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# Micro-simulation analysis of social protection interventions in Pacific Island countries

## AusAID Pacific social protection series: poverty, vulnerability and social protection in the Pacific

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Cover images from left to right:

Family in Vanuatu outside their home.
*Photo: Philippa Freeland*

Social welfare beneficiaries receive training on their new Westpac bank cards in Fiji.
*Photo: Mere Senikau/Pacific Financial Inclusion Program*



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# Contents

# 1. Introduction to the research

Pacific Island countries (PICs) have varying social protection systems, informal and traditional. These systems are important in supporting the most vulnerable members of society and those affected by personal and natural disasters. In the Pacific Islands social protection has typically been an area of low government involvement. Knowledge about formal social protection in the region is limited, and there have been no studies on the impact of such schemes on poverty, human development and economic growth.

There is no one agreed definition of social protection, but this body of research—commissioned by AusAID—uses the term to refer to the set of public actions aimed at tackling poverty, vulnerability and social exclusion, as well as providing people with the means to cope with major risks they may face throughout their life.

Social protection's core instruments include regular and predictable cash or in-kind transfers to individuals and households. More broadly, social protection includes instruments that improve people's access to education, health care, water, sanitation, and other vital services.

Traditional social protection in the Pacific Islands is stretched by new challenges, most recently the 2008–09 global food, fuel and financial crisis. This has led to greater attention to innovative social protection mechanisms that tackle chronic poverty, mitigate the impact of shocks, improve food security and overcome financial constraints to accessing social services. This attention has been driven by the success of mechanisms in other parts of the world.

In an environment with limited or conflicting information about patterns of poverty and vulnerability, knowing whether social protection represents a sound, or even appropriate, policy choice is difficult. This research looks at poverty, vulnerability and social protection across the dimensions of health and education, gender, social cohesion, economic growth, and traditional protection networks in the Pacific Islands. It aims to improve the evidence base on formal and informal social protection programs and activities in the Pacific region and make recommendations on support for strengthening and expanding social protection coverage so it can contribute to achieving development outcomes.

The research was conducted by social protection experts and is based on case studies in Kiribati, Samoa, Solomon Islands and Vanuatu—representing the three sub-regions of Melanesia, Micronesia and Polynesia—and a review of secondary literature. It also commissioned a set of research papers:

- an overview of poverty and vulnerability in the Pacific, and the potential role of social protection
- a briefing on the role of social protection in achieving health and education outcomes
- a life-cycle approach to social protection and gender
- an assessment of the role of social protection in promoting social cohesion and nation-building in the Pacific
- an assessment of the relationship between social protection and economic growth
- a review of the strengths and weaknesses of informal social protection in the Pacific
- a micro-simulation analysis of social protection interventions in Kiribati, Samoa, Solomon Islands and Vanuatu.

# 2. About this research paper

This research paper—'Micro-simulation analysis of social protection interventions in Pacific Island countries'—reports on the results of micro-simulation analyses of Kiribati, Samoa, Solomon Islands and Vanuatu. It analyses the impact of various social protection interventions on poverty headcounts and poverty gaps, nationally and by demographic group. In addition, the micro-simulation model enables analysis of interventions on the distribution of expenditure across welfare deciles. A companion report (Abbott 2010) describes in detail the data used in this modelling process. A technical report (Samson 2011) details the specifications for model construction, including its four datasets:

- Kiribati 2006 Household Income and Expenditure Survey (HIES)
- Samoa 2008 HIES
- Solomon Islands 2006 HIES
- Vanuatu 2008 HIES.

Micro-simulation models are a tool for evidence-based analysis of social policy interventions. Rooted in representative household surveys of a country's population, the models paint a picture of income, expenditure and poverty levels throughout a country. They enable researchers to investigate the impact of existing social policy interventions on income levels and other outcomes. In addition, researchers can simulate the impact of new social policy interventions.

The model prepares baseline data by calculating ex-post adjustments to original survey data to remove existing social pensions in Kiribati and Samoa, as discussed below and further in the technical report.

The model uses per adult equivalent expenditure as the main welfare measure, with children weighted one-half of the adult measure. All adults have weights equal to one. In translating social transfer policy interventions into household impacts, a marginal propensity to consume 100% is assumed. Given the very low poverty line for all four countries, and the measurement error in existing data, this is considered reasonable. To the extent that the actual marginal propensity to consume for these very poor households is lower, the actual poverty impacts will be correspondingly less.

The model uses the two components of the basic needs poverty line:

- cost of food
- required expenditure on essential non-food basic-needs.

This basic needs poverty line aims to represent the minimum expenditure required to provide a basic, low-cost, minimally nutritious diet (measured as the minimum daily calorie intake needed for basic human survival, internationally benchmarked at an average of around 2100 to 2200 calories a day per adult per capita[1], as well as other essential non-food items (Abbott 2010). This poverty line has been widely used to analyse poverty in the four countries involved in this research, which generally do not specify their own official poverty line.

The baseline analysis compares the money poverty gap across countries, finding Kiribati to have the highest relative poverty line (compared to per capita income) and the highest poverty gap, at 2.51% of gross domestic product (GDP), followed by Samoa (2.49%) and Solomon Islands (2.3%). Vanuatu, with a poverty line relative to GDP less than half of Kiribati, has the lowest poverty gap at 1.13% of GDP. Samoa reports the highest relative poverty for young children (defined in this body of research as those under 5 years of age), compared to poverty rates overall, but the lowest relative poverty for older- people (defined in this study as people 65 years of age or older). Solomon Islands have the lowest rate of relative child poverty and Kiribati reports the highest relative poverty for older- people.

The model analyses variations on categorically targeted cash transfers to young children and older- people. The least expensive package—providing a benefit equal to 10% of the poverty line for young children and 25% of the poverty line for older- people—costs the most in Kiribati (1.1% of GDP in the survey year) and Samoa (1%), moderately lower in Solomon Islands (0.8%) and significantly lower in Vanuatu (0.4%), mainly because the relatively low poverty line in Vanuatu leads to a low modelled benefit level. Expressed as a percentage of government expenditure, the fiscal burden for Samoa is the greatest, at 3%, followed by Vanuatu at 2%, with Kiribati and Solomon Islands a little more than 1% each. Vanuatu's relatively low ratio of government spending to GDP accounts for this reversal in ranking.

These categorical benefits, while not explicitly targeting the poor, reach poor households proportionally more than the representation of poor households in the population. This is particularly true for Samoa, because households with young children are poorer than average. Overall, the least expensive social protection package reduces each country's poverty gap by approximately 7% to 10%, the poverty gap for households with young

1 This is the daily minimum adult calorie intake for a moderately active adult recommended by the Food Agriculture Organization and World Health Organization.

children by 10% to 11% and the poverty gap for households with older-people by 15% to 17%.

Doubling the least expensive benefits package—to 20% of the poverty line for young children and 50% of the poverty line for older- people—doubles the costs, but only at most an arguably affordable 2% of GDP which is towards the upper end of the inter-quartile range for developing country spending on social assistance. Poverty-reducing efficiency falls slightly, since the grants are now large enough to lift more people out of poverty, but all packages remain strongly pro-poor. In Samoa's case, the poverty gap reduction is 30% larger than would be the case with universal provision. Across all countries the poverty gap falls between 13% and 20%—between 18% and 21% for households with young children and between 27% and 32% for households with older people.

Tripling the least expensive benefits package to 30% of the poverty line for young children and 100% of the poverty line for older- people leads to roughly proportional increases in costs and poverty reducing impacts. The cost is greatest in Kiribati, at nearly 4% of GDP, and just a little less in Samoa. The impacts on the poverty gap are significantly larger elsewhere—reducing it by nearly a third in Samoa, a quarter in Kiribati and by nearly half in all countries for households with older- people. The large size of the benefits exhausts the pro-poor bias in Solomon Islands—a more efficient package for poverty reduction would distribute smaller benefits more broadly.

The micro-simulation exercise demonstrates the feasibility of starting with a small but affordable package of benefits and scaling up as resources and political will permit. In Kiribati, Samoa and Vanuatu, the pro-poor impact persists even as benefit levels rise to fairly generous levels. Countries are likely to encounter fiscal constraints before exhausting the potential of the categorical benefits to efficiently reduce poverty.

The micro-simulation exercise also separately tested two singular cash transfer benefits:

- a child benefit equal to 30% of the poverty line for all children under 5 years of age
- a social pension equal to 100% of the poverty line for all people 65 years of age and older.

The child benefit costs less than 2% of national income in Kiribati, Samoa and Solomon Islands and just 7% of GDP in Vanuatu. In Samoa, Solomon Islands and Vanuatu the poverty-reducing efficiency of this child benefit alone is more than the efficiency of the combined packages discussed above. The situation is reversed in Kiribati, where the combined packages are more efficient in reducing poverty than the child benefit. This is consistent with the relative poverty analysis discussed above: Samoa

reports the highest relative poverty for young children and Kiribati reports the highest relative poverty for older- people.

The child benefit also has a significant impact on poverty for older- people. Even in Kiribati the child benefit alone results in a 10.6% reduction in the poverty rate among households with people 65 years of age and older. This reduction is the result of benefits reaching households with both children under the age of 5 years and persons 65 years of age and older. However, the pairing of the child benefit with a generous social pension (100% of the poverty line) results in poverty rate reductions among these older- people households ranging from 3.6 (Kiribati) to 8 (Samoa and Solomon Islands) and to nearly 15 (Vanuatu) times greater than the reductions resulting from the child benefit alone.

The stand-alone social pension (equal to 100% of the poverty line) costs less when expressed as a percentage of GDP than the child benefit in Solomon Islands and Vanuatu but more in Kiribati and Samoa. In Samoa, Solomon Islands and Vanuatu the poverty gap reduction from the social pension alone is less than the impact of a child benefit on its own. The situation is reversed in Kiribati with a 14.4% reduction in the poverty gap with the social pension compared to a 10.4% reduction with the child benefit.

The micro-simulation analysis also evaluated two types of poverty-targeted cash transfers in Samoa and Vanuatu:

- benefits equal to 50% of the individual poverty line targeted to the poorest quintile of households, but under a range of assumptions about targeting costs and errors
- benefits targeted to children (30% of the poverty line) and older- people (100% of the poverty line) in the poorest three deciles of households, again testing a range of assumptions about targeting costs and errors.

The results were surprisingly similar in all four cases (household benefits in Vanuatu, household benefits in Samoa, demographic benefits in Vanuatu and demographic benefits in Samoa). Not surprisingly, effective targeting with low costs and low errors yielded the highest possible efficiency in poverty reduction. However, this is an optimistic scenario. Usually minimising targeting errors of inclusion and exclusion requires an expensive targeting mechanism—not only the administrative costs of targeting but also private, social, political, economic (‘perverse incentives’) and other costs.

A more realistic trade-off involves choosing between a low-cost targeting mechanism yielding relatively high targeting errors and a higher-cost mechanism minimising errors. In each country and for each poverty targeting approach, a purely categorical package of benefits reduced poverty more efficiently than in at least one of these ‘realistic’ scenarios.

The fourth option—targeting with high costs and high errors—not surprisingly performed the worst.

In the absence of credible evidence on targeting costs and likely errors of inclusion and exclusion—evidence that does not exist for Pacific countries—it is not possible to precisely identify which targeting approach will be most effective and efficient in PICs. However, this analysis underscores the importance of paying attention to targeting costs and errors, because they determine the relative efficiency of categorical versus poverty targeted approaches.

# 3. Baseline analysis

The baseline for the micro-simulation analysis reflects the poverty profile of the four countries in the absence of government-funded social cash transfer benefits. While the governments of Solomon Islands and Vanuatu provide no social cash transfer program, the governments of Kiribati and Samoa provide non-contributory social pensions to older- people.

Table 1 reports the baseline indicators for each country. The basic needs poverty line varies between 23.6% of per capita income (as measured by GDP) in Vanuatu and 49.5% in Kiribati. Although Kiribati employs the highest poverty line (relative to per capita income), it has the second lowest household poverty rate (16.2%), in part because it has the lowest measured inequality (based on the Gini coefficient) of the four countries. Samoa has the highest measured household poverty rate (20.9%), followed by Solomon Islands (18.8%). Vanuatu has both the lowest poverty line and the lowest household poverty rate, measured at 13.4%.

