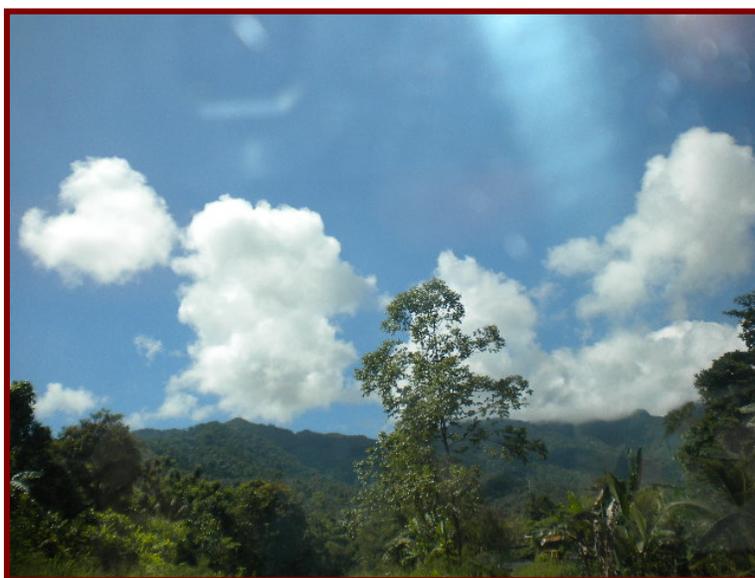


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DISCUSSION PAPER NO. 123**



**METHODOLOGY FOR MONITORING THE EFFECTIVENESS OF LAND
TENURE REFORMS IN PAPUA NEW GUINEA**



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**National Research Institute
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**METHODOLOGY FOR MONITORING THE EFFECTIVENESS OF LAND
TENURE REFORMS IN PAPUA NEW GUINEA**

by

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ABSTRACT

Assessing the effectiveness of land tenure reform for spurring development remains problematic, largely because of the absence of a counterfactual. This paper presents a baseline and research methodology designed to assist assessment of the effectiveness of land tenure reform in Papua New Guinea. Regular updating of the data is envisaged with the lessons from the analysis to be used in fine-tuning of policy. While the research methodology has been applied to a specific context, the implications of these findings may extend well beyond Papua New Guinea.

SECTION 1: INTRODUCTION

This paper describes a research initiative to create a baseline for a longitudinal database to facilitate assessment of the effectiveness of land reform in Papua New Guinea. This exercise is an integral part of a major land reform program now taking place. The land reform program was conceived in 2005, with contributions from the authors of this paper. It is due for full implementation by 2010. The goal of this research project is to monitor the effectiveness of the reform being undertaken with a view to feeding the lessons into policymaking. These lessons, moreover, should have applicability beyond Papua New Guinea. The authors are not aware of any reform programs designed and executed with the explicit goal of assessing effectiveness. Consequently, the effectiveness of reforms in general and land reforms in particular remain in dispute within the broader literature (Feder and Nisho, 1999; Deininger, 2003; Deininger and Feder, 2009).

Land reform as an instrument for spurring economic growth has been in vogue since the early 1970s. The important role that private property rights play in spurring economic growth has been extensively documented by economic historians such as North and Thomas (1973) and Rosenberg and Birdzell (1986). This line of analysis has influenced the thinking of commentators, policy makers and international donor agencies about land reforms across the developing world. The World Bank has sponsored land reform initiatives in many developing countries, including Papua New Guinea.

The Bank's official policy, first launched in 1975, emphasized a land reform agenda that focussed on the issuing of individual land titles (World Bank 1975). After more than three decades of experimentation, the Bank has shifted emphasis to tenure security (Deininger, 2003). Governments of the developing and transition economies are implementing different variants of land reforms, all motivated by economic, political and social factors (Deininger, 2003).

The literature has identified two channels via which land titling impacts development. The first draws on the microeconomic channel, linking tenure security to levels of investment and the supply of credit. These investments, in turn, are hypothesised to have a positive impact on land productivity, land prices and household income (Feder *et al*, 1988). The setting for this analysis was, in the main, the agricultural sector.

While the channels of causation between tenure security and land productivity are distinctive, they are complementary. The issue of secure land titles, it has been suggested, incentivises the titleholder to save and borrow for increased investment. The secure land title acts as the collateral for accessing credit. Formal financial institutions thus extend credit to meet both the investment and operational needs of the titleholder. The combined effect is increased productivity, higher land prices and higher income.

The second channel generalises the first, arguing that land reform triggers economy-wide strengthening of institutions for property rights and financial intermediation such that it raises investment and income in the economy as a whole (Byamugisha 1999a). Here, land registration is argued to underpin the development (and maturation) of land, labour and capital markets.

Land registration encompasses the issuance of land titles, the design of the systems of administration and the enforcement of property rights. This leads to increased supply of credit and concomitant increases in demand for capital and labour. Further, the creation of a system of land registration leads to a reduction in the transaction costs in land and credit markets. It is thus hypothesised that the registration process transforms land into a liquid asset, provides the incentives for investment and leads to growth in income and employment. The theoretical basis for this reasoning is sound but hard evidence in support of the conclusions remains elusive.

