Abstract:
The idea that rural people must be ‘moving from subsistence to the cash economy’ is just one of the myths perpetrated by ‘old school’ economics. In fact, most Papua New Guinean families have engaged in both cash economies and subsistence for many decades. With its focus on finance and the formal and export sectors, and its obsession with GDP, the ‘old school’ fails to properly account for the full range of subsistence production, social exchange, informal markets, small business and supplementary export crops that underwrite most rural livelihoods. This paper indicates the destructive role played by ‘old school’ in PNG, particularly in debates over land and agriculture. By contrast, a ‘new school’ re-focuses on livelihoods, uses human development indicators and takes seriously ‘ecologically sustainable development’. Only such a revised focus is capable of recognising the emerging ‘hybrid’ livelihoods which form the basis of PNG’s mainstream rural economy and offer the best future options. With reference to ‘land reform’ debates and an empirical study of comparative rural livelihood options, this paper demonstrates the importance of shifting the economic paradigm in PNG.
Land and livelihood economics in Papua New Guinea – shifting the paradigm

One of the most persistent myths in development is that people linked to traditional lifestyles must be in a process of ‘moving from subsistence to the cash economy’. This expression comes not only from finance agencies (e.g. World Bank 1962) but also from analysts with greater sensitivity to livelihoods (e.g. Falconer and Arnold 1988: 3). Yet the idea neither describes current livelihood realities nor the better future possibilities. Most Papua New Guinean families have engaged in cash economies for many decades, so as to purchase fuel, supplementary foods, clothing, and school and college fees. Yet this has not reduced the general reliance on family land for basic food, housing, natural medicines and many other needs. In fact, subsistence production and cash economies are both elements of more complex hybrid livelihoods, which are resilient precisely because of their various, adaptive combinations; and their base in PNG is in customary land.

The myth of ‘subsistence to the cash economy’ is one of the legacies of ‘old school’ economics, which actively obscures many of the economic realities of everyday life. With an agenda of ‘aggregate growth’ in the national economy, and consequently privileging large corporations and export industries, this logic fails everywhere; but especially so in a country like Papua New Guinea, with large rural populations, large subsistence sectors and large informal economies. If people matter at all in economics, Papua New Guinea’s mainstream economy mostly involves family livelihoods based on diverse agricultural production. Only a ‘new school’ economics, which re-focuses on family livelihoods, human development indicators and ‘ecologically sustainable development’, can appreciate this.

The ignorance sown by ‘old economics’ is legion. For example, a booklet by the Bank of the South Pacific wrongly asserts: ‘agriculture (coffee, cocoa and copra) provides a subsistence livelihood for the bulk of the population (about 75% of PNG’s population)’ (BSP c.2010: 21). In fact, most agricultural production in PNG is focused on vegetables, fruit and other fresh produce. The three export crops mentioned have almost nothing to do with ‘subsistence’: people eat very little coffee, cocoa and copra. The BSP goes on: ‘The driving force behind commercial agriculture in Papua New Guinea has always been the export crops’ (BSP c.2010: 21). Wrong again. Even in commercial agriculture, for most PNG families export crops come a distant second to domestic crop sales.

There are some more general problems with ‘old school’ economics. With its focus on finance and the formal sector:

- It does not take proper account of ‘subsistence’ production, or ‘social exchange’;
- It fails to adequately measure domestic, informal market activity; and
- It does not take into account the broader costs of formal market activity, such as the chemically intensive monocultures, like oil palm.

In PNG, combinations of subsistence alongside informal cash markets and small businesses, supplemented by export crops, remain at the core of rural livelihoods.

If economics has any relevance to the PNG experience, it must pay regard to the emerging ‘hybrid livelihoods’ amongst the majority rural population. Such hybrids are not unique to PNG. Amongst small farmers in Thailand, for example, researchers have shown that ‘subsistence’ in its limited
sense barely exists, because rural households have diversified into ‘hybrid’ livelihood activities which include various farm and non-farm activities (Rigg and Nattapoolwat 2001: 955). Looking at indigenous Latin American experience, Bebbington (1999) suggests that shifting and more complex rural livelihoods make use of a range of assets, resources and markets. Similarly, Warren (2002: 11) says that ‘enterprise-based diversification’ (as opposed to wage labour) may better help build sustainable rural livelihoods, particularly when there is a basis in assets, supportive structures, access to markets and resilience against market failure. The UN’s Food and Agriculture Organization (FAO) also supports rural livelihood diversification.

The modernist idea of ‘subsistence’ as ‘bare survival’ hardly exists in PNG. Subsistence underwrites many quite valuable rural livelihoods. It is commonplace to find Papua New Guinea families engaged in subsistence production and consumption, social exchange, local cash crop markets, small businesses, employment and export crop production. If they are not engaged in all six of these, they will be involved in several.

In the hope of contributing to a better understanding of land economics and rural livelihoods in PNG, this paper (which draws on material in my forthcoming book ‘Land and Livelihoods in Papua New Guinea’) looks at a necessary shift in economic perspectives, considers the absurd logic of some recent ‘land economics’, charts some of the comparative rural livelihood options and then characterises hybrid livelihoods.

