The Cost of Funds and Access to Credit: The Case of Smallholder Oil Palm Growers in Papua New Guinea

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Statement of Originality

This thesis is all my original work except where cited

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Abstract

This thesis is about the cost of funds to borrowers and access to formal sector credit by smallholder oil palm growers in the Hoskins oil palm project in Papua New Guinea. This study finds that the cost of funds to smallholder oil palm grower borrowers is high and their access to formal sector credit is restricted. The study has uncovered many underlying factors responsible for this situation. It is not the result of government policies nor of actions of the formal commercial financial sector. These underlying factors are driven by insecure land titles and poor savings and banking history.

This research enriches the existing literature on the determinants of financial development by contributing to the understanding of three important factors: borrower transaction cost, property rights and relationship banking. It shows that the development of an efficient property rights system and a good relationship with commercial banks would lower the cost of funds and enhance financial development. This study contributes to the growing empirical research that analyses the determinants of financial development.

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Definitions and Abbreviations

Currency Equivalent

Papua New Guinea K1 to US $ 0.3042 as of 28 September, 2004

Acronyms

BSP	Bank of South Pacific Limited
CLUA	Clan Land Usage Agreement
CP	Customary Purchase
DLPP	Department of Lands and Physical Planning, Papua New Guinea
LSS	Land Settlement Scheme
NBPOL	New Britain Palm Oil Limited
NLC	National Lands Commission, Papua New Guinea
NLTC	National Land Titles Commission, Papua New Guinea
OPIC	Oil Palm Industry Corporation - unless specified it refers to OPIC Hoskins
PNG	Papua New Guinea
PNGOPRA	Papua New Guinea Oil Palm Research Association
PNGRDB	Papua New Guinea Rural Development Bank

ROSCA	Rotating Savings and Credit Association
SAD	Smallholder Affairs Division
SLS	Savings and Loan Society
VOP	Village Oil Palm

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Chapter 1

Introduction

1.0 Introduction

This thesis is about the cost of funds to borrowers and access to credit in Papua New Guinea. The research examines the factors that raise the cost of funds to borrowers using survey data from smallholder oil palm growers. The research enriches the literature on rural finance in developing countries by adding to the understanding of three important factors, namely borrower transaction cost, property rights and relationship banking that determines the cost of funds and access to rural credit.

This chapter begins by defining the scope and focus of this research, before providing a brief overview of the research methodology and a description of the research objectives. Finally, the structure of the thesis is outlined.

1.1 Research scope and focus

The important role of finance in economic development has long been established (Schumpter 1934).[1] Although sceptics question the high level of emphasis placed on finance as a determinant of economic growth (Lucas 1988:6), there is a consensus amongst economists that the links between financial mobilisation and intermediation and economic growth are strong (Levine *et al.* 2000). However, both theoretical and

[1] The original work is Shumpeter (1911) but reprinted in 1934.

empirical evidence to date is inconclusive about the direction of causality (Levine 2004:85).

Levine (2004) provides the latest extensive review of the literature on the theory and empirical evidence for the nexus between finance and economic growth. His review makes the point that financial systems emerge to ameliorate (they cannot eliminate) three costs of financial transactions by performing five functions. The three costs involved in financial transaction are information costs, enforcement costs and transaction costs. The five functions of financial systems are: (i) the production of information *ex ante* about possible investments and the allocation of capital; (ii) monitoring investments and exerting corporate governance after providing finance; (iii) facilitating the trade, diversification, and management of risk; (iv) mobilising and pooling savings; and (v) easing the exchange of goods and services.

Information costs are associated with evaluating firms, managers, and market conditions prior to making investment decisions. Enforcement costs refer to the degree to which the providers of capital can effectively monitor and influence how firms use the capital. Transaction costs refer to the costs incurred in executing a financial transaction. Financial intermediation may reduce the costs associated with acquiring and processing information. Financial intermediaries may facilitate shareholders and creditors to monitor firms and induce managers to maximise firm value. Financial markets and intermediaries may arise to ease the trading, hedging, and pooling of risk across firms, industries and regions (cross-sectional risk), across time (inter-temporal) and liquidity (cost and speed at which financial instruments can be converted into purchasing power). Through financial intermediation, numerous financial arrangements may arise to mobilise savings for

investment by mitigating the transaction costs associated with savings mobilisation and overcoming the informational asymmetries associated with making savers feel comfortable in relinquishing control of their savings. Finally, the emergence of specialised financial intermediaries may ease exchange by lowering both transaction and information costs.

Therefore, different types of contracts, markets and intermediaries emerge to address the three costs and perform the five functions. Each of these functions influences savings and investment decisions and hence economic growth. However, across countries and time, distinct financial contracts, markets and intermediaries have emerged because legal, regulatory and policy regimes differ. These differences will have different implications for resource allocation and welfare depending on the frictions present in the economy. Financial development therefore entails improvements in all these five functions and reductions in information, enforcement and transaction costs.

The summary of Levine (2004: 4-25) presented above provides the background for defining the research scope and focus for this study.[2]

1.1.1 Research scope

During the 1950s, interventionist policies in the form of directed credit, interest rate ceilings, and state ownership of financial institutions were common (Yaron *et al.* 1998:147). The rationale behind the pursuit of these interventionist policies was that improving access to credit was a means of alleviating poverty (Remenyi 1991:ix-x). The

[2] These five functions were mentioned in an earlier paper (Levine 1997: 691-701).

assumption behind this strategy was that improved access to credit would facilitate the adoption of new technology that would improve productivity, raise incomes and move the poor out of poverty.

However, there exists a body of literature on the failure of these interventions (Adams 1971; Adams and Graham 1981; Adams *et al.* 1984; Braverman and Guasch 1986). The interventionist polices resulted in capital market fragmentation and condemned these economies to inferior technology and poor growth (McKinnon 1973; Shaw 1973). The standard policy recommendation to overcome the problems that arose, based on the McKinnon (1973) and Shaw (1973) analysis, was financial market deregulation. There is however a body of literature that supports state interventions in areas where market failure exists (Morduch 1999; Besley 1994).

This debate leads to the pursuit of efficient and successful rural financial intermediation (Yaron *et al.* 1998; Yaron 1994). The literature identifies three distinct features that distinguished developing country credit markets from other credit markets (Besley 1994:31-32). These are scarce collateral, underdeveloped complementary institutions, and covariant risk and segmented markets. This type of market structure encourages informal financial market intermediation whereby local actors such as money lenders, friends and relatives, or Rotating Savings and Credit Associations play significant roles that are founded on local information, enforcement mechanisms and operations (Besley 1994:32). Compared to formal financial intermediaries, informal intermediaries are inefficient (Morduch 1999; Besley 1995a; Townsend 1995; Platteau 1997; Dercon 2002).

For all these reasons, the financial system of developing countries consists of informal, government owned and formal financial intermediaries.

1.1.2 Research focus

Different types of financial contracts, markets, and intermediaries emerge because there are costs involved in the acquisition of information, enforcement of contracts, and making transactions (Levine 2004:4). The important role of information in financial transaction has been established (Stiglitz and Weiss 1981).[3] The emerging empirical based literature discusses enforcement through analysis of the role played by the legal system (Beck *et al.* 2003; Claessens and Laeven 2003; Levine 1998). There is also a large body of literature that analyses the impact of transaction costs (Gonzales-Vega 1976; 1984; Ladman 1984) using many empirical applications in developing countries (Abiad *et al.* 1988; Dat 1998; Gonzales-Vega 1976; 1984; Ladman 1984).

This study focuses on how the cost of funds to borrowers can be lowered and thereby increase access to formal sector credit through financial development in a developing country context.

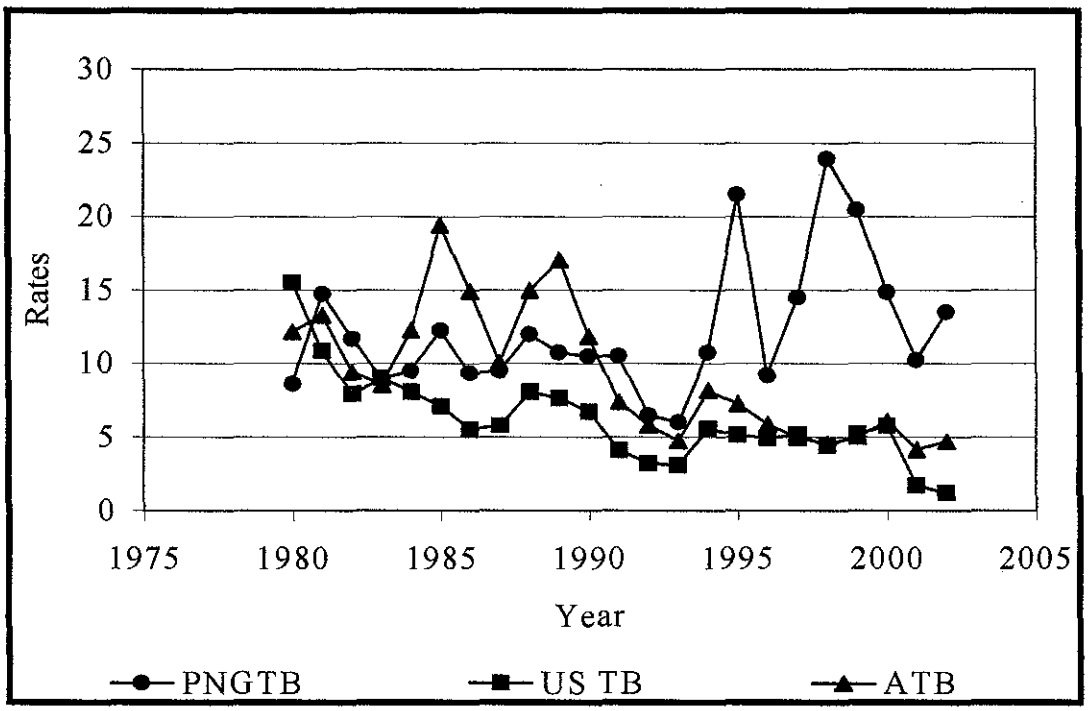
1.2 Research objectives, motivation and questions

The primary objective of this research is to identify the factors that constrain smallholders from accessing finance from the formal sector in Papua New Guinea. There are three motivating factors behind this research objective. Firstly, the cost of funds to

[3] Stiglitz and Weiss (1981) discuss the problems of adverse selection and moral hazard involved in financial transactions. Adverse selection refers to the case where the lender runs the risk of funding a risky

business in Papua New Guinea is high. The interest rates for Papua New Guinea, Australia and the United States depicted in Figure 1.1 show the severity of this problem.

Figure 1.1 **Comparison of Treasury Bill Rates in Parity Terms Between Papua New Guinea, Australia and the United States, 1980 to 2002 ***



* PNGTB is Papua New Guinea Treasury Bills, USTB is United States Treasury Bills and ATB is Australian Treasury Bills.

Source: Data from Bank of Papua New Guinea, *Quarterly Economic Bulletin,* (Various Issues, 1980-2002).

The large gap between interest rates in Papua New Guinea and in the two developed economies of Australia and the United States, especially after 1994 (see Figure 1.1), demonstrates the high cost of undertaking investments in Papua New Guinea.[4] The implication from this data (Figure 1.1) is that only highly profitable investments will

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or bad project. Moral hazard refers to the case where, once funded, the creditor runs the risk that the debtor

receive external funding. The high interest rates demonstrated by the formal financial sector in Papua New Guinea point to the cost of funds to the smallholder sector being very high and severely restricting smallholders from accessing credit from formal financial institutions.

Furthermore, the underlying causes of the high interest costs are beyond the influence of individual smallholder borrowers. However, they may be able to lower their marginal borrowing costs. Using information obtained from smallholder oil palm growers from the Hoskins oil palm project in Papua New Guinea, this thesis analyses whether these growers are able to reduce their marginal borrowing costs and improve access to formal sector credit. The Hoskins project is studied because the structural set-up of the project appears ideal for lowering the marginal costs of borrowing. Similar conditions cannot be found in other parts of the country (see more details in Chapter 3).

Attempts to develop the rural financial sector in Papua New Guinea have largely failed. The World Bank (1997:18-19) concluded that nearly three decades of public sector interventions in rural financial intermediation have not led to the establishment of any sustainable financial institution and that the environment in Papua New Guinea has large obstacles for the development of rural financial institutions.

There have been no empirical studies using microeconomic data from field surveys in Papua New Guinea to study the financial sector. This study is the first to analyse the issues confronting rural financial development in Papua New Guinea.

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will not commit fully to the project. In both cases the risks of default are high.

[4] In 1994 the Papua New Guinea currency was floated.

To operationalise the research objective, two research questions were posed:

- How high is the cost of funds to small borrowers?
- What factors have led to the high cost of funds?

The first question is addressed using the concept of borrower transaction costs. This analysis provides estimates of the magnitude of the cost of funds to borrowers. The second question is addressed using the property rights theory as it relates to land titles and the theory of relationship banking. The latter two components of the analysis explain why the cost of funds has remained high and consequently restricted smallholder access to formal sector credit.

1.3 Structure of the thesis

The rest of the chapters are organised as follows: Chapter two presents a theoretical model. The cost of funds model (Chand 2001) is linked to existing models in the literature on finance and development and transaction costs. This theoretical model is designed to depict the financial system in Papua New Guinea and provides the theoretical underpinnings of the analysis of the two research questions.

Chapter three discusses the methodology used in the empirical analysis. The reasons for choosing the Hoskins smallholder oil palm growers, the sampling technique, the survey questionnaire, and the interviews undertaken are described. The limitations of the study and the constraints faced during the field research are also presented in this chapter.

Chapters four, five and six present the empirical analysis. Chapter four uses the concept of borrower transaction costs to estimate the magnitude of the cost of funds to smallholder oil palm grower borrowers. Chapters five and six provide explanations of the factors underlying the high cost of funds to borrowers estimated in chapter four. Chapter five uses property rights theory to analyse the role of land titles in the high cost of funds to borrowers. Chapter six uses the literature on relationship lending to analyse the role of bank account ownership in the high cost of funds to borrowers. The concluding chapter summarises the main research findings and discusses policy and research implications.

Chapter 2

Analytical Framework: The Cost of Funds Model

2.0 Introduction

This chapter provides the theoretical framework for the thesis. It also draws out the theoretical predictions tested in the following chapters that are based on empirical data. The model used in this thesis is derived in Section 2.1 by linking three sets of models drawn from the literature. Section 2.2 draws out the theoretical implications for analysis in the subsequent chapters.

2.1 Derivation of the Cost of Funds model

The initial Cost of Funds model was derived directly with the theoretical and policy implications relevant to the theme of this research in mind. This model is based on Chand (2001). The chapter reviews two sets of earlier models and links these with the Cost of Funds model. The first is the standard financial sector model taken from the finance and development literature and the second is a microeconomic-based model using transaction cost theory.

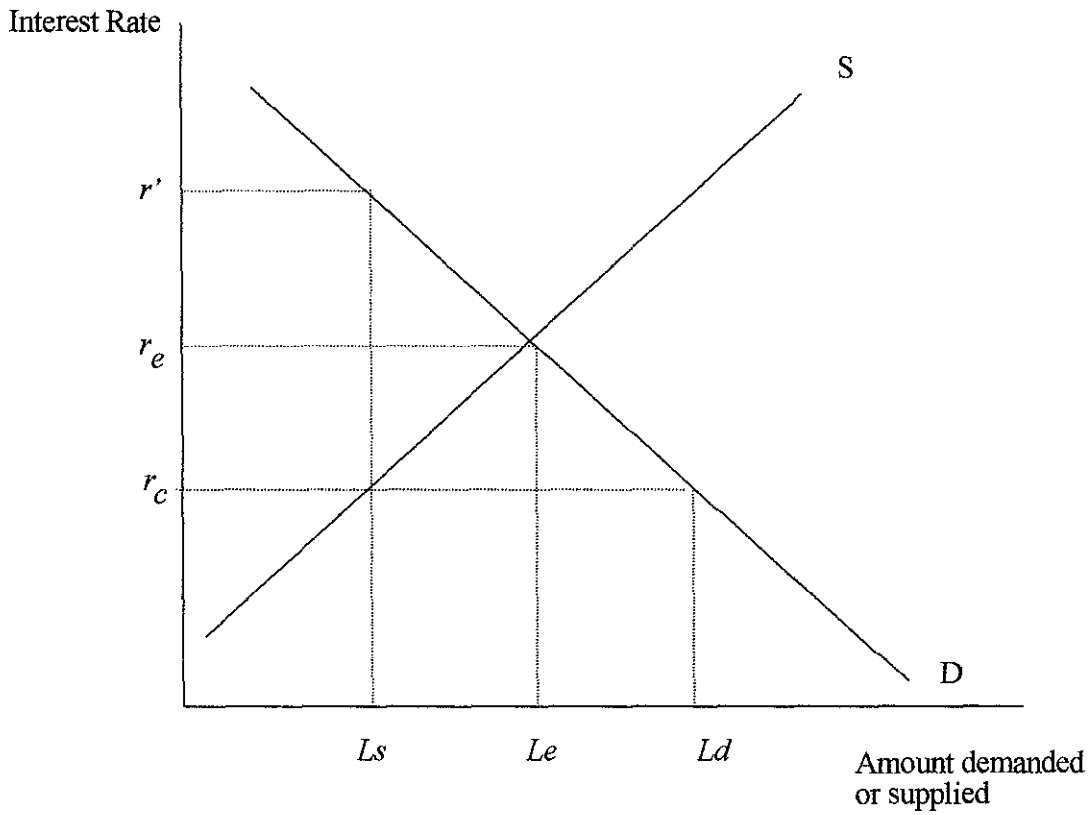
2.1.1 The standard financial sector model

The standard financial sector model is based on the seminal works of McKinnon (1973) and Shaw (1973). Figure 2.1 depicts this model. Demand for credit is negatively related to the interest rate and the supply of credit is positively related to the interest rate. McKinnon's argument (1973) for this relationship is that the 'lumpiness' of the expenditure on investment using self-raised funding requires prior savings accumulation before investments can be made. Since positive and high real interest rates encourage savings accumulation, investments will occur only when the rate of return on investment exceeds the real rate of interest earned from savings. Shaw's justification for this relationship is that high interest rates encourage savings accumulation but discourage investment in low yielding projects (Shaw 1973). Interest rates are therefore positively related to savings and negatively related to investment.

In this standard model, savings accumulation defines the supply curve and investment demand defines the demand curve. The aggregate demand and supply determines the market demand (D) and supply (S) (see Figure 2.1).

Both McKinnon (1973) and Shaw (1973) used this model to show that government interventions in the credit market will cause credit market segmentation, drive credit away from profitable projects to marginal projects, and condemn economies to reliance on inferior technology and low growth. The following example demonstrates this analysis (see Figure 2.1).

Figure 2.1 **Standard Model of Financial Sector**



According to McKinnon (1973) and Shaw (1973) the market clears at interest rate r_e and loan amount L_e. In the presence of restrictive policies like interest rate ceilings, the rate of interest will be set administratively at r_c. As a result, demand expands to L_d while supply remains at L_s. The area between L_s and L_d depicts excess demand. Lenders are likely to use this excess demand and employ non-price credit-rationing techniques and divert investments from profitable to marginal investment projects. The intervention also restricts lenders to mobilise savings at high cost to lend at rates below profitable levels. This will restrict savings mobilisation and will encourage the proliferation of informal

financial institutions in both savings and credit mobilisation as the financial sector is segmented into formal and informal sectors.

Financial markets of developing countries do not seem to work as classical competitive markets due to the prevalence of market imperfections and government interventions (Hoff and Stiglitz 1990:235; Besley 1994:29). Since McKinnon (1973) and Shaw (1973) assumed classical competitive markets when deriving the demand and supply functions, the prevalence of market failures and government interventions makes the supply and demand function derivation process less relevant to developing countries. Particular attention is therefore paid when deriving the supply and demand functions in section 2.1.2 so that the Cost of Funds model represents the realities of developing country financial markets.

2.1.2 Microeconomic based model

The supply curve is derived from a lender cost minimisation problem suggested by Gongales-Vega (1976, 1984). The lender is assumed to minimise costs in order to be profitable. There are four components of the total cost of lending. These are the opportunity cost of funds, administration costs, expenditure on risk-minimisation, and default costs. The opportunity cost of funds can be estimated from the marginal rate of return from an alterative use of the loanable funds (Gongalez-Vega 1976). It can also be taken as the cost at which the lender has borrowed funds from savers. This cost is assumed to be constant. Administration costs consist of initiating, recording, despatching and collecting repayments. This is a fixed cost independent of the loan size.

Expenditure on risk reduction consists of expenditure on screening of loan applications prior to loan approvals and monitoring project performance and loan repayments after granting the loan. Because of the asymmetry of information between lenders and borrowers, risk cannot be eliminated (Stiglitz and Weiss 1981) even if expenditure on risk reduction is increased. The lender is aiming to lower costs associated with the probability of the borrower defaulting on a loan. In the event of default, the lender loses the total loan, opportunity costs, administration costs and the expenditure on risk-reduction strategies. To insure itself against this possibility, the lender charges a risk-premium. The risk premium is calculated using a rate of default, which is a function of information from past experience and risk-reducing expenditure.

Collectively, administration, risk-reducing expenditure and default cost constitute the lender's transaction cost component of the total cost of lending. The total cost of lending is therefore the sum of transaction plus opportunity cost of funds. The lender maximises profits by optimising the total cost of lending. The supply curve is therefore the upward sloping segment of the marginal cost of lending.

The demand curve is derived from a borrower profit maximisation problem following Dat (1998). The following summarises Dat's (1998: 26-27) argument on the derivation of the downward sloping demand curve. The demand for credit is determined by initial endowments, production, access to and cost of alternative sources of credit, and the borrower's attitude toward risk. The borrower is assumed to borrow for working capital in the context of a given production function exhibiting diminishing marginal productivity of all inputs. The borrower would demand credit up to the point where the expected marginal rate of return on the credit use equals the marginal cost of credit. The

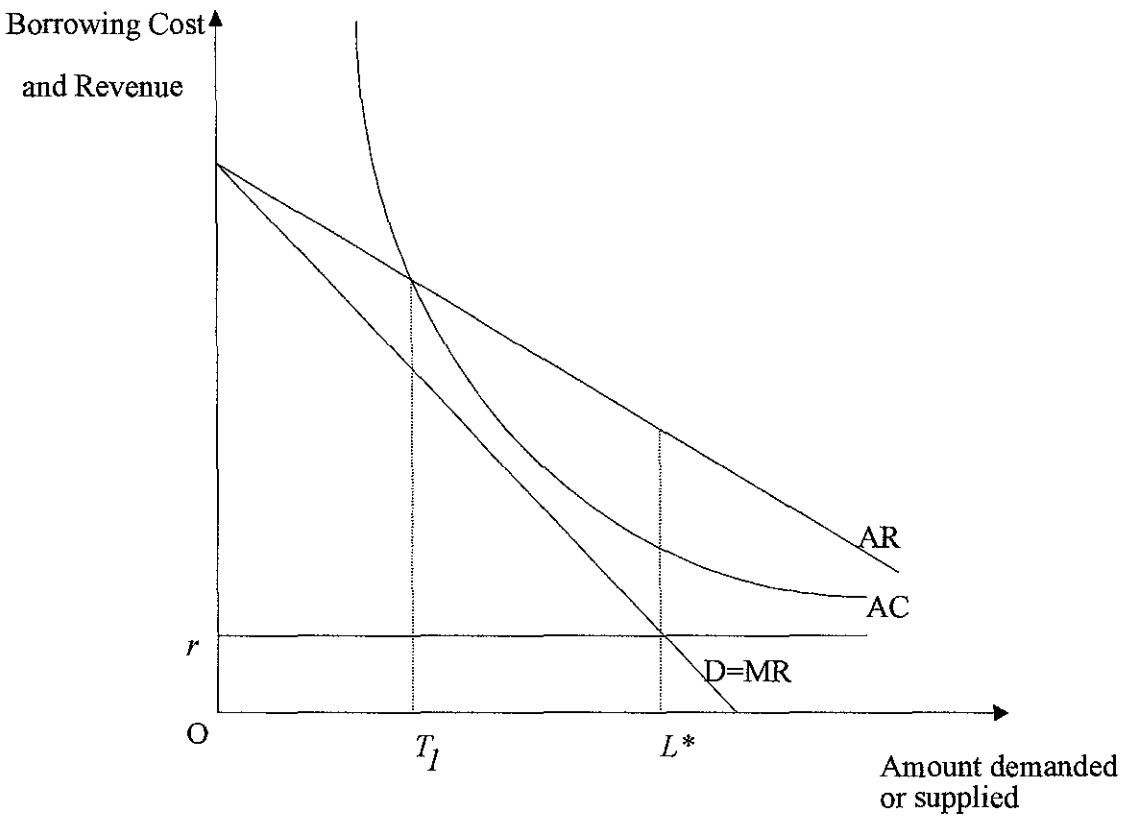
marginal rate of return on credit will diminish because of the diminishing marginal rate of return of variable inputs. This means that the demand for credit will be negatively sloped.

The supply and demand functions derived here are similar to the positively sloping supply function and negatively sloping demand function represented in Figure 2.1. But this demand function excludes borrower transaction costs. Borrowers incur these costs while searching for potential lenders, completing forms, attending interviews, signing up to loans, paying loan administration fees, and making regular loan repayments. The significance of the borrower transaction costs is that at the advertised lending interest rate an investment may look attractive but the 'hidden' transaction costs to the borrower is expensive (Dat 1998: 29).

The model that captures borrower's total cost optimisation follows Ladman (1984). The total cost of borrowing is the sum of interest costs and borrower transaction costs. The one borrower/one lender model and the one borrower/two-lender model put forward by Ladman (1984) are depicted in Figures 2.2 and 2.3, respectively.

