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# How effective are cash transfer programs in mitigating income instability ? evidence from the AUH in Argentina

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**Abstract:** Income instability is a crucial determinant of household poverty, particularly in developing countries where precarious employment is widespread and social protection tools are limited. This paper examines the effectiveness of a nationally implemented cash transfer program – the Universal Child Allowance (AUH) – as a buffer against income instability among economically vulnerable households in Argentina. Using nationally representative household surveys from 2004 to 2015, it compares the income stability of eligible and non-eligible households for the program by measuring their coefficient of variation of income and transitions into poverty over one and a half years. The findings reveal that the AUH effectively mitigates income instability for eligible households, reducing the proportion of periods spent in poverty by 15% and income fluctuations up to 16% compared to a situation without the program introduction. This stabilizing effect is particularly stronger for households experiencing a loss of income during the period, smoothing out income losses. While the program’s effect is higher for households with several children or a young child, it is largely reduced for households that are less resilient to shocks, such as single mothers. Lastly, the AUH also affects households’ financial behavior by reducing their reliance on in-kind and monetary donations, as well as their use of informal loans.

**Keywords:** Income instability, poverty, social protection, public policy, Argentina

**JEL:** H53, I38, J31, J6

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## 1. Introduction

While the 2030 Agenda for Sustainable Development from the United Nations makes access to social protection a priority worldwide (Target 1.3), the coverage is still limited notably in the Global South (UN, 2015; UNICEF, 2019a). As of 2020, less than one person in two was covered by social protection schemes, leaving more than 4 billion people unprotected (ILO, 2021). Many people have been lifted out of poverty in the last decades but remain largely vulnerable, far from Western middle-class standards (Ravallion, 2010). In particular, people with informal or precarious employment are often excluded from contributory social protection systems, but also from anti-poverty programs when their income temporarily or slightly exceeds eligibility limits (Busso et al., 2021). Uninsured shocks and lack of access to social protection mechanisms increase households' economic instability and the likelihood of falling or staying in poverty, reducing prospects for economic mobility (De Janvry et al., 2010; Birdsall et al., 2014).

A burgeoning literature has started addressing how economic instability profoundly impacts household well-being, both economically and cognitively (Morrissey et al., 2020). In a special issue dedicated to the causes and consequences of household economic instability, Hill et al. (2017) define economic instability “as repeated changes in employment, income, or financial well-being over time, particularly changes that are not intentional, predictable, or part of upward mobility”. Household economic instability can stem from various dimensions, such as employment (job transitions, hours worked, schedules), changes in family structure, or unstable sources of income (benefits). For low-income families, unexpected changes in these dimensions can lead to material (basic needs and services) or income instability (Hill et al., 2017).<sup>2</sup> Several studies find associations between income instability and various adversities such as material deprivation, deteriorating health, psychological distress, and diminished parenting quality

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<sup>2</sup> There is no consensus in the literature on how to refer to income instability. Thus, terms such as “income variability”, “income volatility” or “income fluctuations” will be used synonymously.

(Gennetian et al., 2015; Shaefer et al., 2018; Monahan, 2020). Income instability also has detrimental consequences on household's spending patterns and human capital investment, with potentially large negative impact on children's development (Hill et al., 2013). While anti-poverty policies have as their objectives to ease and foster economic mobility for vulnerable households, very few studies have tried to measure the impact of cash transfer (CT) programs on recipients' income stability so far, which is crucial for effective policymaking (Wolf et al., 2014; Hill and al., 2017).

This paper fills this gap by investigating the impact of a CT program on income stability and poverty transitions within economically vulnerable households. The case of the Universal Child Allowance (AUH) is examined, Argentina's largest social program implemented nationally in late 2009 and one of the most generous non-contributory programs in Latin America (LA). Informal work is widespread in the LA region, particularly among workers in the two lowest income quintiles (Busso et al., 2021). The AUH program aims at extending social protection to children in poor and economically vulnerable households excluded from the contributory social protection system, such as informal workers, domestic workers, or unemployable individuals. Argentina provides a highly relevant setting for examining how a massive and nationally coordinated CT program affects household income stability.

The data used come from several waves of nationally representative household surveys from the *Encuesta Permanente de Hogares* (EPH) covering a broad period from 2004 to 2015. The survey's rotating panel structure allows to track each household's income throughout one and a half years through four observations. Household income stability is measured by looking at household poverty transitions, i.e. the proportion of periods spent in poverty during the

observation period, and by computing the coefficient of variation (CV) of income.<sup>3</sup> The empirical strategy leverages Garganta and Gasparini's (2015) methodology to estimate the intention-to-treat effect by comparing potentially eligible and non-eligible households based on socioeconomic characteristics. A difference-in-difference (DD) strategy is applied to mitigate selection bias produced by the non-random allocation of the program among the population. To the best of my knowledge, this paper is the first to use a quasi-experimental method to assess the effect of a safety net program on income stability outcomes.

Overall, the results confirm the AUH's protective role in preventing households from income swings that lead to poverty and its stabilizing effect on household income flows. The direct income effect of the program reduces the proportion of periods classified as poor by 15% among eligible household compared to what would have happened without the AUH implementation. This constitutes a substantial positive effect aligned with the program's objective of alleviating child poverty. The program also stabilizes recipients' income flows, notably for those having experienced a negative income change in income, with a 16% reduction in the CV compared to the counterfactual. These findings underscore the program's effectiveness in mitigating and smoothing income streams, particularly in the face of losses from insecure revenue sources. Several robustness checks confirm these results. The analysis also reveals that the program's estimated effect varies heterogeneously depending on the household's family structure. The effect on poverty reduction is higher in households with poorer initial economic conditions or facing significant expenses, such as larger families or households with a young child. However, the impact is considerably reduced in households headed by women or with single parents. Given that most women declared as heads of household are single mothers in the sample (76%),

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<sup>3</sup> To consider that income fluctuations impact household welfare differently depending of the direction on income change, the CV is also analyzed separately according to household income's positive or negative evolution. Further details in section 3.

households' adaptation or resilience to shocks is likely to be more challenging than for households with both parents. Finally, an exploration of the program's effects on household financial behavior also reveals that eligible households reduce their reliance on in-kind and monetary donations and their need for taking out informal loans, in line with the previous results indicating higher household income stability.

These results contribute to the literature dealing with safety net programs and income stability. A large literature has extensively examined the impact of CT programs on various economic and human capital outcomes (Fiszbein et al., 2009; Papadopoulos and Leyer, 2016; Millán et al., 2019; Abramo et al., 2020) as well as their role in enhancing households' resilience to shocks and ability to manage risks (Haushofer and Shapiro, 2016; Ralston et al., 2017; Premand and Stoeffler, 2020; Macours et al., 2022). By contrast, very few studies have assessed the effects of these programs on the income stability of the growing number of economically vulnerable households relying on informal activities and sources of revenues. While the receipt of regular financial aid is expected to affect households' welfare by protecting living standards, smoothing consumption, or mitigating material hardship (Shaefer et al., 2018), safety net policies might exacerbate income instability if households frequently enter and exit programs based on their design and conditionalities (Wolf et al., 2014; Morrissey et al., 2020). The findings of this present paper confirm prior findings of Micha and Trombetta (2020), also for the AUH case. Using a microsimulation strategy in the post-AUH period (2010-2014), they quantified the contribution of each income source to the total income fluctuations among eligible households and came to a similar conclusion. These results are also in line with recent studies that show the stabilizing role of social safety net programs in the US, in a different program and context (Hardy, 2017; Bitler et al., 2017).