1. Land in ‘old school’ economics

The ‘old school’ relies on aggregate growth measures (such as GDP), privileges large formal sector activities and promotes ‘market formation’, including in land. The ‘new school’ – while recognising the role of the formal sector and public finance – has its main focus on human well-being and family livelihoods, takes seriously sustainable ecologies and considers the ‘human development’ indicators as of greater relevance than GDP.

The limitations of GDP, as an economic indicator, could be spoken of in three main areas: problems of economic formalisation, distributional issues and environmental concerns. ‘Growth’ oriented strategies typically favour the rise of new, formal economies, private businesses with formal employees and, with the neoliberal emphases of the 1980s, export industries in particular. However this emphasis ignores, undervalues and often actively displaces promising ‘hybrid’ livelihoods. Growth strategies are also blind to key distributional issues, including the marginalisation of large populations and the development (or not) of critical shared services, such as in education and health.

All this has important implications for old school ‘land economics’, which is in turn linked to colonial and post-colonial ‘modernisation’. In East Africa (Uganda, Zimbabwe, Kenya, the Sudan) in the late colonial era there were moves to change land tenure in the name of agricultural productivity (see Platteau 1996). They failed in most of their stated objectives. This British program was based on the notion that the privatisation or ‘enclosure’ of land was essential to successful agriculture, and that ‘African traditional forms of land tenure were often incompatible with ‘good farming’, essentially because of their small scale (MAAHWR 1956: 1, 5). Kenya’s Swynnerton Plan developed a land registration process (Swynnerton 1955) which carried on after independence in 1963. The stated goal was ‘developing African agriculture’, by providing ‘greater
security to landholders, enhancing the freedom to transact land and serving as a basis for agricultural credit’ and, in response to indigenous rebellions, ‘to create a class of African freeholders, yeoman farmers’ who would have a stake in the regime (Dickerman et al 1989: x-xi). The Swynnerton arguments are essentially the same as those used today by the World Bank (e.g. Deininger 2003).

However Okoth-Ogendo concluded that any the benefits from Kenyan land registration were outweighed by specific disadvantages: the redistribution of political power, creation of economic disparities, generation of a ‘disequilibrium’ in social institutions, failure to develop extension and rural credit, and a general failure to improve agricultural productivity. Of the new registered land owners, less than 5% were women; further, the new land regime was ‘creating new forms of stratification and status differentials’ amongst small farmers (Okoth-Ogendo 1982). Another critique of the Kenyan process found failures in tenure security and access to formal credit and little improvement in crop yields (Place and Migot-Adholla 1998: 360, 368, 371). Yet another found that ‘the hoped for benefits of registration do not accrue automatically and, in some circumstances, the effects of registration may be the converse of those anticipated’ (Cotula et al 2004: 3).

Nevertheless, economists attempted to breathe new life into land rationalization. Boserup’s (1965) idea of capitalising land was picked up by other economic liberal ‘modernisers’. For example Deininger and Feder (1998: 35), following Boserup, backed the liberal evolutionist idea of a ‘transition from traditional to [individual] private property rights’ to help ‘productivity enhancing land-related investments’. They concede that ‘traditional systems are associated with a wide range of equity benefits not all of which can normally be preserved in a system characterized by private land ownership’; but they nonetheless extend the ‘evolutionary’ logic, which suggests no real future for customary management.

In a similar way, yet claiming a developing country voice, Peruvian-born Hernando de Soto urged greater formalisation of property rights (De Soto 2000). He argued that failures in such formalisation held back capitalism in developing countries. Clearly documented property rights were an essential foundation for systems of credit, share ownership, contracted services and so on. ‘Capitalism requires the bedrock of the rule of law, beginning with that of property’, he argued (De Soto 2002: 349). De Soto followed the British in East Africa, Boserup, Deininger and others in clamimg that the ‘greater security’ of (registered, individual and transferable) land tenure would stabilise investment and help increase agricultural productivity and the growth of formal economies. Yet it has been pointed out, a number of times, that imported models of formal rights are ‘too often … not grounded in local realities’ and can make things worse for ordinary people (Meinzen-Dick 2009: 5; see also Lavigne Delville 2006: 18-19; Hunt 2004: 174). A South African study observed that greater formal property rights had not increased tenure security, nor promoted greater lending to the poor, and had instead been expensive, exposing many poor people to homelessness (Cousins et al 2005: 4).

Land modernisation in the Pacific persists, based on similar arguments and backed by powerful interest groups. This is despite a failed attempt, in the colonial era, to port the ‘Kenyan model’ to Melanesia (see Larmour 2002). For example, the World Growth Institute (WGI) and International Trade Strategies Global (ITS Global), contracted by logging, wood pulp and oil palm industries, present arguments on the value of giving over Melanesian land to those ‘high productivity’
industries (see ITS Global 2011). These studies have not thought it necessary to demonstrate how, for example an oil palm plantation is ‘more productive’ than the diverse production of small farmers. They just assume this. Their own frameworks are too limited to allow any empirical comparison.

