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**To cite this article:** Nassima Abdelghafour (18 Dec 2023): The prices of development. An ethnographic account of a randomized pricing experiment in East Africa, Journal of Cultural Economy, DOI: [10.1080/17530350.2023.2272953](https://doi.org/10.1080/17530350.2023.2272953)

**To link to this article:** <https://doi.org/10.1080/17530350.2023.2272953>



Published online: 18 Dec 2023.



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# The prices of development. An ethnographic account of a randomized pricing experiment in East Africa

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## ABSTRACT

This article, based on ethnographic research, explores the material conditions of price realization, in the context of a poverty-reduction intervention implemented in rural areas of an East African country. It describes a pricing experiment conducted by development economists on people living in extreme poverty, with real money. Using pricing as an analytic prism, I discuss the politics of a market-based poverty-alleviation project. The goal of the experiment was to identify a price that ultra-poor, off-grid consumers would be willing to pay to acquire a solar light. It consisted of testing different prices simultaneously and led to a situation in which participants within the same village were offered to buy the same object at a randomized price. The paper details the operations through which prices were turned into experimental objects and analyses the consequences of the particular way in which prices were materialized. As a result of the experimental pricing process, prices were carefully detached from the solar lights for sale, and carefully attached to randomly selected people. I show that beyond testing the villagers' ability to pay a given price, the experiment aims at testing their ability and stimulating their desire to behave as payers in general.

## ARTICLE HISTORY

Received 4 May 2022  
Accepted 13 October 2023

## KEYWORDS

Price-making; economic experiments; randomized controlled experiments; poverty action; affects

## Introduction: price-making in market-based approaches to poverty

At what price can a social business operating a network of micro-enterprises in poor, rural, off-grid areas of East Africa sell a solar lantern to people living under the global poverty line? What is the willingness to pay of people who have no money? As the imperative of containing the costs of global poverty action has become core to the mainstream international development doxa, micro-enterprises have crystallized the hope that local resilience and inventiveness could compensate for government failure or neglect (Elyachar 2005; Mitchell and Sparke 2016). At the same time, the requirements for impact evaluation and accountability increased, microeconomics supplanted macroeconomics in mainstream development economics (Labrousse 2010), and experimental approaches to poverty gained scientific legitimacy (Abdelghafour 2017; Bédécarrats, Guérin, and Roubaud 2019), turning places inhabited by the poorest inhabitants of poor countries into *in vivo* laboratories in which poverty knowledge and poverty action are shaped and contained (Abdelghafour 2020).

This paper recounts the search for a price conducted in the form of a randomized controlled experiment by an international consortium of stakeholders (philanthro-capitalists, academic economists, and international development professionals) who share a vision of poverty action in which

designing business models and correctly pricing products that are supposed to better the lives of the poor are key endeavors. The Research Group<sup>1</sup>, a team of academic economists specialized in behavioral and experimental economics, designed the experiment. A social business, Kianga Energy Ltd., provided low-cost solar lights. Evidence against Poverty, an international organization running experiments all over the world to evaluate the impact of poverty-reduction interventions, hired and trained fieldworkers to implement the experiment in the villages. Although the pricing experiment described in the paper is just one small branch of a project with multiple ramifications, it occupied much of the experimenters' attention and resources: identifying a price at which people among the poorest in the world could purchase (rather than receive for free) a device endowed with life-improving, poverty-reducing qualities would demonstrate the potential of market-based solutions in poverty action.<sup>2</sup>

In describing a sophisticated pricing experiment, this paper offers two contributions. On the one hand, it analyzes recent attempts at economizing<sup>3</sup> the lives of the poor in such a way that alleviating poverty can be made into a profitable enterprise. While scholarly contributions have studied 'bottom of the pyramid'<sup>4</sup> markets through the prism of entrepreneurship (Cross 2019; Dolan 2012; Dolan and Rajak 2018; Dolan, Johnstone-Louis, and Scott 2012; Elyachar 2012), consumer culture (Cross and Street 2009) or the design of 'little development devices and humanitarian goods' (Collier et al. 2017; Cross 2013), there is little work on pricing products for the poor. Yet, pricing strongly contributes to qualify a business operation as a poverty-reduction intervention. This proposition draws on the insight that the technical features of a device can be interpreted as a set of responses to the assumptions made by its designers on the users and the environment for which the device is intended (Akrich 1987). Technical devices contain a 'script' that literally 'de-scribes' the world, as it is projected by their designers. The descriptive and prospective work embedded in the conception process is all the more salient when a technical object is elaborated for an unfamiliar environment. I argue that prices, and more generally economic objects, can also be read as 'scripts' and make as good an analytical starting point as technical objects; this slight shift of angle may be all the more fruitful as the question of the cost of poverty-reduction interventions has gained much traction since the early 2000s. The choice of focusing on the price of the solar lights rather than on their technical features is not only driven by the specificity of the empirical case; it is also an attempt at capturing a more general trend: international development has gradually become the businessmen's and economists' affair, at least as much as the engineers' affair.<sup>5</sup> In this paper, I show that price-making is not only the process in which the meaning of a 'doing well while doing good' project is produced and consolidated but also the primary way of engaging with the public of a poverty-alleviation intervention.

On the other hand, this paper contributes to the literature on prices. Important works by STS scholars have renewed price theory by going against the idea that prices 'form' on markets. Michel Callon provocatively likens the new economic sociology to standard microeconomics inasmuch as both 'postulate that prices are dependent variables determined, in one case, by the conjoined play of individual preferences and competition, in the other by social relations or social structures' (2021, 296). Rather than uncovering the factors and forces that influence market functioning to understand where prices come from, scholars focusing on the materiality of pricing processes shine the light on the operations through which prices are elaborated. Michel Callon uses the term 'price formulation' to stress that prices are always 'qualculated' from other prices, through a mix of qualitative operations and calculations (Callon 2021, 301). Studying the global market for cotton, Koray Çalışkan speaks of 'price realization' to describe the process through which human as well as non-human economic agents produce a multitude of 'prosthetic prices', the purpose of which is to guide further decision-making in the market, eventually resulting in the realization of an 'actual price', enabling an actual transaction on a global market (2007; 2009). Studying 'one of the preferred sites for an economic theory of the formation of prices', a stock exchange market, Fabian Muniesa describes 'the concrete efforts that economic agents (including market architects) deployed' in order to produce closing prices that are considered 'objective' and adequately reflecting the value

of things (2007, 390). Leaving aside the idea that skyrocketing drug prices result from market failure, Liliana Doganova and Vololona Rabeharisoa unpack the ‘value-based pricing’ defended by pharmaceutical companies and analyze ‘the narrative and calculative dimensions of the formulation of prices’ (2022). In so doing, they show how prices, operating both as epistemic and political objects, reconfigure pharmaceutical markets. While taking a less radical theoretical stance, important works have examined the operations through which prices are elaborated, as in the cases of supermarket distribution (Barrey 2006) or wine (Chiffolleau and Laporte 2004).

