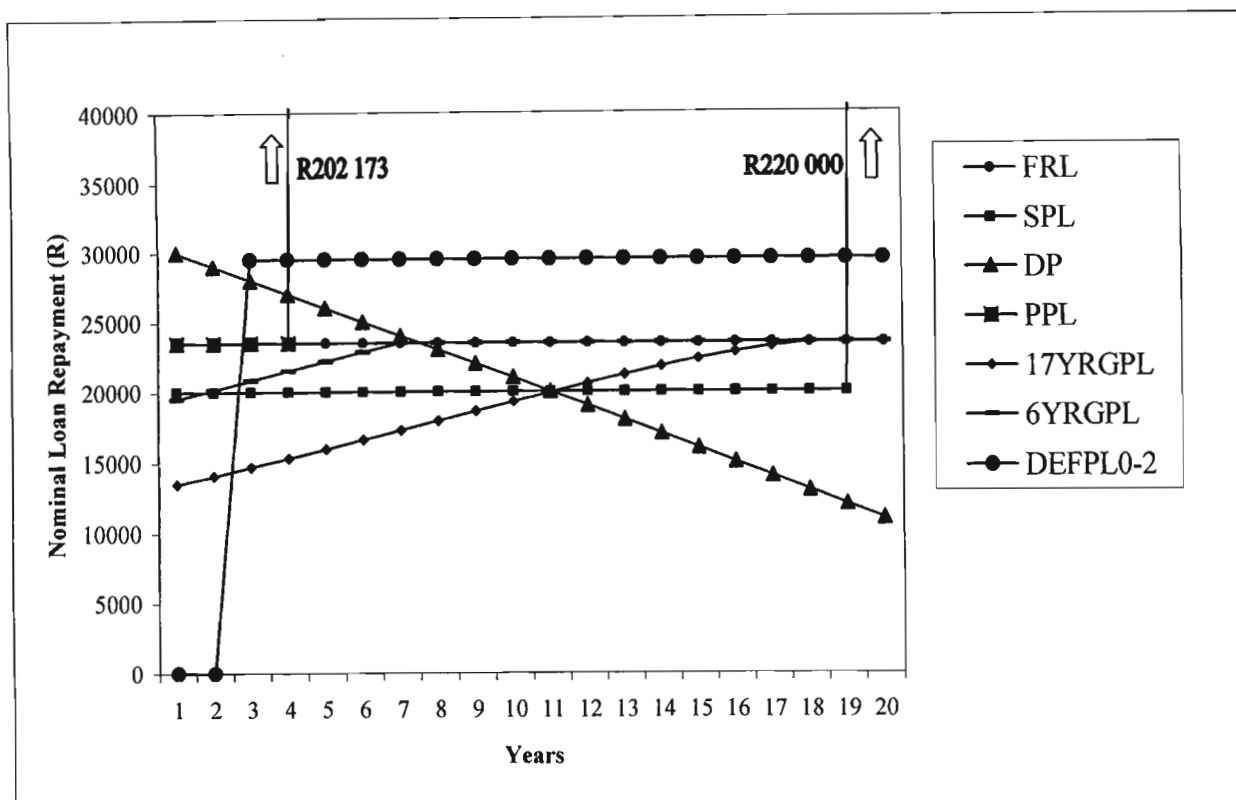
Figure 2: Time patterns of the nominal annual repayments for the conventional loan (FRL) versus five alternative variable payment loans (all loan terms for a R200,000 loan principal repaid over 20 years at a nominal annual interest rate of 10%).

Note: FRL = fixed repayment loan; SPL = single payment non-amortized loan; DP = decreasing payment loan; PPL = partial payment loan; 17YRGPL = seventeen-year graduated payment loan; 6YRGPL = six-year graduated payment loan; and DEFPL0-2 = two-year deferred payment loan.

The PPL has the lowest total nominal and real repayments, assuming that the borrower can make the nominal balloon repayment in year 5 of R202 173. If not, the ending balance of the loan in year 4 would have to be refinanced at current market interest rates. In this situation, the PPL uses very similar financing terms to that of the VRL already used in SA, and thus may not be a useful option to consider for BEE investments facing the cash-flow problem. Interest rates may have risen over the last four years of the loan, encouraging lenders to add a premium into the interest rate for the refinanced loan, which could worsen the liquidity position of the BEE enterprise. The DP requires higher initial nominal loan repayments (R6 508 more than the FRL) that do not ease the liquidity problem in the early years

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of operation. The DP loan, however, has total nominal and real repayments that are R59 838 and R23 118, respectively, less than the FRL.

A GPL with diminishing, finite interest-rate subsidy seems to have the most potential to ease the borrower's (BEE investment's) liquidity stress. The 17YRGPL used to purchase land had total nominal and real repayments that were R84 634 and R67 726 (after subsidy), respectively, less than the FRL. If the GPL was used to finance the purchase of machinery-type assets, then the 6YRGPL would have required total nominal and real repayments of R13 957 and R12 596, respectively, less than the FRL. Finally, the DEFPL0-2 loan required a total nominal repayment of R531 128 (R61 290 more than the FRL) and a total real repayment of R345 358 (R26 095 more than the FRL). Clearly, the GPL and DEFPL0-2 loan repayment schedules can partly resolve the liquidity problem in the early years (assuming no major income shocks), although the DEFPL0-2 plan requires higher total repayments than the FRL. The question remains whether lenders would be prepared to implement these two financing plans for BEE investments in productive assets, where the funds to finance the diminishing, finite interest-rate subsidy and the deferment would be sourced, and how the interest-rate subsidy would affect asset values.

2.3 Experience with graduated payment loan and deferred payment loan schemes used to finance BEE in the farmland market in South Africa

2.3.1 GPLs used by Ithala to finance "medium-scale farmers" in KwaZulu-Natal

Cash grants to finance land purchases in SA were proposed by the World Bank in 1993, based on Binswanger's line of reasoning that poor people are unable to finance land with conventional mortgages, especially when the market value of land exceeds (what is claimed by some authors) to be its productive value (Lyne *et al.*, 2000:2). Nieuwoudt & Vink (1995:514) argued that diminishing, finite interest subsidies associated with GPLs make it easier for PDIs to finance land purchases due to the relatively high rates of inflation that were common in SA in the 1990s. This was in line with Tweeten's (1989) reasoning that higher inflation causes higher costs (higher nominal annual interest payments), but defers returns (higher expected future nominal annual incomes). Adams (1987:11) believes that countries that run fewer subsidy loan programs have more efficient and equitable financial systems. Policymakers in SA are concerned that interest-rate subsidies will be capitalized into higher

values of land and other long-term asset values. If the interest-rate subsidy for the GPL were finite and targeted at PDIs, it may create fewer distortions in capital markets (Lyne & Darroch, 2003). Per rand of subsidy, the interest-rate subsidy is more effective at solving the cash-flow problem than are cash grants, but grants are still needed to provide equity- especially for employees wanting to purchase shares in ESSs (Lyne, 1995:17). Private-sector sugar millers working with Ithala since 1996 have used the diminishing, finite, interest-rate subsidy approach, whereas the SA government has used only cash grants to finance land purchases by PDIs since 1994.

Lyne & Darroch (2002:127) indicate that for the six-year GPL, Ithala reduced the nominal interest rate for entrants from 16.5% to 10% initially, increasing it each year at the *then* expected 10% annual inflation rate in SA over the first six years of the loan. For example, the nominal interest rate rose from 10% to 11% in year 2, and to 12.1% in year 3 and so on until years seven to 20 when the sugarcane farmers would pay the full 16.5%. These medium scale farmers (MSFs) were highly indebted - most had to borrow up to 95% of the funds needed to acquire the land (Mashatola & Darroch, 2003:1) - so the *liquidity problem was inevitable*. The MSF financing plan has shown positive results as currently some 80% of the 107 farmers that have used the scheme have met their loan repayments. The amount outstanding is reported to be only 0.5% of the R94 million total value of loans issued (FAO, 2003:141). Van den Heever as cited by Mashatola & Darroch (2003) attributes the absence of defaulters, despite very high leverage ratios, partly to the interest-rate subsidy. The low rate of default is surprising, given that the initial (subsidized) annual interest rate was 10%, compared to an expected annual current real (cash) return on farmland of 5%, and that these farmers must still repay loan principal. These borrowers probably used part of the annual return attributed to management and risk to help fund their loan repayments. Some loan rescheduling, client access to off-farm income and no major income shocks to date have also helped them to meet their repayments (Mashatola & Darroch, 2003:1).

The MSF programme can be criticized as being elitist, in that 107 relatively wealthy farmers have been financed at an average loan size of R878 036. However, the graduated payment principles could be adapted and applied to help PDIs to finance the acquisition of smaller, more affordable farms that are creditworthy, thereby exposing buyers to lower levels of leverage and less financial risk than in the MSF programme. This would be a more effective channel than cash grants alone for using taxpayer money and donor funds to promote productive asset-based BEE in SA. These principles could also be adapted to finance the purchase of other productive farm, agribusiness and non-farm assets such as machinery and equipment by BEE investors.

2.3.2 DEFPLs offered by the Land Reform Empowerment Facility (LREF)

The maturity term of each DEFPL offered by the LREF, and the period of deferment, is determined by the projected cash flows of the enterprise and the level of risk that the intermediary commercial bank is prepared to accept in each case. Together with the one to three percentage point discount below the three-month Jibar, these terms have enabled commercial banks to help finance land-based empowerment partnerships that would otherwise have been rejected because of the liquidity problem and related financing risks. The LREF's deferred repayment loans thus ease the liquidity problems faced by emerging black commercial farmers and farm-worker ESSs when financing land and other long-term assets like orchards and pack sheds. The SA government provides cash grants to help PDIs to finance farmland or equity in land-based enterprises, and offers larger grants to beneficiaries that can raise loans to complement their grants.

Between 2000 and 2002, non-guaranteed commercial loans worth R50 million were approved for disbursement through commercial banks to 15 land-based empowerment enterprises (Zille & Lyne, 2002:7). These loans benefited 500 new worker-shareholders with shareholdings varying between five and 70% of total equity. The average LREF loan size per new owner was R135 000, making this a relatively cost-effective empowerment instrument considering the costs of buying high quality land using an individual mortgage, and the problem of creditworthiness that confronts new entrepreneurs. To date, no loan defaults have been reported by any of the participating banks (Zille & Lyne, 2002:7). The LREF's experience, together with a steady growth in loan enquiries for *non-land* BEE enterprise projects, suggests that the underlying loan concept could be extended beyond the land economy to creditworthy empowerment enterprises in other sectors of the SA economy.

Commercial banks can set the nominal on-lending interest rate above the Jibar, but are required to carry 100% of the lending (credit) risk, thus ensuring careful screening and appraisal of all loan applications. This also ensures that grant money is not used to re-capitalise non-viable white-owned farms that are experiencing cash-flow problems. Borrowers prefer the shortest deferment period necessary to overcome their liquidity problem, as there is a trade-off with profitability - the longer the deferment, the lower is the net present value of the investment's expected future net income streams. In practice, the commercial bank intermediaries usually charge an interest rate that is slightly below the market rate. Interest rates decline further when farm-workers are awarded Land Redistribution for

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Agriculture Development (LRAD) grants to capitalise their share in an ESS (FAO, 2003:35; Land Redistribution for Agricultural Development, 2002). The LRAD programme also acts as an important partnership incentive for white farm-owners, because the equity injection improves the owners' gearing ratios and thus improves their cash flow and risk profiles (Zille & Lyne, 2002:7). The LRAD grant ranges between R20 000 and R100 000, depending on the applicant's contribution. For example, a minimum own contribution of R5 000 is required for applicants to access a grant of R20 000. The maximum grant of R100 000 can be accessed if the beneficiary makes a minimum contribution (of equity plus debt) of R400 000. However, banks usually require a debt-to-equity ratio of less than unity when financing agriculture (Barry *et al.*, 1995), which thus places an implicit cap on the LRAD grants. Even under optimal conditions, where the lender is assured that the borrower will receive a grant, a prospective owner-operator would have to contribute R100 000 of his/her own equity (from savings and/or other asset sources), in order to qualify for a grant of R90 000, and thus a loan of R190 000. The implicit cap on LRAD grants is less generous when the outcome of a grant application is uncertain (Lyne 2001:23).

The LREF was initially capitalised with R63 million, R32 million of which was granted by the DLA, and R29 million by the European Union (EU) (Lyne, 2001:9). Lyne (2001) simulated a series of loans with deferments of between one and three years and showed that the LREF could disperse about R15 million in the first year without reducing the real value of the fund to a level where it would become unsustainable. The facility approved R32 million in loans by 2001, with applications for another R34 million pending its recapitalisation. Out of the R32 million, R4.8 million financed loans to individual farmers, and R27.7 million financed long-term loans to ESSs. Knight *et al.* (2003:2) reported that about 50 farm-worker ESSs had been established in SA, mostly in the Western Cape. In 2003, 14 new loans worth R51 285 000 in total were approved, with 961 beneficiaries (526 male and 443 female), and the fund balance had risen to R124 337 507 with additional funds raised through the DLA, EU and the Department of Environmental Affairs and Tourism in SA (Khula Enterprise Finance Limited, 2003). This empowerment programme appears to be much less elitist than that currently offered by Ithala's GPLs, and highlights the potential that financing asset growth can play in promoting BEE in SA.

Zille & Lyne (2002:9) applied the experiences of the LREF with its deferred payment plans to design a BEE loan product to finance investments in property, fixed improvements, equipment, and other

durable assets under liquidity stress. They assessed the effects of variations in the interest rate, the maturity of the loan, the repayment schedule and the prospect of adding grant-financed equity capital, to identify the extent to which such variations could decrease the borrower's risk profile, and thus enable loans to be made to PDIs. Using 20 loan variations on realistic enterprise cash-flow projections, they showed that negative cash flows experienced using a conventional VRL could be overcome if a variation of the key loan features was applied. Higher interest rates reduced the borrower's liquidity, while longer-term loans with a one-year deferred repayment, and equity grant, could help to alleviate financial stress. The deferred payment had the largest statistically significant influence on the liquidity of the enterprise, followed by the loan term, the interest rate charged, and the use of grant money to finance equity.

This chapter has compared the four alternative loans to the FRL in terms of their liquidity effects using a R200 000 loan repaid over 20 years at a nominal annual interest rate of 10%. While it also described recent experience with the GPL and DEFPL in SA, clearly there is a need for more research to test the potential liquidity effects of alternative loans relative to the FRL using data from actual BEE investments in productive assets. The next chapter, therefore, describes the methodology and data sources used to analyze how the alternative loan products affect the financial feasibility of five actual proposed BEE company investments in productive assets in SA during 2003, compared to the FRL. It also evaluates which of these alternative loans would be preferred from the borrower's perspective and from the lender's perspective. Note that the PPL or balloon payment loan is not analyzed, as the financing terms would be similar to the FRL if the PPL is amortized over a 20-year loan period.

CHAPTER THREE

CASE STUDIES SHOWING HOW THE ALTERNATIVE LOAN PRODUCTS AFFECT BEE COMPANY BUSINESS PLANS AND THE LENDER

This chapter first describes the capital budgeting procedures used to compare the viability of the five proposed BEE investments in productive assets using the FRL versus the SPL, DP, GPL, and the DEFPL. It then describes the proposed investments and analyzes how these loans affect the expected profitability of the investments, and the lender's and borrower's cash flows.

3.1   Capital budgeting procedures

The four alternative loan products to promote the feasibility of broad-based BEE investments in productive assets were compared to the FRL using capital budgeting procedures. Spreadsheets were designed using the Microsoft Excel programme to study how the four alternative loans affect the profitability and nominal cash flows of each of the five BEE company business plans - designated A to E as the owners want to remain anonymous - and the lenders' nominal cash flows when compared to the FRL. Initially it was assumed that donor/grant funds from a wholesaler of development finance were lent to an intermediary (like a commercial bank), which in turn, could finance the five companies using any of the four alternative loans, with the lender's repayment to the wholesaler being via a FRL. It was then assumed that the lender could repay its borrowed funds to the wholesaler using the same loans, or combinations of them, that the lender had granted to these companies. The methodology followed to make these comparisons was the same for each company, and is discussed below using analysis of the FRL for Company A as an example.

The Net Present Value (NPV) and the Internal Rate-of-return (IRR) as profitability indicators were calculated for each of the five company business plans after incorporating the relevant loan repayment schedule. Following Barry *et al.* (1995:275), the NPV of an investment can be estimated by equation (3) as:

$$NPV = - INV + P_1/(1+i) + P_2/(1+i)^2 + ...+ P_N/(1+i)^N + V_N/(1+i)^N \qquad (3)$$

where INV = the initial equity investment, $P_{1...N}$ = the net cash-flow attributed to the investment that can be withdrawn each year, V_N = any salvage or terminal investment value in year N, N = the length of the planning horizon in years, and i = the interest rate or required rate-of-return.

The Project NPV for each company was the Present Value of the expected Real Net Cash Flows (PV of Real NCFs), less the Project's Initial Equity Investment. To illustrate how the PV of Real NCFs was computed, Company A's business plan is given in Appendix 2, section 2a, on page 79, for a 5-year FRL of R1 600 000, at a nominal annual interest rate of 9.3%. The first part of section 2a shows the FRL loan repayment schedule, with the Nominal Lender PV (inflows) being the PV of the loan repayment from the lender's perspective. The Nominal Lender PV (inflows) from the FRL was calculated by discounting Company A's total loan repayments at 9.3% (the lenders required rate of return, or RRR) for years 1-5 and then adding the annual results. Subtracting the initial loan of R1 600 000 from the Nominal Lender PV (inflows) gave the Lender's NPV, which was zero for all of the loans.

The second part of section 2a starts by estimating the annual Real Project Net Cash Flow Before Interest, Depreciation, Loss and Tax (NCFBIDLT). Expressing NCFBIDLT in real terms implies that increases in the Real Project NCFBIDLT were due to real increases in sales, and not inflation. The Real Project NCFBIDLT in year 1 was R665 590, assuming an expected annual CPIX for SA of 4%. The annual real depreciation allowance was subtracted from this figure to obtain the Real Net Cash-Flow Before Interest, Loss and Tax (Real NCFBILT). Charging depreciation influences annual cash flows because depreciation is tax deductible and so reduces taxable income (Huxham and Haupt, 2002/2003). Company A had a real depreciation allowance of R190 333 in each year, giving the annual Real NCFBILT in year 1 of R475 257. The Real Interest on the loan of R143 077 in year 1 was then deducted from Real NCFBITL to give annual Real Net Cash Flow Before Loss and Tax (Real NCFBLT) of R332 180. Note that following Gittinger (1982), annual nominal net cash flows, and interest and principal payments were expressed in real terms by dividing them by the compounding inflation factor (assuming a 4% CPIX) for that year. Companies in SA can deduct any accumulated loss brought forward from a previous year before calculating taxable income, and any loss incurred during the current year from any trade done in the current year (Huxham and Haupt, 2002/2003:194). For Company A, the accumulated real loss brought forward was zero and thus a positive annual Real NCFBT of R332 180 was subject to tax in year 1.

Currently, SA companies must pay a basic tax rate of 30% (SAICA Legislation Handbook, 2002/2003). This implies a Real tax of R99 654 in year 1, and Real Net Cash Flow After Tax (Real NCFAT) of R232 526. The real depreciation allowance of R190 333 was added back to Real NCFAT (depreciation involves no cash outflow) to estimate Real Net Cash Flow After Tax plus Real Depreciation (Real NCFAT + Real Dep) of R422 859. Finally, the Real Principal of R255 533 was subtracted to get the Real NCF of R167 326. The Real NCF was then discounted using a 5.3% real discount rate (5% time value of money plus a 0.3% risk premium) to get a PV of Real NCFs of R158 904 for year 1. This procedure was repeated for years 2-5 and the resultant PVs were then summed to give a total PV of Real NCFs of R1 533 973. Table 1 on page 36 shows that if the Initial Equity Investment of R600 000 is subtracted from this figure, the estimated Project NPV is R933 973. The same calculations were repeated (see sections 2b to 2e of Appendix 2 on pages 80-84) for each of the four alternative loans for Company A and the other four companies. The results are compared in section 3.3 of this dissertation.

The IRR, or the interest rate that equates the NPV of a projected series of net cash-flow payments to zero, was calculated for each company for each loan type using the Microsoft Excel programme and following Ross *et al.* (2001) as:

$$0 = -INV + P_1/(1+i) + P_2/(1+i)^2 + \ldots + P_N/(1+i)^N + V_N/(1+i)^N \qquad (4)$$

The IRR on equity for Company A using the FRL was 41% (IRRs for the five companies are summarized in Table 1 on page 36). The return on equity (ROE), rather than the return on assets (ROA) is used to assess the NPV and IRR because (see Barry *et al.* (1995:286-287)): (1) The ROA measures profitability before interest is paid to the lender, while the ROE measures profitability after this cost; (2) The ROE forecasts the net cash outflows and then discounts these payments to the present value using the firm's cost of equity as the discount rate. This approach accounts for each investment's method of financing and assumes that an investment's financing costs may strongly influence the firm's leverage and the cost of capital; and (3) The ROE is more applicable for smaller non-corporate firms - like the five BEE companies - whose leverage may fluctuate over time, and thus the ROE looks specifically at the factors affecting cash-flows.

The nominal interest rates used before adjusting the PV of NCFs to real terms were 9.3% and 5.8% for the lender and the wholesaler, respectively. Development finance wholesalers in SA, like the Land

Reform Empowerment Fund (LREF), offer loan finance on average at the current three-month Jibar less 1-3% (Khula Enterprise Finance Limited, 2004). The Jibar is the wholesale interest rate that banks lend to each other. If Company A was given the three-month Jibar minus 2% for the three-month Jibar of 7.8% at the time of writing, the lender would pay an interest rate of 5.8%. The lender will add on a margin of about 3.5% (the difference between the prime overdraft lending rate and the repo rate) to get an interest rate of 9.3% (Khula Enterprise Finance Limited, 2004). The 9.3% consists of a 4% average annual expected rate of inflation, and a 5.3% margin to account for the time value of money, and a risk premium.

The third part of section 2a of Appendix 2 on page 79, shows how the lender's cash flows are affected by the terms that the wholesaler offers on the R1 600 000 loan. The total nominal annual repayments *by the lender* if the wholesaler provides a FRL at a nominal annual interest rate of 5.8% are R377 770 by equation (1). The nominal principal again increases, and the nominal interest charge decreases annually until year 5. The Lender PV (outflows) as expected is R1 600 000. The same methodology as described for the three parts of section 2a of Appendix 2 for Company A's FRL was repeated for Company A assuming that the lender granted a SPL, DP, 4YRGPL, and DEFPL0-1, *with the wholesaler granting the lender the same type of loan* (see sections 2b to 2e of Appendix 2 on pages 80-84). The methodology was then adjusted to simulate the *effects of the wholesaler granting the lender a different type of loan to that granted by the lender to Company A* for all possible loan combinations (for example, the lender grants a SPL but repays the wholesaler via a FRL or a DP, etc.). This process was then repeated for each of the other four BEE company business plans (see Appendices 4 to 11, on pages 87-143), and the results are reported and compared in section 3.3.

3.2 Collection of relevant company data

Business plans for five BEE companies in KwaZulu-Natal were sourced from credit applicants at ABSA Bank and Ithala in 2003. The loan terms, interest rates, loan amounts, and characteristics of each firm are described below using data provided by Bradley (2003) and Cillié (2003). Loan terms and amounts vary, and the companies have different assumed current rates of return on equity, depending on the business type. Companies A and C are agribusinesses with a higher expected current rate of return of 8% on machinery investments (see section 2.2.4), while companies B, D, and E invest in farmland with a lower expected annual rate of return of 5% (see section 1.1). The five business plans

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may not be representative (in a statistical sense) of all BEE firms in KwaZulu-Natal, but were used because they were readily available.

3.2.1 Company A

Company A is a black-owned fishing company, and the shareholders have been active in the SA fishing industry for 30 years. The company's main objective is to expand its interest in the fishing industry and to provide sustainable employment to PDIs. Company A wants to buy a new fishing vessel for R2.2 million using R600 000 (30%) of shareholders' equity, and R1.6 million debt to be repaid over five years. The company has strong positive annual Real NCFBIDLTs over the proposed life of the project. These generate positive annual Real NCFs over the five years for all of the loans.

3.2.2 Company B

Company B is an equity share scheme (ESS) on a beef farm in the KwaZulu-Natal Midlands. The empowerment project includes the current owner's partnership and 43 labour tenant families (of which 14 members are employed full-time on the farm) who purchased part of the farm with government Settlement/Land Acquisition grants. The ESS firstly aims to ensure sustainable use of the farm by allowing the labour tenants to exchange cattle for financial equity. Secondly, it seeks to increase the wealth of the shareholders through specialist management of a larger herd on the farm. Lastly, it aims to ensure future business opportunities for the labour tenants by forming a well-functioning community-based organization, and transferring the necessary skills to administer it. Company B requires a loan of R605 000 over eight years to buy breeding cattle, and has pledged breeding cows as collateral. The company has a markedly negative Real NCFBIDLT for the first year and then positive annual real NCFBIDLTs for years 2-8 of the project. In year 8 the real salvage value of the breeding herd (assumed to be R605 000) is added back, with an owner's equity contribution of R293 360. The result is negative annual real NCFs for FRL, DP, and DEFPL0-1 for the first three years, and for the first two years for the GPL and SPL (the latter has a marked negative NCF in year 8).

3.2.3 Company C

Company C is a beef operation that wants to expand in size and build a farm abattoir. One of the major

advantages for Company C is that it will be able to use livestock from the farming operation in the abattoir, and thus reduce the input costs of the new business. The expansion will create eight new employment opportunities for PDIs. The construction of the abattoir will require R670 000 in debt financing over 10 years. The company has strong annual positive Real NCFBIDLTs over the proposed life of the project. These generate positive annual Real NCFs over the 10 years.

3.2.4 Company D

Company D requires a R1.5 million loan over 15 years to buy a dairy farm. The capital needed for the entire project is R5.8 million, with the balance of R4.3 million to be financed through a cash contribution and government LRAD grants (see section 2.3.2 on page 28). The project is an empowerment partnership in a company structure with equal shares between a very experienced businessman (50%) and 37 PDIs (50%). The main farming activities are the dairy and the production of wine grapes. Wheat will be produced on surplus land available and there are plans to process milk into value-added products like cheese, butter and yoghurt. In the first year, the dairy will be the main focus of production, with a long-term goal to extend the dairy and grape enterprises. The company has a markedly negative annual Real NCFBIDLTs for the first year and then positive annual Real NCFBIDLTs for years 2-15. In year 15 the real salvage value of the dairy farm (R5.8 million less accumulated real depreciation of R774 995) is added back. The result is negative annual Real NCFs in years 1-5 for the FRL and DP, and for years 1-4 for the GPL, DEFPL0-1 and SPL (which has a substantial negative NCF in year 15).

3.2.5 Company E

Company E has purchased a 'medium-scale' commercial sugar-cane farm in KwaZulu-Natal using a GPL from Ithala. This company will be highly geared as it requires a loan of R1 110 499 (95% of the purchase price) over 20 years. The owner has off-farm income from a small cane contracting business, which may help to meet the loan repayments in the early years of operation. The company has markedly negative annual Real NCFBIDLTs for the first six years, after which positive annual Real NCFBIDLTs are projected for the remaining 14 years. In year 20 the real salvage value of the sugar farm (R1 168 946) is added back, with an owner's equity contribution of R58 447. This causes

negative annual Real NCFs for years 1-6 for all loans except the GPL, which has negative flows for the first five years.

3.3   Data analysis

Table 1: Impact of alternative loans on the NPV and IRR for each selected BEE company investment, KwaZulu-Natal, 2003

Company and Asset Investment	Loan Type	Loan Code	Project NPV (Rands)	Project IRR (%)
A Fishing Vessel	Fixed Repayment Loan	FRL	933 973	41
	Single Payment Loan	SPL	994 840	70
	Decreasing Payment Loan	DP	927 769	39
	Four-Year Graduated Payment Loan	4YRGPL	959 969	42
	One-Year Deferred Payment Loan	DEFPL0-1	917 956	53
B Breeding Cattle	Fixed Repayment Loan	FRL	24271	6
	Single Payment Loan	SPL	52175	7
	Decreasing Payment Loan	DP	20508	6
	Seven-Year Graduated Payment Loan	7YRGPL	135106	9
	One-Year Deferred Payment Loan	DEFPL0-1	107282	8
C Abattoir	Fixed Repayment Loan	FRL	2 344 827	145
	Single Payment Loan	SPL	2 383 792	165
	Decreasing Payment Loan	DP	2 336 325	136
	Nine-Year Graduated Payment Loan	9YRGPL	2 363 601	147
	One-Year Deferred Payment Loan	DEFPL0-1	2 339 389	167
D Dairy Farm	Fixed Repayment Loan	FRL	-2314932	1
	Single Payment Loan	SPL	-2267330	1
	Decreasing Payment Loan	DP	-2317124	1
	14-Year Graduated Payment Loan	14YRGPL	-1662071	2
	One-Year Deferred Payment Loan	DEFPL0-1	-1944350	2
E Sugarcane Farm	Fixed Repayment Loan	FRL	-495239	2
	Single Payment Loan	SPL	-481195	2
	Decreasing Payment Loan	DP	-462902	3
	19-Year Graduated Payment Loan	19YRGPL	238534	7
	One-Year Deferred Payment Loan	DEFPL0-1	-131606	4

Table 2: Impact on the lender's nominal cash flows when the lender on-lends wholesale funds to the selected BEE companies using the four alternative loans, but repays the wholesaler via the FRL, KwaZulu-Natal, 2003

Company and Asset Investment	Loan Code	Total nominal cash inflows from the borrower for each loan (Rands) (1)	Total nominal cash outflows paid by lender to the wholesaler for FRL (Rands) (2)	Aggregate *net* total nominal cash inflow for lender [(1) – (2)] (Rands)	Years when lender's nominal cash flows are positive	Number of years that lender's nominal cash flows are positive
A Fishing Vessel	FRL	2 072 774	-1 888 850	183 924	Yrs1-5	5
	SPL	2 344 000	-1 888 850	455 150	Yr5	1
	DP	2 046 400	-1 888 850	157 550	Yrs1-4	4
	4YRGPL	20702774	-1 888 850	183 924	Yrs1-5	5
	DEFPL0-1	2 173 434	-1 888 850	284 584	Yrs2-5	4
B Breeding Cattle	FRL	884 238	-773 256	110 982	Yrs1-8	8
	SPL	1 055 120	-773 256	281 864	Yr 8	1
	DP	858 193	-773 256	84 937	Yrs1-6	6
	7YRGPL	884238	-773 256	110 982	Yrs1-8	8
	DEFPL0-1	928988	-773 256	155 732	Yrs2-8	7
C Abattoir	FRL	1 057 821	-901 709	156 112	Yrs1-10	10
	SPL	1 293 100	-901 709	391 391	Yr 10	1
	DP	1 012 705	-901 709	110 996	Yrs1-7	7
	9YRGPL	1 057 281	-901 709	156 112	Yr1-10	10
	DEFPL0-1	1 112 780	-901 709	211 071	Yrs2-10	9
D Dairy Farm	FRL	2 840 946	-2 286 484	554 462	Yrs1-15	15
	SPL	3 592 500	-2 286 484	1 306 016	Yr 15	1
	DP	2 616 000	-2 286 484	329 516	Yrs1-10	10
	14YRGPL	2 840 946	-2 286 484	554 462	Yrs1-15	15
	DEFPL0-1	2 997 866	-2 286 484	711 382	Yrs2-15	14
E Sugarcane Farm	FRL	2 485 144	-1 428 721	1 056 423	Yrs1-20	20
	SPL	3 175 884	-1 428 721	1 747 163	Yrs1-20	20
	DP	2 194 802	-1 428 721	766 081	Yrs1-13	13
	19YRGPL	2 485 144	-1 428 721	1 056 423	Yrs1-20	20
	DEFPL0-1	2 630 155	-1 428 721	1 201434	Yrs2-20	18

Table 3: Impact on the lender's nominal cash flows when the lender on-lends wholesale funds to the selected BEE companies using the four alternative loans, and repays the wholesaler via the same loan type, KwaZulu-Natal, 2003

Company and Asset Investment	Loan Code	Aggregate *net* total nominal cash inflow for lender (Rands)	Years when lender's nominal cash flows are positive	Number of years that lender's nominal cash flows are positive	Nominal interest rate subsidy that the wholesaler must finance (Rands)
A	SPL	280 000	Yr1-5	5	0
Fishing	DP	168 000	Yr1-5	5	0
Vessel	4YRGPL	183 924	Yr1-5	5	-43 586
	DEFPL0-1	228 265	Yr1-5	5	0
B	SPL	169 400	Yr1-8	8	0
Breeding	DP	95 288	Yr1-8	8	0
Cattle	7YRGPL	110 982	Yr1-8	8	-88 812
	DEFPL0-1	132 047	Yr1-8	8	0
C	SPL	234 500	Yr1-10	10	0
Abattoir	DP	128 975	Yr1-10	10	0
	9YRGPL	156 112	Yr1-10	10	-35 621
	DEFPL0-1	182 964	Yr1-10	10	0
D	SPL	787 500	Yr1-15	15	0
Dairy	DP	420 000	Yr1-15	15	0
Farm	14YRGPL	554 462	Yr1-15	15	-420 208
	DEFPL0-1	637 058	Yr1-15	15	0
E	SPL	777 314	Yr1-20	20	0
Sugarcane	DP	408 090	Yr1-20	20	0
Farm	19YRGPL	580 183	Yr1-20	20	-425 735
	DEFPL0-1	660 780	Yr1-20	20	0

3.3.1 Effects of alternative loan types on investment profitability and the borrower's and lender's real and nominal cash flows

Table 1 on page 36 compares the impact of the FRL and the four alternative loans on the profitability (NPV and IRR) of each company investment. The lender (intermediary) that on-lends the alternative loans, after sourcing funds from the wholesaler, to each company has zero NPV for each loan product. This implies that the lender earns its RRR for each alternative loan. Table 2 on page 37 evaluates the impact on the lender's nominal cash flows when it on-lends wholesale funds using the four alternative loans, but repays the wholesaler using the FRL. Finally, Table 3 on page 38 shows how the lender's nominal cash flows are affected when it on-lends alternative loan products and repays the wholesaler using the same loan type. Tables 1-3 thus summarize the key results of the data analyses presented in Appendices 2-11 on pages 79-143. Sections 3.3.1.1 to 3.3.1.5 highlight the results for each company. Given that these results are reported for a wide range of loan types, section 3.4 summarizes the main findings.

3.3.1.1 Results for Company A

In Table 1, the SPL has the largest NPV of R994 840 and the highest IRR (70%) for Company A. The differences between these figures and the NPV and IRR for the FRL were R60 867 and 29 percentage points, respectively. In Table 2, the lender would receive the highest total nominal return of R455 150 by offering the SPL and repaying the wholesaler via the FRL, but the SPL is unlikely to be used by commercial banks in this case due to negative nominal cash flows from years 1-4. Table 3 shows that if the lender could repay the wholesaler using the SPL instead of the FRL, the cash-flow problem could be transferred to the wholesaler. The lender would have five years of positive nominal cash flows but earn a lower total nominal return of R280 000. Based on Appendix 3, on pages 85-86 if the lender grants Company A the SPL and repays the wholesaler using any alternative loan to the FRL, only repayment via the SPL gives the lender five years of positive cash flows.