Similarly an Australian corporate ‘think tank’, the Centre for Independent Studies – backed by banks and mining companies – regularly produces reports asserting the need to convert customary land systems into individual property rights regimes. For example, Helen Hughes (2004:4), backed by the CIS, simply asserts that customary land is ‘the primary reason for deprivation in rural Pacific communities’. She does not attempt to prove such a claim. Referring to the Solomon Islands, Gaurav Sodhi, also backed by the CIS, likewise argues ‘Agriculture is the key … without land surveys, registration and long term leases there can be no progress’ (Sodhi 2008). The assumption here is that the only ‘agriculture’ that matters in the Solomon Islands is the corporate plantations. Yet these export oriented monocultures (mostly oil palm) neither feed nor provide the majority of income for the most Solomon Islanders.

From colonial East Africa to Melanesia we have seen repeated modernist claims, backed by the logic of ‘old school’ economics. These themes are characterised in the table below, alongside some similarly characterised themes of what might be called the ‘new school’.

<table>
<thead>
<tr>
<th>Table 1: Measuring productivity and achievements: which economics?</th>
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<tr>
<td><strong>‘Old school’ economics</strong></td>
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<tr>
<td>Growth of a national economy</td>
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<td>Large corporations, formal markets</td>
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<td>Export sector privileged, future and ecological costs ‘discounted’</td>
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<td>Financialised measures (GDP, profits, foreign investment, aid, taxation)</td>
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The ‘new school’ themes both address deficiencies in the ‘old school’ and reconceptualise the economic problem. In the first place there is the idea of a more inclusive economy, where people, their livelihoods and their ‘capabilities’ (Sen 1983; Sen 1999) are at the centre. Second, the demands of a broader and more diverse ‘economy’ means that the focus is on addressing domestic needs first, including the requirements of social systems, domestic markets and local ecologies (e.g. Shiva 1993). Finally, this new more inclusive and human-focused view of an economy needs other measures, a need which is to some extent met by the human development indicators of the UNDP, popularised since the early 1990s (UNDP 1990) and now to some degree incorporated in the Millennium Development Goals (MDGs).

The newer economic approaches, looking beyond modernist assumptions, are more able to recognise the contributions of customary land systems. They might be able to see that these systems remain vehicles for food security, housing, widespread employment, social security, biodiversity protection, ecological stability and a store of natural medicines, as well as a source of social cohesion and inclusion and cultural reproduction (see Lee and Anderson 2010). These customary systems address a number of the ‘capabilities’ referred to by the human development
indicators, and embody elements of what elsewhere has been called the ‘multifunctionality’ of small farming: where small and diverse rural social and productive relations make multiple economic and social contributions, many of which lie beyond the scope of formal economies (Rosset 2000; Moxnes Jervell and Jolley 2003). In fact, fuller studies of customary systems can illustrate and test out the new productivity arguments over small farming.

Nevertheless, modernist ‘land reform’ programs persist, driven by commercial interests and modernist mindsets. These programs insist on the economic benefits of registration, individual property rights and commercial land markets. The enthusiasm for such ‘reform’ seems barely dampened by the serious environmental and social problems catalysed – in PNG and elsewhere – by land rationalisation and the chemically-intensive monocultures (see e.g. Shiva 1993; Kimbrell 2002; Altieri 2004). Let’s turn now to some of the applications in PNG of this narrow economic logic.

2. ‘Land economics’ in Papua New Guinea
Contemporary arguments for formal land markets in Melanesia come from the international aid agencies (e.g. AusAID 2000; AusAID 2008), companies with direct interests in resource extraction, foreign academics and some Melanesian government officials. The arguments address economic growth, government revenue and development finance. Only occasionally and in a very limited way do they touch on family livelihoods.

For example ITS Global, an Australian company contracted by the peak logging group in Papua New Guinea (which is dominated by Malaysian companies), has prepared a series of reports that argue the case for logging and oil palm plantations. These arguments focus on the contribution of those land-intensive industries to PNG’s gross economy, their contributions to public finance (in the case of logging, through export taxes) and consequent revenue for development spending. In the case of oil palm there is a limited discussion of livelihoods, through ‘smallholder’ incomes (ITS 2011); those few small farmers who have joined a scheme to sell their own oil palm fruit to the corporate mills.

ITS Global calls for an expansion of PNG’s wholesale log exports, on the basis that logging generates a substantial amount of income (about 300 to 400 million Kina per year). Even though most of this accrues to the logging companies, it is said that the PNG government reaps almost one third (about K100 million) in export taxes per year, while local landholders receive ‘substantial’ royalties (ITS Global 2006: 12). On top of this, there are said to be ‘significant benefits’ to local people from infrastructure spending (airstrips, roads, health centres) although it is acknowledged that such works ‘are constructed primarily for the purposes of the project’ (ITS Global 2006: 39, 41). This report denies the claims of environmental damage, unsustainability and limited benefit to landowners, made by many other reports (e.g. IFRT 2004), and boldly asserts that ‘there is no economic case against fostering a vibrant and productive forestry industry in PNG’ (ITS Global 2006: 27). This is, however, a partisan argument, compromised by its direct links to interested parties.

In addition to the constant environmental criticisms of wholesale logging (e.g. Laurance et al 2011), the economic returns to customary landowners are very poor. For example, local communities are paid $11 per cubic metre of Kwila wood, less than 1/20th of the typical returns of
$240 per cubic metre in China (EIA-Telapak 2005; Bun, King and Sherman 2004). Meanwhile, the roads and bridges built by the loggers are not maintained and do not survive much beyond the logging operation (CELCOR and ACF 2006), while the importance of logging taxes is falling rapidly as mining and gas revenues rise. Many agencies now accept the need to support more sustainable timber alternatives, such as eco-forestry.