**Table 1. Baseline indicators by country**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| GDP per capita (weekly, local currency) | 32.53 | 155.12 | 122 | 4,721.27 |
| Basic needs poverty line (weekly, local currency) | 16.10 | 53.59 | 47.37 | 1,113.12 |
| Poverty line as % of per capita GDP | 49.5 | 34.5 | 38.8 | 23.6 |
| Household poverty rate (%) | 16.2 | 20.9 | 18.8 | 13.4 |
| Poverty gap as % of GDP | 2.51 | 2.49 | 2.30 | 1.13 |

The most relevant poverty analysis for social protection uses the money poverty gap indicator, measured in Table 1 as a percentage of GDP. This gap can be defined as the amount of money required to eliminate a country's poverty, if that money is perfectly targeted to every poor household in the exact amount required to lift the household to the poverty line. The poverty gap indicator in Table 1 expresses the money poverty gap as a percentage of GDP to facilitate comparisons across countries. Kiribati, with the highest relative poverty line, also

demonstrates the highest poverty gap, at 2.51% of GDP, followed by Samoa (2.49%) and Solomon Islands (2.3%). Vanuatu, with a poverty line relative to GDP less than half of Kiribati, has the lowest poverty gap at 1.13% of GDP.

Table 2 reports baseline demographic indicators for households with children under 5 years of age. Samoa has the highest rate of poverty for these households (23.8%) and Vanuatu the lowest (15%). The ranking of countries by the poverty rate of household with children is the same as the ranking by the national poverty rate. The indicated poverty gap is the average weekly money poverty gap per adult equivalent of households with children under the age of 5 years. This poverty gap measure is reported as a percentage of the poverty line, with Samoa reporting the highest relative poverty gap for households with young children. The relative poverty index is the ratio of the poverty rate of households with young children to the overall poverty rate. Samoa reports the highest relative index at 114% and Solomon Islands the lowest at 99%, reflecting that households with young children in Solomon Islands tend to be less poor than households without young children.

**Table 2. Baseline demographic indicators for households with children under 5 years of age by country**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Poverty rate (%) | 17.4 | 23.8 | 18.6 | 15 |
| Poverty gap | 0.94 | 5.09 | 3.66 | 70.6 |
| Poverty gap as % of poverty line | 5.8 | 9.5 | 7.7 | 6.3 |
| Relative poverty index (%) | 107 | 114 | 99 | 112 |

Table 3 reports baseline demographic indicators for households with people 65 years of age or older. Solomon Islands have the highest older person poverty rate (28.5% and Vanuatu has the lowest (18.7%). The ranking of countries by the poverty rate of households that include older persons is different from the ranking by the national poverty rate. The indicated poverty gap is the average weekly money poverty gap per adult equivalent of households with people 65 years of age or older. This poverty gap measure is reported as a percentage of the poverty line, and Solomon Islands report the highest relative poverty gap for households with older-people. The relative poverty index is the ratio of the poverty rate of households with older- people to the overall poverty rate. Kiribati reports the highest relative index at 157% and Samoa the lowest at 101%.

## Table 3. Baseline demographic indicators for households with people 65 years of age or older by country

| Baseline demographic indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Poverty rate households (%) | 25.5 | 21.2 | 28.5 | 18.7 |
| Poverty gap | 1.49 | 4.37 | 5.71 | 97.84 |
| Poverty gap as % of poverty line | 9.2 | 8.1 | 12.1 | 8.8 |
| Relative poverty index (%) | 157 | 101 | 151 | 140 |

# 4. Assumptions underpinning the micro-simulation analysis

## 4.1. Key assumptions

The micro-simulated impacts analysed in this research paper depend on simplifying assumptions about household consumption behaviour, economies of scale and the interaction between simulated social transfers and traditional and informal mechanisms for social protection.[2] The main simulations reported on in this research paper make the following assumptions:

- The household marginal propensity to consume is 100%. That is, households consume their entire cash transfer within the time period for which the poverty impact is analysed
- There are no household-level economies of scale. For example, a household with two adults will require twice the expenditure of a household with one adult to maintain the same living standard
- There is no interaction between simulated cash transfers and informal and traditional systems of social protection. More specifically, a household receiving a cash transfer will not experience an increase or decrease in benefits provided through informal or traditional mechanisms.

These simplifying assumptions reflect the absence of definitive findings from relevant empirical research on quantifying the likely impact of long-term reliable cash transfers on associated behaviours in PICs. The basis for these assumptions are discussed next. Subsequent sections report on simulations that assess the sensitivity of the main poverty gap impact to alternative indicative assumptions, based on existing academic literature.

2 It is noted that John Gibson (one of this research paper's peer reviewers) contributed to these assumptions and provided a useful framework for addressing associated issues.

## 4.2. Marginal propensity to consume equal to 100 per cent

The first assumption, a marginal propensity to consume equal to 100%, reflects the absence of quantitative assessments for the four countries of consumption responses to increased permanent income from long-term reliable social protection benefits. In the absence of an empirical basis for an alternative assumption the modelling assumes, for simplicity's sake, that a poor household receiving a social protection benefit will consume all associated income within the time period for which poverty is assessed.

Prior research has demonstrated that households save a significant share of the short-term income earned through seasonal work schemes[3], implying a lower marginal propensity to consume than what this research paper assumes. If households see new social transfer benefits as temporary, they may save a significant share for future consumption to help with the income shock faced once benefits end. It is plausible that poor households might hold these perceptions in light of the Pacific's history of electorally-driven school fee subsidies that rise and fall across election campaigns (as with Papua New Guinea's experience). Alternatively, demand for short-term savings for ceremonial expenditures, church offerings or other relatively large and irregular (lumpy) expenditures may reduce the immediate marginal propensity to consume.[4] Modelling the full poverty impact then requires a dynamic micro-simulation approach, measuring the impact on poverty resulting from using the savings later.[5]

While some anecdotal evidence exists on consumption behaviour for upper income groups, less empirical evidence analyses the consumption of the poor. For example, in 2007 the United Nations Development Programme reported[6]:

> There is a considerable body of anecdotal evidence that most borrowing is for consumption, and that the practice is widespread in society (p. 10) … In Samoa, for example,

3 Gibson and McKenzie, *The Development Impact of a Best Practice Seasonal Worker Policy* 2010, <http://ipl.econ.duke.edu/bread/papers/working/286.pdf>, viewed at 1 December 2011.

4 John Gibson provided these ideas.

5 If the assumed discount rate in a dynamic model is close to the interest rate poor households face, this research paper's simple one-stage modelling (assuming 100% marginal propensity to consume) might provide a good approximation of the relative poverty-reducing impacts (comparing across alternative types of cash transfer benefits) that would be identified by a dynamic model assuming a lower marginal propensity to consume.

6 United Nations Development Programme, *Financial Service Sector Assessment: Kiribati, Tuvalu, Samoa, Solomon Islands, Vanuatu* 2007, <http://www.uncdf.org/english/microfinance/uploads/sector_assessments/PIC%20LDCs%20-%20SA.pdf>, viewed 1 December 2011.

> consumer credit is clearly part of a national appetite for over-consumption ... In Samoa, consumption borrowing is wide spread. Banks report that many salaried workers maintain loan obligations that consume their entire pay check. (p. 11)

However, the report does not describe the consumption of lower income households that certainly face formal sector credit constraints.

Recognising the sensitive nature of the assumption, this modelling tests two scenarios for marginal propensity to consume:

- 88% for a high alternative
- 33% for a low alternative.

The high scenario is based on the randomised experiment Gertler, Martinez and Rubio-Codina (2006)[7] conducted for social transfers from the Oportunidades program to poor households in rural Mexico. For each peso transferred, beneficiary households used 88 cents to buy consumption goods and services and invested the rest in increased investment in micro-enterprise and agricultural activities. The low scenario is based on the multi-year study of two PICs (Tonga and Vanuatu) by Gibson and Mackenzie (2010)[8] analysing New Zealand's Recognised Seasonal Employer Worker Policy. The estimated marginal propensity to consume, using a recall-based, 20-category expenditure module, was as low as one-third in Tonga, although higher in Vanuatu. However, the seasonal worker scheme used guaranteed a return the next year (it allowed for the return of experienced workers if they had an offer of employment and met immigration requirements), so this estimate may be much lower than what would result from a permanent, dependable social transfer program.

The values for the high and low alternatives do not imply expected impacts from the modelled policy scenarios. Rather they demonstrate how sensitive results are a key parameter that may vary from the assumed value.

7 World Bank, *Investing Cash Transfers to Raise Long-Term Living Standards* 2006, <http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2006/08/10/ 000016406 20060810124348/Rendered/PDF/wps3994.pdf>, viewed 1 December 2011.

8 Gibson and McKenzie 2010. <http://ipl.econ.duke.edu/bread/papers/working/286.pdf>, viewed 1 December 2011.

## 4.3. No household-level economies of scale

The second assumption, no household-level economies of scale, reflects the absence of empirical evidence for the Pacific of an appropriate estimate for the extent to which larger households can more economically convert expenditure into wellbeing. This research paper assumes it is more appropriate when the poor consume commodities like food and individual services with no spill-over benefits to other household members, particularly when the commodities offer no benefit from bulk purchases. The assumption is less appropriate when the poor consume goods or services for which a fixed quantity of expenditure will benefit multiple household members about as much as a single household member. For example, commodities like books or newspapers would imply substantial economies of scale, because multiple household members can benefit from them.

Assumptions about economies of scale are important when different types of policy-relevant households vary significantly in size. For example, if older- people households are significantly smaller than the average household size, and households with children much larger, then ignoring economies of scale can bias poverty analysis. In this case, the true poverty rate of older- people households will be higher than that calculated in simulations that assume no economies of scale, while the true poverty rate for households with children will be lower than the measured rate. In addition, reported poverty impacts for child benefits will be greater than true impacts and reported impacts for social pensions lower.

In the four countries included in this study, however, household sizes do not vary much by relevant demographic categories on which social transfers are modelled. For example, households with older- people and households with children have an average household size of approximately five in Vanuatu, seven in Kiribati and Solomon Islands and eight in Samoa. As a result, adjusting for economies of scale will not have the same large impact on comparing child benefits and social pensions (the interventions analysed for this research paper) that would result with substantial differences in the relative sizes of different target group households. While correcting simulations for household economies of scale will change the overall estimate of the poverty rate for a given poverty line, the rescaling of the poverty line that usually accompanies the economies of scale adjustment will tend to offset this.

## 4.4. No 'crowding out' or 'crowding in' of private transfers and remittances

The third assumption, no crowding out or crowding in of private transfers and remittances, similarly reflects the absence of quantitative research on the Pacific for an alternative assumption.

Theoretical literature on social transfers is ambiguous on whether public benefits crowd out or crowd in private transfers and remittances. The Samoa case study that forms part of this body of research recognises the importance of formal social protection interventions in complementing rather than crowding out traditional systems of support.[9] However, there is little quantitative research on the links between the cash transfers modelled in this research paper and traditional systems of social protection in PICs. The Samoa case study recognises this as a critical area for future research and study, both in Samoa and in the larger Pacific region.

Globally, the evidence is mixed on this assumption. Nielsen and Olinto (2007)[10] used evaluation data from randomised trials of conditional cash transfer program in Honduras and Nicaragua to estimate the impact of government-funded cash transfers on private remittances, private food transfers, and money and food transfers from non-government organisations. While they confirmed crowding out for private food and non-government organisation transfers when conditional cash transfers were large, the public benefits did not affect private remittances. Teruel and Davis (2000) made similar findings, employing two rounds of evaluation data from Mexico's Progresa conditional cash transfer program. They rejected the hypothesis that the program had a crowding-out affect private remittances. However, a South Africa study of crowding out found government grants crowded out private remittances between 20 and 40 cents for each dollar of public transfers.[11]

In the simulations that follow in this research paper, sensitivity analysis tests three assumptions:

1. no crowding out (the main assumption of this research paper)
2. an alternative low assumption of 20% crowding out (for the equivalent of every dollar in public social transfers received), a household receives 20 cents less in private remittances so that—further assuming a 100%

9 Samson, 2011.

10 <www.cid.harvard.edu/neudc07/docs/neudc07_s1_p07_nielsen.pdf>, viewed 1 December 2011.

11 Jensen, R 1996, 'Public Transfers, Private Transfers, and the "Crowding Out" Hypothesis: Theory and Evidence from South Africa' (draft), Princeton University, cited in Samson 2002, 'The Social, Economic and Fiscal Impact of Comprehensive Social Security Reform for South Africa', *Social Dynamics*, vol. 28:2, 2002.

marginal propensity to consume—the associated increase in consumption is only 80 cents

3. an alternative high assumption of 40% crowding out.

The simulations also assume 100% take-up of categorical transfers, except for where exclusion error is explicitly specified. This assumption is based on the literature on universal categorical cash transfers that generally finds very high take-up rates, often close to 100% (Willmore 2004; Samson et al. 2006). This study tested the alternative assumption of 90% take-up of categorical grants and found the results very close to those associated with the 100% take-up scenarios.

