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You Are What (and Where) You Eat

Capturing Food Away from Home in Welfare Measures

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Abstract

Consumption of food away from home is rapidly growing across the developing world. Surprisingly, the majority of household surveys around the world haven not kept up with its pace and still collect limited information on it. The implications for poverty and inequality measurement are far from clear, and the direction of the impact cannot be established a priori, since consumption of food away from home affects both food consumption and the poverty line. This paper exploits rich data on food away from home collected as part of the National Household Survey in Peru, shedding light to the extent to which welfare measures differ depending on whether they properly account for food away from home. Peru is a relevant context, with the average Peruvian household spending 28 percent of their food budget on food away from home by 2010. The analysis indicates that failure to account for the consumption of food away from home has important implications for poverty and inequality measures as well as the understanding of who the poor are. First, accounting for food away from home results in extreme poverty rates that are 18 percent higher and moderate poverty rates that are 16 percent lower. These results are also consistent, in fact more pronounced, with poverty gap and severity measures. Second, consumption inequality measured by the Gini coefficient decreases by 1.3 points when food away from home is included, a significant reduction. Finally, inclusion of food away from home results in a reclassification of households from poor to non-poor status and vice versa: 20 percent of the poor are different when the analysis includes consumption of food away from home. This effect is large enough that a standard poverty profile analysis results in significant differences between the poverty classification based on whether food away from home is included or not. The differences cover many dimensions, including demographics, education, and labor market characteristics. Taken together, the results indicate that a serious rethinking of how to deal with the consumption of food away from home in measuring well-being is urgently needed to properly estimate and understand poverty around the world.

This paper is a product of the Surveys and Methods Team, Development Research Group; and the Poverty Global Practice Group. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at gfarfan@worldbank.org, mgenoni@worldbank.org, and rvakis@worldbank.org.

You Are What (and Where) You Eat: Capturing Food Away from Home in Welfare Measures[1]

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1. Introduction

Consumption patterns are rapidly changing across the developing world, with prepared and packaged meals and meals consumed outside the home taking an ever growing share of the households' food budget. Furthermore, with rising incomes, urbanization, and women entering the labor force, among various reasons, this trend is expected to persist as economies transition to middle-income status (USDA; Smith, 2013).

In spite of its growing participation in households' budgets, food away from home (FAFH) remains one of the least studied aspects of food consumption. The vast majority of the literature corresponds to studies in the developed world, where the rising trend of eating out started a few decades ago. The main focus of that literature has been on public health issues, initially motivated by the high and positive correlation between eating out and obesity trends, and later also connected to other chronic diseases developed later in life (Burns et al., 2002; Guthrie et al., 2002; Kant and Graubard, 2004; Le Francois et al., 1996; Lin and Guthrie, 2012; Binkley et al., 2000). While causality has been hard to prove, sharp differences in the caloric and nutritional composition between food produced in commercial outlets and home-made food have been well documented, and interest in developing food-based dietary guidelines is increasing (Kearney et al., 2001; O'Dwyer et al. 2005).

The health consequences of eating out are also of interest in developing countries, but the role of food consumption in this setting has a much broader and deeper scope.[2] Food consumption plays an instrumental role in the design and monitor of development policy at the local, national, and global levels. Poverty, food security, health, and nutrition, lie at the heart of the development agenda, and the computation and monitoring of indicators that track those welfare dimensions rely heavily on food consumption or expenditure data. While data on household consumption or expenditure data has dramatically increased over the last few decades[3], appropriate data on FAFH patterns are lacking, and the consequences of miss-measurement of food consumption on our assessment and understanding of these major policy areas are largely unknown.

[2] With obesity increasingly becoming a pressing health issue in some middle-income countries, the link between eating out and obesity is also drawing attention in the developing world (Lozada et al., 2008; Bezerra and Sichieri, 2009).

[3] The 1990 World Development Report on Poverty published by the World Bank relied on data from only 22 countries, and no country had more than one survey. Today, there are more than 850 surveys from 125 countries with consumption or expenditure data (Ravallion and Chen, 2011).

A few small-scale studies – with the exception of Liu et al. (2006) - have documented the increasing contribution of FAFH to diet quantity, quality, and diversity, among various population groups across different developing countries. For example, FAFH has been found to contribute to as much as 36% of the daily energy intake among men in urban Kenya, and 59% among market women in urban Nigeria (van't Riet et al. 2002; Oguntona and Tella 1999). Among the younger population, FAFH contributes, for example, to 18% and 40% of daily energy intake among Chinese children and school-going adolescents in Benin, respectively (Liu et al., 2006; Nago et al., 2010).

However, most nationally representative household surveys have not kept up with the pace and collect very limited information on FAFH. A number of conceptual and practical challenges emerge. The first challenge in collecting information on FAFH has to do with the complexity that the concept "food away from home" entails. On one hand, FAFH can refer to food *produced* outside, regardless of whether the food is consumed outside or inside the home. In this case, take-out meals would be considered FAFH. Alternatively, it can refer to food *consumed* outside irrespective of the origin of the food. Under this scenario, home-made meals consumed at work or school would be a component of FAFH. While there is a general preference towards defining FAFH based on the place of preparation of the food, a clear protocol that takes into account all these different pieces is required to be well defined regardless of the concept that is adopted. A second element to consider when collecting information on FAFH is snacks, which in modern eating habits are more likely to be consumed outside the home. Finally, there can be different modes of acquisition of the food, including purchased food or food received in kind, each of which can further originate from multiple sources such as commercial establishments, social programs, and other households, among others. In all, integrating FAFH information in household surveys is complex, and in practice few countries have addressed these survey design issues adequately.

In a recent comprehensive assessment on the relevance and reliability of food data collected in household consumption and expenditure surveys in developing countries, Smith et al. (2014) take the most recent nationally representative household survey from each developing country and analyze the content of the questionnaire. The final sample consists of 100 surveys, which represent 70% of the developing countries. Among other quality indicators, the coverage and detail of FAFH data is analyzed. Following a very lax definition of FAFH, which consists of checking whether "any food item in the food list itself, the title of the section in which it is found, or a question regarding the item, contains words such as consumed out, restaurant, consumed away, and the like", it turns out that 90%

of the surveys do consider FAFH in some form. However, when looking more deeply into the way this information is collected we find a huge variation in quality. More detailed statistics reported by Smith et al. (2014) paint far from optimal picture in the collection of FAFH data. For example, a quarter of the surveys aim to capture all related household consumption from FAFH using just one question, while only one in five surveys considers multiple places of consumption. With respect to snacks, only 35 percent takes them explicitly into account, and close to half of the surveys do not include FAFH received in kind.[4]

Recent analysis from India and Brazil provide new evidence on the implications that not accounting for FAFH can have on food security analysis. In the case of India, Smith (2013) argues that the great Indian calorie debate originated by an apparent increase in undernourishment at the time of falling poverty rates can be partly explained by inaccurate data on calorie intake due to the lack of measurement of FAFH. Similarly, work by Borlizzi and Cafiero (2014) in Brazil shows how the distribution of food consumption by income strata changes once food consumed at school is taken into account. In fact, they show that proper account for food received through a school feeding program targeted at the poorer strata of the population results in a more equal distribution of food consumption than previously thought, allowing for a long due revision of the FAO assessment of undernourishment in Brazil.

In this paper, we evaluate the impact of accounting FAFH on poverty and consumption inequality estimates in Peru.[5] To do this, we simulate a situation where we move from a world where FAFH is not accounted for to one where it is. In the process, we show that from a theoretical point of view, the direction of the effect on poverty or inequality of properly accounting for FAFH cannot be predicted ex-ante.

[4] In addition to *what* information to elicit, *how* that information is elicited is also of great importance. In the case of FAFH, the informant plays a critical role. While most surveys apply the consumption or expenditure module to a household informant, this strategy is expected to result in much higher measurement error when it comes to reporting FAFH, because by definition most of this consumption takes place outside the house (and therefore out of sight from the informant). According to Smith et al. (2014), only 17 percent of the surveys collect FAFH at the individual level.

[5] A few papers analyze the impact of different aspects of survey design on total expenditures, and poverty and inequality measures (Backiny-Yetna et al. 2014; Beegle et al. 2012; Deaton and Grosh, 2000; Gibson et al., 2003; Joliffe, 2001; Pradhan, 2001). The work by Backiny-Yetna et al. (2014) is the only one to look in particular at the impact of food consumption data collection methods on poverty and inequality.

Operationally, we exploit a rich module on FAFH collected as part of the multi-year National Household Survey in Peru (ENAHO) to shed light on the extent to which welfare measures may differ based on whether FAFH accounted for. Peru is a relevant context to study this question since FAFH is fairly widespread and increasing. In 2013, the average Peruvian household spent about 28 percent of their food budget on FAFH.