Yet logging survives in league with large plantation developments, which in South East Asia and Melanesia has meant oil palm. Logging permits have been made conditional on ‘back end’ oil palm development, and the major international financial agencies in the region (AusAID, the Asian Development Bank, the World Bank) have subsidised oil palm development, often in the guise of supporting ‘community participation’ and enhancing the ‘productivity’ of smallholder agricultural development (e.g. World Bank 2007). Here we see some departure from the more general, modernist arguments about growth and government revenue into a limited engagement with livelihoods and family incomes.

The World Bank, for example, claims that the incomes for landowners who give over part of their land to oil palm are equivalent to 2,793 Kina per hectare per year, a figure greater than an estimated K1,136 for cocoa cultivation. On this basis the Bank (wrongly) claims that ‘oil palm currently provides small holders with higher returns on their land and labour than most other agricultural commodities’ (World Bank 2011: 2). Notice the ‘old school’ assumption – it is only export crops that matter; no other crops are considered. The industry consultant ITS Global seizes on this claim, calling for a removal of the ‘restraints’ on land availability for logging and oil palm (ITS Global 2010; ITS Global 2011). As the World Bank itself is constitutionally and effectively a private investors’ lobby group, there is no independent voice in this chorus.

There are several problems with the World Bank’s calculations. First, the returns on oil palm are gross income, and oil palm is a more expensive crop to maintain, using a great deal of fertiliser and other chemicals. Second, oil palm is a very productive but greedy plant, which cannot be companion planted. It competes with and reduces the diversity of other local crops, unlike cocoa, coconut and coffee and the other more lucrative crops grown for the domestic market. Third, the comparison made is with export crops, without any real reference to incomes in domestic markets. Yet returns on crops like peanut and betel nut can be much higher, and without chemical inputs (Anderson 2008). Fourth, the environmental damage from oil palm is stark (see e.g. Wilcove and Koh 2010). Rivers, such as those on the Popondetta plains, are silted up and algae-clogged from the fertiliser run-off. Like other large chemical-intensive monocultures (see Kimbrell 2002), oil palm has a range of costs that reach well beyond the plantation price calculations.

Limited and selective engagement with livelihood issues does not seem to dent the enthusiasm for generalised growth arguments. Three academics (two Papua New Guineans and an Australian) present a modeling exercise which purports to show a several billion dollar addition to PNG’s GDP by extending formal tenure over just another 2.5% of land, over a decade (Fairhead, Kauzi and Yala 2010: 29). While they abandon the old idea that land registration will enhance rural credit for small land owners – because of the consistently negative evidence (Fairhead, Kauzi and Yala 2010: 26) – they maintain the ‘old school’ and neo-colonial notions that private, individual title will allow capitalisation, investment and thus a generally more productive agriculture.
This is a cultural argument, too, and one that is not too sympathetic to Melanesian culture. They suggest that only those who individually invest in land, engage in projects separate from the needs of the clan or family, are to be considered ‘productive’. Individual investment and benefit — contrary to the customary ethos of land as a shared community asset — is implied as these ‘productive’ people (whether clan members or outsiders) are said to be denied (by customary law) ‘exclusive access’ to ‘optimal amounts’ of the clan’s best land, as well as ‘exclusive access’ to the income that might be generated from that land. Thus individuals who make exclusive business for themselves through clan or family land are said to be ‘superior’ economic agents. Yet the precondition for such ‘success’ is that the clan is specifically excluded from sharing the benefits of land development. This would amount to an anti-social act, indeed probably a criminal act under customary law. The reference to ‘productive’ and ‘non-productive’ people is backed by reference to ‘the bankability of land’ (Fairhead, Kauzi and Yala 2010: 3). This is the idea that land is productive only when it becomes a financial asset. This is a familiar ‘old school’ argument: customary land is not ‘valuable’ until it can be financialised, and thus separable from its community. These concepts make it certain that the model which follows both undervalues the current productive functions of customary land, and constructs a ‘productivist’ argument for land commercialisation.

The computer generated model used was a modification of the Australian ORANI and Austem techniques, even though Australia’s land tenure system is entirely different to that of PNG. Cash crops are important inputs to the model, but the first problem is that model shows no estimate of non-market production (i.e. subsistence, cultural exchange and ceremonies). Yet the authors should have been aware of at least one AusAID funded study, which had estimated that Melanesian staple food production (of sweet potato, cassava, taro, banana and coconut) was about 920 kilograms per person, with a money equivalent of between A$693 (wholesale) and A$876 (retail) per person (Bourke et al 2006: 24). That is before we talk about other agricultural produce. Second, there is no real indication that Fairhead and the others considered productive exchange in informal markets, including domestic produce markets. They rely instead on an old Rural Development Handbook which claimed that ‘93% [of rural residents] … earned less than 200K per year from the cash economy’ (Hansen et al 2000: 25). In fact, that estimate was based on 1990s data, a highly valued Kina and only on incomes from ‘21 agricultural cash crops’, mostly export crops (Hansen et al 2001: 2, 296). It was an extremely poor ‘baseline’. There was no reference to more contemporary rural incomes, yet there had been published work on this (Sowei et al 2003; Anderson 2006; Anderson 2008).