# 5. Analysis of categorical targeting scenarios

## 5.1. The low social protection benefit scenario

The first scenario modelled is the low social protection benefit package, which includes a child benefit equal to 10% of the poverty line for all children up to their 5th birthday, and a social pension equal to 25% of the poverty line for all older- people from their 65th birthday. The money benefit levels for Kiribati, Samoa, Solomon Islands and Vanuatu are reported in Table 4, with the estimated costs of these national-scale programs. Benefit levels are reported in survey year terms and adjusted to 2010 purchasing power using an estimate for each country's consumer price index inflation. The costs are greatest in Kiribati (1.1% of GDP in the survey year) and Samoa (1%), moderately lower in Solomon Islands (0.8%) and significantly lower in Vanuatu (0.4%), mainly because the relatively low poverty line in Vanuatu leads to a low-modelled benefit level.

**Table 4. The low social protection benefit package**

| Social protection packages | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Child benefit (2010 purchasing power, local currency) | 2.02 | 6 | 8.06 | 129.12 |
| Social pension (2010 purchasing power, local currency) | 5.08 | 15 | 20.13 | 322.81 |
| Child benefit (survey year, local currency) | 1.60 | 5.36 | 4.74 | 111.31 |
| Social pension (survey year, local currency) | 4.03 | 13.39 | 11.84 | 278.28 |
| Cost of package as % of GDP (survey year) | 1.1 | 1 | 0.8 | 0.4 |
| Cost of package as % of government expenditure (survey year) | 0.98 | 3.05 | 1.82 | 1.30 |

The low social protection benefit package yields different impacts in reducing poverty across the four countries, depending on the demographic and poverty profile. In all cases, the impact of the percentage reduction in the poverty gap is greater than the percentage reduction in the household poverty rate (the headcount indicator). For Samoa, the package reduces the number of households in poverty by 4.4%, but the money poverty gap by 10.3%. One reason is that the poverty gap indicator reflects a greater sensitivity to social transfer interventions, because much of the impact of these interventions occurs well below the poverty line.

Poverty-reducing efficiency can be defined as the reduction in the money poverty gap per unit of expenditure on the social protection package. The poverty-reducing efficiency demonstrated in the four country scenarios is relatively low due to the low official poverty rates used to construct this indicator. Samoa demonstrates the highest reported indicator and faces the highest household poverty rate of the four countries. The measured 28% poverty-reducing efficiency indicator implies that for every 100 tala spent on the package, Samoa's poverty gap is reduced by 28 tala.

Table 5 shows the low social protection package's impact on poverty. The pro-poor index is constructed by dividing poverty-reducing efficiency by the national household poverty rate. A universal benefit will have an index value of 100%, representing neutrality in pro-poor impact. The more the index value exceeds 100%, the greater the pro-poor impact. All scenarios demonstrate a significant pro-poor impact, with Samoa's package yielding the highest index value, equal to 134%. That is, Samoa's package provides the greatest proportion of transfers to poor households, in large part because the poverty lines used categorise Samoa with the highest household poverty rate.

### Table 5. The low social protection package's impact on poverty

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New household poverty rate (%) | 15.1 | 20 | 17.8 | 12.8 |
| % reduction in household poverty rate | 7.3 | 4.4 | 5.5 | 4.6 |
| New poverty gap (local currency) (%) | 2.3 | 2.2 | 2.1 | 1.1 |
| % reduction in poverty gap | 7.9 | 10.3 | 7.2 | 6.6 |
| Poverty-reducing efficiency | 19.3 | 28.0 | 21.6 | 6.4 |
| Pro-poor index (100% = neutral) | 119 | 134 | 115 | 123 |

Table 6 reports the poverty impacts of the low social protection package on households with children up to 5 years of age. Poverty gap reductions are relatively greater, except in Samoa. For example, Solomon Islands' poverty headcount overall falls by 5.5% but the poverty rate for households with young children falls by 6.1%. While the national poverty gap falls by 7.2%, Solomon Islands' poverty gap for households with young children falls by 10.2%. While the impact on the poverty rate is not greater for households with children under the age of 5 years in Samoa, there is a more significant impact on the poverty gap (10.9% reduction compared to a 10.3% reduction for all households).

**Table 6. Demographic poverty impact analysis for households with children up to the age of 5**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 16.1 | 22.7 | 17.5 | 14.3 |
| % reduction in poverty rate | 7.5 | 4.4 | 6.1 | 4.7 |
| New poverty gap (local currency) (%) | 0.84 | 4.53 | 3.29 | 63.83 |
| Poverty gap as % of poverty line | 5.2 | 8.5 | 6.9 | 5.7 |
| % reduction in new poverty gap | 10.8 | 10.9 | 10.2 | 9.6 |

Table 7 reports the poverty impacts of the low social protection package on households with people 65 years of age and older. Poverty headcount reductions are much higher for this group than for national populations more generally, except for Samoa. For example, Kiribati's poverty rate for people 65 years and older falls by 16% (compared to a decline in the national poverty rate of only 7.3%). In Samoa the poverty rate for households with people 65 years and older falls by only 6.1%, per 10 percentage points less than the declines in the other three countries. Poverty gap reductions are consistently high across the four countries, ranging between 14.6% (Kiribati) and 17.1% (Vanuatu).

### Table 7. Demographic poverty impact analysis for households with people 65 years and older

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 21.5 | 19.9 | 23.7 | 15.7 |
| % reduction in poverty rate | 16.0 | 6.1 | 16.7 | 16.2 |
| New poverty gap (local currency) (%) | 1.27 | 3.70 | 4.87 | 81.13 |
| Poverty gap as % of poverty line | 7.9 | 6.9 | 10.3 | 7.3 |
| % reduction in poverty gap | 14.6 | 15.2 | 14.7 | 17.1 |

Note: The poverty gap is the average weekly money poverty in domestic currency units

Table 8 includes the distributional analysis of the low social protection package. In all four countries, the ratio of the richest decile to the poorest decile per adult equivalent spending rises by between 0.2 and 0.3 percentage points. This reflects the greater proportional impact of the social protection package on the spending of low-income households. For example, the spending of the poorest decile rises between 4.3% (Samoa) and 5.2% (Kiribati). The spending of the richest decile only rises by 0.2 % (Solomon Islands and Vanuatu) or 0.3% (Kiribati and Samoa).

### Table 8. Distributional analysis of the low social protection package

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Ratio of poorest to richest decile per adult equivalent spending without new benefits (%) | 7 | 6.2 | 5.3 | 5.1 |
| Ratio of poorest to richest decile per adult equivalent spending with new benefits (%) | 7.3 | 6.4 | 5.5 | 5.3 |
| % change in poorest: richest spending ratio | 4.8 | 4 | 4.4 | 4.5 |
| % change in spending of poorest decile | 5.2 | 4.3 | 4.6 | 4.8 |
| % change in spending of richest decile | 0.3 | 0.3 | 0.2 | 0.2 |

Table 9 reports the results of the sensitivity analysis of the poverty gap modelled with alternative behavioural assumptions for the low social protection scenario, as discussed in Section 3. The assumption of the slightly lower marginal propensity to consume (88% versus 100% in the main model) leads to higher poverty gaps, reducing the poverty impacts by

about 10%. The assumption of a much lower marginal propensity to consume (33%) reduces the poverty impact by nearly two-thirds in all four countries. The assumption of 20% crowding out likewise reduces the poverty impact by about a fifth. The higher crowding out assumption (40%) reduces the poverty impact by nearly twice as much as the lower crowding out assumption. However, given the relatively small impacts associated with the low scenario, rounding obscures impact variability.

**Table 9. Sensitivity analysis of the poverty gap modelled with alternative assumptions**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Baseline poverty gap (%) | 2.5 | 2.5 | 2.3 | 1.1 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 2.3 | 2.2 | 2.1 | 1.1 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 2.3 | 2.3 | 2.2 | 1.1 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 2.4 | 2.4 | 2.2 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 2.4 | 2.3 | 2.2 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 2.4 | 2.3 | 2.2 | 1.1 |

*marginal propensity to consume

## 5.2. The medium social protection benefit scenario

The second scenario modelled is the medium social protection benefit package, which includes a larger child benefit (20% of the poverty line for all children up to their 5th birthday, compared to 10% in the low-benefit scenario) and a larger social pension (50% of the poverty line to all older-people from their 65th birthday, compared to 25% in the low-benefit scenario). The medium money benefit levels for Kiribati, Samoa, Solomon Islands and Vanuatu are reported in Table 10, along with the estimated costs of these national-scale programs. The larger benefit sizes result in larger costs (as a percentage of GDP), an increase of 50% across the board, except in Vanuatu where the low modelled poverty line results in lower costs overall and a subsequent increase of 43%. As in the low social protection benefit scenario, the costs are greatest in Kiribati (2.2% of GDP in the survey year) and Samoa (2%) and significantly lower in Vanuatu (0.7%).

### Table 10. The medium social protection benefit package

| Social protection packages | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Child benefit (2010 purchasing power, local currency) | 4.06 | 12.00 | 16.12 | 258.25 |
| Social pension (2010 purchasing power, local currency) | 10.13 | 30.00 | 40.27 | 645.62 |
| Child benefit (survey year, local currency) | 3.22 | 10.71 | 9.48 | 222.63 |
| Social pension (survey year, local currency) | 8.04 | 26.79 | 23.69 | 556.57 |
| Cost of package as % of GDP (survey year) | 2.2 | 2.0 | 1.6 | 0.7 |
| Cost of package as % of government expenditure (survey year) | 1.96 | 6.11 | 3.64 | 2.28 |

The medium social protection benefit package yields different impacts in reducing poverty across the four countries, although the percentage reduction in the poverty gap is consistently greater than the percentage reduction in the household poverty rate. The most significant impact is seen in Samoa where the package reduces the number of households in poverty by 10% and the money poverty gap by 19.9%. For Kiribati, Solomon Islands and Vanuatu the percentage reduction in the poverty gap is consistently two to three percentage points higher than it is in the household poverty rate.

As with the low social protection benefit scenario, the poverty-reducing efficiency demonstrated is relatively low due to the low official poverty rates. Samoa demonstrates the highest reported indicator and faces the highest household poverty rate of the four countries.

Analysis of the medium social protection benefit reveals a significant pro-poor impact, with Samoa's package yielding the highest index value, equal to 130%. However, across the four countries the pro-poor index values are less than with the low social protection package.

### Table 11. The medium social protection package's impact on poverty

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New household poverty rate (%) | 14.4 | 18.8 | 16.7 | 12.1 |
| % reduction in household poverty rate | 11.6 | 10 | 11.2 | 9.6 |
| New poverty gap (local currency) (%) | 2.1 | 2 | 2 | 1 |
| % reduction in poverty gap | 14.8 | 19.9 | 13.5 | 12.5 |
| Poverty-reducing efficiency | 18.1 | 27.1 | 20.3 | 15.6 |
| Pro-poor index (100% = neutral) | 112 | 130 | 108 | 117 |

Table 12 reports the poverty impacts of the medium social protection package on households with children up to 5 years of age. In Solomon Islands and Vanuatu, poverty rate reductions among these households are greater when compared to the national reductions. For example, Solomon Islands' poverty headcount overall falls by 11.2% but the poverty rate for households with young children falls by 12.3%. However, the situation is reversed in Kiribati and Samoa, where the medium-package results in a greater reduction in the household poverty rate than the rate among households with children up to 5 years of age. Across all four countries poverty gap reductions among households with children under 5 years of age are greater than the national reductions.

### Table 12. Demographic poverty impact analysis for households with children up to the age of 5

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 15.6 | 21.5 | 16.3 | 13.5 |
| % reduction in poverty rate | 10.4 | 9.5 | 12.3 | 9.8 |
| New poverty gap (local currency) (%) | 0.75 | 4.01 | 2.96 | 57.68 |
| Poverty gap as % of poverty line | 4.6 | 7.5 | 6.3 | 5.2 |
| % reduction in new poverty gap | 20.3 | 21.3 | 19.2 | 18.3 |

Table 13 reports the poverty impacts of the medium social protection package on households with people 65 years of age and older. Across the board, poverty headcount reductions are much higher for this group of households than for the population as a whole. For example, Kiribati's

poverty rate for households with people 65 years of age and older falls by 25.6% compared to 11.6% for households nationally. Poverty gap reductions for households with older- people are consistently high across the four countries, ranging from 26.8% (Solomon Islands) to 32% (Vanuatu).