Thus, occurrences when prices are elaborated shall no longer be seen as exceptions arising when markets fail to emerge and institutions take over, for instance when a price has to be set for something that is morally difficult to treat as a commodity, e.g. a ruined landscape (Fourcade 2011), a life-saving organ (Thomas 2013) or the life of a deceased child (Zelizer 1994), or when it comes to energy rates or carbon prices, that are the locus of political struggles about conflicting visions of the public interest and desirable futures (Øvstebø Tvedten 2022; Pallesen 2016; Yon 2014).<sup>6</sup>

Beyond the singularity of the empirical case described, the present paper defends an argument that applies to any pricing process: the material conditions of ‘price formulation’ (Callon 2021) or ‘price realization’ (Çalışkan 2009) matter not only to understand where prices come from but also to elicit the meaning of the transaction they enable and the politics of the market at stake. The paper provides a thick description of an experimental price-crafting project and discusses the effects of the particular way in which prices are materialized throughout the experiment: prices end up being the object of attention and desire, at the expense of the solar lights for sale. I show that beyond the participants’ willingness to pay for a solar light, what is put to the test in the experiment is their willingness to behave as payers in general. Thus, studying price-making sheds light on an approach to poverty reduction in which beneficiaries, even when they have no money, are expected to bootstrap themselves into a slightly better life by consenting to behave as payers.

Empirically, this article is based on a corpus of ethnographic notes. I practiced participant observation, accompanying the fieldworkers tasked with implementing the project in the villages participating in the experiment, observing their work and their interactions with the villagers and occasionally helping with small tasks. I observed the preparation and implementation of the pricing experiments, in constant conversation with the fieldworkers. I consigned what they did, the comments they made on the experiments, as well as the doubts and difficulties that arose along the way. I also rely on a corpus of documents written by the Research Group and by the local managers of the project, in charge of supervising the material implementation of the experiments. Some of these documents were intended for internal use only (protocols, memos, etc.), while others were meant for publication: reports written for the main funding organization, short papers aimed at presenting the experiment on the internet for the general public, policy briefs and scientific articles intended for peers (economists), etc.

### **The fantasy of an unfree market?**

In the case described in the paper, prices precede the market, both logically and chronologically. The pricing experiment is an ambitious, yet somewhat desperate undertaking: defining the right prices is regarded as a necessary condition for a market for Kianga solar lights to exist at all.

### ***Crafting a price for the poor***

All the companies distributing solar energy products to a so-called ‘basis of the pyramid’ clientele in Africa sell solar lights with a solar panel included, sometimes even built in the light.<sup>7</sup> Kianga Energy Ltd., unlike its competitors, sells solar lights without providing any solar panel to individual customers. The recharging equipment (a portable battery, a solar panel and a pedal dynamo) is delivered to a group of four villagers, in exchange for a ‘commitment fee’. These four villagers are swiftly made into micro-entrepreneurs after attending a few hours of training and signing their name at

the bottom of a contract they cannot always read. They are tasked to operate a Kianga charging station and to sell battery recharges to the local Kianga solar light (and/or cellphone) owners. The only thing that makes the lights distributed by Kianga 'solar' is their non-standard (thus exclusive) connection to the solar charging system leased to the micro-entrepreneurs.

Selling the solar light without a charging equipment is presented as a way to lower the upfront cost barrier; the expected sustained stream of revenue generated by the sale of recharges is supposed to compensate for the initial low price of the solar lights. Both prices determine each other in a feed-back loop: the more households buy a solar light, the bigger is the village micro-enterprise's potential clientele. Conversely, the more often the villagers are expected to recharge their solar light's battery on the long run, the lower can be the price of a solar light. So, the price of a solar light must be low enough to broaden the micro-business clientele, and the recharge rate must be such as to ensure a regular and constant stream of revenue in the long-run.

This pricing strategy is based on a representation of the villages as small, closed and compact economic units in which a large proportion of inhabitants actively participate on a regular basis. Prices are engineered for tiny village-level monopolistic markets: Kianga Energy Ltd. only extends its operations in villages where people have not been offered solar lights by competitors. Kianga's business model is locked: all parameters are carefully engineered in advance, and the 'micro-entrepreneurs' are left with no entrepreneurial decision to make. A strict market segmentation is achieved not only through the design of the solar lights – they look cheaper and clunkier than the ones sold by other companies to urban middle-class customers facing occasional power outages – but also through a pricing strategy geared at matching the poor's spending patterns. This idea that value must be extracted or produced on-site by working around the constraints of the poorest – rather than brought from richer segments of society, in a spirit of redistribution – is typical of the experimental approach to poverty adopted by the Research Group (Abdelghafour 2020). The pricing strategy elaborated by the experimenters sketches out a village-based, monopolistic market managed in a top-down manner. Paradoxically, the ideal of market-based solutions is implemented in a way that results in the proposition of an unfree market that seeks to steer the consumers' conduct without offering them much choice.

### ***Price and personhood: crafting a price for the average poor***

Given the extreme cash constraint and price sensitivity of the targeted users, it is 'crucially important', as the Research Group stresses in the report sent to its main funder at the onset of the project, to carefully determine the price of the solar light and the recharge rate, two key parameters in the business model. This search, as for the other questions investigated by the Research Group, took the form of randomized experiments. One experiment randomly tested different purchasing prices for a solar light, while the other randomly tested different recharge rates. The two pricing experiments did not overlap: they took place in distinct villages. In both cases, eight different prices were simultaneously circulated within villages, in the material form of a paper voucher or of a coupon card. These prices were randomly assigned to households, and each household was faced with the choice whether to proceed to the purchase or not, at the price it was randomly assigned. These experimental prices are both 'prosthetic prices', because their purpose is to enable the identification of a unique posted price, and 'actual prices', because they are used to actually conclude a transaction (Çalışkan 2009).

The researchers sought to maximize two variables: the take-up rate and the usage of the solar lights. The take-up rate describes the proportion of households who purchase a solar light. Usage refers to the frequency at which the households purchase a battery recharge, which is correlated with how often they use the light. Both the take-up rate and the usage of the lights are proportions, meaning that they describe an aggregate population. The prices crafted through the experiment aim at ensuring that in each village, a fair share of the households do proceed to the

purchase of a solar light and regularly use their lights afterwards, securing a sustained flow of income to the local micro-businesses.

The goal of the pricing experiments, as expressed by the Research Group, consists in estimating the price elasticity of demand, for the solar lights on the one hand, and for the battery-charging service on the other hand. Price elasticity is a basic notion in micro-economics: it describes how a variation in price influences the variation in demand for a given product. Typically, the more elastic the demand for a product is, the steeper is the slope of the demand curve: a small increase in price results in a large drop in the demand for the product. The Research Group seeks to observe how demand varies with the price, that is, to experimentally elicit the demand curves for the solar lights and for the battery-charging service. To that end, they use an experimental method called the ‘take-it-or-leave-it’ method. Unlike other experimental price elicitation methods, this one is not a game: participants use their own money in the experiment. Economists argue that people’s preferences are better revealed by candid actions than by words: respondents could make strategic moves and understate their willingness to pay if they expected their answer to influence future policy interventions. About using real money, economists argue that participants not using their own money may not care enough to ponder their answers (Dupas and Miguel 2017).