This failure to include an economic value of subsistence production and ‘social exchange’, and the apparent failure to properly incorporate commercial exchange in domestic markets should, in itself, render the model’s results worthless. Yet there is a third serious flaw, this time to do with land valuation. The authors explain:

‘Given the significance of land for this analysis, the PNG CGE database has been expanded to include land as a separate primary factor for each industry … [by using] the weighted sum of the land price in each industry’ (Fairhead, Kauzi and Yala 2010: 12).

But how do they calculate a price for land in a country which has virtually no rural land market? If it were on the western basis of previous land sales, the value could be zero. Alternatively, also based on practice, it might be the tiny 20 Kina per hectare per year (plus 10% royalties) that is charged as rent for oil palm ‘mini-estate’ leases in Oro Province (Gou and Higaturu 1999). On the
other hand, if it were on the basis of the ‘opportunity cost’ of productive land lost, it could be 17,000 Kina per hectare per year (Anderson 2006: 146).

Which method do they use? None. Without any attempt to develop or apply a PNG-based method of land valuation, they borrow some land prices from Fiji, another Melanesian country, but one with a quite distinct land tenure history. They say: ‘Given that forestry and subsistence agricultural practices across the Pacific are not dissimilar, this [Fijian] data is used in the PNG database’ (Fairhead, Kauzi and Yala 2010: 13). The whole model, therefore, is made dependent on whether land valuation in Fiji had any reasonable and comparable basis or, better said, whether such prices reflected values that might enhance rather than undermine rural livelihoods.

The model goes on to set a baseline estimate for GDP growth in PNG, without land reform, then a model giving three possible growth outcomes (low, medium and high impact) with land reform. The overall conclusion – predictable, given the assumptions and input valuations - is that the economy will grow strongly with land reform. They assert there would be additions of between six and sixteen billion Kina to national income, if only a few percent more customary land would enter the formal system (Fairhead, Kauzi and Yala 2010: 29). For the reasons given above, I suggest these calculations are worthless.

The ‘sting is in the tail’ of this paper because, while it is not specified who might benefit from the suggested economic growth, it is the customary landowners whom, it is said, must pay the cost by surrendering their land rights. The authors say that investor demand for land must be met ‘by customary landowners bringing their land into the cash economy’ (Fairhead, Kauzi and Yala 2010: 27). Well, there is no doubt this is what foreign investors want, however the authors make the liberal modernist claim that customary owners might also benefit, as it would:

‘open up alternative income earning opportunities for rural residents, leading to a strong shift away from subsistence to market based agriculture, employment and income generation’ (Fairhead, Kauzi and Yala 2010: 25).

However, they do not refer to any particular ‘alternative income earning opportunities’ for those PNG landowners who might lease or otherwise alienate their land. The major benefits are said to be an expansion of the formal economy, large agricultural projects and other land based investments, and an associated, but unspecified, increase in formal sector jobs. The problem is, none of this says much of any relevance at all to the livelihoods of rural people.

3. Comparative rural livelihood options
Let’s go back to that central issue by comparing the returns on various rural livelihood options in PNG. We should do this bearing in mind that families with customary land can engage in several forms of income earning activities, and that some activities have greater ‘opportunity costs’ (i.e. excluding more valuable alternative options) than others. Table 2 below shows a range of income (or income equivalent, in the case of subsistence consumption) options, based on fairly recent PNG experience. Notice that we are comparing economic options associated with the formal sector, as stressed by ‘old school’ economics (corporate plantations, smallholder oil palm, the ‘mama lus frut’ program, and wages in factories and mines), and informal sector options, more often associated with the ‘new school’ (subsistence production, sales in local fresh produce markets, and associated small businesses). In practice, PNG families often combine several options, to form ‘hybrid’ livelihoods.
The main division in the table is between formal and informal sector incomes. In rural PNG the latter (and sometimes the former) form elements which often supplement subsistence production for consumption. The income equivalent figure for subsistence production is based on estimates of what it would cost a family to purchase the food and housing they currently gain from their own land in local/regional markets. The Kina value here represents the ‘opportunity cost’ of existing without productive subsistence land.

The first thing to note is that rural rents in PNG bear little relationship to the productive capacity of land. Rents return only 1% or less of the value of subsistence production for family consumption; between 1% and 50% the value of marketing garden produce; and 1% to 5% the value of a range of other formal and informal sector activities. These fractions grow even smaller for the more economically active families engaged in livelihood ‘hybrids’. Why anyone would agree to lease out their land in these circumstances deserves consideration.

The second matter that merits attention is the great variability in informal sector incomes, in particular in the marketing of garden produce, which can draw in just a few hundred Kina per year, or many thousands. Typically, we see those lower incomes coming from an unplanned marketing of surplus production, while the higher incomes are seen amongst those who focus on specific crops for market, and in particular for domestic markets (Anderson 2008). The top domestic cash
crop earners (200 Kina or more per week) in surveys of roadside sellers in four provinces were as follows: Madang (peanut, betel nut, melons and mangoes), Morobe (taro, peanut, cooking banana, oranges, tobacco, cucumber), Eastern Highlands (sweet potato, various vegetables, fried food and peanut) and East New Britain (peanuts, tobacco, oranges, cooked food and vegetables). Many of those surveyed also grew export crops (coffee, cocoa, copra and vanilla) but hardly any earned more from these than from the locally sold crops (Anderson 2011).