From Figure 2.2, it can be seen that the average total borrowing cost curve will approach the line that cuts the vertical at r for a given interest rate r. Profit maximisation implies that, the borrower has to borrow L^* and earn $L^*(AR-AC)$ in profits. There is a threshold point T_1 below which the borrower will not borrow from this lender because the loan amounts below this threshold are loss-making. This indicates that increases in the average borrower transaction cost lower profits and increase the borrowing threshold.

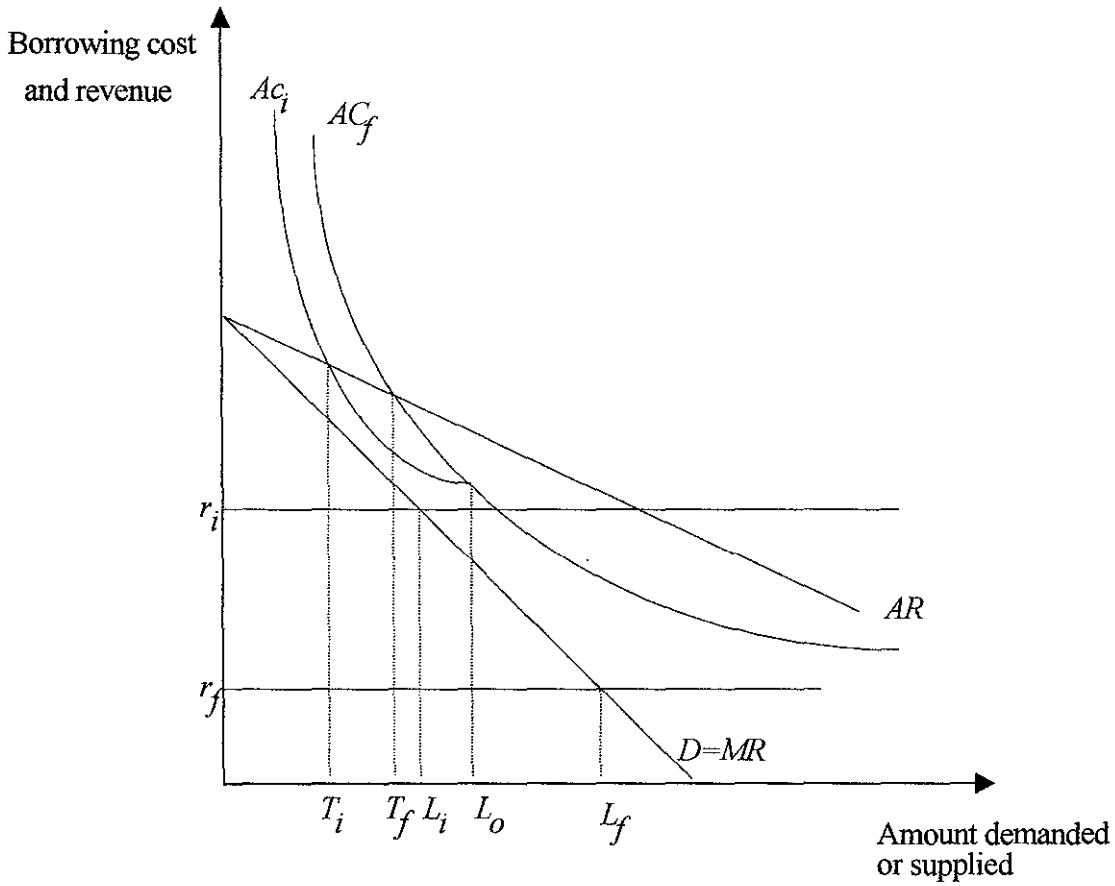
Figure 2.2 **Borrowing Costs and Revenues: One Lender**



Linking the discussions based on Figure 2.2 to Figure 2.3, it is found that the decision to borrow from one lender will not be influenced by the interest rate alone, but by the total cost of borrowing in which the size of loan plays an important role in maintaining profitability. The borrower is forced to choose between a formal lender offering large loans (L_f) at low interest rates (r_f) but who imposes higher borrower transactions costs (AC_f) and an informal lender offering small loans (L_i) at high interest rates (r_i) but who imposes lower borrower transactions costs (ACi). The threshold loan sizes beyond which the two different lenders cannot fall are T_f for formal lenders and T_i for informal lenders. The market will be partitioned at the loan size about which all borrowers in the market

will be indifferent. This is where the effective cost of borrowing from both lenders is equal for all borrowers (Ladman 1984:112), depicted as point L_o in Figure 2.3.

Figure 2.3 **Borrowing Costs and Revenue: Two Lenders**



Borrower transaction costs will therefore impact on the decision to borrow and on profitability. Ladman (1984:109) identified three implications of this analysis. First, larger borrower transaction costs imply a higher total cost of borrowing and less profit. Second, for a given interest rate and borrower transaction cost, a borrower will not borrow below the threshold level where the average total cost of borrowing is equal to average revenue. This is the loan size below which the borrower will not be willing to

borrow. Third, since the borrower transaction costs are spent in advance of receiving the loan, they are part of the threshold amount. Borrowers who cannot fund these out-of-pocket costs will not be able to borrow from that particular lender. Even for those borrowers who can afford the out-of-pocket costs but face a positive probability of rejection face losing this money and therefore may not attempt to borrow from this lender. Compared to potential borrowers with a prior relationship with both the lender and the large borrowers, small and first-time borrowers face a greater possibility of falling below these thresholds.

This framework provides an explanation for the coexistence of lenders offering credit at different interest rates and involving different borrower transaction costs. The main implication of this model is that the borrower's decision to borrow is determined by the effective cost of borrowing. Lending rates, borrower transaction costs and loan size all play a part in the decision to borrow from a particular lender. The cost of funds model (Chand 2001) discussed next generalises the one-borrower/two-lender case to depict the multi-financial instruments, markets and intermediaries that form the financial systems in the real situations of developing countries.

2.1.3 The Cost of Funds model

In its initial formulation, the Cost of Funds model was derived directly (Chand 2001). Here, the model is integrated with the two models reviewed above.

Both models reviewed above demonstrate that the supply of funds is positively related to interest rates and the demand for funds is negatively related to interest rates. Equalising

demand for funds with supply gives the market clearing. The cost of funds model is intended to define the envelope.

The total cost of funds to a borrower is depicted in equation 2.1

$$C^T = F + rK \qquad (2.1)$$

where C^T is the total cost of funds, F is the total fixed costs of accessing funds and K is the value of the loan, and r which is the marginal cost to the lender is a function of K.

F depicts the costs associated with accessing funds. This is a fixed cost that is independent of the loan amount.

The variable r is the marginal cost of funds. For the lender, r incorporates the marginal costs associated with mobilising funds and then lending.

The average cost of funds to the borrower defines the cost of funds model as depicted in equation 2.2.

$$C(K) = \frac{F}{K} + r \qquad (2.2)$$

where $C(K) = \frac{C^T}{K}$ and $K > 0$.

This equation (2.2) depicts the cost of funds to the firm. This links the two models reviewed to the Cost of Funds model, and defines an overall financial system with many financial intermediaries, markets and instruments.

Taking the first and second derivatives with respect to K as in equations 2.3 and 2.4, respectively, confirms a hyperbolic relationship as depicted in Figure 2.3.

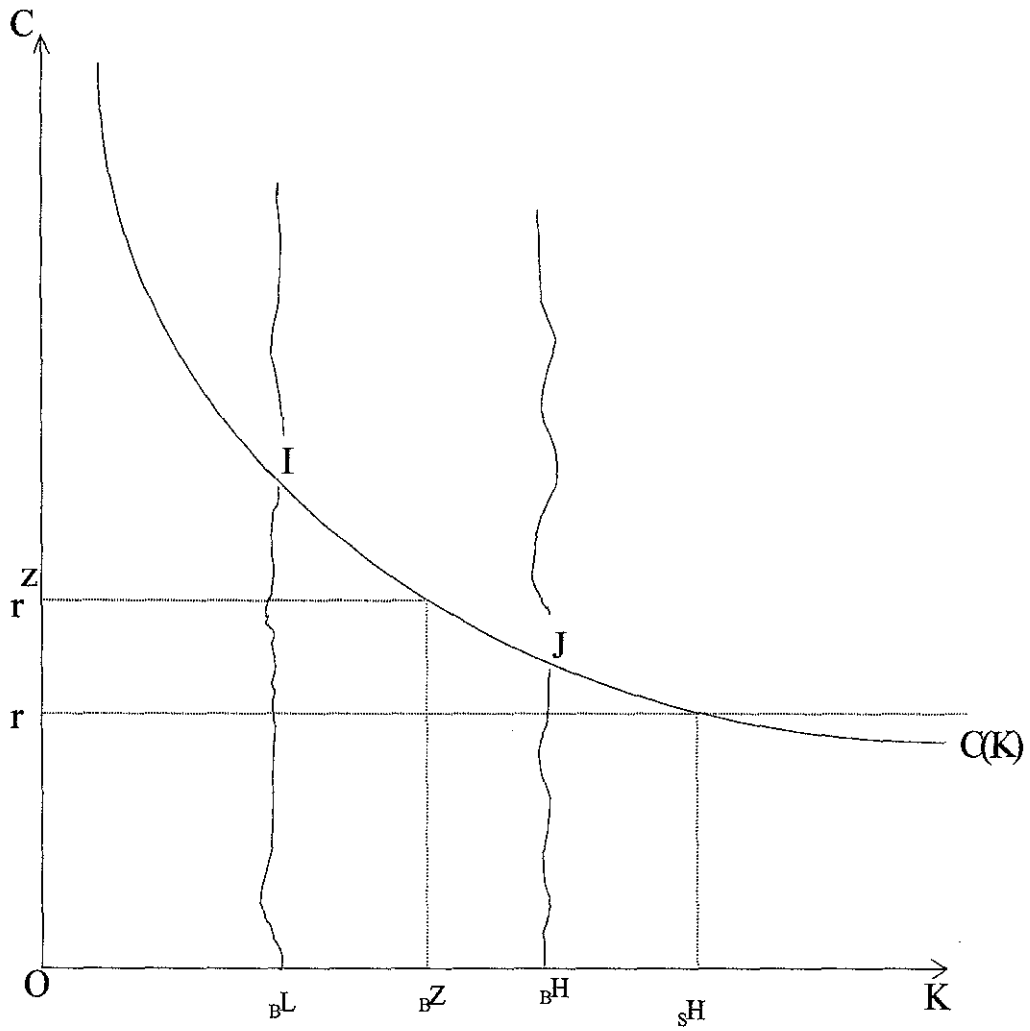
$$\frac{\partial C}{\partial K} = -\frac{F}{K^2} < 0 \qquad (2.3)$$

$$\frac{\partial C}{\partial K^2} = 2\frac{F}{K^3} > 0 \qquad (2.4)$$

The intuition behind this model is that financial intermediaries acquire funds at the cost of r and lend to businesses at a cost determined by the *C(K)* schedule.. This model depicts the existence and functioning of a myriad of financial intermediaries with comparative advantages in serving distinct market segments.

Points on the vertical axis in Figure 2.4 represent levels of the unit cost of funds and the horizontal axis represents total borrowing. The *C(K)* schedule constitutes the lower envelope depicting the cost of funds to enterprises of varying sizes. The horizontal line r depicts the optimal marginal cost of funds to the lender. The area between the *C(K)* schedule and r therefore constitutes the access cost to borrowers. Other features of this figure are explained in the next section in the context of discussing the theoretical implications of the model.

Figure 2.4 **Depiction of Cost of Funds to Business**



2.2 Theoretical implications of the Cost of Funds model

Six theoretical implications have been identified as arising from the cost of funds model described above. This section also discusses theoretical responses to the two research questions posed in Chapter 1. Discussion of the empirically testable implications are reserved for the next section.

The first implication to be drawn from the model relates to the relationship between K and F. As K approaches infinity, $\frac{F}{K}$ approaches zero. This relationship predicts that fixed costs *(F)* will be critical in defining both the loan size and source of loan for firms that demand small loans.

The second implication relates to the relationship between K and $C(K)$. As K increases the $C(K)$ schedule declines and at some point falls below the lender's optimal marginal cost of lending, r. Chand (2001:10) explains that the conditions under which the $C(K)$ schedule may be lower than r are explained by the behaviour of the average and variances of the return from debts and equity, respectively. The bond price or the price of other long-term securities may best define the optimal marginal cost of capital *(r)*. Debt financing represents a contractual claim on the borrower. The firm is committed to the provision of periodic payments over the term of the loan as defined in the contract. Equity has a residual claim to the firm's income and assets. Equities have voting rights and no maturity dates. The average return from a debt is therefore larger than that of equity. However, because of the higher risk associated with equities as compared to debt,

the variance of the return on equity is larger than the variance on the return on debt. This implies that, beyond point S^H, equity is more attractive for the firm than the issue of debt.

Large and growing firms will therefore have greater choice of intermediaries, markets and instruments because they will accumulate information and assets which will enable them to acquire credit at lower costs. Small firms will be uncompetitive and restricted to limited intermediaries, markets and instruments. They will be confined to the small loan and high cost market segment.

The third implication relates to the composition of participants in the financial system. The area between the *C(K)* schedule and *r* determines the emergence of different financial intermediaries, instruments and markets. Since the access cost are consequences of the differences in dealing with information, enforcement and transaction costs, different intermediaries with comparative advantages in serving the different segments of the market could emerge.

Informal financial intermediaries such as moneylenders, friends and relatives, and rotating savings and credit associations will serve small firms lacking collateral or credit history who are demanding small loans. This market segment exists to the left of B^L featuring high cost of funds and relatively large transaction costs. These informal financial institutions rely on existing social networks as sources of information in monitoring and enforcement. This is the region where informal financial institutions function effectively and where formal institutions fail (Besley 1995a:117).

In contrast commercial banks will serve the market segment $B^L B^H$. Since loans to the left of B^L are small, commercial banks would not find this segment profitable. Commercial

banks may also withdraw from serving the market segment to the right of B^H because the access cost to borrowers would be low for profit maximising banks. Integration of the small loans market with the commercial banks is possible, as depicted by the wiggly line $B^L I$. The ownership of bank accounts with a commercial bank would be an important integrating instrument. Firms to the right of B^H are large enough to seek funds from the securities market.

The fourth implication concerns the composition of the access costs. The absence of modern social (healthy and literate population and law and order in particular) and economic (transport and communication in particular) infrastructure, and institutions that define and enforce both property rights and contracts would increase the access costs. Profitable financial intermediaries may service this area but would impose high access cost. Firms either borrow at this high cost or would choose to seek loans from alternative sources.

The fifth implication relates to interventionist policies. Restrictive legal and regulatory policy measures could increase access demand for loans, with two implications. First, inefficient financial intermediaries could enter the market and squeeze efficient intermediaries out. Second, intermediaries established with interventionist intentions will ration credit by increasing borrower transaction costs because of the excess demand, as explained before.

To demonstrate the impact of a restrictive interventionist policy, refer to the interest rate ceiling depicted by point r^Z in Figure 2.3. Since the interest rate ceiling is lower than the market rate, extra-legal (informal) intermediaries serve the market segment $B^L B^Z$. As a

consequence, the commercial banks' market share is squeezed to $B^Z B^H$. However, the access costs are high but are forced downwards. This would justify increased borrower transaction costs through credit rationing. This is exactly the same result as from the example relating to Figure 2.1.

The sixth implication relates to the opportunity cost of funds. The opportunity cost of funds sets the benchmark for each lender as indicated by the *r* line. Lenders will charge their own profit margins and the transaction cost of lending on top of the benchmark rates. A high opportunity cost of funds will therefore raise the cost of funds to borrowers. The factors that determine the opportunity costs are country risk factors (political and economic), monetary policy, fiscal policy, exchange rate policy, and so on (Demirgu-Kunt *et al.* 2003).

Overall, these implications show that the cost of funds to borrowers is high when the access costs are high and the loan size is small. This provides a theoretical framework within which to examine the two research questions. The next section links the theoretical analysis to the empirical analysis.

2.3 Empirical application

Equation 2.5 depicts the formula for the standard effective interest rates *(e)*, which is derived from compound interest equation on the net loan received (Dat 1998:123) and operationalises the Cost of Funds model. The effective interest rate is a function of lending rates *(r)*, loan amount *(L)*, total borrower transaction cost *(TBTC)* and the term of the loan *(t)*.

$$e = (1+r)\left(\frac{L}{L-TBTC}\right)^{\frac{1}{t}} - 1 \qquad (2.5)$$

First, Equation 2.5 explicitly identifies the variables for which data can be generated for empirical analysis from a survey of borrowers as Dat (1998:125) did in the case of Vietnam. Second, effective interest rate estimation reveals the overall cost of borrowing. For instance, net-loan amount is used because TBTC consists of money spent upfront. This is particularly important for small loans where TBTC as a proportion of loan amount can be substantial. Third, although interest rates are defined annually, repayments are made frequently (monthly, quarterly or half-yearly). The three empirical chapters (Chapters 4, 5 and 6) use the survey data to test the theoretical implications.

This chapter has reviewed the literature on modelling financial systems and adopted a model that more accurately depicts the financial system commonly found in developing countries. The theoretical predictions from the model are directly linked to the research objective and the two research questions discussed in Chapter 1. The effective interest rate equation (equation 2.5) operationalises the cost of funds model. The next Chapter (3) describes the data collection process that provided the data for the empirical analysis in the three empirical chapters that follow.

Chapter 3

Research Methodology

3.0 Introduction

This chapter describes the selection of interviewees and the conduct of a survey in Papua New Guinea to gather relevant data. To place the field survey in context, the chapter begins with a description of the financial system in Papua New Guinea. The chapter then describes the population and sampling technique, the survey questionnaire used, and interviews and group discussions undertaken. The chapter ends with a discussion of the main limitations of this study and the constraints faced during the field research.

3.1 A brief review of the financial system in Papua New Guinea

This short review of the financial system in Papua New Guinea uses the cost of funds framework depicted in Figure 2.3. The intention is to show the relevance of the cost of funds model in the Papua New Guinea context.

The literature defines financial institutions that fall within the control of the Central bank as 'formal' and those unregulated as 'informal' (Adams and Fitchett 1992b:2). While accepting this classification, a third classification used in this research is the government financial institutions. These are both formal and informal financial institutions established by the government with specific policy objectives. The financial system in Papua New Guinea can therefore be analysed as consisting of three main sectors: the private informal and formal sector financial institutions and in between are the

government financial institutions, which appear to have features of both formal and informal institutions.

The informal financial sector institutions serve the market segment to the left of B^L in Figure 2.3. Writing during the early 1990s, Fernando (1991a,b, 1992) identified the following informal sector institutions: *sande, wok meri, wantok*, friends and relatives, less organised moneylenders and store owners.[5] By 2000, organised money lenders and 'quick' money schemes could also be added to this list (Kavanamur 2000:41-43). The organised moneylenders directly deduct repayments from salaries. The quick money schemes are actually pyramid schemes. Anecdotal evidence provides overwhelming support for the presence and active operation of the informal sector in Papua New Guinea. However, the magnitude of the informal financial sector has not been estimated or studied empirically.

The formal financial sector of Papua New Guinea in 2004 consisted of the Central Bank, commercial banks, non-bank financial institutions, and the Port Moresby stock exchange. While four of the five commercial banks are subsidiaries of foreign banks, the fifth, the Bank of South Pacific Ltd, is nationally owned. The Bank of South Pacific purchased the state owned commercial bank (Papua New Guinea Banking Corporation) when it was privatised in 2002 (Bank South Pacific Limited 2002:3). The non-bank financial sector institutions consist of insurance agencies, finance companies and superannuation funds (Bank of Papua New Guinea, nd). There are two large superannuation funds, one each for

[5]In Tok Pisin, the most commonly-used lingua franca used in Papua New Guinea, *Sande* is Rotating Savings and Credit Associations (ROSCA), *Wok Meri* is Women's Work, and *Wantok* refers to anyone who belongs to the same clan group or, more broadly language group. Women's work is ROSCA amongst women.

the private and public sector employees. The Port Moresby Stock Exchange has thirteen companies listed (Port Moresby Stock Exchange 2004). Seven of the companies traded on the stock exchange are local subsidiaries of international companies engaged in mining and petroleum projects. Two of the Papua New Guinea based companies are agricultural companies (Ramu Sugar Limited and New Britain Palm Oil Limited); there is one commercial bank (Bank South Pacific Ltd) and one finance company (Credit corporation (PNG) Limited); there is one transport and merchandise company operating in Papua New Guinea, SteamShips Trading Company Limited and there is one pharmacy company (City Pharmacy Limited).

The government-sponsored financial institutions in Papua New Guinea may be categorised into four groups. The savings and loan societies and microfinance financial intermediaries were established to promote integration with the formal sector through savings and credit mobilisation. Although established during the 1960s with the assistance of the Australian Reserve Bank, the savings and loan societies have had a chequered history, mainly as a result of fraud and mis-management (Bank of Papua New Guinea 1998:141). Out of the 189 societies during the 1970s, there were only seventeen active savings and loan societies still in existence in 2002. The first microfinance pilot project in Papua New Guinea (LikLik Dinau Arbitore Trust) failed and was closed in 2003. With the support of the Asian Development Bank and Australian Agency for International Development (AusAID) a new microfinance project as a micro-finance bank providing both savings and loan services was launched in 2004 (The National 2004).

The second group of government-sponsored financial organisations is focused exclusively on cheap credit delivery. Included in this group is the Papua New Guinea Development Bank (now called the Papua New Guinea Rural Development Bank), which was established in 1967 as a specialist lender of subsidised credit and provider of management services. The bank has suffered from political interference and poor management (Kannapiran 1995) and its future is currently being debated.[6] There also exist micro-credit schemes for targeted clientele that are sponsored by donors, local politicians, and government departments and agencies but which are channelled through the Papua New Guinea Rural Development Bank (Kavanamur 2002; Papua New Guinea Rural Development Bank Limited 2000:12-14).

The third group of government-sponsored organisations comprises credit guarantee schemes. Initiated in 1977, these schemes, which are administered by the Department of Finance, guarantee commercial banks up to eighty percent of the total loan repayment in the event of default (Bank of Papua New Guinea 1998:148; Kavanamur 2002:36). These schemes and others like cooperatives are no longer operational.

The fourth group of government interventions in the financial system combines credit and training operated in partnership with commercial banks, the central bank and the Small Business Development Corporation. This scheme, established in 1991, had access to funds from the Small Business Credit Facility that were deposited in the Bank of Papua New Guinea. The loans were made available through the participating commercial banks at discounted interest rates but the applicant had to complete a business, accounting and

[6] In 2004, Papua New Guinea's two daily newspapers (*Post-Courier* and *The National*) widely reported on loan defaults, write-offs, investigations, and calls for a review of the PNGRDB.

management training course provided by the Small Business Development Corporation. The Small Business Development Corporation has largely failed and with it the guarantee facility (Kavanamur 2002: 17-20).

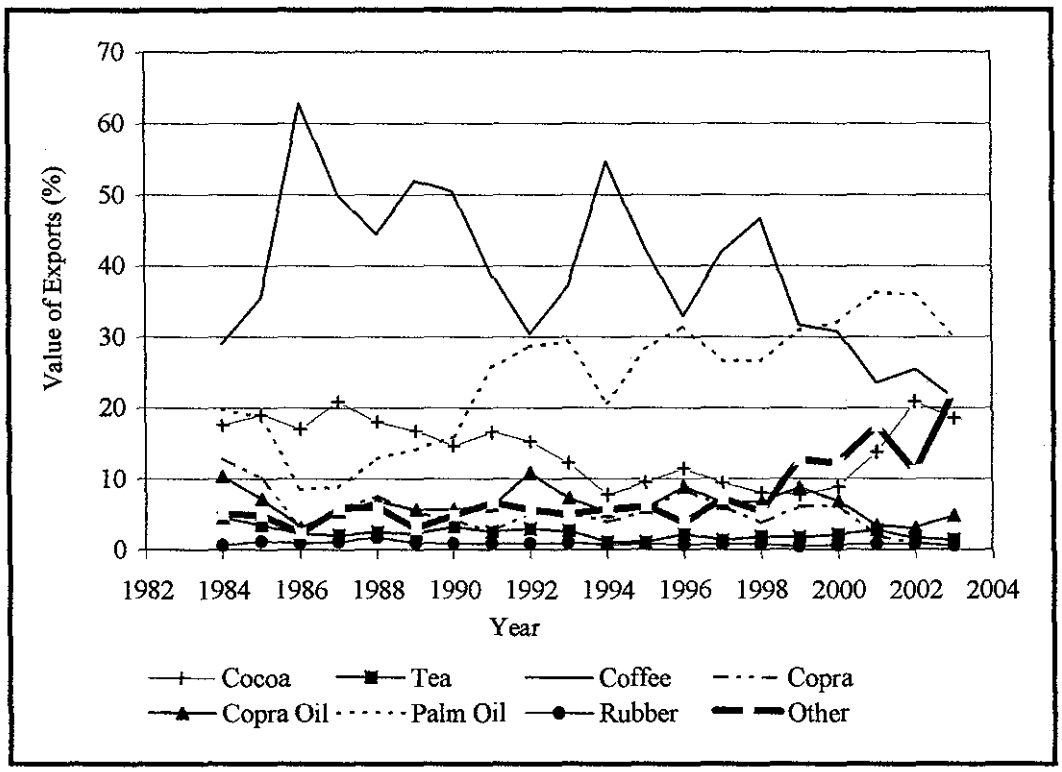
The *Bank and Financial Institutions Act (No 2 of 2000)* was amended in 2000 (Government of Papua New Guinea 2000). The new-look Act emphasises prudential regulation and increased independence of the central bank. The central bank supervises Microfinance and Savings and Loans Societies because they mobilise savings as well as credit. These two intermediaries are examples of line B^LI in Figure 2.4 as they promote integration with the commercial banks. The superannuation and insurance funds serve the market segment between B^H and the S^H.