Several studies have been undertaken to test the hypothesis that land reform causes development. Byamugisha (1999b) used data from Thailand to test the link between land registration and financial sector development leading to economic growth. The results from this analysis supported the espoused link. Recently, de Moura, da Silveira Bueno and Loeny (2009) used this framework to analyse the impact of land titling policy on the use of child labour in Brazil. The results showed reductions in child labour force participation in families that received land titles. A problem with these studies is in establishing causation and controlling for the many confounding factors – issues that are difficult to address without a scientifically designed experiment. Debate over the effectiveness of these reforms revolves around the true counter-factual; an issue impossible to address in the context of most reforms.

The espoused link between land titling and productivity in the rural or agricultural sector has been tested extensively. However, the conclusions remain ambiguous. Test of the proposition from theory that titling leads to improved farm-level productivity (using data from rural Thailand) was promising (Feder, *et al*, 1988). A similar analysis using farm-level data from Papua New Guinea confirms this link (Chand and Yala, 2009). However, a review of decade-long literature that applied the framework by Feder and Nisho (1999) has shown that while studies from South East Asia and to an extent Latin America are supportive of the theoretical predictions, the results from Africa produced inconclusive results. Deininger's (2003) review of the literature on land policy and research reported findings similar to Feder and Nisho (1999).

Interest in land titling initiatives in the context of urban and peri-urban squatter settlements has gained momentum since the seminal work of de Soto (2000). Having valued the properties owned by slum dwellers in several developing country cities, de Soto concluded that the properties that the slum dwellers own are worth hundreds of thousands of dollars. Unfortunately, they are on land without titles. The issuance of land titles would breathe life into this 'dead capital'. Inspired by this argument, many developing and transition countries have initiated land-titling programs. Payne, Durrand-Lasserre and Rakodi (2008), who reviewed the literature that documented the social and economic impacts of land titling projects implemented within the urban and peri-urban informal sector, failed to provide conclusive evidence in support of the proposition that land reforms impact positively on development.

Deininger and Feder (2009) is the most recent and updated review of the empirical literature. In their review, Deininger and Feder describe the realities in many developing countries, including the governance environment, effectiveness of state institutions and socio-economic power that may undermine the impact of land reforms on development. They caution that land titling initiatives should not be seen as a panacea for development. This line of argument is made forcefully by Bromley (2008).

In summary, the empirical evidence fails to confirm, one way or the other, that reforms to land tenure lead to development. In terms of the impact on investment, savings, land values, land prices and incomes, the overall evidence is positive. Empirical evidence in support of access to credit is weak, however. Access to credit has remained restrained to the small loans end of the market (Carter and Olinto, 2003). However, what is emerging from the extant literature is the importance of understanding the operating environment such as the governance, political and social conditions and the impacts they have on the outcomes.

A major weakness of the empirical literature is the absence of a counterfactual, an issue that this paper aims to address head-on. Recently, de Moura, da Silveira Bueno and Loeny (2009) and Di Tella, Galliani and Schargrotsky (2007) tried to use a control group (those without title) and a treatment group (those with titles) to create what they claimed were natural experiments. While a marked improvement on past studies, this research drew on information from a single survey. Consequently, the contribution of factors inherent to the 'treatment group' is not fully addressed.

Those selected as having title, for example, may systematically differ in other attributes to those not having acquired title. Specifically, if acquiring title is costly, then those with titles, all else being equal, must be wealthier; thus, the effect of titling may be confounded by level of wealth in this natural experiment. A longitudinal analysis may ameliorate some of this effect. Furthermore, the existing empirical analysis fails to unpack the drivers or motivations for land reform policies. The World Bank noted economic, social, political and security reasons driving different variants of land reforms across the developing and transition economies (Deininger, 2003).

Evaluating the economic impacts of a land program that moved settlers to a new location and offered each settler land titles for the purpose of good urban development, for instance, is misleading. Finally, the dichotomous analysis between formal and informal arrangements is less than satisfactory given the continuum between the two (see Chand and Yala, 2006, 2008 for the spectrum of arrangements ranging from formal titles to informal arrangements made to acquire tenure security). Land tenure reforms may be delivering positive outcomes via the informal land, properties and financial markets. This could be the optimal outcome given the social, political and economic landscape of the country in question at that time.

The current literature is biased towards the formal end of the spectrum depicting successful outcomes. It may require a generational or a paradigm shift in the political, economic, environmental and social structure to transition from the prevailing informal arrangement to fully formal arrangements for tenure security. By focussing on a longitudinal data generation process, it is possible to capture the dynamics, including inter-generational impacts.¹

¹ For instance, the issuance of land titles without supportive institutions would undermine access to credit from the formal financial sector. However, this would trigger incentives for investment funded by personal savings and credit mobilised through the informal financial sector. This growth in investment may lead to improved housing and the development of a viable informal land market. The returns from investments within the marginal areas may be used to graduate the current tenants or the next generation into the formal land, properties and financial markets. Investment in housing also has the potential to impact positively on health and educational investments, as children are able to grow and be educated in a healthy home. This implies that the positive impacts maybe intergenerational and this may not be captured by a one-off sampling, which is commonly being undertaken in many of the current studies.

