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## **Developing countries in need: Which characteristics appeal most to people when donating money?**

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# **Developing countries in need: Which characteristics appeal most to people when donating money?**

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## **Abstract**

A discrete choice experiment was conducted to discover the relative importance of five characteristics of developing countries, as suggested by the literature, considered by people when choosing countries to donate money to. The experiment was administered via an online survey involving almost 700 student participants (potential donors) from a New Zealand university. The most important recipient-country characteristic for participants on average is hunger and malnutrition (a weight of 0.29), followed by child mortality (0.24), quality of infrastructure (0.21), income per capita (0.18), and, least importantly, ties to New Zealand (0.09). A cluster analysis of participants' individual 'part-worth utilities' representing the relative importance of the country characteristics reveals they are not strongly correlated with participants' demographic characteristics. Our findings overall indicate that to maximise the donations they receive, non-governmental aid organisations are better to focus their marketing efforts on emphasising country characteristics associated with hunger, malnutrition and child mortality than other things.

*Keywords:* foreign aid, charitable giving, discrete choice experiment, conjoint analysis, PAPRIKA method

*JEL codes:* A13, C91, D64, O1

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## **1. Introduction**

The funds available to non-governmental aid organisations (NGOs) to pay for development projects in less-developed countries often come from, at least in part, donations received from households and businesses in developed countries. Recent research (e.g. Nunnenkamp et al., 2009; Dreher et al., 2012) has focussed on the criteria used by NGOs to decide how to allocate funds across countries, regions and projects, often comparing NGO's criteria to ones used by governments for allocating official development assistance (ODA).

Also likely to be of interest, and the subject of the present paper, is how every-day 'mom-and-pop' donors (in contrast to corporate and governmental donors) would like to see their donations spent. When someone considers giving money to an NGO, such as World Vision, which characteristics of aid-receiving countries does he or she care about most? For example, do people prefer to give money to countries with low average incomes or with high child mortality rates? Would they rather support countries whose people are starving or countries with close geographic ties to their own country? Knowing what potential donors care about would obviously be useful for NGOs as this would enable them to focus their marketing efforts on particular countries (or country 'types') that people relate to most strongly, as well as to justify their funding decisions to stakeholders. Likewise, governments could use such information about citizens' and tax-payers' preferences to assess whether the criteria used for allocating ODA are appropriate (and if not, the criteria could perhaps be revised).

This paper investigates the relative importance of the characteristics of aid-receiving countries likely to influence donor decisions using a discrete choice experiment (McFadden, 1974) administered via an online survey involving students (potential donors) from a New Zealand university. 'Part-worth utilities' (or weights) representing the relative importance of the characteristics to each individual participant, and on average for the group as a whole, are

calculated. A major strength of the method we employ is that a full set of part-worth utilities is generated for each individual participant – in contrast to other studies that are limited to using aggregated data, as reviewed in the next section, in particular Bachke et al. (2013). Our individual-level data, in conjunction with our relatively large sample of more than 600 participants, permit us to perform a cluster analysis (Spath, 1980) to distinguish ‘clusters’ of participants with similar patterns of utilities – in effect, identifying ‘consumer segments’ in the market for donations. The remainder of the paper is organised as follows. Section 2 reviews the related literature concerning the preferences and behaviour of donors and aid agencies in the private and public sectors. Section 3 describes the discrete choice experiment and survey. The survey results are reported and discussed in Section 4. Our conclusions are presented in Section 5.

## **2. Literature review**

Two main approaches to investigating the preferences and behaviour of individual donors and of NGOs and governments with respect to allocating aid have been used in earlier studies: cross-country regressions and economic experiments. We critically review each approach in turn.

Several studies collect data on the amount of aid received by individual countries (sometimes analysing the data by donor country) and run regressions to test whether the per capita amount of aid correlates with recipient-country characteristics such as income per capita, mortality rates, etc. Some of these papers focus on the determinants of aid from governments (e.g. Burnside and Dollar, 2000; Alesina and Dollar, 2000; Trumbull and Wall, 1994; Stone, 2010), with others focusing on aid from NGOs (e.g. Nunnenkamp et al., 2009; Dreher et al., 2012; Koch et al., 2009; Nancy and Yontcheva, 2009). With the exception of Feeny and Clarke

(2007), this literature does not analyse the giving behaviour of private individuals, which is the focus of the present paper.

A major focus of the studies analysing donor governments is to estimate whether aid is given on the basis of recipient-country need or in pursuit of the strategic objectives of the donor. These studies tend to find that poorer countries receive more aid per capita. Trumbull and Wall (1994) also find that countries with higher infant mortality rates receive more aid. This is evidence that recipient-country need is a motive for foreign aid. There is also evidence that strategic considerations are also important. Many countries donate more aid to their former colonies rather than to countries with which they have no historic or geographic ties (Alesina and Dollar, 2000; Stone 2010), to countries that vote with them at the UN (Alesina and Dollar, 2000; Stone 2010), and to countries with which they have strong trade links (Stone, 2010).

