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LINKING GROWTH AND POVERTY REDUCTION IN PAPUA NEW GUINEA

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EXECUTIVE SUMMARY

Papua New Guinea (PNG) is in its seventh consecutive year of economic growth – its longest uninterrupted spell of economic expansion since independence. During this period, the level of extreme poverty in PNG is estimated to have fallen by 8.8 percentage points. Yet this reduction would be insufficient to reel in the spread in poverty which is understood to have occurred over the late 90s and early part of this decade.

Increasing the poverty-reducing effects of growth would greatly enhance PNG's ability to achieve the first Millennium Development Goal – to eradicate extreme poverty and hunger – by 2015. Policymakers should consider favouring types of growth in which more income reaches the poor and craft interventions which can better integrate the poor with the remainder of the economy.

The highly anticipated LNG project lends weight to these arguments. The high rate of growth presaged by the project will reinforce the existing structure of the economy in which the poor are largely excluded, rather than ushering in much needed structural reform. Maximising the benefits of the project for the poor will require a radically different approach by government. Government should rethink its approach to the appraisal of foreign investments, placing greater onus on what investments offer in terms of domestic employment, beyond their effect on government revenue. Foreign-owned companies should be encouraged to reinvest their profits within PNG through fiscal incentives. In a move back to basics, the Papua New Guinea government should narrow its expenditure on the provision of essential public goods and services, in recognition of its limited capacity. While the range of goods and services government attempts to provide should be circumscribed, their reach must be expanded to bridge the gap to those poor who are currently overlooked.

By placing the MDGs at the centre of their new Pacific Partnerships, the Australian government shares some of the accountability for progress on poverty reduction in PNG. Its challenge is to revise its policies and interventions in light of this goal, which will require a more satisfactory accommodation of the role of growth.

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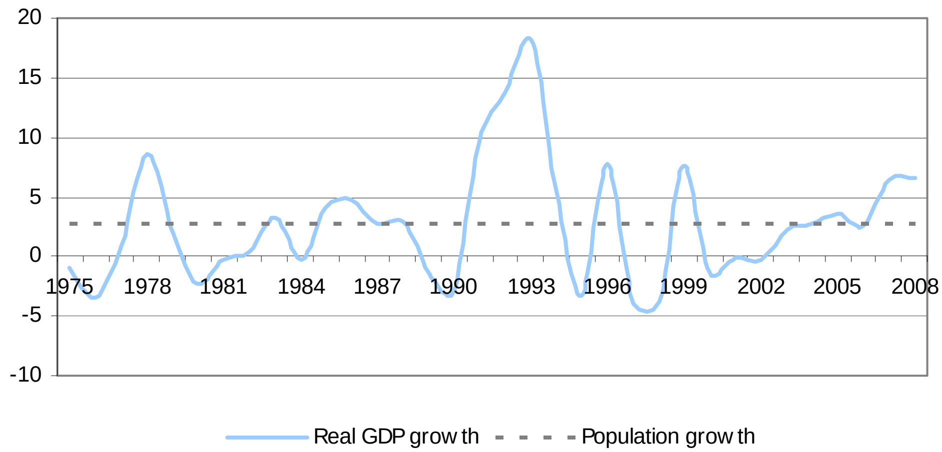
Growth and poverty

PNG is currently enjoying its longest uninterrupted spell of economic expansion since its independence in 1975 – see Figure 1. A government target which once appeared fanciful – to grow by 5 per cent annually in real terms towards the end of the period 2005-2010[1] – has been surpassed, ahead of schedule. This growth has not been limited to the mining sector; the non-mining sector growth rate has outstripped that of the full economy for each of the last three years.[2]

Figure 1: Real GDP Growth (annual rate)



Use of the term 'poverty' is often met with a degree of unease in PNG. Prime Minister Somare reinforced this point in April 2009, when he asserted, 'Our people have plenty in their villages…No one is starving in Papua New Guinea. We always have something to eat.'[3] Yet there can be little doubt that, by any standard measure, poverty exists in PNG and pervades much of the country.[4] On the most recent desk-based estimate, using the international poverty line of $1 a day, 37.5 per cent of the population lived in extreme poverty in 2004.[5] PNG stands 145th on the UN's Human Development Index, one place above Haiti, and as the largest of the Pacific Island nations by some distance, contains the bulk of the region's poor.

Like the poor elsewhere, PNG's poor are typically malnourished (particularly in terms of protein), face few if any economic opportunities, are cut off from public services and live precariously given their vulnerability to a host of threats, including infectious diseases, poor harvests, natural disasters, violence and other crime. Many of their deprivations can be defined in terms of lack of access: to jobs and cash, land, education, health care and clean water, transport and roads.[6] In contrast to most other countries, poorer households in PNG tend to have fewer members: fewer adults to contribute their labour, but also fewer children, as offspring are fostered by other households better able to support them – see Figure 2.[7]

Figure 2: Average Household Composition

Consumption Quintile	Adult	<18	Total
1	2.2	1.9	4.2
2	2.7	2.7	5.4
3	3.2	3.1	6.3
4	3.4	3.4	6.7
5	3.9	3.5	7.4

In a country that is less urbanised than any other except Burundi, poverty in PNG is fundamentally a rural problem.[8] Not only is the incidence of poverty higher in rural areas, the rural poor are found further below the poverty line than their urban counterparts and experience lower growth rates.[9] Four fifths of the country's poor rely on the land for their livelihoods, whether for cash crops or subsistence alone. One in six of the poor earn no cash income whatsoever.[10] Contrary to the romanticised notion of rural simplicity, reliance on agriculture is rarely straightforward.[11] In Hanson's authoritative PNG Rural Development Handbook, the majority of PNG's landmass is judged to be of low or very low quality, with less than 1 per cent considered very high quality land.[12]

The weakness of the rural sector is compounded by the paucity of public infrastructure, which isolates the poor. It is little wonder then that the spatial pattern of poverty has been historically rigid in what amounts to a series of geographical poverty traps.[13] The government's inability to meet and overcome the challenge posed by the country's geography means that environmental determinism has effectively won over.[14]

The government's Performance Monitoring Framework for the Medium Term Development Strategy provides an up-to-date account of the daily struggles of Papua New Guineans. According to data released in the past 18 months, only 35 per cent of birth deliveries are currently supervised by healthcare professionals; 45 per cent of the current generation of school-leaving age completed their primary education; and 27 per cent of the national road network is judged to be in good condition.[15]

Analysing the poverty-growth relationship

Understanding of the relationship between poverty and growth in developing countries has improved considerably over the past 15 years, following a deluge of international research.[16] Analysis demonstrates that growth in Gross Domestic Product (GDP) reduces poverty across regions, across times, in both the short and long run.[17] Over 80 per cent of the variation in incomes of the poor within developing countries can be explained by variation in GDP per capita, making GDP growth an indispensable component of any development strategy.[18]

By demonstrating the strong relationship between economic growth and poverty reduction, the distinction between growth-inducing and poverty-reducing policies has been shown to be a false choice.[19] However, this relationship is not static, with comparable periods of growth capable of generating both small and large reductions in poverty.

Explanations for why growth may be more or less 'pro-poor' have traditionally focused on a country's characteristics and the prevalence of constraints which prevent the poor from sharing in an economy's expansion.[20] For instance, the poor may be prohibited from employing the limited assets they have productively if employers unfairly discriminate against them, if land rights are ill-defined or if markets are located far away. These explanations are most useful for assessing the *potential* of the poor – or a subset of the poor – to benefit from growth; no two periods of growth are entirely the same and understanding the cause of growth is likely to yield additional insights as to how the poor may be affected.

Poverty elasticities

One way of describing the growth-poverty relationship is to use an elasticity measure. Elasticities are used to measure the responsiveness of poverty to growth. A typical calculation of the growth elasticity of poverty - *poverty elasticity* for short - estimates the percentage change in a country's poverty rate, following a one per cent change in average incomes, or GDP per capita.

The poverty elasticity measure is an intuitively appealing tool and offers a valuable means for illustrating the importance of the growth-poverty relationship. However, it is subject to some limitations – see Textbox 1.

Despite these weaknesses, two attempts have been made to estimate the poverty elasticity of PNG.[26] The most recent is by Datt and Walker for the World Bank. They construct a two-sector model to estimate changes in the incidence of poverty in PNG up to 2004, based on the $1 a day poverty line. The authors obtain a separate poverty elasticity for mining sector growth (-0.1 per cent) and non-mining sector growth (-0.9 per cent), indicating that the direct contribution of the mining sector to poverty reduction is modest.