3.2 Survey data - Hoskins project smallholder farmers

Agriculture is the main source of livelihood and income for the 85 percent of Papua New Guineans who reside in rural areas cultivating mostly customary land, which makes up 97 percent of the total land area in Papua New Guinea (Hanson *et al.* 2001:11-12). The smallholder sector is dominant in the production of the four principal agricultural export crops: coffee, copra, cocoa and oil palm (Hanson *et al.* 2001:12). Between 1984 and 2003, the agriculture sector contributed 22 percent of total exports.[7] Oil palm, which is produced in four provinces and five projects, has since 2000 become the leading agricultural export crop (see Figure 3.1).

[7] This figure of 22 percent is author's calculation using data from the Bank of Papua New Guinea, *Quarterly Economic Bulletin*, (various issues, 1984 to 2003).

Figure 3.1 **Decomposition of Value of Agricultural Exports, Papua New Guinea (1982-2003)**



Source of Data: Bank of Papua New Guinea, *Quarterly Economic Bulletin,* (Various Issues, 1982-2003).

Borrowers who are smallholder oil palm growers from the Hoskins project in West New Britain Province were chosen as subjects for the survey because of the structural set-up of the project. This structural set-up allows the testing of the predictions of the theoretical framework and provides information with which to answer the research questions.

The oil palm sector set-up is different from those of the other three major tree crops (coffee, cocoa and copra) because of the nucleus-estate farm model adopted. In this model, there is an estate sector that owns the plantations and the processing facility, and

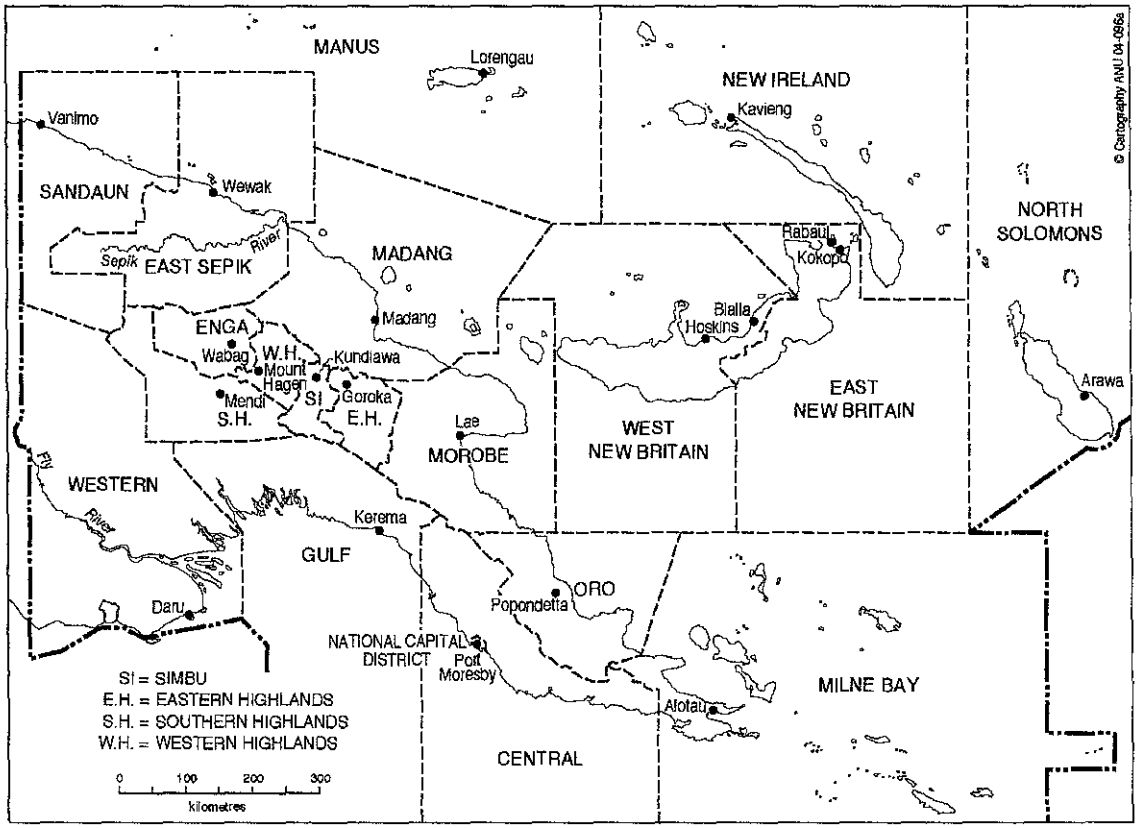
exports its output. Surrounding this nucleus estate is the smallholder sector, which is provided with technical and market access by the estate sector (Christensen 1986:136).

This set-up allows smallholders access to research and development, milling and exporting facilities, transportation, and extension services. Access to education, health and credit services were originally an integral part of this scheme (Hulme 1984:240). Growers in the Hoskins, Bialla and Popondetta projects have smallholder growers cultivating land with and without formal land titles while New Ireland and Milne Bay projects have growers only on land without formal titles (Koczberski *et al.*2001:4-10). The Hoskins and Bialla projects are located in West New Britain Province, the Popondetta project is in Oro Province, the Milne Bay project is in Milne Bay Province, and the New Ireland project is in New Ireland Province (see Map 1).

The smallholder oil palm growers from the Hoskins project were selected for the survey because it was the first oil palm project; established in 1967 (Hulme 1984:238).[8] It is also now the biggest project in the country. Figure 2.3 shows that 48 percent of the total Fresh Fruit Bunch (FFB) production in Papua New Guinea in 2003 came from the Hoskins project.[9]

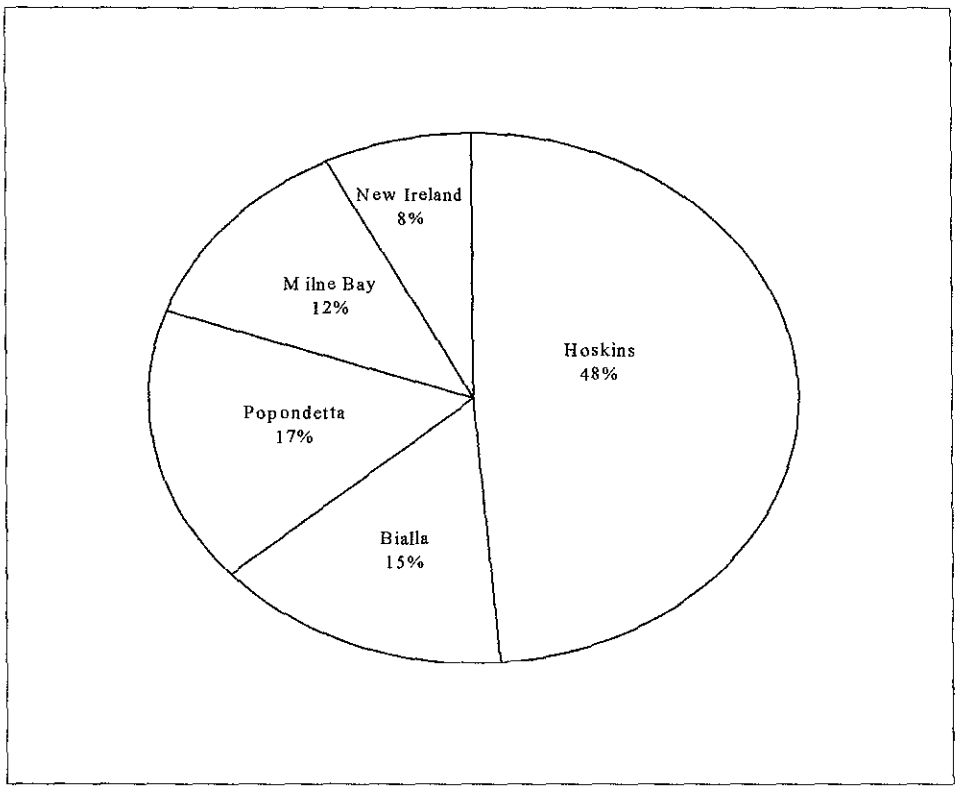
[8] The sequential order in which the different oil palm projects were established is as follows: Hoskins in 1967, Bialla in 1972, Popondetta in 1976, Milne Bay in 1985 and New Ireland in 1998 (Koczberski 2001:4-10).

Map 1 **Map of Papua New Guinea**



[9] FFB is the name given to the bunch of oil palm fruits.

Figure 3.2 **Decomposition of Total Fresh Fruit Bunch Production in 2003 by Project**



Source of data: Ian Orrell, Email Comm, Director PNGOPRA, 1 December 2004.

Furthermore, it is the most successful oil palm project in the country because New Britain Palm Oil Limited (NBPOL), the company that owns the Estate sector, milling and export facilities and buys smallholder FFB is listed in the Port Moresby Stock Exchange since 2001 (New Britain Palm Oil Limited 2001:7). There are three further reasons for choosing this project. There exists a computerised database detailing planting, production, income, and credit information for each grower. Second, income from the sale of palm production is paid into bank accounts. Third, the Estate Company sponsors a

credit scheme through which farmers are provided tools and inputs in advance and repayments are made through deductions from palm income.

Furthermore, a diverse range of financial institutions has operated in this area. Friends and relatives, rotating savings and credit associations, less organised moneylenders, and the in-kind credit scheme sponsored by the Estate Company constitute the informal sector institutions. Within the formal sector, there are two commercial banks. Government sponsored financial institutions include two savings and loan societies, a branch of the Papua New Rural Development Bank, and a Women's Micro-Credit Scheme.

The advantages and characteristics discussed above make the smallholder oil palm growers from the Hoskins project an ideal population from which to generate the data required for the empirical analysis. It was anticipated that the access costs to borrowers would be low because all growers have access to a transport network and bank accounts. It was also expected that differences in the property rights environment should lower costs for farmers with formal land titles as compared to those without formal titles.

3.2.1 The survey and the questionnaire

The smallholder sample was stratified by land tenure differences because this is the only factor that differentiates the smallholder oil palm grower population. All have the same level of access to roads, markets, extension services, transportation, schools, health facilities and bank accounts. Table 3.1 provides the population and sample selection.[10]

[10] There is a slight difference in the total population between this list and others. This is because the sample was generated using the 'already-planted' database. Although the OPIC Hoskins Project Manager had a monthly updated file, it was a working file. Furthermore, the 'others' category included farms owned by

Officially, there are two types of growers - Land Settlement Settlers (LSS) and Village Oil Palm (VOP) growers. During the field survey a third group - customary purchase (CP) growers - was identified. With the assistance of OPIC extension officers, CP growers were separated from the VOP list.

Table 3. 1 **Sample Selection** *

	Population	Sample**
Land State Settlement	1788	48 (3)
Village Oil Palm	2808	48 (2)
Customary Purchase	334	32 (10)
Others	15	-
Total Population	4930	128 (3)

* Figures in brackets are percentage of the sample for each category from the smallholder oil palm grower population in the Hoskins project.

** Numbers in the sample selected are comparable across the three types of land tenure.

Source of data: OPIC[11]

churches and schools. However, these were excluded from the sample because they were owned by a group and were few in number.

[11] There is a computerised database available through OPIC and the NBPOL's Smallholder Affairs Division. These two organisations allowed the author to access that database and so the sample was selected from this database. Any data from that database used in the thesis will be referred to as data from OPIC and SAD.

3.3 Survey sample

Officially, LSS growers are settlers from other parts of the country brought in to settle and develop oil palm (details are provided in Chapter 5). The VOP growers are from the local customary land owning community.

This study identified CP growers as growers originally not from the local community and having no customary relationship with the local communities. CP growers who have married into the local communities were defined as part of the VOP list.

The sample was chosen by random sampling (Deaton 1997:38) stratified by land tenure. The selected sample size is as follows: 48 LSS, 48 VOP and 32 CP. Thirty extra growers from each group were selected as reserves for replacement during the survey. The reserve list was used when the first selected growers were difficult to find, either because they were out of the province, in hospital, or could not be found after making three attempts.

A sample of the survey questionnaire used in the survey is attached as Appendix A. The questionnaire was designed to capture the credit behaviour of these farmers and the variables that determine the effective interest rate. It was adopted from Dat (1998:100-106) with some modifications. The questionnaire is in seven parts. Section A constitutes grower identification. Section B profiles the socio-economic features of farmers and their households. Section C captures details of the oil palm block covering its history, area, production, income, income distribution, and status of land title. Section D captures the credit behaviour of farmers, focusing on the source of loans, costs associated with each loan application, loan term and loan amount. Section E asks for the reasons for not

borrowing. Section F documents the assets accumulated by farmers. Finally, section G investigates links with commercial banks and other financial intermediaries.

3.3.1 Main characteristics of the sample

LSS and CP growers are to be found in the area surrounding Kimbe town while VOP growers blocks extend outwards towards the coast, both east (Koimomu) and west (Talasea) of Kimbe town and inland towards Buvusi, as depicted in Map 2.

Map 2 **Map of West New Britain Province**

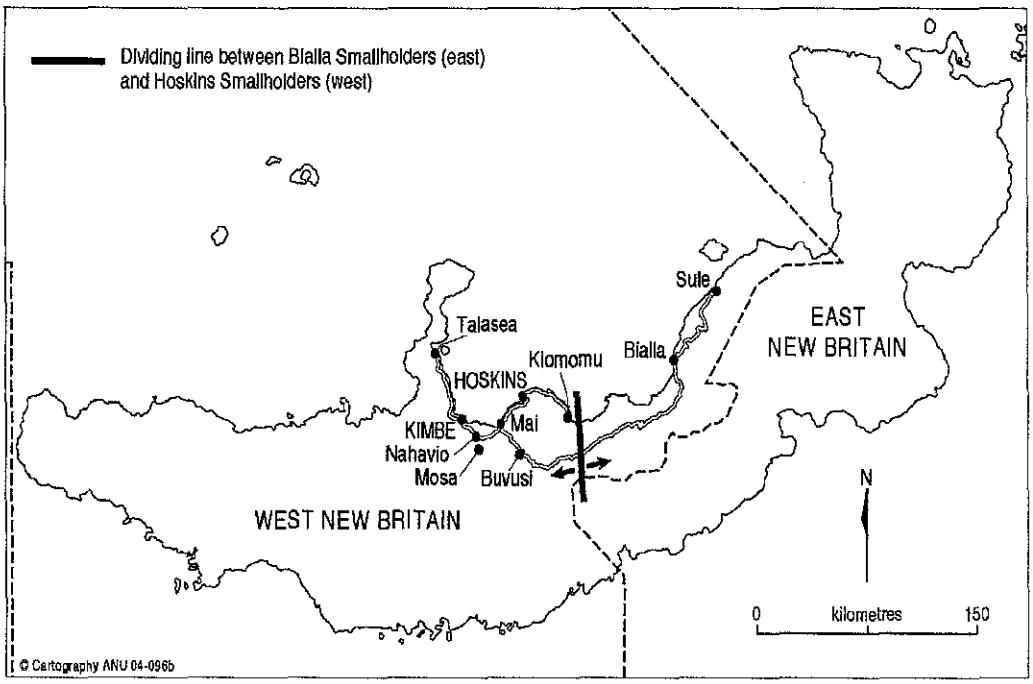


Table 3.2 presents the main characteristics of a sample household. The average age of a smallholder oil palm grower is 43. This age category reflects the dominance of second generation farmers, especially for the LSS.

Table 3.2 **Characteristics of Sample Households** *

	Land State Settlement (48) Total	Village Oil Palm (48) Total	Customary Purchase (32) Total	Sample 128 (Total)
*Age of principal farmer***				
Oldest	80	74	77	80
Average	45	41	42	43
Youngest	23	23	22	22
Gender				
Male	40 (83)	43 (90)	32 (100)	115 (90)
Female	8 (17)	5 (10)	0 (0)	13 (10)
Education (Years of Schooling)				
Highest	17.4	14	15.5	17.4
Average	5.6	7.4	6.9	6.6
Lowest	0	0	0	0
Household Size				
Highest	29	15	34	34
Average	12	8	12	11
Lowest	3	1	1	1
Dependents				
Highest	18	10	30	30
Average	6	4	5	5
Lowest	1	0	0	0

* Figures in brackets are percentages of the sample total for each category.

** The principal farmer is the interviewee. The Harvest Card issued by OPIC is in this persons name and OPIC recognises this person as the principal farmer.

Source: Survey data, 2003.

With respect to the gender decomposition, only 10 percent of the growers in the sample are female. Male domination in the LSS farms was expected because the initial farmers were settler male farmers with their nuclear families (see details in Chapter 5). However, the low female participation among VOP growers contradicts expectations because the traditional land tenure rights amongst the Nakanai (East of Kimbe) community are vested in women, and they also have matrilineal land inheritance rights. The CP growers are males with paid employment, children of LSS block holders, and retirees.

The educational level, as measured by the number of years spent in school, on average is seven years. As mentioned, primary schools were established as an integral part of nucleus-estate development. The data reveals that the majority of the children of the original farmers did not continue education beyond primary level.

The average number of block residents in a LSS and CP block is twelve, including different households, especially comprising married children and their families. VOP growers live in villages that are usually distant from the farms. The average number of family members who benefit from the oil palm farm is eight. The sample average number of beneficiaries per farm is eleven. Almost fifty percent (five) of them are dependents who are above 65 and below 15 years of age and those not able to live independently.

3.4 Interviews and group discussions

To complement the data from the survey, interviews were conducted with stakeholders associated with the Hoskins project, oil palm industry personnel, other tree crop industries, financial institutions, Lands Department officials, and community and grower

groups. Appendix B provides the list of the organisations, people, dates and locations of the interviews.

3.5 Limitations of the study

There have been several limitations to this study. Six of these are enumerated below. First, the empirical analysis focuses on only one industry and one project within that industry. Application of the model to contrasting environments could enrich the information collected. For instance, it would be of interest to compare smallholder coffee grower borrowers with smallholder oil palm grower borrowers, given the extreme differences between these two industries. However, time and financial resource constraints restricted the study to the Hoskins oil palm project.

Second, initial intention was that the empirical analysis would be largely econometric. However, the small size of the sample of successful loan applicants forced the data analysis to be qualitative.

Third, some major logistical problems were encountered in carrying out the survey. Relying on OPIC staff for transportation and identification of farmers and then meeting farmers at a convenient time were two of the most difficult tasks involved

Fourth, the targeted interviewee was the principal farmer under whose name OPIC issued a harvest card.[12] However, the presence of deceased estates, old farmers, caretakers, and disputes over ownership complicated both the identification of the interviewee and the

[12] Harvest card identifies farmers and is used for recording production, income and distribution of tools and seedlings. The harvest card number identifies each grower. This is issued only by OPIC.

conduct of the interview process. Farms with absentee ownership were excluded based on the fact that the caretakers would not be able to provide answers to all the questions. Gathering of other family members during the interviews was accepted. This ensured transparency in the interviewing process and prevented any misunderstanding occurring, especially when there were disputes over ownership. Moreover, it assisted in recollection, which was useful because all respondents relied on recollections in responding to the questionnaire.

Fifth, although the verbal interviews and discussions were extensive and less restrictive, access to written documents was difficult, if not impossible, in most cases.

Finally, it is acknowledged that the sample size is small. Although the advantages of a larger sample size cannot be discounted, it is unlikely that the conclusions reached in this study would be changed by the use of a larger sample for reasons that will become apparent by the end of the empirical analysis.

Chapter 4

Borrower Transaction Cost and the Effective Cost of Borrowing

4.0 Introduction

This chapter estimates the borrower transaction costs and the effective interest rate levied on successful loan applicants. The concept of borrower transaction cost is discussed first before estimating the magnitude of the borrower transaction cost and effective interest rate. These results are then compared with estimates derived from other studies.

4.1 The concept of borrower transaction costs

There is a large body of literature focussing on the role of transaction costs in credit allocation and the structure of financial markets. Gongales-vega (1976, 1984), Ladman (1984), Abiad *et al.* (1988), Puhazhendhi (1995), and Dat (1998) are examples.

Transaction costs are the resources required for transferring one unit of funds between participants (Dat 1998:108). Both lenders and borrowers incur transaction costs. The efficiency of financial systems influences the level of transaction costs, while financial regulations, the internal efficiency of financial intermediaries, and the interaction of the demand and supply of credit influence the efficiency of financial systems (Puhazhendhi

1995:4). Therefore, the impact on savings and investment decisions, resource allocation and welfare will depend on the frictions in the economy (Levine 2004:6).

Empirical studies carried out in Honduras (Cuevas and Graham 1984), Philippines (Abiad *et al.* 1988), Bolivia (Ladman 1984) and Vietnam (Dat 1998) investigating the role of transaction cost in credit allocation and financial market structure have one thing in common - the area of study was operating under interest rate ceiling policies. As predicted by the Cost of Funds model (as well as the other two models), these empirical studies conclude that in an attempt to clear the excess demand, the lenders use borrower transaction costs as a rationing tool. Passing some of its costs to borrowers, increasing collateral requirements and rent-seeking by staff members were some of the ways in which borrower transaction costs were raised.

The total of borrower transaction costs consists of two parts, cash and implicit costs. Cash costs constitute application, service and closing fees, payments outside the formal lending system like bribes and gifts, and travel expenses. The opportunity cost of the borrower's time spent in the loan process constitutes the implicit cost. The opportunity cost of time is substantial when loan transactions are undertaken during planting and harvesting periods (Adams and Nehman 1979:167).

Borrower transactions can be taxing for small loans and may influence the demand for loans more than interest payments (Adams and Ghate 1992). Offering cheap credit may therefore not necessarily influence farmers to borrow from formal credit sources. Instead, borrowers will decide on the basis of the total cost, that is, the sum of transaction costs plus interest payments (Ladman 1984). The size of the loan demanded determines the

borrowers' choice of lender. Borrowers demanding small loans will prefer to borrow from lenders who charge a higher interest rate but impose lower borrower transaction costs. The converse will be true for those demanding large loans. Dat (1998:124) showed empirically that small loan borrowers rely on informal financial intermediaries while large loan borrowers rely on formal financial sources.

Estimating the effective cost of credit to borrowers is one way of looking at the effects of borrower transaction costs on the cost of credit. The magnitude of the borrower transaction cost and the effective interest rates are quantified for the successful loan applicants and compared with estimates from other countries in the discussions that follow.

4.2 Quantification of the effective cost of borrowing

Table 4.1 presents the credit behaviour of these growers. Of all the financial institutions that operate within the Hoskins project area discussed in Chapter 3, commercial banks, Papua New Guinea Rural Development Bank (PNGRDB) and the in-kind credit scheme sponsored by the Estate Company were the only sources of investment loans.[13]

This section quantifies borrower transaction costs and the effective interest rate for applicants to the banks - the two commercial banks and the PNGRDB. The quantification of borrower transaction costs and effective interest rates for the in-kind credit scheme was omitted for the reasons discussed in section 4.4.

[13] The Questionnaire asked for investment loans only.

Table 4.1 **Credit Activities** *

Items	Land State Settlement	Village Oil Palm	Customary Purchase
Borrowers from In-Kind Credit Scheme	48 (100)	48 (100)	32 (100)
Applicants to PNGRDB	6 (13)	16 (33)	17 (53)
Successful Applicants with PNGRDB	1 (17)	1 (6)	0 (0)
Applicants to Commercial Banks	2 (4)	4 (8)	2 (6)
Successful Applicants with Commercial Banks	1 (50)	2 (50)	1 (50)

* Figures in brackets are percentages of the total for each category.

Source: Survey Data, 2003.

Forty-seven growers submitted loan applications to the three banks -Westpac Bank (PNG Ltd), Bank South Pacific Ltd and the PNGRDB. The PNGRDB received the majority - 39 applications. Village oil palm (VOP) growers and customary purchase (CP) growers were the main applicants to the PNGRDB, seeking loans for building homesteads but only one from each group succeeded. The one successful LSS applicant used this loan for the construction of a trade store and liquor outlet within the premises of his oil palm block. The bank rejected the rest, including all 17 of the customary purchase (CP) applications. Two of the rejected applicants had applied for K1 million and K300,000 to develop large scale smallholder oil palm blocks on customary land.

The two commercial banks received eight applications; four applications from the VOP growers and two each from CP and LSS growers. Loan approvals by the commercial banks were fifty percent from each type of grower.

In total there were only six successful loan applicants - two from the PNGRDB and four from the commercial banks. This sample of successful loan applicants is too small for quantitative analysis. Therefore, the analysis in this chapter and the two chapters that follow is restricted to qualitative analysis.

4.2.1 Quantification of borrower transaction costs

Borrower transactions for the six successful applicants are quantified in this section.[14] There are three components of the total borrower transaction cost:

(1) Fees and charges, which consist of application, establishment, and administration costs and stamp duty fees.

(2) Transport and miscellaneous costs include travel expenses incurred while making arrangements for the loan and miscellaneous expenditure on food, soft drinks, betelnut and cigarettes, and inducement fees paid to those who assist in completing the application form or bank staff paid during the loan application.[15]

[14] Borrower transaction costs for the rejected applicants are excluded because the maximum borrower transaction cost is incurred up to the disbursement of the loan.

[15] It was easier to ask growers to include inducement costs as part of their miscellaneous expenses because inducement offers were generally in the form of in-kind payments like the offer of lunch, soft drinks, cigarettes and betelnuts.