Like the studies on the determinants of bilateral aid, studies analysing the behaviour of NGOs estimate regression equations to determine which recipient-country attributes correlate significantly with the amount of aid donated. This literature is also concerned with whether NGO giving tends to be based on recipient-country need or on strategic considerations, and also whether governments and NGOs from the same country tend to support identical countries. Some evidence is found of NGO aid being correlated with government aid (e.g. Dreher et al., 2012; Koch et al., 2009) but it is also common to find that aid is more likely to go to poorer countries (e.g. Nunnenkamp et al., 2009; Koch et al., 2009; Nancy and Yontcheva, 2006) and Nancy and Yontcheva finds evidence of more aid going to countries where life expectancy is lower. Whereas Nancy and Yontcheva finds little evidence of NGOs being motivated by strategic concerns, Koch et al. (2009) finds some evidence that NGOs may be concerned with the closeness of ties between the recipient country and where the

NGO is based in terms of colonial ties to the donor country and whether the recipient country and the NGO share the same religion.

One paper which analyses the giving behaviour of private individuals is Feeny and Clarke (2007), which compares the responses of the Australian public and government to emergencies and natural disasters overseas. Both the public (through World Vision) and the government donate more if the natural disaster has affected a large number of people, if the disaster has received a lot of media coverage and if it has occurred in a country with relatively high levels of political and civil freedom. The public tends to donate more to countries with larger populations, whereas the government does the opposite. The public also tends to donate for emergencies in countries with lower per capita incomes and when the disaster occurs in the Middle East compared to in Africa, whereas these characteristics are not significantly correlated with government aid. Thus in Australia at least, characteristics attracting government aid are significantly different from those attracting aid from the public.

Donor preferences have also been investigated in an experimental setting in the context of the Dictator Game – where participants are given (or earn) a sum of money and have to decide how much to keep for themselves and how much to give to another player, or, in some studies, to a charity. Several studies have used the Dictator Game to investigate aspects of giving to international development charities and to test whether the information provided about the characteristics of the country or of the beneficiaries affects donations. In some of these studies (Small et al., 2007; Etang et al., 2012) participants earn their endowment (e.g. by answering a survey) rather than simply receiving their endowment as a windfall gain.

Small et al. (2007), using a between-groups design,<sup>1</sup> finds that participants express more sympathy by making a larger donation for an identifiable victim of poverty or a disaster (e.g., from a photo or description of a particular person) relative to a description of the overall effects of the disaster (e.g., the percentage of people affected by a severe drought). Educating participants about this ‘identifiability effect’ or bias tends to reduce donations to identified victims but not to ‘statistical victims’.

Brañas-Garza (2006), also using a between-groups design, finds that participants transfer significantly more money when told that beneficiaries live in poor communities in underdeveloped countries than if they are provided with no information. Donations increase even more if participants are told that the money will be spent on medicine.

Etang et al. (2010), using a between-groups design, pays participants to take part in a survey, and then invites them to donate some of their payment to World Vision. Each participant is assigned randomly to one of six treatment groups. All treatment groups are told that their donations will be spent to improve primary education in an African country. Two attributes – income per capita (either \$684 or \$1165) and the cause of the country’s poverty (no reason given or due to being landlocked or political instability) – vary across the groups, resulting in six different treatments. No significant differences in giving across treatment groups was detected, which implies that participants are insensitive<sup>1</sup> to these differences in income and the reasons for the country’s poverty.

Etang et al. (2012) adds within-group variation to the between-groups variation in the 2010 study to further test whether giving depends on the cause of the recipient country’s poverty. In

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<sup>1</sup> In a between-groups design each participant takes part in only one treatment (i.e. only makes one decision). In contrast, in a within-groups design each participant takes part in each treatment.

one treatment participants are told the country is poor due to global warming (i.e. a cause external to the country); in the second treatment the reason given is that people living in the country choose to have large families (a cause internal to the country). For the within-groups design, average donations are significantly higher for the country affected by global warming, but no significant treatment effect is found for the between-groups design.

Bachke et al. (2013) takes the within-groups variation to a greater extreme. Ninety Norwegian university students recruited to a Dictator Game were given 250 NKO (approximately \$40US) and asked how much they wish to keep or, alternatively, to donate to an overseas development project. The development projects differed on four attributes: age of beneficiaries (adults or children), gender, region (Sub-Saharan Africa, Middle East, Asia, Latin America or Eastern Europe) and type of project (peace and reconciliation, health, education, agriculture and business development). Sixty combinations of attributes were distinguished. Participants were randomly split into four groups, with all members of each group choosing their individual donations for the same 15 combinations of project attributes. Payments were made to each individual and the project respectively on the basis of the choices made in one of the individual's 15 games chosen at random. Note that, in contrast to the method we employ (explained in the next section), this method does not generate a full set of preference data for each individual participant, as each participant considered just 15 of the 60 combinations of attributes; instead, individuals' data are aggregated.