### Table 13. Demographic poverty impact analysis for households with people 65 years and older

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 19.0 | 17.6 | 19.8 | 13.2 |
| % reduction in poverty rate | 25.6 | 16.9 | 30.5 | 29.2 |
| New poverty gap (local currency) (%) | 1.09 | 3.09 | 4.18 | 66.52 |
| Poverty gap as % of poverty line | 6.8 | 5.8 | 8.8 | 6 |
| % reduction in poverty gap | 27.0 | 29.3 | 26.8 | 32 |

Table 14 compares the distributional analysis of the medium social protection package across countries. In all four countries, the ratio of the richest decile to the poorest decile for per adult equivalent spending rises by between 0.4 and 0.6 percentage points, about double the impact of the low scenario. This reflects the greater proportional impact of the social protection package on the spending of low-income households. For example, the spending of the poorest decile rises between 8.6% (Samoa) and 10.3% (Kiribati). The spending of the richest decile only rises by 0.4% (Solomon Islands and Vanuatu) or 0.6% (Kiribati and Samoa).

### Table 14. Distributional analysis of the medium social protection package

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Ratio of poorest to richest decile per adult equivalent spending without new benefits (%) | 7 | 6.2 | 5.3 | 5.1 |
| Ratio of poorest to richest decile per adult equivalent spending with new benefits (%) | 7.6 | 6.6 | 5.7 | 5.6 |
| % change in poorest: richest spending ratio | 9.6 | 8.0 | 8.7 | 9 |
| % change in spending of poorest decile | 10.3 | 8.6 | 9.2 | 9.5 |
| % change in spending of richest decile | 0.6 | 0.6 | 0.4 | 0.4 |

Table 15 reports the results of the sensitivity analysis of the poverty gap modelled with alternative behavioural assumptions for the medium social protection scenario. The assumption of the 88% marginal propensity to consume again leads to moderately higher poverty gaps, reducing poverty impacts by about 10%. The assumption of a 33% marginal propensity to consume again reduces the poverty impact by nearly two-thirds in all cases. The assumption of 20% crowding out likewise reduces the poverty impact by about a fifth, while the 40% crowding out assumption reduces the poverty impact by nearly twice as much.

### Table 15. Sensitivity analysis of the poverty gap modelled with alternative assumptions

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Baseline poverty gap (%) | 2.5 | 2.5 | 2.3 | 1.1 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 2.1 | 2.0 | 2.0 | 1.0 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 2.2 | 2.1 | 2.0 | 1.0 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 2.4 | 2.3 | 2.2 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 2.2 | 2.1 | 2.1 | 1.0 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 2.3 | 2.2 | 2.1 | 1.0 |

*marginal propensity to consume

## 5.3. The high social protection benefit scenario

The third scenario modelled is the high social protection benefit package, which has the largest child benefit (30% of the poverty line for all children up to their 5th birthday) and a social pension equal to 100% of the poverty line. The high money benefit levels for Kiribati, Samoa, Solomon Islands and Vanuatu are reported in Table 16, along with estimated costs.

**Table 16. The high social protection benefit scenario**

| Social protection packages | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Child benefit (2010 purchasing power) | 6.08 | 18 | 24.15 | 387.37 |
| Social pension (2010 purchasing power) | 20.29 | 60 | 80.54 | 1291.21 |
| Child benefit (survey year) | 4.82 | 16.07 | 14.21 | 333.94 |
| Social pension (survey year) | 16.10 | 53.57 | 47.38 | 1113.11 |
| Cost of package as % of GDP (survey year) | 3.8 | 3.6 | 2.6 | 1.2 |
| Cost of package as % of government expenditure (survey year) | 3.38 | 10.99 | 5.91 | 3.91 |

The high social protection benefit package results in further declines in household poverty rates and poverty gaps across the four countries. Declines in the poverty rate compared to the poverty rate in the medium-package scenario range from 0.8 percentage points (Vanuatu) to 1.6 percentage points (Samoa). For all four countries, moving from the medium to the high-packages results in a greater reduction in the poverty gap than moving from the low to medium packages. For example, in Solomon Islands the low-package results in a poverty gap of 2.1%, reduced further to 2% with the medium package, a decrease of nearly 5%. However, moving from the medium package to the high package results in a poverty gap of 1.8% and results in a decrease of 10%. This larger percentage reduction indicates that the high-benefit package is not just moving people further ahead of the poverty line; it is moving people closer to and over the line.

As with the low and medium social protection benefit scenarios, the poverty-reducing efficiency demonstrated is relatively low. Samoa demonstrates the highest reported efficiency (24.5%), more than 10 percentage points higher than the reported efficiency for Vanuatu.

Analysis of the high social protection benefit reveals that the impact is less concentrated with the poor than in the previously modelled scenarios with lower benefit amounts. For example, the low social protection package yielded an index value of 134% for Samoa, while the medium package yielded 130% and the high package 118%. This pattern is consistent across all four countries.

### Table 17. The high social protection package's impact on poverty

| Social protection poverty impact | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New household poverty rate (%) | 13.2 | 17.2 | 15.7 | 11.3 |
| % reduction in household poverty rate | 18.8 | 17.7 | 16.8 | 15.6 |
| New poverty gap (local currency) (%) | 1.9 | 1.7 | 1.8 | 0.9 |
| % reduction in poverty gap | 24.2 | 31.6 | 20.8 | 19.3 |
| Poverty-reducing efficiency (%) | 17.2 | 24.5 | 18.7 | 14.3 |
| Pro-poor index (100% = neutral) | 106 | 118 | 99 | 107 |

Table 18 reports the poverty impacts of the high social protection package on households with children up to 5 years of age. Poverty rate reductions are significantly greater when compared to national reductions. For example, Vanuatu's poverty headcount overall falls by 15.6% but the poverty rate for households with young children falls by 15.3%. While the national poverty gap falls by 24.2%, Kiribati's poverty gap for households with young children falls by 31.9%. With the exception of Solomon Islands, the difference between national reductions and reductions in households with children under the age of 5 years decreases with benefit size.

For Kiribati the low social protection package resulted in a 7.3% reduction in the household poverty rate and a 7.5% reduction in the poverty rate in households with children under 5 years of age, a difference of 0.2 percentage points. However, with the high-benefit package there is an 18.8% reduction in the household poverty rate and a 16.7% reduction in the poverty rate in households with children under the age of 5 years.

**Table 18. Demographic poverty impact analysis for households with children up to the age of 5**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 14.5 | 19.7 | 15.4 | 12.7 |
| % reduction in poverty rate | 16.7 | 17.3 | 17.5 | 15.3 |
| New poverty gap (%) | 0.64 | 3.36 | 2.62 | 51.27 |
| Poverty gap as % of poverty line | 4 | 6.3 | 5.5 | 4.6 |
| % reduction in new poverty gap | 31.9 | 33.9 | 28.6 | 27.4 |

Table 19 reports the poverty impacts of the high social protection package on households with people 65 years of age and older. Poverty headcount reductions are much higher for this group of households than for the population as a whole. For example, Kiribati's poverty rate for households with people 65 years of age and older falls by 38.1% (compared to a decline of 18.8% for all households nationally). Poverty gap reductions for households with older- people are consistently high across the four countries, ranging from 44.6% (Solomon Islands) to 53.3% (Vanuatu). In each country the percentage reduction in the poverty gap is approximately three times larger than with the low social protection.

**Table 19. Demographic poverty impact analysis for households with people 65 years and older**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 15.8 | 13.6 | 14.9 | 9.2 |
| % reduction in poverty rate | 38.1 | 35.7 | 47.6 | 50.8 |
| New poverty gap (%) | 0.79 | 2.23 | 3.16 | 45.69 |
| Poverty gap as % of poverty line | 4.9 | 4.2 | 6.7 | 4.1 |
| % reduction in poverty gap | 47.1 | 48.8 | 44.6 | 53.3 |

Table 20 compares the distributional analysis of the high social protection package, showing the greater proportional impact of the benefits on the spending of low-income households. The large benefit size results in a larger difference between per adult equivalent spending in the poorest and richest deciles. For example, in Samoa the spending of the lowest decile rises by 14.3%, while the spending of the richest decile rises by 1.1%, a 12.2 percentage point difference. With the low social protection package the difference was only four percentage points.

**Table 20. Distributional analysis of high social protection package**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Ratio of poorest to richest decile per adult equivalent spending without new benefits (%) | 7 | 6.2 | 5.3 | 5.1 |
| Ratio of poorest to richest decile per adult equivalent spending with new benefits (%) | 8.1 | 7 | 6.1 | 5.9 |
| % change in poorest:richest spending ratio | 17 | 13.1 | 14.9 | 15.5 |
| % change in spending of poorest decile | 18.3 | 14.3 | 15.6 | 16.3 |
| % change in spending of richest decile | 1.1 | 1.1 | 0.6 | 0.7 |

Table 21 reports the results of the sensitivity analysis of the poverty gap modelled with alternative behavioural assumptions for the high social protection scenario. The assumption of the 88% marginal propensity to consume again leads to an approximately 10% smaller poverty impact, but the poverty gap still falls from 2.5% of GDP to 2% (close to the 1.9% in the main scenario) for Kiribati with similar drops in Samoa and Solomon Islands. The alternative assumption of a 33% marginal propensity to consume yields a much smaller poverty impact. For example, the poverty gap falls from 2.5% in Kiribati to just 2.3%, compared to a reduction to 1.9% in the main scenario. Crowding out assumptions also leads to material differences. With a 40% crowding out assumption for Samoa, for example, the poverty gap falls from 2.5% of GDP to only 2%, compared to a reduction to 1.7% in the main scenario. The differences with the 20% crowding out assumption are only half the magnitude.

**Table 21. Sensitivity analysis of the poverty gap modelled with alternative assumptions**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Baseline poverty gap (%) | 2.5 | 2.5 | 2.3 | 1.1 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 1.9 | 1.7 | 1.8 | 0.9 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 2 | 1.8 | 1.9 | 0.9 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 2.3 | 2.2 | 2.1 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 2 | 1.9 | 1.9 | 1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 2.1 | 2 | 2 | 1 |

*marginal propensity to consume

## 5.4. The high child benefit scenario

The fourth and fifth scenarios look at the high child benefit and high pension independently of each other, as stand-alone programs. This additional analysis allows for a comparison across countries as well as across two categorical transfer groups. The fourth scenario modelled is a high child benefit (equal to 30% of the poverty line). The money benefit levels and costs are shown in Table 22.

**Table 22. The high child benefit scenario**

| Social protection packages | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Child benefit (2010 purchasing power) | 6.08 | 180 | 24.15 | 387.37 |
| Child benefit (survey year) | 4.82 | 16.07 | 14.21 | 333.94 |
| Cost of package as % of GDP (survey year) | 1.8 | 1.5 | 1.6 | 0.7 |
| Cost of package as % of government expenditure (survey year) | 1.6 | 4.58 | 3.64 | 2.28 |

Independent of a pension, the high child benefit still results in significant declines in household poverty rates and poverty gaps across the four countries (Table 23). The declines in the poverty rate range from 8.2% (Samoa) to 10.7% (Kiribati). For each country these percentage reductions are larger than the reductions resulting from the low social protection package, but smaller than the reductions with the medium social protection package. The same pattern is observed with percentage reductions in the money poverty gap for each country.

In Samoa, Solomon Islands and Vanuatu the poverty-reducing efficiency of the high child benefit alone is more than the efficiency of the high social protection package, when the benefit is paired with a pension. However, the situation is reversed in Kiribati, where the high child benefit is less efficient when not paired with the pension.

In Samoa, Solomon Islands and Vanuatu the pro-poor index value is also larger when the high child benefit is analysed alone, compared to when the whole high social protection package is analysed. However, Kiribati has a lower pro-poor index value (96%) when the high child benefit is analysed alone. In fact, this value indicates that a high child benefit alone would be unfavourable to pro-poor redistribution and, instead, favour those above the poverty line.

### Table 23. The high child benefit's impact on poverty

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New household poverty rate (%) | 14.5 | 19.2 | 17.1 | 12.2 |
| % reduction in household poverty rate | 10.7 | 8.2 | 9.4 | 8.7 |
| New poverty gap (%) | 2.2 | 2 | 2 | 1 |
| % reduction in poverty gap | 10.4 | 17.9 | 12.8 | 11.3 |
| Poverty-reducing efficiency (%) | 15.6 | 32.7 | 19.0 | 14.7 |
| Pro-poor index (100% = neutral) | 96 | 156 | 101 | 110 |

Table 24 reports the poverty impacts of the high child benefit on targeted households with children up to 5 years of age. In Kiribati and Vanuatu the percentage reduction in the poverty rate is more with the high child benefit alone than with the low social protection package or the medium one. In Samoa and Solomon Islands the reduction in the poverty rate from the high child benefit is more than the reduction from the low social protection package, but less than the reduction from the medium one. The same pattern is repeated for reductions in the poverty gap, although for Solomon

Islands the reduction in the poverty gap with just the high child benefit is less than with the medium-benefit package.

Across all four countries, the high social protection package is most effective at reducing the poverty rate and poverty gap among households with a child under the age of 5 years. This is a result of some children under the age of 5 years living in households that also include people older than 65. These households are eligible for the child benefit and the pension, and subsequently receive a larger total benefit.