(3) *The opportunity cost of time* measured as the cost of working days lost.[16] This is the cost of employing someone to carry out work that has to be done while the arrangements are made for the loan or the income lost from an activity that was forgone during the loan application process.[17]

The sum of the first two components constitutes the cash expenses incurred in dealing with the loan while the opportunity cost of time constitutes the implicit component. The total borrower transaction cost is the sum of both cash and implicit costs. Table 4.2 shows the components of the total borrower transaction cost separated into the two types of banks: commercial banks and the PNGRDB.[18]

Analysis in terms of grower type is excluded for two reasons. First, the two commercial banks did not accept farmland with formal titles as loan collateral. Second, the PNGRDB as a lender of subsidised credit generally lends to the smallholder sector without requiring land with formal titles as loan collateral. Jointly, these two factors imply that the stratification of the sample in terms of land tenure differences failed to produce the anticipated result. It was anticipated that farmers with formal land titles would have increased access to formal sector credit, compared to those without formal titles, because they can mortgage on their land title deeds. The factors behind this result will be discussed in Chapter 5 but with respect to the cost of funds to borrowers, it can be anticipated that it will be high because insecure land titles will not be able to lower the access costs as expected.

[16] Care was taken during the interview to ensure that trips recorded were largely for the purpose of obtaining loans.
[17] This approach to measuring the cost of working days lost is adopted from Dat (1998: 111-115).
[18] The commercial banks are the Bank South Pacific Ltd and Westpac (PNG) Ltd.

Table 4.2 **Distribution of Borrower Transaction Cost by Bank** *

Bank	Fees & Charges (A)	Transport & Miscellaneous (B)	Cash Cost (C) = (A) + (B)	Cost of Working days Lost (D)
Commercial Banks	644 (51)	157 (12)	801 (63)	465 (37)
PNGRDB	200 (14)	483 (34)	683 (48)	750 (52)

* Figures in parentheses indicate percentages of the total transaction cost of borrowing and figures in rows indicate amount in Kina.

Source: Author's calculations, based on survey data, 2003.[19]

At the time of the survey the PNGRDB had funds from the National Government's Smallholder Agricultural Credit Scheme (SACS), which was established in 1996 (Papua New Guinea Rural Development Bank Limited 2000:12-13). From a total of K10 million, the smallholder oil palm sector was allocated K2.5 million in 1997 (Badira *et al.*nd:1-2). The lending rate is fixed at five percent per annum, no formal collateral is demanded, and the maximum loan is K10, 000 for a maximum term of 10 years (Badira *et al.*nd: 1-2). An interest rate of five percent per annum is lower than the average commercial bank lending interest rates, which for the period between 2002 to June 2003 that the questionnaire focussed on were above 10 percent per annum (Bank of Papua New Guinea 2003: S24). This low interest rate typifies the interventionist policies described in Chapter 2. The low interest rate created excess demand as predicted, because PNGRDB received 83 percent

[19] Interviews with bank lending officers in Kimbe and brochures the Bank staff provided assisted in confirming fees and charge costs.

of the loan applications but rejected 95 percent of them. This contrasts with the two commercial banks that received 17 percent of the loan applications, with a rejection rate of 50 percent.

To clear this excess demand, the PNGRDB used borrower transaction costs as a rationing device. Borrower transaction costs for the commercial banks were split as follows: 63 percent cash costs and 37 percent cost of working days lost (see Table 4.2). In contrast, for the PNGRDB, 52 percent of the total borrower transaction cost was the cost of working days lost and 48 percent was cash costs. The commercial bank applicants spent 51 percent of the total borrower transaction cost on fees and charges compared to PNGRDB's 14 percent. In contrast, transport and miscellaneous costs constituted 34 percent of the total borrower transaction cost for the PNGRDB compared to 12 percent for the commercial banks. This difference in the composition of borrower transaction between commercial bank and PNGRDB borrowers demonstrates that the PNGRDB used borrower transaction costs as a rationing device. The strategy used to raise the cost was to increase the number of trips an applicant had to make to the bank. This increased both transport and miscellaneous costs and the opportunity cost of time for PNGRDB loan applicants. A PNGRDB applicant made seven trips on average as compared to two for commercial bank applicants.[20]

Table 4.3 presents borrower transaction costs decomposed into three loan sizes that correspond to the loan sizes available to the smallholder oil palm growers in the Hoskins

[20] Two other possible reasons exist for the higher number of trips. First is rent seeking strategy used by individual PNGRDB staff members. Second is the imbalance between cash-inflow (repayments) and cash-outflow (loans) given the fixed amount of loanable funds used in a rotational system

project. These were the in-kind credit scheme's quota allocation of K2,000. The PNGRDB has small agricultural loans under K10,000 (SACS fund is in this category) and large agricultural loans with a minimum of K10,000 (Papua New Guinea Rural Development Bank 2000: 9-10). Commercial bank personal loans ranged between K1,000 (Bank South Pacific 2004) and K20,000 or above (Westpac Bank (PNG Limited) 2003:7). The commercial banks could give large loans under their business, housing and trade loans. However, these loans were much larger than those required by smallholder oil palm growers. Furthermore, the banks' loans officers interviewed in Kimbe said commercial banks had classified the smallholder growers as being eligible for personal loans only.

Apart from establishment and stamp duty fees that vary with loan size, the bulk of borrower transaction costs are the same irrespective of loan size (Dat 1998:118-119). This explains the positive association between total borrower transaction costs and loan size, as depicted in Table 4.3.

The key result is in the last column that shows the borrower transaction cost per kina. The total borrower transaction cost per kina borrowed decreases with loan size. This result supports the theoretical prediction in Chapter 2 that the cost of funds decreases with loan size. Past empirical studies support this relationship (Dat 1998; Ladman 1984; Abiad *et al.* 1988). This result also supports the finding that the borrower transaction cost has a penalising impact on small loan borrowers (Dat 1998:119).

Table 4.3 **Distribution of Loans by Transactions Costs of Loan Size**

Loan Size (Kina)	Number of Borrowers	Total Borrower Transaction Cost (Kina)	Ratio of Transactions Costs to loan size (Percentage)
Up to 2000	2	781.9	37.27
2001-10,000	3	916.1	7.78
10,001 and over	1	1000	5.00

Source: Author's calculations, based on survey data, 2003.

4.2.2 Comparison of borrower transaction cost estimates with other studies

In Table 4.4 the estimates of the components of borrower transaction costs from this study are compared with the results from studies in four other developing countries. In all countries, more than 50 percent of the total borrower transaction cost is cash costs.

Table 4.4 **Comparison of Borrower Transaction Costs with Costs in Other Countries**

Country	Cash outlays (Percentage)	Cost of workdays lost (Percentage)
Bangladesh	51.7	48.3
Bolivia	69.7	30.3
Philippines	81.1	18.9
Vietnam	57.5	42.5
Papua New Guinea	55	45

Sources: Dat (1998, Table 5.2:117) and author's calculation, based on survey data, 2003.

Cash costs are high for the Philippines (81.1 percent) as well as for Bolivia (69.7 percent). Costs for Papua New Guinea, at 55 percent are between Bangladesh (51.7 percent) and Vietnam (57.5 percent).

Table 4.5 decomposes borrower transaction costs into percentage of the loan amount and as a proportion of the interest rate charged for seven developing countries.[21] Bangladesh is excluded following Abiad *et al.* (1988:31) and Dat (1998: 119) because the results were extreme.[22]

Table 4.5 **Comparison of Borrower Transaction Costs for Selected Countries**

Country	Transaction Cost as a percentage of loan amount (sample average)	Transaction cost as a percentage of interest rate (sample average)
Bangladesh	21.7	180.8
Ecuador	2.8	22.9
Honduras	3	23.1
Panama	5.2	46.4
Peru	1.2	4
Philippines	3.1	17.4
Vietnam	1.65	6.45
Papua New Guinea	16.68	52.3

Source: Abiad *et al.*(1988:31); Dat (1998:120) and Author's calculations, based on survey data, 2003.

[21] Abiad *et al.* (1988) were the first to summarise the results for 6 countries and then Dat (1998) used that 6 to compare with the results for Vietnam.
[22] Unusually small loan size and relatively low nominal interest rates were the reasons for the extreme results in Bangladesh (Abiad *et al.* 1988:31).

Papua New Guinea leads in both measurements - 16.68 percent in terms of borrower transaction costs as a percentage of loan amounts and 52.3 per cent in terms of the proportion of interest rates charged.[23] Second to Papua New Guinea in both measurements is Panama at 5.2 percent and 46.4 percent, respectively. Peru is the lowest with 1.2 percent and 4 percent, respectively.

4.3 Quantification of effective interest rates

The demand for credit is partitioned at the loan volume where borrowers are indifferent to lenders. This is the point where the effective cost of borrowing from alternative sources is equal. The partition referred to in Dat (1998:124) was between the formal and informal financial lenders. The comparison of effective interest rates in this study is, however, restricted to the banks – the two commercial banks and the PNGRDB for the reason already given.

Table 4.6 shows average monthly effective and lending rates for PNGRDB and the two commercial banks combined. Both effective and lending rates are higher for the commercial banks. This finding is maintained when comparing the differences between the two rates in the last column.

Table 4.7 presents the monthly effective interest rates, which have been constructed for three loan brackets as in Table 4.3. The results show that the effective monthly interest rates decline with increase in loan size. This result is consistent with the case in Vietnam (Dat 1998: 123).

[23] The ratios were first computed and then derived the average. But the ratios are highly skewed therefore the average may not be representative.

Table 4.6 **Monthly effective and Lending Interest Rates By Lenders**

Banks	Effective Interest Rate (percentage)	Lending Rates (percentage)	Difference between Effective Rate and Lending Rate (percentage)
Commercial Banks	2.74	1.33	1.41
PNGRDB	1.43	0.94	0.49
Average	2.30	1.20	1.10

Source: Author's calculations, based on survey data, 2003.

Table 4.7 **Distribution of Monthly Effective Interest Rates by Loan Size**

Loan Size	Effective Interest Rate
Up to 2000	3.61
2001 to 10000	1.66
10001 and above	1.60

Source: Author's calculations, based on survey data, 2003.

4.4 Borrower transaction cost and effective interest rate for loans from the in-kind credit scheme

Borrower transaction costs and the effective interest rate for the in-kind credit scheme have not been quantified. Following the one-week pilot survey, it was decided that questions relating to farmer access to farm inputs and tools from the in-kind credit scheme would not be included in the survey. The in-kind credit scheme is structured so that each grower is allocated a ceiling of K2,000 worth of farm tools and inputs. Once growers have obtained these tools and materials, the loan must be fully repaid before they

can access the scheme again. During the pilot survey (later confirmed during the actual survey) it was found that all the farmers had used this scheme. There was therefore no reason to include questions relating to the scheme in the questionnaire. Finally, the structure through which a farmer seeks and receives the tools and other inputs means that OPIC takes on the entire logistical costs. Therefore, costs directly incurred by borrowers are negligible.

4.4.1 Operational structure minimises borrower transaction costs

There are three steps involved in accessing materials through the in-kind credit scheme. First, requests are made through OPIC extension officers. They can be contacted at anytime, including during their weekly farm visits. The extension officer contacts the OPIC staff manning the database directly, to ensure that the applicant has not exhausted his/her ceiling amount. Second, the extension officer confirms that the requested farm equipment is replacing equipment that has served its prescribed economic life. For instance, a wheelbarrow is designated to have a 10-year economic life and cannot be replaced until the tenth year. Third, the loans were designed for farms of up to six hectares, and tools and input materials should not exceed the set requirements for that farm area. For instance, one wheelbarrow is the maximum allowance for a two-hectare farm and two wheelbarrows is the maximum for a farm of six hectares. The check on the database can be done from any location as each extension officer has a walkie-talkie. Alternatively, the extension officer can travel to OPIC's base and confirm as each extension officer has a motorbike.

Each extension officer carries copies of the application form for the loan, which can be completed on the spot and signed by the farmer.[24] The extension officer then submits the form to the divisional manager to sign. In turn, the divisional manager submits the form to the project manager. Having crosschecked with the database, the project manager signs and submits the application form to the Smallholder Affairs Division (SAD) of the Estate Company. Staff at the SAD office do another crosscheck using SAD's copy of the same database before the manager approves the application. The approved application form is sent to the central supply section, which then releases the requested materials. OPIC divisional managers coordinate with extension officers to collect and deliver the materials directly to the farm. Except for fertiliser, all materials are transported by OPIC at no direct cost to the grower.

4.4.2 Justifications for the negligible level of effective interest rates

The Estate Company and OPIC claim that there are no interest charges for the in-kind credit scheme. The unit prices for all farm inputs are priced at cost recovery and the SAD is an integral part of the Estate Company. There are economic reasons that justify this claim. The Estate Company is the monopoly buyer of all smallholder Fresh Fruit Bunches (FFB). Loan repayments are deducted directly from FFB sales income.

Monitoring monthly production through the database, the restrictions placed on weights allowed to be registered on other harvest-cards, and the deployment of harvest committee

[24]The application form is called a 'consent form' because the grower authorises deductions by the Estate Company as loan repayments from their Fresh Fruit Bunch (FFB) sales income.

members to monitor pick-up truck drivers are strategies put in place to reduce any defaults on the loans.[25]

The Estate Company benefits from both production and quality improvements but the smallholder farm gate pricing formula (Chapter 6) excludes quality considerations. This implies that benefits from quality improvements go to the company. This is a strong incentive for the Estate Company to extend this form of credit.

4.4.3 Comparisons between in-kind credit and bank loans

The presence of OPIC and its database reduces information costs for both lenders and borrowers. The loan contract is executed by direct deductions from FFB sales while monitoring is undertaken jointly by OPIC and SAD. OPIC therefore takes on both the borrower's and the lender's transaction costs. But the borrowers indirectly pay through the levy of K3.50 per tonne per farmer paid to OPIC. With the zero interest rate costs and negligible levels of borrower transaction costs, the effective interest rate will also be negligible.

If a grower were to borrow K2,000 from the banks to purchase farm inputs, which is the estimated loan amount for an average smallholder oil palm block, 37 percent of the loan proceeds would have been spent on borrower transaction costs and at a monthly effective interest rate cost of 3.61 percent. By relying on the in-kind credit scheme, farmer borrowers save this amount. These are two strong incentives for the reliance on the in-

[25] It should be mentioned, however, that both OPIC and SAD management reported cases of default.

kind credit scheme. The conclusion that those demanding small loans prefer lenders that impose lower transaction cost is supported by this result.

4.5 Summary and implications

Quantification of borrower transaction cost and the effective interest rate was restricted to banks because the other financial institutions were not active in supplying investment credit. With respect to the in-kind credit scheme, every grower used it and the structural operation of the scheme leads to negligible levels of the effective cost of borrowing. The sample of successful loan applicants from the banks was too small to allow for quantitative analysis.

This analysis of borrower transaction cost and effective interest rates leads to the same conclusion as from similar empirical studies in other developing countries and the theoretical predictions from the Cost of Funds model. That is, for a given interest rate, the source of the loan will depend on the size of the loan. The loans demanded by these smallholder oil palm growers are small. It is optimal, therefore, for them to rely on the in-kind credit scheme where the effective cost of borrowing is low compared to the banks. Comparisons with other developing country results ranked Papua New Guinea high in the effective cost of borrowing from banks. This is a direct response to the first research question.

To provide an answer to the second research question, the focus was on the factors impacting on the access costs that lenders charged. First, it was found that all land, including land with titles, cannot be mortgaged. Another factor raising access costs is the

presence of the SACS funds in the PNGRDB. In a bid to clear the excess demand for the subsidised credit, the PNGRDB requires a large number of visits to the bank, which raises transaction costs for borrowers. Finally, commercial banks are using the information from the bank accounts held by smallholders to restrict smallholder access to bank credit.

The next two chapters focus on the two potential access cost-lowering attributes of this project—land titles and smallholder relationships with commercial banks. The results presented show the opposite effect to what was expected. Instead of lowering access costs, they increased access costs and the overall cost of funds to borrowers.

Chapter 5

Security of Land Titles and Loan Collateral

5.0 Introduction

This chapter examines the role of land title security in loan demand, cost of funds, and access to formal sector credit by smallholder oil palm growers in the Hoskins project. After a short review of the literature linking property rights and finance, a brief background to the property rights regime in the Hoskins project is provided. Before discussing the ability of farmers with formal title to land to access formal credit, access to credit by farmers without formal land titles is discussed.

5.1 A short review of the literature on land titles and finance

The literature linking land titles and finance suggests that formal titles increase access to formal sector finance (Byamugisha 1999; Feder *et al.* 1988:67; Feder and Nisho 1999:27). Two channels are said to link land registration and financial development (Byamugisha 1999:4-5). One channel is the land-collateral-asset relationship leading to expansion in the asset base for loans and reduction in intermediation costs; the second is the unlocking of land resources and making them available for mobilisation by financial institutions.

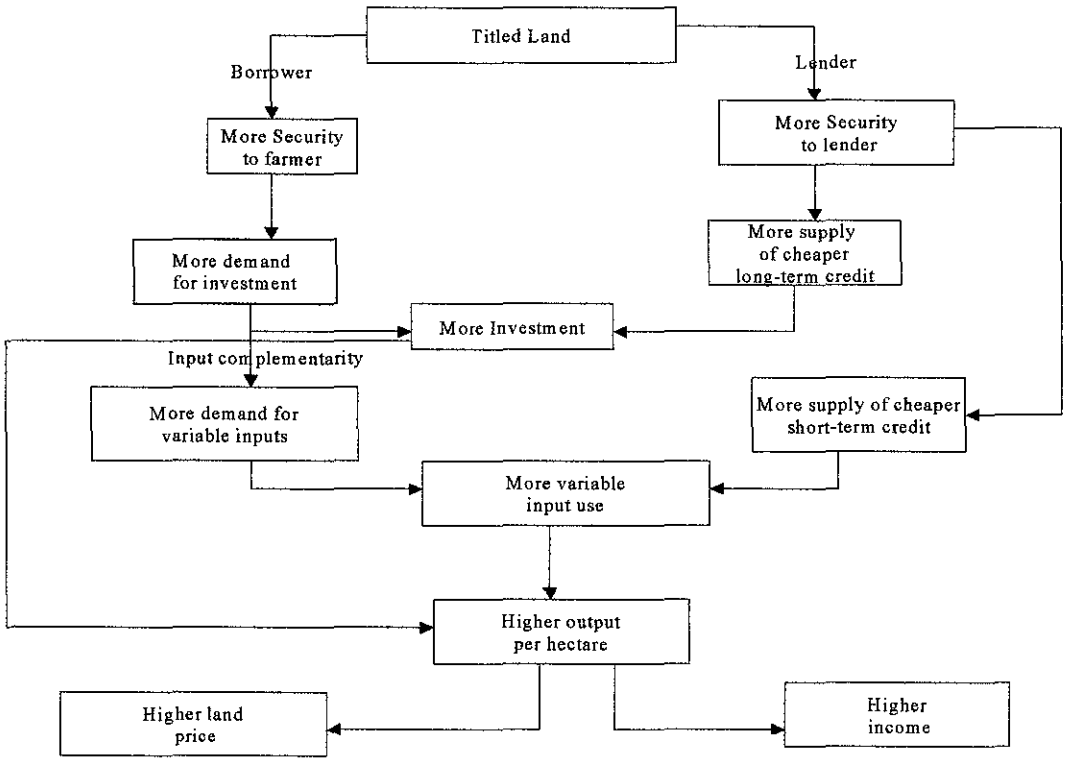
This chapter follows the land-collateral-asset channel because it is directly related to the objective of this study. The empirical analysis that follows uses the conceptual

framework developed by Feder *et al.* (1988). This conceptual framework was the first one developed for analysing the economic benefits of land registration. Econometric results using data from rural Thailand confirmed this conceptual framework. Later studies expanded (Besley 1995b) and generalised (Byamugisha 1999) this framework.

The conceptual framework is depicted in Figure 5.1. Following the direction of the arrows, land with title has two links. One is through the borrower's side and the other is through the lender's side. The borrower's link shows title security increasing demand for investment and variable inputs. The supply side complements this with increased supply of long-term investment and short-term credit. The combined impact results in higher per hectare productivity, which in turn raises land prices and incomes.

The conceptual framework was based on the premise that credit transactions are inherently risky (Feder and Nisho 1999:27). Lenders advance the loan against a promise by the borrower to repay the principle with interest. Because the lender has less information than the borrower about the prospect of full and timely repayment, collateral arrangements become important. Collateral improves the information content about borrowers and guarantees loan repayments. Land with secured title is a fixed asset and therefore important loan collateral—in fact, the most important collateral. If the land titles are insecure, lenders cannot be assured that the intended borrower is indeed the owner of the land to be mortgaged. For these reasons, presentation of a formal land title is often a mandatory precondition for formal sector loans.

Figure 5.1 **Land Ownership Security and Farm Productivity: A Conceptual Framework**



Source: Adopted from Feder and Nisho (1999:28)

The conceptual framework outlined in Figure 5.1 is used to analyse the survey data on land titles. If land titles are insecure, the flow of credit depicted in Figure 5.1 will not even begin.

5.2 Property rights regime - the Hoskins project

There are three types of smallholder oil palm growers operating under two different land tenure systems in the Hoskins project. The land settlement growers are cultivating oil palm on state land with formal 99-year agricultural leasehold titles under the *Land Act 1996 (No 45 of 1996)*. Village oil palm growers and customary purchase growers have a

semi-formal Clan Land Usage Agreement (CLUA) land title to customary land without any specific legal support. A brief review of each of these groups and the land tenure systems is presented next.

5.2.1 Background to cultivation on state land

State land cultivated by LSS growers was originally customary land alienated by the Australian Administration during the 1950s (Hulme 1984:237). Reviews of the literature on property rights (Larmour 2002; 2003), indigenous agriculture (Cheetham 1963; Hulme 1984; Wright 2002) and oil palm development (Christensen 1986; Grieve 1986) in Papua New Guinea show that the nucleus-estate model of farming used in the oil palm industry is a hybrid model developed out of a series of land settlement trials. Hoskins was the first project to be developed using the nucleus-estate farm model.

According to Cheetham (1963:70-74), following a series of land settlement trial programs during the 1950s, in 1968 the Australian Administration decided to bring farmers from other parts of the country into a region to settle and farm.[26] Each farmer was to be allocated land sufficient for cash crop cultivation, a homestead, and food gardens for subsistence. In order to implement this plan, the state alienated suitable land from the customary landowners; the land was declared as state-owned and subdivided into blocks with lease titles. The blocks were advertised throughout the country for the production of cocoa, coffee, copra and rubber crops. The Land Board interviewed applicants and 99

[26] The Hoskins Estate sector was developed in 1967 and smallholder cultivation started in 1968 (Hulme 1984: 238-239).

year agricultural leasehold titles were allocated to the successful applicants (Cheetham 1963).

The idea was conceived to instil a voluntary process towards the development of private property rights over customary land. It was expected that, once successful, a settlement family's level of living would be above that of the majority of the villager farmers. The increased income and the expected change in the settler family's life was expected to stimulate the demand for private property rights, which would engender a favourable attitude toward the conversion of customary land to land with formal individual titles, and expand indigenous agricultural development (Cheetham 1963).

Hoskins was selected for the first oil palm project, following the 1964 World Bank Mission to Papua New Guinea which recommended the development of oil palm on a nucleus-estate model in the Hoskins area of West New Britain and Bougainville (International Bank for Reconstruction and Development 1965:120). The present day LSS growers to be found in the Hoskins project are family members of the successful applicants brought in from other parts of the country, especially from areas with land shortages (Hulme 1984:242). All successful applicants were given 99-year agricultural leases for 6.5 hectares of land. It was planned that each grower would develop a total of six hectares planted on a two hectares cycle of three lots. According to highly experienced extension officers, the intuition behind this cycle of planting was to accommodate the flow of income to smallholder households during the poisoning and replanting cycle. A palm tree has an economic life of 20 years, and at the end of this economic life it has to be poisoned and replanted. The three cycles would provide a continuous stream of income over the cycle of poisoning and replanting.

Each grower was advised to immediately plant two hectares of oil palm and use 0.5 hectares for a homestead and subsistence food cultivation. Each successful applicant was provided loans for the purchase of tools, seedlings, farm inputs, building materials and subsistence until the first sale of fresh fruit bunch (FFB). The loans were provided first by the Ex-Service Credit Scheme (Hulme 1984:240) and later through the Papua New Guinea Development Bank (now Papua New Guinea Rural Development Bank).

5.2.2 Background to cultivation on customary land

Villagers were also encouraged to develop oil palm blocks on customary land as soon as the alienated state land was exhausted, that is, by 1972/73 (Hulme 1984: 245). These developments became what has been designated in this thesis as the Village Oil Palm (VOP) growers.

The third group of growers identified comprises the customary purchase growers. Customary purchase (CP) growers are growers with no direct cultural relationships with the traditional landowners. This is a heterogeneous group of growers consisting of people from other parts of the province, from other provinces, and even foreigners. Some are employees of the Estate Company and other private sector enterprises, as well as public servants. Some LSS growers have expanded by developing a second block on customary land, mainly to resettle their children. Existing documentation suggests that customary purchase growers emerged during the mid-1980s (Koczberski *et al.* 2001:131).[27]

[27] Koczberski *et al.* (2001:131) identified this from the grower's province of origin within the VOP list. Oil Palm Industry Corporation files document growers as either VOP or LSS. At the time of the fieldwork, the project manager was working on a new program to separate CP growers from VOP growers because CP growers are at present part of the VOP group. The definition of CP growers used in this thesis is any growers on customary land who do not have any customary relationship with the customary landowners. This is the author's definition.

Although they accessed customary land by making cash payments to landowners, they continue to pay implicit rents. These implicit rents constitute payments in cash or kind to customary landowners if and when the payments are demanded. Contributions to traditional ceremonies, bride price payments and health expenses are examples of the types of payments made.