The preceding analysis justified the need to generate a time series so as to facilitate longitudinal analysis to inform the effectiveness of land reforms. This paper reports on an initiative created with respect to ongoing land tenure reforms in Papua New Guinea. It is envisioned that the updating of the data will continue for the foreseeable future with this information being placed on the public domain for scrutiny. Here the authors provide details on the design of the experiment and present data on the baseline.

The land reforms being undertaken in Papua New Guinea are an ideal candidate for this research, for five reasons. First, the authors are directly involved in the implementation of the land reform program and have the blessing of the Government of Papua New Guinea to undertake this study. Second, they are cognisant of the paucity of hard evidence, both in Papua New Guinea and more broadly, by which to assess the effectiveness of land reform. Third, the conception and formulation of the land reform program was informed by a review of the broader literature (Yala, *forthcoming*). Fourth, the Papua New Guinea land reform program is broad and comprehensive, aimed squarely at mobilising land for development. Finally, full implementation of the land reform program is expected by 2010.

The rest of the paper is structured as follows. Section 2 provides a brief background on Papua New Guinea, including a summary of past attempts at land reforms. Section 3 presents a detailed discussion of the methodology employed to construct the baseline that will be used for subsequent assessment of the effectiveness of the land reform. Section 4 presents the preliminary findings. Policy implications of these findings are drawn in the subsequent section and conclusions bring the paper to a close.

SECTION 2: CUSTOMARY LAND TENURE IN PAPUA NEW GUINEA AND THE PILOT AREA

This section provides a summary of the prevailing customary land tenure system in Papua New Guinea. It also describes the selection of a pilot for the proposed reforms to land tenure. The authors use the pilot and two similar areas outside of the pilot to create ‘treatment’ and ‘control’ groups. The controls are created so as to have a counterfactual with respect to two cultural groups that populate the pilot area proposed for the reform. This design allows use of difference-in-difference methodology to tease out the effect of tenure reforms on the levels of investment, employment and development.

Land in Papua New Guinea can broadly be classified into two major types – land held under formal tenure and land held under customary tenure. Approximately 5 percent of the land under formal tenure is administered by the Land Act (1996). The bulk, that is, some 95 percent is held under customary tenure and is administered by custom. With more than 800 distinctly spoken languages and 2 000 dialects, “*PNG approximates a perfectly fractionalised state*” (Fearon, 2003:205). Consequently, customary land tenure practices differ considerably across the country. Broadly, customary land tenure practices can be divided into two main groups – the matrilineal (inheritance passed along the female line) and the patrilineal (inheritance passed along the male line). Common to the two groups is the fact that the bundle of property rights residing within each is specific to and understood by members of the social unit. This understanding is passed down the generations through oral history. However, the system fails to facilitate transactions over land with non-members of the social unit.

More than half of the 5 percent of land under formal tenure belongs to the State.² This land was largely alienated from the traditional customary landowners by the colonial government. The State, however, also leases land from customary owners for public purposes. The rest of the land under formal administration consists of pockets converted to freehold by customary landowners using the Land Tenure Conversion Act (1963), special business leases issued under provisions provided for in the Land Act (1996) and special leases granted for major development projects such as those for mining, gas, petroleum and forestry projects. All land under formal tenure is administered through statutory law and the Land Act (Amendment) 1996 in particular.

The predominance of land under customary ownership in Papua New Guinea is a direct consequence of colonial policy. The British annexed the Southern end of Papua in October 1884 and appointed Sir Peter Scratchley as the Special Commissioner for the newly-declared Protectorate in November, 1884. In the letter of appointment addressed to Scratchley, he was directed to establish friendly relations with the natives and to explain to the natives ... “*that Her Majesty in taking them under her protection has their welfare in view, and that you are sent to secure them safety of their persons, the enjoyment of their property, and particularly to protect them from being deprived of their lands by force or defraud*” (Queensland Parliamentary Papers, 1885:1010). Both Scratchley and his successor, Hon. John Douglas implemented policies that protected the interests of the natives (Queensland Parliamentary Papers, 1886).

² At independence, approximately 3 percent of the total land had been alienated and administered formally. Post-independence, another 2 percent has been brought under formal administration where title to this land remains with the customary owners. This land has been accessed using the Lease-Lease-Back provision of the Land Act (1996).

The colonial attitude towards land policy was influenced by the broader policy to protect land for the indigenous people. In articulating the Land Policy for the protectorate, Douglas noted in 1886 that “*The land question is no doubt the cardinal one upon which almost everything connected with British policy within the Protectorate will turn. It is the Primary consideration, both as regards the present native inhabitants and those schemes of colonization which have at various times been suggested*” (Queensland Parliamentary Papers, 1886). While describing the land issue in the protectorate as “complex subject”, Douglas’ position was that, “... *the true interests of the natives and their advancement in the scale of life are not inconsistent with some encouragement being given to European settlement*” (Queensland Parliamentary Papers, 1886). The latter meant that land would need to be alienated with payments made to indigenous landowners for the delivery of public service and private enterprise development. This view was shaped through correspondences between Missionary settlers and the administration (Queensland Parliamentary Papers, 1886).

