



## Supermarkets and food consumption patterns: The case of small towns in Kenya



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### ABSTRACT

This paper investigates the effect of supermarkets on food consumption patterns in urban Kenya using cross-sectional household survey data collected in 2012. To establish causality, we selected study sites that differ in their supermarket access, and employ instrumental variable techniques to allow for endogeneity of supermarket purchases. We find that supermarket purchases increase the consumption of processed foods at the expense of unprocessed foods. Supermarket purchases increase per capita calorie availability, which is linked to lower prices paid per calorie, particularly for processed foods. Our results imply that supermarkets contribute to dietary changes commonly associated with the nutrition transition. The effects on nutrient adequacy are less clear.

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### Introduction

Many low and middle income countries are experiencing a nutrition transition, which is understood as a rapid change of diets towards more energy-dense, often (highly) processed and convenience foods and beverages that tend to be rich in fat, caloric sweeteners and salt, and a concurrent trend towards more sedentary lifestyles (Popkin, 2004). These transformations were soon being observed with concern, because they contribute to surging rates of overweight and obesity, which are risk factors for nutrition related non-communicable diseases such as diabetes, cardiovascular diseases and certain types of cancer (Popkin et al., 2012). Given still prevailing rates of undernutrition and related

nutritional deficiencies, many low income countries are now facing a double burden of malnutrition where undernutrition and obesity coexist, sometimes even in the same households (Popkin et al., 2012; Roemling and Qaim, 2013).

These nutritional transformations have been associated with changes on both the demand as well as the supply side: changing demand patterns, commonly linked to rising incomes and urbanisation processes coincided with a rapid spread of supermarkets (SMs) in what was termed a 'supermarket revolution' (Reardon and Timmer, 2012). While Mergenthaler et al. (2009) provide case study evidence to suggest demand side factors to predominate, both trends are often believed to be mutually reinforcing (Hawkes, 2008; Popkin et al., 2012; Reardon et al., 2004).

The consumption of processed and highly processed foods and beverages is often singled out as an important factor contributing to unhealthy diets, as this category includes high calorie foods with poor micronutrient content, such as sugary beverages, sweets, and all kinds of salted snacks (Monteiro et al., 2010). Spreading supermarkets, in turn, are suspected to improve the availability of these products and to increase their desirability even among poor households in remote areas (Asfaw, 2008; Hawkes et al., 2009). On the other hand, supermarkets could provide more stable and affordable access to a greater variety of foods and drinks, which might

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improve the dietary diversity and overall dietary quality of consumers (Asfaw, 2008; Hawkes, 2008).

In any case, supermarkets have the potential to affect dietary choices for better or worse, and it is important to better understand if and how the presence of supermarkets influences consumer decisions. For this reason, our research questions are first: how supermarkets affect consumption patterns of households and second, what factors determine where consumers source their food from.

For our empirical analysis, we rely on cross-sectional survey data collected in Kenya in 2012. While our analysis does not consider nutritional outcomes directly, highly disaggregated food expenditure data allow us to focus on goods that have been associated with the nutrition transition, and on different levels of processing in particular.

Our contribution to the literature is threefold: first, we use data on actual food purchases from different retail formats in addition to measures of physical access which the food environment literature is often restricted to (notable exceptions are Asfaw, 2008; Tessier et al., 2008). Second, in contrast to most other studies (Asfaw, 2008 being another exception), we account for potential endogeneity of supermarket purchases related to selection effects, using instrumental variable techniques and further improve identification by a survey design that ensures variance in supermarket access and by using primary data generated for precisely this analysis. Lastly, given the very few studies on this issue in developing countries, we provide the first case study in Sub-Saharan Africa.

For our sample of small towns, we chose survey locations that differ in terms of when, if at all, a local supermarket was established. While most households in large Kenyan towns have fairly good access to supermarkets, this is not yet true for small towns. Small towns in Kenya (less than 50000 inhabitants) are of particular relevance because they comprise 70% of the urban population (KNBS, 2010a, 2010b), and manifestations of lifestyle changes are less apparent and less well studied there. Adding to the relevance of our case study, Kenya suffers from a dual burden of malnutrition with 2008/09 Demographic and Health Survey data showing 25% of women of ages 15–49 being overweight or obese and 35% of children below 5 years of age being stunted (KNBS and ICFMacro, 2010).