Secondly, this article contributes to the limited literature on income stability in developing countries. Mainly due to the scarcity of longitudinal studies in these countries, existing studies

dealing with income instability have historically focused on the United States or Western European countries (Dyner, 2012; Hardy, 2017; Avram et al., 2022). In a recent illustrative study, Beccaria et al. (2021) underscore a high level of short-term income mobility in seven major countries of the LA region during the 2000s. Despite a general improvement in wages, they also find that around 40% of households experienced a loss of income over the period, highlighting a high degree of income insecurity, especially in countries with high levels of informal employment and lacking adequate social protection systems.

Thirdly, this article provides new evidence supporting the effectiveness of extending social protection to excluded or marginalized populations. Regular transfers ensure a “floor” income that helps vulnerable households to cope with the shocks that harm their disposable income and limits the risk of a loss in living standard, often involving an increase in out-of-pocket expenses, asset sales or indebtedness. These findings carry particular relevance for Argentina, a nation frequently exposed to macroeconomic fluctuations (debt crisis, financial market confidence issues, high inflation), but more generally for all developing countries characterized by widespread informal labor, inadequate investments in social protection and healthcare services, and where political turnover significantly impact access to program benefit (Abramo et al., 2020).

The rest of the paper is structured as follows. Section 2 briefly details social programs in Argentina and describes the data used. Section 3 presents the methodology adopted to measure income stability, and the identification and estimation strategies. Section 4 shows the results, the robustness tests performed, and the program’s heterogeneous effects. Section 5 concludes.

## 2. Background and data

### 2.1. Social programs in Argentina

Since the late 1990s, CT programs have become popular and relatively affordable public policy tools for alleviating poverty and inequality worldwide. Particularly, conditional CT programs have proliferated in the LA region, targeting specific groups within the population and requiring compliance with conditions often relating to health and schooling to foster human capital accumulation.<sup>4</sup> However, mean-tested benefits often leave out many households at high risk of poverty, especially those whose members work in the informal sector (Busso et al., 2021). By 2021, 40% of the LA region's population was still not covered by a social protection scheme.<sup>5</sup>

In Argentina, the country's main social programs were set up in response to the 2001 economic crisis, which had a devastating impact on the country, dramatically increasing unemployment and poverty rates (Galasso and Ravallion, 2004).<sup>6</sup> The first large-scale emergency program was implemented in 2002 with the *Plan Jefes y Jefas de Hogares Desocupados* (PJJHD) to economically support households with children affected by the economic crisis. This program consisted of transferring 150 pesos (around \$50 US) to household where the head was unemployed. In 2005, because of improved labor market conditions, the *Plan Familias* program progressively absorbed a substantial part of the PJJHD beneficiaries, restricting access to unemployable individuals with low education levels with two or more children (Ceballos and Lautier, 2013). After several years of sustained economic growth during the mid-2000s, the Argentine government significantly reorganized its social protection system (Pautassi et al., 2013). In late 2009, the government extended the family allowance system to the informal

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<sup>4</sup> For more details about the transformation of social protection in the LA region, see Lavinás (2015).

<sup>5</sup> Data from ILOSTAT (International Labour Organization) for 2020 or 2021, depending on the latest available period. More details on <https://ilostat.ilo.org/data/>.

<sup>6</sup> The feeling of pauperization, described as the “new poor”, is well documented in the LA region and especially in Argentina (Kessler and Di Virgilio, 2010).



sector with the non-contributory AUH program, replacing all other safety nets. Unlike previous social programs which depended on a specific ministry, the AUH was added as the second pillar of the existing family allowance system administrated by the *Administración Nacional de la Seguridad Social* (ANSES), and its high degree of institutionalization enables it to operate over the long term (Bertranou, 2010; UNICEF et al., 2017).

The AUH aims to reduce the number of children living in households at high risk of poverty by extending social protection coverage to households with under-18 children whose parents are unregistered in the contributory system.<sup>7</sup> To be eligible for the program, parents must either work in the informal sector, be in domestic service, or be unemployed without pension (the AUH is incompatible with other social transfers). Eligibility for the AUH is automatically determined by government records and verified by the ANSES (Chudnosky and Peeters, 2022). Even if the AUH is not exclusively reserved for the poor, the program targets relatively low-income workers, officially earning less than the minimum wage with a self-declaration.

Although both parents must be eligible, nearly all the program transfers go directly to mothers (more than 90%). The initial transfer value per child was 180 monthly pesos (around 48 US\$ per child) and 720 pesos for one disabled member. For a typical eligible household with two children, the cash transfer accounts for roughly 30% of its monthly income. The transfer value is regularly adjusted for inflation and is one of the most generous programs in the LA region (Stampini and Tornarolli, 2012). Like traditional conditional CT programs, the AUH requires compliance with regular health checks and immunization for children under age four and school attendance for children aged 5 through 18 (Garganta et al., 2017). Most of the transfer is paid monthly (80%), with the remainder paid at the end of the year when the required conditions are

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<sup>7</sup> Since its implementation, the government has made a few extensions. First, in 2011, the AUH widened for pregnant women from their 12<sup>th</sup> week of pregnancy until birth with the Asignación por Embarazo. In 2015, the transfer was adjusted according to the household's residence region to account for geographical disparities and living standards. It also provided supplementary transfers to finance school fees in the same year. In 2016, the program also extended the coverage for children from *monotributistas* parents (specific independent workers).

met. It is important to note that even though these conditions are standard for this type of program, compliance with them is a prerequisite for renewal the following year, which can be restrictive if certificates are not issued on time. In 2019, the AUH covered around 4 million children, representing more than 30% of the child population in the country (UNICEF, 2019b).<sup>8</sup> The take-up rate of the program in the country is relatively high, estimated at 82%, with roughly 350,000 eligible people not covered, mainly due to a lack of the necessary documents (Chudnosky and Peeters, 2022).

## 2.2. Data

This study uses nationally representative microdata from the EPH survey collected by the *Instituto Nacional de Estadística y Censos* (INDEC) from 2004 to 2015. The EPH is a widely used national household survey carried out quarterly which covers 31 large urban areas representing roughly 62% of the Argentine population. The EPH addresses work and income-related dimensions and provides various socioeconomic information on households and individuals (education, housing equipment, geographical information). Unfortunately, the EPH survey only covers populations living in urban areas, thereby excluding individuals living in rural areas who might benefit from the program. However, this drawback should be tempered by considering the high urbanization rate of the country, with more than 90% of Argentines living in urban areas since the early 2000s. The survey has a rotating panel structure that allows for tracking the households surveyed over multiple waves. Thus, in each wave, a part of the sample is replaced (see Figure A1 in Appendix A). This structure allows the construction of several short-term panels between 2004 to 2015.<sup>9</sup> In each panel, households are interviewed a

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<sup>8</sup> Yet, in 2016, around 16% of children were still not covered by any social protection scheme because of administrative barriers, such as the lack of identity documents or birth certificates, or for migrants who have been in the country for less than three years (Pautassi et al., 2013; UNICEF, 2019b). Similarly, delays on the supply side (administration, health services) in receiving certificates of compliance with conditionalities can sometimes compromise program renewal for the following year, particularly for rural or geographically remote populations.

<sup>9</sup> The EPH data includes only the first semester of the 2014-2015 panel.

maximum of four times over one and a half years. A household with a complete follow-up is interviewed in two consecutive quarters of a year  $t$  when it enters the survey, exits the survey for the following two quarters, and is interviewed again in the same two quarters the following year in  $t+1$ . In this case, a household has two pairs of observations between years  $t$  and  $t+1$ .

However, for some households, the follow-up is not fully complete. Since the aim of this study is to measure the impact of the AUH program on household income stability, only households interviewed three or four times are considered in the analysis, accounting for around 56% of the total sample.<sup>10</sup> While measuring the income stability of households interviewed only once is not feasible, the majority of those interviewed twice are interviewed over only two consecutive quarters. This different temporality could bias their level of income stability relative to others. Yet, the inclusion of these households in robustness tests presented later does not affect the conclusions (Section 4).