To assess the impact on poverty measurement, we follow the official methodology adopted by the National Institute of Statistics and Informatics (INEI) and start with a scenario where FAFH is not accounted for. Then, we use this estimate as the benchmark over which the impact of including FAFH is assessed. Peru introduced a big methodological change in 2010, and therefore we use that year for our analysis. The definition of FAFH adopted by INEI includes all food *prepared outside* the home. We estimate the effect of FAFH on the poverty rate, the poverty gap, and the severity of poverty. Then, to evaluate the effect on consumption inequality we compute the Gini coefficient based on the expenditure distribution with and without FAFH. Finally, we go beyond a summary welfare measure and analyze whether lack of accounting for FAFH changes our understanding and characterization of the poor population, i.e. we analyze how the profile of the poor changes once we take into account FAFH.

Our analysis indicates that failure to account for FAFH has significant and sizable effects on poverty and inequality indices and our understanding of poverty in general. First, proper accounting of FAFH results in extreme poverty rates that are 18 percent higher and moderate poverty rates that are 16 percent lower than the scenario without FAFH. The increase in the extreme poverty rate is driven by the fact that the cost of the food basket is higher when FAFH is taken into account (which raises the poverty line), an effect that outweighs the increase in measured consumption that results from accounting for FAFH (which increases household consumption). The increase in the cost of the food basket is explained by the higher per calorie costs derived from FAFH relative to food prepared at home.

Second, and by contrast, the moderate poverty rate falls because the increase in resources that come from accounting for FAFH consumption offsets the increase in the moderate poverty line. When we split FAFH into take-out food, food prepared and consumed outside by children, and food prepared and consumed outside by adults, we find that all these effects are driven by adult consumption outside the home. These effects are also consistent, in fact more pronounced, when we

compute changes in the poverty gap and severity of poverty. Finally, consumption inequality is lower when FAFH is accounted for. The Gini coefficient falls by 1.3 points, an effect explained by the higher relative participation of FAFH over total household expenditures at the lower end of the distribution.

Finally, accounting for FAFH also generates a re-ordering of households along the consumption distribution. Overall, 41 percent of the population changes their relative ranking when measured by the percentile of the expenditure distribution they belong under each scenario. This implies that not including FAFH in the poverty estimates can lead to an important re-classification of the poor population, which has a significant impact on the profile of the poor. In our analysis, we find that 20 percent of the population classified as poor when FAFH is ignored is no longer poor once FAFH is accounted for. Furthermore, this substantial change in the composition of the poor translates into changes in the typical profile of the poor when measured by demographic and socio-economic characteristics. We finally discuss some implications for survey design and future research.

The remaining of the paper is organized as follows: Section 2 connects FAFH to welfare and discusses the impact that FAFH has on the poverty and inequality indicators analyzed in this paper as well as on the profile of the poor; Section 3 introduces the setting and data, including details on the official methodology INEI implements to compute poverty statistics; Section 4 presents the results; and Section 5 concludes.

2. Integrating Food Away from Home in Welfare Analysis

While it is well understood that welfare entails multiple dimensions, household expenditure – consumption - has long been considered a flagship summary welfare indicator. It responds to the view that well-being constitutes the command over household commodities, and therefore consumption patterns, if well-measured and properly adjusted for time and space price differences, can properly track utility levels.[6,7]

[6] An alternative approach to well-being consists of asking whether people are able to obtain specific types of consumption goods, such as food, health or education (Haughton and Khandker, 2009). Measuring well-being in that way requires selecting a marker for each dimension of interest, as there is little agreement over how to construct a multidimensional index in an objective way, or if there is any value to such index at all. Therefore, the monetary approach to the measurement of well-being continues to take a central place in development policy, especially in poverty analysis.

[7] An alternative monetary indicator of welfare is income, which is mostly used in developed countries. In contrast, concerns with underreporting and the high variability of income in developing settings have made

In developing countries, food consumption represents a high share of total consumption, and therefore special interest is placed on proper measurement of food consumption. Being a central welfare marker, proper measurement of consumption - and food consumption in particular, can have far reaching implications for welfare analyses. In this work, we focus on the impact that incorporating FAFH in the measurement of food consumption has on two welfare measures: poverty, understood as a 'pronounced deprivation in well-being', and inequality, which relates to the distribution of resources (Haughton and Khandker, 2009).

2.1 FAFH and Monetary Poverty

Understanding poverty as pronounced deprivation of well-being, and following the monetary approach, the poor are those individuals whose resources – measured through consumption (or income) - fall below an 'adequately' defined threshold. This threshold (the poverty line) is generally set by measuring the cost of acquiring a basket of goods - the cost of basic needs method.[8]

Most countries track two levels of poverty: extreme and moderate. Extreme poverty is associated with a poverty line that reflects the cost of acquiring a food basket that satisfies minimum calorie requirements, intending to guarantee minimum nutrition needs. Moderate poverty adds to the basket goods necessary to satisfy other essential needs, such as clothing, health and housing.

To compute the extreme poverty line, the usual approach is to select a representative basket of the consumption patterns of a selected group of the population - the reference population. In some cases the reference population corresponds to the segment of the population whose food consumption is such that the calories consumed are in the neighborhood of the calorie requirements in that setting.[9] In the case of Peru, the reference population is selected as those whose overall consumption levels fall within a somewhat arbitrary distance from the moderate poverty line (on both

consumption the preferred welfare indicator in developing countries. While most of this work focuses on consumption, we point to the differences between income and consumption when appropriate.

[8] Other methods do exist to set an absolute poverty line, for example the food energy intake and subjective evaluations. The first approach is used when no price information is available but suffers from serious flaws. The second approach is rarely used and is not considered a valid replacement of more objective measures. An alternative to an *absolute* poverty line is a *relative* poverty line, which establishes deprivation relative to the rest of the population. This method is more common among developed countries.

[9] Internationally agreed recommendations on calorie requirement are provided by FAO/WHO/ONU, and differentiate by gender, age groups, and physical activity levels.

directions). Given this population, the food basket is selected such that, consistent with their consumption patterns, it satisfies their calorie requirements.[10]

There is much less agreement over how to incorporate the cost of non-food needs to compute the moderate poverty line. Confronted with the extreme difficulty of selecting a set of goods in an objective way, the most commonly used method is the indirect approach which draws from the budget composition between food and non-food expenses. The cost of the food basket, together with the share of total consumption allocated to food can be used to back-up the cost of the non-food basket. A few alternatives exist, the most common of which consists of proportionally expanding the cost of the food basket by the inverse of the food budget share (Orshansky coefficient), which tells us by how many times total consumption exceeds food consumption.

Based on the above, it becomes evident that measurement of FAFH can affect poverty measurement through two channels: the estimate of total consumption and the poverty line. We refer to the first effect as an *expenditure effect*, and the second as *poverty line effect*. For those countries that use income to measure poverty, only the poverty line effect applies.

To decompose the total impact on poverty into expenditure and poverty line effects, we need to specify a poverty index, i.e. a summary measure of poverty. Let a poverty index P be a function of the poverty line z, and the consumption distribution, $f(x)$:

$$P = P(z, f(x))$$

Moving from a scenario where FAFH is not accounted for to one where it is, the change in the poverty index would be:

$$\Delta P = P\big(z_1, f_1(x)\big) - P(z_0, f_0(x))$$

where subscript 0 refers to poverty without FAFH and subscript 1 with FAFH.

[10] Under the first scenario the process is iterative. The poverty lines are first calculated based on an educated guess of the reference population. If the moderate poverty line does not fall close to the mid-consumption level of the reference population, the reference population is adjusted accordingly and the poverty line re-calculated.

Following Kakwani (2000), we decompose the change in the poverty index into an *expenditure effect* and a *poverty line effect* in the following way: [11]

$$\Delta P = \frac{1}{2}\left[P\left(z_0, f_1(x)\right) - P\left(z_0, f_0(x)\right) + P\left(z_1, f_1(x)\right) - P\left(z_1, f_0(x)\right)\right]$$

$$+\frac{1}{2}\left[P\left(z_1, f_0(x)\right) - P\left(z_0, f_0(x)\right) + P\left(z_1, f_1(x)\right) - P\left(z_0, f_1(x)\right)\right]$$

In words, the expenditure effect represents the change in the poverty index that results from the change in the consumption distribution, holding fixed the poverty line. Similarly, the poverty line effect represents the change in the poverty index that results from a shift in the poverty line, holding constant the consumption distribution. If one measured the changes sequentially, the magnitude of each effect would depend on the order in which they are computed. To avoid such arbitrary choice, the decomposition above measures the expenditure effect as ½ the change due to the shift in the consumption distribution under the original poverty line and ½ the change due to the same shift in the consumption distribution computed under the new poverty line. A similar reasoning applies to the poverty line effect.