The third feature of note is that the formal economy options listed (Village Oil Palm, Mama Lus Frut, various basic employment options) typically have lower incomes than the other informal and small business options and, in particular, they were less than the incomes of those who market fresh produce. In my survey of women roadside sellers in Madang, the weighted average income (for an average of three days a week at market) was significantly higher than the highest reported family incomes from Village Oil Palm (Anderson 2008; World Bank 2010). Furthermore, there seem to be ‘ceilings’ on these formal sector schemes, as wages are set by employers and oil palm fruit prices for growers are set by a single local company. That is, the potential of formal sector options for families is limited by other powerful players who dominate those markets.

Finally, the opportunity costs are greater, and there is less flexibility, in the formal sector options that involve leasing of land or turning one’s own land over to oil palm cultivation. Oil palm allows no companion planting and ties up good quality land for many years (e.g. Wilcove and Koh 2010; Danielson et al 2009). On the other hand, land use for high return domestic crop options such as peanut, taro, betel nut and melons can be adjusted from year to year. Export crops such as cocoa and vanilla can be companion planted, and do not consume the fertiliser that oil palm demands.

Table 3 shows another interesting feature of my roadside seller surveys in 2007 and 2011. Most local fresh produce sellers also participate in growing and selling export crops; however in very few cases do the incomes from export produce equal or exceed the cash income from local markets. This tells us that domestic markets are usually much more important to these small farming families. Further, a very high (but variable) proportion of roadside sellers have family participation in other businesses (like small stores and poultry businesses) as well as in formal sector employment. This data suggests the need to rethink the emphasis given to export crops, and to pay more attention to the multi-faceted livelihood options being adopted by small farming families.

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<th>Also participate in?</th>
<th>Highest income from?</th>
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<tr>
<td></td>
<td>exports</td>
<td>Other business</td>
</tr>
<tr>
<td>Morobe</td>
<td>24 (48%)</td>
<td>18 (36%)</td>
</tr>
<tr>
<td>EHP</td>
<td>34 (62%)</td>
<td>9 (16%)</td>
</tr>
<tr>
<td>ENB</td>
<td>41 (73%)</td>
<td>7 (13%)</td>
</tr>
<tr>
<td>[Madang]</td>
<td>36 (82%)</td>
<td>27 (61%)</td>
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Sources: rural roadside seller surveys by this writer (Anderson 2008; Anderson 2011)

The ‘land modernisers’ (e.g. Fairhead, Kauzi and Yala 2010; Hughes 2004) have put the case for the ‘growth and state revenue’ contributions of land-using formal sector activities, like logging and oil palm, often ignoring family and community livelihoods. Where it has been suggested that
landowning families would benefit from these activities (ITS Global 2006; ITS Global 2010; World Bank 2010), the evidence neither matches the assertions nor considers the full range of options. Overall, the evidence makes it plain that neither rural rents nor engagement with formal economies in rural PNG provide either the range of options, the flexibility or the income earning potential of the better hybrid livelihoods. In these hybrids, families retain their customary land and subsistence production, while engaging in various supplementary informal and formal sector activities, some of them quite successful, yet incompatible with land alienation.

4. Hybrid Livelihoods

Many customary land-based hybrids can be threatened by modernist projects. Looking at Tonga, Storey and Murray (2001) warned against ‘growth oriented strategies which undermine or marginalise traditional social institutions’ and diverse livelihoods. In Papua New Guinea Grossman (1981: 220) warned that cash focused activities in PNG can undermine subsistence systems, ‘even when surplus land and labor exist’, as dependence on export focused commercial systems like cattle and coffee ‘reduces the resilience of village systems’. In a similar vein, Benediktsson (1998) pointed to the need to focus on actually existing markets in PNG, rather than stylised and general ‘market’ development.

Examples of hybrid livelihoods – where cash economies supplement rather than replace ‘subsistence’ production – have been noted in PNG, as in Melanesia more generally. Allen (2000: 100-111) discusses the improved food security prospects of the community of Malo Island in Vanuatu, who have developed some cash cropping options. Some of this income was used to supplement their home-grown diet with imported foods. However only 20% of their food was gained from imports. Similarly, Mosco showed a Central Province community taking advantage of the Port Moresby markets, with average households making 5,000 to 24,000 cash income per year, mainly by marketing betel nut products (areca nut and pepperfruit). This had a marked impact on living standards in their villages, in terms of consumer durables purchased and the ability to fund secondary education for their children (Mosco 2005: 16-21). But staple foods still come from their gardens. Much the same applies to families engaged with the plantation oil palm industries. Koczberski et al note that about 80% of the diet of Kavui and Popondetta LSS farmers was from garden food, and that most women (100% on LSS blocks and 52% on VOP blocks) regularly sold market food, many relying on the market as their main source of cash income (Koczberski, Curry & Gibson 2001: 50 & 57-58). LSS and VOP farmers are smallholders who grow oil palm either on a leased block (LSS) or on their own land (VOP).