Another important consideration is the non-reporting of individuals incomes. Approximately 30% of households have at least one member who does not report a source of income during its observation period, representing around 3% of all individuals. Given this relatively small proportion, these households are kept in the final sample. Although this could lead to a measurement bias in the variation of income at the household level, it should be noted that this phenomenon is more prevalent among the wealthiest households, i.e. those in the top deciles of the per capita income distribution (around 14% for deciles D1 and D2, against 25% for D9 and D10). Again, further tests check the results' robustness to the exclusion of these households (Section 4).

Finally, all income values are deflated to 2018 Argentine pesos and converted to 2011 purchasing power parity (PPP) dollars.<sup>11</sup> Given the consensus in the literature on the poor

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<sup>10</sup> Households with no follow-up account for 18%, and only two interviews for around 26% of the total sample.

<sup>11</sup> The 2011 PPP factor conversion for Argentina in 2018 is 14.23 (World Bank, last access in November 2023).

quality of INDEC’s official data on consumer price index (CPI) over the 2007-2015 period, two different sources are used. From 2004 to 2007, the official CPI data is used. However, an alternative CPI source is preferred for the following years based on the Billion Prices Project, using numerous online prices available on the web that correct for bias coming from official sources (Cavallo and Rigobon, 2016).

### 3. Methodology

#### 3.1. Income stability measurement

Two indicators are used to measure household income instability: the poverty trends indicator and the CV of per capita income. The first one measures the proportion of periods spent in poverty during a household’s observation period. It shows the extent to which income swings push a household below the poverty line, over the four interviews through one and a half years. The poverty line is set at \$5.5 per capita a day (2011 PPP), which corresponds to moderate poverty, and is commonly used for the LA region (Jolliffe and Prydz, 2016; Lustig et al., 2020; Gasparini et al., 2023). The second indicator, the CV of per capita income, is calculated to quantify how much household income fluctuates over its observation period.<sup>12</sup> This indicator, allowing comparison of heterogeneous groups, has been used in the literature to examine household income variability in the US (Newman, 2008; Gennetian et al., 2015; Mohanan, 2020) but also in LA (Beccaria and Groisman, 2008; Micha and Trombetta, 2020; Beccaria et al., 2021). The CV for a household  $i$  is computed as the ratio of the standard deviation of income measured over time to the mean income:

$$CV_i = \frac{\sqrt{\frac{1}{T} \sum_{t=1}^T (y_{i,t} - \bar{\mu}_i)^2}}{\bar{\mu}_i} \quad (1)$$

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<sup>12</sup> Additional results are available using the CV indicator in equivalised household income (OECD equivalence scale) and an absolute variation indicator with the standard deviation of arc percentage change in income, which reduces the influence of large income changes (Hardy, 2017). Similar conclusions are obtained. See Figures A4 and A5 in Appendix A and Table B2 and B3 in Appendix B.

Where  $y_{i,t}$  is the per capita income of household  $i$  observed at period  $t$ , and  $\bar{\mu}_i$  the average income of household  $i$  over its entire observation period. However, the variation in household income measured by the CV does not consider the direction in which income evolves. Since an upward or downward change in income does not have the same impact on a household's welfare, the CV analysis will also be carried out on two sub-samples, taking into account the change in average household income  $\bar{y}_i$  between the first and final year of interview. Thus, the CV-up computes the CV for household experiencing an upward income mobility between year  $t$  and  $t+1$ , i.e. when  $\bar{y}_i^t < \bar{y}_i^{t+1}$ . The CV-down, for those with a downward income mobility between  $t$  and  $t+1$ , i.e. when  $\bar{y}_i^t \geq \bar{y}_i^{t+1}$ .

### *3.2. Empirical approach: groups identification*

The rotating structure of the EPH allows the construction of eleven yearly panels covering 2004-2015. Since the AUH program appeared during the last quarter of 2009, the 2009-2010 panel is excluded from the analysis to delimit a clear cut-off between the pre- and post-implementation of the program.<sup>13</sup> Then, five-yearly panels are entirely located in the pre-intervention period (from 2004-2005 to 2008-2009), and the following five panels after the AUH implementation (from 2010-2011 to 2014-2015). However, the EPH survey does not include questions allowing us to identify AUH beneficiaries directly. The questionnaire asks only: "Did you receive any monetary transfers from the State, church, etc., in the past three months?" with the corresponding monetary amounts. There is no way to be sure that households are part of the AUH program and that the amount received does not come from other public institutions or alternative sources. Therefore, the methodology Garganta and Gasparini (2015) adopted is followed to estimate the program's intention-to-treat. Households are assigned to treatment or control groups according to their initial labor and socioeconomic

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<sup>13</sup> Similarly, households interviewed during the implementation of the AUH are not considered.

characteristics, which mimic the program's official eligibility criteria. The treatment group includes households with children under 18 years old whose parents are either working in the informal sector, as domestic employees, inactive, unemployed, or retired without health coverage, in the first year of interview. Only households meeting these criteria in their first two interviews are considered eligible (i.e. the first year of entry into the survey) or non-eligible otherwise.<sup>14</sup> The status of the declared head of household and the spouse are checked for program eligibility. In cases where one of the child's grandparents is declared head of household, only the status of the child's parents is considered.

For parents with employee status, the distinction between formal and informal is approximated by asking whether pension contributions are deducted from wages. Lack of contribution to the pension system through deductions from wages is the most commonly used proxy in the literature to determine informality in LA (Tornarolli et al., 2014). Self-employed are also considered eligible since social protection is poorly developed for them in Argentina (Gasparini et al., 2009). In this income bracket, most are unskilled self-employed (73% with less than a secondary degree) and have no healthcare coverage (77%). Unemployed are also included in this group given that less than 3% report receiving unemployment benefits. Finally, retired people are considered eligible if they have no healthcare coverage. On the other hand, the control group is made up of households with a similar family structure with minor children but with different labor characteristics since they are registered or are paying contributions to the social system (employers, formal employees, retired with health coverage), which is not compatible with the AUH eligibility criterion.

A final condition for access to the program is that household members must declare that they earn less than the national minimum wage. Measuring income from informal activities (non-

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<sup>14</sup> Around 8% of households in the sample change category between the first two quarters of interview. In Section 4, some robustness tests introduce additional eligibility constraints to test the sensitivity of the results, such as eligibility for the whole period instead of the first year. Results remain mostly unchanged.

declared income, reporting error, no or poorly developed accounting) remains difficult for the ANSES and this requirement is rarely met in practice (Garganta and Gasparini, 2015). Given that the AUH program targets economically vulnerable households, only those in the first three deciles of the national per capita income distribution during the first year of interview are kept. Households in the upper deciles are therefore not considered, to avoid including wealthier households with a low probability of benefiting from the program. To ensure that the AUH beneficiaries are properly identified in these income deciles, an alternative database allowing for direct identification of AUH beneficiaries is used. The *Encuesta Nacional de Gastos de los Hogares* (ENGHo) is a household expenditure survey only available for the year 2012 until March 2013 that is also nationally representative.<sup>15</sup> For 2012, the ENGHo survey shows that 76% of AUH beneficiary households are located in the first three deciles of the national per capita income distribution, confirming that a large proportion of potential AUH beneficiaries are well identified in the EPH data. Robustness tests, presented later in Section 4, check the sensitivity of the results to the inclusion of households located in the upper deciles, and present similar conclusions.