These elasticities can be applied to the country's current growth spell to estimate how growth has affected poverty over the past six years.[27] From 2003 to 2008, the mining sector has grown by an anaemic 1.0 per cent in real terms, which translates into an increase in the poverty level of 1.4 percentage points, after adjusting for population growth. Meanwhile, the non-mining sector has grown by 30.3 per cent, generating an estimated reduction in poverty of 10.2 percentage points. Adding these two together gives the net poverty effect. On this estimate, economic growth between 2003 and 2008 has caused the $1 a day poverty measure to fall by 8.8 percentage points, driven entirely by the non-mining sector.[28]

As positive as this estimate sounds, if accurate, it would be insufficient to reel in the increased incidence of poverty that occurred over the late 90s and early part of this decade, as estimated by the World Bank authors. Part of the explanation for this is that GDP per capita today still remains below its 1996 level. On current government growth forecasts, this will remain unchanged as far into the future as 2014 – the last year for which the government provides forecasts – even though this would entail a 12-year string of uninterrupted economic growth.[29] This highlights the inadequacy of positive but low economic growth in a country with a fast rate of population growth. In only three of the past six years has economic growth exceeded the rate of population growth – see Figure 1. Consecutive years of economic growth will fail to make an impression on PNG's poverty levels if they do not consistently and convincingly exceed the country's population growth rate.

Textbox 1: Poverty Elasticities

A calculation of poverty elasticity estimates the percentage change in the headcount poverty rate, using a PPP $1 a day poverty line, for a one per cent change in average incomes, or GDP per capita. For studies in which average incomes (or consumption) are drawn from household survey data, poverty elasticities typically range from -1.6 to -3.1.[21] Where average incomes are derived instead from national accounts, poverty elasticities are expected to be lower.[22] Some studies have employed higher-order poverty measures to determine whether the benefits of growth extend to the poorest of the poor. On this issue, the evidence is mixed.[23]

Poverty elasticities have some drawbacks. Any given elasticity will depend on the particular distribution of income that holds on or around the poverty line over the period under examination. So while a high elasticity provides some assurance of growth's inclusiveness, it can easily be misinterpreted as evidence that the benefits of growth are more generally redistributive, when it only vouches for growth's distributional effects over a narrow range. An added difficulty is that poverty elasticities will tend to rise with income levels.[24] Thus, an ex-post calculation of a country's poverty elasticity provides weak grounds for projecting future growth-poverty dynamics since the composition of the income distribution that generated the elasticity will invariably have changed.

More generally, the use of a simple elasticity can detract from the complex interactions that underpin the growth-poverty relationship. Since GDP growth is a measure of economic activity, and poverty is a measure of income, the relationship is, by its nature, complex.[25]

An alternative analytical framework

What can be done to increase PNG's poverty elasticity so that growth in the future generates a more significant reduction in poverty? In this paper, a new analytical framework is developed to help policymakers think through this problem.

The framework views the growth-poverty relationship in PNG as hinging on the distinct roles of individuals, companies and government in the economy. Each is recognised as performing a different function in productive activity and is remunerated accordingly.[30] Furthermore, it is assumed that each precipitates a distinct set of economic transactions in the economy on accruing income from productive activity, based on their unique consumption preferences.[31] On this basis, our framework suggests that a different poverty elasticity may hold depending on to whom the additional income, implicit in GDP, initially accrues: individuals, companies or government.

Rather than attempt to quantify these elasticities, which the lack of data prohibits, the analytical framework is used here to trace the series of economic transactions which link the economy's productive activity to the poor. This means not only analysing the consumption preferences of the initial recipients of income, but also examining how these preferences may shape the ongoing series of transactions – known as *second-order effects* – they then precipitate in the economy. The channels these employ are ones on which the poor ultimately depend and should therefore be of special relevance to policymakers. [32]

The framework relies on an interpretation of the PNG economy which emphasises its limited degree of connectivity, or high level of fragmentation. Rather than the economy consisting of a single circular flow of income, it can be better understood as a series of only loosely connected economies, divided by geography, limited transport infrastructure, cultural heterogeneity and limited financial development.[33] The poor are characterised as having very limited connections with the rest of the economy.

Put simply, the framework enables a study of how individuals, companies and government share in the growth process, what they do with their income, and whether and how this may eventually benefit the poor. This can assist policymakers in thinking through the poverty-reducing effects of different types of interventions. Furthermore, the framework helps to explain how well-known features of the PNG economy affect the growth-poverty relationship: the enclave nature of growth; the high level of foreign-owned capital; differences between the formal and informal sector; the cash and non-cash economy; inter-household transfers between wantoks; and the incomplete coverage of public services in the country.

Individuals

Individuals share in the growth process by contributing their labour and physical capital. They are then remunerated through formal sector wages, informal sector wages (to the extent that informal activity is indirectly captured in growth calculations) and rents. Despite low levels of labour productivity, there are reasons to believe that the role of individuals in the country's recent growth has expanded: the rise in formal employment, the growth of labour-intensive sectors and strong commodity prices which have pushed up landowner rents.[34]

While formal workers, informal sector workers and rent-earners make up a diverse group, it is fair to assume that the poor do not feature prominently among these immediate beneficiaries of growth. PNG's poor are, in part, characterised by their estrangement from the economy and the opportunities it presents. For instance, only 5.4 per cent of PNG's poor are dependent on a formal wage in the private sector for their primary source of income.[35] Gender disparities in education suggest the degree of estrangement may be even higher for PNG's women.

The poor are more likely to benefit from the second-order effects of higher individual income, as wages and rents are expended, precipitating a series of subsequent transactions in the economy. Through this process, income is spread to a new set of recipients. Among the beneficiaries are those who draw wages from spin-off informal activities that support the economy's main sectors, such as drivers and security services; those who work in stand-alone informal industries, such as the market for domestically produced food; and the recipients of inter-household transfers. This enables households unable to share in the economy's core productive activity with the means to benefit indirectly. Nevertheless, a share of the poor remains excluded.

Consumption patterns

Data from the 1996 household survey can help to illustrate how higher rising individual incomes affect the poor via second-order effects. Figure 3 illustrates average annual consumption per capita, arranged by consumption decile to reflect different income levels.[36] Consumption is disaggregated into five parts: food and drink (including firewood, kerosene and kitchen utensils); merit goods (comprising school fees, medical fees and medicine); demerit goods (comprising betelnut, tobacco, alcohol and gambling); transport costs; and a residual. The first three deciles roughly capture individuals living in extreme poverty.[37]

Figure 3: Individual Consumption Patterns

Average Expenditure per Capita (Kina 1996)						
Decile	Food & Drink	Merit	Demerit	Transport	Residual	Total
1	123	4	14	2	19	162
2	179	7	18	9	42	254
3	227	9	21	16	51	324
4	301	9	33	18	55	418
5	372	11	39	20	73	514
6	470	14	43	33	86	645
7	498	17	77	57	166	814
8	645	23	93	63	244	1,068
9	911	30	147	123	360	1,571
10	1,318	90	414	278	1,241	3,341
Average Expenditure per Capita (% share)						
Decile	Food & Drink	Merit	Demerit	Transport	Residual	Total
1	76%	2%	8%	1%	12%	100%
2	70%	3%	7%	4%	16%	100%
3	70%	3%	6%	5%	16%	100%
4	72%	2%	8%	4%	13%	100%
5	72%	2%	7%	4%	14%	100%
6	73%	2%	7%	5%	13%	100%
7	61%	2%	9%	7%	20%	100%
8	60%	2%	9%	6%	23%	100%
9	58%	2%	9%	8%	23%	100%
10	39%	3%	12%	8%	37%	100%
Marginal Expenditure per Capita (% share)						
Decile	Food & Drink	Merit	Demerit	Transport	Residual	Total
2	61%	3%	4%	7%	25%	100%
3	69%	3%	4%	11%	14%	100%
4	80%	1%	14%	2%	4%	100%
5	73%	1%	5%	2%	18%	100%
6	75%	2%	3%	10%	10%	100%
7	17%	2%	20%	14%	47%	100%
8	58%	3%	6%	2%	31%	100%
9	53%	1%	11%	12%	23%	100%
10	23%	3%	15%	9%	50%	100%

One of the most striking features of the data is the prominence of food and drink in individual consumption, at all levels of income. The dominance of food and drink in marginal expenditure demonstrates an important means by which the incomes of the poor can be linked with higher incomes in the economy, both at existing income levels and as the economy continues to grow. Food consumption in PNG includes a variety of imported goods, such as meat and certain staples, but a large share is attributable to domestic produce. The domestic food market serves as an important source of income for the poor, given its high degree of informality, its labour intensity and the participation of women.

The same data provides useful insights on how incomes affect access to education and health services – see Textbox 2.