The official land policy was enacted into law as the *Land Regulation Ordinance 1888*. This Act protected foreigners from directly dealing with customary landowners. Instead, all land dealings had to be through the Administration. The Australian Administration which took administrative control over Papua New Guinea after the Second World War maintained this policy. For instance, the Minister for External Territories declared that the indigenous people would decide what to do with their land at the time of their choosing (Wright, 2002). At independence, on the 16 of September, 1975, Papua New Guinea inherited this policy. Consequently, the land policy and provisions from the *Land Regulation Ordinance 1888* remain part of the existing land laws dealing with customary land.

Throughout Papua New Guinea’s history, the quest has continued for an efficient, equitable and secure system for mobilising land held under customary tenure for development. Unfortunately, all past attempts to undertake customary land tenure reforms proved futile (Larmour, 2002, 2003). Furthermore, opposition to customary land tenure reforms during the 1990s and early 2000s degenerated into violence and destruction of property. The opposition to the Morauta Government-initiated land reforms in 2002, for instance, resulted in the death of four protestors, three of whom were students from the University of Papua New Guinea, and resulted in damages to property worth millions of Kina.³

In contrast, a recent Government of Papua New Guinea-initiated land reform program, which started in 2005 and is aimed at mobilising all (state, freehold and customary) land for development, has enjoyed some success (Yala, *forthcoming*). Unlike the previous attempts, this initiative invested heavily in the process of stakeholder consultation and information dissemination about the proposed reforms. There were three distinctive phases to the ongoing land reform initiative: conception, formulation and implementation. The conception phase saw the staging of a national Land Summit in 2005 (National Land Summit Coordinating Committee 2006) aimed at gathering stakeholders to identify the issues and explore options and strategies. The National Land Development Taskforce in 2006 formulated the recommendations from the Summit into strategies, options and frameworks for implementing a comprehensive land reform program (National Land Development Taskforce, 2006).

As of 2007, the program has progressed towards implementation under the National Land Development Program (National Land Development Program, 2007). There are four components to this program: namely, improving the system of land administration, improving

³ K1 = US\$0.3729 on 14 September, 2009.

the system of land dispute settlement, designing a framework for mobilising land held under customary tenure for development and establishing institutions for the development of a viable land and properties market.

A major milestone was achieved in March 2009 with the passage through Parliament of two pieces of legislations aimed at mobilising land held under customary tenure for development. These are the *Incorporated Land Groups (Amendments) Act 2009* and the *Land Registration (Amendment) Act 2009* (see Constitutional and Law Reform Commission, 2008 for details of these laws). The first law protects customary land for the social unit that claims rights to land by customary land tenure law. The second law is intended to facilitate transactions on the land so that individuals from within the same social unit, other Papua New Guineans and foreigners can access portions that the land owning social unit decides to deal on.

The boundaries for the customary land tenure reform were set by the Land Summit. The Committee on Customary Land Development (CCLD) for the National Land Development Taskforce (NLDT) worked within the set boundary to formulate a framework that would protect the interest of the customary land owning social unit but at the same time provide a framework for mobilising land held under customary tenure for development. The Constitutional and Law Reform Commission translated the original concepts into law.

Conceptually, those who claim rights to the land by customary law are formally defined as the owners of that land by the *Incorporated Land Groups (Amendments) Act 2009*. The *Land Registration (Amendment) Act 2009* permits the social land owning unit to lease an agreed portion of their landholding to others. The terms and conditions under which those interested in using the land can access these rights will be governed by statutory law, the *Land Act (Amendment) Act 1996* being the principal legislation. The stream of income generated from the sale of leases, annual land rents and a share of the various tax revenues flows back to the owners via their Incorporated Land Group (ILG). The *Incorporated Land Groups (Amendment) Act 2009* has provisions and penalties for non-compliance, with legislation designed to ensure transparency in the management of the ensuing incomes.

Linking back to history, it should be noted that the British, in enacting the *Land Ordinance Act 1884*, protected customary land from foreigners. The recently-passed *Incorporated Land Groups (Amendment) Act 2009* has gone a step further. It is protecting individual social units that claim rights to land by customary law against influential individuals from within the social unit, other Papua New Guineans and foreigners. Furthermore, the role of the state is confined to the administration of land titles, enforcement of property rights and addressing other binding constraints. This is expected to lay the basis for the efficient mobilisation of land, as the various channels depicted in the conceptual frameworks begin to function, thereby laying the foundation for sustained, broad-based economic growth and development in Papua New Guinea.

Land tenure system in the pilot and controls

A pilot project on instituting land reform is being planned within Taurama, a large, largely vacant, area within 10 kilometres of downtown Port Moresby, the capital of Papua New Guinea. Baruni and Tatana Island, the two control areas chosen for this analysis are within the same vicinity. The land tenure system and the specifics of the pilot are briefly discussed next.