The relative importance of the attributes was revealed by estimating regression equations. Participants are more likely to give to projects aimed at children rather than men; sub-Saharan Africa is the most popular region and health projects are the most popular type of project. Female and males differed in their choices; for example, females are more likely than males to give when the beneficiary is female and less likely to support health projects. Bachke et al.

does not include the characteristics of recipient countries as attributes other than their geographic region. Hence, though their methodology has similarities with ours, their research question is different. The other research summarized earlier in this section offers some guidance as to which recipient-country characteristics matter most to donors, with nearly all of this research focusing on governments or NGOs as the donor. A key research question is whether donors are motivated more by recipient-country need or strategic considerations.

### **3. Discrete choice experiment and survey**

As outlined earlier, this paper seeks to discover the relative importance of the characteristics of aid-receiving countries considered by every-day ‘ordinary’ people when choosing countries to donate money to. We use a form of discrete choice experiment involving ‘pairwise ranking’ in which hypothetical countries are defined according to potentially relevant characteristics (typically referred to as ‘attributes’). Participants complete the survey online, which enables individual-level data to be collected from a larger sample than is usual in economic experiments (e.g. Bachke et al., 2013) and that allows us to examine the extent to which variation in participant characteristics correlates with variation in participant preferences.

As explained in more detail below, each participant is asked to imagine he or she is donating money to a developing country and is invited, repeatedly, to choose which of two hypothetical countries differentiated in terms of two attributes at a time he or she would prefer to donate money to. Each choice (pairwise ranking of two hypothetical countries) requires the participant to confront a trade-off between more of one attribute in exchange for less of another. This series of pairwise choices provides the information needed to capture each participant’s strength of feeling for each attribute relative to the others – represented by the

relative weights attached to the attributes, or what are often referred to as the ‘part-worth utilities’ for the attributes.

A concern with this kind of ‘stated-preferences’ survey is that some participants are likely to respond rather casually, potentially undermining our confidence in their data’s validity and reliability. To encourage participants to take the survey seriously, they were told that for 200 of them (selected at random) \$20, or \$4000 in total, would be given on their behalf to World Vision New Zealand to spend in the country most closely matching the participant’s preferences as revealed in the survey. This is not quite true ‘revealed preferences’ (in the sense of observing the decisions people make with their own money), but, rather, it is ‘stated preferences with consequences’. Everyone who participated also received a ticket in a lottery to win a \$1000 cash prize, which they were given the opportunity of keeping themselves or donating to World Vision.

### *3.1 Choice experiment design*

The first stage in designing the discrete choice experiment (DCE) was to determine which recipient-country characteristics (usually referred to as ‘attributes’ in this methodological context) to include in the analysis. We were guided in our choice of attributes by the literature reviewed in the previous section, and also by discussions with senior staff from World Vision regarding the country characteristics they think may affect donor behaviour. As the burden of participating in the DCE increases with the number of attributes, we settled on five. The first three attributes relate to the level of poverty within a country: income per capita, the extent of hunger and malnutrition and the child mortality rate. The fourth attribute concerns the quality of the country’s infrastructure (schools, roads, water, electricity supply, etc), and the fifth attribute pertains to a country’s geographic, political and historical ties to the donor country (in this case, New Zealand, the setting for the DCE and survey).

The second stage in designing the DCE involves determining appropriate levels of ‘performance’ or severity for each attribute. For example, average income per person was demarcated into three levels: poor (\$4-\$8 per day), very poor (\$1-\$3 per day) and extremely poor (<\$1 per day). The five attributes and their levels are listed on the left-hand side of Table 2 in Section 4 below.

When specifying the attributes and their levels, we were careful to use language that is easily understandable by participants with no specialist knowledge of economics. For example, we used the phrase “average income per person” rather than “income per capita”. The final wording was settled on after feedback from a pilot version of the survey on a group of students to test their understanding. Participants in the pilot did not take part in the final survey.

As well as the DCE, each participant was also asked some basic demographic and background questions. As well as standard questions about gender and age, participants were asked to report their intended major subject and the number of years they had been at university. They were also asked about whether or not they had visited a developing country, their involvement in religious activities and clubs respectively, how much they follow world news, and how frequently they donate their time or money to charities. In Section 4.3 we analyse whether any of these survey responses are correlated with donor preferences.

