The Free Provision of Anti-Malarial Nets: Inefficient and Counterproductive Aid?

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By drawing upon a range of academic literature, Catalina de la Sota makes the hypothesis that the free provision of Insecticide-Treated Nets (ITNs) may have no adverse effects on usage of ITNs provided households are well educated with regard to the correct usage and potential benefits of ITNs. Furthermore, the author postulates that this free provision may lead to more sustained use of ITNs and benefit long term development.

"Give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime."

Introduction

Numerous Least Developed Countries (LDCs) have remained in a poverty trap despite having received important amounts of foreign aid. This has led various observers to conclude that aid has been largely inefficient and might have done more harm than good. An illustration often repeated in criticisms of aid is that of free provision of anti-malarial nets. Their free provision is allegedly inefficient, because it leads to misuse, and counterproductive since it prevents the development of a local mosquito net retailing market.

This paper will draw from experimental economics to assess the impact of free net distribution on short and long-term development. It will first present the arguments whereby free distribution is an example of a poor aid policy. Then, the essay will succinctly touch upon the mechanisms behind the claims of those advocating free distribution or those supporting cost-sharing programmes. These views will finally be assessed in the light of various experiments conducted in malaria-ridden regions.

It is not in the scope of this paper to address the broad question of humanitarian aid's effectiveness, but field studies will allow assessing of the performance of the individual aid policy of anti-malarial prevention. This paper will stress that education is key to any free distribution scheme. Providing a fishing rod is beneficial, as long as the fishing instructions are sent alongside.

Ineffective and Counterproductive Humanitarian Aid?

Fierce criticisms of foreign aid can be found, among others, in the works of William Easterly and Dambisa Moyo. Both take the free provision of mosquito nets as an illustration of the inefficiencies and harmful effects of aid.

For Easterly, free net distribution often conduces to the misuse or wastage of nets since people do not value equally an item they were given for free and one they paid for. It is, then, not surprising to see images of mosquito nets being used as fishing nets. Since these were provided for free, they were inefficiently allocated and ended up being wasted. More broadly, large amounts of foreign aid are misallocated and sent for projects that are not necessarily valued or useful to solve local problems (Easterly, 2006).

In her much-commented Dead Aid, Dambisa Moyo scales up the above criticism by stating that aid can hurt long-term development. The author presents the example of an African mosquito-net producer who is forced out of business after the market was flooded with free nets by a "vociferous Hollywood movie start." (Moyo, 2009: p.44) In the short-term, the intervention was urgently needed for a positive impact on malaria prevention; yet it turned out to be detrimental to sustainable development. Similarly, many other aid programmes hinder long-term development.

Is aid inefficient? Has it done more harm than good? "Sadly we don't know, and worst of all, we will never know," as Esther Duflo put it (Duflo, 2010). One can analyse how LDCs have performed during decades of aid provision. But no definite conclusion on the impact of aid on such a performance can be drawn since the counterfactual case, (i.e. the scenario where no aid whatsoever was granted during the same period), is unknown. By contrast, the impact of individual aid projects can be determined through experimentation. Experimental economics, by using randomized controlled trials, has thus gained increasing attention. The free provision of mosquito nets has been evaluated in various experiments.

Malaria, Insecticide-Treated Nets (ITNs), and the Debate Underlying their Distribution

Malaria led to 660,000 deaths in 2010, 90 percent of which occurred in the African continent. No successful vaccine has been found to date, and the most popular prevention means remains mechanical through devices such as ITNs (Economist, October 12 2013). An ITN is a "net that repels, disables and/or kills mosquitoes coming into contact with insecticide on the netting material" (World Health Organization, 2007: p.2). Since over half a million deaths a year could be prevented if bed nets were widely available, and given their rather modest provision costs, ITNs are formidably cost-effective (Heierli and Lengeler, 2008: p.7).

Retailing at four to six dollars, what appears cheap from the perspective of a donor agency is unaffordable to most poor households, leading observers such as Jeffrey Sachs to advocate free distribution. Sachs noticed that rural poor households in Kenya "cannot afford the bed nets, which [...] are too expensive even when partially subsidized" (Sachs, 2005: 230). Given the prevalent below target coverage level, the World Health Organization (WHO) has recommended free distribution since 2007. Coverage of over 50 percent is needed for a strong incidence on mortality according to Hawley et al. (2003: p.126). No cost-sharing system has proved the ability to achieve this target so far.

As was previously touched upon, others such as William Easterly state that nets should be partially funded rather than entirely free. First, pricing triggers a selection effect, whereby nets go "to those who both value them and need them" (Easterly, 2006: p.12). There can also be psychological effects from not using a purchased product if households experience sunk costs (Arkes and Blumer, 1985). Price may be interpreted as a signal for quality, leading to greater wastage of nets distributed for free since households do not value them much (Bagwell and Riordan, 1991). While pricing may influence usage of nets, it can additionally induce long-term development issues. Local producers of anti-malarial nets may for instance go bankrupt if the market is flooded with free nets as was already suggested (Moyo, 2009).