### *3.3. Empirical approach: impact identification and assumptions*

Since the AUH program was not randomly assigned to the population across the country, the analysis may suffer from a selection bias, bringing endogeneity concerns. The treatment and control groups have many observable and unobservable differences (consumption behavior, saving strategies, and budget allocation like health expenditures) that could prevent us from identifying the program's causal effect on household income stability. Table (1) presents some household characteristics of the treatment (eligible) and control (non-eligible) groups before the implementation of the AUH.

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<sup>15</sup> Descriptive statistics of the AUH beneficiaries from the ENGHo are available in Appendix B (Table B1).

**Table 1: Characteristics of eligible and non-eligible households before the AUH implementation**

| Variables                              | Pre-AUH      |                  |                    | t             |
|----------------------------------------|--------------|------------------|--------------------|---------------|
|                                        | Eligible (1) | Non-eligible (2) | Difference (2)-(1) |               |
| Poverty trends (%)                     | 51.8         | 24.0             | -27.8              | <b>-45.18</b> |
| CV                                     | 0.43         | 0.34             | -0.09              | <b>-21.25</b> |
| Daily per capita income (initial year) | 5.19         | 7.45             | 2.26               | <b>45.57</b>  |
| Daily per capita income (final year)   | 7.36         | 10.16            | 2.80               | <b>25.27</b>  |
| Household size                         | 5.24         | 5.52             | 0.28               | <b>7.67</b>   |
| Nb. of minor children                  | 2.66         | 2.74             | 0.08               | <b>2.81</b>   |
| Nb. of major children                  | 0.70         | 0.72             | 0.02               | 0.91          |
| Age of the youngest child              | 5.71         | 6.00             | 0.29               | <b>3.24</b>   |
| Age of the head                        | 42.7         | 43.22            | 0.55               | <b>2.41</b>   |
| Woman head                             | 0.38         | 0.19             | -0.19              | <b>-23.52</b> |
| Single parent household                | 0.34         | 0.16             | -0.19              | <b>-25.29</b> |
| Parents' pluri-activity                | 0.11         | 0.06             | -0.05              | <b>-9.74</b>  |
| Grandparents in the household          | 0.25         | 0.17             | -0.08              | <b>-10.28</b> |
| Parents' highest level of education    |              |                  |                    |               |
| Primary incomplete                     | 0.13         | 0.08             | -0.05              | <b>-9.20</b>  |
| Primary complete                       | 0.36         | 0.28             | -0.08              | <b>-9.88</b>  |
| Secondary incomplete                   | 0.25         | 0.23             | -0.02              | <b>-2.12</b>  |
| Secondary complete                     | 0.17         | 0.24             | 0.07               | <b>9.81</b>   |
| University incomplete                  | 0.05         | 0.08             | 0.03               | <b>6.23</b>   |
| University complete                    | 0.03         | 0.08             | 0.05               | <b>10.57</b>  |
| Non-reporting of income                | 0.27         | 0.26             | 0.01               | -0.90         |
| Observations                           | 8,791        | 4,288            |                    |               |

Source: Author's calculation based on the EPH microdata, 2004-2009.

Note: The poverty trends indicator measures the proportion of periods classified as poor for a household over its observation period, i.e. income per capita below \$5.5/day (PPP 2011). The CV is the coefficient of variation of household income. CV-down and CV-up measure the CV of sub-samples of households with the same change in income between the first and second year of interview (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. A household is eligible if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. Values in bold indicate significant differences between the two groups at 95% level.

As expected, both groups differ in income stability and poverty levels. On average, households eligible (1) for the AUH have a 52% probability of being in poverty during their observation period, i.e. around two periods out of four, compared with 24% for non-eligible (2) households. Eligible households also have higher income fluctuations than non-eligible households, confirming that income from individuals working in the informal sector is more volatile. Although there are differences in family structure between the two groups, these remain relatively limited in terms of household size, number of children, or age of the head of household. More pronounced differences exist in terms of education, gender of the head of

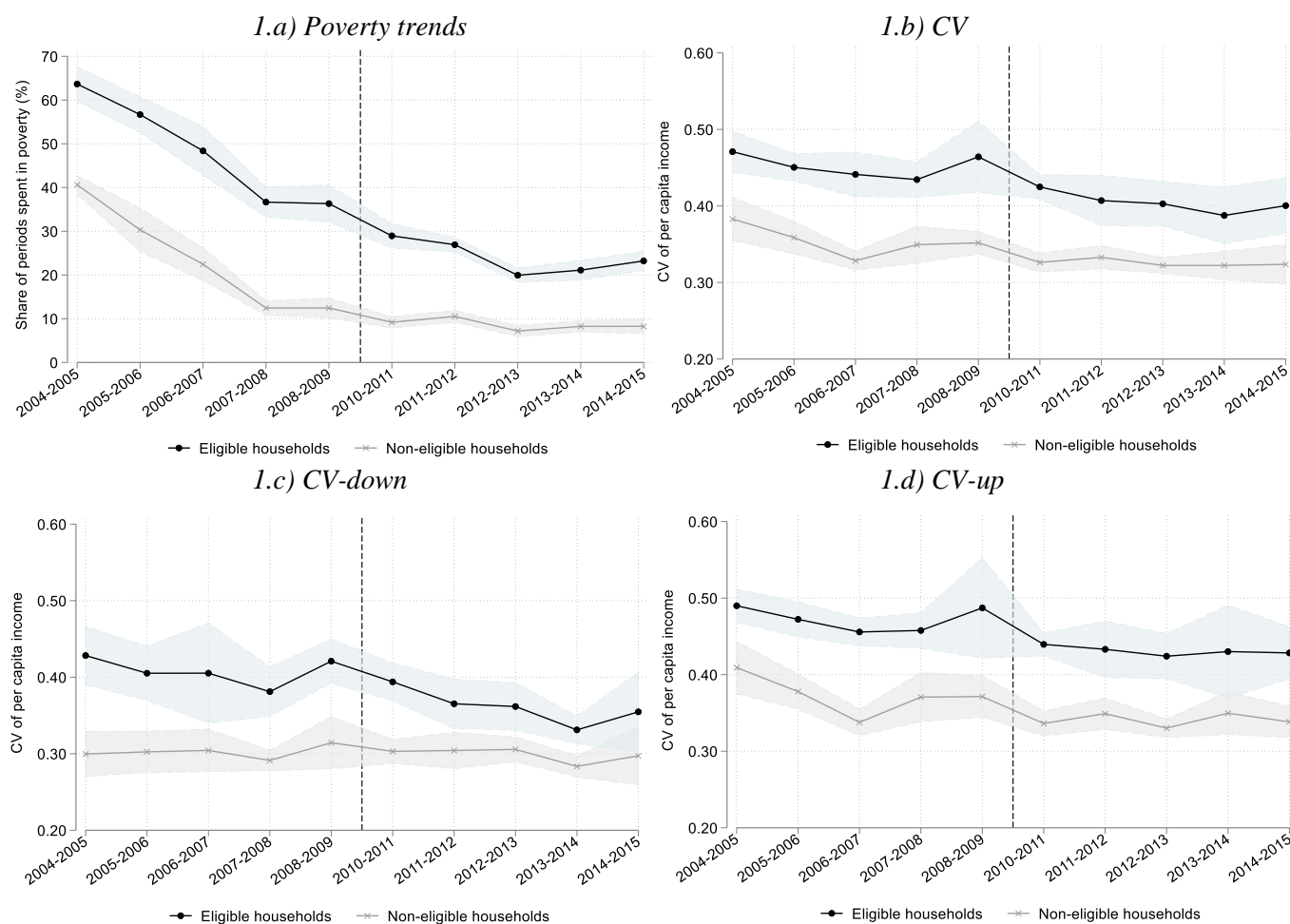


household, or the proportion of single parents (mainly single mothers). 74% of parents in AUH-eligible households have less than secondary education. Eligible households are also more likely to live with grandparents in the same household. While this may indicate a higher financial burden since most of them are inactive, grandparents can also offer an important alternative for childcare. Finally, there are no significant differences between the two groups regarding the proportion of individuals who do not report a source of income, before and after the AUH implementation. A comparison of the eligible (EPH) and beneficiaries (ENGHo) households shows that the characteristics of age, education, or household size are similar, reinforcing the confidence in the identification of beneficiaries (Appendix B Table B1).