### Table 24. Demographic poverty impact analysis for households with children up to the age of 5

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 15.3 | 21.8 | 16.5 | 13.4 |
| % reduction in poverty rate | 11.8 | 8.3 | 11.3 | 10.6 |
| New poverty gap (%) | 0.74 | 4.05 | 2.87 | 54.86 |
| Poverty gap as % of poverty line | 4.6 | 7.6 | 6.1 | 4.9 |
| % reduction in new poverty gap | 20.6 | 20.4 | 21.6 | 22.3 |

Table 25 reports the poverty impacts of the high child benefit on households with people 65 years of age and older. While older- people are not categorically targeted with a child benefit, it is useful to examine the impact of this benefit because it can indicate distribution of the vulnerable. For example, in Kiribati the high child benefit alone results in a 10.6% reduction in the poverty rate among households with people 65 years of age and older. This reduction is the result of households with children under 5 years of age and persons over 65 years of age.

Table 25 also indicates the substantial number of households in each country eligible for both benefits. However, the pairing of the high child benefit with a high social pension results in poverty rate reductions among these households ranging from 3.6 (Kiribati) to 8 (Samoa and Solomon Islands) to nearly 15 (Vanuatu) times greater than the reductions resulting from the high child benefit alone.

### Table 25. Demographic poverty impact analysis for households with people 65 years and older

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 22.8 | 20.2 | 26.7 | 18.1 |
| % reduction in poverty rate | 10.6 | 4.6 | 6.1 | 3.4 |
| New poverty gap (%) | 1.38 | 3.71 | 5.17 | 90.89 |
| Poverty gap as % of poverty line | 8.6 | 6.9 | 10.9 | 8.2 |
| % reduction in poverty gap | 7.1 | 15.0 | 9.5 | 7.1 |

Table 26 shows the distributional analysis of the high child benefit. In all four countries, the ratio of the richest decile to the poorest decile for per adult equivalent spending rises by between 0.4 and 0.5 percentage points. In comparison to the distributional analysis of the high social protection package, the high child benefit alone results in a smaller ratio of poorest to richest decile per adult equivalent spending.

### Table 26. Distributional analysis of the high child benefit

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Ratio of poorest to richest decile per adult equivalent spending without new benefits (%) | 7 | 6.2 | 5.3 | 5.1 |
| Ratio of poorest to richest decile per adult equivalent spending with new benefits (%) | 7.4 | 6.7 | 5.7 | 5.5 |
| % change in poorest:richest spending ratio | 6.6 | 8.3 | 7.6 | 7.8 |
| % change in spending of poorest decile | 7.1 | 8.5 | 8.1 | 8.3 |
| % change in spending of richest decile | 0.5 | 0.3 | 0.4 | 0.4 |

Table 27 reports the results of the sensitivity analysis of the poverty gap modelled with alternative behavioural assumptions for the high child benefit scenario. The assumption of the slightly lower 88% marginal propensity to consume leads to somewhat higher poverty gaps in all four countries, reducing the poverty impacts by about 10%. The assumption of the 33% marginal propensity to consume reduces the poverty impact by nearly two-thirds in all four cases. The low crowding out assumption

reduces the poverty impact by approximately 20%, while the higher crowding out assumption reduces it by nearly twice as much.

**Table 27. Sensitivity analysis of the poverty gap modelled with alternative assumptions**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Baseline poverty gap (%) | 2.5 | 2.5 | 2.3 | 1.1 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 2.2 | 2 | 2 | 1 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 2.3 | 2.1 | 2 | 1 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 2.4 | 2.3 | 2.2 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 2.3 | 2.1 | 2.1 | 1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 2.4 | 2.2 | 2.1 | 1 |

*marginal propensity to consume

## 5.5. The high social pension scenario

The fifth scenario modelled is a stand-alone high social pension (equal to 100% of the poverty line). The money benefit levels and costs are shown in Table 28. In Solomon Islands and Vanuatu the high pension costs less than the high child benefit (when expressed as percentage of GDP), while in Kiribati and Samoa the pension costs more than the child benefit.

**Table 28. The high pension scenario**

| Social protection packages | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Social pension (2010 purchasing power) | 20.29 | 60.00 | 80.54 | 1291.21 |
| Social pension (survey year) | 16.10 | 53.57 | 47.38 | 1113.11 |
| Cost of package as % of GDP (survey year) | 2 | 2 | 1 | 0.5 |
| Cost of package as % of government expenditure (survey year) | 1.78 | 6.11 | 2.27 | 1.63 |

Independent of a child benefit, the high pension still results in significant declines in household poverty rates and poverty gaps across the four countries. The declines in the poverty rate range from 6.6% (Vanuatu) to 9.9% (Kiribati). Across all countries the reduction is less than with the high child benefit. Differences range from 0.8 percentage points less of a reduction (Kiribati) to 2.1 percentage points less (Vanuatu). For each country these percentage reductions are larger than the reductions resulting from the low social protection package, but smaller than the reductions with the medium package. A similar pattern is seen with the poverty gap reduction. In Samoa, Solomon Islands and Vanuatu the decrease is less than with the high child benefit. However, the situation is reversed in Kiribati with a 14.4% reduction in the poverty gap with the high pension compared to a 10.4% reduction with the high child benefit.

In Kiribati and Solomon Islands, the poverty-reducing efficiency of the high pension alone is more than the efficiency of the high social protection package, where the benefit is paired with a pension. However, the situation is reversed in Vanuatu and Samoa. For example, in Samoa the high child benefit has a poverty-reducing efficiency of 20%, but the high package of 24.5%.

In Kiribati and Solomon Islands the pro-poor index value is larger when the high child benefit is analysed alone, compared to the analysis of the whole high social protection package. Samoa and Vanuatu have a lower index value when the high child benefit is analysed alone. When the pro-poor index for the high pension is compared to the pro-poor index for the high child benefit, in Kiribati and Solomon Islands the pension is more pro-poor. In Samoa and Vanuatu the high child pension has a greater pro-poor index value. The difference is largest in Samoa where the high pension has a pro-poor index value of 96% and the high child benefit 156%, a difference of 60 percentage points.

### Table 29. The high pension's impact on poverty

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New household poverty rate (%) | 14.6 | 19.4 | 17.3 | 12.5 |
| % reduction in household poverty rate | 9.9 | 7.2 | 8.1 | 6.6 |
| New poverty gap (%) | 2.1 | 2.1 | 2.1 | 1 |
| % reduction in poverty gap | 14.4 | 14.8 | 8.7 | 8.2 |
| Poverty-reducing efficiency (%) | 19.4 | 20 | 19.9 | 14.2 |
| Pro-poor index (100% = neutral) | 119 | 96 | 106 | 106 |

Table 30 reports the poverty impacts of the high child pension on households with children up to the age of 5. While children are not categorically targeted with the pension, the table illustrates the overlap between the two groups and how some children benefit from being in households with people receiving the pension. In Solomon Islands the high social pension alone results in a 6.9% reduction in the poverty rate among children up to the age of 5, compared to a 17.5% reduction when the high child benefit is paired with a high pension. The 6.9% reduction is the result of households with children under the age of 5 years and people 65 years of age and older.

**Table 30. Demographic poverty impact analysis for households with children up to the age of 5**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 16.1 | 22.2 | 17.3 | 14.4 |
| % reduction in poverty rate | 7.0 | 6.6 | 6.9 | 4.3 |
| Poverty gap as % of poverty line | 5.1 | 8.1 | 7.1 | 6 |
| % reduction in new poverty gap | 12.5 | 14.8 | 8.2 | 5.7 |

Table 31 reports the poverty impacts of the high social pension on targeted households (households with people 65 years of age and older). For all four countries, the percentage reduction in the poverty rate among this subset of households is more with the high pension alone than with the low or medium social protection packages. The same pattern repeats for reductions in the poverty gap. Across all countries the high pension is more effective at reducing the poverty gap among households with people 65 years of age and older than are the low or medium social protection packages.

**Table 31. Demographic poverty impact analysis for households with people 65 years and older**

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| New poverty rate (%) | 16.9 | 16.2 | 15.7 | 10.1 |
| % reduction in poverty rate | 33.7 | 23.6 | 44.9 | 45.7 |
| New poverty gap (%) | 0.87 | 2.77 | 3.52 | 50.96 |
| Poverty gap as % of poverty line | 5.4 | 5.2 | 7.4 | 4.6 |
| % reduction in poverty gap | 41.8 | 36.5 | 38.3 | 47.9 |

Table 32 shows the distributional analysis of the high social pension. In all four countries, the ratio of the richest decile to the poorest decile for per adult equivalent spending rises by between 0.3 (Samoa) and 0.7 (Kiribati) percentage points. All countries demonstrate the greater proportional impact of the social pension on the spending of low-income households. For example, in Kiribati the spending of the poorest decile increases by 11.2% while the spending of the richest decile increases by only 0.6%. In comparison to the distributional analysis of the high social protection package, the high social pension alone results in a smaller ratio of poorest to richest decile per adult equivalent spending.

### Table 32. Distributional analysis of the high social pension

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Ratio of poorest to richest decile per adult equivalent spending without new benefits (%) | 7.0 | 6.2 | 5.3 | 5.1 |
| Ratio of poorest to richest decile per adult equivalent spending with new benefits (%) | 7.7 | 6.5 | 5.7 | 5.5 |
| % change in poorest:richest spending ratio | 10.5 | 4.9 | 7.3 | 7.7 |
| % change in spending of poorest decile | 11.2 | 5.8 | 7.5 | 8 |
| % change in spending of richest decile | 0.6 | 0.8 | 0.2 | 0.3 |

Table 33 demonstrates that the high social pension scenario yields similar results with the alternative assumptions compared to the high child benefit scenario. The lower 88% marginal propensity to consume reduces poverty impacts by about 10%, while the higher marginal propensity to consume reduces the impact by about two-thirds for all four countries. The low crowding out assumption reduces the poverty impact by about a fifth, while the higher crowding out assumption reduces it by nearly 40%.

## Table 33. Sensitivity analysis of the poverty gap modelled with alternative assumptions

| Indicator | Kiribati | Samoa | Solomon Islands | Vanuatu |
|---|---|---|---|---|
| Baseline poverty gap (%) | 2.5 | 2.5 | 2.3 | 1.1 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 2.1 | 2.1 | 2.1 | 1 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 2.2 | 2.2 | 2.1 | 1 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 2.4 | 2.4 | 2.2 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 2.2 | 2.2 | 2.1 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 2.3 | 2.3 | 2.2 | 1.1 |

*marginal propensity to consume

# 6. Analysis of poverty targeting scenarios

## 6.1. Household poverty targeting

### 6.1.1. Vanuatu

Table 34 shows the results of costs, impacts and efficiency of household poverty targeting in Vanuatu. It compares the micro-simulation of a poverty-targeted cash transfer equal to 50% of the national poverty line to the poorest 20% of households, under alternative assumptions about targeting errors and costs. For comparison, the results from the previous categorical micro-simulation exercises are included in the two right-most columns (low-benefit scenario for children and older- people, and high-benefit scenario for both demographic groups). The first three rows report the actual weekly benefit amounts and the next three these benefit amounts as percentages of the national poverty line. The next two rows report scenario costs, expressed as percentages of total government expenditure and national income (measured as GDP). The poverty-targeted household transfer costs approximately 0.5% of GDP and 2.6% of government expenditure, excluding administrative and targeting costs. These amounts fall towards the low end of the range marked by the low and high-benefit categorical scenarios.

With low targeting errors, the poverty targeted transfers reduce the household poverty rate by approximately 11%, but only by about 7% in the high-error scenarios (there is no difference in poverty rate reduction between low and high targeting cost simulations). A similar result follows for the poverty gap reduction—approximately 13% for the low targeting error scenarios but only about 8% for the high-error ones. These estimated impacts also fall in the range marked by the two categorical scenarios.

To compare the efficiency of various scenarios on a more equitable basis, Table 34 reports the measure of poverty-reducing efficiency calculated by dividing the poverty gap reduction (the output) by the total costs of the intervention, measured as the money cost of the transfers plus assumed targeting costs. For high-cost scenarios the targeting costs are assumed to be 80% of the transfers; for the low-cost scenarios it is 40%; and for pure categorical scenarios it is 20%. For low-error scenarios, exclusion and

inclusion errors of 50% are assumed; for high-error scenarios, 70%.12 The pro-poor index is constructed by dividing the efficiency measure by the national poverty rate. Since the national poverty rate is the marginal poverty-reducing efficiency of a universal transfer (assuming no transactions costs), this index value represents the degree to which the scenario transfers more or less resources to poor households (and reduces the country's poverty gap) compared to the benchmark of a universal transfer.