Company A scores the second largest project NPV (R959 969) using the 4YRGPL, while the IRR ranked the 4YRGPL third (42%). These figures differ by R25 996 and one percentage points, respectively, compared to the FRL. In Table 2, the lender also has five years of positive nominal cash flows when granting the 4YRGPL and repaying borrowed funds using the FRL. Table 3 estimates five

years of positive nominal cash flows when the wholesaler could be repaid via the 4YRGPL. Lenders would only use this loan if wholesalers could mobilize donor/grant funds to finance the graduated interest subsidy of R43 586 (see section 2.2.4, and Appendix 2d on page 82). The total nominal interest subsidy of R43 586 in this example would be equivalent to reducing the loan interest rate by 1.3 percentage points, and the lender would require the wholesaler to charge an initial interest rate of 4.5% in year 1, while the wholesaler would increase the annual interest rate at the expected average inflation rate of 7% up to an interest rate of 5.8% in year 5. The 4YRGPL thus helps to alleviate the cash-flow problem by the difference between the NPV of the FRL and the NPV of the 4YRGPL.

Note that the wholesaler's graduated interest rates increase at a lower annual percentage than the graduated interest rate that the lender repays on funds to the wholesaler. The reason is that the total subsidy would be absorbed at a much faster rate in the first few years if the same graduation rate were applied, as the lender charges a higher interest rate (9.3%) than the wholesaler (5.8%) does. Appendix 3 on page 86 shows that the difference between the lender's nominal cash inflows and outflows when granting the 4YRGPL whilst repaying the wholesaler using any of the alternative loans, was positive for five years for the 4YRGPL and the DP, with the DP giving the lender a total nominal return of R194 374.

The conventional FRL gives Company A's fishing vessel investment the third largest NPV (R933 973) and the fourth highest IRR (41%). The lender (see Table 2) would have five years of positive nominal cash flows if the wholesaler was repaid via the FRL. Appendix 3 on page 85 suggests that if all the alternative loan combinations were considered to repay the wholesaler when a FRL was granted to the client, the DP and the 4YRGPL also give the lender five years of positive cash flows, with the DP having the highest total nominal return (R194 374). The DP produced the fourth largest NPV of R927 769, and the fifth largest IRR of 39%. These figures differ from the NPV and IRR of the FRL by −R6 204 and −2 percentage points, respectively. Table 2 shows that if the lender granted a DP but repaid the wholesaler using the FRL there would be positive nominal cash flows in years 1-4, and a negative cash flow in year 5. Table 3 and Appendix 3 on page 86, show that the lender has five years of positive nominal cash flows by repaying the wholesaler via the DP, and would earn a total nominal return of R168 000. The DEFPL0-1 had the fifth largest NPV (R917 956), and the second highest IRR (45%). The differences between the NPV and IRR for the DEFPL0-1 compared to those of the FRL were −R16 017 and 12 percentage points, respectively. In Table 2, the lender has positive nominal cash

flows from years 2-5 when repaying the wholesaler under the FRL. If the wholesaler offered alternative loans, only the DEFPL0-1 gives five years of positive nominal cash flows for the lender (total nominal return of R228 265 in Appendix 3 on page 86).

Figure 3 below compares the distribution of Company A's annual Real NCFs for the FRL and the alternative loans, while Figure 4 on page 42 compares the net annual difference between these distributions.
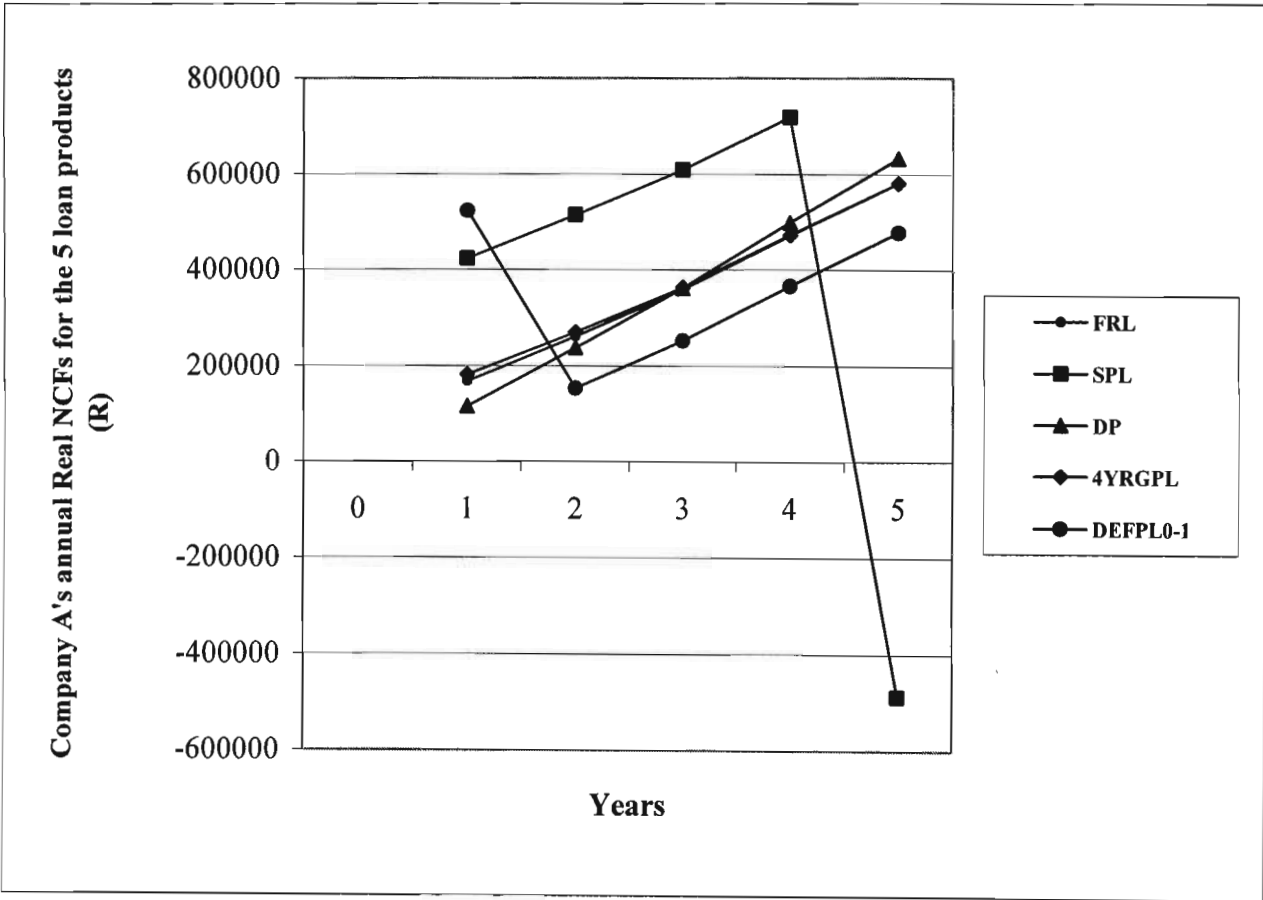
Figure 3: Distribution of Company A's annual Real NCFs for the FRL, and for each alternative loan.

Figures 3 and 4 shows that the SPL has smaller initial real interest repayments from years 1-4 when compared to the FRL. These lower initial payments ease liquidity stress in the early years after asset purchase, and give Company A higher annual Real NFCs. The SPL, however, requires a balloon repayment of both real interest and real principal in year 5 of R1 977 514 which decreases Company

A's Real NCFs. The DP requires higher initial real loan repayments in year 1 (R52 159 more than the FRL) that do not ease the liquidity problem in the early years of operation. The DP however, has a lower total real repayment throughout the length of the loan period (R13 098 less than the FRL) and thus increases Company A's Real NCFs. The 4YRGPL with diminishing, finite interest-rate subsidy showed strong potential to ease the borrower's liquidity stress. The 4YRGPL used to purchase the fishing vessel had total Real NCFs of R28 450 more than the FRL. The DEFPL0-1 produced stronger initial cash flows, but lower Real NCFs for years 2-5 than the FRL, DP and 4YRGPL.
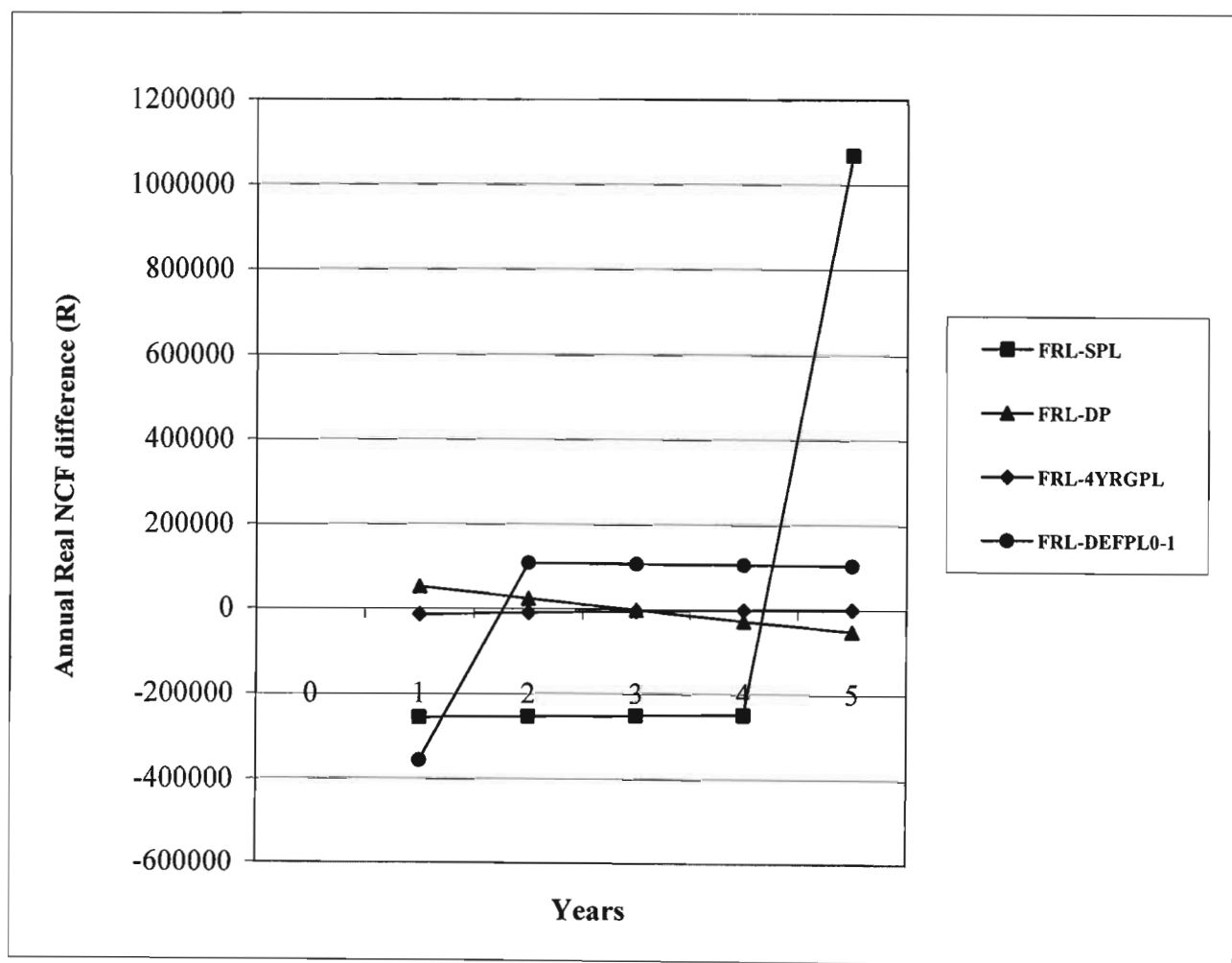
Figure 4: Rand differences between Company A's annual Real NCFs for the FRL and Company A's annual Real NCFs for each alternative loan.

3.3.1.2 Results for Company B

The largest investment NPV (R135 106) and IRR (9%) are recorded by the 7YRGPL. The difference between the 7YRGPL NPV and the FRL NPV was R110 835, while the difference between the 7YRGPL IRR and the FRL IRR was three percentage points. In Table 2, the lender has positive net cash inflows for all eight years of the 7YRGPL and FRL loans if the wholesaler is repaid using the FRL, although the 7YRGPL means that a donor incurs a nominal interest subsidy cost of R88 812. To calculate the 7YRGPL, it was assumed that the lender would start at an interest rate of 5% and graduate to 9.3% over the eight years. The 7YRGPL thus had to be graduated at an average expected rate of inflation of 9%, rising from 5% in year 1 to 5.46% in year 2, and so on (see Appendix 4d on page 90). The total accumulated subsidy would be equivalent to reducing the loan interest rate by about four percentage points. In this scenario, the lender would require an initial interest rate of 1.65% from the wholesaler in year 1, and the wholesaler would graduate the interest rate by 20% per annum up to 5.8% in year 8 to ensure that the accumulated nominal subsidy of R88 812 could be realised by the BEE project. Further calculations using equation (2) indicate that at the expected annual rate of inflation in SA of 4%, a 16-year GPL (16YRGPL) would be more appropriate for graduating Company B's interest payments (see Appendix 4d1 on page 92). The accumulated nominal subsidy under these conditions would increase to R194 030 (much improved liquidity position for Company B), with the project NPV and IRR rising to R786 205 and 17%, respectively.

The DEFPL0-1 has the second highest NPV (R107 282) and IRR (8%), which is R83 011 and two percentage points more than the FRL NPV and FRL IRR respectively. The lender gains positive nominal cash flows from years 2-8 (see Table 2) when repaying the wholesaler under the FRL. Table 3 and Appendix 5 on page 97 show that only repayment to the wholesaler using also the DEFPL0-1 generated eight years of nominal positive cash flows, and a total nominal return of R132 047, for the lender. The SPL gave the third highest NPV and IRR of R52 175 and 7%, differing from the FRL NPV by R27 904 and the FRL IRR by one percentage point. In Table 2, the lender granting a SPL loan while repaying the wholesaler via the FRL would have negative nominal cash flows from years 1-7. Based on Table 3 and Appendix 5 on page 96, the lender would gain eight years of positive nominal cash flows by also repaying the wholesaler via the SPL, and have a total nominal return of R169 400. The FRL and the DP did not alleviate liquidity stress as constructively as the other loans, recording the two lowest NPVs and IRRs of R24 271 and 6% for the FRL and R20 508 and 6% for the DP,

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respectively. The lender would also experience eight years of positive nominal cash flows if the wholesaler was repaid via the FRL or the 7YRGPL for the FRL. The DP loan would have eight years of positive nominal cash flows if the lender repaid the wholesaler using the DP (see Appendix 5 on page 97).

Figure 5 below compares the distribution of Company B's annual Real NCFs for the FRL and the alternative loans, while Figure 6 on page 45 compares the net annual difference between these distributions.
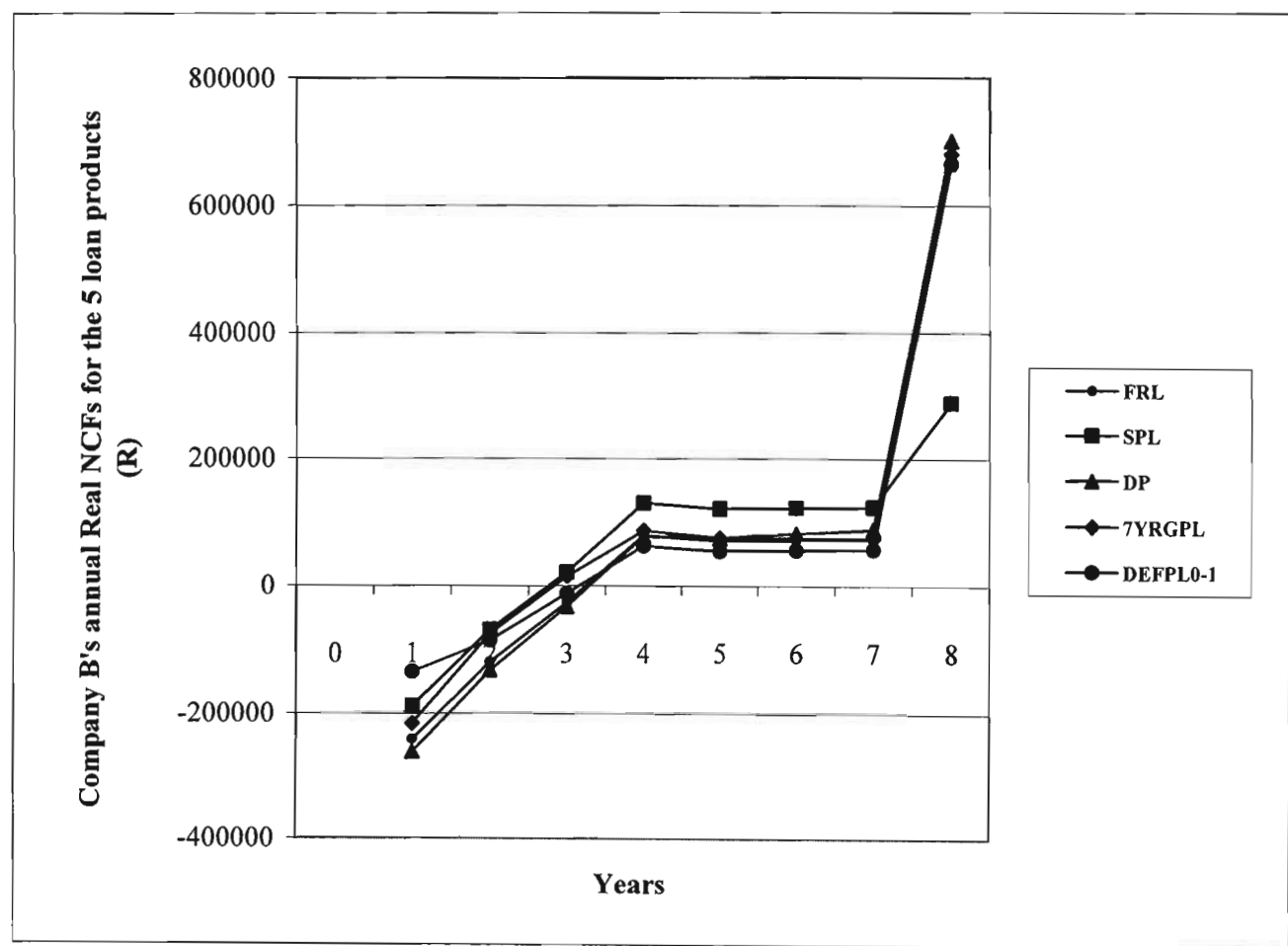
Figure 5: Distribution of Company B's annual Real NCFs for the FRL, and for each alternative loan.

Figures 5 and 6 shows that the 7YRGPL with diminishing, finite interest-rate subsidy on average best helped to ease borrower's liquidity stress, with the 7YRGPL having total Real NCFs of R125 604 higher than the FRL. The DEFPL0-1 gave the least negative initial Real NCF due to the one-year

deferment of principal and interest repayments, and had total Real annual NCFs of R72 171 more than the FRL over the 8-year loan period. The DP had the lowest initial annual Real NCFs, which gradually increased over the 8-year term loan. The FRL, SPL, DP, 7YRGPL, and the DEFPL0-1 had a similar Real NCF pattern, however, the SPL requires a real balloon repayment of both interest and principal in year 8 of R483 180, which markedly decreased Company B's total Real NCFs.
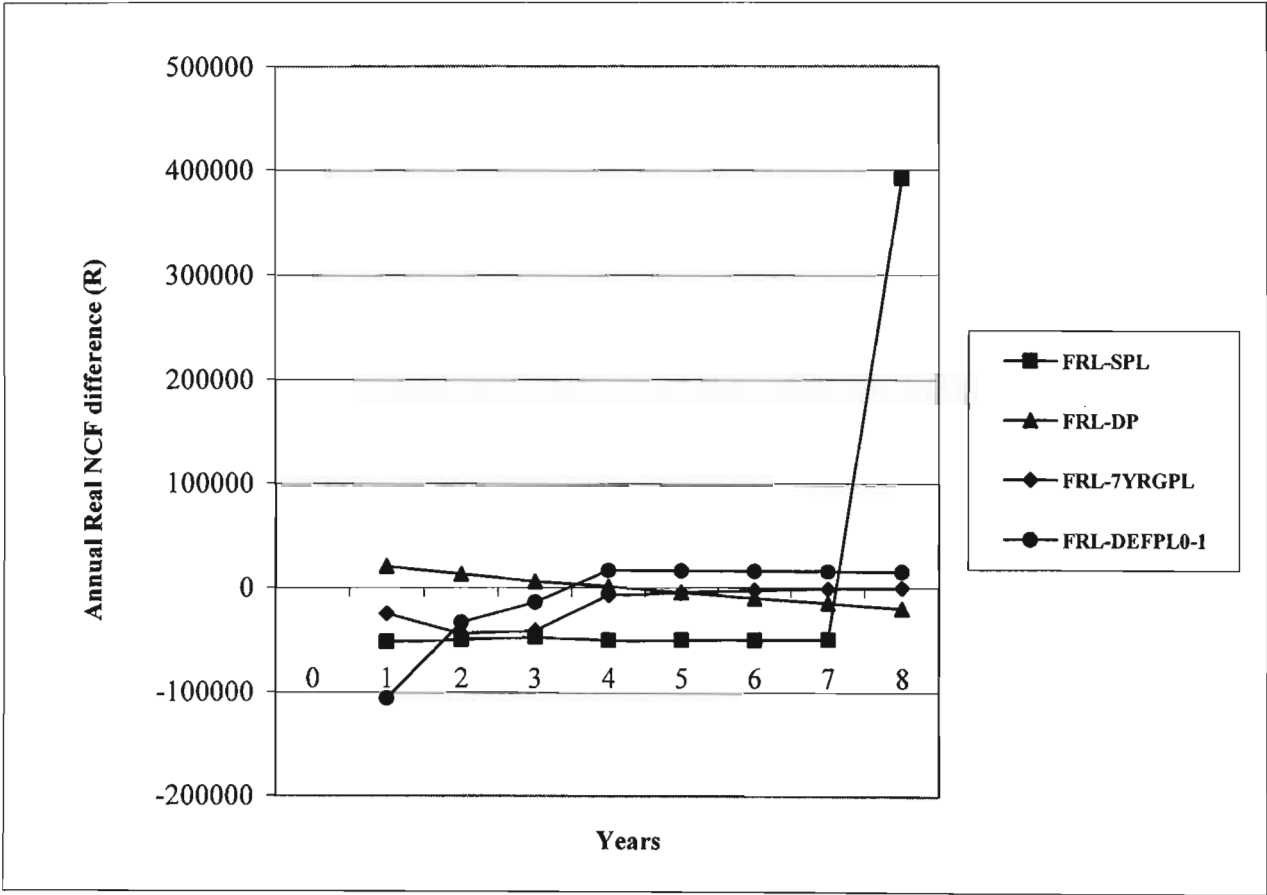
Figure 6: Rand differences between Company B's annual Real NCFs for the FRL and Company B's annual Real NCFs for each alternative loan.

3.3.1.3 Results for Company C

The SPL gave the largest NPV (R2 383 792), and second highest IRR (165%), which are above the FRL figures by R38 965 and 20 percentage points, respectively. The lender granting a SPL and repaying the wholesaler with the FRL would have negative nominal cash flows from years 1-9. In

Appendix 7 on page 106, the lender has 10 years of positive nominal cash flows when repaying the wholesaler via the SPL, and earns a total nominal return of R234 500 (which was also the most profitable combination for the lender when all options were considered). The second largest project NPV (R2 363 601) occurs for the 9YRGPL, while the IRR ranked the 9YRGPL third (147%). These figures are R18 774 and two percentage points, respectively, higher than the FRL. The lender again has 10 years of positive nominal cash flows offering the 9YRGPL and repaying the wholesaler via the FRL. The lender also has 10 years of positive nominal cash flows when repaying the wholesaler via the 9YRGPL and the DEFPL0-1, but the 9YRGPL incurs a nominal interest subsidy cost to the wholesaler of R35 621.

For the 9YRGPL it was assumed that the lender would graduate the loan interest rate from a nominal 8% to 9.3% over the 10-year loan. This meant graduating the 9YRGPL interest rate at an annual average rate of 2%, with the interest rate rising from 8% in year 1 to 8.13% in year 2. The total accumulated subsidy would be equivalent to a loan interest rate reduction of about one percentage point. In this scenario, the lender would require an initial interest rate of 4.48% from the wholesaler in year 1, and then graduate the interest rate at an average annual rate of 3% up to 5.8% in year 10 to ensure that the accumulated nominal subsidy of R35 261 could be realised by the BEE project (see Appendix 6d on page 102). Further calculations using equation (2) indicate that at the expected annual rate of inflation in SA of 4%, a 4-year GPL (4YRGPL) would be more appropriate for graduating Company C's interest payments and not 9 years. The accumulated nominal subsidy under these conditions would thus decrease to R20 648, with a slight decrease in the project NPV to R2 356 989.

The conventional FRL gave the third largest NPV (R2 344 827) and the fourth highest IRR (145%). The lender would have 10 years of positive nominal cash flows if the wholesaler was repaid via the FRL, DEFPL0-1, or the 9YRGPL, with the FRL and 9YRGPL giving the highest total nominal return of R156 112. The lender would, however probably prefer to use the 9YRGPL as it decreases Company C's risk profile. The DEFPL0-1 and the DP recorded the fourth and fifth largest NPV of R2 339 389 and R2 336 325, respectively. When the other loan products could be used to repay the wholesaler, only the DEFPL0-1 generated 10 years of nominal positive cash flows for the lender, while with the DP, the lender has 10 years of positive nominal cash flows only if the wholesaler was repaid via the DP (see Appendix 7 on page 106).

Figure 7 below compares the distribution of Company C's annual Real NCFs for the FRL and the alternative loans, while Figure 8 on page 48 compares the net annual difference between these distributions.
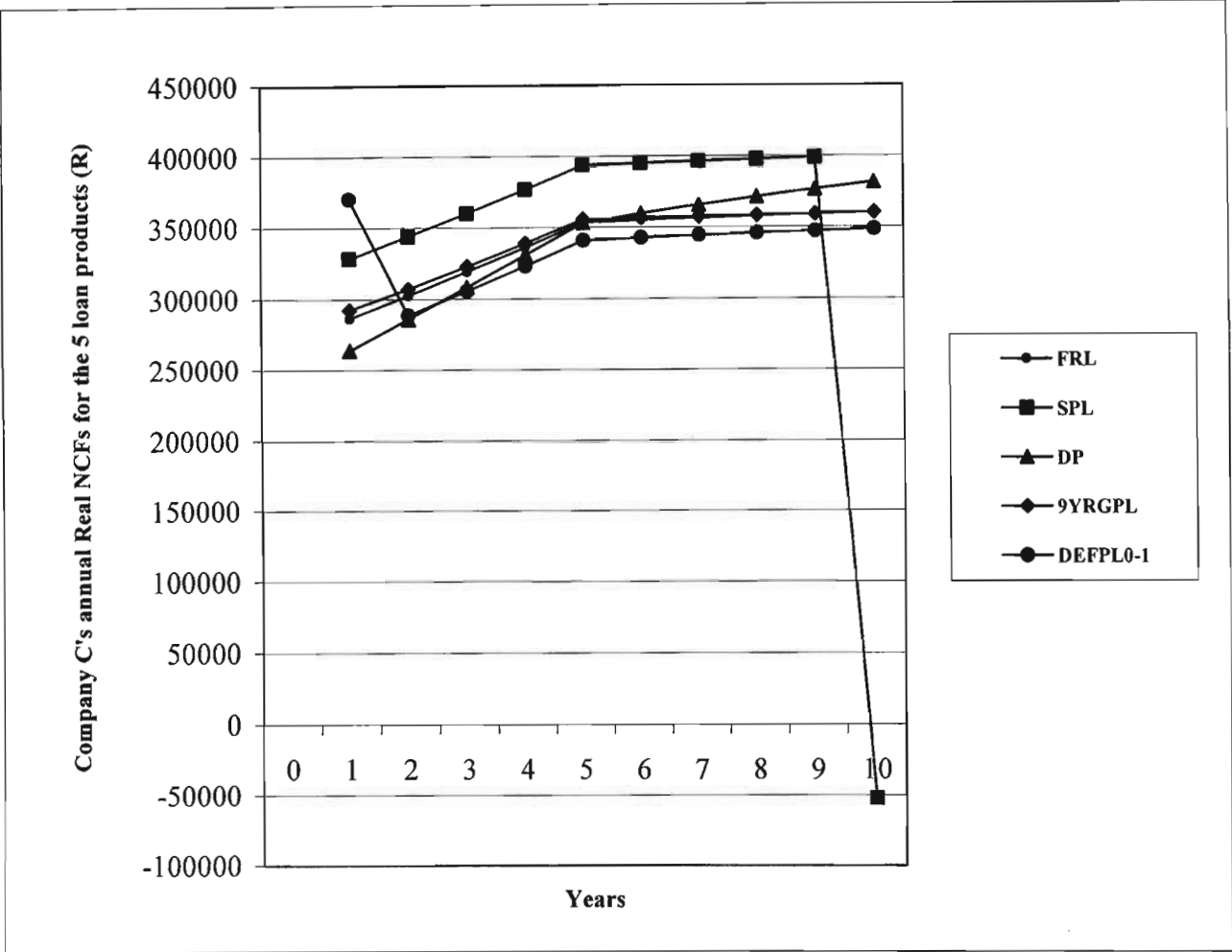
Figure 7: Distribution of Company C's annual Real NCFs for the FRL, and for each alternative loan.

In Figures 7 and 8, the DEFPL0-1 had the strongest initial Real NCF of R370 087 in the first year when compared to the FRL that had a Real NCFs of R286 347. The DEFPL0-1 requires that any accumulated interest and principal that is deferred in year 1 must be reimbursed to the lender and thus the DEFPL0-1 Real NCFs weakened in the second year, although they gradually increased from years 1-3. The SPL only requires real interest repayments from years 1-9, and thus gave the next highest initial Real NCFs in the year 1 of R328 147 (compared to the FRL initial annual Real NCF of

R286 347). The SPL requires a real balloon repayment of both interest and principal in year 10 of R494 722 and thus reduced Company C's Real NCFs when compared to the other loan products.
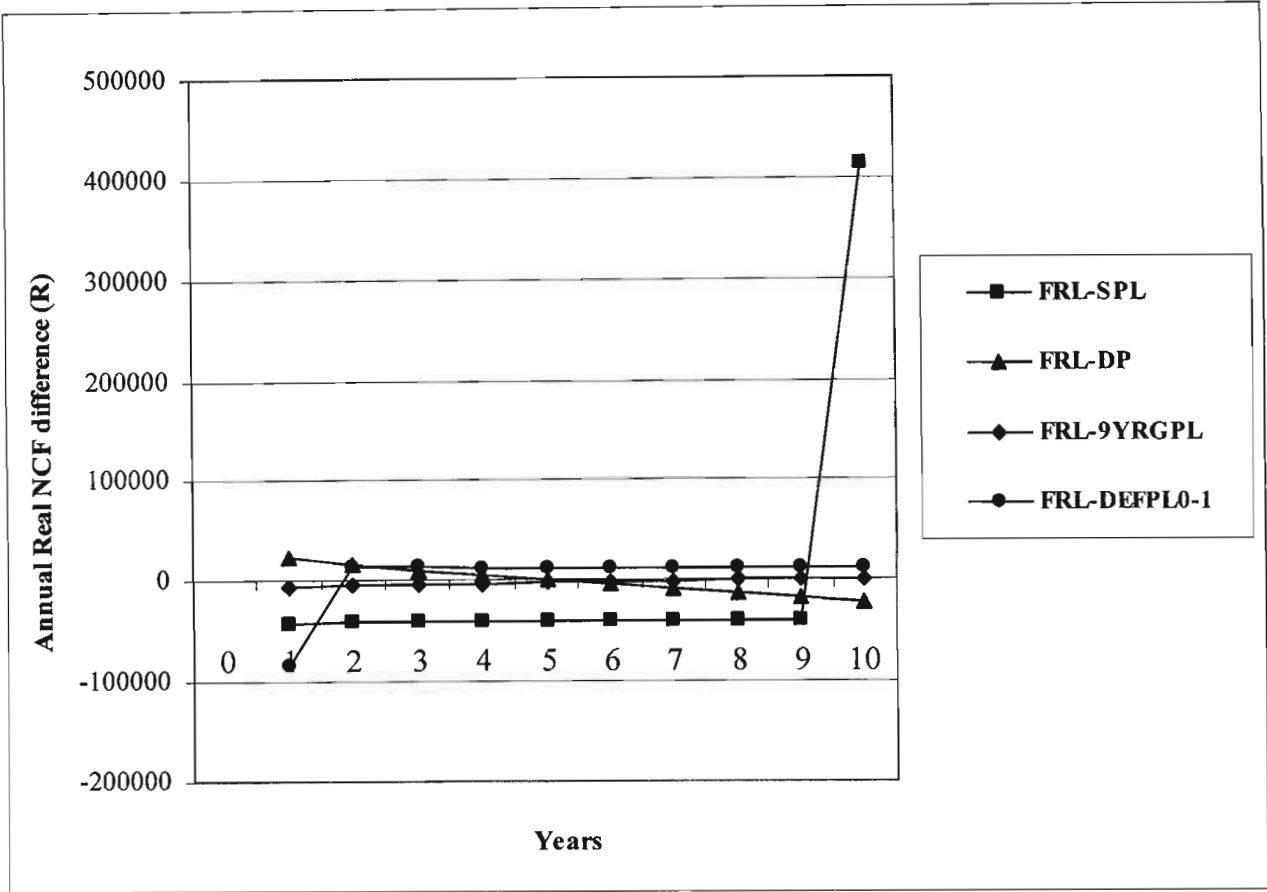
Figure 8: Rand differences between Company C's annual Real NCFs for the FRL and Company C's annual Real NCFs for each alternative loan.

3.3.1.4 Results for Company D

The least negative project NPV (-R1 662 071) and IRR (2%) for Company D in Table 1 is for the 14YRGPL, a difference of R652 861 and one percentage point versus the FRL NPV and FRL IRR, respectively. The negative NPV was due to poor projected operating NCFs that the loans that alleviate financial stress could not fully offset. The lender has positive nominal net cash inflows for all 15 years if the wholesaler is repaid using the FRL, DP, DEFPL0-1, or 14YRGPL. However, the 14YRGPL implies a nominal interest subsidy cost of R420 208 for the wholesaler. The lender would have to graduate the loan interest rate for the 14YRGPL from a nominal 5% to 9.3% over 15 years, implying

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an average expected annual rate of inflation of 5% (the interest rate rises from 5% in year 1 to 5.23% in year 2, and so on) (see Appendix 8d on page 114). The total nominal accumulated subsidy of R420 208 represents a loan interest rate reduction of four percentage points. In this scenario, the lender would require the wholesaler to charge 1.6% in year 1, and the wholesaler would graduate this interest rate at an average annual inflation rate of 10% up to 5.8% in year 15 to ensure that the subsidy could be realised by the BEE project. The 14YRGPL thus helps to alleviate the cash-flow problem by the difference between the NPV of the FRL and the NPV of the 14YRGPL. The rate of expected annual inflation in this example of 5% exceeds the expected rate of inflation in SA of about 4%. Further calculations using equation (2) indicated that a 16YRGPL would be more appropriate to graduate Company D's interest rate payments. This implies a loan term of 17 years and not 15 years, an accumulated nominal subsidy of R481 067, and an increase in the project NPV to –R1 576 707 (less negative NPV by R738 225 when compared to the FRL) with an IRR of 3%.

The DEFPL0-1 scored the second least negative NPV (–R1 944 350) and IRR (2%), a difference of –R370 582 and one percentage point when compared to the FRL NPV and FRL IRR (see Appendix 8e on page 120). The lender has positive nominal cash flows from years 2-15 if repaying the wholesaler under the FRL. In Table 3, and Appendix 9 on pages 122-125, only repaying the wholesaler via the DEFPL0-1 gives 15 years of nominal positive cash flows for the lender. The SPL gave the next best NPV of –R2 267 330 and IRR (1%), a difference compared to the FRL NPV of R47 603. The lender granting a SPL while repaying the wholesaler using the FRL would have negative nominal cash flows for 14 years from year 1-14. Lenders would only gain 15 years of positive nominal cash flows if they could repay the wholesaler using the SPL. The FRL had the fourth lowest NPV of –R2 314 932 and IRR (1%), with the lender having 15 years of positive nominal cash flows if the wholesaler was repaid via the FRL, DP, DEFPL0-1, or the 14YRGPL. The DP gave the lowest NPV of –R2 317 124 and IRR (1%) with 15 years of positive nominal cash flows only if the wholesaler was repaid via the DP (see Appendix 9 on pages 122-125).