Textbox 2: The Impact of Higher Incomes on Health and Education

The survey data shows that the share of consumption committed to merit goods remains remarkably constant at 2 to 3 per cent, across income levels. Ultimately, merits goods must compete with other consumption choices when incomes rise.

When consumption patterns were re-evaluated on the basis of the educational attainment of the household head, no discernible differences were found. This suggests that education levels alter consumption more in terms of *scale*, enabling higher incomes and so larger purchases, than through consumption *choices.*[38] Consumption choices may instead be affected by other factors, such as access to financial services or the gender of the household head.

Wantok transfers

The 1996 survey also allows examination of inter-household transfers – an enduring feature of PNG society and a potentially important channel for linking the poor to the nation's economic growth. Figure 4 details the share of individuals whose households participated in inter-household cash transfers over a 12-month period. Participation is defined in five ways according to the degree of involvement.[39]

Figure 4: Household Participation in Inter-household Transfers

Decile	Receiving	Giving	Either	Both	Either Minus Both
1	14%	13%	24%	2%	22%
2	20%	18%	35%	3%	32%
3	23%	26%	38%	11%	27%
4	31%	26%	43%	14%	29%
5	33%	40%	56%	17%	39%
6	37%	33%	54%	16%	38%
7	42%	45%	68%	19%	49%
8	49%	51%	70%	30%	40%
9	44%	61%	76%	30%	46%
10	63%	72%	88%	47%	41%

To interpret the data, households that have both given and received transfers within the 12-month survey period (penultimate column) are assumed to be engaged in active reciprocal assistance. All other households that give or receive transfers (final column) are assumed to participate only in kin obligations. Textbox 3 provides further explanation of this classification.[40]

How do the poor benefit from these transfers? Based on this analysis, poorer individuals rarely engage in reciprocal assistance, presumably due to a lack of affordability and an inability to sustain regular payments. By contrast, kin obligations are more inclusive, with a participation rate of no less than 22 per cent, even among the poorest households.

However, while transfers motivated by kinship have the potential to distribute income towards the poor, there is little evidence of such an effect from the data.[43] A poor household's kinship ties may often be restricted to the very same geographical poverty trap in which the household itself is located, with all households facing similar income constraints.

Textbox 3: Classifying Inter-household Transfers

Morauta proposes that inter-household transfers fall into one of two categories: exchanges of active reciprocal assistance; and kin obligations.[41]

Active reciprocal assistance provides households with a form of short-term insurance. Coordinated transfers are assumed to be distribution neutral, but enable households to smooth consumption, mitigating temporary fluctuations in their income. According to Morauta, households make such transfers *'...in expectation of a return, perhaps not immediately but with only a short delay…The important thing about such relationships is that if returns are not forthcoming in a reasonable period, the relationship will languish'.*

Kin obligations serve as a demonstration of family bonds and, when motivated by compassion, may help to redistribute income from rich to poor. However, even these transfers may rely on a degree of reciprocity. Poor families may be *'…disowned by close relatives because of their inability to reciprocate gifts which express relationship and affection'* including contributions to *'…life-crisis ceremonies that reflect one's enduring commitment to kin'.*[42]

Thus, while inter-household transfers provide an indisputable means of linking some of the poor to individuals who share in the economy's growth, the value of this link is called into question in the absence of any distributional effect.[44] Furthermore, the low participation rates of low-income individuals are consistent with the notion of a large group of '*invisible poor*' who have nobody to help them.[45]

Even if the role of wantok transfers is rejected, income remunerated to individuals may ultimately reach the poor through a number of channels, underpinning the poverty elasticity for individual income. Increasing the role of individuals in PNG's economic activity can help to connect the poor to PNG's economic expansion.

Companies

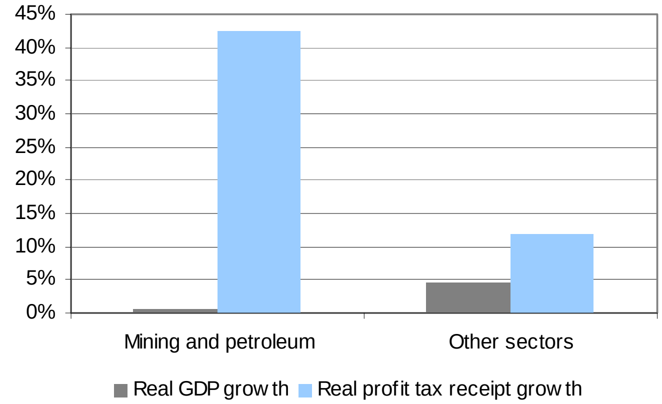
Companies share in the spoils of growth by making profits from the contribution of their capital to economic activity. While data on business activity in PNG is limited, there is clear evidence of increasing profitability during the current growth spell: tax receipts on profits have mushroomed as has the issuing of dividends.[46] This increase in profits cannot all be attributed to economic activity; on the contrary, a comparison of growth in GDP and profit tax receipts reveals the overwhelming effect prices have played in driving company income in extractive industries – see Figure 5. Regardless of their source, an analysis of how profits are deployed can shed light on the impact of company income on poverty.

Profits can be put to one of two purposes: dividends or reinvestment. The poverty impact of each choice is predominantly a question of geography: where shareholders reside and where reinvestment takes place.

When companies are foreign-owned, their profits are typically withdrawn from the economy and have no discernible impact on PNG's poor. Dividends are repatriated where they are then spent. Reinvestment is as likely to occur overseas as in PNG.

While recent growth has been broad-based by historical standards, profits have followed a more traditional pattern, dominated by sectors – mining and petroleum, and to a lesser extent, finance – which are overwhelmingly foreign-owned. Thus a great swathe of the income that has accrued to companies over recent years has immediately been lost from the economy. It is estimated that the welfare effect to the PNG economy is typically only one third of export values from the mining sector, after discounting the returns that accrue to foreign capital and the purchase of intermediate imported inputs.[47]

Figure 5: GDP vs Profits
(average annual growth rate, 2003-2008)



Domestically-owned companies offer more promise. When profits are distributed among individual domestic shareholders, the impact on the poor is commensurate with any other increase in income among richer households. Dividends from state-owned enterprises are remunerated back to government and are treated like all other source of revenue in the government's budget – see the following section for an analysis of the poverty effect. However, while domestic ownership is more common among the economy's non-traditional sectors and in the informal economy, only the government and a very small number of individuals (via pension funds) share a stake in the economy's largest companies.

Reinvestment within PNG holds the prospect of expanding the reach of the economy to support a growing share of the population, including the poor. The poverty impact of reinvestment occurs principally via its effect on employment; any increase in capital consumption generates a corresponding demand for labour, the size of which is dependent on the capital-labour ratio of the economic activity.[48] As many of PNG's poor reside far from the location of businesses, they will be poorly placed to compete for new jobs created through investment, even those jobs for the unskilled. This is exacerbated by the enclave nature of many industries in PNG, with reinvestment occurring in the vicinity of existing operations, placing the onus on the poor to migrate to where employment opportunities exist.[49] Nevertheless, those who succeed in attaining new work will spread the benefits more widely through their expenditures and the second-order effects they precipitate.

Unfortunately for PNG, a perpetually depressed investment rate suggests that few companies are opting to reinvest within the country, despite increased profitability. This reflects a separate, though related, problem PNG faces in reducing poverty: the need to spur investment to sustain existing growth levels. Chand estimates that repeating the growth rates of 2007 and 2008 without increasingly favourable commodity prices would require a near-doubling in the economy's investment rate, combined with a dramatic increase in annual productivity growth.[50]

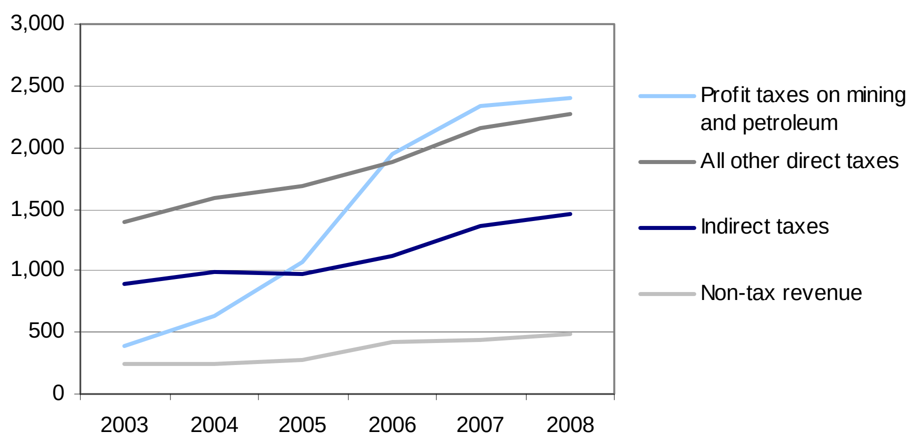
In the absence of domestic alternatives, Chand stresses the importance of securing large new foreign investments to realise this goal. Even with some high-profile individual cases in recent years – Digicel's entry into the mobile phone market, the nickel mine in Ramu and the highly anticipated LNG project – foreign investment remains markedly low by developing country standards and new investments continue to shadow the existing structure of the economy, rather than ushering in much needed structural reform.[51] The global financial crisis – in particular, the combination of tightening credit markets and abating commodity prices – will not make this any easier.