For both village oil palm and customary purchase, the underlying land is under customary land tenure, but each grower has a semi-formal title. This title, named the Clan Land Usage Agreement (CLUA), is derived through the smallholder oil palm grower approval process imposed by OPIC. The completion of a CLUA form is a precondition under which smallholder oil palm cultivation on customary land is approved. The form was first designed and used by the Papua New Guinea Development Bank to extend loans to farmers cultivating cash crops on customary land (Gunton 1974; Lakau 1994:64-65). The CLUA form identifies an individual farmer's claim to the land under customary law. Village elders sign to confirm a claimant's right to farm the land and to receive all income generated by this portion of land. For loans with a duration exceeding five years, a Local Level Council clerk must sign to verify the identities of the village elders and the interested farmer.[28]

Since OPIC approves smallholder oil palm development on customary land conditional upon the ownership of a CLUA land title, a CLUA title falls somewhere between the use of informal customary land without titles and land with formal titles - a semi-formal title indeed. The main advantage of a CLUA title is that it lowers the likelihood of land-

[28] A sample copy of the CLUA form is in Appendix C.

related disruptions to production in the short to medium term. However, the long-term security of this title is not guaranteed.

5.3 Informal land titles and credit

All customary land is generally inalienable (Platteau 1997:33) but land with formal title has the following five basic transfer rights: rent, sell, bequeath, give as a gift and mortgage (Belsey 1995b: 905). The right of transfer is missing with respect to the CLUA land titles, as is the right to mortgage. This is because the underlying land is community owned and is inalienable. Constraints on the sale of communal land to outsiders (Binswanger *et al.* 1995:2722) disqualify communal land from being adequate collateral. CLUA title is therefore insecure and cannot be mortgaged.

This was confirmed by the reality that none of the commercial banks interviewed recognised CLUA titles. The PNGRDB had used it extensively to on-lend externally sourced and government-funded loanable funds (Goodman et al. 1985:152-153) in the past (Lakau 1994: 64-65 and Gunton 1974). Gunton (1974) was especially sceptical of the success of the CLUA title as a form of collateral.[29]

Smallholder oil palm growers were also provided with loans on the basis of CLUA land titles by the PNGRDB with funds provided by the Asian Development Bank (Christensen 1986:137) and World Bank. The latest World Bank-provided funds were used for replanting in the Popondetta project until 2001 (Koczberski, *et al.* 2001:155). In all smallholder oil palm projects (and other smallholder agricultural sectors), the funds from

[29] Although the author is aware of the failures because of the high loan default rate and the poor performance of the PNGRDB, it is difficult to establish the contribution of the CLUA to the failures.

the Smallholder Agricultural Credit Scheme (SACS) made available through the PNGRDB in 1996 accepted CLUA as collateral.

Landownership may serve as a sign of credit worthiness in informal markets (Binswanger *et al.* 1995: 2699). Since formal land titles are not a requirement for informal financial intermediaries, CLUA titles will immensly improve the credit worthiness of informal sector borrowers. Access to local knowledge on the potential level of income will also improve credit worthiness for those who rely on informal financial intermediaries.

Therfeore, CLUA titles will improve credit worthiness for accessing loans from informal lenders and government-backed lenders like the PNGRDB but not from formal commercial lenders.

5.4 Formal land titles and access to Credit

Small holder oil palm blocks with formal land titles have all the prescribed transfer rights - to sell, rent, bequeath, pledge, mortgage and gift (Besley 1995b:905) because the underlying land is state land and each block of land has a formal lease title. These factors should enable the growers to mortgage the land.

However, the results from the survey revealed that the formal state land title deeds are not accepted by the commercial banks as loan collateral. The discussion that follows focuses on three factors that undermine the security of formal land title. These are formal title transmission problems, accumulation of land rent debts, and reclaiming of customary land and compensation claims over state land.

5.4.1 Formal title transmissions

The role of land registration and the issuing of titles is to reduce the problem of asymmetric information, provide an institutional framework to facilitate land sales and assure any lender that the borrower has the right to dispose of the land (Binswanger *et al.* 1995:2719-2720). The documentation of land rights accords land its credibility as collateral, impacts on the willingness of the lender to lend, and promotes efficiency in the credit market (Feder *et al.* 1988b). While public registers exist to assure potential buyers or renters that the rights they are about to buy belong to the seller, a functioning legal system and an effective enforcement mechanism are necessary to reduce uncertainties (Binswanger *et al.* 1995: 2720).

The survey information on the status of title transmission presented in Table 5.1 shows that 69 percent of the respondents did not have the leases in their names. Of these, 26 percent are farming deceased estates. Three explanations are provided for this situation.

The first factor restricting formal title transmission is the strength of the traditional hereditary system. In one case, conflicting beneficiaries - children, members of the extended family, and caretakers - constrained formal title transmission. This situation was common amongst farmers from the Simbu and East Sepik provinces. In direct contrast, informal tenancy-in-common arrangements have provided secure access and transmission for growers from the East New Britain province. There is no need for them to seek formal transmission because each beneficiary and his/her immediate family can access farm income and facilities on a block for a specified period of time.

Table 5.1 **Status of Titles on Leased State Settlement Land**

Item	Number of Farmers	Percentage Distribution
Deceased Father's name	12	25
Father's name	15	31
Interviewee's name	15	31
Title Change Pending with Register of Titles	2	4
Brother's name	1	2
Husband's name	2	4
Deceased Husband's name	1	2
Total	48	100

Source: Survey data, 2003.

The combination of traditional inheritance, population pressure and restrictions on mobility has meant that there has been great pressure for the original farms to be fragmented. One way by which OPIC has formalised farm fragmentation is the issuance of the 'C card'. To control for tensions between parents (original farmers) and their offspring, this card is issued to offspring. In this way parents can allocate offspring certain hectares from the block to harvest and thereby earn income for his/her immediate family. This has enabled fragmentation of these farms while the formal title for the entire block of land remains under a single person's name.

The second reason is that the formal transmission process is inefficient, inaccessible and expensive. Smallholder oil palm growers generally do not have formal wills. This means

they must first deal with the Custodian for Trust Land whose office is located within the Department of Provincial Affairs. Section 125 of the *Land Registration Act 1981(consolidated to no 46 of 1996)* empowers the Custodian for Trust Land to identify and certify beneficiaries under customary law.

Registration records from the Custodian of Trust Land reproduced in Table 5.2 show that the two provinces with smallholder oil palm growers with formal land titles - West New Britain and Oro provinces - are first and fourth in terms of the total number of registrations in the country. It is inferred from this data that smallholder oil palm growers are seeking to have titles transmitted formally. However, there is no data available from the Registrar of Titles office to confirm the number of successful transmissions.

The probability of successfully transmitting titles is assumed to be low for the following reasons. The process is complex and expensive. Structurally, three separate government agencies under two departments are involved. The agencies are the Office of the Custodian of Trust Land located within the Department of Provincial Affairs, and the Valuer General's office and Registrar of Titles located within the Department of Lands and Physical Planning. The first step towards transmission is the confirmation of a claimant's identity by the Custodian of Trust Land. The second step is to have the land valued by the Valuer General's Office. The final step is for the Registrar of Titles to execute the transmission.

Table 5.2 **Registration for Formal Land Title Transmission with the Custodian for Trust Land***

Province	Number registered
West New Britain	358
National Capital District and Central	285
East New Britain	173
Oro	144
Morobe	69
Manus	55
East Sepik	51
Western Highlands	51
West Sepik	20
Madang	18
New Ireland	15
Western	14
Gulf	13
Eastern Highlands	13
Milnebay	11
North Solomons	8
Enga	7
Southern Highlands	5
Simbu	2

* These are data recorded up to September, 2003.

Source: Custodian of Trust Land, Department of Provincial Affairs, 2003.

This process is out of reach for an average farmer educated to a maximum of primary education. Furthermore, these Agencies and Departments are based in Port Moresby. In theory, provincial representatives of the Provincial Affairs and Lands and Physical Planning Departments should establish the identity of beneficiaries and value the land,

respectively, and then submit the prepared file directly to the Registrar of Titles for registration. However, in reality, the Provincial Lands Office based in Kimbe was under-resourced and did not work cooperatively with the National Lands Office. This was in direct contrast to the well-resourced and better-coordinated Provincial Lands Office witnessed in neighbouring East New Britain province.

In addition, there are costs for each of the three stages. The registration fee for the Office of Custodian is K100. The cost of a Valuer from the Valuer General's Office is K50. The lodgement fee for the Registrar of Titles is K100. The total cost of K250 underestimates the actual costs required to facilitate the title transmission. In reality, growers would have to travel to Port Moresby to consult the Custodian of Trust Land, return to Kimbe to have the land surveyed and then return to Port Moresby to submit the file to the Registrar of titles for execution. The regional valuer who is located in Kokopo, East New Britain province will have to travel to Kimbe for the valuation at a total cost that would exceed K50. The actual transaction cost involved in the transmission process will therefore be high and likely prohibitive.

Finally, disputes over succession have prevented formal title transmission. Formal title transmission has not progressed beyond the first step for many farmers because of these conflicts. OPIC, having recognised disputes over titles impacting on production, employed a former Lands Liaison Officer to mediate over the title disputes and identify one beneficiary under whose name a harvest card is issued. The identified name in the card is only symbolic, as it will be rotated for the benefit of each conflicting party. This process has facilitated continued production on these farms and meets OPIC's objective. However, OPIC Hoskins does not facilitate the steps to obtain formal title transmission. It

is left to the farmers. As expected, many transmissions have not gone beyond the OPIC-mediated process.

The literature on land titles in Africa shows that traditional transmission and succession systems are dominant for land with formal title (Barrows and Roth 1990; Brasselle *et al.* 2002; Place and Migot-Adholla 1998). These studies concluded that formal title systems work well when the informal system is weak and vice versa. The results in this current study support this conclusion. The dominance of the customary inheritance system is resulting in land being converted from individual title to land with multiple beneficiaries, with the underlying land remaining state-owned under one leaseholder's name, while OPIC-mediated transmission has offered semiformal title ownership status. This trend of conversion will continue because the possibilities for out-migration are restricted. Return migration to their province of origin is difficult for most of these farmers and their children because they originally migrated from areas with high population densities. Thirty-six years have now gone by and the third generation is starting to cultivate the same farmland and the population pressure is building here too. This was demonstrated in Chapter 3 where it was shown that multiple households comprising children and their families are residing on the same block of land. However, to these families, their livelihood on the farm seems to be relatively better than any perceived alternatives.

The literature also highlights the impact of transaction costs, lack of awareness, rent-seeking behaviour of local land control boards and officers, and farmers' feelings of security with the existing land titles in the effectiveness of title transmissions (Place and Migot-Adholla 1998: 363-365). The costly and inaccessible transmission system provides a strong case for reliance on informal title transmission. At the same time, land has had to

be informally fragmented because of the restrictions on out-migration. The East New Britain farming community in Hoskins appear to feel secure with the existing system where each beneficiary is accessing the income on rotation without many conflicts. These divergent views underpin the multiple factors restricting title transmission.

When the title is in a different person's name, the lender cannot be assured that the loan applicant is indeed the owner. The land title deed becomes insecure and therefore cannot be accepted as loan collateral. Therefore, the problem of formal title transmission has restricted 69 percent of the farmers in the sample from mortgaging their land.

5.4.2 Outstanding land rentals

The efficient and equitable administration of land tax requires the recording of land size, value, ownership, and information on productive capacity, costs of outputs and inputs for each track of land (Binswanger *et al.* 1995: 2724). Furthermore, land tax administration involves a legal framework that defines property rights and tax obligations and an administrative organisation that keeps an up-to-date register, as well as the capacity to assess and enforce the tax (Bird 1974). However, for many developing countries that meet the necessary conditions listed above, land taxes remain unimportant if the administrative or political costs are higher than the advantages associated with the tax revenue (Binswanger and Rosenzweig 1986:2724).

Papua New Guinea has the relevant legal and administrative structure for the collection of land taxes but lacks effective implementation. Section 3 of the *Land Regulation 1999 (No 5 of 1999)* defines the annual land rent on a State lease as five percent of the unimproved value of the land comprised in the lease. All the growers are aware that they

have land rentals to pay. However, data presented in Table 5.3 show that 88 percent of the farmers have accumulated land rental arrears. Non-payment of land rents has been going on for over 10 years. Personal communication with staff from the National Department of Lands and Physical Planning, whose responsibility covers the West New Britain province, admitted to having difficulties with non-payment of land rents by LSS growers from the Hoskins project.

Table 5.3 **Lease State Settlement Rental Arrears** *

In arrears	No Arrears	Do not know	Not Asked
42 (88)	2 (4)	3 (6)	1 (2)

* Figures in brackets are percentages of the total LSS growers in the sample (48).

Source: Survey data, 2003

Although the Provincial Land Office is the closest authority that can enforce land rental collections, this has not happened. The Provincial Lands Office based in Kimbe was under-resourced and did not work cooperatively with the National Lands Office. One major disincentive for the Provincial Land Office is that land rentals are part of national consolidated revenue. There is therefore no incentive for the provincial land office to enforce land rental collection. Discussion in the next section shows that the state is showing signs of weakness in enforcing the laws that govern property rights. The failure to collect the outstanding land rentals may be reflective of this trend of weakening state influence and control.

Banks do not accept land title deeds with land rental arrears because, legally, the Department of Land and Physical Planning can seize the land and evict the leaseholder

for non-payment of rental. The land title is therefore insecure and cannot be used to mortgage the land. This problem alone restricted 94 percent of the farmers in the sample from mortgaging their land.

5.4.3 Insecurity of the underlying state land

The third and perhaps the most important explanation for banks refusing to accept these land titles as loan collateral is the insecurity of the alienated state land itself. Legal and illegal reclaiming of alienated state land by customary landowners is common nationwide. Legally, customary landowners can claim compensation for alienated land through the National Lands Commission. Chapter 357 of the *Land Registration Act 1981 (consolidated to No 46 of 1996)* established the NLC as an independent tribunal to adjudicate over land compensation claims. The purpose behind the establishment of the Commission was '...to give [sic.] last chance to the people to have some means of fair compensation for transfer of Native Land for public purposes to [sic.] State' (National Lands Commission of Papua New Guinea 2001:4).

The Commission is expecting more state land claims as people become educated about land compensation claims (National Lands Commission of Papua New Guinea 2001:12). Between 1999 and 2001, 1000 claims worth K180 million in total were awarded (Ruahmaa 2004).

Koczberski *et al.*(2001:123-130) provide a good description of the conflict between customary landowners and land settlement schemes in the West New Britain and Oro provinces. The problem is worse in the Oro project than in the Hoskins project. A move to evict people is not confined to one LSS sub-division but to all LSS farmers and people

from other parts of the country working in the main town, Popondetta. The first major uprising was in 1992 under the banner, 'Oro-for-Oro.' Claims for compensation in the Oro province are continuing, even after a K200,000 compensation package for the settlement and plantation land was paid in 1982 (Koczberski *et al.*2001).

With respect to the Hoskins project, 173 LSS farmers from the Kavugara sub-division in Talasea (see Map 2) were evicted because of a landowner uprising in 1993. The land was returned by the state as freehold to customary landowners (Koczberski *et al.*2001). The landowners have subsequently developed mini-estates under two landowner companies - Kavugara Development Corporation (KDC) and Karato Limited. Discussions with the management of these two landowner companies and OPIC staff revealed that the state had lent a total of K2.5 million to the landowner companies to develop the mini-estates. The money was divided as follows: K1.3 million to KDC and K1.2 million to Karato Limited. Since the major incident in 1993, minor confrontations between settlers and customary landowners have been witnessed, even during the survey period. Such incidents encourage the eviction of settlers from even legally acquired land.

The Kavugara incident appears to have had a major impact on the thinking of every settler farmer. This incident was mentioned in all conversations with CP and LSS growers. Settlers are convinced that they are farming at the mercy of the customary landowners and not the state. They know that the local landowners from Kavugara benefited at the expense of the settlers. They got the land back and were given loans to develop mini-estate oil palm blocks. Such actions by the state have diminished the

settlers' trust in the state's ability to protect them in the event of a landowner uprising. The provincial government is widely believed to be in support of evicting settlers.[30]

Table 5.4 depicts implicit payments made by CP and LSS growers, and the actual receipt of payments by VOP growers. These implicit payments consist of contributions to major community activities of the customary landowning communities. Marriages, compensation payments, funerals, church building, and rituals were the main community activities funded.

Table 5.4 **Implicit Land Rental Payments to Customary Land Owners ***

Type of Grower	Paid Implicit Rent	Does not Pay Implicit Rent	Not asked	Total
Land State Settlement	20 (41)	26 (55)	2 (4)	48 (100)
Village Oil Palm**	13 (27)	35 (73)	0(0)	48 (100)
Customary Purchase	28 (88)	3 (9)	1 (3)	32 (100)
Sample	61 (47)	64 (50)	3 (2)	128 (100)

* Figures in brackets are percentages of the total for each category.

** Village oil palm grower respondents were asked if they received such payments.

Source: Survey data, 2003.

Although payments made by CP growers are self-explanatory, as discussed in section 5.2.1, the significant information from the survey respondents involving LSS growers strengthens the argument that settlers are buying security from customary landowners. Although the percentage of growers with formal land rental outstanding was as high as 88

[30] The author was provided a leaked confidential provincial executive decision to evict settlers.

percent, the fact that 41 percent are making implicit rental payments is significant. This indicates that they are prepared to forego rental payments to the state but are keen to pay customary landowners.

Landowner reclaiming of land is a nationwide problem. It has impacted on the Hoskins project and the state's handling of the issue shows greater weakness than strength. Being aware of the frequency of landowners acting in this manner and the weakness of the state in exerting its authority, commercial banks are not accepting any land with formal titles as loan collateral. The insecurity of the underlying alienated state land has eroded and weakened the security of the formal lease titles. All state land with formal title in the smallholder oil palm sector in the Hoskins project is insecure and cannot be mortgaged.

5.5 Summary and Implications

The prediction of the land title-collateral system illustrated in the conceptual framework in Figure 5.1 has not been realised in the case of the Hoskins smallholder oil palm sector because all land, including state land with formal lease titles, is insecure. Perhaps the most important and most unfortunate finding is the insecurity of the underlying state land and the inability of the state to exert authority against the reclaiming of customary land and compensation claims over customary land.[31] Being aware of this situation, formal commercial lenders have rejected land with titles as loan collateral. Likewise, settler

farmers feel more insecure. This feeling of insecurity has contributed to farmers preferring informal title transmission and implicit land rental payments.

[31] Recall that the present state land through out the country was alienated by the colonial government. This is being claimed back by the present generation of customary landowners.

OPIC has assisted in title transmission to a limited extent and use of CLUA titles has resulted in a semi-formal land tenure system. CLUA has improved titling on customary land while mediated issuance of harvest cards for LSS farmers has downgraded formal titles to a semi-formal level.[32] All smallholder land titles in the Hoskins project therefore have semi-formal titles. However, no land titles can be mortgaged. Formal lenders will therefore increase access costs to borrowers and restrict smallholder access to formal sector credit. Semi-formal land titles can improve credit worthiness for informal and government-sponsored financial intermediaries. In the Hoskins project, the in-kind credit scheme and the PNGRDB, respectively, represent these types of financial intermediaries.

Insecure land titles provide one reason for the high cost of borrowing for smallholders in the Hoskins project and thus provide one answer to the second research question.

The next chapter continues discussion of the results of the survey, focussing on the commercial banks and their relationship with smallholder oil palm growers.

[32] In section 5.4.1, it was discussed that OPIC employed a former land liaison officer to mediate amongst conflicting beneficiaries and issue a harvest card in one person's name, who is referred to being the principal farmer and also the interviewee in this thesis.

Chapter 6

Smallholder Relationship With Commercial Banks

6.0 Introduction

As discussed in Chapter 5, smallholder access to commercial bank credit is limited by the insecurity of land titles. An alternative option available to the smallholder oil palm growers to lower the cost of funds is to capitalise on their relationship with commercial banks. This chapter will consider the factors that inhibit these growers from capitalising on their relationship with the two commercial banks represented in the province.

Before analysing the case involving the Hoskins smallholder oil palm growers, a short review of the literature on relationship banking is presented. This is followed by a discussion on cash flows into and out of bank accounts

6.1 Brief review of the literature on relationship banking

There is a debate in the theoretical literature over the composition of institutions in the financial system. This debate largely occurs between bank-based and market-based financial systems (Levine 2004: 34-35). This section focuses on commercial banks because the smallholder farms have remained small since the project was developed in 1968, with the average farm size of only four hectares. Therefore, access to credit is restricted. Commercial banks remain the only formal source of credit since the farms are too small to access the securities and equities markets. Interventionist-oriented financial

intermediaries and informal financial intermediaries are alternative sources to the commercial banks.

The smallholder oil palm grower's access to banking services, especially transaction accounts held with the two commercial banks represented in the province, makes commercial banks a likely major source of formal sector credit. However, the survey data discussed in Chapter 4 showed that the commercial banks were the least frequent source of credit and therefore the expectation put forward in Chapters 2 and 3 is contradicted. This section draws on the relationship lending literature to develop a suitable framework to analyse the data from the smallholder oil palm growers.

6.1.1 The concept of relationship lending

There is a growing body of literature that focuses on relationship banking. Boot (2000) provides a review of this literature. The literature distinguishes between relationship lending and transaction-oriented lending. In relationship lending, a lender obtains borrower-specific information that is propriety in nature and has multiple interactions. Profitability of an investment is evaluated through multiple interactions with the same customer over time and across products. Other financial services such as deposits, cheque clearance, letters of credit, and cash management services are examples of multi-products or service provision. This contrasts with transaction lending where the focus is on one transaction or multiple transactions with different customers (Boot 2000:10-11). In transaction lending, investment evaluations and contracts are designed using the information available at the time of origination (Berger *et al.* 2001a:2130).

The modern literature on financial intermediation has focused on the role of banks as relationship lenders (Boot 2000:8). The focus of this literature is on establishing the benefits of relationship lending for borrowers and bankers (Dahiya *et al.* 2003:375). Since this thesis is concerned with small firms, this chapter concentrates on the literature that links relationship lending and small firms.

According to Berger and Udell (1995:616), one important way of defining small businesses is that all small firms are informationally opaque. Unlike large firms, the contracts of small firms are kept private, they are not publicly listed, and many do not have audited financial statements. Small firms therefore cannot credibly convey their quality and find it difficult to build reputations. Unlike large firms, which obtain credit from the public debt market, small firms largely depend on commercial banks (Berger and Udell, 1995: 351). In other words, informational opacity limits small firms' access to sources of external finance and limits them to relationship loans from commercial banks (Berger *et al.* 2001a:1). Furthermore, small firms concentrate their borrowing with the bank with which they have a long-term relationship (Straham and Weston 1998:824). This relationship enables the bank to collect private information on their credit worthiness. Countering earlier arguments that large banks do not have relationship lending with smaller firms, Berger *et al.* (2001b) showed that it is the size of the market and not the size of the bank that matters.

Empirical evidence suggests that small firms have benefited from relationship banking. The benefits to small firms are summarised under three categories: lower interest rates (Berger and Udel 1995; Degryse and Cayseele 2000; Harhoff and Korting 1998); reduced collateral requirements (Berger and Udel 1995; Harhoff and Korting 1998); and increased

credit availability (Cole 1998; Elsas and Krahnen 2000). There is consensus that closer relationships should increase credit accessibility but there is little consensus on their impact on interest rates (Angelini *et al.* 1998:928). Finally, the existing empirical studies used small business data from developed countries, especially the United Sates and Europe.

Commercial banks are special because they have the ability to monitor loan customers through their cheque account information (Black 1975; Fama 1985). According to Kashyap *et al.* (2002:34), commercial banks perform both the lending and deposit taking roles because of the synergy between deposit taking and lending. Peterson and Rajan (1994:6) showed that the benefits of purchasing non-loan services, in addition to the maintenance of cheque and savings accounts, generates two benefits. First, the bank lender will increase the precision of its information about the borrower. For instance, a bank can monitor a firm's cash flow through its cheque accounts. Second, the bank can spread the cost of generating information across these multiple products. While both benefits lower the bank's cost of providing loans and services, the first will also increase the availability of funds to the firm. Meyer (1998:1110) states that small firms' reliance on the supply of credit, and on transactions and deposit accounts, enables them to pursue their relationship banking with a nearby bank. The relationship with a bank begins when the firm buys a product from the bank for the first time (Degryse and Cayseele, 2000:97). This implies that opening a bank account is the start of this relationship, even if the depositor may not have borrowed from the bank. Banks are seen to perform their main function of mitigating informational asymmetry (Boot 2000: 8).

Cole (1998) tested the relationship between four variables depicting the financial services bought by the borrower and the source of credit. These four variables were cheque accounts, savings accounts, loans (credit lines, equipment loans, motor vehicle loans, mortgage loans, miscellaneous other loans, and capital leases), and financial management services (transaction services, cash management services, credit-related services, brokerage services, and trust and pension services). In contrast, Peterson and Rajan (1994) used one variable to measure both savings and cheque accounts. Cole (1998:969) found that the relationship with the savings account was positive and statistically significant. Although statistically not significant, the association with cheque accounts was negative. On the other hand, circumstantial evidence from small borrowers in the United States shows that cheque account information is relatively more transparent and complete (Nakamura 1993). Using data from a commercial bank in Canada, Mester *et al.* (1999) showed that cheque account information helps banks to monitor borrowers.