The Research Group tests eight different prices for a solar light (0; 200; 300; 500; 800; 1000; 1500 and 2000). Which proportion of the villagers faced with a given price will purchase the light? Presumably, all the villagers faced with a zero price (i.e. who can get the light for free) will take it. Most of the villagers faced with the price 200 will also probably buy the light, at such a low price. On the contrary, it is likely that very few of the villagers faced with the price 2000 will purchase the solar light. What happens in between? The researchers seek to identify the threshold above which the demand collapses.<sup>8</sup> What makes the pricing experiments so unsettling is that the eight different prices are tested simultaneously, within each village.

The point of the experimental method in general (and of randomized experiments in particular) is to organize the variation of one variable (here, the price) in order to observe the effects of such variation on one or several other variables (here, the village-level demand for a solar light). Varying only the price while keeping the other variables constant, in this case, means selling a same good or service at different prices to different customers. This may appear as an ethically delicate operation, introducing unfairness in transaction. Price is indeed a particular object, the variation of which is often fraught with moral meanings. It is for example said that the Quakers started practicing equal prices for all their customers out of respect for ‘the seed of God’ that exists in all people, regardless of their social condition (Kent 2007 [1983]). This is however a very situated interpretation of fairness and posted prices are not necessarily fairer than personalized prices resulting from bargaining:

where both participants have equal power to negotiate and are equally well informed, bargaining is a quick, efficient and equitable means of agreeing on a price. Where one party is more powerful or better informed, the conventions of bargaining are maintained, but one party effectively sets the price – which is very similar to a system of posted prices. (Alexander and Alexander 1991, 507)

In situations of bargaining, the decoupling of the price from the object for sale is achieved through orality: each client has to engage a negotiation with the dealer, resulting in the production of a personalized price. More recent and sophisticated pricing techniques, based on data analysis, achieve a personalization of prices in an automatized way (Moor and Lury 2018). Yield management for instance, practiced by most airlines and train companies, consists in charging each consumer the highest price she/he is willing to pay, depending on their personal characteristics (e.g. their age, whether they hold a bonus card, the frequency at which they travel) and according to how they booked their ticket (how long in advance, online vs. at the counter, etc.). The decoupling of the price from the service that is sold is achieved through the multiplicity of sale interfaces and of clients’ profiles.

In both examples (bargaining at a shop and booking a ticket), the variation of price is selective and related to the clients’ characteristics and choices. The experimental variation of prices

organized in the pricing experiments seeks to create the opposite effect: it purposely disconnects the prices from the households' characteristics through randomization. The population of the villagers who will be faced with the price 200 is no different, on average, from the population of the villagers who will be faced with the price 1500. A household with very little means (say, a destitute elderly widow) may be faced with the price 2000 when a better-off (say, a family owning a piece of land and who can afford hiring day laborers) may be faced with the price 300. Each experimental price is proposed to a random, and heterogenous subsample of villagers.

This provides an important indication on the type of price that the Research Group is trying to craft. It is not elaborated as an entity that should be personalized and adapted to individual circumstances. In a time of 're-personalization' of prices in the rich world, through yield management or behavioral data analysis (Fourcade and Healy 2017), the pricing experiments are geared at eliciting old-fashioned, posted prices. This type of prices, that are publicly displayed and apply equally to all the customers without any distinction, is characteristic of the 19th and twentieth century gradual shift towards more impersonal trade relationships and contributes to produce a 'generic personhood' (Moor and Lury 2018). But how *generic* is the personhood shaped through the prices of a low-cost, entry-level task lamps and of a battery recharge, one might want to object? Obviously, the design of the products sold by Kianga Energy Ltd. achieves a very narrow targeting. But within this consumer segment, the prices crafted through the experiment shape a generic figure of the ultra-poor off-grid consumer. Thus, the prices are elicited through an experimental technique that is based on revealing collective, aggregated preferences rather than individual preferences. The point is not to accommodate a variety of situations so as to capture the whole market, but to identify prices such as a reasonable share of the village can afford them. Quite counter-intuitively, the experimental variation of prices across the villagers is not aimed at achieving price personalization, but the opposite.

Not only the pricing process 'feeds and prolongs [the good's] qualification' (Callon 2021, 288), but it also qualifies the projected consumers and their environment. The prices crafted through these experiments contribute to shape a generic figure of the ultra-poor consumer, rooted in her village and participating in a small, auto-sufficient economic circuit.

## **Materializing prices**

These experiments are run with real money, in villages where people are extremely poor. The Research Group gave the villagers a few days between the moment when they discover the price they are assigned and the day of the sale. In this way, households had some time to make their decision and, if they did decide to make the purchase, to gather the money. Thus, the price must reach the villagers before the solar lights do. How to communicate the experimental prices to the villagers? Eight different prices, randomly allocated to each household, must coexist in each village. Thus, prices cannot circulate as one single information shared by the whole village; they cannot be publicly announced or displayed because they do not apply to everyone alike. They cannot be physically attached to the good or service they refer to because they must circulate by themselves and reach the participants ahead of the sale. The solution adopted by the Research Group consists in materializing the prices into standalone objects able to circulate on their own, in a random manner.

## **Turning prices into standalone objects**

Let us insist that the originality here is that prices are made into standalone objects, and not that they exist in a material form. Prices, in general, are material entities. Even in situations, such as financial trading, where prices may appear as particularly elusive and abstract entities, authors argue that they still take one physical form or another (Beunza, Hardie, and MacKenzie 2006).<sup>9</sup> I have referred to the two pricing experiments as the 'voucher experiment' and the 'coupon card

experiment'; this is how the Research Group and the field teams called them. Both pricing experiments are informally named after the material artefacts (the printed piece of paper or cardboard) that are distributed to the villagers to physically embody the price.

Let us examine a used voucher, photographed at the end of the sale. It is printed on one side of a sheet of paper. The voucher is wrinkled: it bears a folding mark, and some crumples, from being carried around and passing from hands to hands. It was signed twice with two different blue pens, by two different fieldworkers, on the day of the sale. The first signature attests that the voucher holder paid the price indicated on the voucher, and the second signature attests that the solar light was delivered to the voucher holder: the transaction has been completed. In the language of the country, the voucher indicates:

Voucher for a Kianga light.

Real price = 4000.

With this voucher, pay 500.

This voucher gives the right to buy one light per household at the price displayed above.

1006064

Umutesi Emilienne

Kalindo\_Nyakareto

KIANGA

Light for everyone!

This voucher was distributed to Umutesi Emilienne, a woman who has been previously registered as the head of her household, during a census conducted in her village by the fieldworkers. She lives in the village of Nyakareto, located in the county of Kalindo. Umutesi Emilienne's household was assigned a unique seven-digit identification number, that is displayed just above her name. Two different prices appear on the voucher. On the top of the page, between the two representations of the Kianga solar lights, the 'real price' is indicated: a Kianga solar light costs 4000. But the price offered to Umutesi Emilienne is 500. What does this 'real price' of 4000 refer to? Outside of the Kianga Energy Research Project, the Kianga lights are not systematically sold at the price of 4000. Prices ranging from 1000 to 7000 are charged, depending on the terms of each particular transaction (bulk purchase, public subsidy, etc.). The 'normal price' of 4000 is a fictional price, set semi-arbitrarily for the purpose of the experiment. It is clearly a 'prosthetic device', which is not produced to actually enable a transaction, but for the purpose of influencing further decision-making processes (Çalışkan 2010). In comparison of this prosthetic price of 4000, any of the prices proposed in the experiment corresponds at least to a 50% discount.