The colonial policy of preserving native institutions and traditions was aggressively pursued in Port Moresby (Oram, 1976). The colonial administration however, alienated land from the indigenous owners as the need arose. Consequently, the land boundary created in 1971 remains to date as the official boundary of the National Capital District (NCD) within which the capital, Port Moresby, is located (See Map in Oram, 1976: 178). The land within the NCD is divided between land held under customary tenure and that under state ownership.

The land under customary tenure is owned by two ethnic groups. The present generations are descendents of the Motu and Koita people who were the inhabitants of the land that Port Moresby currently occupies. In 1873, a total of 11 villages were located along the Papuan coastline (see Map in Oram 1976: 3). By 1975, nine of these villages were incorporated into the NCD. Of the original nine, six villages—Pari, Kirakira/Mahuru, Vabukore, Hanuabada, Baruni and Tatana Island—exist as urban villages within the greater NCD. Because their land is under customary tenure, the villagers are exempt from the formal NCD town planning and building laws and regulations.

The Office of Urbanisation, the implementing agency within the National Land Development Program, has identified a portion of land in the Taurama Valley, which is under customary tenure, to pilot their policy of accommodating urban expansion on land under customary tenure using the recently passed customary land tenure reform laws. The Taurama Valley is prime land for urban development, being situated at the southern end of Port Moresby. The Motuans from the Pari/Taurama villages and the Koitabuans from the KiraKira/Mahuru villagers have customary land tenure rights over the entire valley.

At first, a survey was conducted in the landowning villages, Kirakira/Mahuru, Pari/Taurama beach and Taurama valley, to collect socio-economic data from a randomly chosen sample of households. Later, the survey was repeated in Tatana Island and Baruni, two adjoining villages but outside of the pilot (north of downtown Port Moresby). Thus, the Taurama pilot project inhabitants comprise our ‘treatment’ sample, while Baruni and Tatana are the ‘control’ groups.

The socio-economic surveys are to be repeated for the same households after the land reform is completed with a view to generating longitudinal data about the households and the customary landowning social units. The Taurama Valley land is populated by a mixture of two cultural groupings, namely Motu and Koita people. Tatana Island and Baruni are occupied by Motu and Koita people, respectively. Other than for the differences in cultural composition of the treatment and control groups, they have been affected by the same historical, political, social and economic factors.

Both the treatment and control samples contain migrants from other parts of Papua New Guinea. This group is part of a growing segment of the Port Moresby urban landscape (See Chand and Yala, 2006, 2008 and Koczberski, Curry and Connell, 2001). Settlers reside within the main villages, adjacent to the main villages, or within the greater area such as the Taurama Valley. The settlers were included in the survey.

The baseline data, together with future surveys updating this information for the same households, will be used to glean the impact of land tenure reforms on investment, employment generation and social and economic progress of the households. This will be done whilst accounting for the cultural composition of the samples and their initial conditions. The data collected in this exercise will be placed in the public domain for further

analysis and updating, thus forming the basis for evidence-based policymaking. The policy analysis is aimed at monitoring the effectiveness of the land reform program. The empirical analysis will contribute towards the broader literature on the economics of land reform. The specifics of survey design and the database generated are discussed next.

SECTION 3: BASELINE SURVEY DESIGN, EXECUTION AND DATABASES

The logistics of conducting surveys in this environment is both demanding and resource-intensive. Thus, a balance had to be struck between the minimal number of households that could be surveyed for robust statistical analysis and the cost of the above. Resource limitations (funding and time) and safety considerations restricted the baseline data collection to random sampling rather than a survey of the entire population of households in each of the locations. Therefore, care was taken to ensure that the sampling process produced a representative sample. The methodology used was well thought out, planned and executed so that quality of data was maintained without compromising time, costs and personal safety.

The sampling frame included everyone within the defined territorial boundaries. Household heads were randomly selected and interviewed with their consent. The practical challenges facing the sample selection process included the following: the area of coverage was large, there were great personal risks, budget and time were limited and there was no prior knowledge of the population. From the limited data available, the authors were aware that the population for the control group was half that of the treatment. Therefore, the authors adopted stratification by groups of 50 and 25 homesteads for the treatment and control groups, respectively. From the stratified population, 10 percent of the households were selected for interview. This meant that five households in the case of the treatment and three in the case of the control group for each stratum were selected. To select the actual household, five and three random numbers, respectively, were generated from the set of numbers between one and 50 and one and 25, respectively. To identify the actual household selected, the authors counted houses from one end of each village. In the case of the treatment group, the counting started at one end of Mahuru and progressed to Kirakira, Taurama Beach, Taurama Valley, and ended at Pari. With respect to the control group, the counting started at the far end of Tatana Island, then to Baruni and ended at Koukou village.⁴ The household number from the counting that matched the randomly generated number was included in the interview list. A reserve list was generated and was used when the first identified interviewee could not be identified after three attempts or when the household head declined to be interviewed. Those who refused to be interviewed or were absent from the reserve list were dropped from the survey. This explains why the number of completed questionnaires is less than the 10 percent target from the stratification process, as depicted in Table 1.