We proceed next to apply this decomposition to the exercise at hand: the inclusion of FAFH.

Expenditure effect

Moving from a world without FAFH to one with proper measurement of FAFH has a relatively straightforward impact on overall household consumption: everything else equal, every household has higher total measured consumption once FAFH is included in the analysis.[12] In other words, the whole consumption distribution shifts to the right. The magnitude and shape of this shift depends on the importance of FAFH along the ex-ante consumption distribution, i.e. the consumption distribution without accounting for FAFH. Note that because FAFH and food at home are substitutes, it is highly likely that the inclusion of a measure of FAFH generates a re-ordering of households, changing their position along the consumption distribution (more below).

[11] Kakwani (2000) was concerned with decomposing changes in poverty into an income/growth effect and an inequality effect. Therefore, in that work z is held constant and f(x) is expressed as a function of mean income and the Lorenz curve.

[12] In practice, this is true under the assumption that the inclusion of FAFH in the survey does not result in lower reports of other areas of household consumption.

Whether that translates into a fall in the poverty index depends on its properties. However, among the indices most commonly used, which satisfy a number of basic desirable properties, poverty will go unambiguously down. This happens, for example, if we restrict ourselves to the family of poverty indexes that are additively separable, as suggested by Atkinson (1987), and the index satisfy the monotonicity axiom. These indexes can be expresses as the sum of individual poverty indicators, and therefore we easily see that if each of these individual indices weakly decreases with an increase in resources, the poverty index should go down.

Poverty line effect

Without going into the specific details involved in the selection of the food basket, we note that a food basket selected from data that do not accurately represent expenditure patterns may not be consistent with the behavior of the reference population.[13] The resulting impact on the poverty line can go two ways:

a) The calorie requirements are satisfied at artificially high costs – i.e. the poverty line is higher than it would be had the data reflect actual consumption patterns
b) The calorie requirements are satisfied at artificially low costs – i.e. the poverty line is lower than it would be had the data reflect actual consumption patterns

For the case of the extreme poverty line, the direction of the effect will therefore depend on the relative calorie costs of food items included and excluded in the analysis. By contrast, the change in the moderate poverty line is hard to predict without referring to a specific methodology of how it is defined. If the methodology uses the relative participation of food and non-food items in the household budget to back-up non-food costs, then the impact of introducing FAFH can be established. Everything else equal, accounting for FAFH increases the expenditure share allocated to food. As the participation of food increases, the relative cost of non-food items goes down. In other words, for any given cost of the food basket, fewer resources need to be added to get to the moderate poverty line.[14]

[13] An additional effect relates to the fact that the reference population changes across the two scenarios, which may result in different calorie requirements. In our exercises the change in calorie requirements is very low (among all simulations we run, the maximum change we observe is 4 kilocalories on a total of 2,105).

[14] More specifically, the change in the Engel coefficient comes from two sources: the incorporation of FAFH in household expenditures, and the change in the reference population. However, the effect driven by the change in the reference population is significantly smaller relative to the effect driven by the incorporation of FAFH on total

The overall effect in the moderate poverty line then will be then derived from the net impact of the change in the cost of the food basket and the relative cost of food versus non-food items. If the cost of the food basket goes down, the smaller non-food budget share reinforces this effect and the poverty line goes down. Otherwise, the effect is ambiguous. It can be that the increase in the cost of the food basket outweighs the fall in the relative cost of non-food and the line goes up (though by less than the increase in the extreme poverty line). Alternatively, it can be that the increase in the cost of the food basket is less strong than the change in the relative cost of non-food and the moderate poverty line goes down.

As it happened with the expenditure effect, for additively separable poverty indexes satisfying the desirable properties the direction of the effect in the poverty line will determine the direction of the effect in the poverty index.

Overall effect

The overall magnitude and direction of the final effect on the poverty index will result from the sum of the expenditure and poverty line effects. If both effects move in the same direction, there can be a significant change in the poverty index even when both the expenditure and poverty line effects are small in magnitude. Similarly, if the effects move in opposite directions, the net effect can be quite small even if both the expenditure and poverty line effects are substantial as they will cancel each other out. In the empirical analysis presented later, we show that both of these situations take place in Peru when we analyze different components of FAFH.

In this paper we analyze the change in poverty measured by the FGT(α) index, a family of indexes widely used in the literature:

$$FGT(\alpha) = \int_0^z \left(1 - \frac{x}{z}\right)^{\alpha} f(x)dx \qquad \alpha \geq 0;$$

or in discrete form:

$$FGT(\alpha) = \frac{1}{N}\sum_1^N \left(1 - \frac{x}{z}\right)^{\alpha} 1(x < z) \quad \alpha \geq 0$$

expenditures. For example, the change in the food share driven by the change in the composition of the reference population when moving from a scenario without FAFH to one with FAFH is 1.13. In contrast, keeping constant the reference population, but ignoring FAFH, increases that share by 10.

We focus on the FGT(0) or head-count ratio; the FGT(1) or poverty gap; and the FGT(2) known as the severity of poverty.

2.2 Consumption Inequality

Wellbeing not only depends on the levels of deprivation – i.e. poverty, but also on the distribution of resources across the population. It is increasingly recognized that high levels of inequality is detrimental to development and therefore development policy should focus, not only on growth, but also on inequality.

While poverty analysis focuses on the lower end of the distribution, inequality analysis depends on the shape of the whole distribution. In other words, it is not the level of resources but its distribution what matters. Therefore, the scope that proper measurement of FAFH has on consumption inequality depends on the degree to which the incidence and magnitude of FAFH consumption varies along the consumption distribution.

Under mean independence – a desirable property of any inequality index, inequality would not change if the participation of FAFH on total consumption without FAFH was the same along the entire distribution. Since that condition is unlikely to hold, inequality is expected to change. The direction of the bias, however, cannot be established ex-ante. Provided the inequality index satisfies the Pigou-Dalton transfer sensitivity axiom, the direction will be determined by whether the shift in the distribution is consistent with a progressive or regressive transfer across individuals. For example, if the participation of FAFH on total consumption monotonically increases along the distribution, the transfer is regressive and inequality increases. In contrast, if that participation monotonically decreases along the distribution, the transfer is progressive and inequality falls.

To measure the impact of FAFH on consumption inequality we compute the Gini coefficient, which is the most widely used inequality index. It is based on the Lorenz curve, which tracks the share of resources that go the lowest x% of the population, when the population is ordered from poorer to richer. Under equal distribution of resources, this curve would coincide with the 45º line. Formally:

$$Gini = 1 - \frac{1}{N}\sum_{i=1}^{N}(y_i + y_{i-1}) \ ,$$

Where y_i consumption of individual i, and i =1,..,N are ordered from poorer to richer. It is a measure that ranges from 0 to 1, though many users multiply the number by 100.

2.3 Re-classification and Poverty Profile

Unless all individuals across the distribution consume the same amount of FAFH, the shift from a distribution without FAFH to one where all consumption is accounted for will result in a re-ordering of individuals. If this re-ordering is big enough, the identity of those individuals falling at the lower end of the distribution changes. This has two important implications. On the one hand, it affects the identification of the poor population leading to an important re-classification of the poor. On the other hand, it changes the composition, and therefore the characterization of the poor population.

By definition, the poverty (and inequality) indices do not capture these changes because they are constructed in a way that preserves the anonymity of the individuals (symmetry property). While that is desirable for poverty indices, identifying the poor and understanding their characteristics is essential to poverty analysis.

There are no strong a priori predictions as to how the profile would change, aside from the fact that those likely to leave poverty are individuals who eat more outside and those who fall into poverty are individuals more likely to eat at home. Therefore, correlates with eating out such as household composition, education, and labor market outcomes are likely going to be different across those who transition from one poverty status to another. To the extent those differences are strong enough they will have a significant impact on the profile of the poor. We empirically test these hypotheses below.

3. Setting and Data

We analyze the impact of FAFH on poverty and inequality for the case of Peru. Peru is a middle-income country that has experienced sustained GDP growth over the last decade. Poverty has been steadily declining over time, reaching in 2013 23.9 percent and 4.7 percent for moderate and extreme rates respectively. Likewise, consumption inequality has been falling, with a Gini coefficient for 2013 of 35.