In qualitative terms, we also provide a detailed account of the current food environment and different retail formats in Kenya and shed some light on the rationale behind consumer decisions. This is relevant as it creates a reference point in a highly dynamic market (Neven et al., 2006; PlanetRetail, 2013). In order to understand potential interactions between the food environment and consumption patterns, we refine a theoretical framework from the literature for the setting at hand.

The paper is structured as follows: The next section introduces the concept of food environments and develops the theoretical framework. We continue by giving a background on the food environment in Kenya before describing our methodology and data. Afterwards, we present and discuss our empirical results, and conclude.

## Theoretical framework and literature review

The term food environment refers to the “[food related] physical and infrastructural features of the area” (Giskes et al., 2011, p. e96) such as access to, and the density of different types of retail outlets, including supermarkets. There are several pathways through which supermarkets can influence consumption patterns that go beyond the availability of goods. The basic argument for an effect of supermarkets on diets is that the food environment affects where people do their shopping which in turn influences

their dietary practice (Asfaw, 2008), and that introducing supermarkets significantly alters the food environment.

Fig. 1 illustrates potential relationships between food environments, consumption choices and dietary practices (see Fig. 1, column 3) as developed and refined from the literature. Supermarkets improve physical access to, and increase the availability of goods throughout the year (Gómez and Ricketts, 2013). By offering more types of goods, brands, flavours, functional foods, and levels of processing, supermarkets offer a larger variety of all types: healthy, health-neutral and unhealthy products, regardless of the consumer’s dietary needs. This is expected to increase the dietary diversity of consumers. At the same time, changing quantities and substitution within and across food categories could be enhancing as well as deteriorating dietary quality (Asfaw, 2008; Hawkes, 2008). Thus, the expected magnitude of these effects has to be further elaborated on and will closely be linked to likely effects on relative prices.

Reardon et al. (2004) argue that supermarkets in low income countries have a price advantage when it comes to industrially processed goods with long shelf-lives. In this context, the term ‘processed foods’ refers mainly to highly processed foods. These are predominantly ready-to-eat products, produced for instance by adding spices, preservatives, synthetic vitamins, by frying, cooking or baking (Monteiro et al., 2004). It is highly processed foods for which supermarkets are expected to have the strongest advantage over other retail formats. Even though this classification puts flour enriched with vitamins and potato chips in the same processing category, most highly processed foods tend to be high in salt, sugar and saturated fats, are often considered unhealthy and found to contribute to developing non-communicable diseases.<sup>5</sup> The effect of supermarkets on prices, however, is controversial in the empirical literature. General price premiums were detected in some cases (Schipmann and Qaim, 2011) and examples of consistently lower prices in others (Hawkes, 2008). Gómez and Ricketts (2013) argue that traditional retailers can follow a flexible pricing strategy that makes them cheaper than supermarkets.

Following another line of argument, Chandon and Wansink (2012, p. 572) point out that highly processed foods are highly differentiated and “with these branded products, marketers can establish their own price depending on which consumer segment they wish to target.”; such prices need not be lower than unprocessed foods. At the same time, there may be production advantages in processed foods enabling them to be cheaper. Popkin et al. (2012) mention production related price reductions in edible oils, for example, that had already by the mid 1990s enabled poor households to increase their energy intake.

Reviewing evidence on pricing strategies of supermarkets in low income countries, Hawkes (2008) finds that supermarkets tend to be more expensive upon market entry but become more price-competitive later, and first among processed foods as discussed above. On a related note, supermarkets facilitate bulk shopping by offering large packaging sizes, which is often accompanied by quantity discounts. However, poor consumers are likely to have a limited capacity to utilise potential quantity discounts due to liquidity constraints (Rao, 2000; Rao and Komala, 1997). In fact, for poor consumers one advantage of kiosks is that they often offer credit and small package sizes. In sum, the impact of changes in retail and product systems on both price levels and price volatility remain important research gaps (Reardon and Timmer, 2012).

Apart from influencing relative prices, supermarkets use a variety of marketing strategies to influence what and how much customers are buying, many of them affecting consumers

<sup>5</sup> See Monteiro et al. (2010) and Asfaw (2011) for a discussion of underlying evidence from the medical literature.

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