Figure 9 overleaf compares the distribution of Company D's annual Real NCFs for the FRL and the alternative loans, while Figure 10 on page 51 compares the net annual difference between these distributions.
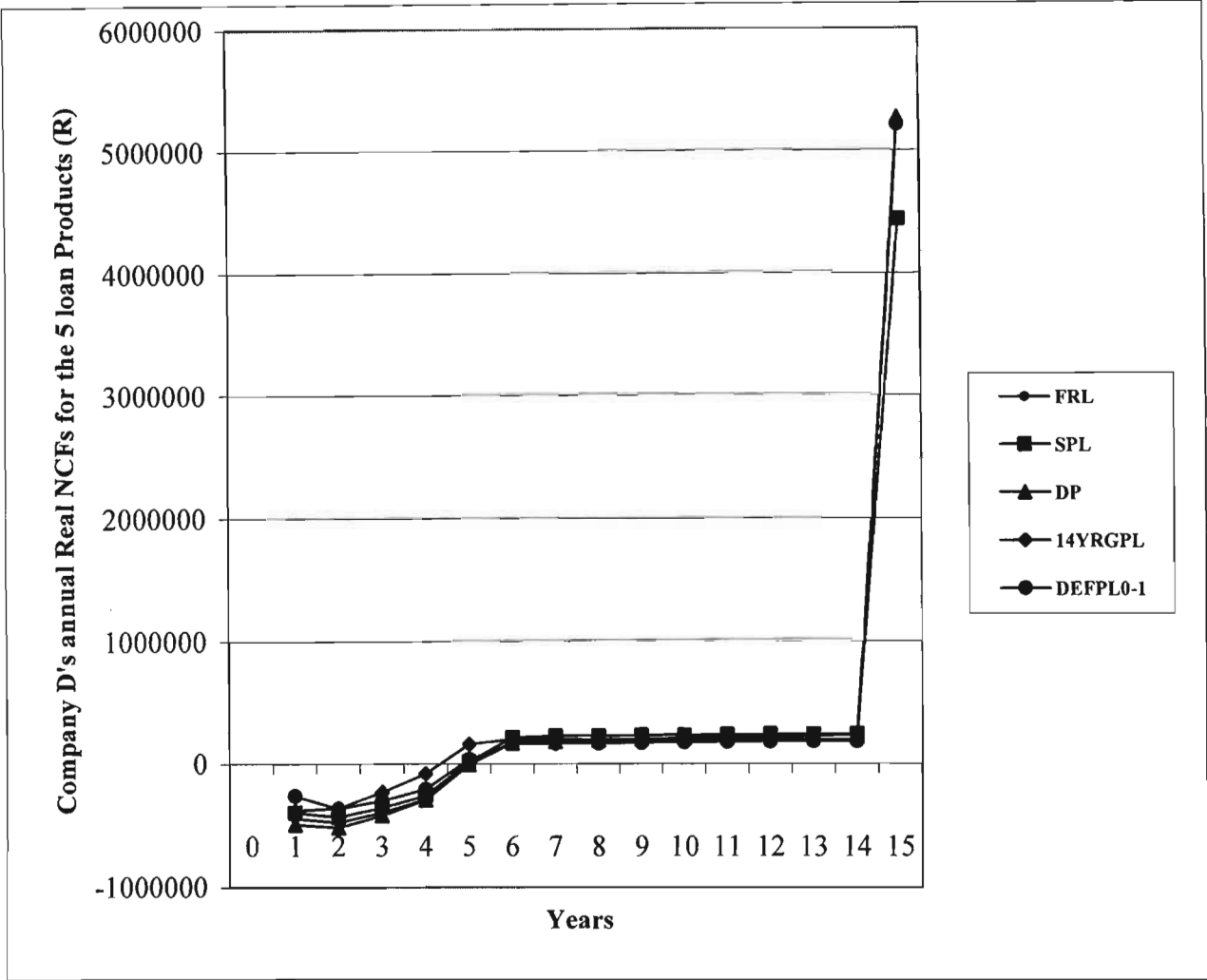
Figure 9: Distribution of Company D's annual Real NCFs for the FRL, and for each alternative loan.

Figures 9 and 10 shows that the DEFPL0-1 produced the least negative initial Real NCFs in year 1, but over the 15-year loan period, like the other loans, could not prevent a negative NPV. The SPL had smaller initial real interest repayments compared to the FRL, that eased liquidity stress in the early years after asset purchase, but the SPL balloon repayment of both real interest and real principal in year 15 reduced Company D's total Real NCFs to R5 108 023. The 14YRGPL with diminishing, finite interest-rate subsidy had the most potential to ease (but not resolve) the investment's liquidity stress and gave the most positive total Real NCFs overall of R6 089 137.
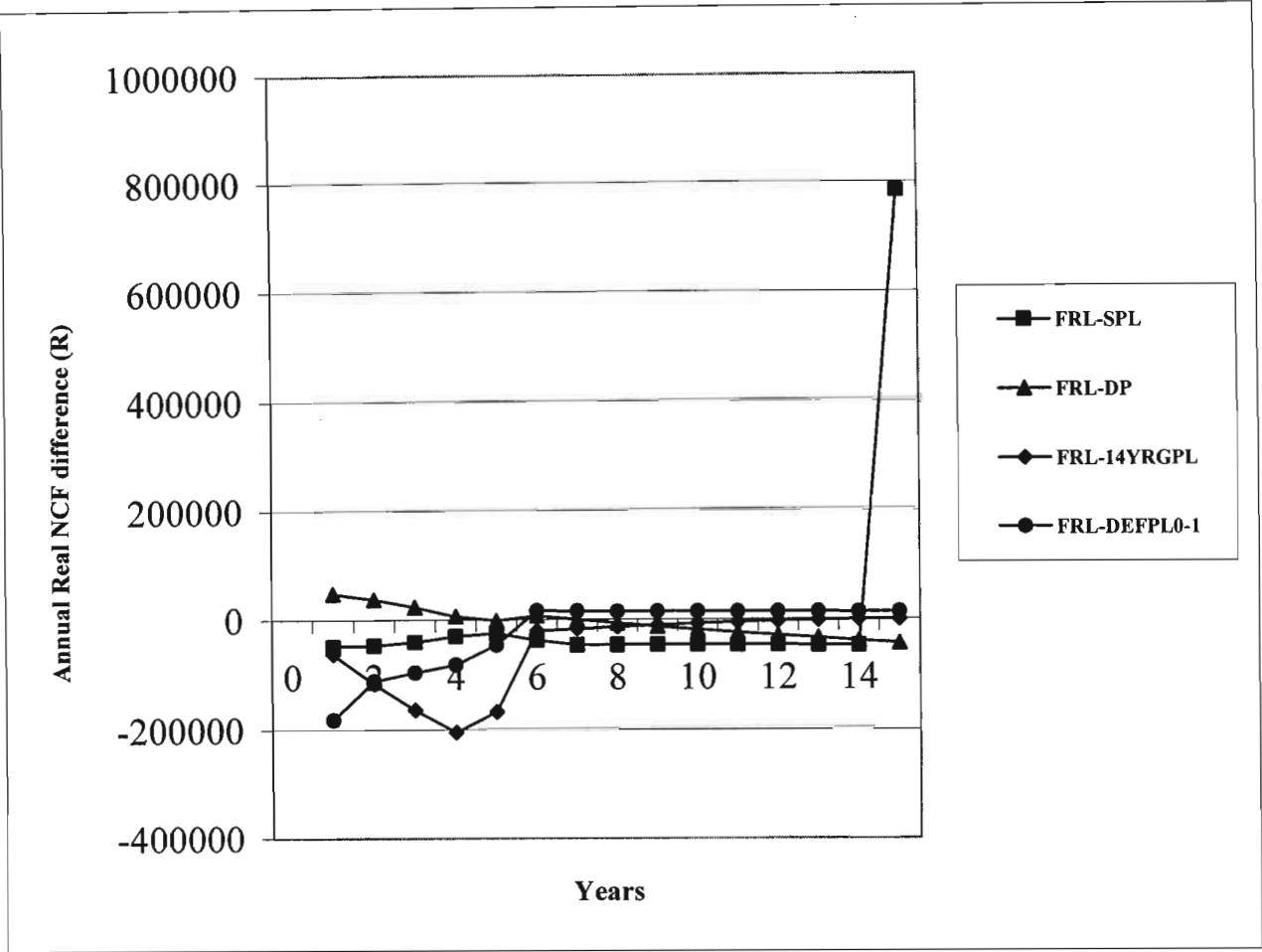
Figure 10: Rand differences between Company D's annual Real NCFs for the FRL and Company D's annual Real NCFs for each alternative loan.

3.3.1.5 Results for Company E

Company E had the only positive NPV of R238 534 (difference of R733 773 versus the FRL NPV), and an IRR (7%) using the 19YRGPL. The lender's nominal cash flows are positive for all 20 years when the wholesaler is repaid using the FRL. If the lender could repay using the DP, DEFPL0-1 and 19YRGPL, there would also be 20 years of positive cash-flows, but the 19YRGPL implies a nominal interest subsidy cost of R425 735 for the wholesaler. The lender must graduate the 19YRGPL interest rate from a nominal 5% to 9.3% over 20 years using an average expected annual rate of inflation of 3% (the interest rate rises from 5% in year 1 to 5.17% in year 2 and so on). The total accumulated subsidy would be equivalent to a loan interest rate reduction of four   percentage points. In this scenario, the

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lender would require an initial interest rate of 1.57% from the wholesaler, and the wholesaler would graduate the interest rate annually by 4% up to 5.8% in year 20 to ensure that the subsidy of R425 735 could be realised by the BEE project. The 19YRGPL thus helps to alleviate the cash-flow problem by the difference between the NPV of the FRL and the NPV of the 19YRGPL. The expected annual inflation rate in this example of 3% was below the expected rate of inflation in SA of about 4%. Further calculations using equation (2) indicate that a 16-year GPL (16YRGPL) would be more appropriate for graduating Company E's interest payments over the 20-year loan term. The accumulated nominal subsidy under these conditions would be R381 163, with a slight decrease in the project NPV to R222 356 with the IRR remaining at 7% (see Appendix 10d1 on page 135).

The DEFPL0-1 had the second least negative NPV of –R131 606 and IRR (4%), which was R363 633 less than the FRL NPV and two percentage points more than the FRL IRR. Repayment of alternative loans via the DEFPL0-1 give the lender 20 years of nominal positive cash flows for the FRL, 19YRGPL and the DEFPL0-1 (see Appendix 11 on page 143). The DP gave the third least negative NPV of –R462 902 and IRR (3%), which was R32 337 less than the FRL NPV and one percentage point more than the FRL IRR. The lender granting a DP and repaying the wholesaler using the FRL would have positive nominal cash flows from years 1-13, and negative cash flows from years 13-20. If the lender could repay the wholesaler using alternative loans, the lender would have 20 years of positive nominal cash flows only by repaying with the DP. The SPL had the fourth least negative NPV of –R481 195 with an IRR of 2%, with a difference between the SPL NPV and FRL NPV figures of R14 044. The lender granting a SPL and repaying the wholesaler using the FRL would have 20 years of positive nominal cash flows. If the wholesaler could be repaid using the SPL and the 19YRGPL, the lender also has 20 years of positive nominal cash flows. The lender would earn the highest total nominal return if the wholesaler were repaid via the FRL. Finally, Company E has the worst NPV using the FRL of –R495 239 with an IRR of 2%, while the lender would have 20 years of positive nominal cash flows if the wholesaler was repaid via the FRL, DP, DEFPL0-1, or the 19YRGPL.

Figure 11 overleaf compares the distribution of Company E's annual Real NCFs for the FRL and the alternative loans, while Figure 12 on page 54 compares the net annual difference between these distributions.
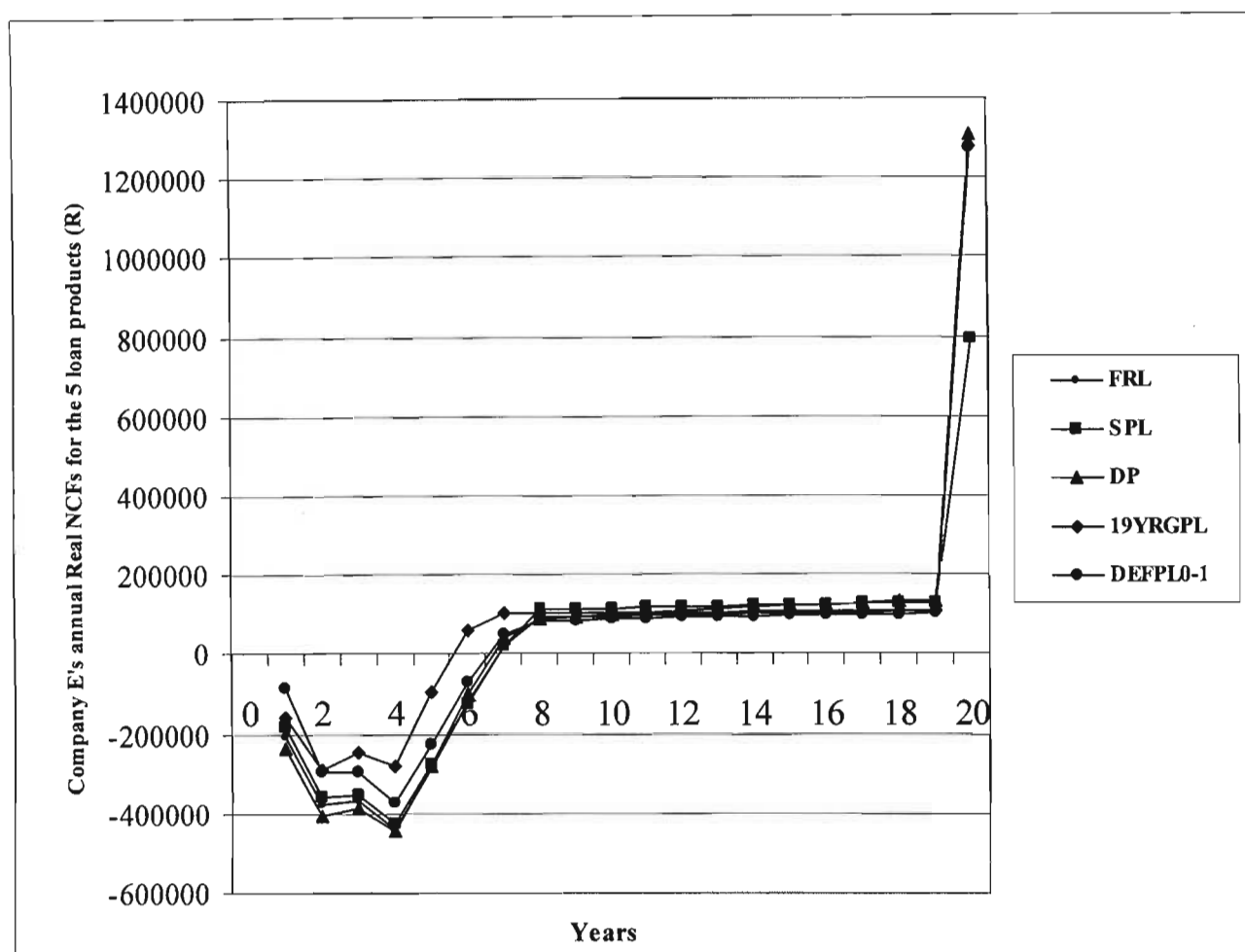
Figure 11: Distribution of Company E's annual Real NCFs for the FRL, and for each alternative loan.

In figures 11 and 12, the DEFPL0-1 again has the least negative initial annual Real NCF in year 1 of -R84 912. Over the 20-year period, like the other loans (excluding the 19YRGPL), the DEFPL0-1 could only ease but not resolve liquidity stress, due to the poor projected investments operating net cash flows. The SPL again requires a real balloon repayment of both interest and principal in year 20 (R553 926) that markedly reduces Company E's overall Real NCFs. The 19YRGPL with diminishing, finite interest-rate subsidy, however, was able to ease the BEE investment's liquidity stress, markedly improving the annual Real NCFs after year 7 with a total real NCF of R1 655 309, thus making the BEE project profitable.

The next section summarizes the main trends in the effects of the alternative loan types on company profitability, investment cash flows and the lender's nominal cash flows.

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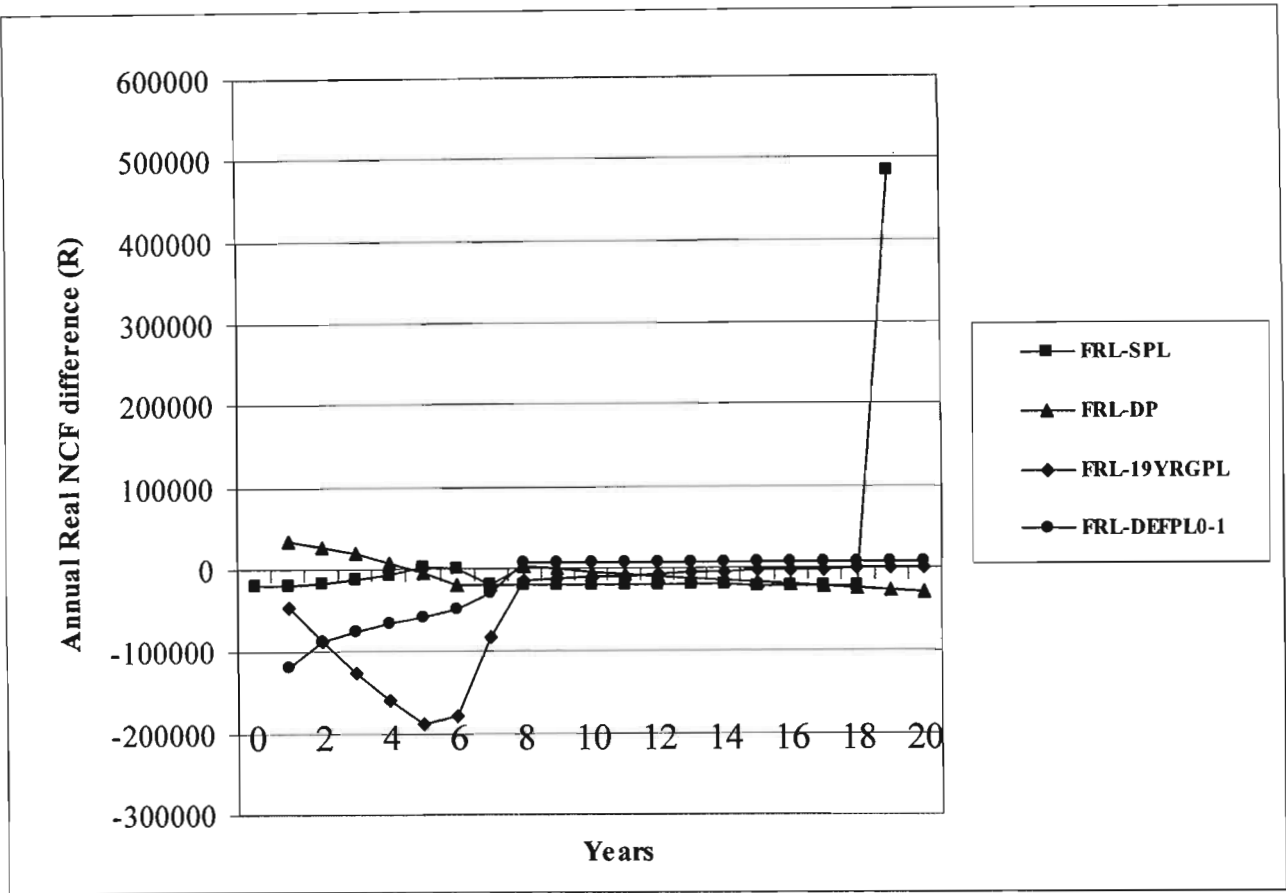
Figure 12: Rand differences between Company E's annual Real NCFs for the FRL and Company E's annual Real NCFs for each alternative loan.

3.4 Summary of results

3.4.1. Effects of alternative loan types on company profitability

Table 1 on page 36 compares the impact of the FRL and the four alternative loans on the NPV and IRR of each company's proposed investment in productive assets. The lender (such as a commercial bank acting as a financial intermediary) that on-lends the alternative loans, after sourcing funds from the wholesaler, to each company has zero NPV for each loan, and so earns its RRR for each alternative loan. The figures in the fourth and fifth columns of Table 1 show the Project NPV and IRR using each loan. Company A and Company C (the machinery type investments) ranked the SPL first for generating the highest Project NPV, followed by the GPL and the FRL. These two companies have relatively more consistent projected cash-flows due their fishing and beef business operations that yield

a relatively higher expected annual rate of return, and they could probably meet future loan repayment commitments in the early years of establishment. The DP and the DEFPL0-1 in both cases did not markedly affect liquidity for the borrower, although the DEFPL0-1 scored a IRR ranking of second for Company A, and first for Company C. Strong initial cash flows for these companies reduced the need for alternative loans to ease liquidity stress, although using loans like the SPL and the GPL *made the projects more profitable compared to the FRL*. For the farming enterprises, Company B and Company D ranked the alternative loans identically on NPV and IRR, while Company E's ranking varied slightly. All three cases ranked the GPL first showing that the graduated payments can ease liquidity stress in farm enterprises characterized by low annual current returns – *although companies D and E* (except the 19YRGPL that showed a positive NPV (R238 534) and IRR (7%) when compared to the alternative loan products) *have negative NPVs* (inadequate projected business performance) due to poor cash flows and high leverage ratios. The IRR also ranked the GPL first for Company B, Company D and Company E. The DEFPL0-1 NPV and IRR also showed potential to help improve profitability by ranking second for Company B, Company D and for Company E. The deferred payments allow time for management skills to develop, or for equipment to come into full production. The SPL NPV ranked third for Company B and Company D, and fourth for Company E. The FRL NPV and the DP NPV (which require higher initial repayments) ranked fourth and fifth for both Company B and Company D. Company E ranked the FRL fifth, but unlike Company B and D, Company E ranked the DP third.

3.4.2   Effects of alternative loan types on investment cash flows

From the annual cash flow perspective of all five investments, the SPL with zero principal repayments in years 1-4 helps to improve liquidity substantially in the early years of repayment, but then markedly reduces liquidity, as the entire loan principal has to be repaid in year 5. The 4YRGPL and DEFPL0-1 loans place less stress on Company A's Real NCFs in the early years of operation than do the FRL and DP, and avoid the major *negative* Real NCF created by the SPL in year 5. Similar NCF distributions were apparent for the other four BEE firms (see Figures 5-12), except that the annual Real NCFs for companies B, D and E were negative due to poor projected operating NCFs that the loans that alleviate financial stress could not fully offset. This suggests that BEE investors that want to buy productive assets, but face the liquidity problem, are likely to prefer the GPL and DEFPL0-1 if these loans were available from lenders.

3.4.3 Effects of alternative loan types on the lender's nominal cash flows

Table 2 on page 37 shows the impact on the lender's nominal cash flows when the lender on-lends wholesale funds to the five BEE companies using the four alternative loans, but repays the wholesaler via the FRL. The lender has a positive aggregate net cash flow (interest earned from the borrower exceeds interest paid to the wholesaler for each loan type), but faces negative cash flows for all but one year, when granting the SPL to companies A, B, C and D while repaying the wholesaler of donor/grant funds using the FRL. This was despite the SPL being the highest earning loan from the lender's perspective for all five BEE investments. In all cases, the DEFPL0-1 has the second highest positive aggregate net cash flow, the FRL and the GPL the third highest, and the DP ranks fifth. The GPL in all cases has marginally more years of positive annual nominal cash flows for the lender than the relatively higher earning DEFPL0-1.

Table 3 on page 38 shows how the lender's nominal cash flows are affected when the lender on-lends alternative loan products to the five BEE companies, and then repays the wholesaler using the same alternative loan type, rather than the FRL. Under these conditions, the lender again has a positive aggregate net cash flow in all cases for all loan types. Considering all of the other combinations for the lender seeking positive net cash-flow for the loan period that yields the highest total return when granting finance to Company A (five-year loan), Company B (eight-year loan), Company C (10-year loan) and Company D (15-year loan), Table 3 suggests that the best option would be to finance the BEE investments using the SPL and to repay the wholesaler using the SPL. For Company E (20-year loan) the best option would be for the lender to on-lend to the BEE project using the SPL, while repaying the wholesaler using the FRL as seen in Table 2. *The SPL, however, is unlikely to be selected by the BEE clients (due to the marked fall in liquidity in year 5) or lenders (due to the negative net cash-flows in all but one year).* From the lender's perspective, the next highest earning combinations in each case for companies A, B, and C would be to grant a DEFPL0-1 and then to repay the wholesaler with a DEFPL0-1. For Company D, the lender would prefer the FRL/DP or the GPL/DP combination, followed by the DEFPL0-1/DEFPL0-1 combination. For Company E, the lender would have opted for the SPL/GPL combination, followed by the FRL/FRL or the GPL/FRL mix. The fifth column in Table 3 shows the nominal interest rate subsidy that the wholesaler must finance (possibly from dedicated empowerment funds allocated by the private sector, donors and/or the SA government) in order to offer a GPL to the lender.

CONCLUSIONS AND POLICY RECOMMENDATIONS

In recent years, several policies and programmes that support BEE have begun to address the distorted pattern of ownership of productive assets in SA. Most attention has focused on funding share ownership and land purchases. Studies show that even when financing is approved, conventional loans with fixed repayment schedules are usually not ideally suited to the development of new businesses that may experience cash flow problems caused by inflation or management lags. There is, therefore, a need for new innovative financing plans that alleviate this constraint and thus encourage economic development in SA by financing the purchase of productive assets (land, machinery, equipment, etc.) by broad-based BEE projects so that *more people benefit than only a limited number of shareholders who acquire ownership in established companies.*

Chapter Two shows how the time patterns of the annual series of nominal loan repayments for a R200 000 loan repaid over 20 years at a nominal annual interest rate of 10% for the FRL compare to the SPL, DP, PPL, 17YRGPL, 6YRGPL and DEFPL0-2. The SPL has smaller initial repayments (R20 000 versus R23 492) that ease liquidity stress in the early years after asset purchase, but requires a nominal balloon repayment of both interest and principal in year 20 of R220 000. The SPL is also the most costly loan, with total nominal and real repayments that are R130 162 and R43 821, respectively, more than the FRL. The PPL has the lowest total nominal and real repayments, assuming that the borrower can make the nominal balloon repayment in year 5 of R202 173. If not, the ending balance of the loan in year 4 would have to be refinanced at current market interest rates. In this situation, the PPL uses very similar financing terms to that of the VRL already used in SA, and thus may not be a useful option to consider for BEE investments facing the cash-flow problem. Interest rates may have risen over the last four years of the loan, encouraging lenders to add a premium into the interest rate for the refinanced loan, which could worsen the liquidity position of the BEE enterprise. The DP requires higher initial nominal loan repayments (R6 508 more than the FRL) that do not ease the liquidity problem in the early years of operation. The DP loan, however, has total nominal and real repayments that are R59 838 and R23 118, respectively, less than the FRL.

A GPL with diminishing, finite interest-rate subsidy seems to have the most potential to ease the borrower's (BEE investment's) liquidity stress. The 17YRGPL used to purchase land had total nominal and real repayments that were R84 634 and R67 726 (after subsidy), respectively, less than the FRL. If

the GPL was used to finance the purchase of machinery-type assets, then the 6YRGPL would have required total nominal and real repayments of R13 957 and R12 596, respectively, less than the FRL. Finally, the DEFPL0-2 loan required a total nominal repayment of R531 128 (R61 290 more than the FRL) and a total real repayment of R345 358 (R26 095 more than the FRL). Clearly, the GPL and DEFPL0-2 loan repayment schedules can partly resolve the liquidity problem in the early years (assuming no major income shocks), although the DEFPL0-2 plan requires higher total repayments than the FRL. The question remains whether lenders would be prepared to implement these two financing plans for BEE investments in productive assets, where the funds to finance the diminishing, finite interest-rate subsidy and the deferment would be sourced, and how the interest-rate subsidy would affect asset values.

A GPL scheme using interest-rate subsidies funded by private sector sugar millers has empowered 107 black commercial farmers to buy sugarcane farms in KwaZulu-Natal since 1996. Relatively high loan repayment rates for this scheme, despite very high leverage ratios, have also been promoted by some loan rescheduling, many clients having access to off-farm income, and the absence of any major income shocks to date. It has also required substantial private sector funding (of interest-rate subsidies) when compared to the other loan products discussed in this dissertation. The concept of graduated loan repayments can readily be applied to finance non-land asset investments that are characterized by liquidity stress in the early years, and would probably relieve financial stress relatively more effectively for other crop enterprises with less regular cash flows than sugarcane, such as maize or orchard investments.

The DEFPLs require higher total repayments than the conventional loans, but lenders would be reluctant to offer such loans unless they could finance the deferments. The Land Reform Empowerment Facility (LREF) is a wholesaler of funds that offers a loan product for this purpose in SA. The LREF has started to bridge the gap between the formal banking sector and new land-based BEE asset purchases by shifting the cash-flow problem away from the client to the LREF, rather than the intermediary. This aspect of the DEFPL resembles the GPL used in KwaZulu-Natal in the sense that for the GPL the private sector millers, rather than the clients or intermediary, bore the liquidity stress (by financing the interest-rate subsidies). The LREF's deferred financing terms mean that commercial banks, in return for a restructuring of the end-borrowers' ownership, can finance profitable agribusiness investments that are usually characterised by a temporary liquidity problem.

The lesson for policymakers is that broad-based BEE could be promoted in *other farm and non-farm* sectors in SA using similar innovative loan products to leverage current cash grant funds via financial intermediaries. Bearing in mind the limitations of the GPL and DEFPL - such as how to finance the subsidy or deferment, and the impact of income shocks - this could be a constructive way to access private sector funds, donor funds and the NEF funds set aside for BEE investments. Donor and NEF funds could be used to allocate grants to provide PDIs with own equity and also to fund *finite, diminishing* interest-rate subsidies via GPLs, or to fund DEFPLs (all LREF loans have been helped by a cash grant component). This could create an incentive for public/private partnerships, as public/donor funds could be then used to attract private sector funds to finance broad-based BEE investments in SA that satisfy defined empowerment criteria.

Data from five *actual* BEE loan applications were used to analyze five alternative loan products - the FRL, SPL, DP, GPL, and the DEFPL0-1 - that wholesalers of funds could offer to lenders that, in turn, could on-lend to broad-based BEE projects to make them financially feasible, assuming that lenders source their funds from a development finance wholesaler. Results indicate that GPLs and DEFPLs can partly resolve liquidity stress that BEE investments in machinery and land financed by conventional loans are likely to face in the early years of operation. For companies D and E with inadequate projected business performance (poor cash-flows, relatively low current annual returns, and relatively high leverage ratios), alternative loan repayment schedules could ease, but not alleviate the liquidity problem, except for Company E's 19YRGPL that showed a positive NPV (R238 534) and IRR (7%). For Company A and Company C - both machinery type investments - the SPL and GPL were more suitable as these firms had stronger cash-flows, while the GPL and the DEFPL played a greater role in alleviating liquidity stress for land investments that have a lower expected annual current rate of return. These results emphasize that the alternative loans considered in this dissertation can help to make investments faced with the liquidity problem financially feasible, but will not necessarily solve this problem for firms with *severe* financial stress. The results also show that loans that best suit the borrower's cash flows do not always best suit the lender's cash flows.

In four out of the five case studies, the lender would have positive cash-flows throughout the full term of the loan when the SPL was granted to the borrower, and the lender repaid the wholesaler of funds via the SPL. The SPL, however, is unlikely to be used by commercial banks or other financial intermediaries, as it does not address the cash flow problem that may arise in the future when the

principal payment is due. Commercial banks would also be reluctant to bear the cash-flow constraint if they could not repay a wholesaler using the SPL as they have shareholders that need to be paid out dividends, and thus could face their own liquidity shortfalls.

The five case studies did not show that the GPLs and DEFPLs could make all profitable (positive net present value) but financially infeasible (returns do not match the size and timing of the lender's financing plan) BEE investments in productive assets under the FRL feasible, except for Company E that showed a positive NPV and IRR when the 19YRGPL was used. They did, however, show how the alternative loans could *improve liquidity* for investments with either strong or poor cash-flows. The financiers consulted to source these case studies in KwaZulu-Natal in 2003 could not provide the researcher with any profitable, but financially infeasible, BEE business plans. This raises some concern about how effective these empowerment loan products could be in the future as there is uncertainty over how many potential BEE investments in productive assets in SA are likely to be profitable but financially infeasible. Further research is needed to assess the impact of these alternative loans on a wider range of broad-based BEE investments, particularly non-farm projects, than considered in this dissertation.

SUMMARY

Broad-based black economic empowerment (BEE) is a key policy objective in South Africa (SA) aimed at addressing the past lack of access to resources, like capital, by previously disadvantaged individuals (PDIs). The SA government recognises that broad-based BEE will require partnerships between the private and the public sector, with the latter providing funds to help finance the transfer of skills and asset ownership. The SA government, therefore, allocated R10 billion in 2003 to the National Empowerment Fund (NEF) to support the funding of new ventures and business expansions that meet agreed empowerment criteria. These public funds could be profitably applied to programmes that leverage additional finance from the private sector for BEE firms.

Conventional long-term loans in SA are repaid in a series of equal annual, semi-annual, quarterly or monthly payments that may not match the repayment capacity of BEE projects, particularly in the early years of operation. Profitable agribusiness investments often have relatively high development costs followed by a period of gradual growth in nominal annual cash flows. This creates a temporary liquidity problem in the early years, particularly when inflation is relatively high. Inflation raises current costs (the nominal interest rate exceeds the current rate of return to land or to other assets like machinery) and defers returns (nominal cash flows grow over time and improve repayment capacity). Liquidity stress may also arise due to lags in adjustment by the managers of BEE firms to new asset investments, due to a lack of management experience and/or the need to develop new skills in machinery, labour and marketing management. Policymakers in SA thus need to find ways to encourage financiers to fund potentially creditworthy BEE projects using loan products that alleviate the liquidity problem and make the projects financially feasible in the long-term.

The aim of this dissertation, therefore, is to compare five alternative loan products - the single payment non-amortized loan (SPL); the decreasing payment loan (DP); the partial payment loan (PPL); the graduated payment loan (GPL); and the deferred payment loan (DEFPL0-1) - relative to the conventional fixed payment (equally amortized)(FRL) long-term loan in SA that lenders could offer to finance BEE investments in productive assets that are faced with liquidity stress. This is done firstly by comparing loan repayment schedules for the six loans using a loan principal of R200 000, repaid over 20 years at a nominal contractual annual interest rate of 10%. Secondly, data from five *actual* BEE loan applications to ABSA Bank and Ithala in KwaZulu-Natal during 2003 are used to compare how

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the FRL, SPL, DP, GPL, DEFPL0-1, affect both the borrower's and the lender's cash flows, assuming that the lender sources funds from a development finance wholesaler. This shows which of the loans would be preferred from either the borrower's or the lender's perspective.