### *3.2 Survey implementation*

Participants were students at a New Zealand university in the first semester of 2012. The survey was emailed first to two large first-year classes in economics and law respectively. It was also emailed to members of the university’s Commerce Students’ Society (a voluntary

student welfare-oriented organisation), and, to increase the diversity of students, to a second-year French class. In total, the survey was emailed to 1522 people. A short presentation was made in each class by the second author to inform students about the survey, the incentives to take part, and that students would receive an email later that same day with a link to the survey and additional information. Members of the Commerce Students' Society received a message with the same information on the social media site Facebook. Participants were requested to complete the survey online any time over a two week time period. The original email was followed up with two reminder emails to potential participants who had not yet completed the survey and offering an extra week to complete it.

The survey was implemented using web-based DCE software known as 1000Minds ([www.1000minds.com](http://www.1000minds.com)), which implements the PAPRIKA method for estimating part-worth utilities (Hansen and Omblér, 2008).<sup>2</sup> A key feature of this software is the speed and efficiency with which it progresses participants through the pairwise-ranking exercise that is central to the method. The software starts by identifying all pairs of hypothetical countries defined on the DCE's five attributes that are differentiated on two attributes at a time (in effect, all other attributes the same) and involving a trade-off between the two attributes. These pairs of hypothetical countries are known as 'undominated pairs' (of hypothetical countries differentiated on two attributes at a time involving a trade-off). The software chooses an undominated pair at random and presents it to the participant for him or her to pairwise rank. An example of such a pairwise-ranking exercise (a screen shot from the 1000Minds software) appears in Figure 1.

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<sup>2</sup> PAPRIKA is an acronym derived from the method's formal title, 'Potentially All Pairwise RanKings of all possible Alternatives'. Other contexts in which this method and software have been used include central banking (Smith, 2009), plant and animal breeding (Smith and Fennessy, 2011; Byrne et al., 2011), medical research (Taylor et al, 2013), urban planning (Christofferson, 2007), health technology assessment (Golan et al, 2011) and patient prioritisation (Hansen et al, 2012; Fitzgerald et al, 2011; Neogi et al, 2010).

[Figure 1 about here]

The software repeatedly selects an undominated pair at random and presents it to the participant for him or her to pairwise rank. Each time the participant ranks a pair, the software immediately identifies all other undominated pairs (i.e. as explained above, hypothetical countries differentiated on two attributes at a time involving a trade-off) that can be pairwise ranked via transitivity. For example, if a participant ranks hypothetical country *X* ahead of country *Y* and also *Y* ahead of country *Z*, then, logically (by transitivity), *X* must be ranked ahead of *Z*. The software ranks this third pair implicitly, and any others similarly implied by transitivity, and eliminates them from the survey. The participant continues pairwise ranking until all possible undominated pairs have been pairwise ranked, either explicitly or implicitly (by transitivity). The DCE, comprising four attributes with three levels each and one attribute with two levels (see Table 2), generates 66 undominated pairs; on average, participants were required to pairwise rank just 20, typically taking 5 to 10 minutes in total. The number of pairwise rankings required varies both with the choices made and the order in which undominated pairs are presented.

## **4. Results and Discussion**

### *4.1 Demographic and background characteristics*

The DCE was completed by 687 participants. However, data on their demographic and background characteristics were available for only 616 of them.<sup>3</sup> Thus, the average (mean)

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<sup>3</sup> Although participants were presented with a single survey, the demographic and background questions were created using Google Forms software (<https://accounts.google.com>), requiring these answers to be stored on Google's servers, whereas the answers to the DCE questions were stored on 1000Minds' servers. Both sets of answers were combined for each participant by matching their

results across participants for the DCE presented in Section 4.2 are based on the full sample of 687 (response rate = 45%), and the results for the cluster analysis in Section 4.3 are based on the sub-sample of 616 (response rate = 40%).

Participants' demographic and background characteristics are summarised in Table 1. There are somewhat more females than males, which is consistent with the student gender-mix at the university. Students in their first year of study comprise 53% of the sample; 37% are studying Law, 44% Commerce, 34% Humanities and 16% Sciences. These subject proportions differ from those of the university as a whole, but reflect the classes that were invited to participate in the survey.

Most participants (81%) reported giving money or time to charities at least once every six months. We found this finding reassuring, as we initially worried that a potential drawback of using university students to represent potential donors is that, having relatively low incomes, students might have been expected to have had little experience donating money to charity. This is not the case. Also, when given the opportunity at the end of the survey, 26% of participants chose to donate their chance of winning \$1000 to World Vision rather than keep it themselves.

[Table 1 about here]

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university email address (by which the link to the survey was delivered) with their reported address which we asked for in the second part of the survey. Unfortunately, 71 participants either did not report an address or reported one different from their university address and so it was impossible to match their data.