It is costly for both the lender and the borrowing firm to develop and maintain a relationship. A model developed by Longhofer and Santos (2000) showed that the profitability of an investment project will provide the incentive to build and commit to the relationship. In this model, the lender will commit to relationship lending if convinced that the investment project is profitable. Since the firm receives a share of the revenue from the investment project with the rest going to loan repayments, the firm exerts effort in pursuit of expanding the revenue base. In this framework, the firm has an incentive to exert effort to increase the profit margin.

In summary, informational opacity restricts small firms to relationship loans from a commercial bank. This relationship will increase information about the borrower and

enable lenders to spread information costs across multiple products and time. Information, enforcement and transaction costs will fall. Borrowers will benefit from lower interest rates, reduced collateral requirements, and increased credit accessibility. However, the commitment to relationship lending must be motivated by the profitability of an investment project.

6.2 Survey data in the context of relationship lending

Results from the survey data appear to challenge the impression given by the literature on relationship banking. Despite the ownership of bank accounts by smallholders, the commercial banks were the least preferred source of credit. In Chapter 4 it was seen that the cost of funds to rural farmer borrowers in Papua New Guinea is high compared to other countries. While rejecting land titles as collateral, both commercial banks demanded savings accumulation within bank accounts as their most preferred bank collateral.

Three explanations are provided below for the failure of relationship lending in the context of the Hoskins project.

6.3 Dead capital accumulation

The profitability of investment projects is immaterial in the context of the Hoskins project because of the property rights insecurity discussed in Chapter 5. Lenders and borrowers do not have the incentive to commit to long-term relationships given the high probability of eviction of smallholders by customary landowners. This situation has two consequences. Firstly, the profitability of the smallholder sector is immaterial to the

decision of commercial banks. The banks will have formed the opinion that the cash flow is not sustainable and guaranteed in the presence of the insecure land titles.

Secondly, CLUA titles rendered the farmland and all improvements on the land as 'dead capital' because they do not have formal titles (following de Soto 2000). The land with formal leasehold titles and their improvements are 'dead capital' because the underlying land is insecure. Improvements on the farmland recorded during the survey included oil palm trees as the prime assets for all the farmers. Some farms had diversified into other crops in addition to oil palm. Commonly seen were cocoa, copra, vanilla, betelenut, and betel pepper. CP and LSS growers cultivated these other crops adjacent to oil palm farms while VOP growers had these crops within walking distance of their oil palm blocks. Homesteads within the farm in the case of CP and LSS growers and in the village for VOP growers are also 'dead capital.' Three types of building structures were recorded: bush material, semi-permanent and permanent constructions. Permanent constructions ranged up to three to four bedroom houses on high poles. Some had water tanks, electricity, TV satellite dishes, and telephones. The collective value of the land, palm trees and other economic crops, and the homestead would, in other situations, substantially raise the value of their total assets. Unfortunately, they are all collectively 'dead capital.'

There are also other assets that the commercial banks do not accept as loan collateral. Examples are farm tools - wheelbarrows, knapsack sprayers, harvesting tools, motor bikes, copra dryers, cocoa fermentaries and lawn mowers. Vehicles and generators are accepted only if they are new and in very good condition. Only four farmers in the

sample had both vehicles and generators that fitted commercial bank standards as collateral.

'Dead capital' encourages transactions intermediated by informal financial intermediaries and interventionist oriented institutions like the PNGRDB. For instance, the continued supply of oil palm production motivated the PNGRDB to use CLUA for its subsidised loans and the Estate Company to sponsor the in-kind-credit scheme. The security of the underlying land title, the long-term viability of these farms, and asset accumulation are immaterial in their considerations. 'Dead capital' accumulation has improved the credit worthiness of these growers with informal lenders and state-sponsored-financial institutions but not with commercial banks.

6.4 Monitoring of cash flow through bank accounts

Prior to 1999, payments for FFB sales were made by cheque. Because of fraudulent cheque transactions, OPIC and the Smallholder Affairs Division of the Estate Company decided to make payments directly into bank accounts. Each grower had to open a bank account, facilitated by OPIC. OPIC issued an identification card and a letter of reference from the project manager addressed to the bank growers' preferred. Given that only two commercial banks are represented in the province, it had to be either Westpac (PNG) Limited or Bank South Pacific Limited (BSP). All banks in Papua New Guinea require an identification card and reference letter to open a bank account. The reason for this given by commercial bank executives is to guard against fraudulent transactions and money laundering.

Table 6.1 depicts the distribution of transaction bank accounts for the three grower types using data from the survey. In aggregate, 89 percent of the growers in the sample have a transaction bank account. All CP growers had a transaction account while 23 percent of VOP growers and 6 percent of LSS growers did not.

Table 6.1 **Transaction Accounts and Grower Type** *

Grower Type	Number of Growers that Own Transactions Accounts	Number of Growers that Do Not Own Transactions Accounts
Lease State Settlement	45 (94)	3 (6)
Village Oil Palm	37 (77)	11 (23)
Customary Purchase	32 (100)	0 (0)
Total in Sample	114 (89)	14 (11)

* Figures in brackets are in percentages of the total for each category of growers.

Source: Survey Data, 2003.

Since this is the bank account into which FFB income is directly deposited, commercial banks are able to monitor smallholder oil palm farm cash flow movements. A background calculation was undertaken to reveal the level of income that is deposited. This was to provide an understanding of the cash flows. More importantly it establishes farm profitability and cash-out flows as well. The latter provides objective explanations for the large and frequent withdrawals from bank accounts that have concerned the banks. Banks have labelled these growers 'less bankable' based on these withdrawals, which erodes the foundations for savings accumulation.

6.4.1 Farm profit estimation

Two recent qualitative studies on the Hoskins and Popondetta (Kozberski *et al.* 2001) and Bialla (Koczberski and Curry 2003) projects have concluded that the smallholder sectors in all three projects have low productivity, mainly because of the negative impacts of socio-economic factors. This section does not estimate productivity and potential profits. Instead, it estimates the magnitude of farm profits under the existing farm management practices and socio-economic circumstances. The objective of this exercise is to demonstrate the magnitude of cash flows and draw implications of the use of this information by the banks in terms of their perceptions about the health of the cash flows.

The formula for calculating profits for each farmer is as follows:

$$\pi = PQ - TC \tag{6.1}$$

where π, P, Q, TC are profit, price, production, and total cost.

Here, equation 6.1 is total revenue minus total cost. The price *(P)* is the farmgate price and production *(Q)* is FFB production.

There is no need to use a spreadsheet to project cash flows for each farm. Instead the unique farm gate pricing system and the database updated monthly by OPIC and the Smallholder Affairs Division (SAD) of the Estate Company are utilised. This enables the use of actual data on production, income, price and costs. First, the farm gate pricing formula is reviewed and then the database is examined.

Smallholder FFB is priced at the farm gate price using a standard formula devised in 1996 by the Palm Oil Producers Association.[33]The formula was designed to smooth out variations in prices to smallholder farmers (ADS(PNG) 2001:40). The formula used in the Hoskins project is presented in equation 6.2.

$$P = \frac{A(CPOcif \quad - US\ \$TC\ 1) + B(PKOc \quad .i.f - USTC \quad 2) + C(PKEc \quad .i.f - US\ \$TC\ 3)}{US\ \$ / Kina}$$
$$= PMf \quad .o.bPP \quad * POR$$
$$= MGP \quad - (L + VAT \quad + T) \qquad (6.2)$$

where:

A is the industry standard extraction rate for crude palm oil (CPO), B is the industry standard extraction rate for palm kernel oil (PKO), C is the industry standard extraction rate for palm kernel expeller (PKE), PM is Palm Products, POR is the pay-out ratio, MGP is mill gate price and L is levies, VAT is national value added tax and T is transportation costs of FFB from the farm to mill.

CPO, PKO and PKE are the three main products from oil palm and the ratios are the respective extraction rates of each component from a single fruit paid to smallholder growers. The Estate Company retains the remaining 43 percent. Levies are deducted for OPIC and the Oil Palm Research Association (OPRA). At present, an additional levy is being charged for research into Sexavia, a palm disease. US$TC1, 2 ,&3 are the cost of freight, insurance, brokerage and shipping losses *(c.i.f)* per tonne for CPO, PKO and PKE. The acronym f.o.b means free on board, which is the export price from the point of

[33] Palm Oil Producer's Association is made up of the Estate Companies and the Smallholder Oil Palm Grower's Association representative.

export in local currency (Kina). Farmers pay the national value added tax (VAT) rate of 10 percent. The Estate Company provides transport but smallholder growers pay through direct deduction.

The practical application of the farm gate price determination process is demonstrated using actual price calculations for July, 2003, as presented in Table 6.2. There are six steps involved in deriving the farmgate price of FFB. *Step1* is pricing palm oil at the world market price for the three products. Crude palm oil and Kernel palm oil are priced at the Rotterdam price and palm extract is expressed in Australian dollars, with all prices converted to US dollars. Costs for transport, insurance and shipping losses are included in this step for each destination. *Step 2* values the extraction rate of each product for one mega tonne of FFB. *Step 3* converts the value from US dollars to Papua New Guinea Kina. *Step 4* defines the pay out ratio, which stands at present at 57 percent of the extracted value in Kina to farmers. *Step 5* deducts all the levies and adds the 1 percent VAT rebate to derive the mill gate price.[34] In the *final step*, transport costs for transporting FFB from the farm to the mill are deducted to derive the farm gate price. The farm gate price for each month is calculated by the Estate Company, NBPOL, and displayed at OPIC Hoskins office and its divisional offices. The information given on the notice is similar to that provided in Table 6.2.

The farmer's pay out ratio (57 percent), transport cost and levies are negotiated during the price determination process, which involves the government, smallholder growers, Estate

[34] The way VAT input credit rebates work in Papua New Guinea is as follows. First, the firms must first be registered. Second, to register the minimum turn over must be K100,000. Virtually, all the informal sector enterprises are not VAT registered.

Sector, and OPIC. Although it was formulated to be reviewed every two years, there has been no review since 1998 (ADS (PNG) 2001:41). Note that the exchange rate, international prices and costs for insurance, shipping loss and transport to export markets are variable. The rest of the parameters are fixed for the duration of a formula.

The value added from reviewing the FFB pricing formula is that expenses on levies, taxes, and transportation are accounted for. There is no need to calculate and deduct these costs in estimating profits. Costs for farm tools, material inputs, labour and land rental remain to be estimated and deducted from income to derive profits.

Production *(Q)* is a function of four factors of production as depicted in equation 6.3. The cost of each factor of production defines *TC* - total cost of production as depicted in equation 6.4

$$Q = f(L, K, M, A) \tag{6.3}$$

where L is labour, K is farm tools, M is inputs and A is land.

$$TC = wL + rK + mM + aA \tag{6.4}$$

where *w, r, m, a* are the prices of labour, farm tools, farm inputs and land, respectively.

Farm tools required by oil palm growers include wheelbarrow, knapsack sprayer and harvesting tools. Farm inputs include seedling, fertiliser and herbicides. The on-farm use

Table 6.2 **New Britain Palm Oil Limited FFB Formula for July, 2003***

Detail	in US $	in Kina
Step 1: International Price of Palm Oil		
US $ Price for CPO c.i.f Rotterdam	430	
Less $78.49 to equate to FOB	351.51	
US$ Price for PKO c.i.f Rotterdam	434	
Less78.49 to equate to FOB	355.51	
US$ Price for PKE Australia A$110*0.6659	73.25	
Less $7.02 to equate to FOB	66.23	
Step 2: Palm Product Extraction Rate		
Palm Product Value of 1 MT of FFB		
Standard Extraction rate for CPO@22.12%	77.75	
Average extraction rate for PKO@2.42%	8.6	
Average extraction rate for PKE@3.16%	2.09	
Step 3: Value Conversion into PNG Kina		
Palm Product Value of 1 MT of FFB US $	88.45	
Exchange rate US$ to Kina	0.2695	
Step 4: Pay out Ratio		
Palm Product Value of 1 MT of FFB Kina		328.2
Farmer's pay out ratio at 57%		187.07
Add 1% VAT		1.87
Step 5: Levy Deductions to Determine Mill gate Price		
Less OPRA Levy		1.77
Less Sexava Levy		1
Less OPIC Levy		3.5
Less VAT 10% on OPIC Levy		0.35
Mill gate Price		182.33
Step 6: Farm Gate Price		
Less FFB transport costs		22.12
Farm gate Price		160.21

* This information taken directly from the notice displayed on the OPIC Public Noticeboard, Hoskins, July 2003.

Source: Smallholder Affairs Division, New Britain Palm Oil Limited, 2003.

of these factors in recent years is represented in Table 6.3. Fertiliser application is infrequent as depicted in the fourth column. In aggregate, 84 percent of farmers applied fertiliser in 2002. However, the average amount of fertiliser applied is below the standard ten bags per hectare per year requirement.

This problem persisted even after the introduction of a K3 per bag refund on every fertiliser bag applied as an incentive by the Estate Company in 1999. With respect to herbicide use, only 55 percent of the sample used it. The average number of workers for each farm is three and each person worked, on average, three hours a week.

Table 6.3 **Labour, Fertiliser and Herbicide Use** *

Farm Type	Average Worker/ Farm	Average Number of Hours worked by each worker	Applied Fertiliser in 2002 (Bags)	Average Number of Fertiliser Bags Applied/ hectare in 2002	Number of growers that use Herbicides
Land State Settlement	3	3	37 (77)	4	36 (75)
Village Oil Palm	3	3	37 (77)	5	15 (7)
Customary Purchase	4	4	31 (97)	4	24 (75)
Sample Average	3	3	35 (84)	4	22 (55)

* Figures in brackets are percentages of the total for each category of growers in the sample. Recall there are 48 LSS, 48 VOP and 32 CP growers that make up the total sample of 128 used in the survey.

Source: Survey data, 2003.

There is no need to estimate the cost of farm tools and farm inputs because the database contains monthly data on both gross and net income. Relating to equation 6.1, monthly data on PQ is available from the database. The net income is the gross revenue minus the cost of farm tools and inputs accessed through the in-kind credit scheme. Since every grower uses this scheme, as discussed in Chapter 4, there is no need to estimate the cost of farm tools and inputs. This analysis therefore shows that the net income data from the income database is profit but without allowing for labour and land rents.

Labour *(wL)* and land rental *(aA)* costs are calculated using survey data from 2003. The number of people working permanently on a farm is used to define the minimum labour used for each farm.[35] Data on the number of hours each person puts into oil palm per week is also used. It is important to value the cost of labour using the number of hours spent on oil palm because these farmers spread their time between oil palm cultivation and other activities like gardening, running small business enterprises, and participating in cultural activities. In aggregate, there are 3 workers working an average of 3 hours a week (Table 6.3). The national minimum weekly wage of K24.65 (Bank of Papua New Guinea 2003:s39) was used to derive a 0.62 toea rate per hour based on a standard 8 hours per week. The formula for costing labour is described as follows:

$$wL = nmh * n * t * w \qquad (6.5)$$

where nmh, n, t, w are national minimum hourly wage rate, number of people who work

[35] There are many forms of labour utilisation ranging from friends and relatives, multiple households, hired labour and rotational labour. However, the labour costed is the minimum labour force available on the farm.

on the farm, number of hours worked per week, and number of weeks in a year.

The corresponding profit calculation corresponds to the row marked by Profit 2 in Table 6.4. This is the profit allowing for the inclusion of land rental costs.

LSS growers are legally obliged to pay rents to the state and customary purchase growers pay an implicit rent to the customary landowners, as discussed in Chapter 5. Village oil palm growers, however, do not pay land rent because they are part of the customary landowning community. This implies that the cost of land rental will be zero for village oil palm growers but a positive value for the other two groups of growers. The annual

Table 6.4 **Demonstration of Profit Calculation Using a Representative Farm**

	Year			
Revenue/ Profit	2000	2001	2002	2003
Gross	6945	6339	10954	6648
Profit 1	6570	5370	10694	6576
Profit 2	6280	5080	10403	6398
Profit 3*	For LSS & CP: 6280-*aA*	For LSS & CP: 5080-*aA*	For LSS & CP: 1040-*aA*	For LSS & CP: 6398-*aA*

* LSS is land state settlement growers and CP is customary purchase growers.

Source: Author's calculations, based on survey data, 2003 and data from OPIC and SAD Database,2003.

land rental rate - a - is formally defined as 5 percent of the unimproved land (as discussed in Chapter 5) for each LSS farm but is implicitly defined and calculated for each customary purchase grower.

Discussion in Chapter 5 showed that 94 percent of the growers on state land interviewed had not paid land rents for the last 10 years. This means that they did not incur land rental costs during the period under investigation. However, a growing number of LSS growers are paying implicit land rents to customary landowners, as also discussed in Chapter 5. The actual value of the implicit land rental payments by both customary and LSS growers was not documented during the survey but grower admission of making these payments was recorded and is shown in Table 5.3 in Chapter 5. Being implicit rents, actual transactions take the form of in-kind and/or cash payments if and when the need arises. Although land rent costs were not deducted from the profit calculation, the actual profits for LSS and CP growers will be less land rental costs. This is depicted in the last row as Profit 3 in Table 6.4.

To provide a summary, Table 6.4 is used to demonstrate the profit calculation process just described. Gross revenue and different categories of profits are in the first column and the corresponding figures for the four years under consideration are in the other columns. Gross income is the value of FFB at the farm-gate price. The net income is the smallholder farm profit after farm tool and input costs are deducted, that is, Profit 1. In the absence of debts, the gross income will be the same as Profit 1.[36] The two remaining

[36] Deductions for the issue of ID cards and production and income history for attachments for loans are included as expenses. Although deductions were made for the purchase of shares in the Estate Company in 1999, they were excluded because the year 1999 is not part of this analysis.

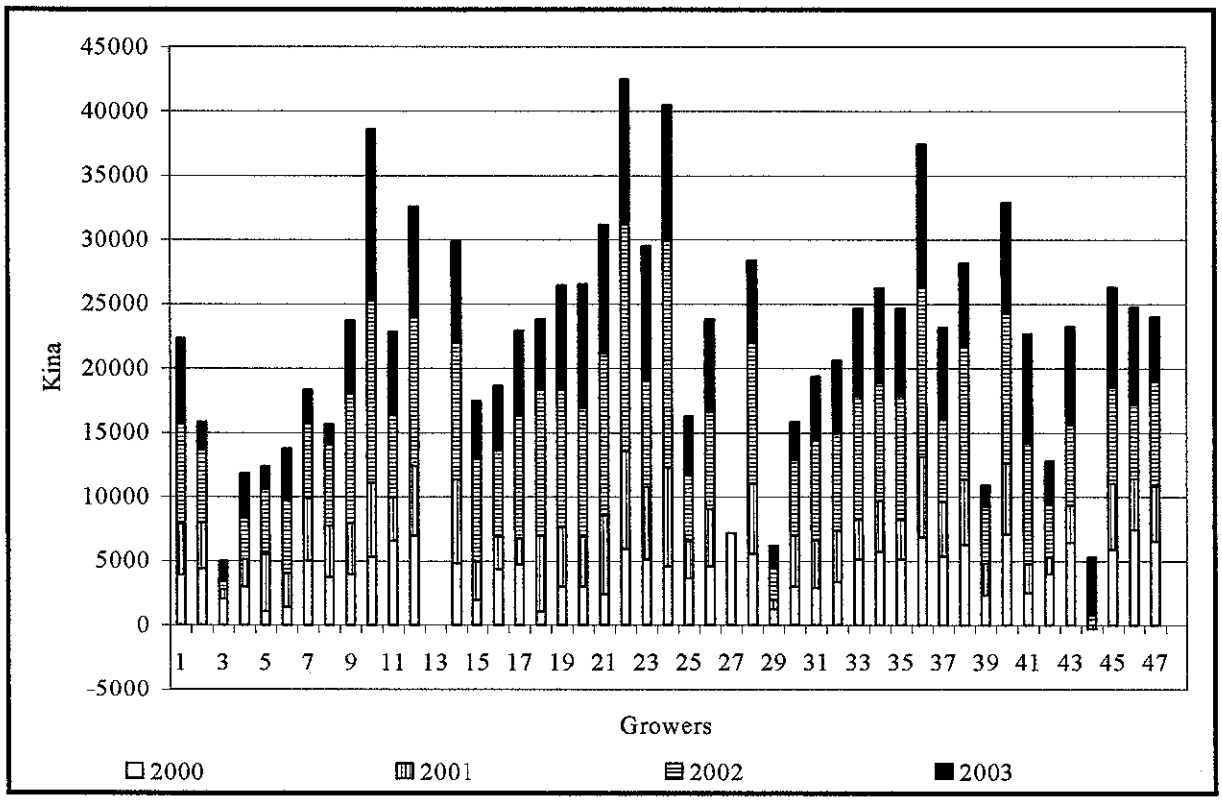
profit estimations are as follows: Profit 2 is after labour costs are deducted and Profit 3 is after land rental costs have been deducted.

6.4.2 Estimated Profits

The estimated profits without land rental costs (Profit 2) for the farms in the sample are represented in Figures 6.1 to 6.3 for LSS, VOP and CP growers, respectively. The vertical axes of these figures depict profits and the horizontal axes depict individual farmers. Estimated profits shown in these graphs are annual figures for the four years - 2000 to August, 2003 for which the data is available. Data missing from these Figures may represent missing data, yet to be harvested or inconsistency in harvesting for that year. Reading the length depicted in each year can identify profitable years. Furthermore, we can identify profitable farms by comparing consistencies in the heights for each year per farmer.

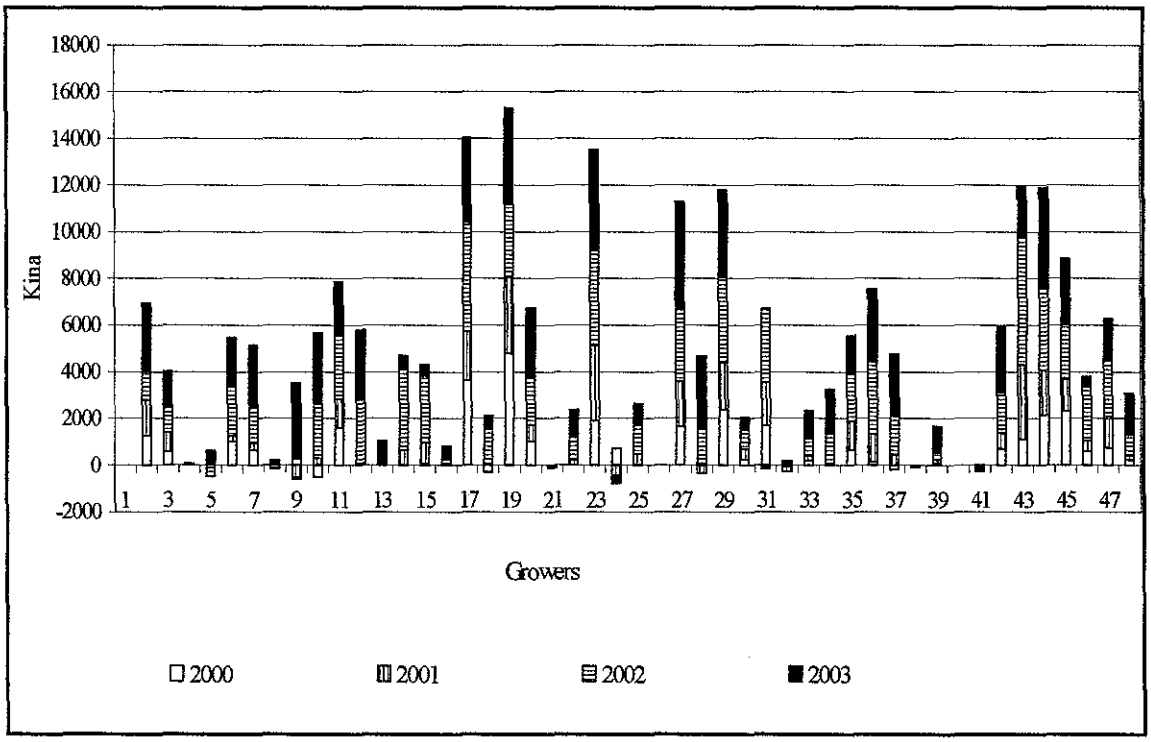
Profits for LSS farmers in Figure 6.1 show that LSS farms are, on aggregate, profitable. Profits for VOP growers in Figure 6.2 show data inconsistencies. OPIC extension officers reported that VOP farmers are overall inconsistent in their approach to farm husbandry, which included inconsistent harvesting. Lack of farm management and harvesting by VOP farmers was also observed during the fieldwork. Records of losses are also obvious between 2000 and 2003 for the VOP growers. Despite these negatives, the overall conclusion is that VOP farms are profitable. Profit estimates for CP growers are shown in Figure 6.3. Although there are some years when losses were made, the overall indication is that CP farms are profitable.