Through this process, a total of 107 (8 percent) questionnaires were completed out of a total population of 1,300 in the treatment group. In the control group, a total of 68 (11 per cent) questionnaires were completed. The two groups are equally well represented. The interview team was organized into five groups of four and four groups of three for the treatment and control groups, respectively. Each team interviewed one household. The interview team was drawn from a group of 20 students from the University of Papua New Guinea (UPNG) who were provided training over two days (15-16 October 2008) for this exercise. As part of the training, the questionnaire was first piloted by the interviewers as part of their training. The surveys were completed within the space of one year. The survey of the treatment group was administered from 6th to 10th November, 2008. The survey of the control group was undertaken on 7th to 10th September, 2009.

⁴ For reasons of personal safety, pockets of Vadavada, the settlement between Kirakira and Mahuru, and the settlement between Baruni and Koukou were excluded. We do not anticipate the excluded population to be significant enough to introduce a bias in our sample.

Three types of data were captured: the socio-economic data collected through the administration of the questionnaire; a photograph of the house was taken on a digital camera; and the Global Positioning System (GPS) coordinates of the house was recorded. The GPS coordinates is to be used in updating the records via subsequent surveys while the picture of the house is to provide an image of any improvements made to the dwelling over time.

The drafting of the questionnaire was guided by the broader literature on the economics of land titling. Therefore, the questionnaire captured data on the profile of the household head, the socio-economic status of the household, relationships with the Taurama Valley land for the treatment group and land settled upon for the control group, assets of the household and their access to basic services and credit.

In linking the broader literature to the Papua New Guinea land reform, this pilot project provides us the opportunity to monitor the impact of the customary land tenure reforms at the household level for those who have rights over this land by customary law. The variables in the questionnaire will be tracked with repeat surveys. Both settlers and customary landowning social units were captured in the survey because the authors are interested in creating a baseline aimed at monitoring the effectiveness of the broader land reform program overtime. This also allows tracking of the composition of the population and its dynamics.

The data has since been uploaded onto three databases. The first consists of the socio-economic data, the photograph identifier and the GPS location all stored in Microsoft access and Excel. The second contains the photographs only. On the photograph are the household identifiers used in the questionnaire, the date and the GPS location. The third, and consolidated, data set is stored on *Google Earth*. A snapshot of the last is shown in Figure 1. Furthermore, the database on Google Earth is interactive when connected to the internet.

SECTION 4: PRELIMINARY FINDINGS ON THE BASELINE

A summary of the key variables for which data was collected via the survey, and now comprising the baseline, is presented next. The summary statistics are confined to household characteristics, access to basic services, asset ownership, access to credit and householders' perceptions of the impacts that land reform is likely to have on their welfare.

Household characteristics depicted in Table 2 show that the typical household within the treatment and control groups is headed by a male aged 46 with High School level education. The first hypothesis to be tested is that the impact of the land reform raises investment in schooling. The literature reports that a successful land reform program leads to increased investment in education. The second hypothesis to be tested is the impact of land reform on household size. The literature suggests that successful reforms lower the number of people per household. Third, improvements in the dwellings will be tracked. The theoretical literature postulates that improved tenure security will lead to greater investment in physical assets.

Access to basic services is expected to improve for the treatment group after having developed their land through the pilot project. At the present, as indicated from the data presented in Table 3, the households from the treatment group, like their counterparts from the control group have poor sanitation (toilet) and drinking water. With respect to toilets, they are heavily reliant on pit toilets and direct disposal into the sea. While the majority of them have access to electricity, access to landline phones is negligible. Marked improvement in the use of flush toilet or improved toilets and direct access to reticulated water and sewage systems, relative to the control group, would indicate positive impacts of land reform. It is difficult to speculate on access to landline telephones because rapid changes in technology may deliver cheaper and more reliable wireless phones, with broadband internet.

An indicator of a successful land tenure reform program would be a marked improvement in asset ownership in the treatment group relative to the control group. In order to facilitate such a comparison, Table 4 presents data on asset ownership. The asset-type is divided into three categories: housing, other physical assets and financial assets. The standard of housing varies considerably, reflecting largely the income levels, because property developments on land held under customary tenure are exempt from town planning and building standards. The survey questionnaire took into account these considerations and categorized the houses accordingly. Four separate classifications are used to designate the type of dwelling; namely, (i) permanent housing – a modern dwelling with complete modern structural framework including iron roofing and walls made from timber or prefabricated material; (ii) semi-permanent housing – an incomplete modern dwelling, for example, incomplete walling or roofing; (iii) shack – a dwelling that has been built using a mixture of materials, for example, a mixture of corrugated iron sheets and plastics used as walling; and, (iv) traditional material – entirely made from traditional building materials, for example, a sago thatched roof with timber cut from the forests. The data reveals that 39 percent in the treatment group and 44 percent in the control group have permanent housing.

With respect to other consumables, the baseline survey results indicate sewing machines (50 percent), radios/ stereos (63 percent) and TV sets (55 percent) ranking high in both groups. The absence of other household items is notable. High-cost items such as vehicles and banana boats rank low. It is encouraging to see that a certain proportion has financial assets in the form of shares and term deposits in bank accounts and property investment within the formal

housing market. A marked improvement in the ownership of a variety of household items, high-cost goods and financial assets, relative to the control group would imply successful reforms to customary land tenure, particularly in the Taurama pilot project.