3.1 Consumption Data and the National Household Survey in Peru (ENAHO)

For this analysis, we use the National Household Survey - ENAHO, a multi-topic household survey that has been collected annually since 1995, and is the main source of information to monitor the living standards of the population in the country. For annual statistics, it is representative up to

the 24 states in the country. Inferences for shorter periods (three-month intervals) can also be done at the national and rural/urban levels.

The survey has an extensive and detailed expenditure module, which collects information on all dimensions of household expenditure reported by a household informant. With respect to food consumption, we can separately identify food consumed at home and food consumed away, as well as different components of FAFH. Expenditures on food consumed at home are reported by the household informant, for a total of up to 650 items. Data on expenditures on food away from home are collected from different informants and in different modules depending on the place of consumption - take-out vs food consumed outside – and on the age of the household members - children versus adults.

Take-out food and food consumed outside the home by children younger than 15 years is reported by the household informant, within the same expenditure module used to collect at-home consumption. The questionnaire allows the respondent to list the names of the meals consumed, together with information on the mode of acquisition, frequency of consumption, source of the food, quantity and amount spent. By contrast, information on food consumed away by adults is collected through a different module applied to each adult household member, who reports expenditures by meal event – breakfast, lunch, dinner, or snacks. For each meal event, the respondent reports frequency, amount spent, and place of consumption, such as street food, restaurant, social program, or work.

Regarding the content in the questionnaire, the survey takes into consideration most of the elements reviewed by Smith et al. (2014), making it well suited for the analysis. It considers both food produced outside and consumed outside as well as food produced outside but consumed at home, i.e. take-out; it contemplates different modes of acquisition – paid versus in kind; it explicitly considers both meals and snacks; and specifies multiple sources, including street vendors, restaurants, market, social programs. Furthermore, this survey is among the few that collect FAFH at the individual level, though only for adults. According to the report by Smith et al. (2014), only 17 percent of the surveys reviewed in their analysis do so. Recent evidence suggests that relying on a household informant to elicit information on consumption away from home is likely to suffer from high measurement error

because by definition, this consumption takes place outside the home, and therefore out of sight of the informant.[15]

3.2 Descriptive statistics on FAFH in Peru

To describe the context of this work Figure 1 presents recent trends on the incidence of FAFH and its participation in the household food budget. The figures report statistics for all components of FAFH, i.e. food consumed away by adults, food consumed away by children, and take-out; and also for the subcomponent of food consumed away by adults.[16]

The panel on the left shows that FAFH is fairly widespread in Peru, and despite its high incidence FAFH has continued to grow over the last few years. In 2006, 84 percent of the households report having at least on household member eating away from home. The figure grew to 89 percent by 2013, so that almost 9 out of 10 households eat at least a meal or snack out. If we only focus on adult food consumption outside the home, the trend shows a similar pattern, only shifted about 5 percentage points downwards. By 2013, 84 percent of the household have at least one adult household member eating out.

The panel to the right shows that, not only the incidence but the contribution of FAFH on the overall household budget is substantial. The share of FAFH on overall food expenditures grew from 23 to 27 percent over the last 7 years, a magnitude that represents a 21 percent increase. This is largely explained by adult consumption away from home, consumption that represents almost a quarter of total household food consumption.

3.3 Poverty methodology in Peru

As discussed above, the main source of information is the ENAHO survey. Peru went through an important methodological change in their poverty methodology in 2010, when among other things

[15] In a small-scale study in an urban slum in India Sujatha et al. (1997) interview husbands and wives about the men's dietary intake, and find that women are not aware of the foods consumed by their spouses outside of their home. Similarly, Gewa et al. (2007) find that mothers of rural school-aged Kenyan children missed 77 percent and 41 percent of the energy intake originated in FAFH in the food shortage and harvest seasons respectively (where FAFH contributes to 13 percent and 19 percent of daily energy intake in each season).

[16] We only include meals produced by commercial sources. While the questionnaire asks for consumption provided by social programs, the valuation of such consumption is controversial, and therefore we abstract from that component. Information on food consumed at other households is also reported, but in order to avoid double count of meals INEI does not include that component of consumption in the computation of total household consumption.

INEI selected a new food basket and computed new poverty lines. In this paper, we conduct our simulations for welfare measures during 2010.[17]

Peru computes seven poverty lines: one for Metropolitan Lima, and one for each of the three geographic regions that divide the rest of the country, differentiating by rural and urban sectors. From 2010 onwards, the poverty lines are updated only to account for change in prices, but the composition of the baskets remains the same. The national poverty line is then calculated as a weighted average of the seven regional poverty lines.

The selection of the food baskets is based on household and individual consumption reported in the ENAHO. Information on the caloric composition of each food item comes from a nutritional table computed by the National Center for Food and Nutrition (CENAN) under the direction of the National Institute of Health. This table consists of 941 food items that correspond to the items reported by households in the main household consumption module in ENAHO, and 12 food items that correspond to the FAFH module applied to each adult. The 12 food items correspond to each meal occasion – breakfast, lunch, dinner, and snack - differentiated by three food sources – street vendors, restaurants, and work. Two necessary pieces of information that are not collected in this module are the content and quantities of food consumed. To assign calorie content, CENAN provides an estimate for each of these items by selecting representative food items. Quantity consumed is calculated indirectly based on the unit calorie cost derived from take-out food and food consumed away by children, i.e. food away from home items reported in the main household consumption module.

As mentioned in the previous section, the baskets are selected based on the consumption patterns and calorie requirement of the reference population. In Peru, this population corresponds to the individuals between the 20^{th} and 40^{th} percentile of the per capita expenditure distribution, an interval that is centered around the moderate poverty rate. Once the cost of the food basket is established, the Orshansky coefficient is used to determine the moderate poverty line.

[17] We also conducted robustness checks of our estimates for a series of years and find similar results. Those results are available upon request.

4. Results

4.1 Consumption distribution with FAFH

To motivate and understand the impact that FAFH has on the selected welfare indexes, it is useful to first analyze the change in the entire consumption distribution. Changes in the lower tail will be reflected in the poverty indexes while changes in the shape of the entire distribution will be reflected in our inequality index.

Figure 2 - Panel A presents the empirical distributions of the log of per capita expenditure whether FAFH is excluded or not. As mentioned before, the distribution shifts to the right once consumption of FAFH is accounted for. To see in more detail how the consumption of FAFH is distributed, Panel B presents graphs: the absolute amount spent on FAFH and the share of expenditures on FAFH over total expenditures, both by percentile of the expenditure distribution when no FAFH is included. The message that emerges from those graphs is clear. On one hand, the absolute amount spent on FAFH increases along the expenditure distribution. As expected, individuals in households with higher total per capita expenditures also spend more on food away from home. However, the expenditure on FAFH as a share of total expenditure follows the opposite pattern. In relative terms, expenditure on FAFH is more important at the lower end of the distribution.

4.2 Changes in welfare indicators

4.2.1 Poverty

We now evaluate the impact that inclusion of FAFH has on poverty estimates. Our baseline scenario is a world where consumption and poverty lines are constructed assuming that no information on FAFH exists. These extreme and moderate poverty rate estimates constitute the benchmark against which the impact of FAFH is going to be assessed. We note them as "at home" (Table 1).

Next, we proceed to include in the estimate of food consumption and poverty lines, one at a time, three components of FAFH that are collected in the ENAHO, based on 'who' within the household consumes the food. We look at: food consumed away by adults (15 and older), food consumed away by children (14 and younger), and food consumed at-home by the household (take-out). As pointed out in the previous section, food consumed away from home by adult household

members is by far the largest component of FAFH. The inclusion of all three components simultaneously gives us the actual official poverty status.[18]

Once the poor population is identified under each scenario, we proceed to compute the corresponding poverty indices: poverty rate, poverty gap, and severity of poverty. We decompose the overall effect into expenditure and poverty line effects following the specification presented in section 2.2. Standard errors are estimated taking into account the sample design and population weights.

Table 1 presents the full set of results. The left panel presents extreme poverty estimates and the right panel moderate poverty estimates. For each case, the upper panel presents poverty rate estimates, the middle panel poverty gap estimates, and the lower panel severity of poverty estimates. Finally, column (1) of each panel corresponds to our baseline specification; in columns (2) to (4) a component of FAFH is included one at a time while leaving the other FAFH components out; and column (5) summarizes the overall effect of FAFH, and therefore corresponds to the official poverty statistics.

Expenditure effect

The expenditure effect provides the estimated change in poverty statistics that result from taking into account the different components of FAFH in total expenditures, while leaving the poverty line unchanged. This effect coincides with the total effect in cases where different data sources are used to select the poverty line and compute total expenditures and only the data to compute the latter is improved to include FAFH. Alternatively, it applies to situations where an external poverty rate is used, such as the WB PPP poverty lines.