The efficiency indicator for the low-cost, low-error scenario—at 20.9%—is the greatest across all scenarios. This reflects the highly optimistic assumption that it is possible to achieve excellent targeting performance at low cost. The following two more realistic scenarios model high targeting errors at low cost (with an estimated efficiency of 12.9%), and alternatively achieving low targeting errors at high cost (with an estimated efficiency of 16.2%). The worst-case scenario is high errors with a high cost—a poorly targeted program that yields efficiency measure of 10.1%. The pro-poor indices follow a similar pattern.

The categorical scenarios compare favourably with the realistic simulations, falling between the two estimates efficiency measures. The low-benefit categorical scenario (efficiency measure of 13.7% and pro-poor index of 10.2%) performs better than the high-error and low-cost, poverty-targeted simulation (with an efficiency measure of only 12.9% and a pro-poor index of 97%). However, all realistic and categorical simulations yield similar efficiency measures and may not be statistically significantly different. However, the results demonstrate that a categorical cash transfer may reduce poverty in a country more efficiently than a poverty targeted transfer. The critical determining factors are targeting effectiveness (measured by inclusion and exclusion errors) and the full cost of targeting.

12 These assumptions reflect the results of a consultative process across AusAID's social protection expert panel, and with social protection practitioners in a range of developing countries. The consultations and research identified little rigorous evidence on the actual costs of targeting, but widespread acceptance that these costs are important to making the right targeting decision. The consultations identified the approach this research paper adopts: to clearly specify stylised assumptions and quantify resulting impacts. The assumptions aim to reflect the full costs of targeting—administrative, private, social, psychosocial, economic and political. This framework is developed in a forthcoming review (Devereux et al. forthcoming; and input paper by Samson et al. 2011) by the Institute for Development Studies (Sussex). The review finds that while most targeting studies in its sample recognised the importance of the broad range of targeting costs, very few tried to quantify these costs. In the face of this evidence vacuum, the assumptions about targeting costs parameterize low and high scenarios reflecting a rough consensus among those consulted about the likely range for these costs. This research paper recognises the need for more research to quantify these costs more rigorously (see conclusions.)

## Table 34. Costs, impacts and efficiency of household poverty targeting in Vanuatu

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Child benefit (children up to 5th birthday) | – | – | – | – | 111.31 | 333.94 |
| Social pension (people 65 years and older) | – | – | – | – | 278.28 | 1113.11 |
| Poverty-targeted household benefit (poorest 20%) | 556.56 | 556.56 | 556.56 | 556.56 | – | – |
| Child benefit as % of poverty line | – | – | – | – | 10 | 30 |
| Social pension as % of poverty line | – | – | – | – | 25 | 100 |
| Household benefit as % of poverty line | 50 | 50 | 50 | 50 | – | – |
| Cost of package as % of government spending | 2.6 | 2.6 | 2.6 | 2.6 | 1.3 | 3.91 |
| Cost of package as % of GDP | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 1.2 |
| New household poverty rate | 11.9 | 12.5 | 11.9 | 12.5 | 12.8 | 11.3 |
| % reduction in household poverty rate | 11.1 | 6.8 | 11.1 | 6.8 | 4.6 | 15.6 |
| New poverty gap | 1 | 1 | 1 | 1 | 1.1 | 0.9 |
| % reduction in poverty gap | 13.1 | 7.9 | 13.1 | 7.9 | 6.6 | 19.3 |
| Poverty-reducing efficiency | 20.9 | 12.9 | 16.2 | 10.1 | 16.4 | 14.3 |
| Pro-poor index (100% = neutral) | 156 | 97 | 121 | 75 | 123 | 107 |

Table 35 reports the analysis of the impact of cash transfers on two demographic groups:

- households that include children under 5 years of age (households with children)
- households that include people 65 years of age or older (older-people households).

The low-error scenarios reduce the poverty rate for households with children by approximately 9% and the rate for older- people households by about 11%. The high-error scenarios perform a little more poorly, reducing the poverty rate for households with children by about 7% and the rate for older- people households by approximately 10%. The differences between high-error and low-error scenarios are more pronounced with the poverty gap reduction indicators. For households with children, the low-error scenarios reduce the poverty gap by approximately 12%, but the high-error scenarios by only about 8%. Similarly, for older- people households, the low-error scenarios reduce the poverty gap by approximately 12%, but the high-error scenarios by only about 7%.

## Table 35. Household poverty targeting impacts on two demographic groups in Vanuatu

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| New poverty rate (% for households with children) | 13.5 | 13.9 | 13.5 | 13.9 | 14.3 | 12.7 |
| % reduction in poverty rate (households with children) | 9.4 | 6.8 | 9.4 | 6.8 | 4.7 | 15.3 |
| New poverty rate (% for older- people households) | 16.6 | 16.7 | 16.6 | 16.7 | 15.7 | 9.2 |
| % reduction in poverty rate (older- people households) | 11.2 | 10.4 | 11.2 | 10.4 | 16.2 | 50.8 |
| New poverty gap (households with children) | 61.96 | 65.27 | 61.96 | 65.27 | 63.83 | 51.27 |
| Poverty gap as % of poverty line (households with children) | 5.6 | 5.9 | 5.6 | 5.9 | 5.7 | 4.6 |
| % reduction in poverty gap (households with children) | 12.3 | 7.6 | 12.3 | 7.6 | 9.6 | 27.4 |
| New poverty gap (older- people households) | 86.48 | 91.51 | 86.48 | 91.51 | 81.13 | 45.69 |
| Poverty gap as % of poverty line (older-people) | 7.8 | 8.2 | 7.8 | 8.2 | 7.3 | 4.1 |
| % reduction in poverty gap (older-people households) | 11.6 | 6.5 | 11.6 | 6.5 | 17.1 | 53.3 |

Table 36 reports the results of the sensitivity analysis of the poverty gap modelled with alternative behavioural assumptions for Vanuatu, comparing household poverty targeting scenarios to categorical approaches. Given the relatively small impacts for this country, there are few material differences under alternative sets of assumptions. The low marginal propensity to consume (33%) scenario yields differences from baseline less than 0.1% of GDP for all targeting approaches, while the

higher marginal propensity to consume (88%) yields differences from the main scenario of less than 0.1% of GDP for all approaches. Likewise, rounding obscures the small differences for the different crowding out scenarios.

### Table 36. Sensitivity analysis of poverty gap modelled with alternative behavioural assumptions for Vanuatu

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Baseline poverty gap (% of GDP) | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 1 | 1 | 1 | 1 | 1.1 | 0.9 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 1 | 1 | 1 | 1 | 1.1 | 0.9 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 1 | 1.1 | 1 | 1.1 | 1.1 | 1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 1 | 1.1 | 1 | 1.1 | 1.1 | 1 |

*marginal propensity to consume

### 6.1.2. Samoa

The same micro-simulation exercise was applied to the model for Samoa, and the results are reported in Table 37, following the same format as Table 34 for Vanuatu. The poverty-targeted household transfer in Samoa costs approximately 0.5% of GDP, the same as for Vanuatu. However in Samoa this represents only 1.4% of government expenditure, excluding administrative and targeting costs. These amounts total only about half the costs of the low-benefit categorical scenario.

With low targeting errors, the poverty targeted transfers reduce the household poverty rate by approximately 5%, but only by about 4% in the high-error scenarios (there is no difference in poverty rate reduction between the low and high targeting cost simulations). A similar result follows for the poverty gap reduction—approximately 9% for the low targeting error scenarios, but only about 6% for the high-error scenarios. These estimated impacts are also less than those of the low-benefit categorical scenario.

Like with the Vanuatu simulations, the efficiency indicator for the low-cost, low-error scenario, at 33.7% (compared to 20.9% for Vanuatu), is the greatest across all of Samoa's scenarios, again reflecting highly optimistic assumptions about achieving excellent targeting performance at low cost. The two more realistic scenarios model high targeting errors at low cost (with an estimated efficiency of 21.5%, compared to 12.9% for Vanuatu), and alternatively achieving low targeting errors at high cost (with an estimated efficiency of 26.2%, compared to 16.2% for Vanuatu). The worst-case scenario is high errors with a high cost—a poorly targeted program that yields an efficiency measure of 16.7% (compared to 10.1% for Vanuatu). Efficiency measures for Samoa simulations are consistently higher than for Vanuatu, mainly reflecting the significantly higher poverty line in Samoa, and the correspondingly higher poverty rate, which renders more of the social transfers efficient in reducing poverty. The pro-poor indices follow a similar pattern.

As with Vanuatu, the categorical scenarios compare favourably with the realistic simulations, falling in between the two estimates of efficiency measures. The low-benefit categorical scenario (efficiency measure of 23.2% and pro-poor index of 112%) performs better than the high-error and low-cost, poverty-targeted simulation (efficiency measure of only 21.5% and pro-poor index of 103%). However, as with Vanuatu, all realistic and categorical simulations yield very similar efficiency measures and may not be statistically significantly different. However, the results again demonstrate that a categorical cash transfer may reduce poverty in a country more efficiently than a poverty targeted transfer, reflecting the critical importance of targeting effectiveness and targeting costs.

## Table 37. Costs, impacts and efficiency of household poverty targeting in Samoa

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Child benefit (% children up to 5th birthday) | – | – | – | – | 5.36 | 16.07 |
| Social pension (% people 65 years and older) | – | – | – | – | 13.39 | 53.57 |
| Poverty-targeted household benefit (poorest 20%) | 26.79 | 26.79 | 26.79 | 26.79 | – | – |
| Child benefit as % of poverty line | – | – | – | – | 10 | 30 |
| Social pension as % of poverty line | – | – | – | – | 25 | 100 |
| Household benefit as % of poverty line | 50 | 50 | 50 | 50 | – | – |
| Cost of package as % of government spending | 1.4 | 1.4 | 1.4 | 1.4 | 3.05 | 10.99 |
| Cost of package as % of GDP | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 3.6 |
| New household poverty rate | 19.7 | 20.1 | 19.7 | 20.1 | 20 | 17.2 |
| % reduction in household poverty rate | 5.4 | 3.5 | 5.4 | 3 | 4.4 | 17.7 |
| New poverty gap (%) | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 1.7 |
| % reduction in poverty gap | 9.1 | 5.7 | 9.1 | 5.7 | 10.3 | 31.6 |
| Poverty-reducing efficiency (%) | 33.7 | 21.5 | 26.2 | 16.7 | 28 | 24.5 |
| Pro-poor index (100% = neutral) | 161 | 103 | 126 | 80 | 134 | 118 |

Table 38 reports the analysis of the impact of the simulated cash transfers in Samoa on the same two demographic groups analysed in Table 35:

- households that include children under 5 years of age (households with children)
- households that include people 65 years of age or older (older-people households).

The low-error scenarios reduce the poverty rate for households with children by approximately 5% (compared to 9% in Vanuatu), and do not reduce the rate for older- people households (compared to a reduction of about 11% for Vanuatu). Ironically, the high error scenarios perform better as measured by the poverty rate indicator, reducing the poverty rate for older-people households by about 4% (compared to 10% in Vanuatu). The better performance of the high-error scenario compared to the low-error one reflects sampling variation in the stochastic process driving the simulation, with a higher proportion of benefits allocated to households right below the poverty line in the high-error scenario. With more of these benefits allocated to households far below the poverty line in the low-error scenario, the relatively small benefit lifted no households out of poverty. This reflects a common concern with poverty targeting. Badly implemented, poverty targeting can exclude the poorest households. In South Africa's poorest district (Mount Frere), 95% of the poorest households were excluded from the government's Child Support Grant due to targeting errors driven by poor implementation of the targeting process (Samson 2002).

For households with children, the low-error scenarios reduce the poverty gap by approximately 8% (compared to 12% in Vanuatu), but the high-error ones by only about 5% (compared to 8% in Vanuatu). Similarly, for older- people households, low-error scenarios reduce the poverty gap by approximately 6% (compared to 12% for Vanuatu), but high-error ones by only about 4% (compared to about 7% for Vanuatu). The poverty rate and poverty gap reductions are consistently greater for Vanuatu, mainly reflecting the lower initial poverty gap of 1.1% of GDP, compared to Samoa's of 2.5%. Since Vanuatu's simulated benefits are not proportionally less than those in Samoa, the measured impacts are consistently greater.