The idea of discount is important: on several documents, the Research Group refers to the vouchers as the 'discount vouchers'. All the prices tested over the course of the experiment are presented as discounted prices compared the prosthetic price of 4000. To a certain extent, this experimental voucher can be compared to the promotional vouchers distributed by retailers to their clients to spur further purchases. But usually, promotional vouchers display the amount that the client will *not* have to pay. Promotional vouchers are used as a substitute to a certain amount of money. They figure how much the client will save, be it in percentage ('20% off!') or in amounts ('save \$5 on your next purchase!'). Promotional vouchers figure a credit. Gift vouchers work the same way: they can be exchanged for a specific good or a service instead of a corresponding amount of money. Promotional or gift vouchers can replace money during a transaction, whereas the Kianga experimental vouchers must be matched by the amount of money displayed on them for the transaction to happen. In that sense, they resemble price labels. Like a price label, the experimental voucher announces the price that the client is expected to pay for a given



object. But labels are usually displayed on the item that is for sale, or close to it, so that the customer understands which item they refer to. By contrast, the vouchers are distributed to the villagers as standalone pieces; they are only loosely connected to the solar lights. Strikingly, the relationship between the voucher and the solar light is the exact opposite of the usual relationship between a price label and the item for sale. Usually, prices are written on the item for sale; whereas in the Kiangra experiment, the item for sale is pictured on the voucher. Price labels are usually a small material representation of the price stuck on an item for sale. In the Kiangra experiment, a small material representation of the item for sale is printed on the materialized price.

What is this voucher then? It is a materialized price featuring several remarkable characteristics. It is only loosely connected to the solar light for sale, by a low quality, black and white representation. It is strongly connected to a particular recipient, whose name is written on it and this strong connection is the result of a random matching process.

### **Experimental prices as passports?**

What is the nature of this standalone object? Which effects do the particular characteristics of these materialized prices produce on the transaction? Let us suppose for a minute that the vouchers were not edited in the name of particular people and that the villagers were allowed to trade vouchers. If this was the case, they might have wanted to organize a specific repartition of the prices. For instance, they might have wanted to attribute the cheapest prices to the poorest households, or to any other group identified as being in the greatest need for a solar light. Alternatively, the villagers receiving a voucher displaying a price that they cannot afford might simply pass it on to a friend or neighbor, until as many vouchers or coupon cards as possible are paired up with a household that is willing and able to use it. However, we have established that the intention of the pricing experiments is the very opposite of price personalization. In the experiments, the multiplicity of prices is not sought-after *per se*; it is a temporary protocol aimed at testing eight different prices to pick only one in the end. Ultimately, the aim of the voucher experiment is to produce one unique price that will apply to all the villagers alike, whatever their situation may be. In other words, each one of the eight experimental prices must apply as if it was the only one, and as if it was applying to the whole village alike, from the more destitute to the more affluent household.

The voucher experiment separates the villages into eight virtual layers, each layer simulating a state of the world in which only one price exists and applies indifferently to everyone. The fact that the villagers are prevented from trading the vouchers theoretically makes the different price layers hermetic to each other. Each price layer is populated by households who are willing and able to pay the price, and also by households who are unwilling or unable to do so. The goal of the experiment is to estimate the proportion of households who are willing and able to pay in each virtual state of the world. If the cheapest prices were attributed only to the neediest, and the more expensive prices only to the better-off villagers, the experiment would fail. In theory, by virtue of the randomized design, each state of the world characterized by one price is counterfactual to any other. All the sub-samples are supposed to be similar to each other and every one of them is supposed to be representative of the whole village.

Umutesi Emilienne, who received the voucher described above, is left with a binary ‘take-it-or-leave-it’ choice. She may decide to purchase the solar light at the price of 500 or renounce to the purchase altogether. Her name is clearly written on the voucher, preventing her to trade her voucher with another villager. The voucher operates as a passport: it grants his/her holder access to a specific experimental space, and it is strongly attached to one person, identified with a unique number. The passport analogy resonates with the vocabulary used by the Research Group, who describes voucher exchanges as ‘fraud’ in an internal note. If the experimenters were weary of ‘fraud’, it is because they were well aware of one limitation in their experimental design: the villagers could not fail to discover that several prices coexisted in their village. In an ideal experiment, the villagers would not be aware of the existence of the other prices. This way, they would make their decision

whether or not to purchase a solar light only considering the one price they are assigned to. As the villagers had ample time to discover the existence of other prices, it is likely that their decision whether to purchase the light was influenced not only by the price they got but also by the position of the price they randomly received relative to the other prices in circulation in the village.

The experimental prices, turned into material artefacts, took the form of standalone, nominative objects, introducing an uncanny situation in the village. Each participant received an opportunity to take part in a collective event where each one could measure their luck against the other participants' luck.

### **Experimental prices and affects**

The voucher experiment required several trips to each village, with a distinctive affective load each time.

### ***Negotiating unlucky prices***

During their first trip, the fieldworkers carried out a census: they were tasked to find all the household heads in the village and to register them in a database. They crisscrossed the village, their touchscreen tablet in one hand and a list of people to locate in the other. They did not explain why they were doing the census, and a few people refused to participate, fearing that they might have to pay something later on as a result of the census. Mutual distrust and restraint prevailed: the fieldworkers preferred not to say too much, and the villagers did not always dare to ask questions.

Based on this census, the field manager, using a statistical software, generated as many vouchers as there were households in each village. Each voucher is unique: it bears a seven-digit identification number, the name of the head of a household, and a randomly assigned price. Once the vouchers were printed, the fieldworkers travelled back to the village to distribute them. Lorie, one of the team supervisors, described the distribution of the vouchers as less demanding than other tasks performed by the field teams: the fieldworkers just needed to find the villagers and hand them the voucher with their name on it. But she also described it as a stirring moment:

It was moving to see people's reactions when discovering the price on their voucher. For example, an old lady who receives a voucher with 0; 200 or 300, it is touching. But old women who got a voucher with 1500 or 2000 ... It was so uncomfortable to give them the voucher! Because we know that 2000 is too high a price for an elder.

Ingrid, a fieldworker, added that the villagers who had refused to take part in the census and who, as a result, did not get any voucher edited in their name, regretted their choice and asked for a voucher, any voucher, even one with a 2000 price written on it, to participate.