Focusing on the poverty rate, the results suggest that if information on FAFH was not included, extreme poverty in Peru in 2010 would have been 6.46 percent and moderate poverty 36.55 percent (table 1). Once all components of FAFH are included, the expenditure effect results in a reduction in extreme poverty by 3.3 percentage points and by 10.5 percentage points for moderate poverty. Both changes represent very sizable changes of an order of 30 to 50 percent relative to the baseline specification.

[18] Note that Peru's Statistics Institute already uses these FAFH components in its official poverty estimates since 2004.

If we break FAFH into its different components, we note that adult consumption is the main driver of the expenditure effects observed. Accounting for adult consumption outside the home translates into a 2.9 percentage point decrease in extreme poverty and 9 percentage points in moderate poverty. In contrast, accounting for food away from home consumed by children or take-out translate into very small changes in the extreme poverty rate, 0.2 and 0.1 percentage points respectively, and accumulate to a change of about 1 percentage point in moderate poverty. As expected, these differences are explained by the relative small importance that each component has on the household budget.[19] Indeed, summary statistics reported in Table 2 show that adult consumption is by far the most important component, with an incidence of almost 90 percent, and a mean participation in the household food budget of about 16 percent.[20] By contrast, significantly fewer resources are assigned to child consumption or take-out. The incidence is much lower - about 40 percent for either, and the participation of these expenditures in the food household budget is at most 2.2 percent. Even if we restrict the analysis to households that report positive expenditures, these expenditures do not account for more than 5 percent of the food budget.

The same pattern follows when we look at the poverty gap and the severity of poverty. Accounting for FAFH reduces the distance between the mean expenditures among the poor and the extreme poverty line by S/0.87, and the moderate poverty line by almost S/.3.99 (Table 1). Furthermore, the reduction is relatively stronger for those further away from the poverty line, causing the severity of poverty to fall too. Again, these effects are dominated by adult consumption.

Poverty line effect

As mentioned in the previous section - and in contrast with the expenditure effect - the direction of the poverty line effect is a priori unknown. Furthermore, the extreme and moderate poverty lines need not move in the same direction. Table 2 presents the simulated poverty lines under each scenario. We find that when all components of FAFH are accounted for, the extreme poverty line increases by S/.33 to S/.134.5 – a 32 percent change over the baseline poverty line, while the moderate poverty line only increases by S/.19 – an 8 percent increase over baseline. The increase in

[19] Potentially, this may reflect a weakness in the design of these module to accurately collect this information in the survey. See Borlizzi and Cafiero (2014).

[20] Since poverty rates are calculated at the individual level, all statistics in the Table 2 are at the individual level. An incidence of 90 percent means that 9 in 10 individuals live in households where at least one adult member consumed outside during the reference period. Similarly, on average individuals live in a household where 16% of the food budget is allocated to expenditure on food consumed away from home by adult members.

the extreme poverty line is explained by the higher cost per calorie in FAFH relative to food prepared at home (S/.0.007 for FAFH versus S/.0.004 in the case of food eaten at home, Table 2). When computing the moderate poverty line, the increase in the cost of the food basket is somewhat offset by the fall in the Orshansky coefficient, which implies that non-food items are weighted more in the moderate poverty line estimate.

The increase in the two poverty lines translates into about a 4.4 and 4.6 percentage point increase in the extreme and moderate poverty rates, respectively (Table 1). The reason the effects are similar is because of two compensating effects. In the first case, the poverty line shifts more but the effect is evaluated in a segment of the expenditure distribution with lower population density. In the second case, the poverty line moves by less but the move is evaluated in a segment of the distribution with higher population density.

The effects of FAFH by its different components vary across our scenarios. The differences in extreme poverty rates are driven by difference in calorie costs: calories from adult consumption are more expensive than calories from home-made food, but that is not the case for child consumption or take-out (Table 2). As a result, the poverty line and poverty rate change significantly when we incorporate adult consumption, but they barely change when we include child consumption or take-out.

On the other hand, the pronounced differences in the impact on the cost of the food basket translate into sharp differences in the moderate poverty line. When accounting for adult consumption, the increase in the cost of the food basket outweighs the effect that comes from the reduction in poverty that is implied by the population density, resulting in a higher moderate poverty line. When accounting for child consumption or take-out, the cost of the food basket barely changes and therefore is outweighed by the poverty reduction due to the population density shift, which makes the moderate poverty line go down. The fall in the poverty line is, nevertheless, modest because these FAFH components contribute very little in the overall household budget. Consequently, the poverty line effect is positive and substantial when introducing adult consumption, but negative and small when including either of the other two components.

Once again, the direction and relative magnitude of the effects also apply to the poverty gap and severity of poverty.

Overall effect

The overall effect results from adding the expenditure and poverty line effects above together. If they both go in the same direction (basically reducing poverty), they reinforce each other and magnify the final impact on the poverty indexes. If they go in opposite directions, the direction of the net effect will depend on the difference between the two, and the magnitude of the overall effect will be smaller in absolute terms than either of the two effects individually.

In our case, the overall effect of using all components of FAFH on extreme poverty is always positive and significant. The poverty rate increases by 1.1 percentage points, a change that represents an 18 percent increase over the baseline benchmark results. The increase on the poverty gap and severity of poverty is even more pronounced, changing by about 25 percent. Extreme poverty increases because the impact of a higher poverty line outweighs the impact of higher expenditures, and it is driven by adult consumption away from home.

By contrast, the overall effect of all components of FAFH on moderate poverty is always negative and significant. The moderate poverty rate falls by almost 6 percentage points, a change that represents a 16 percent decrease over the benchmark. Similarly, the poverty gap and severity of poverty go down, by 20 and 22 percent respectively. Contrary to the case of extreme poverty, it is now the expenditure effect that outweighs the poverty line effect.

A second difference relative to extreme poverty is that now it is not the case that adult consumption explains virtually the totality of the effect. When analyzing the expenditure and poverty line effects individually, the absolute magnitude of the effects is always stronger when including adult consumption relative to either of the other two components. However, taken together that is no longer the case. The reason behind it is that the expenditure and poverty line effects move in opposite directions when we account for adult consumption. However, both effects move in the same direction when accounting for child consumption or take-out. Individually, each of the three components has a statistically significant impact on poverty and the three effects are of comparable magnitudes.

In sum, when looking at extreme (moderate) poverty, the inclusion of FAFH increases (decreases) the number of individuals who are poor, increases (decreases) the poverty gap among the poor and the poverty line, and increases (decreases) the severity of poverty among the poor.

Furthermore, the impact of FAFH on the poverty gap and severity of poverty is more pronounced than the effect on poverty rates, especially when it comes to extreme poverty.[21]

4.2.2 Consumption Inequality

The impact of FAFH on the Gini coefficient is presented in Table 3. Consistent with previous findings which show that for poor households, the increase in consumption due to FAFH is proportionally higher compared to richer ones, implies that accounting for FAFH has an inequality reduction effect, which is statistically significant.[22] The Gini coefficient falls from 38.5 to 37.1. As the previous analysis on poverty, when we split FAFH into its components, this reduction in inequality is also mainly driven by adult FAFH consumption.[23]

4.3 Re-classification and Poverty Profile

As mentioned before, the amount households spend on food away from home is not homogeneous along the expenditure distribution. Therefore, in this section we explore whether these differential changes when we account for FAFH affect the classification of who is poor or non-poor and whether this leads to any systematic differences in simple poverty descriptive statistics.

Overall, we find that by accounting for FAFH, 41 percent of the population change their relative ranking based on their initial consumption decile. In terms of poverty status, the re-classification of individuals is also substantial. Among those classified as extreme poor when no FAFH is included, 21 percent (or close to 400,000 people) 'escape' poverty once we account for FAFH expenditures (Table 4). In addition, more than 730,000 individuals that were not poor are classified as poor once FAFH is accounted. The corresponding numbers for moderate poverty are also large: 19 percent (more than 2,000,000 individuals) and 350,000, respectively. Consequently, accounting for FAFH not only changes the number of poor individuals but it also changes the composition of those individuals.

[21] As a robustness check, Figure 3 shows that these results are not particular of the year 2010. When we replicate poverty indexes for the period 2010-2013, we find a parallel shift of the downward poverty trend that Peru experienced over the last few years. These results are consistent with the fairly stable trend in FAFH consumption since 2010 (see Figure 1).

[22] Bootstrapped standard errors are estimated taking into account the stratified and clustered sample design and population weights (Bhattacharya, 2005; 2007). Changes significant at 5% in 2010 and 2011, but not in 2012-13.