Three Questions for Field Experiments

There are three major questions to address so as to determine the impact of ITN free provision on short and long-term development.

(i) Will a free distribution scheme or a cost-sharing scheme allow the attainment of the minimum coverage needed to effectively fight malaria?

(ii) If anti-malarial nets are provided for free, will households adequately use them?

(iii) Will the free provision of nets interfere with long-term sustainable development advances?

Various field experiments provide conclusive evidence on these matters.

(i) Price and Demand for ITNs

Jessica Cohen and Pascaline Dupas test the impact on usage and net-uptake of ITNs under free provision compared to cost-sharing in Kenya (Cohen and Dupas, 2010). They find that demand slumps as the price turns positive. With an increase from 0 to $0.60, a price still corresponding to a 90 percent subsidy, uptake of ITNs drops by 60 percentage points. The authors consider this finding surprising and mention it as the "main result of the paper" (Ibid: 20).

Since Kenyan households are aware of the effectiveness of anti-malarial nets, they should unambiguously attempt to purchase a highly subsidized ITN. However, it seems

likely, as proponents of free distribution posit, that extremely poor households trade long-term disease prevention for immediate subsistence needs. Sachs noted how destitute households cannot afford to pay a small amount for a life-saving device (Sachs, 2005). Various studies additionally grant support to this proposition. An experiment in India found that a significantly higher number of households purchase an ITN when able to do so through a micro-loan scheme as opposed to relying on personal cash. Nevertheless the micro-loan option leads to a far weaker coverage than free distribution (Tarozzi et al., 2013). Similar results appear for other health products such as deworming devices. A study showed how a free deworming drug programme in Kenyan primary schools led to a far greater uptake, and ultimately positive impact on health, than any of the cost-sharing schemes that the authors analysed (Kremer and Miguel, 2007).

Therefore, Cohen and Dupas' finding of the impact of price on uptake may not be necessarily surprising. It does however offer conclusive evidence to answer the first question at hand. With a system whereby households pay only a negligible fraction of the price of an ITN, uptake is significantly lower than under a free provision scheme.

(ii) Price and Usage of ITNs

Cohen and Dupas' study truly marks a milestone when no indication is found that charging a positive price reduces the likelihood of misuse. Selection and psychological effects were insignificant and women who were given a free ITN were not less likely to hang it than women who had paid for one. The authors justly dismiss qualitative effects. ITNs have been heavily advertised and Kenyan households are aware that the actual unsubsidized price of nets is much higher, implying that they value equally a free net and a partially free one (Cohen and Dupas, 2010: pp.5-6).

Yet the prevalent awareness of ITNs among the experiment's subjects might be a caveat. The authors admit that given the study's particular context, the results might not be applicable to other less known health products. But the analysis might not be generalisable to nets themselves. In malaria-ridden regions where knowledge of ITNs is not widespread, qualitative effects could enter the equation. Free distribution could be interpreted as a signal of suboptimal quality, increasing the likelihood of wastage. It follows that in order to make a generalisable conclusion, (i.e. to achieve external validity), it would be interesting to replicate Cohen and Dupas' study in other regions where education on ITNs has been minor.

Two conclusions could ensue from the new experiment. Either price has no effect on usage regardless of anti-malarial net awareness, meaning that qualitative effects can be eliminated altogether, or price has no impact as long as households are aware of the benefits of anti-malarial nets, suggesting that the occurrence of qualitative effects is contingent on ITN educational level. The second scenario is more likely given how qualitative effects can be expected to play out. Thus, if qualitative effects prove to be significant,

the answer to question (ii) would state that price has no impact on ITN usage, as long as households are widely aware of ITN benefits.

An experiment conducted by Ashraf, Berry and Shapiro finds that price may have an effect on the usage of water-treatment products (Ashraf et al., 2010). The finding could be interpreted as evidence in support of the hypothesis that education is key to any free distribution scheme. Water treatment products are less known than ITNs and this could explain the variation in use between individuals having paid a different price. It would be enlightening to conduct the same experiment after an awareness campaign on the benefits from using water-treatment devices. It can be posited, given the above reasoning, that such an experiment would find no evidence of an impact of price on usage.

Yet, the finding that price has no effect on use might not be replicable to health products of a different nature such as curative ones. Pricing appears to trigger a selection effect in the case of malarial remedies. After a highly subsidized distribution programme of malarial pills, close to half of the medicine was found to be allocated to individuals who did not have malaria (Cohen et al., 2013). This study seems to prove Easterly's case by showing the potential inefficiencies of free distribution. Curative campaigns appear much more complex to successfully carry out than preventive ones given issues such as misdiagnosis (Adhvaryu, 2012). Further research on the issue would be insightful to determine the extent to which the finding that price has no effect on ITN usage can be mirrored to curative health products.