Some of the prices tested in the experiment were known to be too high right from the start; distributing a voucher displaying a low price felt like helping people, offering them an opportunity, while distributing a voucher displaying a high price was described as unpleasant, especially when the voucher recipient stimulated the fieldworker's empathy. The experimenters also knew that some of the prices they tested were too high. From a pilot experiment conducted by one of them, the researchers already had some evidence showing that prices higher than 800 exceeded the villagers' willingness to pay. The field manager explained to me that the sample of prices was unevenly distributed to increase the take-up rate: there were twice as many vouchers displaying a price ranging between 0 and 500 than vouchers displaying a price ranging between 800 and 2000. After receiving their vouchers, the villagers had a few days to make their decision and to gather the amount of money corresponding to the price written on it. Then, the fieldworkers came back with the solar lights, for the sale.

The sale was supposed to unfold in a standardized way: in every village, the fieldworkers were supposed to follow the same chronological sequence and organize a specific spatial disposition,

described in a detailed experimental protocol. Hereafter, I reproduce a passage of my field notes describing the spatial setting of the experiment.

Some villagers are already there: they have been waiting for two hours. They were told that the distribution would start at 10, and they came on time. We did not: we departed from the office a little late, stopped at Kianga Energy Ltd.'s office to pick up the cardboards full of solar lights, and arrived in Nyakareto around noon. We gather at a spot in the village where people are used to have meetings. Every village has one, it seems. It may be an empty house, or a grassy spot dotted with eucalyptuses, where people can sit and find some shade. It is a rainy day, so we all retreat to an empty house with a sheltered porch. The village leader opens the padlock. It is very dusty inside; it looks like it has not been used in a long time. On the wall, old garlands trace the mysterious word 'Kopabik', suggesting that the house sometimes hosts celebrations. The villagers have already brought a wooden table and a wooden bank for the fieldworkers. Shoka, the team supervisor, asks the villagers to bring three more tables and more banks or chairs. Some villagers leave and come back shortly, carrying tables and banks in various sizes on their heads, bringing them from nearby houses. With this motley furniture, the fieldworkers arrange something like a circuit, with four different counters forming a loop. Counter 1 and counter 4 are set up under the porch, while counters 2 and 3 are inside the room. Behind the different tables, fieldworkers will be sitting or standing, performing different tasks, and the villagers will have to queue and then go from one table to the next, in the prescribed order.

The protocol was explained to the fieldworkers during a meeting held just before the beginning of the voucher experiment campaign. Marek, the Field Manager, carefully went through all the steps, using a paperboard to sketch the spatial disposition of the tables. He put a lot of intensity and energy into his explanations; he wanted to make sure that the different teams would all follow the exact same steps. 'We want uniformity in what we do!' he repeated. Later, in the villages, each team of fieldworkers carried a couple of copies of hand-written notes taken during that meeting by one of them. The protocol figures four rectangular tables, and under each table, a series of step-by-step, numbered instructions in the language of the country, with some English words.

The villagers came with their vouchers. Adrian, one of the fieldworkers, asked everybody for attention and explained to the villagers how they should proceed. Shoka, a team supervisor, added that the people who came with no money could simply return their vouchers and go back without a light. Immediately, an old woman swiftly handed him her voucher 'There, take it!'. Other people imitated her and gave their vouchers back. Shoka collected the vouchers from the villagers who came with no money, or with too little money to pay the price they were assigned. There was no visible outburst of any particular emotion at this moment. Shoka started a list on a sheet of paper: he inscribed the name and number of the first returned voucher, as well as the reason why the person decided to return her voucher. He asked me to continue the list. At first, the list lengthened rapidly. After a while, some villagers came again and asked for their voucher back: either they changed their mind and decided to purchase the light after all, or they managed to borrow some money at the last minute. I retrieved their voucher in the pile and crossed their name off the list.

Despite the few days of delay given to the villagers to contemplate their vouchers and to decide whether they would use them or not, a lot of things happened in the heat of the moment. People came to the sale with the voucher, but decided not to use it, and sometimes changed their mind again and decided to use it after all. These last-minute decisions were taken in the effervescence created by the experimental situation. A large crowd was gathered, possibly creating some emulation. Moreover, relatives, friends, and neighbors were within immediate reach, making it easier to borrow some money if needed. The villagers who decided to buy the solar light waited in line to proceed with the purchase. At the first table, Adrian welcomed the villagers who brought money. He took a look at the voucher and collected the amount of money corresponding to the price written on the voucher. Most transactions went smoothly, people just handed out the money and signed the register. Then Adrian signed the voucher to indicate that he collected the money from the villager, and sent her/him over to the next counter.

Complications arose when people tried to negotiate. A man came with a voucher indicating 1000, but he only brought 800. He explained that he could not find 1000, but he brought 800 hoping that a compromise could be found. Adrian seemed to feel some discomfort. He was shared between

the desire to help and the knowledge that the protocol had to be followed rigorously. He talked to Shoka, his team supervisor, then called Marek (the Field Manager) on the phone, hoping (in vain) to obtain permission to accept the man's bargain. But the randomized process is precisely supposed to prevent people from 'self-selecting', as it is called in the experimental economics vernacular, into the situation that suits them best. The experiment turns the fieldworkers into experimental borderkeepers bearing the emotional cost of forbidding the circulation between the eight counterfactual layers of the village. Each price is enforced upon its recipients as if it were the only one: if the unique price was 1000, what percentage of the village households would actually buy a light? The principle behind a 'take-it-or-leave-it' experiment is to estimate the proportion of people who can and cannot afford such and such price, so as to construct a demand curve for a given good. There is necessarily some discontent; it is even crucial to the success of the experiment.

On several occasions, the villagers tried to exchange their vouchers. If one villager got a voucher indicating 1000 and could not afford it, instead of returning it, she would try to give it to a friend who brought 1000 but who got a voucher displaying 1500 or 2000. Of course, the experiment prohibited such exchanges. Here again, the fieldworkers were expected to avoid 'fraud', by checking the villagers' national ID cards. Sometimes, they indulged in some empathy and accepted to sell a light to a villager who brought another villager's voucher. These little breaches in the protocol created some shared relief among the field workers. On one occasion, a man who had received a voucher displaying 1500 was trying to negotiate a lower price. An old lady, who had received a voucher displaying the price of 300 and was about to return it decided to give her voucher to him. At first, the fieldworkers refused to take the voucher, that was printed in the old lady's name. They were sorry, but firm. Some time passed, and the man stuck around, hoping that he could negotiate something. Finally, the fieldworkers decided to accommodate him and sell him a light for 300 with the old lady's voucher. The old lady went as far as graciously lending her national ID card to the man so that the fieldworkers could register it in the database. Another breach of the experimental protocol happened on a different occasion, in another village. Kianga Energy Ltd.'s country director was in the village, training the four micro-entrepreneurs to use the charging equipment. He was older than the fieldworkers, dressed in a formal suit, and addressed the villagers with self-confidence and authority. An elderly barefooted lady had come to the sale with only 500 whereas her voucher indicated 1000. She called out to him loud enough for everyone around to hear and asked if he would help her. After pondering the old lady's demand for one second, he answered 'Sure, grandmother, I'll help you'. Indeed, he later gave her a 500 banknote, and she bought a solar light.