[23] Figure 4 presents inequality trends for the period 2010-2013 as a robustness check. Proper account for FAFH shifts the trend downwards.

Does this re-classification affect the overall characterization of the poor population in any significant manner? To see this, we run standard poverty profiles of the poor based on whether FAFH is accounted or not. First we compare demographic and socioeconomic characteristics between those groups that actually did change poverty status: those who leave poverty versus those who fall into poverty when FAFH is included. Then, we test whether the change in the composition of the poor population translates into a different poverty profile. We do this by comparing mean characteristics of the entire poor population under each of the two scenarios. Results are shown in Table 5.

All differences are calculated going from the 'FAFH poor' to the 'at-home poor', and therefore reflect the fact that the former group eats relatively more at home than the latter. In other words, the 'FAFH poor' are classified as poor when FAFH consumption is accounted for, while the 'at-home' poor are classified as poor when FAFH consumption is not. Overall, we find a number of statistically significant differences between the two population groups that change poverty status. These differences also remain statistically significant when we compare the overall poor populations under each scenario.

Looking first at extreme poverty a few differences emerge. In terms of demographic characteristics, the 'FAFH poor' have a different household structure – smaller household size and fewer prime-age males; the household head is more likely to be indigenous; and the household head is less likely to be illiterate or have primary incomplete. There are no statistically significant differences in the distribution of dwelling ownership, though there are a few in the access to services: the 'FAFH poor' are more likely to have electricity and a bathroom. In terms of geographic location, once FAFH is accounted for there are fewer poor households in rural areas. Finally, marked differences arise when looking at labor market outcomes. Results are consistent with those households that are extremely poor when FAFH is accounted for but not otherwise having lower income per capita and fewer household members employed, in particular males. Differentiating across types of employment, it is fewer employees, as opposed to self-employed or employers, what drives the results. Overall, the results suggest that households with more prime-age adults and working members are more likely to consume food outside the home and therefore more likely to be classified as extreme poor if those resources are not properly accounted for.

The difference in the profile of the moderately poor is more pronounced. In this case, almost all characteristics are different across the two scenarios. In terms of household structure, the 'FAFH

poor' have larger households and with a different demographic composition. On average, they have more children and more senior adults, but fewer prime-age males. Once again, this is consistent with these households spending fewer resources in FAFH and therefore moving downwards in their relative position in the expenditure distribution once FAFH is accounted for. In terms of household head characteristics, the head is more likely to be indigenous and more likely to have a lower education level. In contrast with extreme poverty, ownership status is also different: the 'FAFH poor' are more likely to be owners and less likely to be renters. They are also less likely to have access to different services such as water, sewage, or electricity. There are statistically significant differences in the geographic distribution of the poor population, and finally, marked differences in labor market outcomes. Consistent with increasing consumption of FAFH as resources increase, income per capita is significantly lower among the 'FAFH poor' relatively to the 'at-home poor', and those households have fewer members employed.

5. Conclusion

Food consumption away from home is rapidly growing across the developing world, yet Household Consumption and Expenditure Surveys are failing to properly account for these changes in the consumption patterns. This is likely to have significant consequences for welfare analysis, since the measurement of food consumption is critical for poverty, food security, health, and nutrition analyses, among others.

In this paper we take advantage of the rich data on FAFH collected in the National Household Survey in Peru (ENAHO) to provide evidence on the potential impact that lack of accounting for FAFH consumption may have on poverty and consumption inequality. We show that conceptually, the direction of the bias on poverty and inequality cannot be established ex ante. Then, we provide evidence on the direction and magnitude of the bias in poverty and inequality indexes for the case of Peru in 2010 by simulating the scenario where no FAFH is accounted for. Peru is a relevant context for this analysis, as FAFH has been growing over the last decade, with the average household spending, by 2010, about 28 percent of the food budget on food away from home.

We find that the effect on poverty and inequality indices is substantial in magnitude and statistically significant. The extreme poverty rate *increases* by 18 percent while the moderate poverty rate *falls* by 16 percent once FAFH is accounted for. The impact on the poverty gap and severity of

poverty are of a similar magnitude, and in general larger. In terms of inequality, accounting for FAFH reduces the Gini coefficient by 3.4 percent, a statistically significant reduction.

Finally, we explore whether these effects change our general understanding of who the poor are. We confirm that by accounting for FAFH, poverty profiles and general characteristics about the household such as demographics, education or labor market differ due to the fact that individuals are moved around when we account for FAFH. As a result, not only the number of poor individuals, but the characterization of the poor population is significantly different.

In all, our findings suggest that ignoring the increasing importance of FAFH in household surveys around the world – even when poverty is measured based on income but with a poverty line that is estimated using a food basket - can seriously affect welfare measures and our general understanding of who the poor are. Given that the direction of this bias is unknown ex ante, accounting for FAFH is even more important. Future research should aim to expand and validate these findings in more settings, and deepen the analysis by better understanding not just how much people are spending on FAFH but potentially on what those FAFH meals include.

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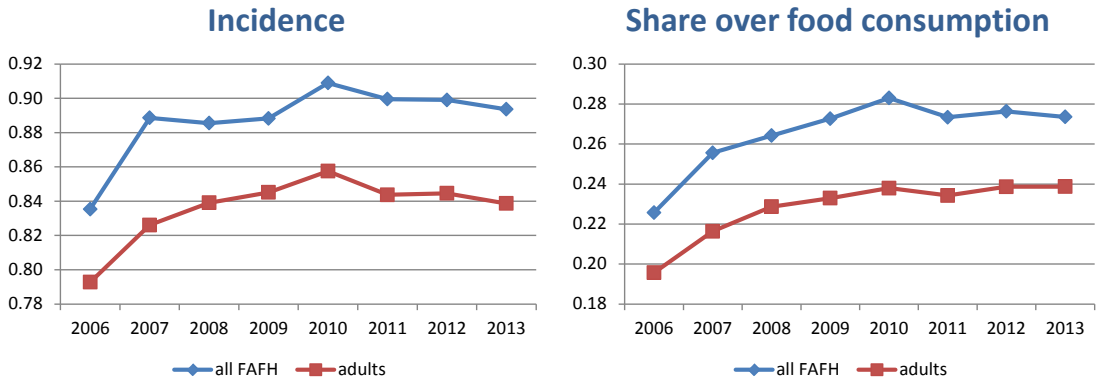
Figures and Tables

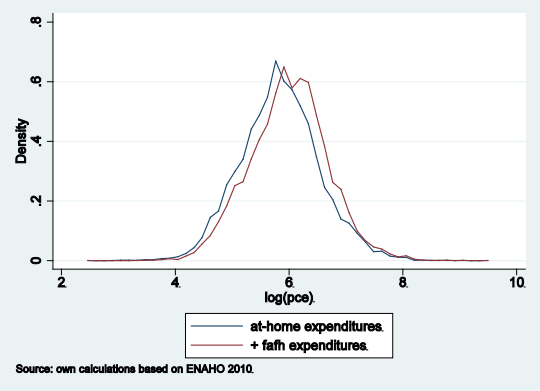
Figure 1. Recent trends of FAFH in Peru



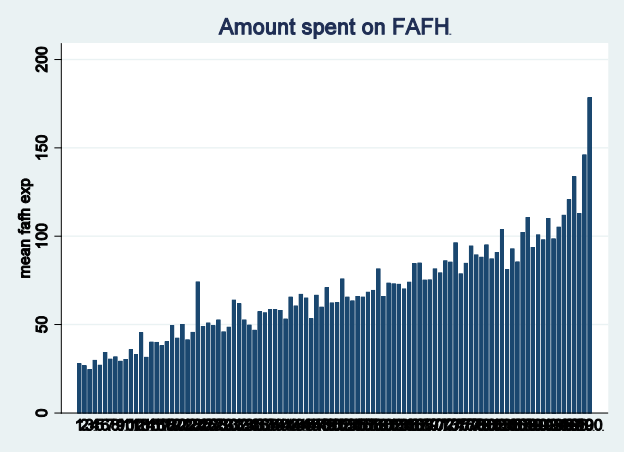
Source: own calculations based on ENAHO 2006-2013

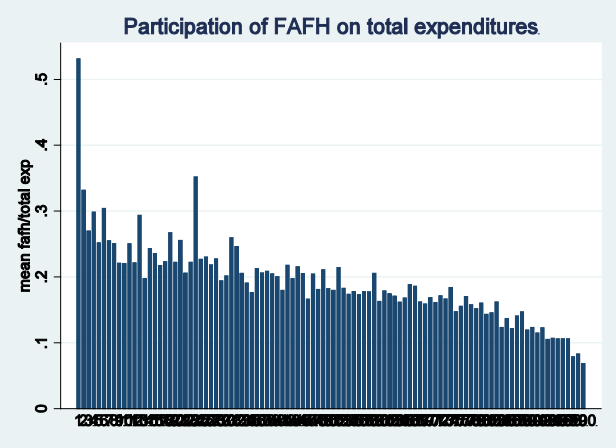
Figure 2. Change in expenditure distribution when FAFH is accounted for