Thus, while companies have seen a rapid increase in their income over the past six years, a high rate of foreign ownership and low rates of reinvestment within PNG undermine the channels which would otherwise see this spread to the poor. Based on the existing set of companies operating in PNG, the poverty elasticity of their income is assumed to be almost negligible.

Government

Government accrues income in the growth process by taxing economic activity and drawing rents on its productive assets. On average, around seventy per cent of government revenue in PNG is derived from tax on income and profits, tying government income loosely to that of individuals and companies. In sectors where labour plays a small role and where foreign firms dominate, government is typically the largest domestic beneficiary of higher income resulting from economic activity.[52] Since 2003, government revenue has risen dramatically – see Figure 6 – far outstripping GDP growth to rise from 23.2 per cent to 30.6 per cent of GDP.[53] For these and other reasons, it is incumbent on government to convert the fruits of growth into benefits for the poor.

Figure 6: Government Revenue (current prices, Kina, millions)



An analysis of the items that comprise government expenditure helps to identify the channels that lead to the poor. Expenditure can be broken down into two parts: recurrent and development.[54]

The recurrent budget is made up of expenditure on goods and services (three-fifths) and on salaries (two-fifths). Government is an important consumer in the domestic utilities, transport and retail sectors, but its reliance on formal markets, including imports, offers fewer direct benefits for the poor in comparison with household consumption. With total manpower of a little over 80,000, the government is the economy's largest formal employer. While only 4.4 per cent of the poor rely on a public sector wage for their primary source of income, the benefits are spread more widely through the second-order effects of public servants' expenditure.[55]

As the poor in PNG are characterised by their dislocation from public services, many are unable to access the schools, police stations, hospitals and aid posts that the recurrent budget sustains. This provides the rationale for the development budget, intended for investment in the expansion and improvement of services. In practice however, the government-funded portion (that which excludes donor grants) covers a broader array of expenditure that can be split into three categories.

The first category serves as little more than an extension of the recurrent budget, enabling additional salaries not listed on the payroll through casual workers' pay and consultancy fees, and goods and services expenditure that the recurrent budget would otherwise not allow.

Textbox 4: Government Interventions to Reduce Poverty

Government efforts to address poverty can ordinarily be classified in three ways:

- Stimulating growth through the provision of public goods, by complementing and crowding in private investment and by helping to better integrate markets.[56] In PNG, this might be usefully extended to favouring types of growth in which more income reaches the poor.
- Enhancing the poor's participation in the growth process by raising levels of human capital and reducing their transaction costs. In PNG, this implies interventions which can integrate the poor with the remainder of the economy.
- Redistributing income towards the poor, providing them with transfers in cash or kind, financed by taxation of the non-poor.[57]

The second category consists of transfers to members of parliament and landowners. While transfers of this kind are explicitly justified for their capacity to reach the poor, the absence of functional reporting requirements means that these transfers are, in effect, discretionary and there is no basis for determining how they are expended. Transfers have consumed a growing share of the development budget in recent years, rising incrementally from 15 to 35 per cent of the government's appropriations over the duration of the current growth spell.[58]

The third category is made up of actual public investment: both physical capital accumulation and investment in people. As with government consumption, government investment draws on both imports and the domestic market. The latter drives economic activity in the construction, retail, transport and business services sectors, through which the poor benefit, principally via wages.

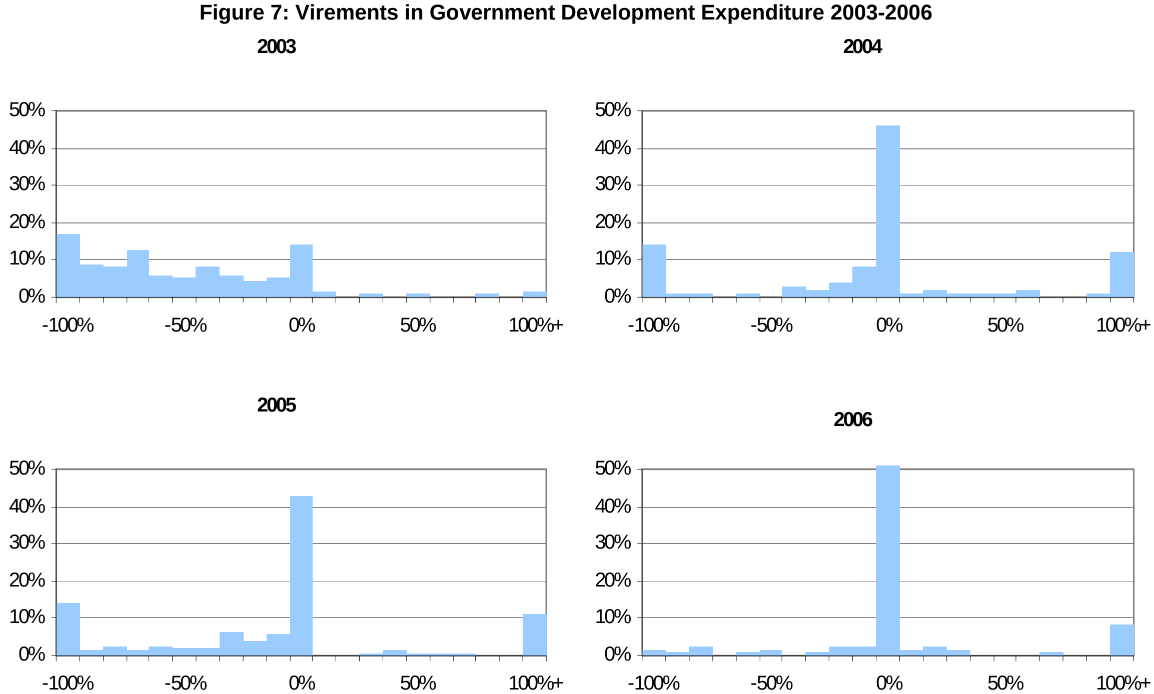
Moreover, this final category has the potential to affect the poor in the way no other can: by bridging the gap that separates the poor from basic services and economic opportunities. However, a reliance on redundant systems of service delivery and insufficient planning limits the scope of public investment mostly to the repairing of core infrastructure and revitalising of services, crowding out new investments in under-serviced areas where most of the poor reside. Thus, the rehabilitation of the road network is prioritised over its extension; hospitals are revived before aid posts; and there remains no practical plan for achieving universal primary education. This prioritisation is valid, but reveals the limitations of government and the consequence of allowing the two other categories of expenditure to eat into the development budget.

Underlying constraints to pro-poor expenditure

While poverty reduction is an explicit goal of government and a central plank of the government's development strategy, there remains considerable cynicism over the capacity of the PNG government to deliver on this promise.[59] Cash transfers are reserved for landowners rather than the poor.[60] Political constraints have prevented the government from targeting expenditure on areas of the country most stricken by poverty.[61] And while the recently begun reforms to have inter-governmental financing reflect the cost of service delivery represent a major step forward, the simultaneous expansion of the District Service Improvement Program – a program through which windfalls are distributed equally among Districts – betrays the government's preoccupation with equality in expenditure and the unchanging political imperative. These problems persist despite continual reform and invasive assistance, reflecting a policymaking process that may exhibit only limited rationality.[62]

For those poverty programs that succeed in obtaining a place in the budget, there is no guarantee that their funding will be forthcoming. Figure 7 illustrates the degree to which actual expenditure deviated from budget appropriations for all government financed projects and programs in the development budget between 2003 and 2006 – the first four years of the current growth spell.[63]

Figure 7: Virements in Government Development Expenditure 2003-2006



For the first three of these years, at least 14 per cent of budgeted programs received no funds at all. While these deviations – or *virements* – became smaller and less frequent over the four years, a deeper analysis of the data reveals that social sector programs remained especially vulnerable to cuts.[64] Actual expenditure on basic education was less than half the value of appropriations in two of the four years. Actual expenditure on HIV/AIDS was less than a third of the value of appropriations in three of the four years, including one year – 2004 – where no funding was released at all. This is most likely explained by weak capacity in the respective government agencies who fail to exert sufficient bureaucratic or political pressure to ensure their appropriations are met in full.