These cases when the experimental intransigence softened remained exceptions. Overall, the experiment required the fieldworkers to overlook the affective dimension of the situation – as explained by a fieldworker: 'even if it is hard, we ought to follow the procedure'.<sup>10</sup>

### **Prices, solar lights, and citizenship**

After giving the amount of money corresponding to the price written on their voucher, the villagers went to the next table. A field worker named Isidora stood in front of a table where twelve rectangular cardboard boxes containing Kianga lights were arranged. With a thick black marker, the fieldworkers had tagged the boxes with prices. For each one of the cheaper prices, (0; 200; 300 and 500) there were two boxes of lights, whereas there was just one box of lights for the higher prices (800; 1000; 1500 and 2000). Isidora checked the price marked on the voucher duly signed by Adrian and reached the corresponding box. She handed the villager in front of her a smaller cardboard box, containing a Kianga light, and then sent her/him over to the next counter. But soon, several villagers came back to return their lights. The lights were not working, either because they were faulty, or because the battery was empty. Each time she proceeded to an exchange, Isidora made sure to pick up the new light in the same box where she took the faulty one. At some point, in the box marked 200, only faulty lights or lights with dead batteries were left. Isidora was not sure whether she could replace a faulty light taken in the box marked 200 with a functioning light stored in the

box marked 2000. The box marked 2000 was still full because unsurprisingly, the villagers who received a voucher displaying the price of 2000 tended to renounce the purchase. Isidora asked her team supervisor what to do. Shoka was not sure either, and in doubt, he preferred to tell her not to switch lights from one box to another. Isidora started giving out dead lights to people holding a voucher indicating 200. As the field manager Marek later clarified, there was no problem exchanging lights from one box to another, ‘because the boxes were filled in a random manner anyway’. It is striking that the fieldworkers were so reluctant to move the lights from one box to the other. They knew that the boxes were filled in a random manner, with lights that were all alike: they were the ones filling the boxes. But in the context of a pricing experiment, the prices tagged on the boxes had a strong agency, to the point of constraining the fieldworkers’ range of action.

The fact that Isidora needed to exchange faulty lights after having distributed them also reveals another important element. When the villagers make the decision whether to purchase a light or not, they have not seen it yet. They have only seen the small black and white image printed on the voucher. In the process of the sale, they paid first and got their light afterwards. Some villagers were a little disappointed when discovered how small it was. An elderly man, after buying a light, realized that he was unable to push the switch button: his fingers were too weak.

The distribution of the lights was organized in such a way that the prices were completely disconnected from the qualities of the light. The decision whether to purchase the light was not based on a reflection about the adequacy of the price relative to the qualities of the light but on the adequacy of the prices relative to the villagers’ willingness to spend money in a public setting.<sup>11</sup> Of course, it made sense for the experimenters to avoid stressing the connection between the price and the object itself in a context where eight different prices were in circulation for an identical object.

But this suggests something more important: the villagers did not buy solar lights, but prices. This is not an unusual situation: prices strongly qualify goods (Callon 2021), sometimes to the point that price may become the good’s main quality in particular market agencements. This ‘buying a price rather than a good’ situation is revealing in the context of a poverty-reduction project. Paying a price is not configured as an act enabling the payer to participate in market transactions, but as a way to get access to a certain form of citizenship and improved life. Until the end of the transaction, prices are way more tangible than the lights. Written on the vouchers, materialized by the vouchers, tagged on boxes, organizing the disposition of the lights in the cardboard boxes and on the table, the prices are made very visible. Prices, and not lights are discussed, examined, and pondered by the villagers. The action of making a payment takes the center of the stage, whereas the activity of purchasing a particular object is almost completely evacuated from the experiment.

The third step involved a short registering operation accomplished by two fieldworkers equipped with digital tablets. For each villager, they entered the number of the voucher, the name of the villager, his or her national ID card number, and finally, the serial number of the light. It was almost like a ritual: the villager’s name was officially tied to three numbers, produced by three different institutions. The national state issued the 16-digit ID number, Kianga Energy Ltd. issued the light’s number, and finally, Evidence against Poverty generated a seven-digit household unique identifying code (Figure 1). This survey did not aim at collecting new information, but it had the effect of establishing a strong correspondence between these three numbers, between a beneficiary household registered by Evidence against Poverty, a citizen registered by the state, and a light produced by Kianga Energy. Under this triple benediction, the villager was finally equipped with a small task light. The experiment configures the action of making a payment in a very particular way. The relationship between payment technologies and citizenship is analyzed in an article about the deployment of prepaid water meters in South African townships:

While the prepaid meter signals the potential for connection, [...], the maintenance of this connection ultimately becomes the responsibility of each resident’s capacity to perform his or her calculative agencies, to optimise the household’s consumption behaviour and to become economising actors. Inclusion in and connection to the state thus become contingent upon a successful performance of an ethic that fuses civic duty and entrepreneurial compoment. (Von Schnitzler 2008)



**Figure 1.** A registered operation. Credit: author.

The payment made by the participants is accompanied by the registration of the payer under three numbers, connected to each other at the occasion of the transaction. The action of making a payment initiates a long-term relationship that can be regarded as a low-key subscription. A user, registered as a country's citizen, an experiment participant, and a social business client, receives a single light, which works as a numbered access point to a future flow of energy, conditioned to future frequent micro-payments at the village micro-enterprise. The pricing of the Kianga solar light is not only intended as a market device but also as a minimalist development device, bearing a promise of inclusion and a slightly better life, provided that off-grid inhabitants of remote villages successfully transform into people who are willing to pay.

### **Conclusion: turning the poor into payers**

This paper describes the complex operations accomplished to turn prices into experimental objects suitable to conduct a randomized experiment, with the goal of eliciting one generic price at which selling solar lights to people whose cash constraint is extremely high. The experiment entangles a scientific pursuit (efficiently eliciting the participants' willingness to pay for a light), a business-model problem (creating a market in which ultra-poor consumers could enter, and thus maintaining the 'social' business identity of the company retailing the lights) and a political question (is extreme poverty fixable through market-based solutions). The protocol designed to address these entangled issues, on top of turning prices into experimental objects, produced some emergent effects that arose in the process of implementing the experiment. The experimental prices had to be materialized into standalone objects for the needs of the experiment, with the result of making prices into the objects of attention and desire, whereas the solar lights for sale were almost invisible for the most part of the sale. In these conditions of price realization, demand is not envisioned as resulting from pondering the adequacy of a price for a given good or service. The importance of price is hypertrophied, at the expense of the lights for sale. Moreover, the experimental pricing

protocol constrains the participants and the fieldworkers in a tangible way, leaving them bewildered by the multiplicity of random prices. These constraints can be understood in the strict context of the experiment (a scientific pursuit following a rigorous protocol), but they can also be extrapolated and tentatively interpreted as playing a role in offering the villagers a taste of the kind of development path that is proposed to them. Throughout the experiment, the message conveyed is that making payments is a required ability in order to gain access to a slightly more modern and comfortable way of life. Beyond the villagers' willingness to pay for a solar light, it seems that what is put to the test in the experiment is their ability to behave as payers in general, entrenching the idea that poverty problems must be solved by fostering resilient local economies, with minimal financial input from the outside.