Panel A. Distribution of log(pce) with and without FAFH



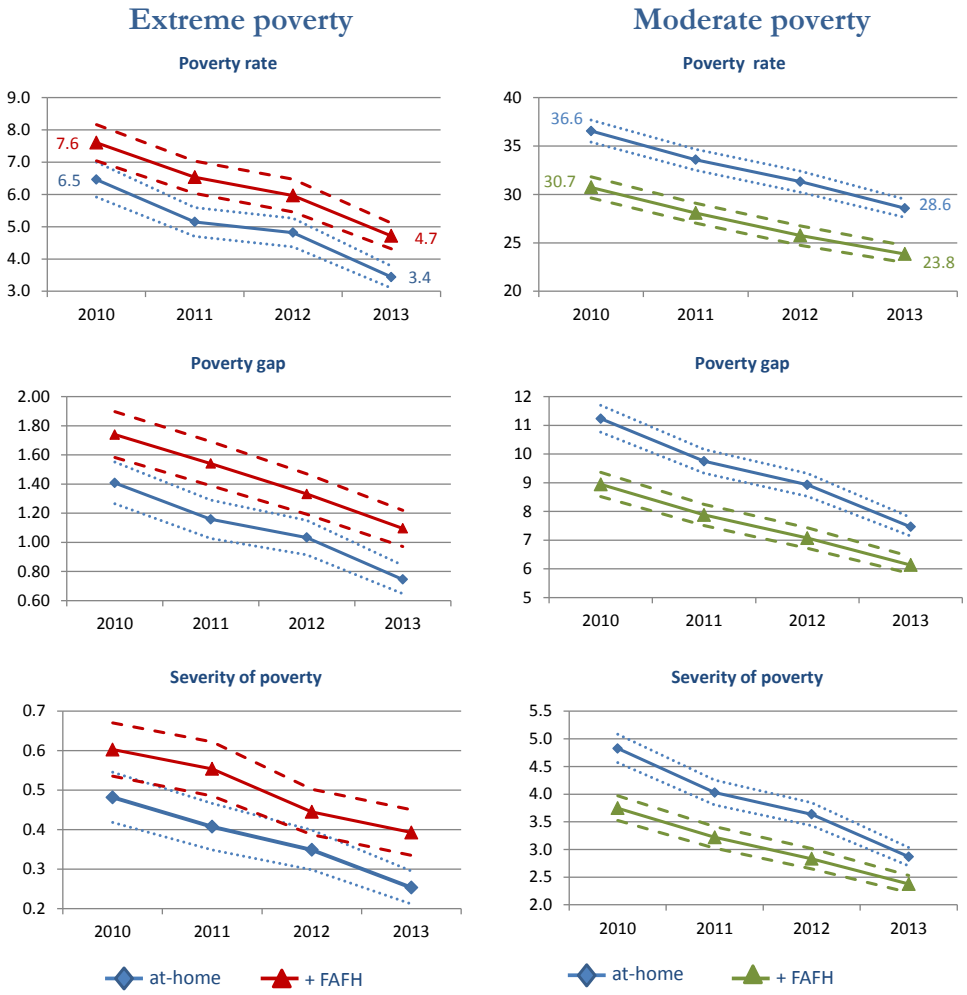
Panel B. Distribution of FAFH expenditures, by percentile of the expenditure distribution without FAFH





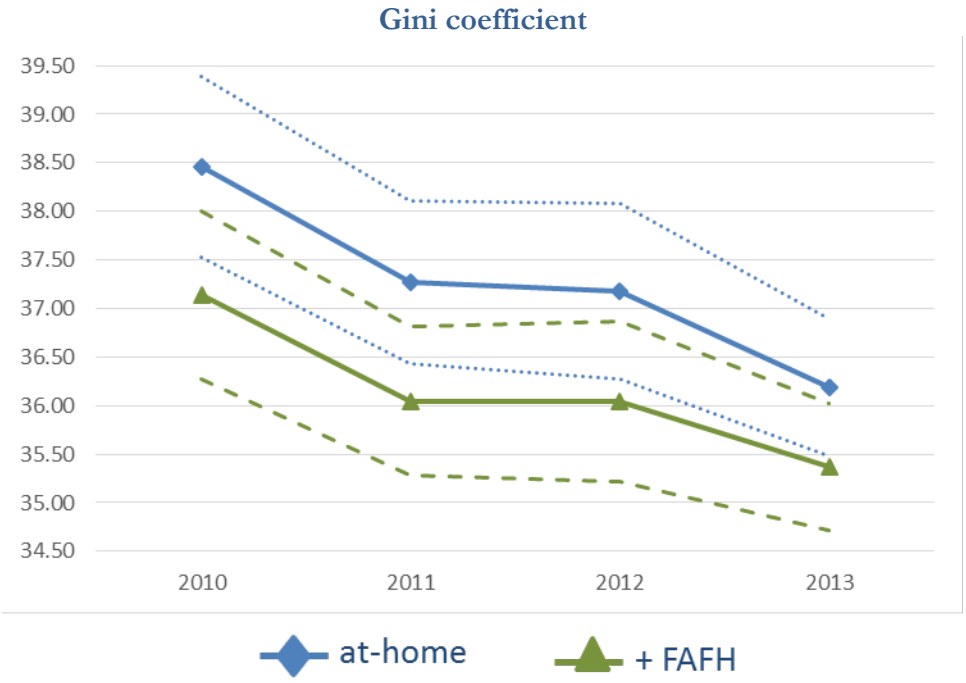
Source: own calculations based on ENAHO 2006-2013

Figure 3. Impact of FAFH on poverty indexes, Peru 2010-2013



Source: own calculations based on ENAHO 2010-2013

Figure 4. Impact of FAFH on Consumption Inequality, Peru 2010-2013



Source: own calculations based on ENAHO 2010-2013

Table 1. Impact of FAFH on poverty rates, poverty gap, and severity of poverty
Simulations accounting for different components of FAFH, Peru 2010

place of consumption…	Extreme poverty					Moderate poverty				
	at home	**at home + …**			**all**	**at home**	**at home + …**			**all**
		meals out		**takeout**			**meals out**		**takeout**	
		adults	**children**				**adults**	**children**		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
poverty rate	**6.46**	**8.15 ***	**6.36**	**6.19**	**7.60 ***	**36.55**	**33.72 ***	**35.37**	**33.95 ***	**30.72 ***
expenditure effect		-2.94	-0.20	-0.14	-3.25		-9.03	-0.63	-1.12	-10.46
line effect		4.63	0.10	-0.13	4.39		6.20	-0.54	-1.48	4.63
overall effect		**1.69**	**-0.10**	**-0.27**	**1.14**		**-2.83**	**-1.18**	**-2.60**	**-5.82**
poverty gap	**1.41**	**1.88 ***	**1.39**	**1.35**	**1.74 ***	**11.23**	**9.94 ***	**10.76**	**10.30 ***	**8.94 ***
expenditure effect		-0.81	-0.05	-0.03	-0.87		-3.62	-0.29	-0.35	-3.99
line effect		1.28	0.03	-0.03	1.20		2.33	-0.18	-0.58	1.70
overall effect		**0.47**	**-0.02**	**-0.05**	**0.33**		**-1.29**	**-0.47**	**-0.93**	**-2.29**
severity of poverty	**0.48**	**0.66 ***	**0.47**	**0.46**	**0.60 ***	**4.83**	**4.20 ***	**4.60**	**4.42 ***	**3.75 ***
expenditure effect		-0.31	-0.02	-0.01	-0.33		-1.78	-0.15	-0.14	-1.92
line effect		0.49	0.01	-0.01	0.45		1.15	-0.08	-0.27	0.84
overall effect		**0.18**	**-0.01**	**-0.02**	**0.12**		**-0.63**	**-0.22**	**-0.41**	**-1.08**

Notes: own calculations following the official poverty methodology using ENAHO 2010. Standard errors calculated taking into account survey design and sample weights. * Statistically significant at 5 percent level.