Figure 6.1 **Profit Estimates for Land State Settlement Growers in the Sample for the Years 2000 to 2003**



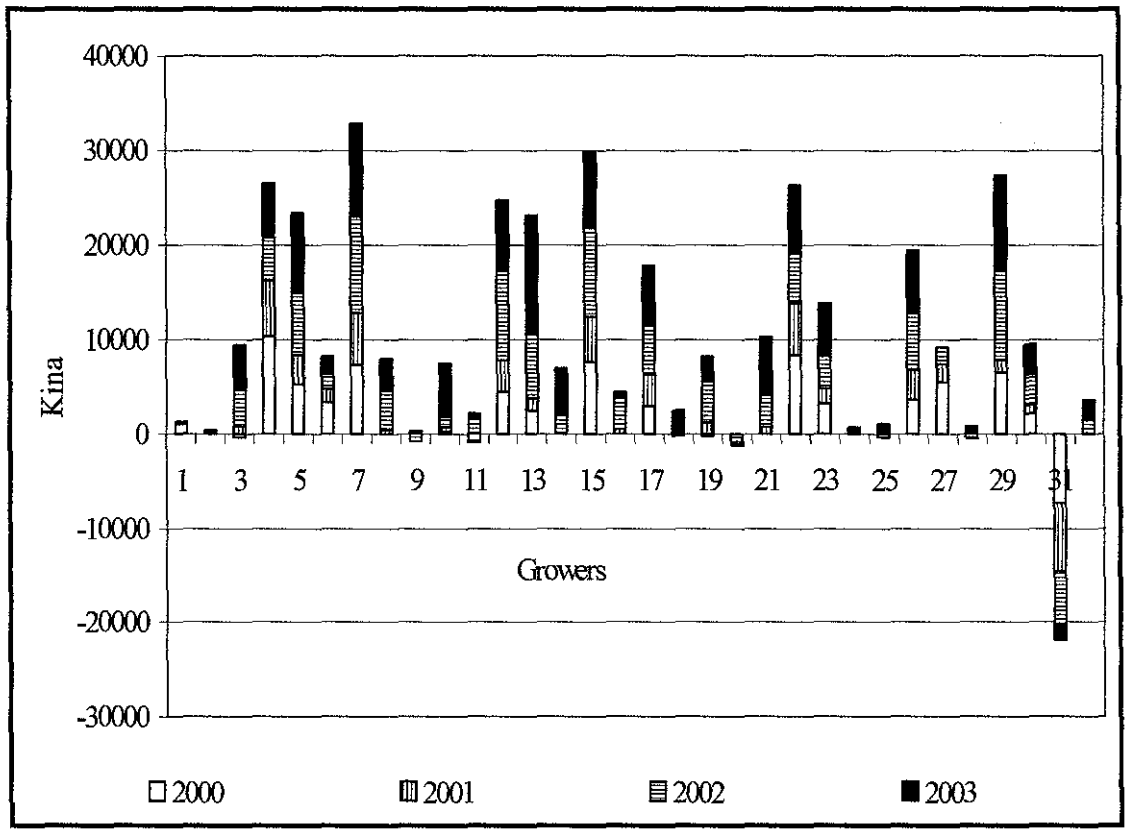
Source: Author's calculation, based on survey data, 2003 and data from OPIC and SAD database.

Figure 6.2 **Profit Estimates for Village Oil Palm Growers in the Sample for the Years 2000 to 2003**



Source: Author's calculation, based on survey data, 2003 and data from OPIC and SAD database.

Figure 6.3 **Profit Estimates for Customary Purchase Growers from the Sample for the Years 2000 to 2003**



Source: Author's calculation, based on survey data, 2003 and data from OPIC and SAD database.

Annual profit estimates ranked from highest to the lowest show the following trend; 2003, 2002, 2000 and 2001. This trend is the same as the farm gate price trend represented in Table 6.5. Price movements therefore influence annual profits.

Table 6.5 **Annual Farm Gate Price per tonne** (Kina)

Year	Average
2000	75
2001	71
2002	142
2003	175

Source: Author's Calculation, using data from OPIC and SAD Database,2003.

In Table 6.6 avcrage annual profits are compared for LSS, VOP and CP farms. The aggregate profit estimates show that smallholder oil palm farms are profitable. The difference in profits between the three groups of growers is explained by the differences in the number of hectares planted. The average number of hectares planted are 6, 4 and 2 for LSS, CP and VOP, respectively. Profit estimates given in Table 6.6 follow this trend. On the other hand, profits are price sensitive. When prices fall, profits for all growers could be on average below K2,000 as demonstrated by profit estimates for 2001. The addition of land rental costs to total costs will further lower these profit estimates for LSS and CP growers.

Table 6.6 **Average Annual Profits** (Kina)

Year	Land Settlement Scheme	Village Oil Palm	Customary Purchase
2000	4280	949	3295
2001	3885	916	1665
2002	8049	1859	3248
August, 2003	6091	1794	4240

Source: Author's Calculation, survey data, 2003 and data from OPIC and SAD database, 2003.

The main reason for going through the profit estimation process is to demonstrate the cash that flows into bank accounts and what that should mean to banks. Cash deposited in bank accounts is Profit 1. This is net income after deducting the costs for farm tools and inputs as well as the tax, levy and transportation of FFB from the farm to the mill. However, labour and land rental costs have not yet been deducted.

This has implications for the bank's understanding of the potential cash flow generated by these smallholder farms. Interviews with staff from both commercial banks revealed that they were not aware that the income deposited into bank accounts is not total revenue but Profit 1. As these profit margins are relatively high for the rural sector in general, the overall cash flow for these farms is healthy. The difference between the gross income and Profit 1 will vary depending on whether the farmer has accessed farm-inputs and tools.

For instance, in Table 6.4, the difference between gross income and Profit 1 was K72 in 2003 but was K969 in 2001.

Without having access to the complete information as presented here, the commercial banks' overall perception was that the smallholder oil palm farms generate positive cash flows. The analysis in this section supports this and provides further information that the income is not gross but they are to an extent profits.

6.5 Monitoring cash outflows from bank accounts

While cash inflows into bank accounts reflect the health status of the cash flow of these farms, cash outflows from bank accounts reflect the farmer's management of the income. The bank will treat each of these pieces of information as important in its own right. In the Hoskins project case, banks are already aware that the cash flow is healthy. However, the banks observe poor management of the income. The commonly-observed behaviour revealed in the interview with bank staff is large withdrawals almost immediately after FFB revenues are deposited into an account.

For reasons of client confidentiality, it is not possible to access bank account details. However, anecdotal evidence of long queues observed at the banks and the Automated Telling Machines (ATM) machines each FFB pay day and the day after supports this view. Alternatively, savings behaviour can be revealed through the ownership of savings

accounts. Table 6.7 presents the distribution of savings accounts by grower types. Only 19 percent of the growers in the sample had a savings bank account.[37]

Low savings account ownership supports the commercial banks' perception of low savings and high withdrawal from bank transaction accounts. This information has a major influence on the lending decisions of the banks. Banks have used this information to classify all the smallholder oil palm growers as 'not bankable.' Instead of lowering the access costs, collateral requirements, and overall cost of funds to borrowers, and increasing access to bank credit, the smallholders' relationship with the commercial banks has had the opposite result. Four explanations are provided for the large and frequent withdrawals from bank accounts.

Table 6.7 **Bank Savings and Term Deposit Accounts** *

Grower Type	Owns Savings Accounts	Does not Own Savings Account
Lease State Settlement	11 (23)	37 (77)
Village Oil Palm	6 (13)	42 (88)
Customary Purchase	7 (22)	25 (78)
Total in Sample	24 (19)	104 (81)

* Figures in brackets are percentages of the total for each category of growers in the sample.

Source: Survey data, 2003.

[37] Except for a few, many farmers were unable to distinguish between savings and term deposit accounts. For this reason, both savings and term deposit accounts are presented in aggregate in Table 6.7.

6.5.1 Labour and land rental costs

Calculations in section 6.3 revealed that the income deposited into bank accounts was profits with labour and land rental costs included. Farmers are entitled to withdraw from the bank accounts to pay for these costs, as they are an integral part of the total cost for running the farm.

Although the family is the main supplier of labour, hiring of youths is common. The costs of hiring this labour were paid either in cash or inkind. Two common inkind payments used were the provision of cooked food, especially rice, or a quantity of FFB. Farmers will usually need to withdraw cash from the bank accounts to meet labour costs.

As mentioned earlier, both LSS and CP growers pay implicit land rents to the customary landowners. LSS growers have not paid their formally defined rentals to the state for the period under consideration, as discussed in Chapter 5. Implicit rents either in cash or inkind include contributions to landowner activities such as bride price, funerals, church building and other community activities as and when the need arises. Both CP and LSS growers will therefore withdraw cash from their bank accounts to meet this implicit land rental cost.

6.5.2 Harvesting in rotation

Harvesting in rotation involves beneficiaries taking turns to harvest, sell and receive the income in rotation. Earlier studies also reported this practice in the Bialla (Koczberski and Curry, 2003), Hoskins and Popondeta projects (Koczberski *et al.* 2001). This practice

emerged in response to the population pressure on the settlement blocks, as described in Chapter 5.

Table 6.8 provides data on harvesting in rotation from the survey. More than half of the LSS farmers harvest in rotation. This process is a structured system of income distribution. The most common frequency of rotation is monthly. However, growers from East New Britain, who use an informal tenancy-in-common agreement amongst beneficiaries, practise extended rotations for periods of between six months and two years.

Table 6.8 **Harvesting in Rotation** *

Grower Type	Rotation Harvest	No Rotation Harvest	Not Yet Harvested
Lease State Settlement	25 (52)	23 (48)	0 (0)
Village Oil Palm	24 (50)	22 (46)	2 (4)
Customary Purchase	12 (38)	18 (56)	2 (6)
Total in Sample	61 (48)	63 (49)	4 (3)

* Figures in brackets are percentages of the total for each category of growers in the sample.

Source: Survey data, 2003.

There are two important issues raised by this practice of structured harvesting in rotation. These are the rotation of bankcards and the in-built incentive to withdraw the total of FFB revenue deposited into the account. As discussed in Chapter 5, OPIC mediated the

issuance of a harvest card in only one beneficiary's name. But this was only for formalities because the access to income is rotated through harvesting in rotation. Since the primary bank account is in the name of the farmer under whose name the harvest card exists, the bank account is informally a joint or group account. The card and account are therefore used by more than one person, coinciding with each rotation. This constitutes a breach of standard banking practice where personal bank accounts are only accessible by the account owner. This constitutes a threat to the credibility of the banking system.

With respect to withdrawals, there is no incentive for a beneficiary to leave money in the account, as it will be passed on to the next beneficiary. Each beneficiary therefore has the incentive to withdraw all the income for that month. People could open their own account and transfer the money to their account. However, the need to have an ID card and reference letter restricts them from this option. OPIC's ID card and letter of reference services are restricted to those with harvest cards.

6.5.3 Cultural activities coinciding with palm income payments

Observations during the field research, discussions with interviewees, interviews with the executives of the Hoskins Smallholder Oil Palm Grower's Association, and OPIC staff confirmed that customary and community activities are time-tabled to coincide with monthly FFB income payments. This is to ensure that each person is able to make a contribution, either in cash or in-kind.

The common activities engaged in are funerals, transportation of dead bodies to home provinces, bride price payments, church building, and compensation payments for

victims of violent conflicts such as the relatives of the deceased and owners of destroyed properties. These activities are not restricted to one group of farmers. The entire smallholder oil palm farming community is engaged in them. Every single month is earmarked for an activity. The dates directly coincide with FFB income payments or the weekend after the payments are made.

The landowner communities expect contributions proportional to a person's wealth, which is additional to what one is obliged to pay. These two components of community obligations are like a fixed and a proportional tax on each farmer. While each person in the community is obligated to support each other as part of the traditional society, those who accumulate prestige in terms of social networks, leadership, and wealth are expected to contribute proportionally to their wealth. This practice is documented in the literature (Platteau 2000:189-240) as a redistributive mechanism common in egalitarian societies. Social pressures, harassment, and ideological intimidation enforce them. Threats of sorcery, for instance, can be a major deterrent to private wealth accumulation in these societies.

In a practical sense, one common practice observed is the use of a less structured harvesting-in-rotation system to meet these expectations. Unlike the structured harvesting in rotation, farmers also allow harvesting in rotation as the need arises (a less structured form). Either a recipient is allowed to harvest and access the income or the farmer harvests purposely to give away the money. This is one of the main reasons for the harvesting in rotation by village oil palm growers and customary purchase growers

depicted in Table 6.8. The lead farmer is in control of the bank account and bankcard. However, the farmer will withdraw the pre-agreed amount and pass it on to the recipient.

6.5.4 Informal financial Intermediation

In the absence of formal financial institutions, informal institutions exist in delivering savings, credit and insurance services. Within the wider finance and development literature there is a large section focusing on informal finance and such functions (Adams and Fitchett 1992a; Besley 1994, 1995a; Morduch 1999; Platteau 1997).

Informal financial intermediaries actively involved in the Hoskins project area are friends and relatives. Savings, investment and insurance are the three services that friends and relatives provide. There is no national social security system in Papua New Guinea, formal insurance schemes are inaccessible, and law enforcement is inefficient. Collectively, these factors force individuals to buy security and insurance directly from family and friends.

Although Table 6.9 demonstrates a high proportion of membership in savings and loan societies, they are largely memberships in name only. Farmers expressed scepticism about savings and loan societies, influenced by past fraud and mismanagement. Growers were disinterested in savings and loans societies and contributions to savings have not been popular. Many were considering withdrawing their membership. However, the Grower's Association expressed interest in starting a Savings and Loan Society for oil palm growers.

Table 6.9 **Savings and Loan Society Membership** *

Land State Settlement	Village Oil Palm	Customary Purchase
12 (25)	13 (27)	16 (50)

* Figures in brackets represent percentages of the total for each category of growers in the sample.

Source: Survey data, 2003.

Savings and investments in informal instruments, such as sharing their income with friends and relatives, is a common practice, as depicted in Table 6.10. This distribution of income is not necessarily within the same household, but may be with members of different households. They may be friends from an extended family network as well as from social networks of non-relatives. In aggregate, 83 percent of the growers shared their income from the sale of FFB with friends and relatives. Village-based growers lead in this because they are operating within a village environment. Although the questionnaire asked only about cash distribution, there is anecdotal evidence showing substantial in-kind (imported goods, food from gardens, betelnut and so on) redistribution.

Two other factors that encouraged savings and investments in the informal financial sector instruments are the requirements of commercial banks for opening bank accounts (ID and reference) and minimum balances for opening savings and transaction accounts.

Table 6.10 **Sharing Income with Relatives Other than Immediate Family** *

Grower Type	Shares Income	Does Not Share Income	Not Yet Harvested
Lease State Settlement	38 (79)	10 (21)	0 (0)
Village Oil Palm	43 (90)	3 (6)	2 (4)
Customary Purchase	25 (78)	5 (16)	2 (6)
Total in Sample	106 (83)	18 (14)	4 (3)

* Figures in brackets are percentages of the total for each category of growers in the sample.

Source: Survey data, 2003.

Since savings and investments in the informal sector can improve credit worthiness for informal financial intermediaries, it was expected that some growers would find this an important incentive to withdraw from bank accounts and save or invest in informal financial markets and instruments. However, the data presented in Table 6.11 contradicts this expectation. For instance, being ashamed is one common reason why growers did not seek loans from friends and relatives for investments.[38] It must therefore be the insurance, savings and credit for consumption argument that is the driving force behind sharing income with friends and relatives.

[38] In Tok Pisin 'sem pasin' which translates to 'shameful practice.'

Table 6.11 **Summary of the Different Reasons for Not Borrowing for Investment from Friends and Relatives, by Grower Type** (Frequency)*

Reasons	Land State Settlement	Village Oil Palm	Customary Purchase
Sees it as an option	3	na	Na
Sees it as shameful	4	10	5
Similar financial position	4	na	2
Self-reliant	3	2	2
Grower is a lender to others	1	na	Na
Gets assistance whenever needed	1	1	Na
Amount is too small for grower's needs	3	5	1
Friends and relatives will not give	na	3	Na
NBPOL in-kind is fine	1	na	Na
Fears Court action	na	na	1
Fears complaints & gossip from lenders	3	na	1
Demand quick repayment	1	na	Na
Culturally, elder does not ask younger children	1	na	Na
Does not like asking	1	1	Na
No one to ask	na	na	2
Knows they will not give	na	3	Na
No need for credit	3	4	Na
Difficult to ask	na	1	Na

* na means not available.

Source: Survey data, 2003.

One other major factor encouraging expenditure on building social networks through sharing income and contributing to community events is the risk of forced repatriation by customary landowners. Through the participation by smallholders, they are buying

security and insurance from each other, given the underlying threat posed by customary landowners. Although there were cultural ethnic differences and conflicts among them, LSS and CP growers were observed generally congregating and supporting each other in cultural and community activities, no matter where they had come from.

6.6 Summary and Implications

The assets that are owned by these growers are not accepted as collateral for commercial banks as discussed in Chapter 5. Having oil palm income paid into bank accounts could have enabled smallholder oil palm growers in the Hoskins project to accumulate savings that could be used as collateral. It could have also enabled them to develop a positive relationship with commercial banks. The potential benefits would be lower interest rates, lower collateral requirements and increased access to credit.

The general conclusion reached by both the commercial banks is that smallholder oil palm growers have healthy cash inflows but poor cash management. The banks have used the information about the large and frequent withdrawals from bank accounts to classify these growers as 'not bankable.' The banks have set collateral requirements that all farmers must have savings accounts, land with formal title in urban centres, and own quality motor vehicles or generators. Access costs and overall cost of funds to these borrowers are therefore very high. Consequently, smallholder oil palm growers have been restricted from accessing commercial bank loans. This outcome is the opposite to the theoretical predictions set up in Chapter 3 and at the beginning of this Chapter.

There is a multitude of factors driving the large and frequent withdrawals from bank accounts. This study has categorised them into four large groups. Some are inter-related factors. Correcting this situation will require a multi-faceted approach.

Chapter 7

Conclusions and Implications

7.0 Introduction

This thesis is about the cost of funds and access to formal credit by smallholder borrowers in Papua New Guinea. It set out to identify the factors that constrain smallholders from accessing competitive priced funds from the formal sector through a survey of smallholder oil palm growers in Papua New Guinea. Past government interventions have not led to the development of a viable rural financial sector in Papua New Guinea. However, no previous studies had been undertaken at farm level to identify the factors restricting smallholder access to formal sector credit. Hence, this study of the smallholder oil palm growers in the Hoskins project, West New Britain, Papua New Guinea set out to estimate the magnitude of the cost of funds to smallholder borrowers and to understand the factors that raise the cost of funds to these borrowers and thereby restrict their access.

The theoretical framework for the thesis was derived from the economics literature on the development of the financial sector, with particular attention paid to the realities of a developing country's financial system. For the empirical application of the analytical framework, the emphasis was on the determinants of the access cost to borrowers. Many factors determine access costs but the empirical analysis focussed on the role of land

titles and the farmers' relationship with commercial banks. The Hoskins project area was chosen for the study because oil palm growers in the project operate under a variety of land tenure arrangements, including formal land titles. As well, the payment arrangements for the sales of their output mean that they all operate commercial bank accounts.

7.1 Summary of research findings

The key prediction arising from theoretical models of behaviour in the financial sector is that those seeking small loans will be restricted to informal financial intermediaries, while large borrowers will seek loans from formal financial intermediaries. Further, government-sponsored financial institutions established to provide subsidised credit will primarily serve inefficient firms rejected by the commercial formal sector. The subsidies will generate excess demand for credit, leading to the use of rationing mechanisms by the lending institutions.

Another prediction from the theoretical models is that informal lenders rely on local knowledge and existing social networks to lower information, enforcement and transaction costs. These factors lower the lending threshold levels and offer informal lenders comparative advantage in dealing with small loans. The threshold levels of formal lenders are higher than those of informal lenders because of higher levels of expenditure on information, enforcement and transaction costs. Formal lenders therefore will not enter the small loans market segment.

In testing the theoretical predictions it was hypothesised that if the costs of funds to borrowers in the Hoskins project were high then formal land titles and their relationships with the commercial banks have failed to lower access costs. The farm survey results show that, in fact, all smallholder oil palm land is insecure and cannot be used as loan collateral and that the commercial banks have used the high level of withdrawals of palm income from bank accounts to classify the farmers as not bankable. The information collected from the field survey of smallholder oil palm farmers in the Hoskins project depicted a complete failure of the formal credit market to provide credit to the smallholders. The high rate of loan rejection and the total dependence on the in-kind credit scheme for oil palm farm inputs and tools illustrate this failure.

The analysis shows that the credit market in the Hoskins project is segmented. Smallholder oil palm credit demand is fully supplied by an informal financial intermediary: the in-kind credit scheme run by the nucleus estate company. However, there is no supplier, except self-funding, for other investment demands. Farmers who applied to the banks for credit to increase farm size, construct houses, or venture into small business enterprises were unsuccessful in obtaining loans from the banks in the area. The study uncovered many underlying factors responsible for this situation. It is not, however, the result of government policies or of actions of the formal commercial financial sector.

The first underlying factor uncovered is that the loan amount required for the current smallholder farm size is below the threshold level of formal lenders. The second underlying factor is the lack of collateral assets acceptable to the commercial banks.

Farmers are unable to accumulate savings in their bank accounts and use that saving to establish credit rating because of the high level of withdrawals from bank accounts. The high level of withdrawals from bank accounts indicates the third underlying factor. This is the dominance of the friends and relatives intermediating for savings, credit and insurance. Transactions through friends and relatives are not only expected but also because of kinship and other societal norms and principles that still prevail in Papua New Guinea society. The fourth underlying factor is that not all land titles are accepted as loan collateral because they are insecure. More important is the contested nature of the underlying state land. This alone is a strong reason for commercial lenders to reject land with formal titles as collateral. This also directed settler farmers to pursue informal title transmissions, invest in the social network and buy security from customary landowners by paying implicit land rents. The state has proven to be weak in both exerting authority and administering land with formal titles. The fifth factor is the presence of state interventions restricting smallholder access to credit. While the PNGRDB was rationing credit, the two savings and loan societies had major credibility problems to overcome as those farmers who had membership were not contributing and did not perceive them as credible sources of credit. The sixth factor is that the low educational level attained by offspring of original farmers has restricted out-migration in search of paid employment. Out-migration to any other part of the country is restricted by customary landowners in those areas. Return-migration to province of origin is restricted because settlers were originally from densely populated regions of the country where land is no longer available. This factor is behind the conflict over formal leasehold titles, increased tensions with customary landowners, and promotes multiple access to bank accounts.

7.2 Implications of the study's results

The implications of the results of this study are discussed under four headings. These are cost of funds to borrowers, state interventions, property rights, and relationship banking.

7.2.1 Cost of funds to borrowers

Borrower transaction costs and effective interest rates estimated for the few successful loan applicants indicate high, if not prohibitive, costs for loan demands of K2,000 and below. Comparing estimates of transaction costs and effective interest rate costs with those estimated for other developing countries, it was established that these costs in Papua New Guinea are relatively high.

The conclusion reached in respect of the in-kind credit scheme was that both borrower transaction costs and effective interest rates are negligible. However, growers pay for them indirectly through their levy payments to OPIC. More importantly, the way in which the in-kind credit scheme is structured reduces information, enforcement and transaction costs for the lender, the Estate Company, and the borrowers—the smallholder oil palm growers.

The analysis established that the high effective cost of borrowing from formal financial intermediaries has restricted smallholder credit access to the in-kind credit scheme, an informal lender. This result is consistent with the theoretical prediction and empirical evidence from other studies on borrower transaction cost, that small borrowers prefer lenders that impose low transaction costs for a given level of interest rate. Growers would

have spent 37 percent of their maximum loan of K2,000 on borrower transaction costs and paid 2.35 percent monthly in effective interest rate costs when they borrowed from formal lenders. These costs are very high, especially given the existence of the reasonable social and economic infrastructure in the project area.

7.2.2 Interventionist policies and their implications

The presence of two Savings and Loan Societies, a Women's Micro-Credit Scheme and a branch of the Papua New Guinea Rural Development Bank (PNGRDB) is a manifestation of the presence of government interventions in the financial market. While the PNGRDB was operational at the time of the survey, the other two organisations were inactive in terms of providing credit to the smallholder oil palm growers.

The analysis established that the presence of ceiling interest rates within the PNGRDB resulting in below-market interest rates, led to excess demand for credit from this financial organisation, raised borrower transaction costs, provided competition to the personal loans sections of the commercial banks, and may have discouraged savings accumulation. As predicted by the theory and as supported by the results of earlier empirical studies on the impact of interventionist policies, the PNGRDB rationed access to the subsidised credit through raising transaction costs, in effect by requiring loan applicants to make many visits to the bank during the application process. In the period under study, the bank rejected 95 per cent of the loan applications.

7.2.3 Property rights

The presence of reasonably well-established economic and social infrastructure in the Hoskins project was expected to lower borrowing access costs for all growers. A further prediction arising from the theory is that secure property rights for land, in the form of formal lease titles to alienated land, could also be expected to lower access costs and increase access to formal sector credit for oil palm growers.

The survey information showed that the state land lease titles were insecure. In fact, all smallholder farmers had insecure titles to their land and neither of the commercial banks in the area accepted these lands as loan collateral. The lack of formal title transmission, the accumulation of land rentals, and the insecurity of the titles to the underlying state land were the three factors identified as undermining the security of the formal lease titles. Of these three, the insecurity of state land—because of the risk of reclaiming the land by the previous landowners and compensation claims—appears the most important factor.

This study therefore established that all state land with formal titles in the Hoskins project is insecure and cannot be accepted by the commercial banks as loan collateral. A formal title is not sufficient if it is insecure. Therefore effective enforcement of property rights by the government is crucial. The emphasis should be on the development of an efficient property rights system that registers titles, updates the records and enforces the rights on a continuous basis.

Another implication of these results is that the land with formal titles is 'dead capital'—not because of the absence of formal titles as de Soto (2000) argues but because the formal property rights system is ineffective. A weak state, the predominance of cultural and traditional land rights inheritance and inefficient administration of state land all work to undermine the formal titles. Farmland under customary land tenure is also 'dead capital' because it does not have formal titles, consistent with de Soto's arguments. Consequently, all land titles in the Hoskins oil palm project smallholder sector can be called 'dead capital.' Accumulation of this capital may have improved credit worthiness for informal and state sponsored intermediaries but not for the commercial banks and other formal lenders.