## Notes

1. All the organizations, people and localities mentioned in the paper are pseudonymized. To ensure that the experimental project cannot be identified, I do not disclose the name of the country where the experiment took place. For the same reason, I do not specify the currency when mentioning amounts of money.
2. These discussions have been very lively in the branch of development economics using an experimental approach to designing and evaluating poverty-reduction interventions. Several experiments were run to compare the relative advantages of giving for free vs. selling at various prices goods or services deemed essential to cater for people's basic needs (Bates et al. 2012; Cohen and Dupas 2010).
3. Economization refers to 'the processes through which activities, behaviours and spheres or fields are established as being economic'. This approach involves that the perimeter of 'the economy' extends as further objects (e.g. poverty action, poor people's habits, and uses) are 'tentatively and often controversially qualified, by scholars and/or lay people, as "economic"' (Çalışkan and Callon 2009, 383).
4. This term refers to the poorest share of the world population, that represents a huge untapped market according to businessman and strategy scholar C.K. Prahalad (2004).
5. Fascinating articles based on Madeleine Akrich's concept of de-description analyze development projects based on technical devices designed by engineers, such as 'the Zimbabwe bush pump' (de Laet and Mol 2000), and photovoltaic lighting kits conceived by French engineers for users in Ivory Coast (Akrich 1987).
6. Alternatively, 'price discovery' may fail because of the diverging conceptions of 'economic theorists, neoliberal policy advocates, and actual entrepreneurs' about how prices should emerge (Robertson 2007, 521). In the case described by Robertson, a new regulation required to set a price for the ecosystemic services provided by wetlands. Institutional actors waited for a price to form on the market while economic agents on the market awaited guidance from public authorities to set a price.
7. Gillian Davies provides a comprehensive description of the market for solar devices in sub-Saharan Africa (Davies 2018).
8. The same strategy is used to create the demand curve for the battery recharges: the researchers test eight different rates for the service (0; 50; 60; 70; 80; 120; 100 and 100/0). The last recharge rate, marked 100/0, consists in rewarding the purchase of the first three recharges at the price of 100 by two free recharges, each month. The researchers seek to identify the threshold above which the villagers will stop using the service.
9. Moreover, the materiality of the pricing processes matters a lot in electronic markets. The shift from hand signal to electronic auction on agricultural markets, for example, modifies the power relations between auctioneers and buyers (Kim 2017). Real-time fish auctions modify the power relations between fishermen and bidders and influence the way the fishermen work and make their decisions (Dobeson 2016).
10. For a detailed analysis of the role and work of the fieldworkers in the context of randomized controlled experiments, see Abdelghafour (2022).
11. This makes this pricing experiment very different from other pricing experiments described in the literature, where the adequacy between price and the commodity at stake is important. In the case of a codfish consumer experiment for example: 'the emergence of this fish with a market price depends on the modification of the participants by the experimental setting but also by the fish they taste, all of which make the participants' expression of a price possible' (Asdal and Cointe 2021).

## Acknowledgements

I warmly thank Kristin Asdal, Martin Denoun, Liliana Doganova, and Vololona Rabeharisoa for their comments and suggestions on this article. I also wish to thank Koray Çalışkan and the two anonymous reviewers for their feedback during the peer-review process.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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## References

- Abdelghafour, Nassima. 2017. "Randomized Controlled Experiments to End Poverty? A Sociotechnical Analysis." *Anthropologie & Développement* 46–47: 237–264.
- Abdelghafour, Nassima. 2020. "Micropolitics of Poverty: How Randomized Controlled Trials Address Global Poverty through the Epistemic and Political Fragmentation of the World." Thèse de doctorat, Université Paris Sciences et Lettres. <https://pastel.archives-ouvertes.fr/tel-03122511>.
- Abdelghafour, Nassima. 2022. "Produire des données au village. Le cas d'une expérimentation contrôlée randomisée en Afrique de l'Est." *Sociologie du travail* 64 (3), Association pour le développement de la sociologie du travail. <https://journals.openedition.org/sdt/41465>.
- Akrich, Madeleine. 1987. "Comment décrire les objets techniques ?" *Techniques & Culture* (9): 49–64. <https://doi.org/10.4000/tc.863>.
- Alexander, Jennifer, and Paul Alexander. 1991. "What's a Fair Price? Price-Setting and Trading Partnerships in Javanese Markets." *Man* 26 (3): 493–512. <https://doi.org/10.2307/2803879>.
- Asdal, Kristin, and Béatrice Cointe. 2021. "Experiments in Co-modification: A Relational Take on the Becoming of Commodities and the Making of Market Value." *Journal of Cultural Economy* 14 (3), 280–292. <https://doi.org/10.1080/17530350.2020.1846592>.
- Dupas, Pascaline, and Edward Miguel. 2017. "Impacts and Determinants of Health Levels in Low-Income Countries." In *Handbook of Economic Field Experiments*, edited by Esther Duflo and Abhijit Banerjee, Vol. 2, 3–93, Amsterdam, Netherlands: North-Holland.
- Barrey, Sandrine. 2006. "Formation et calcul des prix : le travail de tarification dans la grande distribution." *Sociologie du Travail* 48 (2): 142–158. <https://doi.org/10.1016/j.soctra.2006.04.004>.
- Bates, Mary Ann, Rachel Glennerster, Kamilla Gumedde, and Esther Duflo. 2012. "The Price Is Wrong." *Field Actions Science Reports. The Journal of Field Actions* (Special Issue 4), (March). <http://journals.openedition.org/factsreports/1554>.
- Beunza, Daniel, Iain Hardie, and Donald MacKenzie. 2006. "A Price Is a Social Thing: Towards a Material Sociology of Arbitrage." *Organization Studies* 27 (5): 721–745. <https://doi.org/10.1177/01708406060605923>.
- Bédécarrats, Florent, Isabelle Guérin, and François Roubaud. 2019. "All That Glitters Is Not Gold. The Political Economy of Randomized Evaluations in Development." *Development and Change* 50 (3): 735–762. <https://doi.org/10.1111/dech.12378>.
- Callon, Michel. 2021. *Markets in the Making: Rethinking Competition, Goods, and Innovation*. Brooklyn, NY: Zone Books.
- Chiffolleau, Yuna, and Catherine Laporte. 2004. "La Formation Des Prix : Le Marché Des Vins de Bourgogne." *Revue Française de Sociologie* 45 (4): 653–680. <https://doi.org/10.3917/rfs.454.0653>.
- Cohen, Jessica, and Pascaline Dupas. 2010. "Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment." *The Quarterly Journal of Economics* 125 (1): 1–45. <https://doi.org/10.1162/qjec.2010.125.1.1>
- Collier, Stephen J., Jamie Cross, Peter Redfield, and Alice Street. 2017. "Précis: Little Development Devices / Humanitarian Goods." *Limn* 9 (November), <https://limn.it/precis-little-development-devices-humanitarian-goods/>.
- Cross, Jamie. 2013. "The 100th Object: Solar Lighting Technology and Humanitarian Goods." *Journal of Material Culture* 18 (4): 367–387. <https://doi.org/10.1177/1359183513498959>.
- Cross, Jamie. 2019. "Selling with Prejudice: Social Enterprise and Caste at the Bottom of the Pyramid in India." *Ethnos* 84 (3): 458–479. <https://doi.org/10.1080/00141844.2018.1561487>.
- Cross, Jamie, and Alice Street. 2009. "Anthropology at the Bottom of the Pyramid." *Anthropology Today* 25 (4): 4–9. <https://doi.org/10.1111/j.1467-8322.2009.00675.x>.
- Çalışkan, Koray. 2007. "Price as a Market Device: Cotton Trading in Izmir Mercantile Exchange." *The Sociological Review* 55 (2\_suppl): 241–260. <https://doi.org/10.1111/j.1467-954X.2007.00738.x>.
- Çalışkan, Koray. 2009. "The Meaning of Price in World Markets." *Journal of Cultural Economy* 2 (3), Routledge: 239–268. <https://doi.org/10.1080/17530350903345462>.
- Çalışkan, Koray. 2010. *Market Threads: How Cotton Farmers and Traders Create a Global Commodity*. Princeton, NJ: Princeton University Press.