The SPL has smaller initial repayments than the FRL (R20 000 versus R23 492) that ease liquidity stress in the early years after asset purchase, but requires a nominal balloon repayment of both interest and principal in year 20 of R220 000. The SPL is also the most costly loan, with total nominal and real repayments that are R130 162 and R43 821, respectively, more than the FRL. The PPL has the lowest total nominal and real repayments, assuming that the borrower can make the nominal balloon repayment in year 5 of R202 173. If not, the ending balance of the loan in year 4 would have to be refinanced at current market interest rates. In this situation, the PPL uses very similar financing terms to that of the VRL already used in SA, and thus may not be a useful option to consider for BEE investments facing the cash-flow problem. Interest rates may have risen over the last four years of the loan, encouraging lenders to add a premium into the interest rate for the refinanced loan, which could worsen the liquidity position of the BEE enterprise. The DP requires higher initial nominal loan repayments (R6 508 more than the FRL) that do not ease the liquidity problem in the early years of operation. The DP loan, however, has total nominal and real repayments that are R59 838 and R23 118, respectively, less than the FRL.

A GPL with diminishing, finite interest-rate subsidy seems to have the most potential to ease the BEE investment's liquidity stress. The 17YRGPL used to buy land had total nominal and real repayments that were R84 634 and R67 726 (after subsidy), respectively, less than the FRL. If the GPL was used to purchase machinery-type assets, then the 6YRGPL would have required total nominal and real repayments of R13 957 and R12 596, respectively, less than the FRL. Finally, the DEFPL0-2 loan required a total nominal repayment of R531 128 (R61 290 more than the FRL) and a total real repayment of R345 358 (R26 095 more than the FRL). Clearly, the GPL and DEFPL0-2 loan repayment schedules can partly resolve the liquidity problem in the early years (assuming no major income shocks), although the DEFPL0-2 plan requires higher total repayments than the FRL. The question remains whether lenders would be prepared to implement these two financing plans for BEE investments in productive assets, where the funds to finance the diminishing, finite interest-rate subsidy and the deferment would be sourced, and how the interest-rate subsidy would affect asset values.

Spreadsheets were designed using the Microsoft Excel programme to study how the alternative loans affect the profitability and nominal cash flows of five proposed BEE company investments sourced from ABSA Bank and Ithala in KwaZulu-Natal in 2003, and the lender's nominal cash flows. Initially it was assumed that donor/grant funds from a wholesaler of development finance were lent to an intermediary (like a commercial bank), which in turn, could finance the five investments using any of the loans, with the lender's repayment to the wholesaler being via a FRL. It was then assumed that the lender could repay its borrowed funds using the same loans, or combinations of them, that it had granted to these companies. The Net Present Value (NPV) and the Internal Rate-of-return (IRR) were calculated for each of the five company business plans after incorporating the loan repayment schedule, to assess investment profitability. The loan terms and amounts vary, and the companies have different assumed current rates of return on equity, depending on the business type. Companies A and C are agribusinesses with a higher expected current rate of return of 8% on machinery investments, while companies B, D, and E invest in farmland with a lower expected annual rate of return of 5%. The five business plans may not be representative in a statistical sense of all BEE firms in KwaZulu-Natal, but were used because they were readily available.

Companies A and C ranked the SPL first for generating the highest Project NPV, followed by the GPL and the FRL. These two companies have relatively more consistent projected cash-flows due their fishing and beef business operations that yield a relatively higher expected annual rate of return, and they could probably meet future loan repayment commitments in the early years of establishment. The DP and the DEFPL0-1 in both cases did not markedly affect liquidity for the borrower, although the DEFPL0-1 scored a IRR ranking of second for Company A, and first for Company C. Strong initial cash flows for these companies reduced the need for alternative loans to ease liquidity stress, although using loans like the SPL and the GPL *made the projects more profitable compared to the FRL.*

For the farming enterprises, Company B and Company D ranked the alternative loans identically on NPV and IRR, while Company E's ranking varied slightly. All three cases ranked the GPL first showing that the graduated payments can ease liquidity stress in farm enterprises characterized by low annual current returns – *although companies D and E* (except for the 19YRGPL that showed a positive NPV (R238 534) and IRR (7%) when compared to the alternative loan products) *have negative NPVs* (inadequate projected business performance) due to poor cash flows and high leverage ratios. The IRR also ranked the GPL first for companies B, D and E. The DEFPL0-1 NPV and IRR also showed

potential to help improve profitability by ranking second for companies B, D and E. The deferred payments allow time for management skills to develop, or for equipment to come into full production. The SPL NPV ranked third for Company B and Company D, and fourth for Company E. The FRL NPV and the DP NPV (which require higher initial repayments) ranked fourth and fifth for both Company B and Company D. Company E ranked the FRL fifth, but unlike Company B and D, Company E ranked the DP third.

From the borrower's perspective, the SPL with zero principal repayments in years 1-4 helps to improve liquidity substantially in the early years of repayment, but then markedly reduces liquidity as the entire loan principal has to be repaid in year 5. The 4YRGPL and DEFPL0-1 loans place less stress on Company A's Real NCFs in the early years of operation than do the FRL and DP, and avoid the major *negative* Real NCF created by the SPL in year 5. Similar net cash-flow (NCF) distributions were apparent for the other four BEE firms, except that the Real NCFs for companies B, D and E were negative. This suggests that BEE investors that want to buy productive assets, but face the liquidity problem, are likely to prefer the GPL and DEFPL0-1 if these loans were available from lenders.

The lender has a positive aggregate net cash flow (interest earned from the borrower exceeds interest paid to the wholesaler for each loan type), but faces negative cash-flows for all but one year, when granting the SPL to companies A, B, C and D while repaying the wholesaler of donor/grant funds using the FRL. This was despite the SPL being the highest earning loan from the lender's perspective for all five BEE investments. In all cases, the DEFPL0-1 has the second highest positive aggregate net cash flow, the FRL and the GPL the third highest, and the DP ranks fifth. The GPL in all cases has marginally more years of positive annual nominal cash flows for the lender than the relatively higher earning DEFPL0-1.

When the lender on-lends alternative loan products to the five BEE companies, and then repays the wholesaler using the same alternative loan type, rather than the FRL, the lender again has a positive aggregate net cash flow in all cases for all loan types. From the lender's perspective looking at all of the other combinations (seeking positive net cash-flow for the entire loan period involved that yield the highest total return) when granting finance to Company A (five-year loan), Company B (eight-year loan), Company C (10-year loan) and Company D (15-year loan), however, the best option would be to finance the BEE investments using the SPL and to repay the wholesaler using the SPL. For Company E

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(20-year loan) the best option would be for the lender to on-lend to the BEE project using the SPL, while repaying the wholesaler using the FRL. The next highest earning combinations for the lender in each case for companies A, B, C would be to grant a DEFPL0-1 and then repay the wholesaler with a DEFPL0-1, while company D would prefer the FRL/DP combination or the GPL/DP combination, followed by the DEFPL0-1/DEFPL0-1 combination. For Company E, the lender would have opted for the SPL/GPL combination, followed by the FRL/FRL or the GPL/FRL mix.

For companies D and E with inadequate projected business performance (poor cash-flows, relatively low current annual returns, and relatively high leverage ratios), alternative loan repayment schedules could ease, but not alleviate the liquidity problem, except for Company E's 19YRGPL that showed a positive NPV (R238 534) and IRR (7%). For Company A and Company C - both machinery type investments - the SPL and GPL were more suitable as these firms had stronger cash-flows, while the GPL and the DEFPL played a greater role in alleviating liquidity stress for land investments that have a lower expected annual current rate of return. These results emphasize that the alternative loans considered can help to make investments faced with the liquidity problem financially feasible, but will not necessarily solve this problem for firms with *severe* financial stress. The results also show that loans that best suit the borrower's cash flows do not always best suit the lender's cash flows. In four out of the five case studies, the lender would have positive cash-flows throughout the full term of the loan when the SPL was granted to the borrower, and the lender repaid the wholesaler of funds via the SPL. The SPL, however, is unlikely to be used by commercial banks, as it does not address the cash flow problem that may arise in the future when the principal payment is due. Commercial banks would also be reluctant bear the cash-flow constraint if they could not repay a wholesaler using the SPL as they have shareholders that need to be paid out dividends, and thus could face their own liquidity shortfalls.

While past BEE initiatives in SA have mainly financed share ownership, there is scope to develop alternative loan products to draw public and private funds into financing the purchase of productive assets (land, machinery, equipment etc.) so that *more people benefit* than only a limited number of shareholders who acquire ownership in established companies. The GPLs and DEFPLs can partly resolve the liquidity problem that BEE investments in productive assets financed by conventional long-term loans are likely to face in the early years of operation, and so could be a constructive way to access private sector funds and the NEF funds set aside for BEE investments.

A GPL using interest rate subsidies funded by private sector sugar millers via the Ithala Development and Finance Corporation has empowered 107 black commercial farmers to buy sugarcane farmland in KwaZulu-Natal since 1996. Relatively high loan repayment rates for this scheme, despite very high leverage ratios, have also been promoted by some loan rescheduling, many clients having access to off-farm income, and the absence of any major income shocks to date. It has also required substantial private sector funding (of *diminishing, finite* interest rate subsidies) when compared to the other loan products. The concept of graduated loan repayments can readily be applied to finance non-land asset investments that are characterized by liquidity stress in the early years, and would probably relieve financial stress relatively more effectively for other crop enterprises with less regular cash-flows than sugarcane, such as maize or orchard investments.

The DEFPLs require higher total repayments than the conventional FRL, but lenders would be reluctant to offer such loans unless they could finance the deferments. The Land Reform Empowerment Facility (LREF) is a wholesaler of funds in SA that offers such a loan product for this purpose. The LREF has started to bridge the gap between the formal banking sector and new BEE ventures in productive assets by shifting the cash-flow problem away from the client to itself, rather than the intermediary. This aspect of the DEFPL resembles the GPL in KwaZulu-Natal in the sense that the private sector millers, rather than the clients, bear the liquidity problem (by financing the interest rate subsidies). The LREF's deferred financing terms mean that commercial banks, in return for a restructuring of the end-borrowers' ownership, can finance profitable agribusiness investments that typically face a temporary liquidity problem.

Broad-based BEE could be promoted in *other farm and non-farm* sectors in SA using similar innovative loan products to complement cash grant funds via financial intermediaries, bearing in mind the limitations of the GPL and DEFPL - such as how to finance the subsidy or deferment, and the impact of income shocks. Donor and NEF funds could be used to allocate grants to provide PDIs with own equity and also to fund *finite, diminishing* interest-rate subsidies via GPLs, or to fund DEFPLs (many LREF loans have been leveraged by a cash grant component). This could create an incentive for public/private partnerships, as public/donor funds could be then used to attract private sector funds to finance broad-based BEE investments in SA that satisfy empowerment criteria. The five case studies did not show how the GPLs and DEFPLs could make all profitable (positive net present value) but financially infeasible (returns do not match the size and timing of the lender's financing plan) BEE

investments in productive assets under the FRL feasible, except for Company E that showed a positive NPV and IRR when the 19YRGPL was used. They did, however, show how the alternative loans could improve liquidity for investments with either strong or poor cash-flows. The financiers consulted to source case studies in KwaZulu-Natal in 2003 at the time of the study could not provide the researcher with any profitable, but financially infeasible, BEE business plans. This raises some concern about how effective these empowerment loan products could be in the future as there is uncertainty over how many potential BEE investments in productive assets in SA are likely to be profitable but financially infeasible. Further research is thus needed to assess the impact of these alternative loans on a wider range of broad-based BEE investments, particularly non-farm projects, than considered in this dissertation.

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APPENDICES

Appendix 1: FRL, SPL, DP, PPL, 17YRGPL, 6YRGPL and DEFPL0-2 annual loan repayment schedules (all figures in Rands unless otherwise stated).

1a. Fixed Repayment Equally-amortized Loan (FRL)

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492
Nominal Principal		-3492	-3841	-4225	-4648	-5113	-5624	-6186	-6805	-7485	-8234
Nominal Interest		-20000	-19651	-19267	-18844	-18379	-17868	-17306	-16687	-16007	-15258
Loan Balance After Payment	200000	196508	192667	188442	183794	178681	173058	166872	160067	152581	144348
Total Real Payment		-22588	-21720	-20884	-20081	-19309	-18566	-17852	-17165	-16505	-15870

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-469838
Nominal Principal	-9057	-9963	-10959	-12055	-13261	-14587	-16045	-17650	-19415	-21356	-200001
Nominal Interest	-14435	-13529	-12533	-11437	-10231	-8905	-7447	-5842	-4077	-2136	-269839
Nominal Loan Balance After Payment	135291	125328	114369	102313	89053	74466	58421	40771	21356	0	
Total Real Payment	-15260	-14673	-14109	-13566	-13044	-12543	-12060	-11596	-11150	-10721	-319263

Source: Adapted from Nelson *et al.* (1973:169).

1b. Single Payment Non-amortized Loan (SPL)

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000
Nominal Principal		0	0	0	0	0	0	0	0	0	0
Nominal Interest		-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000
Nominal Loan Balance After Payment	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000
Total Real Payment		-19231	-18491	-17780	-17096	-16439	-15806	-15198	-14614	-14052	-13511

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-220000	-600000
Nominal Principal	0	0	0	0	0	0	0	0	0	-200000	-200000
Nominal Interest	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-400000
Nominal Loan Balance After Payment	200000	200000	200000	200000	200000	200000	200000	200000	200000	0	
Total Real Payment	-12992	-12492	-12011	-11550	-11105	-10678	-10267	-9873	-9493	-100405	-363084

Source: Adapted from Nelson *et al.* (1973:169).

1c. Decreasing Payment Loan (DP)

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		-30000	-29000	-28000	-27000	-26000	-25000	-24000	-23000	-22000	-21000
Nominal Principal		-10000	-10000	-10000	-10000	-10000	-10000	-10000	-10000	-10000	-10000
Nominal Interest		-20000	-19000	-18000	-17000	-16000	-15000	-14000	-13000	-12000	-11000
Nominal Loan Balance After Payment	200000	190000	180000	170000	160000	150000	140000	130000	120000	110000	100000
Total Real Payment		-28846	-26812	-24892	-23080	-21370	-19758	-18238	-16806	-15457	-14187

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-20000	-19000	-18000	-17000	-16000	-15000	-14000	-13000	-12000	-11000	-410000
Nominal Principal	-10000	-10000	-10000	-10000	-10000	-10000	-10000	-10000	-10000	-10000	-200000
Nominal Interest	-10000	-9000	-8000	-7000	-6000	-5000	-4000	-3000	-2000	-1000	-210000
Nominal Loan Balance After Payment	90000	80000	70000	60000	50000	40000	30000	20000	10000	0	
Total Real Payment	-12992	-11867	-10810	-9817	-8884	-8009	-7187	-6417	-5696	-5020	-296145

1d. Partial Payment Loan (PPL) (Balloon Payment)

Year	0	1	2	3	4	5	Total
Total Nominal Payment		-23492	-23492	-23492	-23492	-202173	-296141
Nominal Principal		-3492	-3841	-4225	-4648	-183794	-200000
Nominal Interest		-20000	-19651	-19267	-18844	-18379	-96141
Beginning Nominal Balance	200000	200000	196508	192667	188442	183794	
Ending Nominal Balance		196508	192667	188442	183794	0	
Total Real Payment		-22588	-21720	-20884	-20081	-166172	-251445

Source: Adapted from Barry *et al.* (1995:141).

Note: Total payments based on a 20-year amortization and 10% annual interest rate.

1e. Seventeen-year Graduated Payment Loan (17YRGPL)

Year	0	1	2	3	4	5	6	7	8	9	10
Borrower's Total Nominal Payment Minus Interest Rate Subsidy		-13492	-14075	-14677	-15296	-15930	-16578	-17237	-17904	-18575	-19245
Total Nominal Payment Without Subsidy		-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492
Nominal Principal Without Subsidy		-3492	-3841	-4225	-4648	-5113	-5624	-6186	-6805	-7485	-8234
Nominal Interest Without Subsidy		-20000	-19651	-19267	-18844	-18379	-17868	-17306	-16687	-16007	-15258
Actual Nominal Interest Paid		-10000	-10234	-10452	-10648	-10818	-10954	-11051	-11100	-11090	-11011
Actual Nominal Interest Rate Paid (%)		5.00	5.21	5.42	5.65	5.89	6.13	6.39	6.65	6.93	7.22
Nominal Interest Rate Subsidy		-10000	-9417	-8815	-8196	-7562	-6914	-6255	-5588	-4917	-4247
Nominal Loan Balance After Payment	200000	196508	192667	188442	183794	178681	173058	166872	160067	152581	144348
Total Real Payment		-12973	-13014	-13048	-13075	-13093	-13102	-13099	-13083	-13051	-13001

Year	11	12	13	14	15	16	17	18	19	20	Total
Borrower's Total Nominal Payment Minus Interest Rate Subsidy	-19908	-20556	-21181	-21771	-22314	-22795	-23194	-23492	-23492	-23492	-385204
Total Nominal Payment Without Subsidy	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-469838
Nominal Principal Without Subsidy	-9057	-9963	-10959	-12055	-13261	-14587	-16045	-17650	-19415	-21356	-200000
Nominal Interest Without Subsidy	-14435	-13529	-12533	-11437	-10231	-8905	-7447	-5842	-4077	-2136	-269838
Actual Nominal Interest Paid	-10851	-10593	-10221	-9716	-9053	-8208	-7149	-5842	-4077	-2136	-185204
Actual Nominal Interest Rate Paid (%)	7.52	7.83	8.16	8.50	8.85	9.22	9.60	10.00	10.00	10.00	
Nominal Interest Rate Subsidy	-3584	-2936	-2311	-1721	-1178	-697	-298	0	0	0	-84634
Nominal Loan Balance After Payment	135291	125328	114369	102313	89053	74466	58421	40771	21356	0	
Total Real Payment	-12932	-12839	-12720	-12572	-12390	-12170	-11907	-11596	-11150	-10721	-251537

Source: Adapted from Lyne & Darroch (2002:127).

1e1. Six-year Graduated Payment Loan (6YRGPL)

Year	0	1	2	3	4	5	6	7	8	9	10
Borrower's Total Nominal Payment Minus Interest Rate Subsidy		-19492	-20157	-20829	-21502	-22174	-22840	-23492	-23492	-23492	-23492
Total Nominal Payment Without Subsidy		-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492
Nominal Principal Without Subsidy		-3492	-3841	-4225	-4648	-5113	-5624	-6186	-6805	-7485	-8234
Nominal Interest Without Subsidy		-20000	-19651	-19267	-18844	-18379	-17868	-17306	-16687	-16007	-15258
Actual Nominal Interest Paid		-16000	-16316	-16604	-16855	-17062	-17216	-17306	-16687	-16007	-15258
Actual Nominal Interest Rate Paid (%)		8.00	8.30	8.62	8.94	9.28	9.63	10.00	10.00	10.00	10.00
Nominal Interest Rate Subsidy		-4000	-3334	-2663	-1989	-1317	-652	0	0	0	0
Nominal Loan Balance After Payment	200000	196508	192667	188442	183794	178681	173058	166872	160067	152581	144348
Total Real Payment		-18742	-18637	-18517	-18380	-18226	-18050	-17852	-17165	-16505	-15870

Year	11	12	13	14	15	16	17	18	19	20	Total
Borrower's Total Nominal Payment (Minus No Interest Rate Subsidy after Year 6)	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-455882
Total Nominal Payment	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-23492	-469838
Nominal Principal	-9057	-9963	-10959	-12055	-13261	-14587	-16045	-17650	-19415	-21356	-200000
Nominal Interest	-14435	-13529	-12533	-11437	-10231	-8905	-7447	-5842	-4077	-2136	-269838
Actual Nominal Interest Paid	-14435	-13529	-12533	-11437	-10231	-8905	-7447	-5842	-4077	-2136	-255882
Actual Nominal Interest Rate Paid (%)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	
Nominal Interest Rate Subsidy	0	0	0	0	0	0	0	0	0	0	-13957
Nominal Loan Balance After Payment	135291	125328	114369	102313	89053	74466	58421	40771	21356	0	
Total Real Payment	-15260	-14673	-14109	-13566	-13044	-12543	-12060	-11596	-11150	-10721	-306667

Source: Adapted from Lyne & Darroch (2002:127).

1f. Two-Year Deferred Payment of Principal and Interest Loan (DEFPL0-2)

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		0	0	-29507	-29507	-29507	-29507	-29507	-29507	-29507	-29507
Nominal Principal		0	0	-5307	-5838	-6422	-7064	-7770	-8547	-9402	-10342
Nominal Interest		0	0	-24200	-23669	-23086	-22443	-21737	-20960	-20105	-19165
Nominal Loan Balance After Payment	200000		242000	236693	230855	224433	217370	209600	201052	191651	181308
Total Real Payment		0	0	-26232	-25223	-24253	-23320	-22423	-21561	-20731	-19934

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-29507	-29507	-29507	-29507	-29507	-29507	-29507	-29507	-29507	-29507	-531126
Nominal Principal	-11376	-12514	-13765	-15142	-16656	-18322	-20154	-22169	-24386	-26825	-242000
Nominal Interest	-18131	-16993	-15742	-14365	-12851	-11186	-9353	-7338	-5121	-2682	-289128
Nominal Loan Balance After Payment	169932	157418	143653	128511	111855	93534	73380	51211	26825	0	
Total Real Payment	-19167	-18430	-17721	-17040	-16384	-15754	-15148	-14566	-14005	-13467	-345359

Source: Adapted from Lyne *et al.* (2000:11).

Appendix 2: Impact of alternative loan products on the present value (PV) of Company A's cash-flows, and the PV of the lender's loan inflows and outflows (all figures in Rands unless otherwise stated).

2a. Fixed Repayment Equally-amortized Loan (FRL)

		Year	0	1	2	3	4	5	Total
		Total Nominal Payment		-414555	-414555	-414555	-414555	-414555	-2072774
		Nominal Principal		-265755	-290470	-317484	-347010	-379282	-1600000
		Nominal Interest		-148800	-124085	-97071	-67545	-35273	-472774
		Loan Balance After Payment	1600000	1334245	1043775	726291	379282	0	
		Nominal Lender PV (inflows)		379282	347010	317484	290470	265755	1600000
Interest rate	**Loan size**	Real Project NCFBIDLT		665590	790654	920560	1072689	1222555	4672048
9.3%	1600000	Less Depreciation (assume real)		190333	190333	190333	190333	190333	951665
		Real NCFBILT		475257	600321	730227	882356	1032222	3720383
		Less Interest		-148800	-124085	-97071	-67545	-35273	-472774
		Less Real Interest		-143077	-114723	-86296	-57738	-28992	-430826
		Real NCFBLT		332180	485598	643931	824618	1003230	3289557
		Accumulated real loss b/f		0	0	0	0	0	0
		Real NCFBT		332180	485598	643931	824618	1003230	3289557
		Less Tax 30%		99654	145679	193179	247385	300969	986867
		Real NCFAT		232526	339918	450752	577233	702261	2302690
		Add Real Dep (assume real)		190333	190333	190333	190333	190333	951665
		Real NCFAT + Real Dep		422859	530251	641085	767566	892594	3254355
		Less Principal		-265755	-290470	-317484	-347010	-379282	-1600000
		Less Real Principal		-255533	-268556	-282242	-296625	-311742	-1414699
		Real NCF		167326	261695	358843	470940	580852	1839656
		PV of Real NCF		158904	236015	307340	383047	448667	1533973
		IRR = 41%							

		Year	0	1	2	3	4	5	Total
Wholesaler offered a FRL									
		Total Nominal Payment		-377770	-377770	-377770	-377770	-377770	-1888850
Interest rate	**Loan size**	Nominal Principal		-284970	-301498	-318985	-337486	-357060	-1600000
5.8%	1600000	Nominal Interest		-92800	-76272	-58785	-40284	-20710	-288850
		Loan Balance After Payment	1600000	1315030	1013532	694547	357060	0	3380169
		Nominal Lender PV (outflows)		357060	337486	318985	301498	284970	1600000

2b. Single Payment Non-amortized Loan (SPL)

	Year	0	1	2	3	4	5	Total
	Total Nominal Payment		-148800	-148800	-148800	-148800	-1748800	-2344000
	Nominal Principal		0	0	0	0	-1600000	-1600000
	Nominal Interest		-148800	-148800	-148800	-148800	-148800	-744000
	Loan Balance After Payment	1600000	1600000	1600000	1600000	1600000	0	
	Nominal Lender PV (inflows)		136139	124555	113957	104261	1121087	1600000
Interest rate **Loan size**	Real Project NCFBIDLT		665590	790654	920560	1072689	1222555	4672048
9.3% **1600000**	Less Depreciation (assume real)		190333	190333	190333	190333	190333	951665
	Real NCFBILT		475257	600321	730227	882356	1032222	3720383
	Less Interest		-148800	-148800	-148800	-148800	-148800	-744000
	Less Real Interest		-143077	-137574	-132283	-127195	-122303	-662431
	Real NCFBLT		332180	462747	597944	755161	909919	3057952
	Accumulated real loss b/f		0	0	0	0	0	0
	Real NCFBT		332180	462747	597944	755161	909919	3057952
	Less Tax 30%		99654	138824	179383	226548	272976	917386
	Real NCFAT		232526	323923	418561	528613	636943	2140566
	Add Real Dep (assume real)		190333	190333	190333	190333	190333	951665
	Real NCFAT + Real Dep		422859	514256	608894	718946	827276	3092231
	Less Principal		0	0	0	0	-1600000	-1600000
	Less Real Principal		0	0	0	0	-1315083	-1315083
	Real NCF		422859	514256	608894	718946	-487807	1777148
	PV of Real NCF		401576	463791	521503	584767	-376796	1594840
	IRR = 70%							

Wholesaler offered a SPL

	Year	0	1	2	3	4	5	Total
	Total Nominal Payment		-92800	-92800	-92800	-92800	-1692800	-2064000
Interest rate **Loan size**	Nominal Principal		0	0	0	0	-1600000	-1600000
5.8% **1600000**	Nominal Interest		-92800	-92800	-92800	-92800	-92800	-464000
	Loan Balance	1600000	1600000	1600000	1600000	1600000	0	
	Nominal Lender PV (outflows)		87713	82904	78359	74064	1276960	1600000

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2c. Decreasing Payment Loan (DP)

		Year	0	1	2	3	4	5	Total
		Total Nominal Payment		-468800	-439040	-409280	-379520	-349760	-2046400
		Nominal Principal		-320000	-320000	-320000	-320000	-320000	-1600000
		Nominal Interest		-148800	-119040	-89280	-59520	-29760	-446400
		Loan Balance After Payment	1600000	1280000	960000	640000	320000	0	
		Nominal Lender PV (inflows)		428911	367505	313444	265922	224217	1600000
Interest rate	Loan size	Real Project NCFBIDLT		665590	790654	920560	1072689	1222555	4672048
9.3%	1600000	Less Depreciation (assume real)		190333	190333	190333	190333	190333	951665
		Real NCFBILT		475257	600321	730227	882356	1032222	3720383
		Less Interest		-148800	-119040	-89280	-59520	-29760	-446400
		Less Real Interest		-143077	-110059	-79370	-50878	-24461	-407844
		Real NCFBLT		332180	490262	650857	831478	1007761	3312539
		Accumulated real loss b/f		0	0	0	0	0	0
		Real NCFBT		332180	490262	650857	831478	1007761	3312539
		Less Tax 30%		99654	147079	195257	249443	302328	993762
		Real NCFAT		232526	343183	455600	582035	705433	2318777
		Add Real Dep (assume real)		190333	190333	190333	190333	190333	951665
		Real NCFAT + Real Dep		422859	533516	645933	772368	895766	3270442
		Less Principal		-320000	-320000	-320000	-320000	-320000	-1600000
		Less Real Principal		-307692	-295858	-284479	-273537	-263017	-1424583
		Real NCF		115167	237658	361454	498830	632749	1845859
		PV of Real NCF		109370	214337	309577	405732	488753	1527769
		IRR = 39%							

		Year	0	1	2	3	4	5	Total
Wholesaler offered a DP		Total Nominal Payment		-412800	-394240	-375680	-357120	-338560	-1878400
Interest rate	Loan size	Nominal Principal		-320000	-320000	-320000	-320000	-320000	-1600000
5.8%	1600000	Nominal Interest		-92800	-74240	-55680	-37120	-18560	-278400
		Loan Balance After Payment	1600000	1280000	960000	640000	320000	0	
		Nominal Lender PV (outflows)		390170	352200	317220	285017	255392	1600000

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2d. Four-Year Graduated Payment Loan (4YRGPL)

Inflation Rate = 4% (CPIX)

Year	0	1	2	3	4	5	Total
Total Nominal Payment		-414555	-414555	-414555	-414555	-414555	-2072774
Nominal Principal		-265755	-290470	-317484	-347010	-379282	-1600000
Nominal Interest		-148800	-124085	-97071	-67545	-35273	-472774
Actual Nominal Interest Paid		-128000	-110834	-90031	-65050	-35273	-429188
Actual Nominal Interest Rate (%)		8.00	8.31	8.63	8.96	9.30	
Nominal Interest Rate Subsidy		-20800	-13251	-7040	-2495	0	-43586
Loan Balance After Payment	1600000	1334245	1043775	726291	379282	0	
Nominal Lender PV (inflows)		379282	347010	317484	290470	265755	1600000
Cost to Lender (PV of interest rate subsidy)		19030	11092	5391	1748	0	37262
Real Project NCFBIDLT		665590	790654	920560	1072689	1222555	4672048
Less Depreciation (assume real)		190333	190333	190333	190333	190333	951665
Real NCFBILT		475257	600321	730227	882356	1032222	3720383
Less Interest		-128000	-110834	-90031	-65050	-35273	-429188
Less Real Interest		-123077	-102472	-80037	-55605	-28992	-390184
Real NCFBLT		352180	497849	650190	826751	1003230	3330199
Accumulated real loss b/f		0	0	0	0	0	0
Real NCFBT		352180	497849	650190	826751	1003230	3330199
Less Tax 30%		105654	149355	195057	248025	300969	999060
Real NCFAT		246526	348494	455133	578726	702261	2331140
Add Real Dep (assume real)		190333	190333	190333	190333	190333	951665
Real NCFAT + Real Dep		436859	538827	645466	769059	892594	3282805
Less Principal		-265755	-290470	-317484	-347010	-379282	-1600000
Less Real Principal		-255533	-268556	-282242	-296625	-311742	-1414699
Real NCF		181326	270271	363224	472433	580852	1868106
PV of Real NCF		172199	243749	311092	384262	448667	1559969
IRR = 42%							

Interest rate **Loan size**
9.3% 1600000

To compute interest rates for graduated loans:

Start interest rate (year 0) = 8%

End interest rate (year N) = 9.3%

Period of interest rate graduation = 4 years

Annual rate of increase = 4%

Accumulated subsidy (%) = 1.3%

Accumulated nominal subsidy = R43586

Wholesaler offered a Four-Year GPL (4YRGPL)

Inflation Rate = 4% (CPIX)

Year	0	1	2	3	4	5	Total
Total Nominal Payment		-377770	-377770	-377770	-377770	-377770	-1888850
Nominal Principal		-284970	-301498	-318985	-337486	-357060	-1600000
Nominal Interest		-92800	-76272	-58785	-40284	-20710	-288850
Actual Nominal Interest Paid		-71960	-63027	-51765	-37802	-20710	-245264
Actual Interest Rate Paid (%)		4.50	4.79	5.11	5.44	5.80	
Nominal Interest Rate Subsidy		-20840	-13245	-7020	-2482	0	-43586
Loan Balance After Payment	1600000	1315030	1013532	694547	357060	0	
Nominal Lender PV (outflows)		357060	337486	318985	301498	284970	1600000
Cost to Taxpayers/Wholesaler (PV of interest rate subsidy)		19697	11833	5927	1981	0	39438

Interest rate   **Loan size**

5.8%   1600000

To compute interest rates for graduated loans:

Start interest rate (year 0) = 4.5%

End interest rate (year N) = 5.8%

Period of interest rate graduation = 4 years

Annual rate of increase = 7%

Accumulated subsidy = 1.3%

Accumulated nominal subsidy = R43586

2e. One-Year Deferred Payment Loan (DEFPL0-1)

Year	0	1	2	3	4	5	Total
Total Nominal Payment		0	-543359	-543359	-543359	-543359	-2173434
Nominal Principal		0	-380720	-416127	-454827	-497126	-1748800
Nominal Interest		0	-162638	-127231	-88532	-46233	-424634
Loan Balance After Payment	1600000	1748800	1368080	951953	497126	0	
Nominal Lender PV (inflows)		0	454827	416127	380720	348326	1600000

Interest rate Loan size Graduated
9.3% 1600000 1 year

	0	1	2	3	4	5	Total
Real Project NCFBIDLT		665590	790654	920560	1072689	1222555	4672048
Less Depreciation (assume real)		190333	190333	190333	190333	190333	951665
Real NCFBILT		475257	600321	730227	882356	1032222	3720383
Less Interest		0	-162638	-127231	-88532	-46233	-424634
Less Real Interest		0	-150368	-113108	-75677	-38000	
Real NCFBLT		475257	449953	617119	806679	994222	3343229
Accumulated real loss b/f		0	0	0	0	0	0
Real NCFBT		475257	449953	617119	806679	994222	3343229
Less Tax 30%		142577	134986	185136	242004	298267	1002969
Real NCFAT		332680	314967	431983	564675	695955	2340260
Add Real Dep (assume real)		190333	190333	190333	190333	190333	951665
Real NCFAT + Real Dep		523013	505300	622316	755008	886288	3291925
Less Principal		0	-380720	-416127	-454827	-497126	-1748800
Less Real Principal		0	-351997	-369935	-388788	-408601	-1519322
Real NCF		523013	153303	252381	366220	477687	1772604
PV of Real NCF		496688	138259	216158	297871	368979	1517956
IRR = 53%							

Wholesaler offered a DEFPL0-1

Year	0	1	2	3	4	5	Total
Total Nominal Payment		0	-486292	-486292	-486292	-486292	-1945169
Nominal Principal		0	-388110	-410620	-434436	-459634	-1692800
Nominal Interest		0	-98182	-75672	-51856	-26659	-252369
Loan Balance After Payment	1600000	1692800	1304690	894070	459634	0	
Nominal Lender PV (outflows)		0	434436	410620	388110	366834	1600000

Interest rate Loan size Graduated
5.8% 1600000 1 year

Appendix 3: Lender's nominal cash inflows and outflows, and nominal net cash flows, for alternative loan products when financing Company A.