Thus, a quasi-experimental DD strategy is applied to compare the outcomes of heterogeneous groups, controlling their stable characteristics over time. The strategy consists of comparing the dependent variables of the treatment and control groups before and after the AUH implementation.<sup>16</sup> One of the main identification assumptions of the DD strategy is that trends in the outcome variables should have evolved in the same way in the absence of the program. In other words, the evolution of household income stability and poverty should have followed a similar pattern without implementing the program. While this cannot be proven, looking at trends for the different outcome variables before the AUH implementation could help us gain confidence in its validity.

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<sup>16</sup> Other articles assess the impact of the AUH on other outcomes using the DD strategy, such as labor formalization (Garganta and Gasparini, 2015), female labor participation (Garganta et al., 2017), or educational outcomes (Edo and Marchionni, 2019).

**Figure 1: Income stability trends among eligible and non-eligible households**

*Source:* Author's calculation based on the EPH microdata, 2004-2015.

*Note:* The coefficients shown correspond to the averages of the dependent variable over 2004 and 2015. Confidence intervals at 95% are shown. The poverty trends indicator measures the proportion of periods classified as poor for a household over its observation period, i.e. income per capita below \$5.5/day (PPP 2011). The CV is the coefficient of variation of household income. CV-down and CV-up measure the CV of sub-samples of households with the same change in income between the first and second year of interview (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. A household is eligible if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. Clustered standard errors by large urban areas.

Figure (1) shows trends for each income stability outcome with a visual inspection of the unconditional mean for the eligible and non-eligible groups. As can be seen, the eligible and non-eligible groups followed very similar trends for each indicator before the introduction of the AUH in late 2009. Levels of poverty and income fluctuations among eligible households are consistently higher than those of non-eligible ones, which is to be expected since informal workers have higher income risks, less regular income sources, and generally lower incomes

than those in the formal sector.<sup>17</sup> After 2009, the gap between the two groups decreases, coinciding with the implementation of the AUH. While poverty fell for both groups up to 2008 (Figure 1.a), poverty keeps declining after 2010 for the eligible group, while the other remains constant at around 10%. Similarly, the gap in income fluctuations between the two groups narrowed after 2009 (Figure 1.b), mainly due to the CV-down indicator, which restricts the sample to households experiencing a loss of income over the period (Figure 1.c). On the other hand, the CV-up trend appears very similar for both groups (Figure 1.d).

A second and essential assumption of the DD strategy is that no contemporary event other than the AUH should explain any differences in outcome trends for the two groups. On this point, the literature is unanimous in stating that the AUH was the only central public policy that was implemented in Argentina in 2009 and the following years (Bertranou, 2010; Groisman et al., 2011; Garganta and Gasparini, 2015). Furthermore, possible anticipation of the program implementation is very unlikely since the AUH was not expected in the country (Maurizio and Vázquez, 2014). The AUH was notably rolled out immediately after its announcement, and covered over 3 million children in its first month. It was by far the largest program in the country regarding benefits and participants.<sup>18</sup> In the years following the AUH introduction, only the PROGESAR program was introduced in 2014, which aimed to provide additional monetary resources to households with children aged 18 to 24 enrolled in university and whose resources are below the national minimum wage. Since this financial contribution could bias estimates of the program's effect after 2014, further results exclude years after 2013, but results remain unchanged.

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<sup>17</sup> Also, it has to be noted that the structure of household income for both groups evolved in a similar way before the AUH implementation (Figure A3 in Appendix A).

<sup>18</sup> See Figure A2 in Appendix A to see the evolution of beneficiary households for the main social programs in Argentina from 2003 to 2013.

Equation (2) below presents a standard linear specification of the DD model corresponding to the main specification.

$$Y_i = \beta_1 D_t + \beta_2 T_i + \beta_3 (T_i * D_t) + \eta_i + \eta_t + \theta X'_i + u_i \quad (2)$$

The variable  $Y_i$  corresponds to the dependent variable, corresponding to one of the indicators of income stability for a household  $i$ . The dummy variable  $D_t$  takes the value one for the post-intervention period 2010-2015 or zero otherwise (2004-2009).  $T_i$  is the treatment variable that takes the value one if a household  $i$  is eligible to the AUH during its first year of interview. Region  $\eta_i$  and time  $\eta_t$  fixed effect are included. The set of control variables is the  $X'_i$  vector measured during the first interview of household  $i$ . They include the age of the head of household and its square, its gender, the number of under-18 and over-18 children and its square, the household size, the age of the youngest child, the parents' highest level of education, dummy indicating if grandparents live in the household, if a woman heads the households, if the head is a single parent, and if the parents have multiple jobs. A final covariate identifies whether the household benefited from the PJJHD social program, as well as its interaction with the treatment variable since it targeted unemployed heads of household. Lastly, the error term  $u_i$  is clustered at the large urban areas level. The DD strategy computes the changes in outcome between the control and treatment groups over time, as in Equation (3).

$$\beta_3 = (\overline{Y_1^T} - \overline{Y_0^T}) - (\overline{Y_1^C} - \overline{Y_0^C}) \quad (3)$$

With T and C being respectively the treatment and control groups, before (0) and after (1) the AUH introduction. The treatment effect is estimated by the coefficient  $\beta_3$  associated with the interaction term  $(T_i * D_t)$ . Then, the DD provides a consistent estimator of the impact of the AUH program on income stability. An event study regression, including leads and lags into the model as in Equation (4), is also proposed to examine the dynamic treatment effect.

$$Y_i = \eta_i + \eta_t + \sum_{\tau=-q}^{-1} \gamma_{\tau} T_{i\tau} + \sum_{\tau=0}^m \delta_{\tau} T_{i\tau} + \theta X'_i + u_i \quad (4)$$

Where the AUH implementation occurs in year 0, with  $q$  leads (anticipatory effects), and  $m$  lags (post-treatment effects). Year -1 is removed to avoid perfect multicollinearity and is therefore taken as the reference point.

## 4. Results

### 4.1 Main results

Table (2) presents the results of the AUH program's effect on each income stability outcome based on Equation (2). For each dependent variable, the first column (i) reports the coefficients of the baseline specification without controls, while the second column (ii) includes all controls, time and regional dummies. The interaction term corresponds to the estimated impact of the AUH on the dependent variable. In all cases, the coefficient associated with the interaction term is always negative and strongly statistically different from zero, except for the last indicator only significant at 10%. The inclusion of controls, time and regional dummies does not alter the significance of the results.

Results show that households eligible for the AUH experienced a 6.6 percentage points reduction in the poverty trend indicator after the introduction of the program (1). This corresponds to an average decrease of 15% in the proportion of periods in poverty for eligible households, compared to what would have happened without the AUH implementation. For the CV indicators, results also show a reducing impact of the AUH on household income fluctuations. After the introduction of the program, eligible households have a 3.3 percentage points reduction in the overall CV indicator (2), i.e. an average drop of 7.2% in income fluctuations. The estimated impact of the program is more pronounced when the direction of income variation is considered (columns 3 and 4). Households eligible for the AUH whose

incomes fell experienced a 6.7 percentage point drop in the CV after the introduction of the program, i.e. a 16% reduction in income fluctuations compared to the counterfactual (3). By contrast, the estimated effect is only 4% for those whose income increased (4). Additional results test alternative indicators of income variability using the CV indicator in equivalised per capita income (Appendix A Figures A4 and Appendix B Table B2) and the standard deviation of the arc percentage change (Appendix A Figure A5 and Appendix B Table B3), and show very similar conclusions.