#### *4.2 Estimates of average relative preferences*

The data from which to estimate each participant's part-worth utilities – representing the relative importance (or 'weight') of the five attributes with respect to choosing countries to donate money to – consists of the participant's pairwise rankings from the DCE. The 1000Minds software solves a linear programme based on these pairwise rankings to estimate utilities for each level of each attribute that are consistent with the participant's choices. The constraints in the linear programme are key to interpreting the estimated utilities, as explained briefly below.

Utility is assumed to be additive across attributes, ensuring there are no interactions among the attributes.<sup>4</sup> Suppose, for example, that *A* and *B* refer to two attributes each with levels 1 through 3. Let *A1* refer to the utility the participant associates with attribute *A* being at level 1, and so on. Presented with the question, "Which do you prefer, a country characterised by attributes *A1* and *B3* versus another characterised by *A3* and *B1*?", the participant chooses the first country if utilities  $A1 + B3 > A3 + B1$ . Each such choice made by the participant forms a constraint in the linear programme. Utility is also assumed to be non-negative and increases monotonically with the levels of each attribute. There are no additional functional constraints, such as of diminishing marginal utility. See Hansen and Ombler (2008) for details.

For ease of interpretation and comparison across participants, the software scales the results from the linear programme in the same way for each participant. The lowest level of each attribute is assigned a utility value of zero. The utility values assigned to each attribute's highest levels sum across the attributes to one; thus each of these values is easily interpretable as the attribute's overall weight (out of 1). The utility values assigned to the middle level of

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<sup>4</sup> The ranking of undominated pairs is independent of their tied rankings on one or more criteria. This is formally known as 'joint-factor' independence (Krantz 1972).

an attribute represents the combined effect of the level's relative position (middle) on the particular attribute as well as the attribute's overall weight.

As well as estimating part-worth utilities for each participant, these individual results can also be aggregated across all participants by simply calculating the means for the utilities, representing the attributes' relative importance to the group as a whole. Table 2 reports the mean utilities across all 687 participants. These values may seem odd because utility increases as the situation in the country gets worse; but that makes sense in this context in that the utility to the participant from a donation increases the more dire the situation in the country and therefore the more useful the donation is likely to be.

Table 2 lists attributes in decreasing order of their relative importance to the group as a whole – as explained earlier, corresponding to the value for each attribute's highest level. These values, and their associated interpretation as relative weights, must of course be considered in the light of how the attributes' levels are defined. As can be seen in the table, the most important recipient-country characteristic on average is *hunger and malnutrition* (an overall weight of 0.29), followed by *child mortality* (0.24), *quality of infrastructure* (0.21), *average income per person* (0.18), and, least importantly, *ties to New Zealand* (0.09).

This ranking of characteristics based on mean utility values is consistent with the proportions of participants for whom each attribute was revealed by their individual utilities as being personally most important. For 44.2% of participants, *hunger and malnutrition* is most important, followed by *child mortality* (26.8%), *quality of infrastructure* (15.1%), *average income per person* (9.6%) and *ties to New Zealand* (8.6%).<sup>5</sup>

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<sup>5</sup> These numbers sum to more than 100% as for some participants two attributes were ranked first equal.

[Table 2 about here]

Another way of thinking about the numbers reported in Table 2 is to express the attributes' overall weights (bolded in Table 2) as ratios of each other, representing the relative importance of the characteristics vis-à-vis each other (their marginal rates of substitution). These ratios are reported in Table 3. Thus, for example, participants on average regard *hunger and malnutrition* ('high') as being 1.21 times as important as *child mortality* ('high'), all else being equal. In contrast, *hunger and malnutrition* ('high') is 3.22 times as important as the least important attribute, *ties to New Zealand* ('some'), and so on.

[Table 3 about here]

These results suggest that the vast majority of participants would prefer to donate money to a country with high levels of hunger and malnutrition or with high child mortality rates, rather than to a country with close ties to their own country. As mentioned above, *hunger and malnutrition* is 3.22 times more important than *ties to New Zealand*, and only 8.6% of participants rated the latter as the most important attribute. In contrast, as reviewed earlier, Alesina and Dollar (2000) report that many donor governments give more aid to countries they have close ties with, and Feeny and Clarke (2007) found that the Australian public was more likely to give to emergency appeals in countries closer to Australia. Our results suggest that most individuals in our sample do not feel this way.

It is also important to note that average incomes are not as important as the two more direct indicators of social conditions. Alleviating *hunger and malnutrition* is 1.61 times more important than responding to extremely low *average income per person* on the basis of the

part-worth utilities. Moreover, perhaps more importantly from the perspective of international development NGOs, only 9.6% of participants think that responding to extremely low *average income per person* is the most important attribute. Countries with low incomes are likely to also have high rates of hunger and malnutrition, but emphasising the latter is more likely to maximise donations.