- Çalışkan, Koray, and Michel Callon. 2009. "Economization, Part 1: Shifting Attention from the Economy Towards Processes of Economization." *Economy and Society* 38 (3): 369–398. <https://doi.org/10.1080/03085140903020580>.
- Davies, Gillian. 2018. "Clean Energy Product Markets in Sub-Saharan Africa: Complex Market Devices and Power Asymmetries." *Energy Research & Social Science* 42 (August): 80–89. <https://doi.org/10.1016/j.erss.2018.03.009>.
- de Laet, Marianne, and Annemarie Mol. 2000. "The Zimbabwe Bush Pump: Mechanics of a Fluid Technology." *Social Studies of Science* 30 (2): 225–263. <https://doi.org/10.1177/03063120003000202>.
- Dobeson, Alexander. 2016. "Scopic Valuations: How Digital Tracking Technologies Shape Economic Value." *Economy and Society* 45 (3–4), Routledge: 454–478. <https://doi.org/10.1080/03085147.2016.1224143>.
- Doganova, Liliana, and Vololona Rabeharisoa. 2022. "Price as an Epistemic and a Political Object: An Inquiry into 'the Most Expensive Drug Ever'". EGOS (European Group for Organization Studies), Vienne.
- Dolan, Catherine. 2012. "The New Face of Development: The 'Bottom of the Pyramid' Entrepreneurs." *Anthropology Today* 28 (4): 3–7. <https://doi.org/10.1111/j.1467-8322.2012.00883.x>.
- Dolan, Catherine, Mary Johnstone-Louis, and Linda Scott. 2012. "Shampoo, Saris and SIM Cards: Seeking Entrepreneurial Futures at the Bottom of the Pyramid." *Gender & Development* 20 (1): 33–47. <https://doi.org/10.1080/13552074.2012.663619>.
- Dolan, Catherine, and Dinah Rajak. 2018. "Speculative Futures at the Bottom of the Pyramid." *Journal of the Royal Anthropological Institute* 24 (2): 233–255. <https://doi.org/10.1111/1467-9655.12808>.
- Elyachar, Julia. 2005. *Markets of Dispossession: NGOs, Economic Development, and the State in Cairo*. Edited by Julia Adams and George Steinmetz. Durham, NC: Duke University Press. <https://doi.org/10.1215/9780822387138>.
- Elyachar, Julia. 2012. "Next Practices: Knowledge, Infrastructure, and Public Goods at the Bottom of the Pyramid." *Public Culture* 24 (1): 109–129. <https://doi.org/10.1215/08992363-1443583>.
- Fourcade, Marion. 2011. "Cents and Sensibility: Economic Valuation and the Nature of 'Nature'." *American Journal of Sociology* 116 (6): 1721–1777. <https://doi.org/10.1086/659640>.
- Fourcade, Marion, and Kieran Healy. 2017. "Seeing Like a Market." *Socio-Economic Review*, <https://doi.org/10.1093/ser/mww033>.
- Kent, Stephen. 2007. "The Quaker Ethic and the Fixed Price Policy: Max Weber and Beyond." *Sociological Inquiry* 53 (1): 16–28. <https://doi.org/10.1111/j.1475-682X.1983.tb01164.x>.
- Kim, Eun-Sung. 2017. "Senses and Artifacts in Market Transactions: The Korean Case of Agricultural Produce Auctions." *Journal of Cultural Economy* 10 (6), Routledge: 524–540. <https://doi.org/10.1080/17530350.2017.1384931>.
- Labrousse, Agnès. 2010. "Nouvelle économie du développement et essais cliniques randomisés : une mise en perspective d'un outil de preuve et de gouvernement." *Revue de la régulation. Capitalisme, institutions, pouvoirs* (7), (February). <https://regulation.revues.org/7818>.
- Mitchell, Katharyne, and Matthew Sparke. 2016. "The New Washington Consensus: Millennial Philanthropy and the Making of Global Market Subjects." *Antipode* 48 (3): 724–749. <https://doi.org/10.1111/anti.12203>.
- Moor, Liz, and Celia Lury. 2018. "Price and the Person: Markets, Discrimination, and Personhood." *Journal of Cultural Economy* 11 (6), Routledge: 501–513. <https://doi.org/10.1080/17530350.2018.1481878>.
- Muniesa, Fabian. 2007. "Market Technologies and the Pragmatics of Prices." *Economy and Society* 36 (3): 377–395. <https://doi.org/10.1080/03085140701428340>.
- Øvstebø Tvedten, Irene. 2022. "Distributed Accountability: Picking a Carbon Price for Cost–Benefit Analysis." *Journal of Cultural Economy*, February. Routledge, 1–15. <https://doi.org/10.1080/17530350.2022.2028649>.
- Pallesen, Trine. 2016. "Valuation Struggles Over Pricing – Determining the Worth of Wind Power." *Journal of Cultural Economy* 9 (6), Routledge: 527–540. <https://doi.org/10.1080/17530350.2016.1212084>.
- Prahalad, Coimbatore Krishnarao. 2004. *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits*. 2004. Upper Saddle River, NJ: Wharton School Pub.
- Robertson, Morgan. 2007. "Discovering Price in All the Wrong Places: The Work of Commodity Definition and Price Under Neoliberal Environmental Policy." *Antipode* 39 (3): 500–526. <https://doi.org/10.1111/j.1467-8330.2007.00537.x>.
- Thomas, Rick. 2013. "A Market Price for Organs?" *The New Bioethics* 19 (2), Routledge: 111–129. <https://doi.org/10.1179/2050287713Z.00000000032>.
- Von Schnitzler, Antina. 2008. "Citizenship Prepaid: Water, Calculability, and Techno-Politics in South Africa\*." *Journal of Southern African Studies* 34 (4): 899–917. <https://doi.org/10.1080/03057070802456821>.
- Yon, Guillaume. 2014. "L'économicité d'EDF." *Politix* 105 (1): 91–115.
- Zelizer, Viviana A. Rotman. 1994. *Pricing the Priceless Child: The Changing Social Value of Children*. Princeton, NJ: Princeton University Press.