These first results show a stabilizing effect of the AUH on household incomes, particularly by reducing income fluctuations when households experience income losses. Assuming an estimated take-up rate of 82%, the program reduces the proportion of periods spent in poverty by around 18%, and the CV by almost 20% for households with a loss of income during the period.

**Table 2: Difference-in-difference model - Effect of the AUH on income stability**

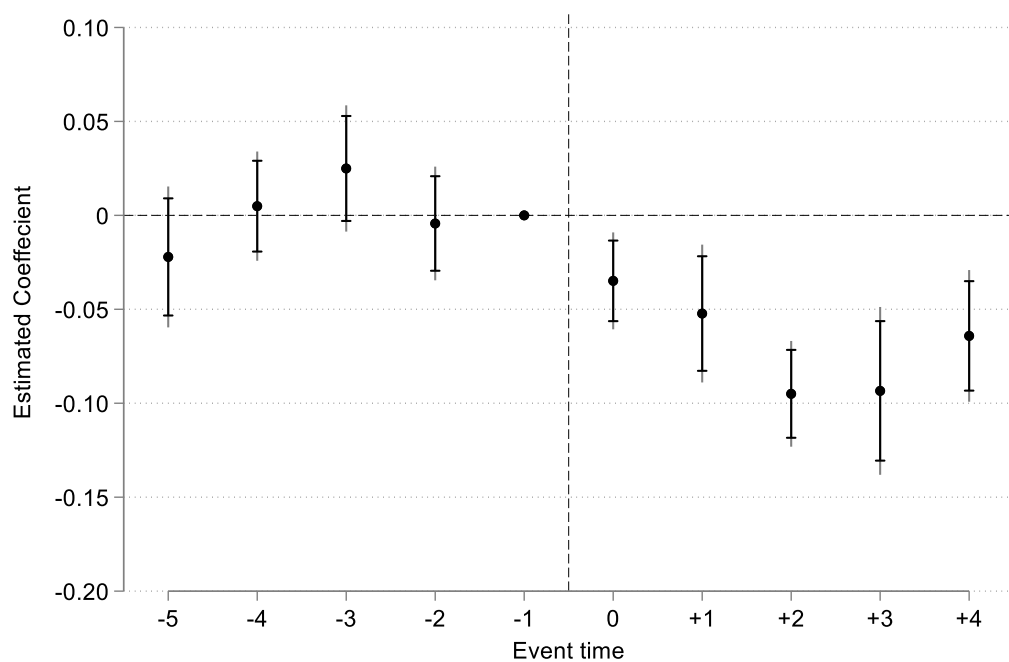
| Dependent variables                 | (1)<br>Poverty trends         |                               | (2)<br>CV                     |                              | (3)<br>CV-down                |                               | (4)<br>CV-up                  |                              |
|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|
|                                     | (i)                           | (ii)                          | (i)                           | (ii)                         | (i)                           | (ii)                          | (i)                           | (ii)                         |
|                                     | After*Eligible                | <b>-0.1191***</b><br>(0.0047) | <b>-0.0663***</b><br>(0.0132) | <b>-0.0181**</b><br>(0.0068) | <b>-0.0333***</b><br>(0.0055) | <b>-0.0429***</b><br>(0.0060) | <b>-0.0667***</b><br>(0.0123) | -0.0076<br>(0.0105)          |
| Eligible                            | <b>0.2761***</b><br>(0.0060)  | <b>0.2049***</b><br>(0.0132)  | <b>0.0988***</b><br>(0.0075)  | <b>0.1120***</b><br>(0.0097) | <b>0.1064***</b><br>(0.0117)  | <b>0.1238***</b><br>(0.0208)  | <b>0.0994***</b><br>(0.0065)  | <b>0.1114***</b><br>(0.0066) |
| After                               | <b>-0.1391***</b><br>(0.0125) | 0.0038<br>(0.0083)            | <b>-0.0271***</b><br>(0.0067) | -0.0118<br>(0.0123)          | -0.0016<br>(0.0071)           | 0.0230<br>(0.0166)            | <b>-0.0327***</b><br>(0.0082) | -0.0269<br>(0.0218)          |
| Controls, time and regional dummies | No                            | Yes                           | No                            | Yes                          | No                            | Yes                           | No                            | Yes                          |
| R-squared                           | 0.2149                        | 0.3809                        | 0.0394                        | 0.0658                       | 0.0349                        | 0.0647                        | 0.0427                        | 0.0734                       |
| Observations                        | 25,808                        | 25,808                        | 25,808                        | 25,808                       | 8,532                         | 8,532                         | 17,276                        | 17,276                       |
| Average                             | 0.227                         |                               | 0.353                         |                              | 0.301                         |                               | 0.373                         |                              |

Source: Author's calculation based on the EPH microdata, 2004-2015.

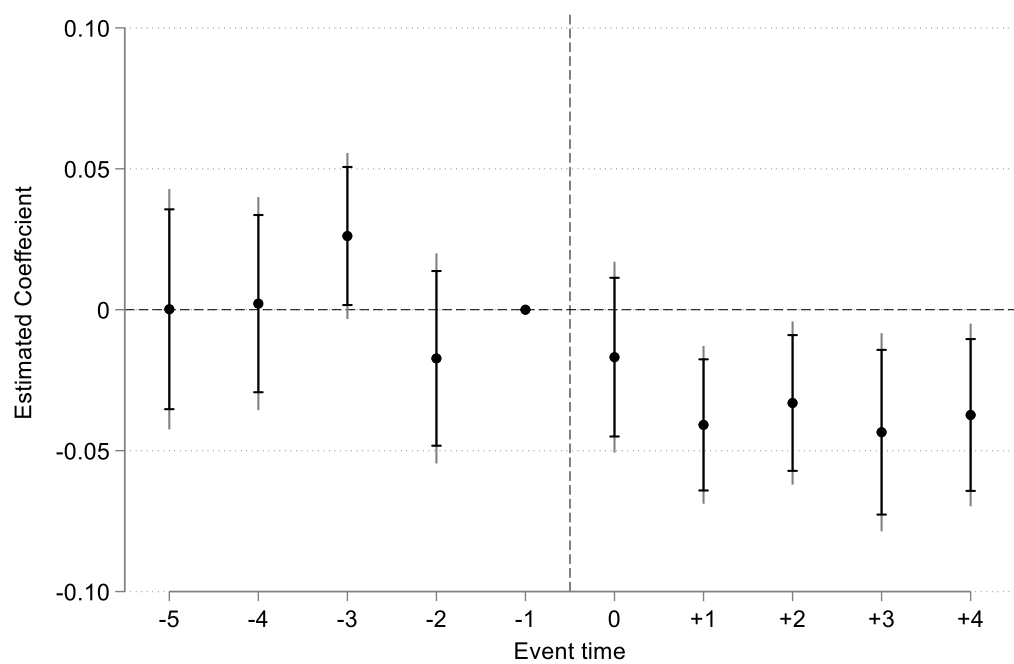
Note: Difference-in-difference estimates. Column (1) measures the effect of the program on the probability of a household falling below the poverty line during its observation period. i.e. income per capita below \$5.5/day (PPP 2011). Column (2) measures the effect on the coefficient of variation of household income. Columns (3) and (4) on the sub-samples of households with the same change in income between the first and second year of observation (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of observation. After variable takes the value 1 for the periods after the AUH implementation (2010-2015), otherwise 0 (2004-2009). Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.