For those poverty-focused programs that receive their full budget appropriation, a challenge remains in implementation. Capacity weaknesses are reflected in poor project design and execution. A more fundamental problem is a reliance on anachronistic systems of service delivery. Many such systems are now failing and there is an urgent need to adapt to simple, sustainable methods that are fit for the country's current and future needs.[65]

Using windfalls effectively

As government expenditure has increased over the current growth spell, so, rightly, has expectation for what it might achieve. Yet the adjustment to greater spending has not been without problems. Supplementary expenditure has been increasingly treated as fungible: the development budget has become progressively less aligned with the government's stated priorities and the Treasurer's advance – the Cabinet's discretionary purse – has been regularly topped up, freeing the government from the need to make hard choices. Despite the existence of numerous sector plans, there is no basis for determining how additional funds should be deployed: shovel-ready projects for which funding can be brought forward or existing initiatives which can be scaled up.[66]

Increased expenditure on transport maintenance and rehabilitation, overwhelmingly concentrated on roads, is one of the few consistent themes in public investment over this period. Key to this trend has been the incremental rate at which appropriations have increased in the development budget - see Figure 8 - a feature reinforced in the supplementary budgets where expenditure is held in trust accounts and so can be drawn down gradually.[67] This has simultaneously helped to foster the capacity development of the relevant government agencies – Transport, Works and the Tenders Board – while sending an unambiguous signal to the private sector identifying a growth industry. Textbox 5 examines the case for greater investment in transport.

Figure 8: Development Budgets, GoPNG Funded Portion (Kina, millions)

	2003	2004	2005	2006	2007	2008	2009
Primary and Preventive Health	24.5	7.6	22.5	55.0	48.0	44.0	39.6
HIV/AIDS Prevention	0.3	0.3	1.0	3.0	12.5	17.0	5.0
Basic Education	2.7	6.3	15.7	14.4	26.9	10.5	30.8
Development Oriented Adult Education	12.5	16.3	7.1	7.1	8.6	3.7	40.0
Transport Rehabilitation and Maintenance	232.6	204.4	312.5	354.9	377.5	338.1	454.5
Income Earning Opportunities	89.3	62.3	78.1	57.1	59.8	55.5	214.8
Law and Justice	5.5	0.8	23.5	15.9	30.5	31.0	10.0
Governance Reform	23.5	15.1	15.0	20.7	16.1	31.4	15.4
General Government Administration	0.1	2.3	1.5	3.3	2.3	10.8	120.1
Aid Administration	0.0	0.0	0.2	0.4	0.2	0.0	0.0
Constitutional Grants	54.5	65.4	54.5	27.3	54.5	54.5	54.5
Development Grants	17.9	14.3	24.8	102.4	97.3	133.0	514.6
Other Government Services	10.2	31.9	48.8	31.8	23.3	34.0	121.6
Total	**473.6**	**426.9**	**605.2**	**693.2**	**757.5**	**763.4**	**1,620.9**
MTDS Alignment	88.3%	82.9%	85.2%	86.3%	88.5%	82.7%	73.6%

In summary, while government can lay claim to a large share of the national income generated through the growth process, its expenditure choices result in far too few benefits for the poor, resulting in only a modest poverty elasticity. A weak public sector reduces government to, at best, an inefficient distributive role, or at worst, an extension of the extractive industry: a necessary cost on companies that provides legitimacy for their activity in the country. While there may be a temptation to dismiss the merits of public expenditure in PNG given the problems that afflict government, the example of transport investment demonstrates that these problems are not insuperable.

Textbox 5: The Case for Investment in Transport

Adequate transport infrastructure has long been recognised as a crucial ingredient for growth and poverty reduction and in recent years the case for greater investment has experienced something of a revival.[68]

There are ubiquitous calls within PNG for more transport investment, including from the informal sector in which the majority of the poor participate.[69] Public investment in transport has been shown to provide the most effective means of reaching the poor in countries with a more developed infrastructure stock than PNG, suggesting the returns to investment in PNG may be even higher.[70] The low stock of functioning transport infrastructure in PNG is one of the explanations for the disconnect of the poor from the remainder of the economy. Extending that infrastructure provides a definitive remedy to this problem, just as Digicel's expansion of the cellular network has since 2007.

The efficacy of transport investment in PNG has been demonstrated by Gibson, who finds that households with access to roads enjoy higher prices for their crops, reduced prices for their purchased food and a wider variety of income earning opportunities, together enabling higher levels of consumption.[71] Investment in the sector can provide numerous spillovers for the provision of public services among government's other priorities.[72]

The government's performance in the transport sector benefits from the application of one of the few functional resource and monitoring frameworks to direct and account for expenditure and while the government's role is not without challenges, it represents a less daunting task than in other sectors.[73] Costing studies indicate that the sector is ripe for further funding; current levels of government funding may now be close to annual maintenance needs, but remain wholly insufficient for the type of reconstruction and rehabilitation investment required to repair those infrastructure assets which remain in disrepair.[74]

The role of commodity prices

Any analysis of poverty in PNG is incomplete without consideration of the role of commodity prices. This paper's analysis focuses on PNG's growth spell between 2003 and the present – a period characterised by rising world commodity prices. Higher commodity prices raise export values which push up the value of the kina.[75] For PNG's limited urban poor, a strong kina has an unambiguously positive welfare effect, by reducing the cost of imported staples. For the rural poor, the effect will vary. Households with no arable land or who produce only for the domestic market will share the same benefits as the urban poor. However, those who grow cash crops will see their competitiveness and earnings affected, depending on the composition of price changes between agricultural and non-agricultural commodities. This, combined with reduced import prices, will determine the net effect on their welfare.

Commodity prices may not of themselves alter the level of output in the economy. However, the increased return on commodity exports increases gross national income, which can spur additional economic activity.[76]

Conclusion and recommendations

The current period of growth has presumably seen many Papua New Guineans escape poverty, a result not only of the economy's increased output, but the additional income generated by a temporary improvement in the terms of trade. Those lifted from poverty retain relatively strong connections to the economy, its active participants and the government. For those whose connections are weak or altogether absent – a potentially increasing share of the poor as poverty diminishes – economic growth provides no obvious reward.

Based on this paper's analytical framework, there are two possible strategies for increasing the impact of growth on poverty: favouring types of growth in which income accrues to higher elasticity channels; and strengthening existing poverty elasticities by bringing the poor in closer connection to the economy. Both strategies can be pursued simultaneously.

These strategies translate into policy recommendations concerning the participation of individuals, companies and government in growth. These provide practical steps by which the government can address poverty in PNG.

To increase **individuals'** share in growth, government should rethink its approach to the appraisal of foreign investments, placing greater onus on what investments offer in terms of domestic employment, in addition to government revenues. Investment in human capital can increase the productivity of labour, while investment in transport can bring individuals in closer proximity with markets. Urban migrants, seeking greater participation in the economy's growth process, deserve support rather than admonishment. Many of these same policies can raise the poverty elasticity of individuals. In addition, increasing access to financial services, preferably with the involvement of the private sector, may enhance the prudence of individuals' consumption preferences by enabling them to save.

The poverty elasticity of **companies** can be increased in a number of ways. The development of domestically-owned companies can be encouraged through the expansion of financial services. Government and donors can support new market entrants in procurement markets by sending clear signals of the pipeline for future contracts and by offering small-scale contracts. Foreign-owned companies should be encouraged to reinvest their profits within PNG through fiscal incentives.

To increase its poverty elasticity, **government** must first go back to basics, narrowing its efforts on the provision of essential public goods and services, in recognition of its limited capacity. While the range of goods and services government attempts to provide should be circumscribed, their reach must be expanded to bridge the gap to those poor who are currently overlooked.[77] This requires further effort to address some of the government's most glaring weaknesses: eliminating wasteful expenditure and fixing the broken systems of service delivery. The latter will necessarily require ongoing donor assistance. Governments' tendency to grow disproportionately as national income rises can be better managed through the development of multi-year expenditure plans.[78]

The highly anticipated LNG project lends weight to these arguments. The high rate of growth presaged by the project will reinforce the existing structure of the economy in which the poor are largely excluded, rather than ushering in much needed structural reform. Maximising the benefits of the project for the poor will require a radically different approach by government.

The recommendations from this paper, together with its insights on the link between growth and poverty, should be used to inform the government's new Long Term Development Strategy and the next Medium Term Development Strategy. The low and variable poverty dividend from growth underlines the limitation of relying on GDP growth as an indicator of PNG's development.