The exceptional cases tend to capture attention, but hybrids are common. In my roadside seller surveys it became apparent that a number of people in formal sector work were also productively engaged in subsistence, informal and export activities. One Madang man I interviewed (L) in 2006 worked part-time in a community group, while his wife baked and sold bread; their farm produce income was no less than others in their area. Similarly one Highlands woman (S) held part-time employment while her husband worked full-time in the public service; their farm income was similar to others in their area. Another Madang man (H), also holding part-time work, said he earned as much as 11,000 Kina per year on a variety of cash crops (cocoa, peanut, coconut, vanilla, betel nut). All continued to produce fruit and vegetables for family consumption, from their own gardens.
Roadside seller surveys in four provinces (Madang, Morobe, Eastern Highlands and East New Britain) give a broader idea of hybridity, at least in relation to those rural populations with good land and reasonable access to main roads. In the first place it became clear that these mostly women sellers were earning on average well above ordinary wage rates paid in the local formal sector industries, such as fish canneries, mines, plantations and shops (Anderson 2008; Anderson 2011). Equally importantly, a large majority reported family engagement in other income earning activities. A majority (48-82%) across the four provinces were engaged in growing and selling some export crops, though a strong majority of these said exports provided less income than sales from domestic markets. A substantial minority (11-48%) had one or more family members employed; and an even larger minority group (13-61%) were engaged in other business, such as poultry sales, transport and store trading (Anderson 2011). All this suggests that multiple livelihood activities have become common, in much of rural PNG, perhaps apart from the very isolated areas.

We might conceptualise hybrid livelihoods as including three elements: production for non-monetised family consumption and cultural exchange; production for cash crop marketing, in both domestic and export markets; and other (often non-farm) informal and formal sector activity. Each element makes a valuable contribution and each also has its own vulnerabilities. These elements are set out in Table 4 below. Each element is vulnerable to displacement or erosion by shifts in land tenure and patterns of agriculture. If traditional lands are eroded, leased or otherwise taken away, garden production will be restricted. Similarly, expansion of monocultures (like oil palm) is likely to reduce the diversity of local production.

<table>
<thead>
<tr>
<th>Table 4: Basic elements of Hybrid Livelihoods</th>
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<tbody>
<tr>
<td>Production for:</td>
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<tr>
<td>Family consumption and cultural exchange</td>
</tr>
<tr>
<td>Cash crop marketing</td>
</tr>
<tr>
<td>Other informal and formal sector activity</td>
</tr>
<tr>
<td>Vulnerable to:</td>
</tr>
<tr>
<td>Erosion of traditional lands</td>
</tr>
<tr>
<td>Monocultures reducing diversity of local production</td>
</tr>
<tr>
<td>Variable</td>
</tr>
</tbody>
</table>

Production for family consumption, for example – which my pilot surveys show can amount to a value equivalent of between 10,000 and 19,000 Kina per family per year in regional PNG – forms the foundation of rural hybrid livelihoods, across all manner of family engagement in other activities, such as informal sector, export crop, oil palm and formal employment (Anderson 2006; Anderson 2011). The value equivalent from the subsistence sector alone outstrips most other productive activities. That is before we count the additional value contributed by cultural exchange; which can range from food for visitors through to substantial contributions of animals, vegetables and fruit on special occasions. Yet the richness of PNG’s subsistence sector would certainly be undermined by alienation of traditional lands, including reserve lands.

Second, there is the marketing of produce from family gardens, which can range from a simple surplus in production (e.g. staple foods such as sweet potato) to market specific produce (e.g. peanut, cucumber, melons); in other words, items grown specifically for sale. The latter seems to generate most income. Cash income from fruit and vegetable marketing can be as low as a few hundred Kina per year (for those who market a simple surplus, often at a time when others also
have a surplus) to many thousands of Kina per year. My surveys of roadside sellers in four provinces showed average incomes of between 140 and 280 Kina per week, or 7,000 to 14,000 per year (Anderson 2011). While the great majority of fresh produce sellers get more cash income from domestic sales rather than exports, the latter remain popular and an important source of supplementary income. Nevertheless, cash crop production is also vulnerable to land loss and competition with encroaching monocultures, which also affect the diversity of local production and, consequently, of sales in local markets. Alternatively, fresh produce sales could be enhanced by the improvement of rural roads.

Third, there is family engagement in various informal and formal sector activities, often not related to family gardens. This can include small stores, transport services and other full or part time work in the formal sector. Informal sector surveys across four provinces found incomes at between 120-150 Kina per week (Sowei et al 2003), or 6,000 to 7,500 Kina per year – three times the nation’s minimum wage, at that time. Incomes in the formal sector vary considerably, but much basic unskilled work in regional areas is paid at, or only slightly higher than, the minimum wage; at 2011 this was 92 Kina per week, or 4,600 per year (Anderson 2011). While professional and skilled employment pays higher wages, some of these people also remain engaged in subsistence and cash crop work. For the most part, rural people face lower income options in the formal sector. Some compensate for this by mixing the two. After work hours, some office and shop employees in Kokopo (East New Britain) go to the town market to sell fresh produce.