#### *4.3. Variation in preferences across participants*

As mentioned earlier, a major strength of the method used by the 1000Minds software, compared to the approach used in Bachke et al. (2013) for example, is that a full set of part-worth utilities is generated for each individual participant, independently of other participants. Of interest is the extent to which preferences vary across participants. One approach to this issue is to identify ‘clusters’ of participants with similar patterns of utilities across attributes. This exercise can be thought of as identifying ‘consumer segments’ in the market for donations. In this sub-section, we report the results of a standard cluster analysis of the part-worth utilities.

We use the K-means clustering routine in Stata statistical software ([www.stata.com](http://www.stata.com)). The ‘K’ in K-means stands for the number of clusters, which is chosen by the researcher. The clustering routine starts by choosing K participants from the sample at random and using each of these K sets of part-worth utilities as the ‘centre’ or ‘centroid’ of a cluster. All of the other participants are then assigned to the cluster with the centroid closest in Euclidean distance to their own set of utilities. From there the routine iterates: once all participants are assigned to a cluster, the average (mean) values of the utilities in the cluster becomes the new centroid and each respondent is again allocated to the centroid closest in Euclidean distance to their own set of utilities. The routine continues iterating until the clusters are stable in the sense that

there are no further movements of participants between the clusters.<sup>6</sup> The end result is K clusters of participants with each participant in the cluster whose mean utilities are closer to their own individual utilities than are the mean utilities of any other cluster.

A critical choice is the number of clusters, K, chosen by the researcher. In practice, the routine works quickly, so the researcher can inspect the results from various values for K. It is not clear that there is an ‘optimal’ number of clusters, but one can evaluate a cluster solution according to the distinctiveness of the clusters, the stability of the solution and how interesting the results are. For a given K clusters, the solution may be unstable in that the result varies with the initial random draw of K centroids. In the case of our study, the four-cluster solution was stable, the clusters relatively distinct, and the results interesting.

Table 4 reports the means of the part-worth utilities in each of the clusters in the four-cluster solution. Participants in the two largest clusters (nearly 60% of the total) focus relatively strongly on *hunger and malnutrition* or *child mortality*. Of interest is that nearly a quarter of participants focus on what may be viewed as more fundamental to the problem of ‘undevelopment’: poor *quality of infrastructure*. Also, nearly 20% of participants value *ties to New Zealand* as highly as any other attribute. Clearly, there is some heterogeneity in preferences across the participants in this sample.

[Table 4 about here]

The variation in preferences as represented by the clusters is not strongly correlated with participants’ demographic characteristics. Differences in proportions across clusters were tested for 12 demographic characteristics, of which only two were significant at the 5%

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<sup>6</sup> See, for example, Fielding (2007) for details.

significance level. The proportion of females was somewhat high (68%) in the cluster concerned most about child mortality, relative to the sample as a whole (59%), and was relatively low (45%) in the cluster relatively more concerned about ties to New Zealand. Students who were majoring in a science subject were significantly less well represented in the cluster with relatively strong concerns about ties to New Zealand; science students tended to focus more on hunger and child mortality. Overall, however, preferences appear to be rather idiosyncratic with respect to demographic characteristics in this sample (bearing in mind, though, that our sample – students at a single university – is relatively homogeneous).

#### *4.4 Country rankings*

As mentioned earlier, participants were told when they engaged with the survey that for 200 randomly selected individuals we would donate \$20 each to World Vision New Zealand to spend in a country that most closely matches their preferences. To reveal these preferences we applied each of the 200 selected individual's part-worth utilities to descriptions of the countries in which World Vision New Zealand operates in terms of each country's 'performance' on the five attributes. We report the results of this exercise here as an indication of which real world countries the DCE results imply that participants would most prefer aid money be given to.

The first step was to rate each country on each of the five attributes. For *average income per person* and *child mortality*, the ranges for each level were specified in the DCE (e.g., a country is rated as 'extremely poor' if income per person is below \$1 per day); data were obtained from World Bank (2012).<sup>7</sup> For the three other attributes, their levels were not defined quantitatively in the DCE, and so for these attributes we had to arrive at more precise definitions ex-post. For the *hunger and malnutrition* attribute we obtained data on child

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<sup>7</sup> Average income per person is GNI per capita, measured in US dollars.