7.2.4 Relationship banking

Access to bank accounts has not provided an opportunity for the smallholder oil palm growers to commit to relationship banking and benefit from reductions in interest rates and collateral requirements, as well as increased access to bank loans, as predicted by the theory of relationship banking. Instead, the high level of withdrawals following deposits of Fresh Fruit Bunch sales income has been used by the commercial banks to categorise the growers as not bankable. This result supports the predictions of the relationship banking literature by showing that commercial banks monitor the movement of cash flows from bank accounts and use that information generated over a period of time in making loan decisions.

The factors behind the large and frequent withdrawals were found to be multi-faceted. For the commercial banks, however, the reason (s) for the high level of withdrawals is immaterial to their loan decisions. But this result has implications for understanding the underlying factors contributing to poor financial sector development in Papua New Guinea. There is an argument in the finance and development literature that market failures, due to the absence of social and economic infrastructure, justify the proliferation and dominance of informal financial intermediaries. The results presented here show that the presence of social, economic, banking and legal infrastructure in the Hoskins project area has done little to weaken the dominance of the informal financial sector. The results discussed here reveal that farmers withdraw money from formal bank accounts to invest in the informal financial sector intermediated by friends and relatives. This means that there are other causes of market failures that make savings and investment through the formal bank accounts less attractive than those done through the informal financial intermediaries.

7.3 Policy implications

This study has shown that high access costs have contributed to the high cost of funds to borrowers in Papua New Guinea. The ineffectiveness of the property rights systems and of the management of income from oil palm farms has raised access costs in the case of the smallholder oil palm growers in the Hoskins project.

Unless a more effective formal property rights system is developed, the rural financial market in Papua New Guinea will remain underdeveloped. In this environment, the

prohibitive cost of funds to smallholder borrowers will remain. Making the system less costly for farmers and others to transfer their formal titles, encouraging the adoption of formal title transmission rather than informal transmission, and ensuring a strong state system that defines and enforces formal property rights and contracts are policy options worth pursuing.

Relationship banking needs to be encouraged. Depositors need to be educated that it is in their own interest to pursue a good banking relationship with their banks. This should involve savings accumulation and controlled withdrawals. The potential benefits from relationship lending are lower costs of funds for borrowers and reductions in collateral requirements and thereby increased access to credit.

The broader policy goal for lowering the cost of funds and improving access to formal finance must be to lower the dominance of the informal intermediaries. Factors revealed by the survey data to be encouraging informal transactions include the commercial bank requirement of an Identification card and a reference letter in order to open a bank account. The absence of social security, poor law enforcement, and lack of access to formal insurance funds encourages savings, insurance and credit transactions in the informal sector. In addition to the egalitarian system of forced income redistribution, the underlying insecurity of land tenure is encouraging increased spending on social capital accumulation. Finally, the inability of grower's children to pursue education beyond primary level has contributed to the increased numbers living on the farm and relying on oil palm income. This inevitably contributes to land title dilution and consequently continued withdrawals from bank accounts and increased reliance on friend and relatives.

There is, therefore, a multitude of factors pushing these farmers towards informal financial intermediaries. A multi-faceted policy approach is required to weaken the dominance of the informal financial intermediaries and increase formal sector participation. There is a large body of literature (Belsey 1995a; Dercon 2002; Morduch 1999; Besley 1994; Yaron 1994; Yaron *et al.* 1998; Townsend 1995; Platteau 1997) that shows that informal financial institutions are generally inefficient.

Finally, government interventions such as interest rate ceilings, credit quotas and specialist financial intermediaries such as the PNGRDB should be removed because they are reducing rather than increasing access to credit and raising rather than lowering the total cost of borrowing. They are competing with the market segment of the more efficient financial intermediaries such as commercial banks as well as promoting inefficient enterprises and discouraging savings accumulation. Instead, policies that enhance savings accumulation should be encouraged.

7.4 Research implications

Several issues could be researched further to fill the gaps due to the limitations of this study (see Chapter 3). First, further research with a larger sample could be undertaken to see whether the conclusions reached in this study are supported. However, it is unlikely that increased sample size will change the conclusions because insecure land titles and poor banking records are both sufficient causes of the high cost of funds to borrowers. Second, repeating the research in another agricultural industry with different characteristics to oil palm (coffee, for instance) or in urban-based small industries might

offer interesting comparative results. Finally, a third research project should investigate the development of an efficient property rights system that registers, updates the records and enforces the rights on a continuous basis.

7. 5 Conclusion

In conclusion, this study shows that the current level of demand for credit among agricultural smallholder oil palm growers is below the threshold of the commercial banks in Papua New Guinea. The informal sector lender best suited for loans of this size is the in-kind-credit scheme.

Relating these results to the research questions, the empirical analysis shows that the cost of funds is high, if not prohibitive, for the smallholder oil palm growers for two reasons. First is the insecurity of land titles, which is restricting the supply of credit and these growers' poor banking relationship.

In the context of the wider literature on finance and development, this study shows that more research is needed to understand the determinants of financial development in developing countries. Levine (2004: 86) reached the same conclusion at the end of a major review of the literature on the theory and empirical evidence on the nexus between finance and growth as mentioned in Chapter 1. Levine (2004:86) categorised the growing literature that analyses the determinants of financial development into two groups. One is examining the direct impact of laws, regulations and macroeconomic policies and the second is examining the political, cultural and even geographical context shaping financial development. This study has implications for both sets of literature.

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Appendix A Questionnaire and answer sheet

This survey was conducted between July and September, 2003. A pilot survey was conducted over a one-week period before the actual survey. The pilot survey assisted in modifying the questionnaire and designing the response record sheet. Data that could be accessed directly from OPIC and the Estate Company through its Smallholder Affairs Division were underlined in the question sheet and shaded off in the answer response sheet. These were production, income, in-kind credit, and planting history. The following is the questionnaire (A1) used to interview farmers and the answer sheet (A2) used to record the responses.

All interviews were conducted in Tok Pisin and assisted by OPIC extension officers.

A1 Sample of Survey Questionnaire

For Block-holders:

1. Area name: 2: Division Name:

4: Block No:

B. Profile of the Block Title Holder and the Household (Table B1):

1. Age:

2. Sex:

3. Occupation (in addition to farming):

4. Level of education (in number of schooling years):[39]

5. Total residents in block:

6. Name and Number of **cards** block residents have (A, B, C, &D):

7: Number of dependents in the block :[40]

8: Number of block members who work on oil palm block:

9: Number of hours in a week each person spends on blockwork (clearing, weeding, spraying, harvesting ...etc):

10: Number of block members who work off the oil palm block (*Identify each occupation, position and wage rate*):

11: Do you engage in any business activities on your block (Trade store, Poultry...etc)? YES/NO.

If YES, identify each type of business activity:

12: Total family monthly income from **all non-oil palm sources (Sum of question 12 & 13, sale of food crops, and other sources like land rentals)**:

[39] This is derived by combining the data in the highest level qualifications attained and years of school. For example, if a person reported that he/she finished two years in a vocational school and his/her highest level completed was 10, then his/her years of schooling is 12.

13: Number of children from block in school:

14: Language group of parents/province of origin of parents:

15: Do you have a position in the community (Block leader, Village leader, Association leader, Pastor, committee members, magistrate,...etc)?

16: How frequently do you contribute to customary activities of local landowners?

C: Block Description (Table C1)

1: How many blocks do you have? If more than one, identify land types (CPL,LSS or or VOP).

2: Do you have the lease title papers for the block(s)? YES/NO

(i) *If YES, check rent book?*

(ii) If NO, provide reasons:

3: For each block, answer the following questions

(a) Total area (hectares-mainly CP &LSS):

(b) Area under Oil Palm (hectares):

(c) Year when block first developed:

[40]Dependents are defined as those under 15 or above 65 years of age and those unable to live

(d) Year when block expanded and by how many hectares?

(e) Year when block replanted and by how many hectares?

(f) How many bags of fertiliser did you apply last year?

(g) How many times did you apply weedicide last year? If no weedicide used, how many times did you clear undergrowth last year?

(h) Do you use hired labour in your block? If yes, state number and wage rate.

(i) Do you have any of the following and is what you have enough for your block?:

(i) Wheelbarrow

(ii) Badang (small tractor)

(iii) Harvesting kit *(pole –8m, 10m, 12, & 14m, harvesting sickles, harvesting chisels, file & oil stone)*

(iv) Spray Kit *(knapsack sprayer, weedicide, overalls, gum boots, hand gloves, facial mask, and goggles).*

(j) Did you seek advice from OPIC on any oil palm related matter last year (2002)? If YES, how many times?

(k) How many of the meetings organised by OPIC last year (2002) did you attend?

(l) How many tonnes of FFB do you harvest in one harvest?

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independently.

(m)How much income do you earn from FFB sale in a month?

(n) Do you harvest in a rotation amongst family members?

(o) Do you share your income from FFB with others outside your own family?

(p) Do you have a rotation with another cardholder?

(q) Do you normally use your FFB records as proof of production for **any loan** (This is separate from NBPOL credit)? If YES, identify purpose(s) of loan:

(r) Have you used your land title as security for any loan (separate from RDB initial loans)?

If YES, identify

(i) Name the year (s):

(ii) Name of the bank:

(v) Purpose of loan :

(vi) Loan amount each time:

(v) Interest amount (or rate) each time:

(s) What is your monthly land rental rate (applicable to LSS) and is it up to date?

(t) What other crops do you grow (food in garden, vanilla, cocoa, copra)?

(u) Future plans- expand, sell, buy new block, diversify into other crops (Vanilla, cocoa,

copra, food crops), go back home …etc and provide reason (s) for each response.

D: Information on Credit (Tables D1-D5)

1. If you require credit (cash/in-kind), when do you need it most (specify): purchase land, develop land, build house, improve homestead (install tank, electricity, hot water system, furniture, white goods), employ labour, buy items necessary for production, diversify into a new business (PMV, Poultry, Trade Store, Vanilla, Cocoa, Copra), and others?:

2. Did you obtain items necessary for production from NBPOL last year (2002)? If Yes, *complete* ***Table D1 in answer record sheet***

3. Why did you **not** buy these production items directly

   (a) from personal savings ?

   (b) borrow money from

   (i) banks

   (ii) semi-formal financial institutions

   (iii) informal sources

   instead of taking credit from NBPOL ?

4: Did you receive the PNGRDB's initial loan (3 loans) arrangement? YES/NO

(a) If NO, provide reason:

*(b) If YES, complete section (b) in **Table D2 of answer sheet.***

5: Excluding those items accessible through the NBPOL in-kind credit scheme and the initial (3) RDB loan, have you obtained any other credit (cash/in-kind) for any of the other purposes mentioned in (1) above, last year (2002)?

YES □ NO □

If NO, skip to Section **E**.

6: If YES, for each source of credit that you borrowed from, answer the following Questions below **(Table D3)**:

a) Name the financial institution you borrowed from (RDB, PNGBC/BSP, Westpac, Savings and Loan Society, relatives & friends, moneylenders, traders, others).

For each source of credit, answer the following questions:

b) If you borrowed 'in-kind'; state the type of commodity or service you borrowed; and for d) and e) state the market value in Kina.

c) What was the purpose of the loan, as stated to the lender?

d) What is the loan amount you initially requested?

e) What is the amount of loan that you finally received?

f) When did you initially inquire about getting the loan?

g) When did you finally receive the loan?

h) Have you ever taken any loans from this lender before? How many times?

i) What is the PMV fare to the lender's office (or home in the case of informal lenders) from your home?

j) Did you need any collateral in applying for the loan?

YES □ NO □

If NO, skip to l)

k) If YES, what type of collateral was required by the lender:

House, Land title certificate, FFB fruit, Guarantors (by company, OPIC, friends & relatives), IBD accounts, trade store, and others.

l) Did you get the loan directly from the lender or through a group or other institutional arrangement *(through women's unions, farmers' associations, OPIC ... etc.)*?

m) What use did you make of the loan?

n) What were the terms of repayment (repayment interval and amount per interval)?

o) How much of the credit have you already paid back (all, more than half, some but less than half, or none)?

p) Do you have any close relatives working in any bank? If YES, identify bank:

7. For each of the credit that you took, answer the following questions **(Table D 4)**:

a) If you had to pay back the loan in-kind, state the commodity or service that will be paid back or due.

b) What was the market value of the commodity or service you paid back?

c) If you paid back in cash, how much was the interest payment? (if the loan has not matured yet, state the total interest payment due).

d) How much did you spend initially as an application fee?

e) Beside any application fee, how much did you spend in order to fill out the forms and be eligible for the loan? *(Include payments to an agent, if any, travel costs and /or other costs in connection with the loan, any other entertainment and bribes to expedite the loan. You do not have to categorise the payments, just state the total expenditure (Use aide memoire).*

f) How many days did you spend away from your normal work in connection with the loan? (This will include only work-days missed in connection with the loan. Do not include those days that you would not have been gainfully employed and you did not spend in connection with the loan). *(Time for travelling to and from*

the lender's place. Time at lender's premises. Time to finish all procedures in connection with the loan).

g) How many trips did you make to the lender in connection with the loan?

h) For each workday missed in connection with the loan, did you employ someone to replace you and at what rate? If you did not employ anyone, what would be the best estimate of your daily income forgone?

i) What is the maturity of the loan?

7. For those transactions which were **not** with ***formal*** lenders **(Table D 5)**:[41]

a) Why did you not obtain the loan from formal lenders? *Applied for formal loan but rejected. Did not apply for formal loan because of perception of a strong probability of being rejected. Did not apply for formal loan because did not want/know.*

b) What is the most important factor that led you to borrow from the stated semi-formal source (s)? Briefly explain.

c) What is the most important factor that led you to borrow from the stated informal source (s)? Briefly explain.

[41] Formal lenders are commercial banks and PNGRDB; Semi-formal lenders are savings and loan societies, micro-finance and micro-credit ; and informal lenders are moneylenders, friends and relatives and Rotating Savings and Credit Associations. NBPOL in-kind credit is semi-formal credit. Note that in the text, these different financial institutions were re-classified into three classifications: formal, informal and state interventionist financial institutions.

d) If informal source was friends and relatives, do you expect to give cash/in-kind credit/service/contributions after repaying the loan into the future? Yes/No and provide reason.

E. For those who did <u>not</u> borrow last year (2002) (Table E1).Excludes NBPOL.

1. Why did you not obtain credit from **formal** sector lenders?

   (Did not apply because no need for credit, applied but rejected, did not apply because perceiving a strong likelihood of being rejected, and Other reasons).

2. Why did you not obtain credit from a **semi-formal** lender?

3. Why did you not obtain loan from an **informal** source?

F: For all households: Assets held by the household

State the major assets that belong to the household in **Table F1 in response record sheet.**

G: Linkage/Relationship with Financial Institutions (Table G1)

1. Do you have a bank account?

   YES □ NO □

(a) If NO, provide reasons *(No need, applied but rejected, perceived rejection, high minimum deposit, do not know about banks).*

(b) If YES, state

(i) how many bank accounts,

(ii) name the bank(s)

(iii) types of account (s)

(iv) year when respective accounts were first opened:

2. Are you a member of any of the following financial institutions?

Savings and Loan Society, ROSCA, women's credit group,...etc.

YES/NO

(c) If YES, name of institution:

A2 Record of Response [42]

Date of Interview: _____

For Block-holders:

1. Area name: 2: Division Name:

4: Block No:

Profile of the Block Title Holder and the Household:

Table B1. Household Head and Household

Age (1)	
Sex (2)	
Main Occupation – in addition to farm (3)	
Education Level (4)	
No. members (5)	
Name (A,B,C,D) & Card No.(6)	
No. dependents (7)	
No. Work on Oil Palm block (8)	
No. of hours a week on blockwork per person (9)	
No. off- Oil Palm Block (10)	
Businesses Activities (11)	
Off Oil Palm monthly family income (12)	
No. children from block in school (13)	
Parents language group/province of origin (14)	
Position in community (15)	
Contribution to landowner activities (16)	

[42] Blackened represent that this data was obtained from OPIC and SAD.

C: Block Description

Table C1. Block Description

No.of Blocks (1)	LSS	VOP	CP
Registered Titles (2)			
YES, check rent book(i)			
NO, Reason (ii)			
Features of Block (3)			
Total farm area (a)			
Oil palm area (b)			
Year first established (c)			
Year of expansion & hectares (d)			
Year replanted & hectare (e)			
No. Fertiliser bags applied (f)			
Weedicide time/ No of times weed (g)			
No of hired labour & wage rate (h)			
Production items (i)	*Tick & State enough or not enough for your block*		
Wheelbarrow (i)			
Badang (mini tractor) (ii)			
Harvesting Kit (tools+Net) (iii)			
Spraying –Kit (iv)			
No.times OPIC advise(j)			
Attendance in 2002(k)			
FFB tonne in one harvest (l)			
Income in one month (m)			
In block Harvest Rotation (n)			
Share income with others (o)			
Harvest Rotation with others (p)			
FFB as loan security & loan purpose? (q)			
Land title as security for loan (r)			
Name the year (s) (i)			
Name of Bank each time (ii)			
Purpose of loan each time (iii)			
Loan amount each time (iv)			
Interest amount each time (v)			

Monthly land rental rate & Up to date (s)			
Other Crops (t)			
Future plans (u)			

D: Information on Credit

1. Reasons for credit needed most:

Table D1: In-kind Credit from NBPOL in 2002

Item	Quantity	Unit Price
Fertiliser		
Seedlings		
Badang (small tractor)		
Wheelbarrow		
Harvesting pole –8m		
Harvesting pole –10m		
Harvesting pole –12m		
Harvesting pole –14m		
Harvesting Sickle		
Harvesting Chisel		
Net		
File		
Oil Stone		
Knapsack Sprayer		
Weedicide		
Overalls		
Hand gloves		
Gum boots		
Facial mask		
Goggles		
Total Loan:	Amount repaid:	Amount Due:

Reason (s) for <u>not</u> borrowing & buying instead of obtaining from NBPOL:

From personal savings:

Borrow from (i) Bank:

(ii) Semi-formal financial institution:

(iii) Informal financial institutions:

Table D2: RDB Loan Amount

Loan Type	Year	Loan Amount	Amount repaid	Amount Outstanding
No, Reasons (a)				
Yes (b)				
Loan 1				
Loan 2				
Loan 3				

Table D3. Information on Credit

	Source (a)				
Type of commodity or service (b)					
Purpose of loan stated (c)					
Initially requested amount (d)					
Total amount finally received (e)					
When first requested loan (f)					
When finally received loan (g)					
No.of previous loans (h)					
PMV (i)					
Collateral required (j)					
Type of collateral /security (k)					
How to get credit (l)					
Actual use of credit (m)					
Terms of repayment (n)					

Amount repaid (o)					
Name of Bank (p)					

Table D4: Costs of Borrowing

	Source				
Type of commodity or service (a)					
Market value of commodity or service (b)					
Total interest rate or amount (c)					
Application fee (d)					
Travel and misc.entertainment expenses (e)					
No.of work-days missed (f)					
No.of trips (g)					
Opportunity cost of each-work (h)					
Maturity of the loan (i)					

Table D5: Credit Not from Formal Lenders

Why Not from Formal Lenders (a)	
Reason for Semi-formal source (b)	
Reason for informal source (c)	
Transactions after repayment (d)	

For those who did not borrow last year (2002).

Table E.1: Reasons for Not Borrowing (Excludes NBPOL credit).

Financial Institutions	Reasons
Formal (1)	
Semi-formal (2)	
Informal (3)	

F: For all households: Assets held by the household

Table F1. Assets Held by the Household

Asset	Estimated market value
Land (with title)	
Land (without title)	
House	
Vehicle	
Palm Trees (Age of trees: 22-years economic life)	
Spraying Kit	
Badang (Small tractor)	
Wheel Barrow	
Harvesting tools	
Tractor	
Fridge/freezer	
Television Set	
Video recorder	
Radio-Cassette	
Furniture	
Trade store	
Poultry	
Cocoa	
Copra	
Vanilla	
Off farm family income (monthly income):	
Savings (estimates):	
Monthly land rental (ME-VOPs):	
Monthly Royalty payments (ME-VOPs):	
NO of Shares (NBPOL and Others)	
Others	

Total Estimated market value:

G: Linkage/Relationship with Financial Institutions

Table G1: Linkage/Relationship with Financial Institutions

Has Bank account, YES/NO (1)		
NO Bank account, reason (a)		
YES, to Bank Account(b)		
How many bank accounts (i)		
Name the bank(s) (ii)		
Types of Bank account (s) (iii)		
Year when respective accounts were opened (iv):		
Financial institution member, YES/NO (2)		
YES, name institution (c)		

Appendix B List of in-depth interviews and group discussions

The following table provides a list of interviews and group discussions referred to in the text. The names of the persons are not disclosed for personal confidentiality.

Location	Organisation	Date	Person (s)
West New Britain	Oil Palm Industry Corporation Hoskins	21 July-9 September, 2003	Constant contact and discussions with all OPIC staff. This includes project Manager, Field Manager, Divisional Mangers, Lands section, extension officers, and staff at the main base located at Nahavio.
	Oil Palm Industry Corporation for Milnebay, Bialla, Popondetta, and New Ireland	27 August, 2003	Project Managers in Kimbe when they all attended a training program.
	Papua New Guinea Rural Development Bank - Kimbe	22 July, 2003	Branch Manager
	West New Britain Provincial Women's Council	29 August, 2003	Executives
	New Britain Palm Oil Ltd	24 July & 6 August, 7 August & 7 September, 2003	Company Secretary, Manager Smallholder Affairs Division & Mini-Estate Coordinator

Cocoa & Copra Growers Savings and Loan Society - Kimbe	31 July, 2003	Loans Officers
West New Britain Savings & Loan Society	13 August, 2003	Manageress
Hoskins Small Holder Oil Palm Growers Association	31 July, 2003	Executives
Village and Community	21 July-9 September,2003	Farmers and others with community responsibilities
West New Britain Provincial Lands Office	02 September, 2003	Lands adviser and Valuer
Bank South Pacific Ltd - Loans Manager	22 July, 2003	Loans Officer
Westpac (PNG Ltd) - Loans Manager	22 July, 2003	Sales Manager
Landowners	21 July-9 September,2003	Mini-estate and Customary purchase areas
Landowner Companies - Kavugara Development Corporation & Karato Ltd	31 July & 6 August, 2003	Managing Director & community Liaison officer
Provincial Department of Agriculture and Livestock	13 August, 2003	Provincial Adviser
Papua New Guinea Oil Palm Research	13 August, 2003	Director

	Association		
Port Moresby, National Capital District	Oil Palm Industry Corporation- Port Moresby	17 July, 2003 & 26 September	Corporate Affairs Manager & Special projects coordinator
	Papua New Guinea Rural Development Bank -Head Office	19 & 24 September, 2003	Smallholder Agricultural Credit Scheme Manager & Manager Policy and Planning
	Office of the National Custodian of Trust Land	24 September, 2003	National Custodian
	Registrar of Titles	15 September, 2003	Registrar
	Department of Lands and Physical Planning	15 & 23 September, 2003	New Guinea Islands Division & Director of Policy
	Bank of Papua New Guinea	22 , 24 & 25 September, 2003	Federation of Savings and Loan Societies, Savings and Loan Society Unit & Monetary Policy Unit
	Banks South Pacific Ltd	01 October, 2003	Managing Director
	Australia New Zealand Bank (PNG) Ltd	25 September, 2003	Managing Director
	Westpac (PNG) Ltd	25 September, 2003	Loans Administration - Head Office staff
	Attorney Generals	17 September, 2003	Former National Land Titles Commissioner
	Department of Agriculture and Livestock	17 September, 2003	Smallholder Agricultural Credit Scheme Coordinator & Director of Smallholder Support Services

	University of Papua New Guinea (UPNG)	24 September, 2003	Staff and students born and educated in the Hoskins project oil palm blocks
Kokopa, East New Britain	East New Britain Savings & Loans Society	10 September, 2003	Manageress
	Provincial Lands Office	10 September, 2003	Senior Lands officer
	Cocoa & Copra Growers Savings and Loan Society	10 September, 2003	Provisional Administrator
	Cocoa Marketing Board	10 September, 2003	Senior Economist
	Islands Regional Lands Office	10 September, 2003	Regional Valuer
Goroka, Eastern Highlands Province	Coffee Industry Corporation	30 September, 2003	Senior Economist, Smallholder Coordinator and Micro-credit Scheme Coordinator
	Liklik Dinau Arbitore Trust	30 September, 2003	Manager

Appendix C Sample of clan land usage agreement form

Form A 2L

CLAN LAND USAGE AGREEMENT

Date ..... 19.....

To the Rural Development Bank

We, the undersigned, being the representatives of the ..... Clan, hereby acknowledge that .....has the right under native law and custom for the whole of his life to use the land known as ..... (or more particularly described in the plan on the reverse hereof) for the purpose of .....with the right to receive the proceeds of crops, trees and palms grown, livestock grazed and/or business conducted on the said land. We certify that all members of the said clan agree to the truth of this certificate and that we are the persons authorised by the clan to sign it.

.....	.....	.....
Signature of Witness	Full name of clan Leader	His Signature /Mark
.....	.....	.....
Signature of Witness	Full name of clan Leader	His Signature/Mark

When term of loan exceeds 5 years the section below must be completed in addition to the above.

As Clerk of the .....Local Government Council, I am of the opinion that the above Clan is not prevented under native law and custom from giving the above certificate and that the signatures/marks are made by person authorized to commit the clan.

.....	.....	
Signature of Witness	His Signature/Mark	Affix stamp of Council here

or

As Clerk of the .....Local Government Council, I certify that a formal record of claimed rights in accordance with the above certificate has been recorded by the Council under the provisions of its Land Use Record Rule.

.....	.....	
Signature of Witness	His Signature/Mark	Affix stamp of Council here