**Figure 2: Estimated effect of the AUH on income stability over time**

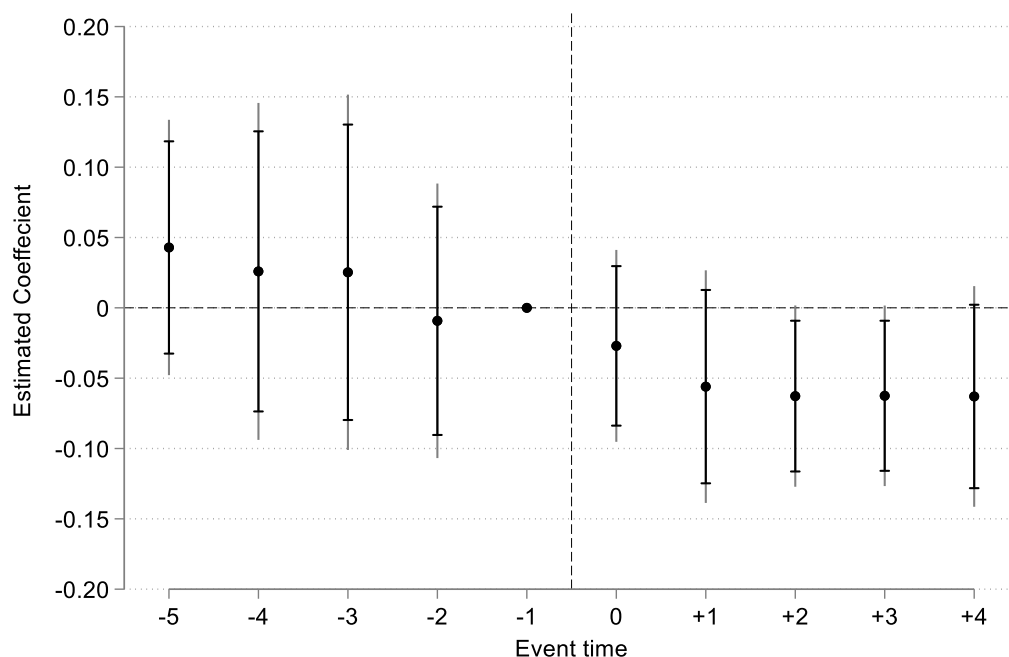
*2.a) Poverty trends*



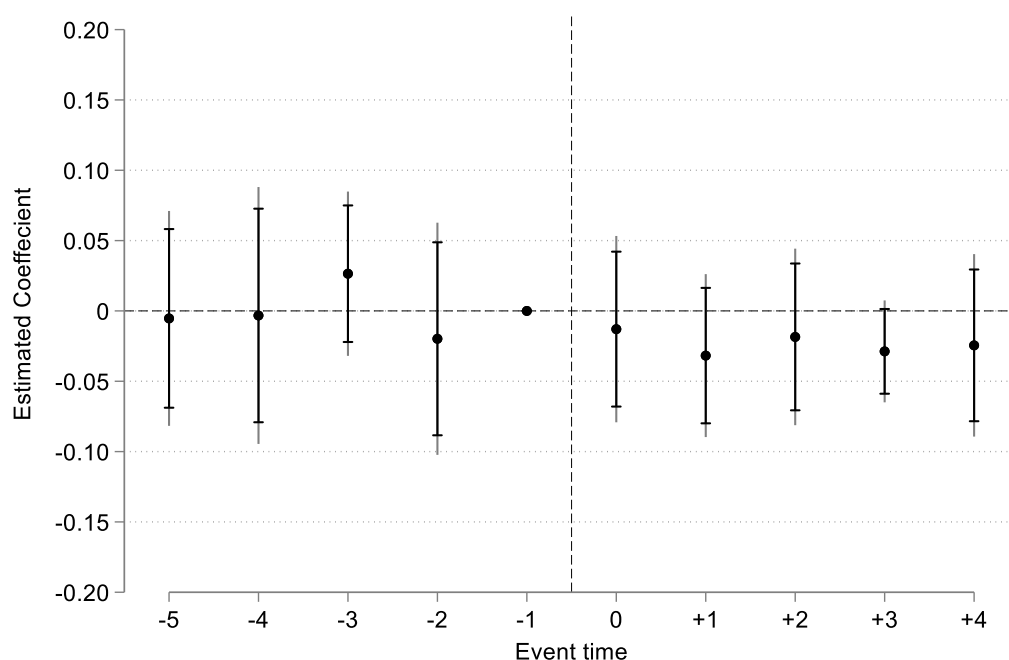
*2.b) CV*



## 2.c) CV-down



## 2.d) CV-up



Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: The coefficients shown correspond to the interaction terms between the treatment variable and a time dummy based on equation (4). Confidence intervals at 90% and 95% are shown. The poverty trends indicator measures the time spent in poverty by a household during its observation period. i.e. income per capita below \$5.5/day (PPP 2011). The CV is the coefficient of variation of household income. CV-down and CV-up measure the CV of sub-samples of households with the same change in income between the first and second year of interview (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. A household is eligible if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors by large urban areas.



Instead of looking at the AUH's overall effect on the pre- and post-period, Figure (2) shows the dynamics of the program's effect for each dependent variable (interaction term between the treatment variable and a time dummy). The plotted coefficients represent the pre-treatment (leads) and post-treatment (lags) effects based on Equation (4) with full controls., with the -1 period as reference. The results here confirm the similar evolution of the two groups prior to AUH implementation, with non-significant coefficients in each period prior to 2010.

After the program's implementation, the gap between the two groups widens steadily, and seems to persist for each indicator. In line with the previous results, only the CV-up indicator shows coefficients that are mostly equal to zero for each period. Households eligible for the AUH have a lower proportion of periods in poverty during their observation period, ranging from -3 to -9 percentage points (Figure 2.a). Interestingly, the estimated impact of the program is higher two periods after its introduction. One reason for this may lie in extending the program to pregnant women from their 12<sup>th</sup> week of pregnancy until birth in 2011. However, this hypothesis cannot be accurately verified in the data since the EPH survey does not identify whether a woman is pregnant at the time of the survey. As shown in the table above, the program also reduces the CV of household income, and this effect appears stable over time (Figure 2.b). The effect is stronger among households with a negative trend in income over the period (Figure 2.c) compared to those with a positive trend (Figure 2.d).

These findings confirm that the AUH significantly reduces poverty transitions among economically vulnerable households working in the informal sector. They also confirm that the AUH stabilizes household income flows with a persistent effect over time. These results echo those of Micha and Trombetta (2020) for the same AUH case, and are consistent with the literature showing the buffering effect of social safety net programs against income instability in the US (Hardy, 2017), even if a direct comparison between different programs and contexts remains difficult