## Table 38. Household poverty-targeting impacts on specific demographic groups in Samoa

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| New poverty rate (% households with children) | 22.5 | 23 | 22.5 | 23 | 22.7 | 19.7 |
| % reduction in poverty rate (households with children) | 5.3 | 3.4 | 5.3 | 3.4 | 4.4 | 17.3 |
| New poverty rate (% older- people households) | 21.2 | 20.4 | 21.2 | 20.4 | 19.9 | 13.6 |
| % reduction in poverty rate (older- people households) | 0 | 3.7 | 0 | 3.7 | 6.1 | 35.7 |
| New poverty gap (households with children) | 4.66 | 4.82 | 4.66 | 4.82 | 4.53 | 3.36 |
| Poverty gap as % of poverty line (households with children) | 8.7 | 9 | 8.7 | 9 | 8.5 | 6.3 |
| % reduction in poverty gap (households with children) | 8.4 | 5.3 | 8.4 | 5.3 | 10.9 | 33.9 |
| New poverty gap (older people households) | 4.09 | 4.20 | 4.09 | 4.20 | 3.70 | 2.23 |
| Poverty gap as % of poverty line (older- people) | 7.6 | 7.8 | 7.6 | 7.8 | 6.9 | 4.2 |
| % reduction in poverty gap (older- people households) | 6.4 | 3.8 | 6.4 | 3.8 | 15.2 | 48.8 |

Table 39 reports the results of the sensitivity analysis with alternative behavioural assumptions for Samoa, comparing household poverty-targeting scenarios to the categorical approaches. Given the relatively larger impacts for this country, there are more material differences under alternative sets of assumptions. The high marginal propensity to consume (88%) scenario yields poverty impacts close to the main scenario (about 10% smaller impacts), while the low marginal propensity to consume scenario (33%) yields results closer to the baseline, with only the high

categorical benefits scenario being much more than 0.1% lower than the baseline. The assumption of 20% crowding out likewise reduces the poverty impact by about a fifth. Again, the higher crowding out assumption (40%) reduces the poverty impact by nearly twice as much as the lower crowding out one, but the lower crowding out assumption still yields impacts close to those resulting from the main assumptions.

### Table 39. Sensitivity analysis of poverty gap modelled with alternative assumptions

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Baseline poverty gap (as % of GDP) | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 1.7 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 2.3 | 2.4 | 2.3 | 2.4 | 2.3 | 1.8 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 2.3 | 2.4 | 2.3 | 2.4 | 2.3 | 1.9 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.0 |

*marginal propensity to consume

## 6.2. Demographic poverty targeting

### 6.2.1. Vanuatu

Table 40 reports the results for Vanuatu comparing the micro-simulation of a package of poverty-targeted cash transfers provided to young children and older-people, as an alternative to the household targeting scenarios of the previous section. The package targets children in the bottom three deciles with a grant equal to 30% of the national poverty line, and older- people in the same three deciles with a grant equivalent to 100% of the poverty line, under the same alternative assumptions about targeting errors and costs.

The poverty-targeted demographic group package in Vanuatu costs approximately 0.5% of GDP, about the same as the poverty-targeted household grants for Vanuatu and Samoa. In this case, there is a small but significant difference in cost between high-error and low-error scenarios, which can be seen by comparing the costs expressed as percentage of government expenditure. For low-error scenarios the cost is 2.9% of government expenditure, while for high-error scenarios the cost is only 2.7% of government expenditure. Since the poorest households have more children, more effective targeting of a grant delivered on a per child basis will yield somewhat higher costs (the cost estimates exclude administrative and targeting costs.)

With low targeting errors, the poverty targeted transfers reduce the household poverty rate by approximately 10%, but only by about 5% in the high-error scenarios. A similar result follows for the poverty gap reduction—approximately 13% for the low targeting error scenarios, but only about 7% for high-error ones.

Like with the household poverty targeted simulations, the efficiency indicator for the low-cost, low-error scenario—at 18.3% (compared to 20.9% for household targeting for Vanuatu and 33.7% for Samoa)–is the greatest across all of Vanuatu's demographic poverty-targeting scenarios, again reflecting highly optimistic assumptions about achieving excellent targeting performance at low cost. The two more realistic scenarios model high targeting errors at low cost (estimated efficiency of 11.3% compared to 12.9% for household poverty targeting in Vanuatu and 21.5% in Samoa) and alternatively achieve low targeting errors at high cost (estimated efficiency of 14.2% compared to 16.2% for household poverty targeting in Vanuatu and 26.2% in Samoa). The worst-case scenario is high errors with a high cost—a poorly targeted program that yields an efficiency measure of 8.8% (compared to 10.1% for household poverty targeting Vanuatu and 16.7% in Samoa). The pro-poor indices follow a similar pattern.

As with the household targeting scenarios, the categorical scenarios compare favourably with the realistic simulations, falling between the two estimates of efficiency measures. The low-benefit categorical scenario (efficiency measure of 13.7% and pro-poor index of 102%) again performs better than the

high-error/low-cost, poverty-targeted demographic group simulation (efficiency measure of only 11.3% and pro-poor index of 85%). However, again, all realistic and categorical simulations yield very similar efficiency measures and may not be statistically significantly different. These results reinforce that a categorical cash transfer may reduce poverty in a country more efficiently than a poverty targeted transfer, depending on targeting effectiveness and targeting costs.

### Table 40. Costs, impacts and efficiency of demographic group poverty targeting in Vanuatu

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Child benefit (children up to 5th birthday) | 333.93 | 333.93 | 333.93 | 333.93 | 111.31 | 333.93 |
| Social pension (people 65 years and older) | 1113.12 | 1113.12 | 1113.12 | 1113.12 | 278.28 | 1113.12 |
| Child benefit as % of poverty line | 30 | 30 | 30 | 30 | 10 | 30 |
| Social pension as % of poverty line | 100 | 100 | 100 | 100 | 25 | 100 |
| Cost of package as % of government spending | 2.9 | 2.7 | 2.9 | 2.7 | 1.9 | 6.3 |
| Cost of package as % of GDP | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 1.2 |
| New household poverty rate | 12.1 | 12.7 | 12.1 | 12.7 | 12.8 | 11.3 |
| % reduction in household poverty rate | 9.8 | 5.1 | 9.8 | 5.1 | 4.6 | 15.6 |
| New poverty gap | 1 | 1 | 1 | 1 | 1.1 | 0.9 |
| % reduction in poverty gap | 12.5 | 7.3 | 12.5 | 7.3 | 6.6 | 19.3 |
| Poverty-reducing efficiency | 18.3 | 11.3 | 14.2 | 8.8 | 13.7 | 11.9 |
| Pro-poor index (100% = neutral) | 137 | 85 | 107 | 66 | 102 | 89 |

Table 41 reports the analysis of the impact of the simulated poverty-targeted demographic group transfers in Vanuatu on the same two demographic groups analysed above. The low-error scenarios reduce the poverty rate for households with children by approximately 9%, and the rate for older- people households by 33%. The high-error scenarios reduce

the poverty rate for households with children by approximately 5%, and the rate for older- people households by 23%. For households with children, the low-error scenarios reduce the poverty gap by approximately 18%, but the high-error ones by only about 11%. Similarly, for older-people households, the low-error scenarios reduce the poverty gap by approximately 35%, but the high-error ones by only about 21%). The impacts of these scenarios on demographic groups are much greater, because these groups are explicitly targeted.

### Table 41. Demographic poverty-targeting impacts on children and older-people in Vanuatu

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| New poverty rate (% households with children) | 13.6 | 14.3 | 13.6 | 14.3 | 14.3 | 12.7 |
| % reduction in poverty rate (households with children) | 9.3 | 4.7 | 9.3 | 4.7 | 4.7 | 15.3 |
| New poverty rate (% older- people households) | 12.5 | 14.4 | 12.5 | 14.4 | 15.7 | 9.2 |
| % reduction in poverty rate (older- people households) | 33 | 22.9 | 33 | 22.9 | 16.2 | 50.8 |
| New poverty gap (households with children) | 57.89 | 63.21 | 57.89 | 63.21 | 63.83 | 51.27 |
| Poverty gap as % of poverty line (households with children) | 5.2 | 5.7 | 5.2 | 5.7 | 5.7 | 4.6 |
| % reduction in poverty gap (households with children) | 18 | 10.5 | 18 | 10.5 | 9.6 | 27.4 |
| New poverty gap (older- people households) | 63.62 | 77.78 | 63.62 | 77.78 | 81.13 | 45.69 |
| Poverty gap as % of poverty line (older- people) | 5.7 | 7 | 5.7 | 7 | 7.3 | 4.1 |
| % reduction in poverty gap (older- people households) | 35 | 20.5 | 35 | 20.5 | 17.1 | 53.3 |

Table 42 reports the results of the sensitivity analysis with alternative behavioural assumptions for Vanuatu, comparing demographic poverty-targeting scenarios to categorical approaches. The results are very similar to those from comparing household poverty targeting and categorical approaches under the alternative assumptions discussed above. The 33% marginal propensity to consume again yields differences from baseline less than 0.1% of GDP for all targeting approaches, while the 88% marginal propensity to consume yields differences of comparable magnitudes. Likewise, the crowding out scenarios yield small differences.

### Table 42. Sensitivity analysis of poverty gap modelled with alternative assumptions

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Baseline poverty gap (as % of GDP) | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 1 | 1 | 1 | 1 | 1.1 | 0.9 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 1 | 1 | 1 | 1 | 1.1 | 0.9 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 1 | 1.1 | 1 | 1.1 | 1.1 | 1 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 1 | 1.1 | 1 | 1.1 | 1.1 | 1 |

*marginal propensity to consume

### 6.2.2 Samoa

Table 43 reports on the costs, impacts and efficiency of demographic group poverty targeting in Samoa It compares the micro-simulation of a similar package of poverty-targeted cash transfers provided to young children and older- people, again as an alternative to the household targeting scenarios. The poverty-targeted demographic group package in Samoa costs approximately 1.1% of GDP, about twice the cost of poverty-targeted household grants in Samoa or Vanuatu. There is a small but significant difference in cost between the high-error and low-error scenarios, which can be seen by comparing the costs expressed as percentages of government expenditure. For low-error scenarios the cost is 3.4% of government expenditure, while for high-error ones it is 3.6% of government expenditure.

With low-targeting errors, the poverty targeted transfers reduce the household poverty rate by approximately 11%, but only by about 8% in the high-error scenarios. A similar result follows for the poverty gap reduction—approximately 19% for the low targeting error scenarios, but only about 15% for the high-error ones.

Like with all previous poverty targeted simulations, the efficiency indicator for the low-cost, low-error scenario, at 29.9%, is the greatest across all of Samoa's demographic poverty-targeting scenarios and again reflects highly optimistic assumptions about achieving excellent targeting performance at low cost. The two more realistic scenarios model high targeting errors at low cost (estimated efficiency of 22%) and alternatively achieving low targeting errors at high cost (estimated efficiency of 23.2%). The worst-case scenario is high errors with a high cost—a poorly targeted program that yields an efficiency measure of 17.1%. The pro-poor indices follow a similar pattern.

In this case, the low-benefits categorical scenario yields a higher efficiency measure than the two realistic scenarios, although not by much (efficiency measure of 23.3% and pro-poor index of 112%). This is better than the high-error/low-cost, poverty-targeted demographic group simulation (efficiency measure of only 23.2% and pro-poor index of 111%) or the low-error/high-cost, poverty-targeted demographic group simulation (efficiency measure of only 22% and pro-poor index of 105%). However, it is worth highlighting again that all realistic and categorical simulations yield very similar efficiency measures and may not be statistically significantly different. The repeated point is that the largely unknown (in practice) targeting errors and particularly targeting costs determine whether a categorical cash transfer reduces poverty in a country more efficiently than a poverty targeted benefit.

## Table 43. Costs, impacts and efficiency of demographic group poverty targeting in Samoa

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Child benefit (children up to 5th birthday) | 16.08 | 16.08 | 16.08 | 16.08 | 5.36 | 16.08 |
| Social pension (people 65 years and older) | 53.59 | 53.59 | 53.59 | 53.59 | 13.40 | 53.59 |
| Child benefit as a % of the poverty line | 30 | 30 | 30 | 30 | 10 | 30 |
| Social pension as a % of the poverty line | 100 | 100 | 100 | 100 | 25 | 100 |
| Cost of package as a % of government spending | 3.4 | 3.6 | 3.4 | 3.6 | 3.1 | 10.7 |
| Cost of package as a % of GDP | 1.1 | 1.2 | 1.1 | 1.2 | 1 | 3.6 |
| New household poverty rate (after transfers) | 18.7 | 19.1 | 18.7 | 19.1 | 20.0 | 17.2 |
| % reduction in household poverty rate | 10.6 | 8.4 | 10.6 | 8.4 | 4.4 | 17.7 |
| New poverty gap | 2 | 2.1 | 2 | 2.1 | 2.2 | 1.7 |
| % reduction in poverty gap | 18.9 | 14.6 | 18.9 | 14.6 | 10.3 | 31.6 |
| Poverty-reducing efficiency (including targeting costs) | 29.9 | 22 | 23.2 | 17.1 | 23.3 | 20.5 |
| Pro-poor index (100% = neutral; including targeting costs) | 143 | 105 | 111 | 82 | 112 | 98 |

Table 44 reports the analysis of the impact of the simulated poverty-targeted demographic group transfers in Samoa on the same two demographic groups. The low-error scenarios reduce the poverty rate for households with children by approximately 11% and the rate for older- people households by 23%. The high-error scenarios reduce the poverty rate for households with children by approximately 8% and the rate for older- people households by 23%. For households with children, the low-error scenarios reduce the poverty gap by approximately 20%, but the high-error scenarios by only about 16%. Similarly, for older- people households the low-error scenarios reduce the poverty gap by approximately 28%, but the high-error ones by only about 24%.