Lender's nominal cash flows (CFs) under alternative loans offered by the wholesaler compared to the conventional FRL

	Year 1	Year 2	Year 3	Year 4	Year 5	Total nominal CFs		
Lender's nominal cash outflows								
For FRL (1)	-377770	-377770	-377770	-377770	-377770	-1888850		
For SPL (2)	- 92800	-92800	-92800	-92800	-1692800	-2064000		
For DP (3)	-412800	-394240	-375680	-357120	-338560	-1878400		
For 4YRGPL (4)	-377770	-377770	-377770	-377770	-377770	-1888850		
For DEFPL0-1 (5)	0	-486292	-486292	-486292	-486292	-1945169		
							Years when lender's nominal CFs are positive	**Number of years that nominal CFs are positive**
Lender's nominal cash inflows and nominal net cash flows								
Nominal cash inflows from the FRL (6)	**414555**	**414555**	**414555**	**414555**	**414555**	**2072774**		
Net cash flows from the FRL for each alternative loan from the wholesaler								
(6) - (1)	36785	36785	36785	36785	36785	**183924**	Yrs 1 - 5	5
(6) - (2)	321755	321755	321755	321755	-1278245	8774	Yrs 1 - 4	4
(6) - (3)	1755	20315	38875	57435	75995	**194374**	Yrs 1 - 5	5
(6) - (4)	36785	36785	36785	36785	36785	**183924**	Yrs 1 - 5	5
(6) - (5)	414555	-71737	-71737	-71737	-71737	127605	Yr 1	1
Nominal cash inflows from the SPL (7)	**148800**	**148800**	**148800**	**148800**	**1748800**	**2344000**		
Net cash flows from the SPL for each alternative loan from the wholesaler								
(7) - (1)	-228970	-228970	-228970	-228970	1371030	455150	Yr 5	1
(7) - (2)	56000	56000	56000	56000	56000	**280000**	Yrs 1 - 5	5
(7) - (3)	-264000	-245440	-226880	-208320	1410240	465600	Yr 5	1
(7) - (4)	-228970	-228970	-228970	-228970	1371030	455150	Yr 5	1
(7) - (5)	148800	-337492	-337492	-337492	1262508	398831	Yrs 1 & 5	2

							Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from the DP (8)	**468800**	**439040**	**409280**	**379520**	**349760**	**2046400**		
Net cash flows from the DP for each alternative loan from the wholesaler								
(8) - (1)	91030	61270	31510	1750	-28010	157550	Yrs 1 - 4	4
(8) - (2)	376000	346240	316480	286720	-1343040	-17600	Yrs 1 - 4	4
(8) - (3)	56000	44800	33600	22400	11200	**168000**	**Yrs 1 - 5**	5
(8) - (4)	91030	61270	31510	1750	-28010	157550	Yrs 1 - 4	4
(8) - (5)	468800	-47252	-77012	-106772	-136532	101231	Yr 1	1
Nominal cash inflows from the 4YRGPL (9)	**414555**	**414555**	**414555**	**414555**	**414555**	**2072774**		
Net cash flows from the 4YRGPL for each alternative loan from the wholesaler								
(9) - (1)	36785	36785	36785	36785	36785	**183924**	**Yrs 1 - 5**	5
(9) - (2)	321755	321755	321755	321755	-1278245	8774	Yrs 1 - 4	4
(9) - (3)	1755	20315	38875	57435	75995	**194374**	**Yrs 1 - 5**	5
(9) - (4)	36785	36785	36785	36785	36785	**183924**	**Yrs 1 - 5**	5
(9) - (5)	414555	-71737	-71737	-71737	-71737	127605	Yr 1	1
Nominal cash inflows from the DEFPL0-1 (10)	**0**	**543359**	**543359**	**543359**	**543359**	**2173434**		
Net cash flows from the DEFPL0-1 for each alternative loan from the wholesaler								
(10) - (1)	-377770	165589	165589	165589	165589	284584	Yrs 2 - 5	4
(10) - (2)	-92800	450559	450559	450559	-1149441	109434	Yrs 2 - 4	3
(10) - (3)	-412800	149119	167679	186239	204799	295034	Yrs 2 - 5	4
(10) - (4)	-377770	165589	165589	165589	165589	284584	Yrs 2 - 5	4
(10) - (5)	0	57066	57066	57066	57066	**228265**	**Yrs 1 - 5**	5

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Appendix 4: Impact of alternative loan products on the present value (PV) of Company B's cash-flows, and the PV of the lender's loan inflows and outflows.

4a. Fixed Repayment Equally-amortised Loan (FRL)

Year	0	1	2	3	4	5	6	7	8	Total
Total Nominal Payment		-110530	-110530	-110530	-110530	-110530	-110530	-110530	-110530	-884238
Nominal Principal		-54265	-59311	-64827	-70856	-77446	-84648	-92521	-101125	-605000
Nominal Interest		-56265	-51218	-45702	-39673	-33084	-25881	-18009	-9405	-279238
Loan Balance After Payment	605000	550735	491424	426596	355740	278294	193646	101125	0	
Nominal Lender PV (inflows)		101125	92521	84648	77446	70856	64827	59311	54265	605000

Interest rate 9.3% Loan size 605000

	0	1	2	3	4	5	6	7	8	Total
Real Project NCFBIDLT	-134643	172259	150058	235051	220033	220033	220033	220033		1302857
Less Depreciation (assume real)	0	0	0	0	0	0	0	0		0
Real NCFBILT	-134643	172259	150058	235051	220033	220033	220033	220033		1302857
Less Interest	-56265	-51218	-45702	-39673	-33084	-25881	-18009	-9405		-279238
Less Real Interest	-54101	-47354	-40629	-33913	-27193	-20454	-13685	-6872		-244202
Real NCFBLT	-188744	124905	109429	201138	192840	199579	206348	213161		1058655
Accumulated real loss b/f	-188744	-63839	0	0	0	0	0	0		-252583
Real NCFBT	-188744	-63839	45589	201138	192840	199579	206348	213161		806072
Less Tax 30%	0	0	13677	60341	57852	59874	61904	63948		317597
Real NCFAT	-188744	-63839	31913	140797	134988	139705	144443	149213		488475
Add Real Dep (assume real)	0	0	0	0	0	0	0	0		0
Real NCFAT + Real Dep	-188744	-63839	31913	140797	134988	139705	144443	149213		488475
Less Principal	-54265	-59311	-64827	-70856	-77446	-84648	-92521	-101125		-605000
Less Real Principal	-52178	-54837	-57631	-60568	-63655	-66899	-70308	531109		105033
Real NCF	-240922	-118676	-25719	80228	71333	72806	74135	680322		593508
PV of Real NCF	-293360	-228795	-107030	-22027	65255	55100	53407	51645	450078	317631
IRR = 6%										

Wholesaler offered a FRL

Year	0	1	2	3	4	5	6	7	8	Total
Total Nominal Payment		-96657	-96657	-96657	-96657	-96657	-96657	-96657	-96657	-773256
Nominal Principal		-61567	-65138	-68916	-72913	-77142	-81616	-86350	-91358	-605000
Nominal Interest		-35090	-31519	-27741	-23744	-19515	-15041	-10307	-5299	-168256
Loan Balance After Payment	605000	543433	478295	409379	336466	259324	177708	91358	0	
Nominal Lender PV (outflows)		91358	86350	81616	77142	72913	68916	65138	61567	605000

Interest rate 5.8% Loan size 605000

4b. Single Payment Non-Amortized Loan (SPL)

		Year	0	1	2	3	4	5	6	7	8	Total
		Total Nominal Payment		-56265	-56265	-56265	-56265	-56265	-56265	-56265	-661265	-1055120
		Nominal Principal		0	0	0	0	0	0	0	-605000	-605000
		Nominal Interest		-56265	-56265	-56265	-56265	-56265	-56265	-56265	-56265	-450120
		Loan Balance After Payment	605000	605000	605000	605000	605000	605000	605000	605000	0	
		Nominal Lender PV (inflows)		51478	47098	43090	39424	36069	33000	30192	324649	605000
Interest rate	Loan size	Real Project NCFBIDLT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
9.3%	605000	Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0
		Real NCFBILT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
		Less Interest		-56265	-56265	-56265	-56265	-56265	-56265	-56265	-56265	-450120
		Less Real Interest		-54101	-52020	-50019	-48096	-46246	-44467	-42757	-41112	-378818
		Real NCFBLT		-188744	120239	100039	186955	173787	175566	177276	178921	924039
		Accumulated real loss b/f		-188744	-68505	0	0	0	0	0	0	-257249
		Real NCFBT		-188744	-68505	31534	186955	173787	175566	177276	178921	666790
		Less Tax 30%		0	0	9460	56087	52136	52670	53183	53676	277212
		Real NCFAT		-188744	-68505	22073	130869	121651	122896	124093	125245	389578
		Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0
		Real NCFAT + Real Dep		-188744	-68505	22073	130869	121651	122896	124093	125245	389578
		Less Principal		0	0	0	0	0	0	0	-605000	-605000
		Less Real Principal		0	0	0	0	0	0	0	162932	162932
		Real NCF		-188744	-68505	22073	130869	121651	122896	124093	288177	552511
		PV of Real NCF	-293360	-179244	-61783	18905	106444	93967	90150	86447	190648	345535
		IRR = 7%										

Wholesaler offered a SPL

		Year	0	1	2	3	4	5	6	7	8	Total
Interest rate	Loan size	Total Nominal Payment		-35090	-35090	-35090	-35090	-35090	-35090	-35090	-640090	-885720
6.3%	605000	Nominal Principal		0	0	0	0	0	0	0	-605000	-605000
		Nominal Interest		-35090	-35090	-35090	-35090	-35090	-35090	-35090	-35090	-280720
		Loan	605000	605000	605000	605000	605000	605000	605000	605000	0	
		Nominal Lender PV (outflows)		33166	31348	29630	28005	26470	25019	23647	407714	605000

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4c. Decreasing Payment Loan (DP)

		Year	0	1	2	3	4	5	6	7	8	Total
		Total Nominal Payment		-131890	-124857	-117824	-110791	-103758	-96724	-89691	-82658	-858193
		Nominal Principal		-75625	-75625	-75625	-75625	-75625	-75625	-75625	-75625	-605000
		Nominal Interest		-56265	-49232	-42199	-35166	-28133	-21099	-14066	-7033	-253193
		Loan Balance After Payment	605000	529375	453750	378125	302500	226875	151250	75625	0	
		Nominal Lender PV (inflows)		120668	104513	90234	77629	66515	56730	48129	40581	605000
Interest rate	Loan size	Real Project NCFBIDLT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
9.3%	605000	Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0
		Real NCFBILT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
		Less Interest		-56265	-49232	-42199	-35166	-28133	-21099	-14066	-7033	-253193
		Less Real Interest		-54101	-45518	-37515	-30060	-23123	-16675	-10689	-5139	-222819
		Real NCFBLT		-188744	126741	112543	204991	196910	203358	209344	214894	1080038
		Accumulated real loss b//f		-188744	-62003	0	0	0	0	0	0	-250747
		Real NCFBT		-188744	-62003	50541	204991	196910	203358	209344	214894	829291
		Less Tax 30%		0	0	15162	61497	59073	61007	62803	64468	324011
		Real NCFAT		-188744	-62003	35379	143494	137837	142351	146541	150426	505280
		Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0
		Real NCFAT + Real Dep		-188744	-62003	35379	143494	137837	142351	146541	150426	505280
		Less Principal		-75625	-75625	-75625	-75625	-75625	-75625	-75625	-75625	-605000
		Less Real Principal		-72716	-69920	-67230	-64645	-62158	-59768	-57469	549742	95836
		Real NCF		-261460	-131922	-31852	78849	75679	82583	89072	700167	601116
		PV of Real NCF	-293360	-248300	-118976	-27280	64133	58456	60579	62050	463207	313868
		IRR = 6%										

Wholesaler offered a DP

		Year	0	1	2	3	4	5	6	7	8	Total
Interest rate	Loan size	Total Nominal Payment		-110715	-106329	-101943	-97556	-93170	-88784	-84398	-80011	-762905
5.8%	605000	Nominal Principal		-75625	-75625	-75625	-75625	-75625	-75625	-75625	-75625	-605000
		Nominal Interest		-35090	-30704	-26318	-21931	-17545	-13159	-8773	-4386	-157905
		Loan Balance After Payment	605000	529375	453750	378125	302500	226875	151250	75625	0	
		Nominal Lender PV (outflows)		104646	94990	86079	77860	70283	63302	56876	50964	605000

4d. Seven-Year Graduated Payment Loan (7YRGPL)

Inflation rate = 4% (CPIX)

Interest rate	Loan size
9.3%	605000

To compute interest rates for graduated loans

Start interest rate (year 0) = 5%

Finish interest rate (year N) = 9.3%

Period of interest rate graduation = 7 years

Annual rate of increase = 1%

Accumulated Subsidy (%) = 4.3%

Accumulated Subsidy Nominal (Rands) = 88812

Year	0	1	2	3	4	5	6	7	8	Total
Total Nominal Payment		-110530	-110530	-110530	-110530	-110530	-110530	110530	-110530	-884238
Nominal Principal		-54265	-59311	-64827	-70856	-77446	-84648	-92521	-101125	-605000
Nominal Interest Rates		-56265	-51218	-45702	-39673	-33084	-25881	-18009	-9405	-279238
Actual Nominal Interest Paid		-30250	-30089	-29338	-27829	-25358	-21676	-16481	-9405	-190426
Actual Interest Rate Paid (%)		5.0	5.5	6.0	6.5	7.1	7.8	8.5	9.3	
Nominal Interest Rate Subsidy		-26015	-21129	-16364	-11845	-7726	-4205	-1528	0	-88812
Loan Balance After Payment	605000	550735	491424	426596	355740	278294	193646	101125	0	
Nominal Lender PV (inflows)	101125	92521	84648	77446	70856	64827	59311	54265		605000
Cost to Lender (PV of interest rate subsidy)	23801	17686	12533	8299	4953	2466	820	0		70559
Real Project NCFBIDLT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0
Real NCFBILT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
Less Interest		-30250	-30089	-29338	-27829	-25358	-21676	-16481	-9405	-190426
Less Real Interest		-29087	-27819	-26081	-23788	-20842	-17131	-12524	-6872	-164145
Real NCFBLT		-163730	144440	123977	211263	199191	202902	207509	213161	1138712
Accumulated real loss b/f		-163730	-19290	0	0	0	0	0	0	-183019
Real NCFBT		-163730	-19290	104687	211263	199191	202902	207509	213161	955693
Less Tax 30%		0	0	31406	63379	59757	60871	62253	63948	341614
Real NCFAT		-163730	-19290	73281	147884	139434	142031	145256	149213	614079
Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep		-163730	-19290	73281	147884	139434	142031	145256	149213	614079
Less Principal		-54265	-59311	-64827	-70856	-77446	-84648	-92521	-101125	-605000
Less Real Principal		-52178	-54837	-57631	-60568	-63655	-66899	-70308	531109	105033
Real NCF		-215907	-74127	15649	87316	75779	75133	74948	680322	719112
PV of Real NCF	-293360	-205040	-66853	13403	71020	58534	55113	52211	450078	428466

IRR = 9%

Wholesaler offered a Seven-Year GPL (7YRGPL)
Inflation rate = 4% (CPIX)

Interest rate	Loan size
5.8%	605000

To compute interest rates for graduated loans

Start interest rate (year 0) = 1.7%
Finish interest rate (year N) = 5.8%
Period of interest rate graduation = 7 years
Annual rate of increase = 20%

Year	0	1	2	3	4	5	6	7	8	Total
Total Nominal Payment		-96657	-96657	-96657	-96657	-96657	-96657	-96657	-96657	-773256
Nominal Principal		-61567	-65138	-68916	-72913	-77142	-81616	-86350	-91358	-605000
Nominal Interest Rates		-35090	-31519	-27741	-23744	-19515	-15041	-10307	-5299	-168256
Actual Nominal Interest Paid		-9995	-10742	-11312	-11585	-11392	-10506	-8614	-5299	-79444
Actual Nominal Interest Rate Paid (%)		1.7	2.0	2.4	2.8	3.4	4.1	4.8	5.8	
Nominal Interest Rate Subsidy		-25095	-20777	-16429	-12159	-8123	-4535	-1693	0	-88812
Loan Balance After Payment	605000	543433	478295	409379	336466	259324	177708	91358	0	
Nominal Lender PV (outflows)		91358	86350	81616	77142	72913	68916	65138	61567	605000
Cost to Tax Payer/Wholesaler (PV of interest rate subsidy)		23720	18562	13873	9704	6127	3233	1141	0	76360

Accumulated Subsidy = 4.8%
Accumulated Subsidy (Rands) = 88812

4d1. Sixteen-Year Graduated Payment Loan (16YRGPL)

Inflation rate = 4% (CPIX)

Interest rate   Loan size
9.3%   605000

To compute interest rates for graduated loans
Start interest rate (year 0) = 5%
Finish interest rate (year N) = 9.30%
Period of interest rate graduation =16 years
Annual rate of increase = 7%

Accumulated Subsidy = 4%
Accumulated Subsidy (Rands) = 194030

Year	0	1	2	3	4	5	6	7	8	9
Total Nominal Payment		-72183	-72183	-72183	-72183	-72183	-72183	-72183	-72183	-72183
Nominal Principal		-15918	-17399	-19017	-20785	-22718	-24831	-27140	-29664	-32423
Nominal Interest		-56265	-54785	-53167	-51398	-49465	-47352	-45043	-42519	-39760
Actual Nominal Interest Paid		-30250	-30619	-30890	-31043	-31057	-30907	-30562	-29990	-29154
Actual Nominal Interest Rate Paid (%)		5.00	5.20	5.40	5.62	5.84	6.07	6.31	6.56	6.82
Nominal Interest Rate Subsidy		-26015	-24166	-22277	-20355	-18408	-16446	-14481	-12529	-10607
Loan Balance After Payment	605000	589082	571683	552667	531881	509163	484332	457192	427528	395105
Nominal Lender PV (inflows)	66041	60422	55281	50577	46274	42337	38734	35438	32423	
Cost to Lender (PV of interest rate subsidy)	23801	20228	17061	14262	11800	9646	7771	6151	4764	
Real Project NCFBIDLT	-134643	172259	150058	235051	220033	220033	220033	220033	220033	
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	
Real NCFBILT	-134643	172259	150058	235051	220033	220033	220033	220033	220033	
Less Interest	-30250	-30619	-30890	-31043	-31057	-30907	-30562	-29990	-29154	
Less Real Interest	-29087	-28309	-27461	-26536	-25527	-24426	-23225	-21914	-20483	
Real NCFBLT	-163730	143950	122597	208515	194506	195607	196808	198119	199550	
Accumulated real loss b/ f	-163730	-19779	0	0	0	0	0	0	0	
Real NCFBT	-163730	-19779	102818	208515	194506	195607	196808	198119	199550	
Less Tax 30%	0	0	30845	62555	58352	58682	59043	59436	59865	
Real NCFAT	-163730	-19779	71972	145961	136154	136925	137766	138684	139685	
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	
Real NCFAT + Real Dep	-163730	-19779	71972	145961	136154	136925	137766	138684	139685	
Less Principal	-15918	-17399	-19017	-20785	-22718	-24831	-27140	-29664	-32423	
Less Real Principal	-15306	-16086	-16906	-17767	-18673	-19624	-20624	-21675	-22780	
Real NCF	-179035	-35865	55067	128193	117482	117301	117142	117008	116905	
PV of Real NCF	-293360	-170024	-32346	47163	104268	90746	86046	81604	77409	73448

IRR = 17%

Year	10	11	12	13	14	15	16	17	Total
Total Nominal Payment	-72183	-72183	-72183	-72183	-72183	-72183	-72183	-72183	-1227114
Nominal Principal	-35438	-38734	-42337	-46274	-50577	-55281	-60422	-66041	-605000
Nominal Interest	-36745	-33449	-29847	-25909	-21606	-16902	-11761	-6142	-622114
Actual Nominal Interest Paid	-28008	-26504	-24585	-22186	-19233	-15641	-11314	-6142	-428084
Actual Nominal Interest Rate Paid (%)	7.09	7.37	7.66	7.96	8.28	8.61	8.95	9.30	
Nominal Interest Rate Subsidy	-8737	-6945	-5262	-3723	-2373	-1262	-447	0	-194030
Loan Balance After Payment	359666	320932	278595	232322	181744	126463	66041	0	
Nominal Lender PV (inflows)	29664	27140	24831	22718	20785	19017	17399	15918	605000
Cost to Lender (PV of interest rate subsidy)	3590	2611	1810	1172	683	332	108	0	125791
Real Project NCFBIDLT	220033	220033	220033	220033	220033	220033	220033	220033	3283154
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0
Real NCFBILT	220033	220033	220033	220033	220033	220033	220033	220033	3283154
Less Interest	-28008	-26504	-24585	-22186	-19233	-15641	-11314	-6142	-428084
Less Real Interest	-18921	-17217	-15356	-13324	-11106	-8685	-6040	-3153	-320769
Real NCFBLT	201112	202816	204677	206709	208927	211348	213993	216880	2962385
Accumulated real loss b/ f	0	0	0	0	0	0	0	0	-183509
Real NCFBT	201112	202816	204677	206709	208927	211348	213993	216880	2778876
Less Tax 30%	60334	60845	61403	62013	62678	63404	64198	65064	888716
Real NCFAT	140778	141971	143274	144696	146249	147944	149795	151816	1890161
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	140778	141971	143274	144696	146249	147944	149795	151816	1890161
Less Principal	-35438	-38734	-42337	-46274	-50577	-55281	-60422	-66041	-605000
Less Real Principal	-23941	-25161	-26443	-27791	-29207	-30696	-32260	571096	206156
Real NCF	116837	116810	116831	116905	117042	117248	117535	722912	2096317
PV of Real NCF	69710	66187	62866	59740	56799	54036	51441	300471	1079565

Wholesalers offered a Sixteen-Year GPL (16YRGPL)

Inflation rate = 4% (CPIX)

Interest rate   **Loan size**
    5.8%   605000
To compute interest rates for
Start interest rate (year 0) = 1.59%
Finish interest rate (year N) = 5.8%
Period of interest rate graduation =16 years
Annual rate of increase = 8%

Accumulated Subsidy = 4%
Accumulated Subsidy (Rands) = 94030

Year	0	1	2	3	4	5	6	7	8	9
Total Nominal Payment		-56916	-56916	-56916	-56916	-56916	-56916	-56916	-56916	-56916
Nominal Principal		-21826	-23092	-24432	-25849	-27348	-28934	-30612	-32388	-34266
Nominal Interest		-35090	-33824	-32485	-31068	-29568	-27982	-26304	-24529	-22650
Actual Nominal Interest Paid		-9619	-10053	-10468	-10855	-11202	-11494	-11715	-11844	-11859
Actual Nominal Interest Rate Paid (%)		1.59	1.72	1.87	2.03	2.20	2.38	2.58	2.80	3.04
Nominal Interest Rate Subsidy		-25471	-23771	-22016	-20213	-18367	-16488	-14589	-12684	-10791
Loan Balance After Payment	605000	583174	560081	535650	509801	482453	453519	422907	390519	356253
Nominal Lender PV (outflows)		53796	50847	48060	45425	42935	40581	38356	36254	34266
Cost to Taxpayers/Wholesaler (PV of interest rate subsidy)		24075	21236	18590	16132	13855	11756	9832	8079	6497

Year	10	11	12	13	14	15	16	17	Total
Total Nominal Payment	-56916	-56916	-56916	-56916	-56916	-56916	-56916	-56916	-967577
Nominal Principal	-36254	-38356	-40581	-42935	-45425	-48060	-50847	-53796	-605000
Nominal Interest	-20663	-18560	-16335	-13982	-11491	-8857	-6069	-3120	-362577
Actual Nominal Interest Paid	-11730	-11424	-10901	-10117	-9015	-7534	-5598	-3120	-168547
Actual Nominal Interest Rate Paid (%)	3.29	3.57	3.87	4.20	4.55	4.93	5.35	5.80	
Nominal Interest Rate Subsidy	-8933	-7136	-5434	-3865	-2476	-1323	-472	0	-194030
Loan Balance After Payment	320000	281643	241062	198128	152703	104643	53796	0	
Nominal Lender PV (outflows)	32388	30612	28934	27348	25849	24432	23092	21826	605000
Cost to Taxpayer/Wholesaler (PV of interest rate subsidy)	5083	3838	2762	1857	1124	568	191	0	145477

4e. One-Year Deferred Payment Loan (DEFPL0-1)

Year	0	1	2	3	4	5	6	7	8	Total
Total Nominal Payment		0	-132713	-132713	-132713	-132713	-132713	-132713	-132713	-928988
Nominal Principal		0	-71215	-77838	-85077	-92989	-101637	-111089	-121420	-661265
Nominal Interest		0	-61498	-54875	-47636	-39724	-31076	-21623	-11292	-267723
Loan Balance After Payment	605000	661265	590050	512212	427135	334146	232510	121420	0	2878739
Nominal Lender PV (inflows)		0	111089	101637	92989	85077	77838	71215	65155	605000

Interest rate 9.3% Loan size 605000 Graduated 1 year

Year	0	1	2	3	4	5	6	7	8	Total
Real Project NCFBIDLT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0
Real NCFBILT		-134643	172259	150058	235051	220033	220033	220033	220033	1302857
Less Interest		0	-61498	-54875	-47636	-39724	-31076	-21623	-11292	-267723
Less Real Interest		0	-56858	-48783	-40719	-32650	-24560	-16432	-8251	-228253
Real NCFBLT		-134643	115401	101275	194332	187383	195473	203601	211782	1074604
Accumulated real loss b/ f		-134643	-19242	0	0	0	0	0	0	-153885
Real NCFBT		-134643	-19242	82033	194332	187383	195473	203601	211782	920719
Less Tax 30%		0	0	24610	58300	56215	58642	61080	63535	322381
Real NCFAT		-134643	-19242	57423	136032	131168	136831	142521	148247	598338
Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep		-134643	-19242	57423	136032	131168	136831	142521	148247	598338
Less Principal		0	-71215	-77838	-85077	-92989	-101637	-111089	-121420	-661265
Less Real Principal		0	-65842	-69198	-72724	-76430	-80325	-84419	516279	67342
Real NCF		-134643	-85084	-11775	63308	54738	56506	58102	664527	665679
PV of Real NCF	-293360	-127866	-76735	-10085	51493	42281	41450	40476	439628	400642
IRR = 8%										

Wholesaler offered a DEFPL0-1

Interest rate 5.8% Loan size 605000 Graduated 1 year

Year	0	1	2	3	4	5	6	7	8	Total
Total Nominal Payment		0	-113849	-113849	-113849	-113849	-113849	-113849	-113849	-796941
Nominal Principal		0	-76724	-81174	-85882	-90863	-96133	-101708	-107608	-640090
Nominal Interest		0	-37125	-32675	-27967	-22986	-17716	-12140	-6241	-156851
Loan Balance After Payment	605000	640090	563366	482193	396311	305449	209316	107608	0	
Nominal Lender PV (outflows)		0	101708	96133	90863	85882	81174	76724	72518	605000

Appendix 5: Lender's nominal cash inflows and outflows, and nominal net cash flows, for alternative loan products when financing Company B.

Lender's nominal cash flows (CFs) under alternative loans offered by the wholesaler compared to the conventional FRL

Lenders nominal cash outflows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total nominal CFs
For FRL (1)	-96657	-96657	-96657	-96657	-96657	-96657	-96657	-96657	-773256
For SPL (2)	-35090	-35090	-35090	-35090	-35090	-35090	-35090	-640090	-885720
For DP (3)	-110715	-106329	-101943	-97556	-93170	-88784	-84398	-80011	-762905
For 7YRGPL (4)	-96657	-96657	-96657	-96657	-96657	-96657	-96657	-96657	-773256
For DEFPL0-1 (5)	0	-113849	-113849	-113849	-113849	-113849	-113849	-113849	-796941

Lender's nominal cash inflows and nominal net cash flows										Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from the FRL (6)	110530	110530	110530	110530	110530	110530	110530	110530	884238		
Net cash flows from the FRL for each alternative loan from the wholesaler											
(6) - (1)	13873	13873	13873	13873	13873	13873	13873	13873	110982	Yrs 1 – 8	8
(6) - (2)	75440	75440	75440	75440	75440	75440	75440	-529560	-1482	Yrs 1 – 7	7
(6) - (3)	-185	4201	8587	12974	17360	21746	26132	30519	121333	Yrs 2 – 8	7
(6) - (4)	13873	13873	13873	13873	13873	13873	13873	13873	110982	Yrs 1 - 8	8
(6) - (5)	110530	-3319	-3319	-3319	-3319	-3319	-3319	-3319	87297	Yr 1	1
Nominal cash inflows from SPL (7)	56265	56265	56265	56265	56265	56265	56265	661265	1055120		
Net cash flows from the SPL for each alternative loan from the wholesaler											
(7) – (1)	-40392	-40392	-40392	-40392	-40392	-40392	-40392	564608	281864	Yr 8	1
(7) – (2)	21175	21175	21175	21175	21175	21175	21175	21175	169400	Yrs 1 – 8	8
(7) – (3)	-54450	-50064	-45678	-41291	-36905	-32519	-28133	581254	292215	Yr 8	1
(7) – (4)	-40392	-40392	-40392	-40392	-40392	-40392	-40392	564608	281864	Yr 8	1
(7) – (5)	56265	-57584	-57584	-57584	-57584	-57584	-57584	547416	258179	Yrs1 & 8	2

									Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Lender's nominal inflows from DP (8)	131890	124857	117824	110791	103758	96724	89691	82658	858193		
Net cash flows from the DP for each alternative loan from the wholesaler											
(8) - (1)	35233	28200	21167	14134	7101	67	-6966	-13999	84937	Yrs 1 - 6	6
(8) - (2)	96800	89767	82734	75701	68668	61634	54601	-557432	-27528	Yrs 1 - 7	7
(8) - (3)	21175	18528	15881	13234	10588	7941	5294	2647	**95288**	**Yrs 1 - 8**	**8**
(8) - (4)	35233	28200	21167	14134	7101	67	-6966	-13999	84937	Yrs 1 - 6	6
(8) - (5)	131890	11008	3975	-3058	-10091	-17124	-24158	-31191	61251	Yrs 1 - 3	3
Lender's nominal inflows from 7YRGPL (9)	110530	110530	110530	110530	110530	110530	110530	110530	884238		
Net cash flows from the 7YRGPL for each alternative loan from the wholesaler											
(9) - (1)	13873	13873	13873	13873	13873	13873	13873	13873	110982	**Yrs 1 - 8**	**8**
(9) - (2)	75440	75440	75440	75440	75440	75440	75440	-529560	-1482	Yrs 1 - 7	7
(9) - (3)	-185	4201	8587	12974	17360	21746	26132	30519	121333	Yrs 2 - 8	7
(9) - (4)	13873	13873	13873	13873	13873	13873	13873	13873	110982	**Yrs 1 - 8**	**8**
(9) - (5)	110530	-3319	-3319	-3319	-3319	-3319	-3319	-3319	87297	Yr 1	1
Lender's nominal inflows from DEFPL0-1 (10)	0	132713	132713	132713	132713	132713	132713	132713	928988		
Net cash flows from the DEFPL0-1 for each alternative loan from the wholesaler											
(10) - (1)	-96657	36056	36056	36056	36056	36056	36056	36056	155732	Yrs 2 - 8	7
(10) - (2)	-35090	97623	97623	97623	97623	97623	97623	-507377	43268	Yrs 2 - 7	6
(10) - (3)	-110715	26384	30770	35156	39543	43929	48315	52701	166083	Yrs 2 - 8	7
(10) - (4)	-96657	36056	36056	36056	36056	36056	36056	36056	155732	Yrs 2 - 8	7
(10) - (5)	0	18864	18864	18864	18864	18864	18864	18864	**132046**	**Yrs 1 - 8**	**8**

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Appendix 6: Impact of alternative loan products on the present value (PV) of Company C's cash-flows, and the PV of the lender's loan inflows and outflows.

6a. Fixed Repayment Equally-amortised Loan (FRL)

	Year	0	1	2	3	4	5	6	7	8	9	10	Total
	Total Nominal Payment		-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-1057821
Interest rate	Loan size	Nominal Principal	-43472	-47515	-51934	-56764	-62043	-67813	-74119	-81012	-88547	-96781	-670000
9.3%	670000	Nominal Interest	-62310	-58267	-53848	-49018	-43739	-37969	-31663	-24770	-17236	-9001	-387821
		Loan Balance After Payment	670000	626528	579013	527079	470315	408273	340460	266340	185328	96781	0	
		Nominal Lender PV (inflows)		96781	88547	81012	74119	67813	62043	56764	51934	47515	43472	670000
	Real Project NCFBIDLT		500624	520649	541475	563134	585659	585659	585659	585659	585659	585659	5639836
	Less Depreciation (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
	Real NCFBILT		435124	455149	475975	497634	520159	520159	520159	520159	520159	520159	4984836
	Less Interest		-62310	-58267	-53848	-49018	-43739	-37969	-31663	-24770	-17236	-9001	-387821
	Less Real Interest		-59913	-53871	-47871	-41901	-35951	-30008	-24061	-18099	-12109	-6081	-329865
	Real NCFBLT		375211	401278	428104	455733	484208	490151	496098	502060	508050	514078	4654971
	Accumulated real loss b/f		0	0	0	0	0	0	0	0	0	0	0
	Real NCFBT		375211	401278	428104	455733	484208	490151	496098	502060	508050	514078	4654971
	Less Tax 30%		112563	120383	128431	136720	145263	147045	148829	150618	152415	154224	1396491
	Real NCFAT		262647	280894	299673	319013	338946	343106	347269	351442	355635	359855	3258480
	Add Real Dep (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
	Real NCFAT + Real Dep		328147	346394	365173	384513	404446	408606	412769	416942	421135	425355	3913480
	Less Principal		-43472	-47515	-51934	-56764	-62043	-67813	-74119	-81012	-88547	-96781	-670000
	Less Real Principal		-41800	-43930	-46169	-48522	-50995	-53593	-56325	-59195	-62212	-65382	-528123
	Real NCF		286347	302464	319004	335991	353451	355012	356444	357747	358923	359973	3385357
	PV of Real NCF		271935	272783	273219	273284	273016	260419	248309	236673	225500	214776	2549914
	IRR = 145%													

Wholesaler offered a FRL

	Year	0	1	2	3	4	5	6	7	8	9	10	Total
	Total Nominal Payment		-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-901709
Interest rate	Loan size	Nominal Principal	-51311	-54287	-57436	-60767	-64291	-68020	-71965	-76139	-80555	-85228	-670000
5.8%	670000	Nominal Interest	-38860	-35884	-32735	-29404	-25880	-22151	-18206	-14032	-9615	-4943	-231709
		Loan Balance After Payment	670000	618689	564402	506967	446200	381908	313888	241923	165783	85228	0	
		Nominal Lender PV (outflows)		85228	80555	76139	71965	68020	64291	60767	57436	54287	51311	670000

6b. Single Payment Non-amortized Loan (SPL)

	Year	0	1	2	3	4	5	6	7	8	9	10	Total
	Total Nominal Payment		-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-732310	-1293100
Interest rate	Nominal Principal		0	0	0	0	0	0	0	0	0	-670000	-670000
9.3%	Nominal Interest		-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-623100
Loan size 670000	Loan Balance After Payment	670000	670000	670000	670000	670000	670000	670000	670000	670000	670000	0	
	Nominal Lender PV (inflows)		57008	52158	47720	43659	39944	36546	33436	30591	27988	300949	670000
	Real Project NCFBIDLT		500624	520649	541475	563134	585659	585659	585659	585659	585659	585659	5639836
	Less Depreciation (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
	Real NCFBILT		435124	455149	475975	497634	520159	520159	520159	520159	520159	520159	4984836
	Less Interest		-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-62310	-623100
	Less Real Interest		-59913	-57609	-55393	-53263	-51214	-49244	-47350	-45529	-43778	-42094	-505390
	Real NCFBLT		375211	397540	420582	444371	468945	470915	472809	474630	476381	478065	4479446
	Accumulated real loss b/f		0	0	0	0	0	0	0	0	0	0	0
	Real NCFBT		375211	397540	420582	444371	468945	470915	472809	474630	476381	478065	4479446
	Less Tax 30%		112563	119262	126174	133311	140683	141274	141843	142389	142914	143419	1343834
	Real NCFAT		262647	278278	294407	311060	328261	329640	330966	332241	333467	334645	3135612
	Add Real Dep (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
	Real NCFAT + Real Dep		328147	343778	359907	376560	393761	395140	396466	397741	398967	400145	3790612
	Less Principal		0	0	0	0	0	0	0	0	0	-670000	-670000
	Less Real Principal		0	0	0	0	0	0	0	0	0	-452628	-452628
	Real NCF		328147	343778	359907	376560	393761	395140	396466	397741	398967	-52483	3337984
	PV of Real NCF		311631	310043	308252	306281	304152	289855	276190	263132	250658	-31314	2588879
	IRR = 165%												

Wholesaler offered a SPL

	Year	0	1	2	3	4	5	6	7	8	9	10	Total
	Total Nominal Payment		-38860	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-708860	-1058600
Interest rate	Nominal Principal		0	0	0	0	0	0	0	0	0	-670000	-670000
5.8%	Nominal Interest		-38860	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-388600
Loan size 670000	Loan	670000	670000	670000	670000	670000	670000	670000	670000	670000	670000	0	
	Nominal Lender PV (outflows)		36730	34716	32813	31014	29314	27707	26188	24752	23395	403370	670000

6c. Decreasing Payment Loan (DP)