We can also see what I call an ‘education effect’, and at times ‘adaptive responses’, in these hybrid livelihoods. Both seem capable of contributing to the development of superior hybrids. An ‘education effect’ here refers to a more sophisticated approach to livelihoods and family farm management, through a more focussed plan, sometimes supported by a higher level of formal education. The ‘adaptive response’ describes a defensive movement in face of threats.

An ‘education effect’ might be simply taking advantage of a strategic circumstance, such as the Central Province betel nut sellers, fairly close to the capital (Mosco 2005); or the peanut sellers at Watta Rais, who can earn several thousands of Kina per week by producing and selling at the junction of two major highways (Anderson 2008). More generally, it is the focussed market sellers who concentrate on superior value crops, such as taro and melons, rather than common place crops in massive surplus, such as retail bananas and sweet potatoes. There seems to also be, perhaps amongst those with greater formal education, a more efficient and focussed pursuit of farming and marketing, which compensates for the time ‘lost’ in other employment or other small business activities. This allows multiple activities within the ‘hybrid’. In other words higher income earners, with livelihoods based on family land, seem to have developed a good sense of their market opportunities. Others appeared to have well developed livelihood strategies, dividing their time between local markets, export crops and other small business, in context of their traditional and cultural lives.

Confirmation of this ‘education effect’ comes from a small agricultural college on the outskirts of Goroka, where a experienced educator took on young people who had dropped out of school. A two year course was provided in farm management, technology and marketing, at the end of which the students had to prepare detailed accounts of returns from their family farm land. The first group of graduates reported an annual income of between 2,000 and 11,000 Kina (Rere 2004). The highest income earner in this group was a young woman who secured vegetable contracts with a
town supermarket. Others did well with more diverse production. More recently, the college has been taking larger groups, including professional people and others who have returned to working their family land. The emphasis in this college is on steady, year-round production and supply to wholesale markets (Rere 2011).

‘Adaptive responses’, which may also contribute to superior hybrid formation, can be seen in a rural community in Madang Province. The Sausi community began large scale planting of cocoa, to demonstrate to the government and an oil palm company that they could manage and ‘develop’ their own land. The cocoa supplemented their already strong local crops such as peanut and melons, and helped spur diversification into rice cultivation and fish ponds, initially just for local consumption. After several years of this diversification the Sausi community now enjoys higher than average incomes. Following this commercial success, they have developed their own village finance scheme for family business projects and a small college scholarship program (Aipapu Marai 2009). While cocoa is taking over a deal of land, unlike oil palm it can be companion planted (for example with banana, vanilla and legumes). Most of their income, however, still comes from domestic crops.

Table 5 below shows a typology of hybrids, from ‘basic’ to ‘focused’ to ‘diverse and efficient’. The latter group, I suggest, would most likely have the benefit of some ‘education effect’ and perhaps the impetus of an ‘adaptive response’.

<table>
<thead>
<tr>
<th>Variant</th>
<th>features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>Subsistence production, sale of surplus garden produce, perhaps additional employment</td>
</tr>
<tr>
<td>Focused</td>
<td>Subsistence production, sale of market specific domestic and export produce, perhaps other business or employment</td>
</tr>
<tr>
<td>Diverse and efficient</td>
<td>Subsistence production, sale of market specific domestic and export produce, other employment or business, effective management of hybrid</td>
</tr>
</tbody>
</table>

One outstanding question over hybrids is: ‘what place might there be in a valuable hybrid livelihood for engagement with the corporatised monocultures’? In PNG this means ‘small holder’ engagement with oil palm estates. Oil palm continues to be promoted and subsidised (by government and aid agencies), as a strong source of corporate and export income. Yet, as Table 2 shows, its contribution to family incomes is low to middling, and not nearly as high as most of the informal sector average incomes. That still leaves open the question of whether it might supplement other activities. The problem here is that oil palm has additional costs. First, there is the need to buy chemical inputs, mainly fertiliser. Second, fertiliser and land clearing contributes to the pollution and siltation of local rivers and streams. Third, oil palm is a voracious plant that cannot be companion planted, so crop diversity is reduced. Finally, there are the economic disadvantages for small-holders selling to a price-fixing, ‘monopsonist’ company, which purchases all local fruit, takes the bulk of the surplus and so limits ‘village oil palm’ incomes. The constraints on effective hybrid development, with oil palm, are substantial.
5. Concluding Comments
This paper calls for a ‘new school’ approach to economic analysis, to better understand PNG’s realities, and in particular to appreciate what matters for the livelihoods of the majority rural population. The ‘old school’ with its fixation on GDP, formal economies and the export sector, cannot do this. The ‘land economics’ that bases itself on ‘old school’ economic ideas, including modelling, plays at best an irrelevant and at worst a destructive role. Its circular logic about the benefits of formalisation and rationalisation both ignores and undermines the more hopeful developments in rural livelihoods. Comparing a wider range of formal and informal sector livelihood elements can help ‘ground’ analysis. The formal sector options in rural PNG do not compare favourably, either in cash income or in flexibility of application. The better hybrid livelihoods more often have a basis in clan and family control of customary land. Although many of these ‘hybrids’ begin in quite a modest way, there are a number of ‘diverse and efficient’ forms which should attract the attention of better analysis.

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