By placing the MDGs at the centre of their new Pacific Partnerships, the Australian government shares some of the accountability for progress on poverty reduction in PNG. Its challenge now is to revise its policies and interventions in light of this goal, which will require a more satisfactory accommodation of the role of growth. Australia's private sector too has expressed its willingness to contribute towards development objectives in PNG, while benefiting from economic opportunities in the country such as the LNG project.[79] It must recognise that the poverty impact of its investments is far from assured, without a more deliberate approach.

The analytical framework employed in this paper serves as an attempt to overcome the paucity of poverty-related data in PNG, a problem which has long been recognised. The new Household Income Expenditure Survey is long overdue and will provide the means to explore this paper’s findings in more detail. A longer-term solution is to develop more regular and small-scale household surveys, both as a means to more accurately track poverty developments in PNG and to increase the capacity of the National Statistics Office.

NOTES

[1]Government of Papua New Guinea, *Medium Term Development Strategy Performance Management Framework: Pocketbook 2008*. Department of National Planning and Monitoring, 2008.

[2] World Bank. *World Development Indicators database*. 2008: http://go.worldbank.org/IW6ZUUHUZ0, accessed January 2009; updated with Government of Papua New Guinea. *Mid Year Economic and Fiscal Outlook Report 2009*. 2009: http://www.treasury.gov.pg/html/national_budget/files/2009/budget_documents/Related%20Budget%20Documents/2009%20MYEFO%20Report.pdf.

[3] Government of Australia. *Prime Minister of Australia Joint Press Conference with the Right Honourable Grand Chief Sir Michael Somare, Prime Minister of Papua New Guinea, Parliament House*. 28 April 2009: http://www.pm.gov.au/media/Interview/2009/interview_0936.cfm.

[4] M. Bourke and B. Allen. Poverty in rural Papua New Guinea. Australian National University, Canberra, 3 July 2008.

[5] G. Datt and T. Walker, Does mining sector growth matter for poverty reduction in Papua New Guinea? *Pacific Economic Bulletin* 21 (1) 2006, World Bank. *Papua New Guinea: Poverty assessment*. 30 June 2004: http://siteresources.worldbank.org/INTPAPUANEWGUINEA/Resources/PA-Report.pdf. This paper uses the $1/day PPP poverty measure, rather than adjusting to the World Bank's new, preferred $1.25/day PPP measure of international poverty (see S. Chen and M. Ravallion. *The developing world is poorer than we thought, but no less successful in the fight against poverty*. World Bank August 2008: http://econ.worldbank.org/external/default/main?pagePK=64165259&piPK=64165421&theSitePK=469372&menuPK=64166093&entityID=000158349_20080826113239) while debate on the validity of this change is ongoing.

[6] Asian Development Bank. *Priorities of the poor in Papua New Guinea*. September 2002: http://www.adb.org/Documents/Reports/Priorities_Poor/PNG/default.asp#contents.

[7] Author's calculations, based on the World Bank, *1996 Papua New Guinea household survey*. 1996.

[8] United Nations Department of Economic and Social Affairs, *Urban and rural areas.* 2007. Papua New Guinea's urban population share is estimated at 12.5 per cent; in Burundi the share is 10.1 per cent.

[9] J. Gibson and S. Olivia, Attacking poverty in Papua New Guinea, but for how long? *Pacific Economic Bulletin* 17 (2) 2002.

[10] Based on the income sources of the household head. The poor may be able to obtain cash income from other household members. World Bank, *Papua New Guinea poverty and access to public services. 2000*.

[11] P. Collier. *The politics of hunger: how illusion and greed fan the food crisis*. Foreign Affairs November/December 2008: http://www.foreignaffairs.com/articles/64607/paul-collier/the-politics-of-hunger.

[12] L.W. Hanson, B.J. Allen, R.M. Bourke and T.J. McCarthy, *Papua New Guinea rural development handbook.* Canberra, Land Management Group, Department of Human Geography, Research School of Pacific and Asian Studies, The Australian National University, 2001.

[13]J. Gibson, B. Allen and M. Bourke, Poor rural places in Papua New Guinea. *Asia Pacific Viewpoint* 46 (2) 2005.

[14] B. Allan and R.M. Bourke, Can rural development alleviate poverty in Papua New Guinea? *Development Bulletin* 72 2007.

[15] Government of Papua New Guinea, *Medium Term Development Strategy Performance Management Framework: Pocketbook 2008.*

[16] This research was precipitated by the compilation of internationally comparable time series datasets, and the greater emphasis and funding given to household surveys. In this section and beyond, the term 'poverty' normally refers to a narrow income definition, as opposed to a broader definition, encompassing non-income dimensions of poverty. While the two definitions overlap, it is important to recognise how and why the two can diverge – see United Nations Development Programme, *Human development report 1996.* New York and Oxford, Oxford University Press, 1996; and United Nations Development Programme, *Human development report 2003.* New York and Oxford, Oxford University Press, 2003. Nevertheless, understanding the relationship between income poverty and growth provides useful insights on how to address non-income aspects of poverty.

[17] For a good overview of the literature, see Operationalizing Pro-Poor Growth Research Program, *Pro-poor growth in the 1990s: lessons and insights from 14 countries.* Washington, DC, World Bank, 2005; R.H.

Adams, *Economic growth, inequality, and poverty: findings from a new data set.* World Bank Policy Research Working Paper No. 2972. Washington, DC, World Bank 2002; and World Bank, *Poverty reduction and the World Bank: progress and challenges in the 1990s.* Washington, DC, World Bank, 1996.

[18] D. Dollar and A. Kraay. *Growth is good for the poor*. World Bank 30 April 2001: http://ideas.repec.org/p/wbk/wbrwps/2587.html.

[19] See M. Roemer and M.G. Gugerty, *Does economic growth reduce poverty?* CAER II Discussion Paper No. 4. Cambridge, MA, Center for International Development at Harvard University, 1997 and D. Rodrik, Growth versus poverty reduction: a hollow debate. *Finance and Development* 37 (4) 2000.

[20] See, for instance, World Bank, *Poverty reduction and the World Bank: progress and challenges in the 1990s;* or Operationalizing Pro-Poor Growth Research Program, *Pro-poor growth in the 1990s: lessons and insights from 14 countries*.

[21] M. Ravallion and S. Chen, What can new survey data tell us about recent changes in distribution and poverty? *World Bank Economic Review* 11 1997; M. Ravallion, Growth, inequality and poverty: looking beyond averages. *World Development* 29 (11) 2001; Adams, *Economic growth, inequality, and poverty: findings from a new data set*; and F. Bourguignon, The growth elasticity of poverty reduction; explaining heterogeneity across countries and time periods, in *Inequality and growth: theory and policy implications*, ed. Theo S. Eicher and Stephen J. Turnovsky. Cambridge, MA, MIT Press, 2003.

[22] Ravallion, Growth, inequality and poverty: looking beyond averages; Operationalizing Pro-Poor Growth Research Program, *Pro-poor growth in the 1990s: lessons and insights from 14 countries*; and P. Warr, Poverty reduction and economic growth: the Asian experience. *Asian Development Review: Studies of Asian and Pacific Economic Issues* 19 (1) 2000.

[23] Ravallion and Chen, What can new survey data tell us about recent changes in distribution and poverty?; M. Ravallion, *Pro-poor growth - A primer.* Policy Research Working Paper No. 3242. Washington, DC, World Bank, 2004; J.E. Foster and M. Székely, *Is economic growth good for the poor? Tracking low incomes using general means.* Research Department Working Paper No 4269. Washington, DC, Inter-American Development Bank, 2001.

[24] This can be demonstrated under a log-normal distribution of income. See Bourguignon, The growth elasticity of poverty reduction; explaining heterogeneity across countries and time periods, and J. Lopez, *Pro growth, pro poor: is there a trade off?* Policy Research Working Paper Series 3378. Washington, DC, World Bank, 2004.

[25] While the degree of poverty in any country can, under some basic assumptions, be fully explained by Gross National Income (GNI) and the income distribution, the same cannot be said of GDP.

[26] J. Gibson, The impact of growth and distribution on poverty in Papua New Guinea. *Applied Economics Letters* 7 (8) 2000 and World Bank. *Papua New Guinea: Poverty assessment*. 2004; updated in Datt and Walker, Does mining sector growth matter for poverty reduction in Papua New Guinea? Gibson focuses narrowly on Port Moresby – the only area for which there is a sufficient quantity of comparable data from the two most recently completed household surveys (1986 and 1996). The author finds a poverty elasticity of -1.4 with respect to mean income in 1996, based on a headcount measure of poverty using the country's national poverty line. The national poverty line allows for 2200 calories per adult equivalent per day and an allowance for basic non-food expenditure. It stood at 37.5 per cent at the time of the last household survey in 1996. The World Bank model captures the poverty elasticity with respect to mean consumption.