Year	0	1	2	3	4	5	6	7	8	9	10	Total
Interest rate 9.3%												
Loan size 670000												
Total Nominal Payment		-129310	-123079	-116848	-110617	-104386	-98155	-91924	-85693	-79462	-73231	-1012705
Nominal Principal		-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-670000
Nominal Interest		-62310	-56079	-49848	-43617	-37386	-31155	-24924	-18693	-12462	-6231	-342705
Loan Balance After Payment	670000	603000	536000	469000	402000	335000	268000	201000	134000	67000	0	
Nominal Lender PV (inflows)		118307	103025	89487	77507	66918	57569	49327	42071	35693	30095	670000
Real Project NCFBIDLT		500624	520649	541475	563134	585659	585659	585659	585659	585659	585659	5639836
Less Depreciation (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
Real NCFBILT		435124	455149	475975	497634	520159	520159	520159	520159	520159	520159	4984836
Less Interest		-62310	-56079	-49848	-43617	-37386	-31155	-24924	-18693	-12462	-6231	-342705
Less Real Interest		-59913	-51848	-44315	-37284	-30729	-24622	-18940	-13659	-8756	-4209	-294275
Real NCFBLT		375211	403301	431660	460350	489430	495537	501219	506500	511403	515950	4690561
Accumulated real loss b/f		0	0	0	0	0	0	0	0	0	0	0
Real NCFBT		375211	403301	431660	460350	489430	495537	501219	506500	511403	515950	4690561
Less Tax 30%		112563	120990	129498	138105	146829	148661	150366	151950	153421	154785	1407168
Real NCFAT		262647	282311	302162	322245	342601	346876	350853	354550	357982	361165	3283393
Add Real Dep (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
Real NCFAT + Real Dep		328147	347811	367662	387745	408101	412376	416353	420050	423482	426665	3938393
Less Principal		-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-670000
Less Real Principal		-64423	-61945	-59563	-57272	-55069	-52951	-50914	-48956	-47073	-45263	-543430
Real NCF		263724	285865	308099	330473	353032	359425	365439	371094	376409	381402	3394963
PV of Real NCF		250450	257813	263880	268796	272692	263656	254575	245503	236486	227562	2541412
IRR = 136%												

Wholesaler offered a DP

Year	0	1	2	3	4	5	6	7	8	9	10	Total
Interest rate 5.8%												
Loan size 670000												
Total Nominal Payment		-105860	-101974	-98088	-94202	-90316	-86430	-82544	-78658	-74772	-70886	-883730
Nominal Principal		-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-67000	-670000
Nominal Interest		-38860	-34974	-31088	-27202	-23316	-19430	-15544	-11658	-7772	-3886	-213730
Loan Balance After Payment	670000	603000	536000	469000	402000	335000	268000	201000	134000	67000	0	
Nominal Lender PV (outflows)		100057	91100	82825	75183	68130	61624	55627	50102	45016	40337	670000

6d. Nine-Year Graduated Payment Loan (9YRGPL)

Inflation rate = 4% (CPIX)

Interest rate   Loan size
9.3%   670000

To compute interest rates for graduated loans

Start interest rate (year 0) = 8%

Finish interest rate (year N) = 9.3%

Period of interest rate graduation = 9 years

Annual % increase = 2%

Accumulated Subsidy = 1%

Accumulated Subsidy (Rands) = 35261

Year	0	1	2	3	4	5	6	7	8	9	10	Total
Total Nominal Payment		-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-1057821
Nominal Principal		-43472	-47515	-51934	-56764	-62043	-67813	-74119	-81012	-88547	-96781	-670000
Nominal Interest		-62310	-58267	-53848	-49018	-43739	-37969	-31663	-24770	-17236	-9001	-387821
Actual Nominal Interest Paid		-53600	-50968	-47897	-44337	-40229	-35512	-30113	-23955	-16950	-9001	-352560
Actual Nominal Interest Rate Paid (%)		8.00	8.13	8.27	8.41	8.55	8.70	8.84	8.99	9.15	9.30	
Nominal Interest Rate Subsidy		-8710	-7299	-5951	-4682	-3510	-2458	-1550	-815	-286	0	-35261
Loan Balance After Payment	670000	626528	579013	527079	470315	408273	340460	266340	185328	96781	0	
Nominal Lender PV (inflows)		96781	88547	81012	74119	67813	62043	56764	51934	47515	43472	670000
Cost to Lender (PV of Interest Rate Subsidy)		7969	6110	4558	3280	2250	1442	832	400	128	0	26969
Real Project NCFBIDLT		500624	520649	541475	563134	585659	585659	585659	585659	585659	585659	5639836
Less Depreciation (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
Real NCFBILT		435124	455149	475975	497634	520159	520159	520159	520159	520159	520159	4984836
Less Interest		-53600	-50968	-47897	-44337	-40229	-35512	-30113	-23955	-16950	-9001	-352560
Less Real Interest		-51538	-47123	-42580	-37899	-33066	-28065	-22883	-17503	-11909	-6081	-298647
Real NCFBLT		383586	408026	433395	459735	487093	492094	497276	502656	508250	514078	4686189
Accumulated real loss b/f		0	0	0	0	0	0	0	0	0	0	0
Real NCFBT		383586	408026	433395	459735	487093	492094	497276	502656	508250	514078	4686189
Less Tax 30%		115076	122408	130018	137920	146128	147628	149183	150797	152475	154224	1405857
Real NCFAT		268510	285618	303376	321814	340965	344466	348093	351859	355775	359855	3280332
Add Real Dep (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
Real NCFAT + Real Dep		334010	351118	368876	387314	406465	409966	413593	417359	421275	425355	3935332
Less Principal		-43472	-47515	-51934	-56764	-62043	-67813	-74119	-81012	-88547	-96781	-670000
Less Real Principal		-41800	-43930	-46169	-48522	-50995	-53593	-56325	-59195	-62212	-65382	-528123
Real NCF		292210	307188	322707	338792	355471	356372	357268	358164	359064	359973	3407209
PV of Real NCF		277502	277043	276391	275563	274576	261417	248883	236949	225588	214776	2568688

IRR = 147 %

Wholesaler offered a Nine-Year GPL (9YRGPL)

Inflation rate = 4% (CPIX)

Interest rate	Loan size
5.8%	670000

To compute interest rates for graduated loans

Start interest rate (year 0) = 4.48%

Finish interest rate (year N) = 5.8%

Period of interest rate graduation =9 years

Annual % increase 0.03%

Accumulated Subsidy = 1%

Accumulated Subsidy (Rands) = 35261

Year	0	1	2	3	4	5	6	7	8	9	10	Total
Total Nominal Payment		-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-901709
Nominal Principal		-51311	-54287	-57436	-60767	-64291	-68020	-71965	-76139	-80555	-85228	-670000
Nominal Interest		-38860	-35884	-32735	-29404	-25880	-22151	-18206	-14032	-9615	-4943	-231709
Actual Nominal Interest Paid		-30008	-28517	-26773	-24749	-22417	-19747	-16702	-13248	-9343	-4943	-196449
Actual Interest Rate Paid (%)		4.48	4.61	4.74	4.88	5.02	5.17	5.32	5.48	5.64	5.80	
Nominal Interest Rate Subsidy		-8852	-7367	-5962	-4655	-3462	-2404	-1503	-783	-272	0	-35261
Loan Balance After Payment	670000	618689	564402	506967	446200	381908	313888	241923	165783	85228	0	
Nominal Lender PV (outflows)		85228	80555	76139	71965	68020	64291	60767	57436	54287	51311	670000
Cost to Taxpayers/Wholesalers (PV of interest rate subsidy)		8367	6581	5034	3715	2612	1714	1013	499	164	0	29699

6d1. Four-Year Graduated Payment Loan (4YRGPL)

	Year	0	1	2	3	4	5	6	7	8	9	10	Total
Inflation rate = 4% (CPIX)	Total Nominal Payment		-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-105782	-1057821
	Nominal Principal		-43472	-47515	-51934	-56764	-62043	-67813	-74119	-81012	-88547	-96781	-670000
Interest rate Loan size	Nominal Interest		-62310	-58267	-53848	-49018	-43739	-37969	-31663	-24770	-17236	-9001	-387821
9.3% 670000	Actual Nominal Interest Paid		-53600	-52045	-49943	-47207	-43739	-37969	-31663	-24770	-17236	-9001	-367173
To compute interest rates for graduated loans	Actual Nominal Interest Rate Paid (%)		8.00	8.31	8.63	8.96	9.30	9.30	9.30	9.30	9.30	9.30	
Start interest rate (year 0) = 8%	Interest Rate Subsidy		-8710	-6222	-3905	-1811	0	0	0	0	0	0	-20648
Finish interest rate (year N) = 9.3%	Loan Balance After Payment	670000	626528	579013	527079	470315	408273	340460	266340	185328	96781	0	
Period of interest rate graduation = 4 years													
Annual % increase = 0.04%	Nominal Lender PV (inflows)		96781	88547	81012	74119	67813	62043	56764	51934	47515	43472	670000
Cost to Lender (PV of Interest Rate Subsidy)			7969	5208	2991	1269	0	0	0	0	0	0	17437
Accumulated Subsidy = 1%	Real Project NCFBIDLT		500624	520649	541475	563134	585659	585659	585659	585659	585659	585659	5639836
Accumulated Subsidy (Rands) = 20648	Less Depreciation (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
	Real NCFBILT		435124	455149	475975	497634	520159	520159	520159	520159	520159	520159	4984836
	Less Interest		-53600	-52045	-49943	-47207	-43739	-37969	-31663	-24770	-17236	-9001	-367173
	Less Real Interest		-51538	-48118	-44399	-40353	-35951	-30008	-24061	-18099	-12109	-6081	-310717
	Real NCFBLT		383586	407031	431576	457281	484208	490151	496098	502060	508050	514078	4674119
	Accumulated real loss b/f		0	0	0	0	0	0	0	0	0	0	0
	Real NCFBT		383586	407031	431576	457281	484208	490151	496098	502060	508050	514078	4674119
	Less Tax 30%		115076	122109	129473	137184	145263	147045	148829	150618	152415	154224	1402236
	Real NCFAT		268510	284921	302103	320097	338946	343106	347269	351442	355635	359855	3271883
	Add Real Dep (assume real)		65500	65500	65500	65500	65500	65500	65500	65500	65500	65500	655000
	Real NCFAT + Real Dep		334010	350421	367603	385597	404446	408606	412769	416942	421135	425355	3926883
	Less Principal		-43472	-47515	-51934	-56764	-62043	-67813	-74119	-81012	-88547	-96781	-670000
	Less Real Principal		-41800	-43930	-46169	-48522	-50995	-53593	-56325	-59195	-62212	-65382	-528123
	Real NCF		292210	306491	321434	337075	353451	355012	356444	357747	358923	359973	3398760
	PV of Real NCF		277502	276415	275300	274165	273016	260419	248309	236673	225500	214776	2562076
	IRR = 147%												

Wholesaler offered a Four-Year GPL (4YRGPL)

Inflation rate = 4% (CPIX)

Interest rate	Loan size
5.8%	670000

To compute interest rates for graduated loans
Start interest rate (year 0) = 4.5%
Finish interest rate (year N) = 5.8%
Period of interest rate graduation 4 years
Annual % increase = 0.07%

Accumulated Subsidy = 1%
Accumulated Subsidy (Rands) = 20648

Year	0	1	2	3	4	5	6	7	8	9	10	Total
Total Nominal Payment		-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-901709
Nominal Principal		-51311	-54287	-57436	-60767	-64291	-68020	-71965	-76139	-80555	-85228	-670000
Nominal Interest		-38860	-35884	-32735	-29404	-25880	-22151	-18206	-14032	-9615	-4943	-231709
Actual Nominal Interest Paid		-30146	-29662	-28832	-27596	-25880	-22151	-18206	-14032	-9615	-4943	-211061
Actual Nominal Interest Rate Paid (%)		4.50	4.79	5.11	5.44	5.80	5.80	5.80	5.80	5.80	5.80	
Nominal Interest Rate Subsidy		-8714	-6222	-3903	-1809	0	0	0	0	0	0	-20648
Loan Balance After Payment	670000	618689	564402	506967	446200	381908	313888	241923	165783	85228	0	
Nominal Lender PV (outflows)		85228	80555	76139	71965	68020	64291	60767	57436	54287	51311	670000
Cost to Taxpayer/ Wholesaler (PV of Interest Rate Subsidy)		8236	5559	3296	1443	0	0	0	0	0	0	18534

6e. One-Year Deferred Payment Loan (DEFPL0-1)

	Year	0	1	2	3	4	5	6	7	8	9	10	Total
Interest rate **Loan size** **Graduated**	Total Nominal Payment		0	-123642	-123642	-123642	-123642	-123642	-123642	-123642	-123642	-123642	-1112780
9.3% 670000 1 year	Nominal Principal		0	-55537	-60702	-66348	-72518	-79262	-86634	-94690	-103497	-113122	-732310
	Nominal Interest		0	-68105	-62940	-57295	-51124	-44380	-37009	-28952	-20146	-10520	-380470
	Loan Balance After Payment	670000	732310	676773	616070	549723	477205	397943	311309	216619	113122	0	
	Nominal Lender PV (inflows)		0	103497	94690	86634	79262	72518	66348	60702	55537	50812	670000
	Real Project NCFBIDLT	500624	520649	541475	563134	585659	585659	585659	585659	585659	585659		5639836
	Less Depreciation (assume real)	65500	65500	65500	65500	65500	65500	65500	65500	65500	65500		655000
	Real NCFBILT	435124	455149	475975	497634	520159	520159	520159	520159	520159	520159		4984836
	Less Interest	0	-68105	-62940	-57295	-51124	-44380	-37009	-28952	-20146	-10520		-380470
	Less Real Interest	0	-62967	-55953	-48976	-42020	-35074	-28124	-21155	-14154	-7107		-315530
	Real NCFBLT	435124	392182	420022	448658	478139	485085	492035	499004	506005	513052		4669306
	Accumulated real loss b/f	0	0	0	0	0	0	0	0	0	0		0
	Real NCFBT	435124	392182	420022	448658	478139	485085	492035	499004	506005	513052		4669306
	Less Tax 30%	130537	117655	126007	134598	143442	145525	147611	149701	151802	153916		1400792
	Real NCFAT	304587	274528	294015	314061	334697	339559	344425	349303	354204	359136		3268514
	Add Real Dep (assume real)	65500	65500	65500	65500	65500	65500	65500	65500	65500	65500		655000
	Real NCFAT + Real Dep	370087	340028	359515	379561	400197	405059	409925	414803	419704	424636		3923514
	Less Principal	0	-55537	-60702	-66348	-72518	-79262	-86634	-94690	-103497	-113122		-732310
	Less Real Principal	0	-51347	-53964	-56714	-59604	-62642	-65834	-69189	-72715	-76421		-568433
	Real NCF	370087	288680	305551	322847	340593	342417	344090	345614	346988	348215		3355082
	PV of Real NCF	-205087	351459	260352	261697	262593	263083	251180	239703	228646	218001	207761	2544476
	IRR = 167%												

	Year		1	2	3	4	5	6	7	8	9	10	Total
Wholesaler offered a DEFPL0-1	Total Nominal Payment		0	-103313	-103313	-103313	-103313	-103313	-103313	-103313	-103313	-103313		-929816
Interest rate **Loan size** **Graduated**	Nominal Principal		0	-62199	-65807	-69623	-73661	-77934	-82454	-87236	-92296	-97649		-708860
6% 670000 1 year	Nominal Interest		0	-41114	-37506	-33690	-29651	-25379	-20859	-16077	-11017	-5664		-220956
	Loan Balance After Payment	670000	708860	646661	580854	511231	437570	359636	277182	189945	97649	0		
	Nominal Lender PV (outflows)		0	92296	87236	82454	77934	73661	69623	65807	62199	58789		670000

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Appendix 7: Lender's nominal cash inflows and outflows, and nominal net cash flows, for alternative loan products when financing Company C.

Lender's nominal cash flows (CFs) under alternative loans offered by the wholesaler compared to the conventional FRL

Lenders nominal cash outflows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total nominal CFs
For FRL (1)	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-901709
For SPL (2)	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-38860	-708860	-1058600
For DP (3)	-105860	-101974	-98088	-94202	-90316	-86430	-82544	-78658	-74772	-70886	-883730
For 9YRGPL (4)	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-90171	-901709
For DEFPL0-1 (5)	0	-103313	-103313	-103313	-103313	-103313	-103313	-103313	-103313	-103313	-929816

Lender's nominal cash inflows and nominal net cash flows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total nominal CFs	Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from FRL (6)	105782	105782	105782	105782	105782	105782	105782	105782	105782	105782	1057821		
Net cash flows from the FRL for each alternative loan from the wholesaler													
(6) – (1)	15611	15611	15611	15611	15611	15611	15611	15611	15611	15611	156112	Yrs 1 – 10	10
(6) – (2)	66922	66922	66922	66922	66922	66922	66922	66922	66922	-603078	-779	Yrs 1 – 9	9
(6) – (3)	-78	3808	7694	11580	15466	19352	23238	27124	31010	34896	174091	Yrs 2 – 10	9
(6) – (4)	15611	15611	15611	15611	15611	15611	15611	15611	15611	15611	156112	Yrs 1 – 10	10
(6) – (5)	105782	2469	2469	2469	2469	2469	2469	2469	2469	2469	128005	Yrs 1 – 10	10
Nominal cash inflows from SPL (7)	62310	62310	62310	62310	62310	62310	62310	62310	62310	732310	1293100		
Net cash flows from the SPL for each alternative loan from the wholesaler													
(7) – (1)	-27861	-27861	-27861	-27861	-27861	-27861	-27861	-27861	-27861	642139	391391	Yr 10	1
(7) – (2)	23450	23450	23450	23450	23450	23450	23450	23450	23450	23450	234500	Yrs 1 – 10	10
(7) – (3)	-43550	-39664	-35778	-31892	-28006	-24120	-20234	-16348	-12462	661424	409370	Yr 10	1
(7) – (4)	-27861	-27861	-27861	-27861	-27861	-27861	-27861	-27861	-27861	642139	391391	Yr 10	1
(7) – (5)	62310	-41003	-41003	-41003	-41003	-41003	-41003	-41003	-41003	628997	363284	Yrs 1 & 10	2

												Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from DP (8)	129310	123079	116848	110617	104386	98155	91924	85693	79462	73231	1012705		
Net cash flows from the DP for each alternative loan from the wholesaler													
(8) - (1)	39139	32908	26677	20446	14215	7984	1753	-4478	-10709	-16940	110996	Yrs 1 - 7	7
(8) - (2)	90450	84219	77988	71757	65526	59295	53064	46833	40602	-635629	-45895	Yrs 1 - 9	9
(8) - (3)	23450	21105	18760	16415	14070	11725	9380	7035	4690	2345	**128975**	**Yrs1 - 10**	**10**
(8) - (4)	39139	32908	26677	20446	14215	7984	1753	-4478	-10709	-16940	110996	Yrs 1 - 7	7
(8) - (5)	129310	19766	13535	7304	1073	-5158	-11389	-17620	-23851	-30082	82889	Yrs 1 - 5	5
Nominal cash inflows from 9YRGPL (9)	105782	105782	105782	105782	105782	105782	105782	105782	105782	105782	1057821		
Net cash flows from the 9YRGPL for each alternative loan from the wholesaler													
(9) - (1)	15611	15611	15611	15611	15611	15611	15611	15611	15611	15611	**156112**	**Yrs 1 - 10**	**10**
(9) - (2)	66922	66922	66922	66922	66922	66922	66922	66922	66922	-603078	-779	Yrs 1 - 9	9
(9) - (3)	-78	3808	7694	11580	15466	19352	23238	27124	31010	34896	174091	Yrs 2 - 10	9
(9) - (4)	15611	15611	15611	15611	15611	15611	15611	15611	15611	15611	**156112**	**Yrs 1 - 10**	**10**
(9) - (5)	105782	2469	2469	2469	2469	2469	2469	2469	2469	2469	**128005**	**Yrs 1 - 10**	**10**
Nominal cash inflows from DEFPL0-1 (10)	0	123642	123642	123642	123642	123642	123642	123642	123642	123642	1112780		
Net cash flows from the DEFPL0-1 for each alternative loan from the wholesaler													
(10) - (1)	-90171	33471	33471	33471	33471	33471	33471	33471	33471	33471	211070	Yrs 2 - 10	9
(10) - (2)	-38860	84782	84782	84782	84782	84782	84782	84782	84782	-585218	54180	Yrs 2 - 9	8
(10) - (3)	-105860	21668	25554	29440	33326	37212	41098	44984	48870	52756	229050	Yrs 2 - 10	9
(10) - (4)	-90171	33471	33471	33471	33471	33471	33471	33471	33471	33471	211070	Yrs 2 - 10	9
(10) - (5)	0	20329	20329	20329	20329	20329	20329	20329	20329	20329	**182964**	**Yrs 1 - 10**	**10**

Appendix 8: Impact of alternative loan products on the PV of Company D's cash-flows, and the PV of the lender's loan inflows and outflows.

8a. Fixed Repayment Equally-amortised Loan (FRL)

	Year	0	1	2	3	4	5	6	7	8
	Total Nominal Payment		-189396	-189396	-189396	-189396	-189396	-189396	-189396	-189396
	Nominal Principal		-49896	-54537	-59609	-65152	-71211	-77834	-85073	-92984
	Nominal Interest		-139500	-134860	-129788	-124244	-118185	-111562	-104324	-96412
	Loan Balance After Payment	1500000	1450104	1395567	1335958	1270806	1199594	1121760	1036687	943703
	Nominal Lender PV (inflows)		173281	158537	145048	132706	121415	111084	101632	92984

Interest rate	Loan size										
9.3%	1500000	Real Project NCFBIDLT		-261426	295210	332995	316649	416839	416839	416839	416839
		Less Depreciation (assume real)		203333	133333	98333	28333	28333	28333	28333	28333
		Real NCFBILT		-464759	161877	234662	288316	388506	388506	388506	388506
		Less Interest		-139500	-134860	-129788	-124244	-118185	-111562	-104324	-96412
		Less Real Interest		-134135	-124685	-115381	-106204	-97139	-88169	-79277	-70447
		Real NCFBLT		-598894	37192	119281	182112	291367	300337	309229	318059
		Accumulated real loss b/ f		-598894	-561702	-442421	-260309	0	0	0	0
		Real NCFBT		-598894	-561702	-442421	-260309	31057	300337	309229	318059
		Less Tax 30%		0	0	0	0	9317	90101	92769	95418
		Real NCFAT		-598894	-561702	-442421	-260309	21740	210236	216460	222641
		Add Real Dep (assume real)		203333	133333	98333	28333	28333	28333	28333	28333
		Real NCFAT + Real Dep		-395561	-428369	-344088	-231976	50073	238569	244793	250974
		Less Principal		-49896	-54537	-59609	-65152	-71211	-77834	-85073	-92984
		Less Real Principal		-47977	-50422	-52992	-55692	-58531	-61513	-64648	-67943
		Real NCF		-443538	-478791	-397080	-287669	-8457	177055	180145	183031
		PV of Real NCF		-421214	-431807	-340089	-233980	-6533	129879	125494	121087
		IRR = 1%									

Wholesaler offered a FRL		Year	0	1	2	3	4	5	6	7	8
		Total Nominal Payment		-152432	-152432	-152432	-152432	-152432	-152432	-152432	-152432
Interest rate	Loan size	Nominal Principal		-65432	-69227	-73243	-77491	-81985	-86740	-91771	-97094
5.8%	1500000	Nominal Interest		-87000	-83205	-79190	-74942	-70447	-65692	-60661	-55338
		Loan Balance After Payment	1500000	1434568	1365340	1292098	1214607	1132622	1045882	954111	857017
		Nominal Lender PV (outflows)		144076	136178	128712	121656	114987	108683	102725	97094

Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-189396	-189396	-189396	-189396	-189396	-189396	-189396	-2840946
Nominal Principal	-101632	-111084	-121415	-132706	-145048	-158537	-173281	-1500000
Nominal Interest	-87764	-78313	-67982	-56690	-44349	-30859	-16115	-1340946
Loan Balance After Payment	842071	730987	609573	476866	331819	173281	0	
Nominal Lender PV (inflows)	85073	77834	71211	65152	59609	54537	49896	1500000
Real Project NCFBIDLT	416839	416839	416839	416839	416839	416839	416839	5268657
Less Depreciation (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFBILT	388506	388506	388506	388506	388506	388506	388506	4493662
Less Interest	-87764	-78313	-67982	-56690	-44349	-30859	-16115	-1340946
Less Real Interest	-61662	-52905	-44160	-35409	-26635	-17820	-8948	-1062977
Real NCFBLT	326844	335601	344346	353097	361871	370686	379558	3430685
Accumulated real loss b/f	0	0	0	0	0	0	0	-1863325
Real NCFBT	326844	335601	344346	353097	361871	370686	379558	1567359
Less Tax 30%	98053	100680	103304	105929	108561	111206	113867	1029205
Real NCFAT	228791	234921	241042	247168	253310	259480	265690	538154
Add Real Dep (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFAT + Real Dep	257124	263254	269375	275501	281643	287813	294023	1313149
Less Principal	-101632	-111084	-121415	-132706	-145048	-158537	-173281	-1500000
Less Real Principal	-71405	-75044	-78869	-82888	-87112	-91551	4928788	3982199
Real NCF	185718	188209	190507	192613	194531	196262	5222812	5295348
PV of Real NCF	116681	112294	107944	103644	99408	95244	2407015	1985068
Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-152432	-152432	-152432	-152432	-152432	-152432	-152432	-2286484
Nominal Principal	-102725	-108683	-114987	-121656	-128712	-136178	-144076	-1500000
Nominal Interest	-49707	-43749	-37445	-30776	-23720	-16255	-8356	-786484
Loan Balance After Payment	754292	645609	530622	408966	280253	144076	0	
Nominal Lender PV (outflows)	91771	86740	81985	77491	73243	69227	65432	1500000

8b. Single Payment Non-amortized Loan (SPL)

		Year	0	1	2	3	4	5	6	7	8
		Total Nominal Payment		-139500	-139500	-139500	-139500	-139500	-139500	-139500	-139500
		Nominal Principal		0	0	0	0	0	0	0	0
		Nominal Interest		-139500	-139500	-139500	-139500	-139500	-139500	-139500	-139500
		Loan Balance After Payment	1500000	1500000	1500000	1500000	1500000	1500000	1500000	1500000	1500000
		Nominal Lender PV (inflows)		127630	116771	106835	97745	89428	81819	74857	68488
Interest rate	**Loan size**	Real Project NCFBIDLT		-261426	295210	332995	316649	416839	416839	416839	416839
9.30%	1500000	Less Depreciation (assume real)		203333	133333	98333	28333	28333	28333	28333	28333
		Real NCFBILT		-464759	161877	234662	288316	388506	388506	388506	388506
		Less Interest		-139500	-139500	-139500	-139500	-139500	-139500	-139500	-139500
		Less Real Interest		-134135	-128976	-124015	-119245	-114659	-110249	-106009	-101931
		Real NCFBLT		-598894	32901	110647	169071	273847	278257	282497	286575
		Accumulated real loss b/f		-598894	-565992	-455345	-286274	-12427	0	0	0
		Real NCFBT		-598894	-565992	-455345	-286274	-12427	265830	282497	286575
		Less Tax 30%		0	0	0	0	0	79749	84749	85972
		Real NCFAT		-598894	-565992	-455345	-286274	-12427	186081	197748	200602
		Add Real Dep (assume real)		203333	133333	98333	28333	28333	28333	28333	28333
		Real NCFAT + Real Dep		-395561	-432659	-357012	-257941	15906	214414	226081	228935
		Less Principal		0	0	0	0	0	0	0	0
		Less Real Principal		0	0	0	0	0	0	0	0
		Real NCF		-395561	-432659	-357012	-257941	15906	214414	226081	228935
		PV of Real NCF	-4300000	-375651	-390202	-305772	-209801	12286	157283	157495	151456
		IRR = 1%									

Wholesaler offered a SPL

		Year	0	1	2	3	4	5	6	7	8
Interest rate	**Loan size**	Total Nominal Payment		-87000	-87000	-87000	-87000	-87000	-87000	-87000	-87000
5.80%	1500000	Nominal Principal		0	0	0	0	0	0	0	0
		Nominal Interest		-87000	-87000	-87000	-87000	-87000	-87000	-87000	-87000
		Loan	1500000	1500000	1500000	1500000	1500000	1500000	1500000	1500000	1500000
		Nominal Lender PV (outflows)		82231	77723	73462	69435	65628	62030	58630	55416

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Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-139500	-139500	-139500	-139500	-139500	-139500	-1639500	-3592500
Nominal Principal	0	0	0	0	0	0	-1500000	-1500000
Nominal Interest	-139500	-139500	-139500	-139500	-139500	-139500	-139500	-2092500
Loan Balance After Payment	1500000	1500000	1500000	1500000	1500000	1500000	0	
Nominal Lender PV (inflows)	62660	57329	52451	47988	43905	40169	431926	1500000
Real Project NCFBIDLT	416839	416839	416839	416839	416839	416839	416839	5268657
Less Depreciation (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFBILT	388506	388506	388506	388506	388506	388506	388506	4493662
Less Interest	-139500	-139500	-139500	-139500	-139500	-139500	-139500	-2092500
Less Real Interest	-98011	-94241	-90617	-87131	-83780	-80558	-77459	-1551015
Real NCFBLT	290495	294265	297889	301375	304726	307948	311047	2942647
Accumulated real loss b/f	0	0	0	0	0	0	0	-1918933
Real NCFBT	290495	294265	297889	301375	304726	307948	311047	1023714
Less Tax 30%	87149	88279	89367	90412	91418	92384	93314	882794
Real NCFAT	203347	205985	208523	210962	213308	215564	217733	140920
Add Real Dep (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFAT + Real Dep	231680	234318	236856	239295	241641	243897	246066	915915
Less Principal	0	0	0	0	0	0	-1500000	-1500000
Less Real Principal	0	0	0	0	0	0	4192108	4192108
Real NCF	231680	234318	236856	239295	241641	243897	4438174	5108023
PV of Real NCF	145557	139805	134206	128764	123482	118361	2045402	2032670
Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-87000	-87000	-87000	-87000	-87000	-87000	-1587000	-2805000
Nominal Principal	0	0	0	0	0	0	-1500000	-1500000
Nominal Interest	-87000	-87000	-87000	-87000	-87000	-87000	-87000	-1305000
Loan	1500000	1500000	1500000	1500000	1500000	1500000	0	21000000
Nominal Lender PV (outflows)	52378	49507	46793	44227	41803	39511	681227	1500000

8c. Decreasing Payment Loan (DP)

Year	0	1	2	3	4	5	6	7	8
Total Nominal Payment		-239500	-230200	-220900	-211600	-202300	-193000	-183700	-174400
Nominal Principal		-100000	-100000	-100000	-100000	-100000	-100000	-100000	-100000
Nominal Interest		-139500	-130200	-120900	-111600	-102300	-93000	-83700	-74400
Loan Balance After Payment	1500000	1400000	1300000	1200000	1100000	1000000	900000	800000	700000
Nominal Lender PV (inflows)		219122	192693	169175	148264	129687	113197	98575	85622

Interest rate	Loan size		0	1	2	3	4	5	6	7	8
9.30%	1500000	Real Project NCFBIDLT	-261426	295210	332995	316649	416839	416839	416839	416839
		Less Depreciation (assume real)	203333	133333	98333	28333	28333	28333	28333	28333
		Real NCFBILT	-464759	161877	234662	288316	388506	388506	388506	388506
		Less Interest	-139500	-130200	-120900	-111600	-102300	-93000	-83700	-74400
		Less Real Interest	-134135	-120377	-107480	-95396	-84083	-73499	-63605	-54363
		Real NCFBLT	-598894	41500	127182	192920	304423	315007	324901	334143
		Accumulated real loss b/f	-598894	-557394	-430211	-237292	0	0	0	0
		Real NCFBT	-598894	-557394	-430211	-237292	67131	315007	324901	334143
		Less Tax 30%	0	0	0	0	20139	94502	97470	100243
		Real NCFAT	-598894	-557394	-430211	-237292	46992	220505	227431	233900
		Add Real Dep (assume real)	203333	133333	98333	28333	28333	28333	28333	28333
		Real NCFAT + Real Dep	-395561	-424061	-331878	-208959	75325	248838	255764	262233
		Less Principal	-100000	-100000	-100000	-100000	-100000	-100000	-100000	-100000
		Less Real Principal	-96154	-92456	-88900	-85480	-82193	-79031	-75992	-73069
		Real NCF	-491714	-516516	-420778	-294439	-6868	169806	179772	189164
		PV of Real NCF	-466965	-465830	-360386	-239487	-5305	124561	125234	125144
		IRR = 1%								

Wholesaler offered a DP

		Year	0	1	2	3	4	5	6	7	8
Interest rate	Loan size	Total Nominal Payment		-187000	-181200	-175400	-169600	-163800	-158000	-152200	-146400
5.8%	1500000	Nominal Principal		-100000	-100000	-100000	-100000	-100000	-100000	-100000	-100000
		Nominal Interest		-87000	-81200	-75400	-69600	-63800	-58000	-52200	-46400
		Loan Balance After Payment	1500000	1400000	1300000	1200000	1100000	1000000	900000	800000	700000
		Nominal Lender PV (outflows)		176749	161878	148106	135358	123562	112653	102569	93251

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Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-165100	-155800	-146500	-137200	-127900	-118600	-109300	-2616000
Nominal Principal	-100000	-100000	-100000	-100000	-100000	-100000	-100000	-1500000
Nominal Interest	-65100	-55800	-46500	-37200	-27900	-18600	-9300	-1116000
Loan Balance After Payment	600000	500000	400000	300000	200000	100000	0	
Nominal Lender PV (inflows)	74159	64027	55083	47197	40254	34151	28795	1500000
Real Project NCFBIDLT	416839	416839	416839	416839	416839	416839	416839	5268657
Less Depreciation (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFBILT	388506	388506	388506	388506	388506	388506	388506	4493662
Less Interest	-65100	-55800	-46500	-37200	-27900	-18600	-9300	-1116000
Less Real Interest	-45738	-37696	-30206	-23235	-16756	-10741	-5164	-902475
Real NCFBLT	342768	350810	358300	365271	371750	377765	383342	3591187
Accumulated real loss b/f	0	0	0	0	0	0	0	-1823791
Real NCFBT	342768	350810	358300	365271	371750	377765	383342	1767396
Less Tax 30%	102830	105243	107490	109581	111525	113329	115003	1077356
Real NCFAT	239937	245567	250810	255690	260225	264435	268339	690040
Add Real Dep (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFAT + Real Dep	268270	273900	279143	284023	288558	292768	296672	1465035
Less Principal	-100000	-100000	-100000	-100000	-100000	-100000	-100000	-1500000
Less Real Principal	-70259	-67556	-64958	-62460	-60057	-57748	4969479	3913166
Real NCF	198012	206343	214185	221563	228501	235021	5266151	5378202
PV of Real NCF	124404	123114	121361	119222	116767	114054	2426989	1982876
Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-140600	-134800	-129000	-123200	-117400	-111600	-105800	-2196000
Nominal Principal	-100000	-100000	-100000	-100000	-100000	-100000	-100000	-1500000
Nominal Interest	-40600	-34800	-29000	-23200	-17400	-11600	-5800	-696000
Loan Balance After Payment	600000	500000	400000	300000	200000	100000	0	
Nominal Lender PV (outflows)	84648	76707	69382	62630	56410	50683	45415	1500000

8d. Fourteen-Year Graduated Payment Loan (14YRGPL)

Inflation rate = 4% (CPIX)

Interest rate   **Loan size**
9.30%   **1500000**
To compute interest rates for graduated loans
Start interest rate (year 0) = 5%
Interest rate (year N) = 9.3%
Period of interest rate graduation = 14 years
Annual % increase = 5%