Table 2. Summary statistics for poverty simulations accounting for different components of FAFH

place of consumption…	**at home**	**at home + …**			**all**
		meals out		**takeout**	
		adults	**children**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Extreme poverty line	101.9	134.5	102.3	101.4	134.5
Moderate poverty line	241.3	266.6	239.3	234.5	260.1
Orshansky coefficient	2.26	1.93	2.24	2.22	1.88
Median Kcal cost	0.004	0.007	0.0031	0.004	0.004
Monthly pc-expenditure	444	501	446	452	512
FAFH component:					
incidence		89.77	37.14	42.93	93.70
share over total exp.		16.05	0.95	2.23	19.23
share (con>0)		17.88	17.88	5.21	20.50

Notes: own calculations following the official poverty methodology using ENAHO 2010. Statistics calculated at the individual level among the reference population. National poverty line calculated as a weighted average of the 7 regional poverty lines.

Table 3. Impact of FAFH on the Gini coefficient, Peru 2010
Simulations accounting for different components of FAFH, Peru 2010

place of consumption…	**at home**	**at home + …**			**all**
		meals out		**takeout**	
		adults	**children**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Gini coefficient	38.46	37.28	38.28	38.45	37.14 *
	(0.48)	(0.44)	(0.47)	(0.47)	(0.44)
Effect		-1.18	-0.18	0.00	-1.32
		(0.65)	(0.67)	(0.67)	(0.65)

Notes: own calculations based on ENAHO 2010. Standard errors calculated taking into account survey design and sample weights. * Statistically significant at 5 percent level

Table 4. Re-classifications: change in poverty status when accounting for FAFH

Extreme Poverty			
		Including FAFH	
		Poor	non-poor
Only at-home meals	poor	1,520,463	**393,285**
	non-poor	**730,765**	26,979,752

Moderate Poverty			
		Including FAFH	
		Poor	non-poor
Only at-home meals	poor	8,748,740	**2,078,532**
	non-poor	**353,034**	18,443,959

Table 5. Impact of FAFH on the profile of the poor

Difference in means between those who are poor when FAFH is accounted for relative to those who are poor when only at-home consumption is taken into account

sample…	Extreme poverty						Moderate poverty					
	if changed poverty status			all			if changed poverty status			all		
	poor to non-poor	non-poor to poor	diff	at-home poor	FAFH poor	diff	poor to non-poor	non-poor to poor	diff	at-home poor	FAFH poor	diff
household size & composition												
household size	5.14	4.80	-0.34	5.01	4.92	-0.09 *	4.38	3.75	-0.63 ***	4.78	4.83	0.05 **
children < 15	0.75	0.77	0.02	0.74	0.75	0.01	0.68	0.67	0.00	0.76	0.77	0.02 ***
women 15-60	0.81	0.80	-0.01	0.79	0.79	0.00	0.80	0.73	-0.07 *	0.83	0.84	0.00
women 60+	0.23	0.31	0.08 **	0.30	0.32	0.02	0.18	0.33	0.15 ***	0.25	0.27	0.02 ***
men 15-60	0.85	0.69	-0.16 ***	0.75	0.71	-0.04 ***	0.85	0.73	-0.12 ***	0.80	0.78	-0.02 ***
men 60+	0.23	0.28	0.05	0.25	0.26	0.01	0.20	0.24	0.04	0.23	0.23	0.01 **
household's head characteristics												
female	0.23	0.21	-0.02	0.22	0.22	-0.01	0.24	0.24	0.00	0.22	0.22	0.00
single	0.04	0.04	-0.01	0.04	0.04	0.00	0.06	0.05	-0.01	0.04	0.04	0.00 **
indigenous	0.42	0.54	0.12 ***	0.49	0.52	0.03 **	0.32	0.36	0.04	0.39	0.41	0.02 ***
illiterate	0.36	0.27	-0.09 **	0.34	0.31	-0.03 **	0.13	0.14	0.01	0.18	0.20	0.01 ***
primary incomplete	0.62	0.56	-0.06	0.63	0.61	-0.02 *	0.32	0.37	0.05	0.43	0.45	0.02 ***
primary complete	0.19	0.23	0.04	0.20	0.21	0.01	0.21	0.19	-0.02	0.21	0.21	0.00
secondary incomplete	0.09	0.11	0.01	0.09	0.10	0.00	0.17	0.13	-0.04	0.15	0.14	-0.01 **
secondary and above	0.09	0.10	0.01	0.07	0.08	0.01	0.30	0.31	0.01	0.21	0.20	-0.02 ***
dwelling ownership												
renting	0.03	0.01	-0.01	0.02	0.01	0.00	0.09	0.08	-0.01	0.05	0.04	-0.01 ***
owner	0.78	0.81	0.03	0.83	0.83	0.00	0.64	0.70	0.06	0.73	0.74	0.02 ***
other	0.20	0.18	-0.02	0.15	0.16	0.00	0.27	0.21	-0.05	0.23	0.22	-0.01 ***
access to facilities												
running water	0.38	0.37	-0.01	0.34	0.34	0.00	0.65	0.65	0.01	0.54	0.52	-0.02 ***
bathroom	0.37	0.46	0.10 **	0.39	0.42	0.03 **	0.66	0.69	0.04	0.58	0.56	-0.01 ***
sweage connection	0.11	0.12	0.01	0.10	0.10	0.01	0.52	0.46	-0.06	0.35	0.31	-0.04 ***
electricity	0.56	0.58	0.03	0.46	0.49	0.02 **	0.86	0.80	-0.06 **	0.73	0.70	-0.03 ***
phone	0.40	0.36	-0.04	0.27	0.27	0.01	0.71	0.66	-0.05	0.56	0.52	-0.03 ***
geographic region												
urban coast	0.07	0.05	-0.02	0.04	0.04	0.00	0.16	0.29	0.14 ***	0.14	0.14	0.00
rural coast	0.05	0.02	-0.03 **	0.04	0.03	-0.01 **	0.05	0.00	-0.05 ***	0.04	0.04	0.00 ***
urban sierra	0.05	0.07	0.02	0.05	0.06	0.00	0.17	0.06	-0.11 ***	0.13	0.11	-0.01 ***
rural sierra	0.61	0.64	0.04	0.67	0.67	0.00	0.17	0.39	0.22 ***	0.36	0.41	0.05 ***
urban selva	0.04	0.05	0.01	0.03	0.04	0.00	0.10	0.00	-0.10 ***	0.07	0.06	-0.01 ***
rural selva	0.15	0.11	-0.04	0.15	0.13	-0.01 **	0.08	0.03	-0.05 ***	0.09	0.09	0.00
metropolitan lima												
labor market outcomes												
log per-capita income	5.39	4.75	-0.64 ***	4.74	4.63	-0.11 ***	5.89	5.45	-0.44 ***	5.29	5.14	-0.14 ***
# individuals employed	2.88	2.18	-0.71 ***	2.39	2.23	-0.15 ***	2.50	1.84	-0.66 ***	2.34	2.27	-0.07 ***
# females employed	1.20	1.06	-0.14	1.08	1.05	-0.03	1.07	0.85	-0.23 ***	1.06	1.04	-0.01 *
# males employed	1.69	1.11	-0.57 ***	1.30	1.18	-0.13 ***	1.43	0.99	-0.43 ***	1.28	1.23	-0.05 ***
# employers	0.06	0.06	0.00	0.04	0.05	0.00	0.11	0.10	-0.01	0.08	0.07	-0.01 **
# females employers	0.01	0.01	0.00	0.01	0.01	0.00	0.04	0.03	-0.01	0.02	0.02	0.00 **
# males employers	0.04	0.04	0.00	0.04	0.04	0.00	0.07	0.07	0.00	0.06	0.06	0.00
# employees	1.55	0.44	-1.12 ***	0.75	0.51	-0.24 ***	1.28	0.48	-0.80 ***	0.89	0.77	-0.12 ***
# females employees	0.45	0.14	-0.31 ***	0.21	0.15	-0.06 ***	0.45	0.14	-0.31 ***	0.29	0.24	-0.05 ***
# males employees	1.11	0.30	-0.81 ***	0.54	0.36	-0.18 ***	0.83	0.34	-0.49 ***	0.60	0.53	-0.07 ***
# self-employed	1.15	1.10	-0.05	1.14	1.13	-0.02	1.04	1.04	0.00	1.09	1.09	0.01
# females self-employed	0.37	0.38	0.00	0.37	0.37	0.00	0.46	0.43	-0.03	0.43	0.43	-0.01
# males self-employed	0.78	0.72	-0.06	0.78	0.76	-0.02	0.58	0.61	0.03	0.65	0.67	0.02 ***
Observations	296	587	883	1,505	1,796	3,301	1,445	284	1,729	7,533	6,372	13,905

Source: ENAHO 2010

Notes: all statistics at the household level, population-weighted means; test of difference in means accounts for clustering following the sampling design