[27] Author's calculations. Consistent with the model, the real per capita growth rate for each sector is assumed to translate one-for-one into changes in the mean consumption growth rate for households whose working members are employed in that sector. Recent growth rates, taken from Government of Papua New Guinea, *Budget 2009*. 2008; and Government of Papua New Guinea. *Budget Strategy Paper 2010*. 2009: http://www.treasury.gov.pg/html/national_budget/files/2009/budget_documents/Related%20Budget%20Documents/2010%20BSP.pdf, are a combination of actuals and estimates. The model assumes no change in the distribution of income for those individuals positioned around the poverty line. No account is made for changes in the terms of trade, which Datt and Walker estimate by the deviation between increases in the GDP deflator and the Consumer Price Index. This appears justified as between 2003 and 2008, the GDP deflator has increased by 34.4 per cent and the CPI has increased by a very close 32.3 per cent. Data from Government of Papua New Guinea, *Budget 2009*; and Bank of Papua New Guinea, *Quarterly Economic Bulletin*. March 2009.

[28] Based on a deeper examination of the model, this may be a conservative estimate. While the model can account for a shift in employment between the mining and non-mining sector, it cannot account for the overall

increase in formal employment recorded since 2006. (From a base of 100 in March 2002, the Central Bank's employment index had risen to 142.8 by Q4 2008 – see Bank of Papua New Guinea, *Quarterly Economic Bulletin.* March, 2009*)*. This implies that the reduction in poverty between 2003 and 2008 may be greater than the poverty elasticity estimates suggest.

[29] Author's calculations based on Government of Papua New Guinea. *Budget Strategy Paper 2010*. These estimates importantly do not factor in the LNG project which would presumably push GDP per capita far beyond 1996 levels.

[30] Remuneration of labour and capital is expected to roughly reflect levels of marginal product, without assuming that labour and capital markets achieve efficient outcomes.

[31] It is implicit here that individuals, companies and government may each exhibit a different propensity to import and to save, resulting in a different multiplier effect.

[32] This framework evokes the essence of more complex quantitative tools which attempt to faithfully model transactions in an economy. For an excellent overview of these tools, see F. Bourguignon and L. Pereira da Silva, *The impact of economic policies on poverty and income distribution: evaluation techniques and tools.* Washington, DC, World Bank and Oxford University Press, 2003.

[33] Since income earned by each of three parties – individuals, companies and government – may change hands numerous times via second-order effects, the three elasticities are interdependent. The fragmented nature of the economy and the distinct consumption patterns of each of the three parties are important for justifying why each of the three elasticities remains distinct.

[34] For evidence of low labour productivity, see S. Chand, Targeting growth in PNG. *Pacific Economic Bulletin* 21 (2) 2006. While formal employment can only account for a fraction of the economy's labour force given the very low level of formalisation, its sharp rise since 2006 is one of the most promising features of PNG's recent growth and provides evidence of the contribution of individuals to economic growth. The contribution of informal sector employment is more difficult to measure. However, since PNG's growth over the past three years has been driven by sectors – agriculture, forestry, fisheries, construction, transport and communications – in which informal labour features prominently, informal sector employees are likely to have benefited, even if this is not explicitly recorded. The commodity price rises which fuelled PNG's export growth have brought direct rewards for landowners, many of whose rents – dividends, development levies and royalties – are directly tied to export values. Note that in this instance, increased rents only reflect an increase in commodity prices, not an increased contribution of resources to the growth process.

[35] Based on the income sources of the household head. The poor may obtain income from other household members. Data from World Bank, *1996 Papua New Guinea household survey.*

[36] Author's calculations based on Ibid. The data is stated in per capita terms, rather than by household, to control for variance in household composition. In converting household consumption to individual consumption, children under the age of 7 are treated as equivalent to 0.5 people, following Gibson. Due to the survey being conducted at a household level, it is not possible to disaggregate individual consumption by gender. Absolute values are stated in 1996 Kina terms. The CPI has since risen by 188 per cent, as of Q1 2009. Bank of Papua New Guinea, *Quarterly Economic Bulletin.* March 2009.

[37] In 1996, 24.6 per cent of the population lived below the PPP US$1 a day poverty line. 54.4 per cent lived below the PPP US$2 a day measure. World Bank. *Papua New Guinea: Poverty assessment*.

[38] This sheds light on the mechanism by which adult education is known to affect child enrollment in PNG. See J. Gibson, Who's not in school? Economic barriers to universal primary education in Papua New Guinea. *Pacific Economic Bulletin* 15 (2) 2000.

[39] Author's calculations. Note that the survey only records cash transfers exceeding K50 in value. This is likely to bias the results against the poor, whose transfers (both given and received) tend to be smaller. Individuals are again arranged by consumption decile, to reflect income levels.

[40] This reading of the data is open to debate. For instance, the requirement that relationships of reciprocal exchange require transfers within 12 months may be overly restrictive, given the depth of societal ties which can guarantee enforcement; and the importance of seasonal income shocks related to harvests, which short-term insurance cannot accommodate. The analysis also ignores the important role played by non-cash gifts in inter-household exchange. 98.4 per cent of households in the survey participated in one or other form of private transfer. Food and drink feature prominently in non-cash gifts, as they do in individual consumption, demonstrating the substitutability of cash and non-cash transfers. Note, there is no reason why households cannot participate in both reciprocal assistance and kin obligations. According to this paper's analysis, those

households would be captured in the penultimate column. Thus, the final column presumably underestimates the total number of households participating in kin obligations.

[41] L. Morauta, Redistribution within the village: can we rely on it?, in *Economic Development and Trade in Papua New Guinea: Proceedings of the 14th Waigani Seminar*, University of PNG, 1981.

[42] M. Mounsell-Davis, *Safety net or disincentive? Wantoks and relatives in the urban Pacific*. National Research Institute Discussion Paper No. 72. Port Moresby, NRI, 1993; Operationalizing Pro-Poor Growth Research Program, *Pro-poor growth in the 1990s: lessons and insights from 14 countries*.

[43] There is plenty of debate in the literature as to whether this finding holds more generally. The same conclusion is drawn from this survey in J. Gibson, *Are there holes in the safety net? Remittances and inter-household transfers in Pacific Island economies.* Pasifika Project Working Paper No. 1. Wellington, Institute of Policy Studies, 2006. Gibson's analysis of the 1996 and 1986 household surveys identifies some elements of poverty targeting: towards rural households in which there was a birth in the last year; rural households where the household head had no source of cash income in the past year; and rural and urban households in which the household head is female. Morauta's original study on the village of Kukipi which distinguishes the two categories of gifts, found no evidence of redistribution. In other work, Morauta found evidence that transfers may exacerbate existing inequalities – L. Morauta, *Left behind in the village*. Monograph No. 25. Port Moresby, Institute of Applied Social and Economic Research, 1984. By contrast, research by Gibson, Boe-Gibson and Scrimgeour suggests that the effectiveness of transfers in protecting the poor depends on the degree of social capital in any particular setting. In a study of Hanuabada, a traditional village where social capital is high, they found that transfers are targeted towards the poor, are responsive to unemployment shocks and persist even when households have access to formal insurance mechanisms – J. Gibson, G. Boe-Gibson and F. Scrimgeour, Are voluntary transfers an effective safety net in urban Papua New Guinea? *Pacific Economic Bulletin* 13 (2) 1998.

[44] Even if transfers do not serve a redistributive role, they might enhance the prudence of recipient households' consumption by endorsing particular purchases. Non-cash gifts directly influence the recipient household's consumption pattern, although they may be partly fungible, depending on the household's alternative sources of income. Donor households exert less influence over recipients when gifts are comprised of cash; while donor households often specify a purpose for their cash gifts, recipient households may exercise discretion in deciding whether or not to honour their donors' preferences. Indeed, recipient households appear to exhibit a collective amnesia over donors' earmarks. For instance, 10.9 per cent of transfers were reported as being for school fees from the perspective of donor households, compared to only 5.9 per cent according to recipients. More generally, while donor households reported that 58 per cent of their cash transfers were provided against a specific purpose, recipient households only recalled earmarks in 35 per cent of their receipts. Author's calculations based on World Bank, *1996 Papua New Guinea household survey*.

[45] Gibson, *Are there holes in the safety net? Remittances and inter-household transfers in Pacific Island economies*; and L. Morauta, *Income, unemployment and welfare in low-income urban areas.* Port Moresby, Institute of Applied Social and Economic Research, 1984.