Accumulated Subsidy (%) = 4%
Accumulated Subsidy (Rands) = 420208

Year	0	1	2	3	4	5	6	7	8
Total Nominal Payment		-189396	-189396	-189396	-189396	-189396	-189396	-189396	-189396
Nominal Principal		-49896	-54537	-59609	-65152	-71211	-77834	-85073	-92984
Nominal Interest		-139500	-134860	-129788	-124244	-118185	-111562	-104324	-96412
Actual Nominal Interest Paid		-75000	-75791	-76247	-76298	-75867	-74862	-73177	-70693
Actual Nominal Interest Rate Paid (%)		5.00	5.23	5.46	5.71	5.97	6.24	6.52	6.82
Nominal Interest Rate Subsidy		-64500	-59068	-53541	-47946	-42318	-36701	-31147	-25719
Loan Balance After Payment	1500000	1450104	1395567	1335958	1270806	1199594	1121760	1036687	943703
Nominal Lender PV (inflows)		173281	158537	145048	132706	121415	111084	101632	92984
Cost to Lender (PV of Interest Rate Subsidy)		59012	49444	41004	33595	27128	21525	16714	12627
Real Project NCFBIDLT		-261426	295210	332995	316649	416839	416839	416839	416839
Less Depreciation (assume real)		203333	133333	98333	28333	28333	28333	28333	28333
Real NCFBILT		-464759	161877	234662	288316	388506	388506	388506	388506
Less Interest		-75000	-75791	-76247	-76298	-75867	-74862	-73177	-70693
Less Real Interest		-72115	-70073	-67783	-65220	-62357	-59164	-55609	-51654
Real NCFBLT		-536874	91804	166879	223096	326149	329342	332897	336852
Accumulated real loss b/f		-536874	-445071	-278192	-55096	0	0	0	0
Real NCFBT		-536874	-445071	-278192	-55096	271053	329342	332897	336852
Less Tax 30%		0	0	0	0	81316	98803	99869	101055
Real NCFAT		-536874	-445071	-278192	-55096	189737	230539	233028	235796
Add Real Dep (assume real)		203333	133333	98333	28333	28333	28333	28333	28333
Real NCFAT + Real Dep		-333541	-311738	-179859	-26763	218070	258872	261361	264129
Less Principal		-49896	-54537	-59609	-65152	-71211	-77834	-85073	-92984
Less Real Principal		-47977	-50422	-52992	-55692	-58531	-61513	-64648	-67943
Real NCF		-381519	-362160	-232851	-82456	159539	197359	196713	196186
PV of Real NCF		-362316	-326621	-199431	-67067	123233	144773	137036	129790
IRR = 2%									

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Wholesaler offered a Fourteen-Year GPL (14YRGPL)

Inflation rate = 4% (CPIX)

Interest rate	Loan size
5.80%	1500000

To compute interest rates for graduated loans
Start interest rate (year 0) = 1.6%
Finish interest rate (year N) = 5.8%
Period of interest rate graduation = 14 years
Annual % increase = 10%

Year	0	1	2	3	4	5	6	7	8
Total Nominal Payment		-152432	-152432	-152432	-152432	-152432	-152432	-152432	-152432
Principal		-65432	-69227	-73243	-77491	-81985	-86740	-91771	-97094
Interest		-87000	-83205	-79190	-74942	-70447	-65692	-60661	-55338
Actual Interest Paid		-24033	-25196	-26289	-27273	-28105	-28730	-29083	-29085
Actual Interest Rate Paid (%)		1.60	1.76	1.93	2.11	2.31	2.54	2.78	3.05
Interest Rate Subsidy		-62967	-58009	-52901	-47669	-42343	-36962	-31578	-26254
Loan Balance After Payment	1500000	1434568	1365340	1292098	1214607	1132622	1045882	954111	857017
Lender PV (outflows)		144076	136178	128712	121656	114987	108683	102725	97094
Cost to Taxpayer/Wholesaler (PV of Interest Rate Subsidy)		59516	51823	44669	38045	31941	26354	21281	16723

Accumulated Subsidy = 4%
Accumulated Subsidy (Rands) = 420208

Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-189396	-189396	-189396	-189396	-189396	-189396	-189396	-2840946
Nominal Principal	-101632	-111084	-121415	-132706	-145048	-158537	-173281	-1500000
Nominal Interest	-87764	-78313	-67982	-56690	-44349	-30859	-16115	-1340946
Actual Nominal Interest Paid	-67269	-62745	-56936	-49631	-40586	-29521	-16115	-920739
Actual Nominal Interest Rate Paid (%)	7.13	7.45	7.79	8.14	8.51	8.90	9.30	
Nominal Interest Rate Subsidy	-20496	-15568	-11046	-7059	-3762	-1338	0	-420208
Loan Balance After Payment	842071	730987	609573	476866	331819	173281	0	
Nominal Lender PV (inflows)	85073	77834	71211	65152	59609	54537	49896	1500000
Cost to Lender (PV of Interest Rate Subsidy)	9206	6398	4153	2428	1184	385	0	284803
Real Project NCFBIDLT	416839	416839	416839	416839	416839	416839	416839	5268657
Less Depreciation (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFBILT	388506	388506	388506	388506	388506	388506	388506	4493662
Less Interest	-67269	-62745	-56936	-49631	-40586	-29521	-16115	-920739
Less Real Interest	-47262	-42388	-36985	-31000	-24375	-17048	-8948	-711982
Real NCFBLT	341244	346118	351521	357506	364131	371458	379558	3781680
Accumulated real loss b/f	0	0	0	0	0	0	0	-1315234
Real NCFBT	341244	346118	351521	357506	364131	371458	379558	2466447
Less Tax 30%	102373	103835	105456	107252	109239	111437	113867	1134504
Real NCFAT	238871	242283	246065	250255	254892	260021	265690	1331943
Add Real Dep (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFAT + Real Dep	267204	270616	274398	278588	283225	288354	294023	2106938
Less Principal	-101632	-111084	-121415	-132706	-145048	-158537	-173281	-1500000
Less Real Principal	-71405	-75044	-78869	-82888	-87112	-91551	4928788	3982199
Real NCF	195798	195571	195529	195700	196113	196802	5222812	6089137
PV of Real NCF	123014	116687	110790	105305	100216	95507	2407015	2637929
Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-152432	-152432	-152432	-152432	-152432	-152432	-152432	-2286484
Nominal Principal	-102725	-108683	-114987	-121656	-128712	-136178	-144076	-1500000
Nominal Interest	-49707	-43749	-37445	-30776	-23720	-16255	-8356	-786484
Actual Nominal Interest Paid	-28640	-27633	-25928	-23361	-19738	-14828	-8356	-366276
Actual Nominal Interest Rate Paid (%)	3.34	3.66	4.02	4.40	4.83	5.29	5.80	
Nominal Interest Rate Subsidy	-21067	-16116	-11518	-7415	-3982	-1427	0	-420208
Loan Balance After Payment	754292	645609	530622	408966	280253	144076	0	
Nominal Lender PV (outflows)	91771	86740	81985	77491	73243	69227	65432	1500000
Cost to Taxpayers (PV of Interest Rate Subsidy)	12684	9171	6195	3770	1913	648	0	324730

8d1. Sixteen-Year Graduated Payment Loan (16YRGPL)

	Year	0	1	2	3	4	5	6	7	8
Inflation rate = 4% (CPIX)	Total Nominal Payment		-178967	-178967	-178967	-178967	-178967	-178967	-178967	-178967
	Nominal Principal		-39467	-43137	-47149	-51533	-56326	-61564	-67290	-73548
Interest rate Loan size	Nominal Interest		-139500	-135830	-131818	-127433	-122640	-117402	-111677	-105419
9.3% 1500000	Actual Nominal Interest Paid		-75000	-75915	-76586	-76967	-77001	-76628	-75773	-74356
To compute interest rates for graduated loans	Actual Nominal Interest Rate Paid (%)		5.00	5.20	5.40	5.62	5.84	6.07	6.31	6.56
Start interest rate (year 0) = 5%	Nominal Interest Rate Subsidy		-64500	-59915	-55232	-50466	-45639	-40774	-35903	-31063
Finish interest rate (year N) = 9.3%	Loan Balance After Payment	1500000	1460533	1417397	1370248	1318714	1262388	1200824	1133534	1059986
Period of interest rate graduation = 16 years										
Annual % increase = 4%	Nominal Lender PV (inflows)		163739	149807	137060	125398	114728	104967	96035	87864
	Cost to Lender (PV of Interest Rate Subsidy)		59012	50153	42299	35361	29257	23915	19266	15250
Accumulated Subsidy = 4%										
Accumulated Subsidy (Rands) = 481067										
	Real Project NCFBIDLT		-261426	295210	332995	316649	416839	416839	416839	416839
	Less Depreciation (assume real)		200000	130000	95000	25000	25000	25000	25000	25000
	Real NCFBILT		-461426	165210	237995	291649	391839	391839	391839	391839
	Less Interest		-75000	-75915	-76586	-76967	-77001	-76628	-75773	-74356
	Less Real Interest		-72115	-70187	-68085	-65791	-63290	-60560	-57582	-54331
	Real NCFBLT		-533541	95023	169910	225858	328549	331279	334257	337508
	Accumulated real loss b/f		-533541	-438519	-268609	-42751	0	0	0	0
	Real NCFBT		-533541	-438519	-268609	-42751	285798	331279	334257	337508
	Less Tax 30%		0	0	0	0	85739	99384	100277	101252
	Real NCFAT		-533541	-438519	-268609	-42751	200059	231895	233980	236255
	Add Real Dep (assume real)		200000	130000	95000	25000	25000	25000	25000	25000
	Real NCFAT + Real Dep		-333541	-308519	-173609	-17751	225059	256895	258980	261255
	Less Principal		-39467	-43137	-47149	-51533	-56326	-61564	-67290	-73548
	Less Real Principal		-37949	-39883	-41915	-44051	-46296	-48655	-51135	-53741
	Real NCF		-371490	-348401	-215524	-61802	178763	208240	207845	207515
	PV of Real NCF		-352792	-314212	-184591	-50268	138081	152755	144791	137285
	IRR = 3%										

Year	9	10	11	12	13	14	15	16	17	Total
Total Nominal Payment	-178967	-178967	-178967	-178967	-178967	-178967	-178967	-178967	-178967	-3042431
Nominal Principal	-80388	-87864	-96035	-104967	-114728	-125398	-137060	-149807	-163739	-1500000
Nominal Interest	-98579	-91103	-82931	-74000	-64238	-53568	-41906	-29160	-15228	-1542431
Actual Nominal Interest Paid	-72281	-69441	-65713	-60955	-55007	-47684	-38778	-28050	-15228	-1061364
Actual Nominal Interest Rate Paid (%)	6.82	7.09	7.37	7.66	7.96	8.28	8.61	8.95	9.30	
Nominal Interest Rate Subsidy	-26297	-21661	-17218	-13045	-9232	-5884	-3128	-1109	0	-481067
Loan Balance After Payment	979598	891734	795699	690732	576004	450606	313546	163739	0	
Nominal Lender PV (inflows)	80388	73548	67290	61564	56326	51533	47149	43137	39467	1500000
Cost to Lender (PV of Interest Rate Subsidy)	11812	8902	6474	4487	2905	1694	824	267	0	311879
Real Project NCFBIDLT	416839	416839	416839	416839	416839	416839	416839	416839	416840	6102336
Less Depreciation (assume real)	25000	25000	25000	25000	25000	25000	25000	25000	25000	775000
Real NCFBILT	391839	391839	391839	391839	391839	391839	391839	391839	391840	5327336
Less Interest	-72281	-69441	-65713	-60955	-55007	-47684	-38778	-28050	-15228	-1061364
Less Real Interest	-50784	-46912	-42686	-38072	-33036	-27536	-21532	-14976	-7817	-795294
Real NCFBLT	341055	344927	349153	353767	358803	364303	370307	376863	384023	4532042
Accumulated real loss b/ f	0	0	0	0	0	0	0	0	0	-1283420
Real NCFBT	341055	344927	349153	353767	358803	364303	370307	376863	384023	3248622
Less Tax 30%	102317	103478	104746	106130	107641	109291	111092	113059	115207	1359613
Real NCFAT	238739	241449	244407	247637	251162	255012	259215	263804	268816	1889009
Add Real Dep (assume real)	25000	25000	25000	25000	25000	25000	25000	25000	25000	775000
Real NCFAT + Real Dep	263739	266449	269407	272637	276162	280012	284215	288804	293816	2664009
Less Principal	-80388	-87864	-96035	-104967	-114728	-125398	-137060	-149807	-163739	-1500000
Less Real Principal	-56479	-59358	-62383	-65562	-68903	-72414	-76105	-79983	4940946	4036135
Real NCF	207259	207091	207025	207075	207260	207597	208110	208821	5234762	6700145
PV of Real NCF	130214	123560	117303	111426	105912	100745	95911	91394	2175778	2723293

Wholesalers offered a Sixteen-Year GPL (16YRGPL)

Inflation rate = 4%

Interest rate   Loan size
6%   1500000

To compute interest rates for graduated loans
Start interest rate (year 0) = 1.59%
Finish interest rate (year N) =5.8%
Period of interest rate graduation = 16 years
Annual % increase = 0.08%

Accumulated Subsidy = 4%
Accumulated Subsidy (Rands) = 481067

Year	0	1	2	3	4	5	6	7	8
Total Nominal Payment		-141115	-141115	-141115	-141115	-141115	-141115	-141115	-141115
Nominal Principal		-54115	-57253	-60574	-64087	-67805	-71737	-75898	-80300
Nominal Interest		-87000	-83861	-80541	-77027	-73310	-69378	-65217	-60815
Actual Nominal Interest Paid		-23848	-24925	-25954	-26913	-27773	-28497	-29045	-29366
Actual Nominal Interest Rate Paid (%)		1.59	1.72	1.87	2.03	2.20	2.38	2.58	2.80
Nominal Interest Rate Subsidy		-63152	-58937	-54586	-50114	-45538	-40881	-36172	-31449
Loan Balance After Payment	1500000	1445885	1388632	1328057	1263970	1196165	1124428	1048530	968230
Nominal Lender PV (outflows)		133379	126067	119156	112624	106450	100614	95098	89885
Cost to Taxpayer/Wholesaler (PV of Interest Rate Subsidy)		59690	52652	46092	39996	34351	29148	24377	20032

Year	9	10	11	12	13	14	15	16	17	Total
Total Nominal Payment	-141115	-141115	-141115	-141115	-141115	-141115	-141115	-141115	-141115	-2398952
Nominal Principal	-84957	-89885	-95098	-100614	-106450	-112624	-119156	-126067	-133379	-1500000
Nominal Interest	-56157	-51230	-46016	-40501	-34665	-28491	-21959	-15048	-7736	-898952
Actual Nominal Interest Paid	-29402	-29082	-28323	-27028	-25083	-22352	-18679	-13879	-7736	-417885
Actual Nominal Interest Rate Paid (%)	3.04	3.29	3.57	3.87	4.20	4.55	4.93	5.35	5.80	
Nominal Interest Rate Subsidy	-26755	-22148	-17693	-13472	-9582	-6139	-3280	-1169	0	-481067
Loan Balance After Payment	883273	793388	698289	597675	491226	378602	259446	133379	0	
Nominal Lender PV (outflows)	84957	80300	75898	71737	67805	64087	60574	57253	54115	1500000
Cost to Tax Payer/Wholesaler (PV of Interest Rate Subsidy)	16108	12603	9516	6849	4604	2788	1408	474	0	360688

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8e. One-Year Deferred Payment Loan (DEFPL0-1)

Year	0	1	2	3	4	5	6	7	8
Total Nominal Payment		0	-214133	-214133	-214133	-214133	-214133	-214133	-214133
Nominal Principal		0	-61660	-67394	-73662	-80512	-88000	-96184	-105129
Nominal Interest		0	-152474	-146739	-140471	-133621	-126133	-117949	-109004
Loan Balance After Payment	1500000	1639500	1577840	1510446	1436784	1356272	1268272	1172088	1066959
Nominal Lender PV (inflows)		0	179244	163992	150039	137272	125592	114906	105129

Interest rate: 9.30% Loan size: 1500000 Graduated: 1 year

	0	1	2	3	4	5	6	7	8
Real Project NCFBIDLT		-261426	295210	332995	316649	416839	416839	416839	416839
Less Depreciation (assume real)		203333	133333	98333	28333	28333	28333	28333	28333
Real NCFBILT		-464759	161877	234662	288316	388506	388506	388506	388506
Less Interest		0	-152474	-146739	-140471	-133621	-126133	-117949	-109004
Less Real Interest		0	-140970	-130451	-120076	-109827	-99685	-89632	-79648
Real NCFBLT		-464759	20907	104211	168240	278679	288821	298874	308858
Accumulated real loss b/f		-464759	-443852	-339641	-171401	0	0	0	0
Real NCFBT		-464759	-443852	-339641	-171401	107279	288821	298874	308858
Less Tax 30%		0	0	0	0	32184	86646	89662	92657
Real NCFAT		-464759	-443852	-339641	-171401	75095	202175	209212	216200
Add Real Dep - assume real		203333	133333	98333	28333	28333	28333	28333	28333
Real NCFAT + Real Dep		-261426	-310519	-241308	-143068	103428	230508	237545	244533
Less Principal		0	-61660	-67394	-73662	-80512	-88000	-96184	-105129
Less Real Principal		0	-57008	-59913	-62966	-66175	-69548	-73092	-76817
Real NCF		-261426	-367527	-301221	-206034	37253	160960	164453	167717
PV of Real NCF		-248268	-331461	-257988	-167581	28775	118072	114563	110956
IRR = 2%									

Wholesalers offered a DEFPL0-1

Year	0	1	2	3	4	5	6	7	8
Total Nominal Payment		0	-168629	-168629	-168629	-168629	-168629	-168629	-168629
Nominal Principal		0	-76583	-81025	-85724	-90696	-95957	-101522	-107411
Nominal Interest		0	-92046	-87604	-82905	-77933	-72672	-67107	-61219
Loan Balance After Payment	1500000	1587000	1510417	1429392	1343667	1252971	1157014	1055492	948081
Nominal Lender PV (outflows)		0	150647	142389	134583	127205	120232	113640	107411

Interest rate: 5.80% Loan size: 1500000 Graduated: 1 year

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Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-214133	-214133	-214133	-214133	-214133	-214133	-214133	-2997866
Nominal Principal	-114906	-125592	-137272	-150039	-163992	-179244	-195913	-1639500
Nominal Interest	-99227	-88541	-76861	-64094	-50141	-34890	-18220	-1358366
Loan Balance After Payment	952053	826461	689188	539149	375157	195913	0	
Nominal Lender PV (inflows)	96184	88000	80512	73662	67394	61660	56413	1500000
Real Project NCFBIDLT	416839	416839	416839	416839	416839	416839	416839	5268657
Less Depreciation (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFBILT	388506	388506	388506	388506	388506	388506	388506	4493662
Less Interest	-99227	-88541	-76861	-64094	-50141	-34890	-18220	-1358366
Less Real Interest	-69716	-59815	-49927	-40033	-30113	-20148	-10117	-1050158
Real NCFBLT	318790	328691	338579	348473	358393	368358	378389	3443504
Accumulated real loss b/f	0	0	0	0	0	0	0	-1419653
Real NCFBT	318790	328691	338579	348473	358393	368358	378389	2023852
Less Tax 30%	95637	98607	101574	104542	107518	110507	113517	1033051
Real NCFAT	223153	230084	237005	243931	250875	257851	264872	990800
Add Real Dep (assume real)	28333	28333	28333	28333	28333	28333	28333	774995
Real NCFAT + Real Dep	251486	258417	265338	272264	279208	286184	293205	1765795
Less Principal	-114906	-125592	-137272	-150039	-163992	-179244	-195913	-1639500
Less Real Principal	-80731	-84846	-89170	-93714	-98490	-103509	4916221	3900243
Real NCF	170755	173571	176169	178550	180718	182675	5209427	5666039
PV of Real NCF	107280	103560	99820	96077	92349	88651	2400846	2355650
Year	9	10	11	12	13	14	15	Total
Total Nominal Payment	-168629	-168629	-168629	-168629	-168629	-168629	-168629	-2360808
Nominal Principal	-113640	-120232	-127205	-134583	-142389	-150647	-159385	-1587000
Nominal Interest	-54989	-48398	-41424	-34046	-26240	-17982	-9244	-773808
Loan Balance After Payment	834441	714209	587004	452421	310032	159385	0	
Nominal Lender PV (outflows)	101522	95957	90696	85724	81025	76583	72385	1500000

Appendix 9: Lender's nominal cash inflows and outflows, and nominal net cash flows, for alternative loan products when financing Company D.

Lender's nominal cash flows (CFs) under alternative loans offered by the wholesaler compared to the conventional FRL

Lenders nominal cash outflows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
For FRL (1)	-152432	-152432	-152432	-152432	-152432	-152432	-152432	-152432
For SPL (2)	-87000	-87000	-87000	-87000	-87000	-87000	-87000	-87000
For DP (3)	-187000	-181200	-175400	-169600	-163800	-158000	-152200	-146400
For 14YRGPL (4)	-152432	-152432	-152432	-152432	-152432	-152432	-152432	-152432
For DEFPL0-1 (5)	0	-168629	-168629	-168629	-168629	-168629	-168629	-168629

Lender's nominal cash inflows and nominal net cash flows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Nominal cash inflows from the FRL (6)	189396	189396	189396	189396	189396	189396	189396	189396
Net cash flows from the FRL for each alternative loan from the wholesaler								
(6) - (1)	36964	36964	36964	36964	36964	36964	36964	36964
(6) - (2)	102396	102396	102396	102396	102396	102396	102396	102396
(6) - (3)	2396	8196	13996	19796	25596	31396	37196	42996
(6) - (4)	36964	36964	36964	36964	36964	36964	36964	36964
(6) - (5)	189396	20767	20767	20767	20767	20767	20767	20767
Nominal cash inflows from the SPL (7)	139500	139500	139500	139500	139500	139500	139500	139500
Net cash flows from the SPL for each alternative loan from the wholesaler								
(7) - (1)	-12932	-12932	-12932	-12932	-12932	-12932	-12932	-12932
(7) - (2)	52500	52500	52500	52500	52500	52500	52500	52500
(7) - (3)	-47500	-41700	-35900	-30100	-24300	-18500	-12700	-6900
(7) - (4)	-12932	-12932	-12932	-12932	-12932	-12932	-12932	-12932
(7) - (5)	139500	-29129	-29129	-29129	-29129	-29129	-29129	-29129

Nominal cash inflows from the DP (8)	239500	230200	220900	211600	202300	193000	183700	174400
Net cash flows from the DP for each alternative loan from the wholesaler								
(8) - (1)	87068	77768	68468	59168	49868	40568	31268	21968
(8) - (2)	152500	143200	133900	124600	115300	106000	96700	87400
(8) - (3)	52500	49000	45500	42000	38500	35000	31500	28000
(8) - (4)	87068	77768	68468	59168	49868	40568	31268	21968
(8) - (5)	239500	61571	52271	42971	33671	24371	15071	5771
Nominal cash inflows from 14YRGPL (9)	189396	189396	189396	189396	189396	189396	189396	189396
Net cash flows from the 14YRGPL for each alternative loan from the wholesaler								
(9) - (1)	36964	36964	36964	36964	36964	36964	36964	36964
(9) - (2)	102396	102396	102396	102396	102396	102396	102396	102396
(9) - (3)	2396	8196	13996	19796	25596	31396	37196	42996
(9) - (4)	36964	36964	36964	36964	36964	36964	36964	36964
(9) - (5)	189396	20767	20767	20767	20767	20767	20767	20767
Nominal cash inflows from the DEFPL0-1 (10)	0	214133	214133	214133	214133	214133	214133	214133
Net cash flows from the DEFPL0-1 for each alternative loan from the wholesaler								
(10) - (1)	-152432	61701	61701	61701	61701	61701	61701	61701
(10) - (2)	-87000	127133	127133	127133	127133	127133	127133	127133
(10) - (3)	-187000	32933	38733	44533	50333	56133	61933	67733
(10) - (4)	-152432	61701	61701	61701	61701	61701	61701	61701
(10) - (5)	0	45504	45504	45504	45504	45504	45504	45504

Lenders nominal cash outflows	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Total nominal CF's		
For FRL (1)	-152432	-152432	-152432	-152432	-152432	-152432	-152432	-2286484		
For SPL (2)	-87000	-87000	-87000	-87000	-87000	-87000	-1587000	-2805000		
For DP (3)	-140600	-134800	-129000	-123200	-117400	-111600	-105800	-2196000		
For 14YRGPL (4)	-152432	-152432	-152432	-152432	-152432	-152432	-152432	-2286484		
For DEFPL0-1 (5)	-168629	-168629	-168629	-168629	-168629	-168629	-168629	-2360808		

Lender's nominal cash inflows and nominal net cash flows	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Total nominal CF's	Years when lenders nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from the FRL (6)	189396	189396	189396	189396	189396	189396	189396	2840946		
Net cash flows from the FRL for each alternative loan from the wholesaler										
(6) - (1)	36964	36964	36964	36964	36964	36964	36964	554462	Yrs 1 - 15	15
(6) - (2)	102396	102396	102396	102396	102396	102396	-1397604	35946	Yrs 1 - 14	14
(6) - (3)	48796	54596	60396	66196	71996	77796	83596	644946	Yrs 1 - 15	15
(6) - (4)	36964	36964	36964	36964	36964	36964	36964	554462	Yrs 1 - 15	15
(6) - (5)	20767	20767	20767	20767	20767	20767	20767	480138	Yrs 1 - 15	15
Nominal cash inflows from the SPL (7)	139500	139500	139500	139500	139500	139500	1639500	3592500		
Net cash flows from the SPL for each alternative loan from the wholesaler										
(7) - (1)	-12932	-12932	-12932	-12932	-12932	-12932	1487068	1306016	Yr 15	1
(7) - (2)	52500	52500	52500	52500	52500	52500	52500	787500	Yrs 1 - 15	15
(7) - (3)	-1100	4700	10500	16300	22100	27900	1533700	1396500	Yrs 10 - 15	5
(7) - (4)	-12932	-12932	-12932	-12932	-12932	-12932	1487068	1306016	Yr 15	1
(7) - (5)	-29129	-29129	-29129	-29129	-29129	-29129	1470871	1231692	Yrs 1 & 15	2
Nominal cash inflows from the DP (8)	165100	155800	146500	137200	127900	118600	109300	2616000		
Net cash flows from the DP for each alternative loan from the wholesaler										
(8) - (1)	12668	3368	-5932	-15232	-24532	-33832	-43132	329516	Yrs 1 - 10	10
(8) - (2)	78100	68800	59500	50200	40900	31600	-1477700	-189000	Yrs 1 - 14	14
(8) - (3)	24500	21000	17500	14000	10500	7000	3500	420000	Yrs 1 - 15	15
(8) - (4)	12668	3368	-5932	-15232	-24532	-33832	-43132	329516	Yrs 1 - 10	10
(8) - (5)	-3529	-12829	-22129	-31429	-40729	-50029	-59329	255192	Yrs 1 - 8	8

									Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from the 14YRGPL (9)	189396	189396	189396	189396	189396	189396	189396	2840946		
Net cash flows from the 14YRGPL for each alternative loan from the wholesaler										
(9) - (1)	36964	36964	36964	36964	36964	36964	36964	554462	Yrs 1 - 15	15
(9) - (2)	102396	102396	102396	102396	102396	102396	-1397604	35946	Yrs 1 - 14	14
(9) - (3)	48796	54596	60396	66196	71996	77796	83596	644946	Yrs 1 - 15	15
(9) - (4)	36964	36964	36964	36964	36964	36964	36964	554462	Yrs 1 - 15	15
(9) - (5)	20767	20767	20767	20767	20767	20767	20767	480138	Yrs 1 - 15	15
Nominal cash inflows from the DEFPL0-1 (10)	214133	214133	214133	214133	214133	214133	214133	2997866		
Net cash flows from the DEFPL0-1 for each alternative loan from the wholesaler										
(10) - (1)	61701	61701	61701	61701	61701	61701	61701	711382	Yrs 2 - 15	14
(10) - (2)	127133	127133	127133	127133	127133	127133	-1372867	192866	Yrs 2 - 14	13
(10) - (3)	73533	79333	85133	90933	96733	102533	108333	801866	Yrs 2 - 15	14
(10) - (4)	61701	61701	61701	61701	61701	61701	61701	711382	Yrs 2 - 15	14
(10) - (5)	45504	45504	45504	45504	45504	45504	45504	637057	Yrs 1 - 15	15

Appendix 10: Impact of alternative loan products on the PV of Company E's cash-flows, and the PV of the lender's loan inflows and outflows.

10a. Fixed Repayment Equally-amortised Loan (FRL)

		Year	0	1	2	3	4	5	6	7	8	9	10
		Total Nominal Payment		-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257
		Nominal Principal		-20985	-22937	-25070	-27402	-29950	-32736	-35780	-39107	-42744	-46720
		Nominal Interest		-103272	-101320	-99187	-96855	-94307	-91522	-88477	-85150	-81513	-77538
		Loan Balance After Payment	1110449	1089464	1066526	1041456	1014054	984104	951369	915589	876481	833737	787017
		Nominal Lender PV (inflows)		113685	104011	95161	87064	79656	72879	66678	61004	55814	51065
Interest rate	**Loan size**	Real Project NCFBIDLT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
9.3%	**1110449**	Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0	0
		Real NCFBILT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
		Less Interest		-103272	-101320	-99187	-96855	-94307	-91522	-88477	-85150	-81513	-77538
		Less Real Interest		-99300	-93676	-88177	-82792	-77514	-72331	-67235	-62218	-57270	-52382
		Real NCFBLT		-184212	-173048	10250	-67282	156802	161984	167080	172097	177046	181934
		Accumulated real loss b/f		-184212	-357260	-347010	-414291	-257489	-95505	0	0	0	0
		Real NCFBT		-184212	-357260	-347010	-414291	-257489	-95505	71575	172097	177046	181934
		Less Tax 30%		0	0	0	0	0	0	21472	51629	53114	54580
		Real NCFAT		-184212	-357260	-347010	-414291	-257489	-95505	50102	120468	123932	127354
		Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0	0
		Real NCFAT + Real Dep		-184212	-357260	-347010	-414291	-257489	-95505	50102	120468	123932	127354
		Less Principal		-20985	-22937	-25070	-27402	-29950	-32736	-35780	-39107	-42744	-46720
		Real Principal		-20178	-21207	-22287	-23423	-24617	-25871	-27190	-28575	-30032	-31562
		Real NCF		-204390	-378466	-369297	-437715	-282106	-121376	22913	91893	93900	95792
		PV of Real NCF		-194103	-341327	-316294	-356023	-217907	-89036	15962	60793	58994	57154
		IRR = 2%											

		Year	0	1	2	3	4	5	6	7	8	9	10
Wholesaler offered a FRL													
		Total Nominal Payment		-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248
Interest rate	**Loan size**	Nominal Principal		-30842	-32631	-34523	-36526	-38644	-40886	-43257	-45766	-48420	-51229
5.80%	**1110449**	Nominal Interest		-64406	-62617	-60725	-58722	-56604	-54362	-51991	-49482	-46828	-44019
		Loan Balance After Payment	1110449	1079607	1046976	1012453	975927	937283	896397	853140	807374	758954	707725
		Nominal Lender PV (outflows)		90027	85091	80426	76017	71850	67911	64188	60670	57344	54200

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Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-2485144
Nominal Principal	-51065	-55814	-61004	-66678	-72879	-79656	-87064	-95161	-104011	-113685	-1110449
Nominal Interest	-73193	-68444	-63253	-57580	-51379	-44601	-37193	-29096	-20246	-10573	-1374695
Loan Balance After Payment	735953	680139	619135	552457	479578	399922	312857	217696	113685	0	
Nominal Lender PV (inflows)	46720	42744	39107	35780	32736	29950	27402	25070	22937	20985	1110449
Real Project NCFBIDLT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFBILT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Interest	-73193	-68444	-63253	-57580	-51379	-44601	-37193	-29096	-20246	-10573	-1374695
Less Real Interest	-47545	-42750	-37988	-33251	-28529	-23813	-19094	-14362	-9609	-4825	-1014660
Real NCFBLT	186771	191566	196327	201065	205787	210503	215222	219953	224706	229490	2684040
Accumulated real loss b/f	0	0	0	0	0	0	0	0	0	0	-1655767
Real NCFBT	186771	191566	196327	201065	205787	210503	215222	219953	224706	229490	1028273
Less Tax 30%	56031	57470	58898	60319	61736	63151	64566	65986	67412	68847	805212
Real NCFAT	130740	134096	137429	140745	144051	147352	150655	153967	157294	160643	223061
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	130740	134096	137429	140745	144051	147352	150655	153967	157294	160643	223061
Less Principal	-51065	-55814	-61004	-66678	-72879	-79656	-87064	-95161	-104011	-113685	-1110449
Less Real Principal	-33171	-34861	-36638	-38505	-40467	-42529	-44697	-46974	-49368	1117062	494910
Real NCF	97569	99235	100792	102241	103584	104823	105959	106993	107926	1277705	717971
PV of Real NCF	55284	53398	51506	49616	47738	45878	44041	42232	40456	454845	-436792
Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-1428721
Nominal Principal	-54200	-57344	-60670	-64188	-67911	-71850	-76017	-80426	-85091	-90027	-707037
Nominal Interest	-41048	-37904	-34579	-31060	-27337	-23398	-19231	-14822	-10157	-5222	-721684
Loan Balance After Payment	653525	596181	535512	471323	403412	331562	255544	175118	90027	0	
Nominal Lender PV (outflows)	51229	48420	45766	43257	40886	38644	36526	34523	32631	30842	1110449

10b. Single Payment Non-amortized Loan (SPL)

		Year	0	1	2	3	4	5	6	7	8	9	10
		Total Nominal Payment		-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272
		Nominal Principal		0	0	0	0	0	0	0	0	0	0
		Nominal Interest		-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272
		Loan Balance After Payment	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449
		Nominal Lender PV (inflows)		94485	86445	79090	72360	66203	60570	55417	50701	46387	42440
Interest rate	Loan size	Real Project NCFBIDLT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
9.30%	1110449	Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0	0
		Real NCFBILT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
		Less Interest		-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272
		Less Real Interest		-99300	-95481	-91808	-88277	-84882	-81617	-78478	-75460	-72557	-69767
		Real NCFBLT		-184212	-174853	6619	-72766	149434	152698	155837	158856	161758	164549
		Accumulated real loss b/f		-184212	-359064	-352445	-425212	-275778	-123080	0	0	0	0
		Real NCFBT		-184212	-359064	-352445	-425212	-275778	-123080	32757	158856	161758	164549
		Less Tax 30%		0	0	0	0	0	0	9827	47657	48527	49365
		Real NCFAT		-184212	-359064	-352445	-425212	-275778	-123080	22930	111199	113231	115184
		Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0	0
		Real NCFAT + Real Dep		-184212	-359064	-352445	-425212	-275778	-123080	22930	111199	113231	115184
		Less Principal		0	0	0	0	0	0	0	0	0	0
		Less Real Principal		0	0	0	0	0	0	0	0	0	0
		Real NCF		-184212	-359064	-352445	-425212	-275778	-123080	22930	111199	113231	115184
		PV of Real NCF	-55522	-174940	-323829	-301861	-345853	-213019	-90285	15974	73565	71139	68724
		IRR = 2%											

Wholesalers offered a SPL

		Year	0	1	2	3	4	5	6	7	8	9	10
Interest rate	Loan size	Total Nominal Payment		-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406
5.80%	1110449	Nominal Principal		0	0	0	0	0	0	0	0	0	0
		Nominal Interest		-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406
		Loan	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449
		Nominal Lender PV (outflows)		60875	57538	54384	51402	48585	45921	43404	41024	38775	36650