The status-quo with respect to access to credit presented in Table 5 shows that the majority of household heads from both groups did not submit loan applications to the formal financial sector institutions. Of those who did submit an application, their access to credit was restricted to personal use, including school fees. The success rate in securing credit from the formal sector was high amongst those with formal employment.

One way of projecting the future trajectory is capturing the perception of each interviewee. The interviewee from the treatment group was asked to disclose his/her association with the portion demarcated for the pilot project, their expectations about the impact this project would have on their own and the community's welfare and how the additional income generated should be spent. With respect to the control group, the question related to their association with the land that their community owned, how incomes generated from any developments on their customary land should be managed and their expectations about the plausible impacts on their own and their community's welfare. The survey information depicting the response to this question is presented in Table 6.

The response from the treatment group shows that only 42 percent have direct landownership rights over the portion identified for the pilot project. The rest have either married into the principal landowning clan, are members of the wider tribal grouping, or are settlers from other parts of Papua New Guinea. With respect to the latter, 27 per cent declared no links, either direct or indirect, to this portion of land. Within the Taurama Valley population, for instance, about 61 percent are settlers. When asked about the household head's perception of the kind of impact expected from the development of customary land, the response from the treatment group demonstrated strong perceptions of positive impact on household welfare (72 percent) and community welfare (79 percent). In terms of how the income generated from developing customary land should be invested, the survey data revealed that 51 percent of the households from the treatment group wanted the bulk of this money invested in education. This is followed by 14 percent preferring investment in other business enterprises. Note that education has a high priority (38 percent), even for the control group. These results suggest that customary landowners from within these communities are placing greater emphasis on education. The response of 'being unsure' ranking amongst the top three ranges in both groups is capturing the views of those who are not directly linked to the landowning social units, especially the settler population.

SECTION 5: POLICY IMPLICATIONS

Papua New Guinea has conceived and formulated and is now implementing a land reform program that is broad and comprehensive. The aim is to mobilize land for development. To achieve this, the program constitutes improvements to land administration, land dispute settlement, customary land tenure reform and establishment of institutions that would drive the development of a viable land and properties market. These attributes make the Papua New Guinea land reform unique.

While the literature argues that land titling programs create incentives for investment and improve access to credit from formal financial institutions, the evidence in support of these claims is less than robust. The database created through this project will help settle some of these disputes.

This, however, is the beginning of a long-term research project. Monitoring the effectiveness of the Taurama pilot project in delivering impacts on the customary landowning social unit will require regular updates using the survey and the methodology used to create the baseline. More importantly, the baseline data and the control group allow for the creation of the counterfactual, that is, what would have been the outcomes for the relevant variables in the absence of the reforms. Finally, a difference-in-difference methodology will allow us to decipher the contribution of reforms to land tenure in Papua New Guinea on development. Having said this, a number of caveats are in order.

First, because this is a state-sponsored pilot project, political and related factors could work to undermine the effective implementation of the pilot project. While monitoring this is part of ongoing research, the authors will be able to monitor developments on the control group. Private sector led development of land owned by the control group could lead to better outcomes. This baseline will also allow tracking of such possibilities.

Second, because the landownership remains vested in a group and the stream of income from releasing land accrues to the Incorporated Land Group, principal agency type problems, fuelled by asymmetry of information, could lead to increased rent-seeking, corruption, endless court battles and disputes. Being aware of these possibilities, attention has been paid to the corporate governance structure and penalties for non-compliance with the legislation. However, ongoing research and monitoring will be required to monitor the way in which the land groups conduct their business.

Third, inefficiencies in other aspects of land administration could undermine successful implementation. Monitoring the interface between the various agencies and institutions, and such problems as the delay in the establishment of vital institutions, may undermine effective implementation and positive outcomes.

Fourth, similar baselines are to be created in other cities and towns and other sectors such as the agricultural sector. Given the diversity of the country, it will be important to monitor how the customary land tenure reform is being accepted and applied in different parts of the country. Furthermore, the legal framework may apply in some industries or sectors only. It is for these reasons that ongoing research of this kind needs to be made integral to the overall land reform program.

SECTION 6: CONCLUSION

This paper describes the beginning of a research project aimed at creating a baseline of information that, when regularly updated, will allow assessment of the effectiveness of the land reform being undertaken in Papua New Guinea. The analysis has the potential to provide the evidence base for policymaking in Papua New Guinea and more broadly. Some of the envisaged benefits from this work are enumerated below.

First, this line of research will generate longitudinal data and analysis that could help refine the land reform program. The existing literature has utilized one-off survey data for empirical analysis. Longitudinal data has the potential to expose the various channels at work in making land reform deliver (or fail).

Second, Papua New Guinea is implementing a land reform initiative that is distinctively different from others. The Papua New Guinea reform program is broad and holistic. It encompasses reforms to customary land tenure, improvements to the system of land dispute settlement, improvements to the land administration system and the development of market-enhancing institutions aimed at driving a viable land and properties market. The program has a clear aim and that is to mobilize land for development. This research could expose bottlenecks in the system and indeed, is an objective of the project.