(iii) Price and Long-Term Development

If free distribution is efficient when it is accompanied by awareness education, might it not hurt sustainable development? Similar concerns have lead various observers to advocate cost-sharing to ensure the development of a sustainable local commercial market (Mushi et al., 2003). Additionally, aside from potentially hindering the local production of nets, free distribution schemes carry an underlying risk of being short-lived and even fickle depending on the donor, thus threatening positive advances in malaria prevention.

The main mechanism underlying a potential negative relationship between short-term subsidies and long-term uptake lies in a reference-dependence, or anchoring effect. The highly subsidized - or zero - price sets a precedent and becomes the price households expect in the future for the same product, whether it is subsidised or not. Dupas tested the impact of short-run subsidies on long-run uptake of nets in Kenya and could not verify this reasoning. No indication was found that a once-off subsidy decreases households' willingness to purchase a net later. The experiment further showed that the subsidy rather surprisingly increased net purchase intentions. The author linked this observation to the playing out of a learning effect. The use of an ITN triggers a form of learning-by-doing mechanism also benefiting the wider community through social learning. This ultimately increases the demand for nets and overrules the occurrence of anchoring

effects (Dupas, 2013).

This study may exhibit a similar caveat to Cohen and Dupas', since it was conducted in the same environment with a widespread awareness of ITN benefits. Households might be more inclined to buy an ITN regardless of the initial subsidy. However, the result is compelling and suggests that "people don't get used to handouts, they get used to nets" (Duflo, 2010). Following the previous reasoning, it would be insightful to replicate the experiment in a different context. However, qualitative effects might prove less important in this case. While awareness campaigns on the benefits of using nets may be key to the success of anti-malarial programmes, the greatest learning likely comes from a household's daily use of a mosquito net. If households discover the benefits ITNs by having one, and if they get accustomed to using it, they are likely to purchase a new net after the previous one wears out. Hence it can posited that the free provision of ITNs is unlikely to hurt long term development. However, more importantly, it might foster sustainable development through learning mechanisms.

Free Distribution in Light of the Evidence

We are now in a position to suggest preliminary answers to the three questions initially offered.

(i') Given the strong demand elasticity of ITNs deriving from poor households' cash constraints, only distributing nets for free will allow the attainment of the coverage needed to effectively fight malaria.

(ii') If anti-malarial nets are provided for free, and as long as awareness of the benefits of ITNs are widespread, households are likely to adequately use them.

(iii') The free provision of nets is unlikely to interfere with long-term sustainable development advances. It might further encourage the emergence of local markets after the playing out of learning effects.

These answers are preliminary given that further research is needed to determine to what extent findings ii') and iii') can be generalised. While the experiments analysed in this paper allows us to infer these answers with a certain degree of confidence, it would be insightful to replicate the studies in different settings as suggested earlier. Statement i') can be considered significant since it has largely been supported by evidence from numerous studies previously touched upon. The general conclusion tends to agree with proponents of free distribution. In fact, Cohen and Dupas' paper marked a turning point in the debate. Easterly acknowledged "I originally thought there was some evidence for charging being better than free. Some new studies suggest free is more likely to get the bed nets out there" (Easterly, October 4 2011).

Lengeler et al. nevertheless note how the complexities arising in the fight against

malaria mean that there is no "one size fits all" solution (Lengeler et al., 2007). While Cohen and Dupas' (2010) as well as Dupas' (2013) results offer optimistic implications for malarial humanitarian interventions, there is a slight possibility that the results do not apply similarly to other experimental settings. However, this paper hypothesizes that such differences would be due to different awareness levels. After a significant awareness campaign, the findings should come closer to the those observed in the studies conducted in Kenya and analysed in this essay. More importantly, while free distribution is certainly the optimal solution to achieve a strong impact against the disease, it may not be realistic to assume it will always be feasible. Donor money may not necessarily be expected to flow during an extended time frame. Thus, limited cost-sharing programmes may still be needed. These should be carefully designed so as not to deny the poorest households access to anti-malarial nets.

Conclusion

This paper attempted to assess whether or not the free provision of anti-malarial nets is an illustration of an inefficient and counterproductive aid policy as William Easterly and Dambisa Moyo have hypothesised. Three major questions were posited so as to guide the research into various field experiments, and certain answers called for further research to be conducted.

It was first found that it is only truly with free distribution that the coverage needed to effectively fight malaria will be attained. The second finding stated that if anti-malarial nets are provided for free, and as long as awareness of the benefits of ITNs is widespread, households are likely to adequately use them. Finally, it is demonstrated that the free provision of nets is unlikely to interfere with long-term development, and might further encourage the emergence of local markets.

The second set of findings, while compelling, was deemed preliminary since it was mostly based on studies conducted where awareness of ITNs was widespread. It is important to replicate the experiments in different settings to determine to what extent the answers would differ. This paper hypothesizes that as long as educative campaigns on ITNs are efficiently conducted, the answers would not significantly change.

The key to a successful free distribution scheme is education. One should not provide the fishing rod without the instructions. Therefore, while one cannot empirically test the general arguments of Easterly and Moyo's respective books, it can be concluded that their use of ITN free distribution as an example of an inefficient and counterproductive aid policy is not justified.

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