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Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-1213721	-3175884
Nominal Principal	0	0	0	0	0	0	0	0	0	-1110449	-1110449
Nominal Interest	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-2065435
Loan Balance After Payment	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	0	
Nominal Lender PV (inflows)	38829	35525	32503	29737	27207	24892	22774	20836	19063	204982	1110449
Real Project NCFBIDLT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFBILT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Interest	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-103272	-2065435
Less Real Interest	-67083	-64503	-62022	-59637	-57343	-55138	-53017	-50978	-49017	-47132	-1403497
Real NCFBLT	167232	169812	172293	174679	176972	179178	181298	183338	185298	187184	2295203
Accumulated real loss b/f	0	0	0	0	0	0	0	0	0	0	-1719792
Real NCFBT	167232	169812	172293	174679	176972	179178	181298	183338	185298	187184	575412
Less Tax 30%	50170	50944	51688	52404	53092	53753	54390	55001	55589	56155	688561
Real NCFAT	117062	118869	120605	122275	123881	125424	126909	128336	129709	131028	-113149
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	117062	118869	120605	122275	123881	125424	126909	128336	129709	131028	-113149
Less Principal	0	0	0	0	0	0	0	0	0	-1110449	-1110449
Less Real Principal	0	0	0	0	0	0	0	0	0	662152	662152
Real NCF	117062	118869	120605	122275	123881	125424	126909	128336	129709	793180	549002
PV of Real NCF	66329	63963	61631	59339	57092	54894	52748	50657	48622	282361	-422748

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-1174855	-2398570
Nominal Principal	0	0	0	0	0	0	0	0	0	-1110449	-1110449
Nominal Interest	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-1288121
Loan	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	1110449	0	21098531
Nominal Lender PV (outflows)	34641	32742	30947	29250	27647	26131	24698	23345	22065	380427	1110449

10c. Decreasing Payment Loan (DP)

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		-158794	-153631	-148467	-143303	-138140	-132976	-127813	-122649	-117486	-112322
Nominal Principal		-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522
Nominal Interest		-103272	-98108	-92945	-87781	-82617	-77454	-72290	-67127	-61963	-56799
Loan Balance After Payment	1110449	1054927	999404	943882	888359	832837	777314	721792	666269	610747	555225
Nominal Lender PV (inflows)		145283	128599	113702	100410	88556	77993	68586	60215	52772	46160

Interest rate 9.30% Loan size 1110449

	0	1	2	3	4	5	6	7	8	9	10
Real Project NCFBIDLT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0	0
Real NCFBILT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
Less Interest		-103272	-98108	-92945	-87781	-82617	-77454	-72290	-67127	-61963	-56799
Less Real Interest		-99300	-90707	-82627	-75036	-67905	-61213	-54935	-49049	-43534	-38372
Real NCFBLT		-184212	-170079	15800	-59525	166410	173103	179381	185267	190781	195944
Accumulated real loss b/f		-184212	-354290	-338491	-398015	-231606	-58503	0	0	0	0
Real NCFBT		-184212	-354290	-338491	-398015	-231606	-58503	120878	185267	190781	195944
Less Tax 30%		0	0	0	0	0	0	36263	55580	57234	58783
Real NCFAT		-184212	-354290	-338491	-398015	-231606	-58503	84614	129687	133547	137161
Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep		-184212	-354290	-338491	-398015	-231606	-58503	84614	129687	133547	137161
Less Principal		-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522
Less Real Principal		-53387	-51334	-49359	-47461	-45635	-43880	-42192	-40570	-39009	-37509
Real NCF		-237599	-405624	-387850	-445476	-277241	-102383	42422	89117	94537	99652
PV of Real NCF	-55522	-225640	-365819	-332184	-362336	-214149	-75103	29552	58957	59395	59457
IRR = 3%											

Wholesaler offered a DP

Interest rate 5.80% Loan size 1110449

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		-119928	-116708	-113488	-110268	-107047	-103827	-100607	-97386	-94166	-90946
Nominal Principal		-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522
Nominal Interest		-64406	-61186	-57965	-54745	-51525	-48305	-45084	-41864	-38644	-35423
Loan Balance After Payment	1110449	1054927	999404	943882	888359	832837	777314	721792	666269	610747	555225
Nominal Lender PV (outflows)		113354	104263	95828	88005	80751	74028	67800	62032	56692	51752

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-107158	-101995	-96831	-91668	-86504	-81340	-76177	-71013	-65850	-60686	-2194802
Nominal Principal	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-1110449
Nominal Interest	-51636	-46472	-41309	-36145	-30982	-25818	-20654	-15491	-10327	-5164	-1084353
Loan Balance After Payment	499702	444180	388657	333135	277612	222090	166567	111045	55522	0	
Nominal Lender PV (inflows)	40291	35086	30476	26396	22789	19606	16799	14328	12155	10249	1110449
Real Project NCFBIDLT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFBILT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Interest	-51636	-46472	-41309	-36145	-30982	-25818	-20654	-15491	-10327	-5164	-1084353
Less Real Interest	-33542	-29026	-24809	-20873	-17203	-13784	-10603	-7647	-4902	-2357	-827423
Real NCFBLT	200774	205289	209506	213442	217112	220531	223712	226669	229414	231959	2871277
Accumulated real loss b/f	0	0	0	0	0	0	0	0	0	0	-1565117
Real NCFBT	200774	205289	209506	213442	217112	220531	223712	226669	229414	231959	1306161
Less Tax 30%	60232	61587	62852	64033	65134	66159	67114	68001	68824	69588	861383
Real NCFAT	140542	143702	146655	149410	151979	154372	156598	158668	160590	162371	444778
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	140542	143702	146655	149410	151979	154372	156598	158668	160590	162371	444778
Less Principal	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-1110449
Less Real Principal	-36066	-34679	-33345	-32063	-30830	-29644	-28504	-27407	-26353	1143606	414378
Real NCF	104475	109023	113309	117347	121149	124728	128095	131261	134236	1305977	859155
PV of Real NCF	59197	58665	57902	56947	55833	54590	53241	51811	50319	464909	-404455
	NA										

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-87725	-84505	-81285	-78065	-74844	-71624	-68404	-65183	-61963	-58743	-1786712
Nominal Principal	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-55522	-1110449
Nominal Interest	-32203	-28983	-25762	-22542	-19322	-16102	-12881	-9661	-6441	-3220	-676263
Loan Balance After Payment	499702	444180	388657	333135	277612	222090	166567	111045	55522	0	
Nominal Lender PV (outflows)	47183	42959	39057	35453	32127	29059	26231	23626	21228	19021	1110449

10d. Nineteen-Year Graduated Payment Loan (19YRGPL)

Inflation rate = 4% (CPIX)

Interest rate	Loan size
9.30%	1110449

To compute interest rates for graduated loans

Start interest rate (year 0) = 5%

Finish interest rate (year N) = 9.3%

Period of interest rate graduation = 19 years

Annual % increase = 3%

Accumulated Subsidy (%) = 4%

Accumulated Subsidy (Rands) = 425735

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257
Nominal Principal		-20985	-22937	-25070	-27402	-29950	-32736	-35780	-39107	-42744	-46720
Nominal Interest		-103272	-101320	-99187	-96855	-94307	-91522	-88477	-85150	-81513	-77538
Actual Nominal Interest Paid		-55522	-56282	-56926	-57434	-57779	-57934	-57867	-57539	-56910	-55932
Actual Nominal Interest Rate Paid (%)		5.00	5.17	5.34	5.51	5.70	5.89	6.08	6.28	6.49	6.71
Nominal Interest Rate Subsidy		-47749	-45038	-42261	-39422	-36528	-33587	-30611	-27610	-24602	-21605
Loan Balance After Payment	1110449	1089464	1066526	1041456	1014054	984104	951369	915589	876481	833737	787017
Nominal Lender PV (inflows)		113685	104011	95161	87064	79656	72879	66678	61004	55814	51065
Cost to Lender (PV of Interest Rate Subsidy)		43686	37700	32365	27622	23417	19700	16426	13555	11051	8879
Real Project NCFBIDLT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0	0
Real NCFBILT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
Less Interest		-55522	-56282	-56926	-57434	-57779	-57934	-57867	-57539	-56910	-55932
Less Real Interest		-53387	-52036	-50607	-49094	-47490	-45786	-43974	-42043	-39985	-37786
Real NCFBLT		-138299	-131408	47820	-33584	186825	188529	190342	192272	194331	196530
Accumulated real loss b/f		-138299	-269707	-221887	-255470	-68645	0	0	0	0	0
Real NCFBT		-138299	-269707	-221887	-255470	-68645	119884	190342	192272	194331	196530
Less Tax 30%		0	0	0	0	0	35965	57102	57682	58299	58959
Real NCFAT		-138299	-269707	-221887	-255470	-68645	83919	133239	134590	136032	137571
Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep		-138299	-269707	-221887	-255470	-68645	83919	133239	134590	136032	137571
Less Principal		-20985	-22937	-25070	-27402	-29950	-32736	-35780	-39107	-42744	-46720
Less Real Principal		-20178	-21207	-22287	-23423	-24617	-25871	-27190	-28575	-30032	-31562
Real NCF		-158477	-290913	-244174	-278893	-93262	58047	106049	106015	106000	106009
PV of Real NCF		-150501	-262365	-209129	-226843	-72038	42581	73877	70136	66596	63249
IRR = 7%											

Wholesaler offered Nineteen-Year GPL (19YRGPL)

Inflation rate = 4% (CPIX)

	Year	0	1	2	3	4	5	6	7	8	9	10
Interest rate **Loan size**	**Total Nominal Payment**	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248
5.8% **1110449**	**Nominal Principal**	-30842	-32631	-34523	-36526	-38644	-40886	-43257	-45766	-48420	-51229	
To compute interest rates for graduated loans	**Nominal Interest**	-64406	-62617	-60725	-58722	-56604	-54362	-51991	-49482	-46828	-44019	
Start interest rate (year 0) = 1.57%	**Actual Nominal Interest Paid**	-17478	-18200	-18904	-19580	-20215	-20794	-21300	-21712	-22008	-22158	
	Actual Nominal Interest Rate Paid (%)		1.57	1.69	1.81	1.93	2.07	2.22	2.38	2.54	2.73	2.92
Finish interest rate (year N) = 5.8%												
Period of interest rate graduation = 19 years	**Nominal Interest Rate Subsidy**	-46928	-44417	-41820	-39142	-36389	-33569	-30691	-27770	-24820	-21862	
Annual % increase = 7%	**Loan Balance After Payment**	107960 7	1046976	1012453	975927	937283	896397	853140	807374	758954	707725	
	Nominal Lender PV (outflows)		90027	85091	80426	76017	71850	67911	64188	60670	57344	54200
Accumulated Subsidy = 4%	**Cost to Tax Payer/Wholesaler (PV of Interest Rate Subsidy)**		44355	39680	35313	31239	27450	23934	20683	17688	14943	12440
Accumulated Subsidy (Rands) = 425735												

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Year	11	12	13	14	15	16	17	18	19	20	
Total Nominal Payment	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-2485144
Nominal Principal	-51065	-55814	-61004	-66678	-72879	-79656	-87064	-95161	-104011	-113685	-1110449
Nominal Interest	-73193	-68444	-63253	-57580	-51379	-44601	-37193	-29096	-20246	-10573	-1374695
Actual Nominal Interest Paid	-54551	-52705	-50325	-47332	-43637	-39138	-33721	-27256	-19595	-10573	-948960
Actual Nominal Interest Rate Paid (%)	6.93	7.16	7.40	7.64	7.90	8.16	8.43	8.71	9.00	9.30	
Nominal Interest Rate Subsidy	-18642	-15738	-12928	-10247	-7741	-5462	-3472	-1840	-651	0	-425735
Loan Balance After Payment	735953	680139	619135	552457	479578	399922	312857	217696	113685	0	
Nominal Lender PV (inflows)	46720	42744	39107	35780	32736	29950	27402	25070	22937	20985	1110449
Cost to Lender (PV of Interest Rate Subsidy)	7009	5414	4069	2951	2039	1317	766	371	120	0	258456
Real Project NCFBIDLT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFBILT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Interest	-54551	-52705	-50325	-47332	-43637	-39138	-33721	-27256	-19595	-10573	-948960
Less Real Interest	-35435	-32920	-30224	-27333	-24230	-20896	-17312	-13454	-9301	-4825	-678119
Real NCFBLT	198880	201396	204091	206982	210085	213419	217004	220861	225015	229490	3020581
Accumulated real loss b/f	0	0	0	0	0	0	0	0	0	0	-954008
Real NCFBT	198880	201396	204091	206982	210085	213419	217004	220861	225015	229490	2066574
Less Tax 30%	59664	60419	61227	62095	63026	64026	65101	66258	67504	68847	906174
Real NCFAT	139216	140977	142864	144887	147060	149393	151903	154603	157510	160643	1160399
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	139216	140977	142864	144887	147060	149393	151903	154603	157510	160643	1160399
Less Principal	-51065	-55814	-61004	-66678	-72879	-79656	-87064	-95161	-104011	-113685	-1110449
Less Real Principal	-33171	-34861	-36638	-38505	-40467	-42529	-44697	-46974	-49368	1117062	494910
Real NCF	106045	106116	106226	106383	106593	106864	107206	107628	108142	1277705	1655309
PV of Real NCF	60087	57101	54283	51627	49125	46771	44559	42483	40537	454845	296981
Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-1904961
Nominal Principal	-54200	-57344	-60670	-64188	-67911	-71850	-76017	-80426	-85091	-90027	-1110449
Nominal Interest	-41048	-37904	-34579	-31060	-27337	-23398	-19231	-14822	-10157	-5222	-794512
Actual Nominal Interest Paid	-22130	-21887	-21386	-20574	-19395	-17780	-15652	-12920	-9483	-5222	-368777
Actual Nominal Interest Rate Paid (%)	3.13	3.35	3.59	3.84	4.11	4.41	4.72	5.06	5.42	5.80	
Nominal Interest Rate Subsidy	-18918	-16017	-13193	-10485	-7942	-5618	-3579	-1901	-674	0	-425735
Loan Balance After Payment	653525	596181	535512	471323	403412	331562	255544	175118	90027	0	
Nominal Lender PV (outflows)	51229	48420	45766	43257	40886	38644	36526	34523	32631	30842	1110449
Cost to Taxpayers (PV of Interest Rate Subsidy)	10175	8142	6339	4762	3409	2279	1372	689	231	0	305126

10d1. Sixteen-Year Graduated Payment Loan (GPL)

Inflation rate = 4% (CPIX)

Interest rate	Loan size
9.30%	1110449

To compute interest rates for graduated loans

Start interest rate (year 0) = 5%

Finish interest rate (year N) = 9.3%

Period of interest rate graduation = 16 years

Annual % increase = 4%

Accumulated Subsidy = 4%

Accumulated Subsidy (Rands) = 381163

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment		-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257
Nominal Principal		-20985	-22937	-25070	-27402	-29950	-32736	-35780	-39107	-42744	-46720
Nominal Interest		-103272	-101320	-99187	-96855	-94307	-91522	-88477	-85150	-81513	-77538
Actual Nominal Interest Paid		-55522	-56627	-57628	-58498	-59212	-59736	-60032	-60060	-59768	-59102
Actual Nominal Interest Rate Paid (%)		5.00	5.20	5.40	5.62	5.84	6.07	6.31	6.56	6.82	7.09
Nominal Interest Rate Subsidy		-47749	-44693	-41559	-38357	-35095	-31786	-28445	-25090	-21745	-18436
Loan Balance After Payment	1110449	1089464	1066526	1041456	1014054	984104	951369	915589	876481	833737	787017
Nominal Lender PV (inflows)		113685	104011	95161	87064	79656	72879	66678	61004	55814	51065
Cost to Lender (PV of Interest Rate Subsidy)		43686	37411	31828	26876	22498	18643	15264	12318	9767	7576
Real Project NCFBIDLT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
Less Depreciation (assume real)		0	0	0	0	0	0	0	0	0	0
Real NCFBILT		-84912	-79372	98427	15511	234315	234315	234315	234315	234315	234315
Less Interest		-55522	-56627	-57628	-58498	-59212	-59736	-60032	-60060	-59768	-59102
Less Real Interest		-53387	-52355	-51231	-50005	-48668	-47210	-45620	-43885	-41992	-39927
Real NCFBLT		-138299	-131727	47196	-34494	185647	187105	188696	190430	192323	194388
Accumulated real loss b/f		-138299	-270026	-222830	-257324	-71676	0	0	0	0	0
Real NCFBT		-138299	-270026	-222830	-257324	-71676	115429	188696	190430	192323	194388
Less Tax 30%		0	0	0	0	0	34629	56609	57129	57697	58317
Real NCFAT		-138299	-270026	-222830	-257324	-71676	80800	132087	133301	134626	136072
Add Real Dep (assume real)		0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep		-138299	-270026	-222830	-257324	-71676	80800	132087	133301	134626	136072
Less Principal		-20985	-22937	-25070	-27402	-29950	-32736	-35780	-39107	-42744	-46720
Less Real Principal		-20178	-21207	-22287	-23423	-24617	-25871	-27190	-28575	-30032	-31562
Real NCF		-158477	-291233	-245117	-280747	-96293	54929	104897	104726	104595	104510
PV of Real NCF		-150501	-262654	-209937	-228350	-74380	40293	73074	69283	65713	62355
IRR = 7%											

Wholesaler offered a Sixteen-Year GPL (16YRGPL)

Inflation rate = 4% (CPIX)

	Year	1	2	3	4	5	6	7	8	9	10
Interest rate **Loan size**	**Total Nominal Payment**	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248
5.8% **1110449**	**Nominal Principal**	-30842	-32631	-34523	-36526	-38644	-40886	-43257	-45766	-48420	-51229
To compute interest rates for graduated loans	**Nominal Interest**	-64406	-62617	-60725	-58722	-56604	-54362	-51991	-49482	-46828	-44019
Start interest rate (year 0) = 1.61%	**Actual Nominal Interest Paid**	-17891	-18844	-19798	-20741	-21659	-22535	-23348	-24073	-24681	-25134
Finish interest rate (year N) = 5.8%	**Actual Nominal Interest Rate Paid (%)**	1.61	1.75	1.89	2.05	2.22	2.40	2.60	2.82	3.06	3.31
Period of interest rate graduation = 16 years	**Nominal Interest Rate Subsidy**	-46515	-43773	-40927	-37982	-34945	-31828	-28643	-25409	-22147	-18885
Annual rate of increase = 8%	**Loan Balance After Payment**	1079607	1046976	1012453	975927	937283	896397	853140	807374	758954	707725
	Nominal Lender PV (outflows)	90027	85091	80426	76017	71850	67911	64188	60670	57344	54200
Accumulated Subsidy = 4%	**Cost to Taxpayer/wholesaler (PV of Interest Rate Subsidy)**	43965	39105	34558	30313	26361	22693	19303	16184	13333	10746
Accumulated Subsidy (Rands) = 381163											

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Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-124257	-2485144
Nominal Principal	-51065	-55814	-61004	-66678	-72879	-79656	-87064	-95161	-104011	-113685	-1110449
Nominal Interest	-73193	-68444	-63253	-57580	-51379	-44601	-37193	-29096	-20246	-10573	-1374695
Actual Nominal Interest Paid	-57996	-56378	-54163	-51255	-47544	-42904	-37193	-29096	-20246	-10573	-993532
Actual Nominal Interest Rate Paid (%)	7.37	7.66	7.96	8.28	8.61	8.95	9.30	9.30	9.30	9.30	
Nominal Interest Rate Subsidy	-15196	-12066	-9090	-6325	-3835	-1697	0	0	0	0	-381163
Loan Balance After Payment	735953	680139	619135	552457	479578	399922	312857	217696	113685	0	
Nominal Lender PV (inflows)	46720	42744	39107	35780	32736	29950	27402	25070	22937	20985	1110449
Cost to Lender (PV of Interest Rate Subsidy)	5714	4151	2861	1821	1010	409	0	0	0	0	241833
Real Project NCFBIDLT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFBILT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Interest	-57996	-56378	-54163	-51255	-47544	-42904	-37193	-29096	-20246	-10573	-993532
Less Real Interest	-37673	-35214	-32529	-29598	-26399	-22907	-19094	-14362	-9609	-4825	-706491
Real NCFBLT	196642	199102	201787	204717	207916	211409	215222	219953	224706	229490	2992209
Accumulated real loss b/f	0	0	0	0	0	0	0	0	0	0	-960156
Real NCFBT	196642	199102	201787	204717	207916	211409	215222	219953	224706	229490	2032054
Less Tax 30%	58993	59731	60536	61415	62375	63423	64566	65986	67412	68847	897663
Real NCFAT	137650	139371	141251	143302	145541	147986	150655	153967	157294	160643	1134391
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	137650	139371	141251	143302	145541	147986	150655	153967	157294	160643	1134391
Less Principal	-51065	-55814	-61004	-66678	-72879	-79656	-87064	-95161	-104011	-113685	-1110449
Less Real Principal	-33171	-34861	-36638	-38505	-40467	-42529	-44697	-46974	-49368	1117062	494910
Real NCF	104479	104510	104613	104797	105074	105457	105959	106993	107926	1277705	1629301
PV of Real NCF	59199	56237	53458	50857	48425	46155	44041	42232	40456	454845	280803
Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-1904961
Principal	-54200	-57344	-60670	-64188	-67911	-71850	-76017	-80426	-85091	-90027	-1110449
Interest	-41048	-37904	-34579	-31060	-27337	-23398	-19231	-14822	-10157	-5222	-794512
Actual Interest Paid	-25391	-25401	-25104	-24428	-23292	-21598	-19231	-14822	-10157	-5222	-413349
Actual Interest Rate Paid (%)	3.59	3.89	4.21	4.56	4.94	5.35	5.80	5.80	5.80	5.80	
Interest Rate Subsidy	-15657	-12503	-9475	-6631	-4045	-1800	0	0	0	0	-381163
Loan Balance After Payment	653525	596181	535512	471323	403412	331562	255544	175118	90027	0	
Lender PV (outflows)	51229	48420	45766	43257	40886	38644	36526	34523	32631	30842	1110449
Cost to Taxpayers (PV of Interest Rate Subsidy)	8421	6356	4553	3012	1736	730	0	0	0	0	281370

10e. One-Year Deferred Payment Loan (DEFPL0-1)

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment	0	-138429	-138429	-138429	-138429	-138429	-138429	-138429	-138429	-138429	-138429
Nominal Principal	0	-25553	-27930	-30527	-33366	-36469		-39861	-43568	-47620	-52048
Nominal Interest	0	-112876	-110500	-107902	-105063	-101960		-98568	-94861	-90810	-86381
Loan Balance After Payment	1110449	1213721	1188168	1160238	1129711	1096345	1059876	1020015	976447	928828	876779
Nominal Lender PV (inflows)	0	115874	106015	96994	88742	81191		74283	67962	62179	56889

Interest rate: 9.30% Loan size: 1110449 Graduated: 1 year

Year	0	1	2	3	4	5	6	7	8	9	10
Real Project NCFBIDLT	-84912	-79372	98427	15511	234315	234315		234315	234315	234315	234315
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFBILT	-84912	-79372	98427	15511	234315	234315		234315	234315	234315	234315
Less Interest	0	-112876	-110500	-107902	-105063	-101960		-98568	-94861	-90810	-86381
Less Real Interest	0	-104360	-98234	-92235	-86354	-80581		-74904	-69314	-63802	-58356
Real NCFBLT	-84912	-183732	193	-76724	147961	153735		159411	165001	170514	175960
Accumulated real loss b/f	-84912	-268644	-268451	-345175	-197214	-43479		0	0	0	0
Real NCFBT	-84912	-268644	-268451	-345175	-197214	-43479		115932	165001	170514	175960
Less Tax 30%	0	0	0	0	0	0	0	34780	49500	51154	52788
Real NCFAT	-84912	-268644	-268451	-345175	-197214	-43479		81153	115501	119360	123172
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	-84912	-268644	-268451	-345175	-197214	-43479		81153	115501	119360	123172
Less Principal	0	-25553	-27930	-30527	-33366	-36469		-39861	-43568	-47620	-52048
Less Real Principal	0	-23625	-24829	-26095	-27424	-28822		-30291	-31835	-33457	-35162
Real NCF	-84912	-292270	-293280	-371270	-224639	-72301		50862	83666	85903	88010
PV of Real NCF	-80638	-263589	-251187	-301979	-173517	-53037		35432	55351	53970	52511

IRR = 4%

Wholesaler offered a DEFPL0-1

Interest rate: 5.8% Loan size: 1110449 Graduated: 1 year

Year	0	1	2	3	4	5	6	7	8	9	10
Total Nominal Payment	0	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651
Nominal Principal	0	-35510	-37569	-39748	-42054	-44493		-47073	-49804	-52692	-55748
Nominal Interest	0	-68142	-66082	-63903	-61598	-59158		-56578	-53848	-50959	-47903
Loan Balance After Payment	1110449	1174855	1139345	1101776	1062028	1019974	975481	928408	878604	825912	770164
Nominal Lender PV (outflows)	0	92598	87522	82724	78189	73903		69851	66022	62403	58982

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-138429	-138429	-138429	-138429	-138429	-138429	-138429	-138429	-138429	-138429	-2630155
Nominal Principal	-56889	-62179	-67962	-74283	-81191	-88742	-96994	-106015	-115874	-126651	-1213721
Nominal Interest	-81540	-76250	-70467	-64147	-57238	-49688	-41435	-32414	-22555	-11779	-1416434
Loan Balance After Payment	819891	757711	689749	615467	534276	445534	348540	242525	126651	0	
Nominal Lender PV (inflows)	52048	47620	43568	39861	36469	33366	30527	27930	25553	23379	1110449
Real Project NCFBIDLT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Depreciation (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFBILT	234315	234315	234315	234315	234315	234315	234315	234315	234315	234315	3698700
Less Interest	-81540	-76250	-70467	-64147	-57238	-49688	-41435	-32414	-22555	-11779	-1416434
Less Real Interest	-52967	-47625	-42321	-37043	-31782	-26529	-21271	-16001	-10705	-5376	-1019760
Real NCFBLT	181348	186690	191995	197272	202533	207787	213044	218315	223610	228940	2678940
Accumulated real loss b/f	0	0	0	0	0	0	0	0	0	0	-1207876
Real NCFBT	181348	186690	191995	197272	202533	207787	213044	218315	223610	228940	1471064
Less Tax 30%	54404	56007	57598	59182	60760	62336	63913	65494	67083	68682	803682
Real NCFAT	126944	130683	134396	138091	141773	145451	149131	152820	156527	160258	667382
Add Real Dep (assume real)	0	0	0	0	0	0	0	0	0	0	0
Real NCFAT + Real Dep	126944	130683	134396	138091	141773	145451	149131	152820	156527	160258	667382
Less Principal	-56889	-62179	-67962	-74283	-81191	-88742	-96994	-106015	-115874	-126651	-1213721
Less Real Principal	-36954	-38837	-40816	-42896	-45082	-47380	-49794	-52332	-54999	1111144	440513
Real NCF	89990	91846	93580	95194	96691	98071	99336	100488	101528	1271402	1107895
PV of Real NCF	50990	49422	47821	46197	44561	-42923	-41288	-39665	-38058	452601	-73159

Year	11	12	13	14	15	16	17	18	19	20	Total
Total Nominal Payment	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-1969375
Nominal Principal	-58982	-62403	-66022	-69851	-73903	-78189	-82724	-87522	-92598	-97969	-1174855
Nominal Interest	-44669	-41249	-37629	-33800	-29749	-25462	-20927	-16129	-11053	-5682	-794520
Loan Balance After Payment	711182	648779	582757	512906	439003	360814	278090	190567	97969	0	
Nominal Lender PV (outflows)	55748	52692	49804	47073	44493	42054	39748	37569	35510	33563	1110449

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Appendix 11: Lender's nominal cash inflows and outflows, and nominal net cash flows, for alternative loan products when financing Company E.

Lender's nominal cash flows (CFs) under alternative loans offered by the wholesaler compared to the conventional FRL

Lenders nominal cash outflows	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
For FRL (1)	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248
For SPL (2)	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406
For DP (3)	-119928	-116708	-113488	-110268	-107047	-103827	-100607	-97386	-94166	-90946
For 19YRGPL (4)	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248
For DEFPL0-1 (5)	0	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651
Lender's nominal cash inflows and nominal net cash flows										
Nominal cash inflows from the FRL (6)	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**
Net cash flows from the FRL for each alternative loan from the wholesaler										
(6) - (1)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009
(6) - (2)	59851	59851	59851	59851	59851	59851	59851	59851	59851	59851
(6) - (3)	4329	7549	10769	13990	17210	20430	23651	26871	30091	33311
(6) - (4)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009
(6) - (5)	124257	20606	20606	20606	20606	20606	20606	20606	20606	20606
Nominal cash inflows from the SPL (7)	**103272**	**103272**	**103272**	**103272**	**103272**	**103272**	**103272**	**103272**	**103272**	**103272**
Net cash flows from the SPL for each alternative loan from the wholesaler										
(7) - (1)	8024	8024	8024	8024	8024	8024	8024	8024	8024	8024
(7) - (2)	38866	38866	38866	38866	38866	38866	38866	38866	38866	38866
(7) - (3)	-16657	-13436	-10216	-6996	-3776	-555	2665	5885	9106	12326
(7) - (4)	8024	8024	8024	8024	8024	8024	8024	8024	8024	8024
(7) - (5)	103272	-380	-380	-380	-380	-380	-380	-380	-380	-380
Nominal cash inflows from the DP (8)	**158794**	**153631**	**148467**	**143303**	**138140**	**132976**	**127813**	**122649**	**117486**	**112322**
Net cash flows from the DP for each alternative loan from the wholesaler										
(8) - (1)	63546	58383	53219	48055	42892	37728	32565	27401	22237	17074
(8) - (2)	94388	89225	84061	78897	73734	68570	63407	58243	53079	47916
(8) - (3)	38866	36922	34979	33036	31093	29149	27206	25263	23319	21376
(8) - (4)	63546	58383	53219	48055	42892	37728	32565	27401	22237	17074
(8) - (5)	158794	49979	44816	39652	34489	29325	24161	18998	13834	8671

Nominal cash inflows from the 19YRGPL (9)	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**	**124257**

Net cash flows from the 19YRGPL for each alternative loan from the wholesaler

(9) - (1)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009
(9) - (2)	59851	59851	59851	59851	59851	59851	59851	59851	59851	59851
(9) - (3)	4329	7549	10769	13990	17210	20430	23651	26871	30091	33311
(9) - (4)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009
(9) - (5)	124257	20606	20606	20606	20606	20606	20606	20606	20606	20606

Nominal cash inflows from the DEFPL0-1 (10)	**0**	**138429**	**138429**	**138429**	**138429**	**138429**	**138429**	**138429**	**138429**	**138429**

Net cash flows from the DEFPL0-1 for each alternative loan from the wholesaler

(10) - (1)	-95248	43181	43181	43181	43181	43181	43181	43181	43181	43181
(10) - (2)	-64406	74023	74023	74023	74023	74023	74023	74023	74023	74023
(10) - (3)	-119928	21721	24941	28162	31382	34602	37823	41043	44263	47483
(10) - (4)	-95248	43181	43181	43181	43181	43181	43181	43181	43181	43181
(10) - (5)	0	34778	34778	34778	34778	34778	34778	34778	34778	34778

Lenders nominal cash outflows	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Total nominal CFs		
For FRL (1)	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-1428721		
For SPL (2)	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-64406	-1174855	-2398570		
For DP (3)	-87725	-84505	-81285	-78065	-74844	-71624	-68404	-65183	-61963	-58743	-1786712		
For 19YRGPL (4)	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-95248	-1904961		
For DEFPL0-1 (5)	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-103651	-1969375		

Lender's nominal cash inflows and nominal net cash flows	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Total nominal CFs	Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from the FRL (6)	124257	124257	124257	124257	124257	124257	124257	124257	124257	124257	2485144		
Net cash flows from the FRL for each alternative loan from the wholesaler													
(6) - (1)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009	**1056423**	Yrs 1 - 20	20
(6) - (2)	59851	59851	59851	59851	59851	59851	59851	59851	59851	-1050598	86574	Yrs 1 - 19	19
(6) - (3)	36532	39752	42972	46193	49413	52633	55854	59074	62294	65514	**698432**	Yrs 1 - 20	20
(6) - (4)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009	**580183**	Yrs 1 - 20	20
(6) - (5)	20606	20606	20606	20606	20606	20606	20606	20606	20606	20606	**515770**	Yrs 1 - 20	20
Nominal cash inflows from the SPL (7)	103272	103272	103272	103272	103272	103272	103272	103272	103272	1213721	3175884		
Net cash flows from the SPL for each alternative loan from the wholesaler													
(7) - (1)	8024	8024	8024	8024	8024	8024	8024	8024	8024	1118473	**1747163**	Yrs 1 - 20	20
(7) - (2)	38866	38866	38866	38866	38866	38866	38866	38866	38866	38866	777314	Yrs 1 - 20	20
(7) - (3)	15546	18767	21987	25207	28427	31648	34868	38088	41309	1154978	1389172	Yrs 7 - 20	14
(7) - (4)	8024	8024	8024	8024	8024	8024	8024	8024	8024	1118473	**1270923**	Yrs 1 - 20	20
(7) - (5)	-380	-380	-380	-380	-380	-380	-380	-380	-380	1110069	1206510	Yrs 1 & 20	2
Nominal cash inflows from the DP (8)	107158	101995	96831	91668	86504	81340	76177	71013	65850	60686	2194802		
Net cash flows from the DP for each alternative loan from the wholesaler													
(8) - (1)	11910	6747	1583	-3580	-8744	-13908	-19071	-24235	-29398	-34562	766082	Yrs 1 - 13	13
(8) - (2)	42752	37589	32425	27262	22098	16934	11771	6607	1444	-1114169	-203767	Yrs 1 - 19	19
(8) - (3)	19433	17490	15546	13603	11660	9716	7773	5830	3887	1943	**408090**	**Yrs 1 - 20**	**20**
(8) - (4)	11910	6747	1583	-3580	-8744	-13908	-19071	-24235	-29398	-34562	289841	Yrs 1 - 13	13
(8) - (5)	3507	-1657	-6820	-11984	-17147	-22311	-27474	-32638	-37802	-42965	225428	Yrs 1 - 11	11

												Years when lender's nominal CFs are positive	Number of years that nominal CFs are positive
Nominal cash inflows from the 19YRGPL (9)	124257	124257	124257	124257	124257	124257	124257	124257	124257	124257	2485144	positive	positive
Net cash flows from the 19YRGPL for each alternative loan from the wholesaler													
(9) - (1)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009	1056423	Yrs 1 – 20	20
(9) - (2)	59851	59851	59851	59851	59851	59851	59851	59851	59851	-1050598	86574	Yrs 1 - 19	19
(9) - (3)	36532	39752	42972	46193	49413	52633	55854	59074	62294	65514	698432	Yrs 1 - 20	20
(9) - (4)	29009	29009	29009	29009	29009	29009	29009	29009	29009	29009	580183	Yrs 1 - 20	20
(9) - (5)	20606	20606	20606	20606	20606	20606	20606	20606	20606	20606	515770	Yrs 1 - 20	20
Nominal cash inflows from the DEFPL0-1 (10)	138429	138429	138429	138429	138429	138429	138429	138429	138429	138429	2630155		
Net cash flows from the DEFPL0-1 for each alternative loan from the wholesaler													
(10) - (1)	43181	43181	43181	43181	43181	43181	43181	43181	43181	43181	1201434	Yrs 2 - 20	18
(10) - (2)	74023	74023	74023	74023	74023	74023	74023	74023	74023	-1036426	231585	Yrs 2 - 19	17
(10) - (3)	50704	53924	57144	60365	63585	66805	70026	73246	76466	79686	843442	Yrs 2 - 20	18
(10) - (4)	43181	43181	43181	43181	43181	43181	43181	43181	43181	43181	725193	Yrs 2 - 20	18
(10) - (5)	34778	34778	34778	34778	34778	34778	34778	34778	34778	34778	660780	Yrs 1 - 20	20