malnutrition (as a proxy for malnutrition in the general population) from U.S. Global Policy Health (2012). This attribute was deemed to be ‘high’ if child malnutrition exceeded 30%, ‘medium’ if between 20 and 30% and ‘low’ if below 20%. *Quality of infrastructure* was proxied by the number of telephone lines per 100 people using data from World Bank (2012): ‘extremely poor’ if the number of telephones per 100 people was less than 1, ‘very poor’ if between 1 and 5 and ‘poor’ if greater than 5. These cut-offs were chosen so that an approximately equal number of countries were assigned to each level. Countries were classified as having ‘some’ *ties to New Zealand* if they are in the Asia-Pacific region; otherwise they have ‘no/low’ ties. Table 5 reports these ratings for each of the 15 countries in which World Vision New Zealand operates, and for which we have data for all variables.<sup>8</sup>

[Table 5 about here]

The next step was to ‘score’ each country’s ratings according to the each participant’s part-worth utilities – to arrive at a ranking of the 15 countries for each of the 200 participants. For example, if there were an individual who had the mean utilities reported in Table 2, Bangladesh would ‘score’ 0.29 for *hunger and malnutrition*, 0 for *child mortality*, 0.21 for *quality of infrastructure*, 0.18 for *average income per person* and 0.09 for *ties to New Zealand* – yielding a total score of 0.77 (out of a maximum of 1.0). Similar calculations for each of the 15 countries produced a ranking for this imaginary participant.

It turns out that Niger is ranked first by 87.9% of the 200 participants. Accordingly, 87.9% (\$3517) of the available \$4000 that we promised for World Vision New Zealand on behalf of participants was allocated to Niger. Niger stands out like this because it is maximally rated for all attributes except *ties to New Zealand* (which for most participants is relatively

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<sup>8</sup> We did not have data for all variables for Myanmar and South Sudan.

unimportant). The remainder of the money went to Timor Leste (\$261), Bangladesh (\$205) and Cambodia (\$17), as they were each ranked first by 6.5%, 5.1% and 0.4% of participants respectively.

Of course, these results do not mean that participants revealed a preference for *nearly all* aid money to go to a single country. The study was designed to reveal which characteristics (and hence which country) people would most prefer aid money went to, but it could well be that participants, if given the option (which they were not), would have liked their \$20 to be spread over more than one country. Similarly, that such a large share goes to Niger in this exercise should not necessarily be taken to imply that aid agencies, if they wanted to allocate funds on the basis of individual donor preferences, should direct a large share of funds to just one country. The fact that *hunger and malnutrition* was the most important attribute for many participants does not necessarily imply that they would want all aid money to go to the country with the most serious problems in this respect. It could be that, if given the opportunity, participants would have liked \$10 to go to their two highest ranked countries, or \$5 to their four highest ranked countries, but we did not allow this possibility.

## **5. Conclusions**

This study found that most potential donors prefer that aid money goes to countries with high rates of hunger and malnutrition and child mortality respectively, rather than to low-income countries per se. Of course, many countries with low incomes also have the highest rates of hunger, malnutrition and child mortality, but not always. Ties between the donor and recipient countries was the least important of the five characteristics considered in our study to potential donors, suggesting that they are more concerned with ‘need’ than with geo-political or historical considerations. In contrast, previous research has shown that donor governments favour giving aid to countries they have close ties with. The quality of a country’s

infrastructure (schools, roads, water, electricity supply, etc) is also relatively unimportant to potential donors. Our findings overall indicate that in order to maximise the donations they receive NGOs are better to focus their marketing efforts on emphasising country characteristics associated with hunger, malnutrition and child mortality than other things.

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**Table 1: Demographic and background characteristics for sub-sample (n = 616)**

<i>Gender:</i>		<i>Donated chance of winning \$1000 to World Vision:</i>	
Female	59%	Yes	26%
Male	41%	No	74%
<i>Number of years at university:</i>		<i>Frequency of following world news:</i>	
1	53%	Every day	44%
2	25%	Every few days	37%
3	10%	Once a week	11%
4	8%	Between once a week and once a month	7%
5	3%	Never	1%
<i>Studies Law:</i>		<i>Studies Arts:</i>	
Yes	37%	Yes	34%
No	63%	No	66%
<i>Studies Commerce:</i>		<i>Studies Science:</i>	
Yes	44%	Yes	16%
No	56%	No	84%
<i>Been to a developing country:</i>		<i>Frequently involved in religious activities:</i>	
Yes	47%	Yes	11%
No	53%	No	57%
		No, but I have some religious beliefs	32%
<i>Frequency of donating time or money to charity:</i>		<i>Actively involved in a club:</i>	
Once a week	4%	Yes	13%
Once a fortnight	6%	Charitable club	5%
Once a month	17%	Sporting club	2%
Once every three months	20%	Cultural club	5%
Once every six months	34%	No	87%
Once a year	2%		
Never	17%		
Other	0%		