Third, the existing empirical analysis is biased towards individual land titling. This is an inevitable outcome because land reform policies have emphasized individual land titling. For instance, until 2003 (Deininger, 2003), the World Bank's policy emphasis had been on individual land titling since the launch of its first policy in 1975 (World Bank 1975). Fitzpatrick (2005) has analyzed modalities for mobilizing land under customary tenure. Deininger and Feder (2009: 24), in their recent review highlighted that the existing analysis neglects group rights and the management of land by the state. This line of research and others that result from the Papua New Guinea land reform program stand to contribute to this gap in the literature.

Fourth, Papua New Guinean customary landowners, who claim rights to the majority of the land in the country, could graduate to being landlords, once the customary land tenure reforms are fully implemented. The role of the state would then have diminished to defining and enforcing property rights through the system of land administration and a land court system. An optimistic scenario envisages investment, employment and household income all increasing as a result of the land reforms being instituted. This would provide the foundations for broadly-based economic growth and development. In this context, this particular baseline survey, using control and experiment groups, is intended to monitor the effectiveness of the land reform program at the household level of a customary landowning social unit. Marked improvements in educational attainments, housing, access to basic services, asset accumulation and access to credit would demonstrate a positive outcome. The reverse would suggest failure.

This is a unique opportunity for testing the effectiveness of land reform. The reform is in a nascent stage, the authors have the full support of the Government of Papua New Guinea and the tools and capacity exist to monitor the impact of the planned reform. Creating a baseline of the kind envisioned, especially prior to implementing the policy and monitoring its consequences is a rare privilege – a privilege the authors would like to extend to others who may want to follow in this work. Indeed, institutional collaboration between the

implementing agencies, academic institutions and the wider stakeholder community in Papua New Guinea under the leadership of the National Research Institute (in Port Moresby) and the University of New South Wales (UNSW) provides reason for hope.

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APPENDIX**Table 1: Population and Sample Size**

Survey Sample	Total Household Population	Sample in number ⁵	Completed questionnaire as proportion of total population (%)
Treatment	1,300	113 (107)	8
Control	595	68 (68)	11

Table 2: Household Characteristics

Survey Sample	HH ⁶ -Head (%)		Education Level (%)		Average Age of HH-head	Average Number of people per HH	Employment in formal sector (%)	Average Number of dependents ⁷	Average Number of children at school per HH
	Male	Female	High School	University					
Treatment	80	20	36	7	46	8	35	3	2
Control	87	13	54	3	46	10	47	4	3

Table 3: Access to Basic Services

Sample	Toilet Facilities		Drinking Water- Outside using a standpipe from city supply (%)	Electricity (%)	Telephone (%)			
	Pit (%)	Sea (%)			Yes	Landline	Mobile	Both
Treatment	61	13	54	62	77	1	81	2
Control	26	44	69	74	97	1	94	1

Table 4: Asset Ownership

Sample	Vehicle (%)	Type of Houses (%)				TV Set (%)	Radio/Stereo (%)	Refrigerat or (%)	Sewing Machine (%)	Banana Boat (%)	F/Assets ⁸ (%)		
		P ⁹	SP ¹⁰	Shack ¹¹	T ¹²						IS ¹³	TD ¹⁴	FP ¹⁵
Experiment	16	39	42	19	0	55	63	32	50	16	9	24	11
Control	19	44	26	12	0	66	66	41	56	24	7	37	12

⁵ The figures in brackets indicate completed questionnaires.

⁶ HH refers to 'Household Head' who is defined to be the 'bread-winner'-he/she makes investment decision, earns income, and provides for the household.

⁷ Dependent is defined as 'a child who is less than 15 years of age or an adult who is more than 65 years of age' or 'a person who is disabled and incapable of taking care of their needs'.

⁸ F/Assets – means Financial Assets.

⁹ P - Permanent

¹⁰ SP - Semi-permanent

¹¹ SH - Shack;

¹² T - Traditional housing.

¹³ IS –Investments in the Share Market.

¹⁴ TD –Term Deposits at the Banks.

¹⁵ FP –Owning a property in the formal property market.

Table 5: Access to Credit

Sample	Applied for loan (%)	Approved (%)	Financial Institution				Purpose of loan (%)				
			Commercial Bank	Development Bank	Microfinance Institution	Non-Bank lenders	Personal	School Fees	Business	Housing	Other
Experiment	14	86	36	0	14	50	36	43	7	14	0
Control	25	94	76	0	0	24	41	41	6	12	0

Table 6: Landownership Status and Preference for Expenditure

Sample	Principal Landowner (%)	Other relationship (%)	Preference for expenditure (%)					
			Education	Health	Further land development	Business enterprise	Distribute To beneficiaries	Not sure
Treatment	39	61	51	6	8	14	7	14
Control	75	25	38	1	7	9	24	21

Figure 1: Google Earth Database from the Taurama Valley Pilot Project Treatment Group