**Table 44. Demographic poverty targeting impacts on children and older-people in Samoa**

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| New poverty rate (households with children) | 21.3 | 21.8 | 21.3 | 21.8 | 22.7 | 19.7 |
| % reduction in poverty rate (households with children) | 10.5 | 8.4 | 10.5 | 8.4 | 4.4 | 17.3 |
| New poverty rate (older- people households) | 16.3 | 17.8 | 16.3 | 17.8 | 19.9 | 13.6 |
| % reduction in poverty rate (older- people households) | 22.7 | 15.7 | 22.7 | 15.7 | 6.1 | 35.7 |
| New poverty gap (households with children) | 4.06 | 4.29 | 4.06 | 4.29 | 4.53 | 3.36 |
| Poverty gap as % of poverty line (households with children) | 7.6 | 8 | 7.6 | 8 | 8.5 | 6.3 |
| % reduction in poverty gap (households with children) | 20.2 | 15.8 | 20.2 | 15.8 | 10.9 | 33.9 |
| New poverty gap (older- people households) | 3.15 | 3.33 | 3.15 | 3.33 | 3.70 | 2.23 |
| Poverty gap as % of poverty line (older- people) | 5.9 | 6.2 | 5.9 | 6.2 | 6.9 | 4.2 |
| % reduction in poverty gap (older- people households) | 27.9 | 23.9 | 27.9 | 23.9 | 15.2 | 48.8 |

Table 45 reports the results of the sensitivity analysis with the poverty gap modelled with alternative behavioural assumptions for Samoa, comparing the demographic poverty-targeting scenarios to the categorical approaches. Like with Vanuatu, the results are very similar to those from Samoa's when comparing household poverty targeting and categorical approaches under the alternative assumptions. Unlike Vanuatu, the relatively larger impacts for Samoa under the main assumptions largely

hold up this country—there are more material differences under alternative sets of assumptions. The 88% marginal propensity to consume scenario yields poverty impacts only about 10% smaller than the main scenario across all targeting approaches, while the 33% marginal propensity to consume scenario yields results closer to the baseline. The assumption of 20% crowding out reduces the poverty impact by about a fifth, and the 40% crowding out assumption reduces the poverty impact by nearly twice as much as the lower crowding out assumption. The lower crowding out assumption still yields impacts close to those resulting from the main assumptions, with differences never greater than 0.1% of GDP.

### Table 45. Sensitivity analysis of poverty gap modelled with alternative assumptions for Samoa

| | Poverty targeting | | | | Categorical targeting | |
|---|---|---|---|---|---|---|
| | low error, low cost | high error, low cost | low error, high cost | high error, high cost | low benefits | high benefits |
| Baseline poverty gap (as % of GDP) | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Micro-simulated gap with main assumptions (100% MPC*, no crowding out) | 2 | 2.1 | 2 | 2.1 | 2.2 | 1.7 |
| Micro-simulated gap with alternative assumptions (88% MPC, no crowding out) | 2.1 | 2.2 | 2.1 | 2.2 | 2.3 | 1.8 |
| Micro-simulated gap with alternative assumptions (33% MPC, no crowding out) | 2.3 | 2.4 | 2.3 | 2.4 | 2.4 | 2.2 |
| Micro-simulated gap with alternative assumptions (100% MPC, 20% crowding out) | 2.1 | 2.2 | 2.1 | 2.2 | 2.3 | 1.9 |
| Micro-simulated gap with alternative assumptions (100% MPC, 40% crowding out) | 2.2 | 2.3 | 2.2 | 2.3 | 2.3 | 2 |

*marginal propensity to consume

# 7. Conclusions and recommendations

The models analyse variations on categorically targeted cash transfers to young children and older- people. The least expensive package—providing a benefit equal to 10% of the poverty line to young children and 25% to older- people—costs the most in Kiribati (1.1% of GDP in the survey year) and Samoa (1%). It is moderately lower in Solomon Islands (0.8%) and significantly lower in Vanuatu (0.4%), mainly because the relatively low poverty line in Vanuatu leads to a low modelled benefit level. Expressed as a percentage of government expenditure, the fiscal burden for Samoa is the greatest (3%), followed by Vanuatu (2%) and Kiribati and Solomon Islands a little over 1% each. Vanuatu's relatively low ratio of government spending to GDP accounts for this reversal in ranking.

These categorical benefits, while not explicitly targeting the poor, reach poor households proportionally more than the representation of poor households in the population. This is particularly true for Samoa where households with young children are poorer than average. Overall, this social protection package reduces each country's poverty gap by approximately 7% to 10%, the poverty gap for households with young children by 10% to 11% and households with older- people by 15% to 17%.

Doubling the benefits—to 20% of the poverty line for young children and 50% of the poverty line for older- people—doubles the costs, but only at most an arguably affordable 2% of GDP—towards the upper end of the inter-quartile range for developing country spending on social assistance. Poverty-reducing efficiency falls slightly since the grant is now large enough to lift more people all the way out of poverty. However, all packages remain strongly pro-poor. In Samoa's case, the poverty gap reduction is 30% larger than would be the case with universal provision. Across all countries the poverty gap falls between 13% and 20%, between 18% and 21% for households with young children and between 27% and 32% for households with older- people.

Tripling the benefits to 30% of the poverty line for young children and 100% for older- people leads to roughly proportional increases in costs and poverty-reducing impacts. The cost is greatest in Kiribati, at nearly 4% of GDP, and just a little less in Samoa. The impacts are also significantly larger. They reduce the poverty gap by nearly a third in Samoa and a quarter in Kiribati, and by nearly 50% in all countries for households with older- people. The large size of the benefits exhausts the pro-poor bias in

Solomon Islands—a more efficient package for poverty reduction would distribute smaller benefits more broadly.

This micro-simulation exercise demonstrates the feasibility of starting with a small but affordable package of benefits and scaling up as resources and political will allows. In Kiribati, Samoa and Vanuatu the pro-poor impact extends up to a relatively generous benefit level. These countries are likely to encounter fiscal constraints before they exhaust the potential of the categorical benefits to efficiently reduce poverty.

The micro-simulation exercise also separately tested two singular cash transfer benefits:

- a child benefit equal to 30% of the poverty line for all children under 5 years of age
- a social pension equal to 100% of the poverty line for all people 65 years of age and older.

The child benefit costs less than 2% of national income in Kiribati, Samoa and Solomon Islands and just 0.7% of GDP in Vanuatu. Particularly in Samoa, but also in Solomon Islands and Vanuatu, the poverty-reducing efficiency of this child benefit alone is more than the efficiency of the combined packages discussed earlier. The situation is reversed in Kiribati where the packages are more efficient in reducing poverty than the child benefit. This is consistent with the relative poverty analysis discussed earlier: Samoa reports the highest relative poverty for young children and Kiribati reports the highest relative poverty for older- people.

The child benefit has a significant impact on poverty for older- people. Even in Kiribati the child benefit alone results in a 10.6% reduction in the poverty rate among households with people 65 years of age and older. The 10.6% reduction is the result of benefits reaching households with children under the age of 5 years and persons 65 years of age and older. However, the pairing of the child benefit with a generous social pension (100% of the poverty line) results in poverty rate reductions among older- people households, ranging from 3.6 (Kiribati) to 8 (Samoa and Solomon Islands) and to nearly 15 (Vanuatu) times greater than the reductions resulting from the child benefit alone.

The stand-alone social pension (equal to 100% of the poverty line costs less (when expressed as a percentage of GDP) than the child benefit in Solomon Islands and Vanuatu but more in Kiribati and Samoa. In Samoa, Solomon Islands and Vanuatu the poverty gap reduction from the social pension alone is less than the impact of a child benefit on its own. The situation is reversed in Kiribati with a 14.4% reduction in the poverty gap with the social pension compared to a 10.4% reduction with the child benefit.

These results depend on strong assumptions about household behaviour in response to social protection benefits. This research paper tested alternative assumptions, demonstrating that poverty impacts are sensitive to assumptions about how much of the cash transfer is consumed as opposed to saved, and how private remittances and transfers are affected by receipt of public cash transfers.

The test of the slightly lower marginal propensity to consume (88% versus 100% in the main model) demonstrated that poverty impacts would be about 10% smaller with this alternative assumption. With a much lower assumed marginal propensity to consume (33%), about two-thirds of the impact disappears from the static one-period model used in this research paper. However, it is unlikely that such a low marginal propensity to consume would persist in the face of a successful long-term cash transfer program. As confidence among recipients grows that they can depend on benefits, fears of future income shocks (interruptions in benefits) dissipate and the marginal propensity to consume will likely rise. Even when the marginal propensity to consume is less than 100%, the associated reduction in consumption is channelled to savings, implying future benefits for households that might be multiplied by investment returns. The long-term poverty impact may be greater than that implied by the modelling in this research paper.

The assumption of no crowding out maximises the measured benefits for targeted households. With the alternative assumptions of low crowding out (20%) and high crowding out (40%), the poverty impacts are reduced by roughly corresponding amounts. With low crowding out, the poverty impacts fall by nearly a fifth, and twice that for the high crowding out. While many studies of cash transfers support the assumption of no crowding out, alternative scenarios demonstrate the importance of working to ensure social protection programs work with, rather than against, informal and traditional systems of social support.

It should be noted that many private transfers and remittances are provided by poor households to even poorer households, so crowding out simulations likely exaggerate associated reductions in poverty impacts. Little research exists on the poverty status of remittance-providing households because of the inter-household mapping required to analyse these effects. These conclusions about the alternative assumptions discussed earlier for the categorical simulations apply similarly to the results for poverty targeted scenarios.

The micro-simulation analysis also evaluated two types of poverty-targeted cash transfers in Samoa and Vanuatu:

- benefits equal to 50% of the individual poverty line targeted to the poorest quintile of households, but under assumptions about targeting costs and errors
- benefits targeted to children (30% of the poverty line) and older- people (100% of the poverty line) in the poorest three deciles of households, again testing assumptions about targeting costs and errors.

The results were surprisingly similar in all four cases (household benefits in Samoa, household benefits in Vanuatu, demographic benefits in Samoa and demographic benefits in Vanuatu).

In all cases, not surprisingly, effective targeting with low cost and low error yielded the highest possible efficiency for poverty reduction. However, this is a particularly optimistic scenario—usually minimising targeting errors of inclusion and exclusion requires an expensive targeting mechanism, not only for the administrative costs of targeting but also for private, social, political, economic (perverse incentives) and other costs.

A more realistic trade-off involves choosing between a low-cost targeting mechanism yielding relatively high targeting errors, versus a higher-cost framework minimising these errors. In each country, and for each poverty targeting approach, a purely categorical package of benefits reduced poverty more efficiently than in at least one of these realistic scenarios. The fourth option—targeting with high costs and high errors—not surprisingly performed the worst.

In the absence of credible evidence on targeting costs and likely errors of inclusion and exclusion—evidence which does not exist for Pacific countries—it is not possible to precisely identify which targeting approach will be most effective and efficient in PICs. However, this analysis underscores the importance of paying attention to targeting costs and errors—because they determine the relative efficiency of categorical versus poverty targeted approaches.

# 8. References


Abbott, D 2010, 'Analysis of Household Income and Expenditure Surveys for Four Pacific Island Countries', AusAID, Canberra, Australia.

Samson, M 2002, 'Social Security and Chronic Illness: A Case Study of Mount Frere', *South African Journal of Economics*, vol. 22, December 2002.

Samson, M 2011, 'Technical Specifications for the Pacific Region Micro-simulation Model', AusAID, Canberra, Australia.

Samson, M, van Niekerk I & Mac Quene K 2006, *Designing and Implementing Social Transfer Programmes*, Economic Policy Research Institute, Cape Town: EPRI Press, Cape Town, South Africa.

Willmore, L 2004, Universal Pensions in Low Income Countries October 2004, Initiative for Policy Dialogue, Pensions and Social Insurance Section, discussion paper no. IPD-01-05. <http://ssrn.com/abstract=381180 or doi:10.2139/ssrn.381180>, viewed 1 December 2011.