**Table 2: Attributes included in the conjoint analysis survey and mean part-worth utilities for full sample (n = 687)**

Attribute	Mean part-worth utility
<i>Hunger and malnutrition:</i>	
Low (most people aren't hungry)	0
Medium (some starvation)	0.13
High (lots of starvation)	<b>0.29</b>
<i>Child mortality (under age 5):</i>	
Relatively low (0-49 deaths per 1000 children)	0
Medium (50-99 deaths per 1000 children)	0.12
High (100+ deaths per 1000 children)	<b>0.24</b>
<i>Quality of schools, roads, electricity supply, etc.</i>	
Poor	0
Very poor	0.10
Extremely poor	<b>0.21</b>
<i>Average income per person:</i>	
Poor (\$4-\$8 per day)	0
Very poor (\$1-\$3 per day)	0.9
Extremely poor (<\$1 per day)	<b>0.18</b>
<i>Ties to New Zealand, e.g. geographical, political, historical:</i>	
None / low	0
Some	<b>0.09</b>

*Note:* The bolded values indicate the relative weights of the attributes overall (i.e. bolded values sum to one).

**Table 3 Average importance of each attribute relative to all others**

	<i>Child mortality</i>	<i>Quality of infrastructure</i>	<i>Average income per person</i>	<i>Ties to New Zealand</i>
<i>Hunger and malnutrition</i>	1.21	1.38	1.61	3.22
<i>Child mortality</i>		1.14	1.33	2.67
<i>Quality of infrastructure</i>			1.17	2.33
<i>Average income per person</i>				2.00

*Note:* Each number is calculated by dividing the part-worth utility values from Table 2 for the highest level of the corresponding row attribute by that of the corresponding column attribute; for example, the top-left entry,  $1.21 = 0.29/0.24$  (from Table 2).

**Table 4: K-means four-cluster solution (n = 616)**

Cluster	Hunger cluster	Mortality cluster	Infrastructure cluster	Ties cluster
No. participants (%):	198 (32.1%)	165 (26.8%)	138 (22.4%)	115 (18.7%)
Attribute				
<i>Hunger and malnutrition</i>	<b>0.41</b>	0.27	0.23	0.22
<i>Child mortality</i>	0.20	<b>0.39</b>	0.17	0.19
<i>Quality of infrastructure</i>	0.18	0.16	<b>0.32</b>	0.17
<i>Average income per person</i>	0.17	0.14	0.23	0.18
<i>Ties to New Zealand</i>	0.04	0.04	0.05	<b>0.25</b>

*Note:* The bolded values indicate the attribute valued especially strongly by those in each cluster, on average.

**Table 5: The levels of the five attributes in the countries in which World Vision New Zealand operates**

	<i>Hunger and malnutrition</i>	<i>Child mortality</i>	<i>Quality of infrastructure</i>	<i>Average income per person</i>	<i>Ties to New Zealand</i>
Bangladesh	High	Relatively low	Extremely poor	Very poor	Some
Cambodia	Medium	Medium	Very poor	Very poor	Some
Honduras	Low	Relatively low	Poor	Poor	None
India	High	Medium	Very poor	Poor	Some
Malawi	Low	Medium	Very poor	Extremely poor	None
Mali	Medium	High	Extremely poor	Very poor	None
Nicaragua	Low	Relatively low	Very poor	Poor	None
Niger	High	High	Extremely poor	Extremely poor	None
Papua New Guinea	Low	Medium	Very poor	Poor	Some
Rwanda	Low	Medium	Extremely poor	Very poor	None
Solomon Islands	Low	Relatively low	Very poor	Very poor	Some
Tanzania	Low	Medium	Extremely poor	Very poor	None
Timor-Leste	High	Medium	Extremely poor	Poor	Some
Uganda	Low	Medium	Extremely poor	Very poor	None
Vanuatu	Low	Relatively low	Very poor	Poor	Some

**Figure 1: Example of a pairwise-ranking question (screenshot from 1000Minds software)**

**Suppose you're donating money to a developing country... Which of these 2 (hypothetical) 'countries' (combinations of characteristics) would you prefer your money went to?**  
(given they're identical in all other respects)

<p>Average income per person <b>Poor (\$4-\$8 per day)</b></p> <p>Ties to NZ, eg. geographical, political, historical <b>Some</b></p> <p style="text-align: center;"><b>this one</b></p> <p style="font-size: small; color: #00aaff;">this combination is impossible</p>	or	<p>Average income per person <b>Extremely poor (&lt;\$1 per day)</b></p> <p>Ties to NZ, eg. geographical, political, historical <b>None / low</b></p> <p style="text-align: center;"><b>this one</b></p> <p style="font-size: small; color: #00aaff;">this combination is impossible</p>
<a href="#">« undo last decision</a>	<p style="background-color: #76b82a; color: white; padding: 10px; display: inline-block;"><b>they are equal</b></p>	<a href="#">skip this question for now »</a>