[46] For data on dividends, see Bank of Papua New Guinea, *Quarterly Economic Bulletin*. June 2008. The Bank of Papua New Guinea's Business Liaison Survey (BLS) also points to rising private sector profits.

[47] Chand and Levantis model a K320m increase in annual exports from the opening of the Lihir mine and estimate that of K183.5 gross returns on capital per annum, K72.0m of profits are repatriated, resulting in a net welfare effect to the PNG economy of only K94.2m per annum. Values in 2000 prices. S. Chand and T. Levantis, Dutch disease and the crime epidemic: an investigation of the mineral boom in PNG. *Australian Journal of Agricultural and Resource Economics* 44 2000.

[48] An excess supply of unskilled workers means the marginal impact of a higher demand for labour on wages will be modest.

[49] While this is most obviously true for the mining sector, one may hypothesise that a difficult business environment and the heterogeneity of local cultures make entrepreneurs from other sectors reluctant to alter the location of their business.

[50] Chand, Targeting growth in PNG. To meet Chand's per capita growth target of 6 per cent, gross fixed capital formation as a per cent of GDP would have to rise to 30.4 per cent, combined with an increase in productivity growth to 1.5 per cent per annum. (Gross fixed capital formation stood at 18.1 per cent of GDP in 2006. World Bank. *World Development Indicators database*. 2008, accessed January 2009.) Other

estimates fall within a similar range – see E. Faal, *Growth and productivity in Papua New Guinea.* IMF Working Paper 06/113, 2006.

[51] For international comparisons of FDI, see International Monetary Fund, *Article IV* Selected Issues and Statistical Appendix, 2008. According to data from the Bank of Papua New Guinea, since the beginning of the current growth episode, foreign equity holdings have increased 41.5 per cent in the mineral sector and 38.0 per cent in the non-mineral sector. Bank of Papua New Guinea, *Quarterly Economic Bulletin*. June 2008.

[52] In the Lihir-based model built by Chand and Levantis, approximately K70m of the K94.2m net welfare gain that accrues to the economy each year is amassed by the government, demonstrating how instrumental its role is in the transformation of growth into development. Chand and Levantis, Dutch disease and the crime epidemic: an investigation of the mineral boom in PNG.

[53] Government of Papua New Guinea, *Budget 2009.*

[54] A third part is debt repayment. Faster amortisation of public debt may help to reduce the cost of credit for other borrowers in the domestic market. However, given that the poor typically have little access to formal credit markets, any benefit to them will be modest, at best. The analysis of development expenditure is applicable to the additional priority expenditures in 2005, 2006, 2007 and 2008, even though they are treated separately in the budget. The poverty impact of government expenditure is assessed here both in a narrow transactional sense – treating government as a consumer, employer and occasional provider of transfers – but also in terms of the provision of public goods and services.

[55] Based on the income sources of the household head. The poor may be able to obtain cash income from other household members. World Bank, *1996 Papua New Guinea household survey.*

[56] E. Anderson, P. de Renzio and S. Levy, *The role of public investment in poverty reduction: theories, evidence and methods.* Working Paper No. 263. London, Overseas Development Institute, 2006.

[57] Assumptions as to the redistributive role of government can often be proved wrong. See World Bank, *Poverty reduction and the World Bank: progress and challenges in the 1990s*; and V. Wilhelm and I. Fiestas, *Exploring the link between public spending and poverty reduction: lessons from the 90s.* Washington, DC, World Bank Institute, 2005.

[58] Author's calculations. Figures represent the total value of all constitutional and development grants as a share of the government-funded portion of the development budget, based on appropriations in 2003 and 2009. The government makes the optimistic assumption that 100 per cent of these funds go on investment, of which 70 per cent go to development priorities. A more reasonable assumption would be that expenditure is split between investment and consumption. Furthermore, where transfers are used for investment purposes, a lack of accountability is likely to result in sub-optimal investment choices. Data from Government of Papua New Guinea, *Budget 2003.* 2002; and Government of Papua New Guinea, *Budget 2008.* 2007.

[59] Government of Papua New Guinea. *Medium Term Development Strategy 2005-2010.* 2004: www.undp.org.pg/documents/country_programme/PNG_government_medium_term_development_strategy.pdf .

[60] One small experiment with providing in-kind transfers for the poor was provided by NEFC's short-lived management over the Least Developed District Grant. The grants were dispersed among schools to relieve parents of the cost of fees and ensure schools a secure income.

[61] Gibson, Allen and Bourke, Poor rural places in Papua New Guinea.

[62] A. Wildavsky, *The politics of the budgetary process.* Boston, Little, Brown, 1964. Wildavsky points out that attempts to address budget weakness designed on the basis of the rationalist paradigm can result only in a 'trivial manipulation of techniques', rather than a change in the underlying behaviour of policymakers. See also A. Fozzard, *The basic budgeting problem approaches to resource allocation in the public sector and their implications for pro-poor budgeting.* Working Paper 147. London, Overseas Development Institute, 2001; and Department for International Development, *Understanding the politics of the budget: what drives change in the budget process?* Briefing Paper. London, DFID, February, 2007.

[63] Author's calculations. This analysis only covers direct government financing and excludes items funded from loans and the tax credit scheme. Expenditure is recorded only so far as its dispersal to the appropriate line agency. *Government of Papua New Guinea, Budget 2006.* 2005; Government of Papua New Guinea, *Budget 2007.* 2006; Government of Papua New Guinea, *Budget 2008.* 2007; Government of Papua New Guinea, *Budget 2009.* 2008.

[64] Author's calculations.

[65] Government of Papua New Guinea. *Medium Term Development Strategy 2005-2010*; Asian Development Bank. *Papua New Guinea country strategy and program 2006-2010*. June 2006:

http://www.adb.org/Documents/CSPs/PNG/2006/default.asp; and Government of Australia, *Papua New Guinea – Australia Development Cooperation Strategy 2006–2010.* Canberra, AusAID, 2006.
[66] The Treasury's Medium Term Fiscal Strategy (Government of Papua New Guinea, *Medium Term Fiscal Strategy for 2008-2012.* 2008) fails to adequately address this issue. The Department of Planning's Public Investment Program, which is intended for such a role, is understood to have not functioned properly for several years.
[67] The table excludes supplementary budget appropriations on transport rehabilitation and maintenance. These totaled K345.5m in 2006 and K638.6m in 2008. Unlike for appropriations in the annual budget, supplementary appropriations do not expire after a set period of time, if they are not drawn down.
[68] Commission for Africa, *Our common interest: report of the Commission for Africa.* London, Commission for Africa, 2005.
[69] Government of Papua New Guinea, *PNG Informal Economy Survey Final Report for National Consultative Committee on the Informal Economy.* 2007.
[70] S. Fan, P. Hazell and S. Thorat, *Linkages between government spending, growth, and poverty in rural India.* Research reports No 110. Washington, DC, International Food Policy Research Institute, 1999.
[71] J. Gibson and S. Rozelle, Poverty and access to roads in Papua New Guinea. *Economic Development and Cultural Change* 52 2003.
[72] See Gibson, Who's not in school? Economic barriers to universal primary education in Papua New Guinea. and Chapter 6, Volume 1 of Government of Papua New Guinea, *Budget 2008.*
[73] The framework referred to here is the Road Asset Management System (RAMS).
[74] Government of Papua New Guinea, *(Re) Building the 'backbone' - A transport infrastructure program of national importance.* 2007.
[75] Two papers demonstrating the strong link between commodity prices and the Kina are: G. Kauzi and T. Sampson, Shock exposure – commodity prices and the Kina. *Pacific Economic Bulletin* 24 (1) 2009; and P. Cashin, L. Céspedes and R. Sahay, *Keynes, cocoa, and copper: in search of commodity currencies.* International Monetary Fund Working Paper 02/223, 2002. One of the notable features of the current growth episode was the slower and more gradual appreciation in the kina, in response to the increase in mineral prices. This appears to be the result of increasingly assured interventions in the exchange rate markets by the Central Bank. Such interventions have the capacity to reduce the volatility borne by the entire economy, but felt especially by the poor, and the negative behavioural effects this has on investment and other economic activity.
[76] A terms of trade improvement will also lead to a shift in the sectoral composition of GDP, via second-order effects. This will likely impact poverty levels, depending on how income is distributed in the affected sectors.
[77] The same case could equally be made for donors to increase their impact on poverty.
[78] The tendency for government to grow with national income is known as Wagner's Law. The growth of government in excess of GDP growth has occurred despite the Treasury's efforts to limit government size to around 25 per cent of GDP, mirroring the ratio in Australia. See Government of Papua New Guinea, *Budget 2009.*
[79] Private sector commitment to the MDGs is exemplified by the work of the Business for Millennium Development.

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