## 4.2 Robustness checks

### 4.2.1 False interventions

**Table 3: Robustness - Effect of false interventions on income stability**

| Dependent variables                 | (1)<br>Poverty trends         |                               |                              | (2)<br>CV                    |                               |                              |
|-------------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------|-------------------------------|------------------------------|
|                                     | 2006<br>(i)                   | 2007<br>(ii)                  | 2008<br>(iii)                | 2006<br>(i)                  | 2007<br>(ii)                  | 2008<br>(iii)                |
| After*Eligible                      | 0.0091<br>(0.0116)            | -0.0092<br>(0.0100)           | -0.0017<br>(0.0143)          | 0.0005<br>(0.0108)           | <b>-0.0204**</b><br>(0.0075)  | -0.0011<br>(0.0152)          |
| Eligible                            | <b>0.2022***</b><br>(0.0179)  | <b>0.2120***</b><br>(0.0146)  | <b>0.2082***</b><br>(0.0138) | <b>0.1144***</b><br>(0.0073) | <b>0.1239***</b><br>(0.0106)  | <b>0.1149***</b><br>(0.0084) |
| After                               | <b>-0.1632***</b><br>(0.0148) | <b>-0.2493***</b><br>(0.0158) | 0.0000<br>(0.0000)           | <b>-0.0153*</b><br>(0.0081)  | <b>-0.0232***</b><br>(0.0073) | 0.0000<br>(0.0000)           |
| Controls, time and regional dummies | Yes                           | Yes                           | Yes                          | Yes                          | Yes                           | Yes                          |
| R-squared                           | 0.3537                        | 0.3537                        | 0.3537                       | 0.0637                       | 0.0640                        | 0.0637                       |
| Observations                        | 13,079                        | 13,079                        | 13,079                       | 13,079                       | 13,079                        | 13,079                       |
| Average                             | 0.348                         | 0.306                         | 0.244                        | 0.369                        | 0.355                         | 0.353                        |
| Dependent variables                 | (3)<br>CV-down                |                               |                              | (4)<br>CV-up                 |                               |                              |
|                                     | 2006<br>(i)                   | 2007<br>(ii)                  | 2008<br>(iii)                | 2006<br>(i)                  | 2007<br>(ii)                  | 2008<br>(iii)                |
| After*Eligible                      | <b>-0.0319*</b><br>(0.0164)   | -0.0388<br>(0.0300)           | -0.0176<br>(0.0520)          | 0.0049<br>(0.0156)           | -0.0185<br>(0.0111)           | 0.0034<br>(0.0367)           |
| Eligible                            | <b>0.1501***</b><br>(0.0300)  | <b>0.1476***</b><br>(0.0367)  | <b>0.1321***</b><br>(0.0316) | <b>0.1102***</b><br>(0.0087) | <b>0.1212***</b><br>(0.0064)  | <b>0.1127***</b><br>(0.0049) |
| After                               | 0.0203<br>(0.0191)            | 0.0376<br>(0.0271)            | 0.0000<br>(0.0000)           | -0.0172<br>(0.0105)          | <b>0.0256**</b><br>(0.0112)   | 0.0127<br>(0.0111)           |
| Controls, time and regional dummies | Yes                           | Yes                           | Yes                          | Yes                          | Yes                           | Yes                          |
| R-squared                           | 0.0782                        | 0.0785                        | 0.0776                       | 0.0697                       | 0.0699                        | 0.0697                       |
| Observations                        | 4,015                         | 4,015                         | 4,015                        | 9,064                        | 9,064                         | 9,064                        |
| Average                             | 0.301                         | 0.302                         | 0.298                        | 0.392                        | 0.374                         | 0.373                        |

Source: Author's calculation based on the EPH microdata, 2004-2009.

Note: Difference-in-difference estimates. Column (1) measures the effect of the program on the probability of a household falling below the poverty line during its observation period. i.e. income per capita below \$5.5/day (PPP 2011). Column (2) measures the effect on the coefficient of variation of household income. Columns (3) and (4) on the sub-samples of households with the same change in income between the first and second year of observation (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of observation. After variable takes the value 1 after the false program implementation, otherwise 0. Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.

Several exercises are presented to test the robustness of the results found above. A first exercise verifies the parallel trends assumption by implementing false interventions before the AUH implementation. Table (3) below presents the estimated coefficients for each dependent variable

for years in which a false program introduction is tested based on Equation (2). Most coefficients of the interaction term are not significant, or indicate a slight divergence that does not persist over time. In the early 2000s, several other social programs such as the PJJHD (2002) and Plan Familias (2005) were in place to reduce the high unemployment and poverty rates after the country's 2001 economic crisis, affecting households similarly targeted by the AUH (unemployed or non-employable people). The number of PJJHD beneficiaries gradually declined as well as its effectiveness since its value was not adjusted for inflation (Figure A2 in Appendix). While the EPH provides information on whether households have benefited from the PJJHD program, this is not the case for the Plan Familias program, which may explain slight divergences in trends between the two groups in the early period of analysis.

#### *4.2.2 Sample size*

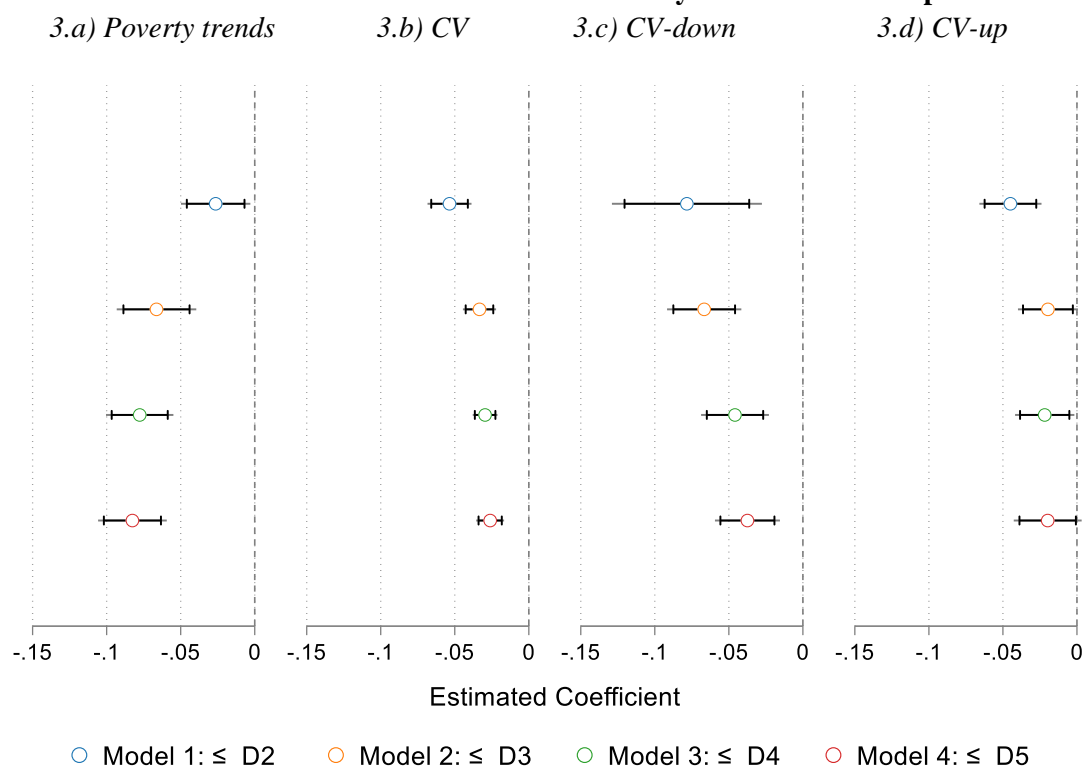
The second exercise checks the sensitivity of the results at different sample sizes. Figure (3) summarizes the results for each dependent variable by plotting the coefficients of the program's effect.<sup>19</sup> All estimations are based on Equation (2) with full controls and exhibit the 90% and 95% confidence intervals. The first part (3.a to 3.d) presents the results when the sample size is restricted to lower deciles (Model 1) or extended to higher deciles (Models 3 and 4) of the national distribution of per capita income. The estimated impact remains quite stable across the specifications compared to the main results (Model 2). The program's impact on the CV declines as more affluent households are included in the sample, which is to be expected as the AUH weighs relatively less in household budgets. In the second part (3.e to 3.h), several alternative models are tested and compared to the baseline model (Model 1). Model 2 extends the sample to households interviewed only twice, instead of three or four times. Model 3 proposes a stricter definition of program eligibility, restricting the sample to eligible and non-eligible households over the entire period, instead of the first year of observation. Model 4

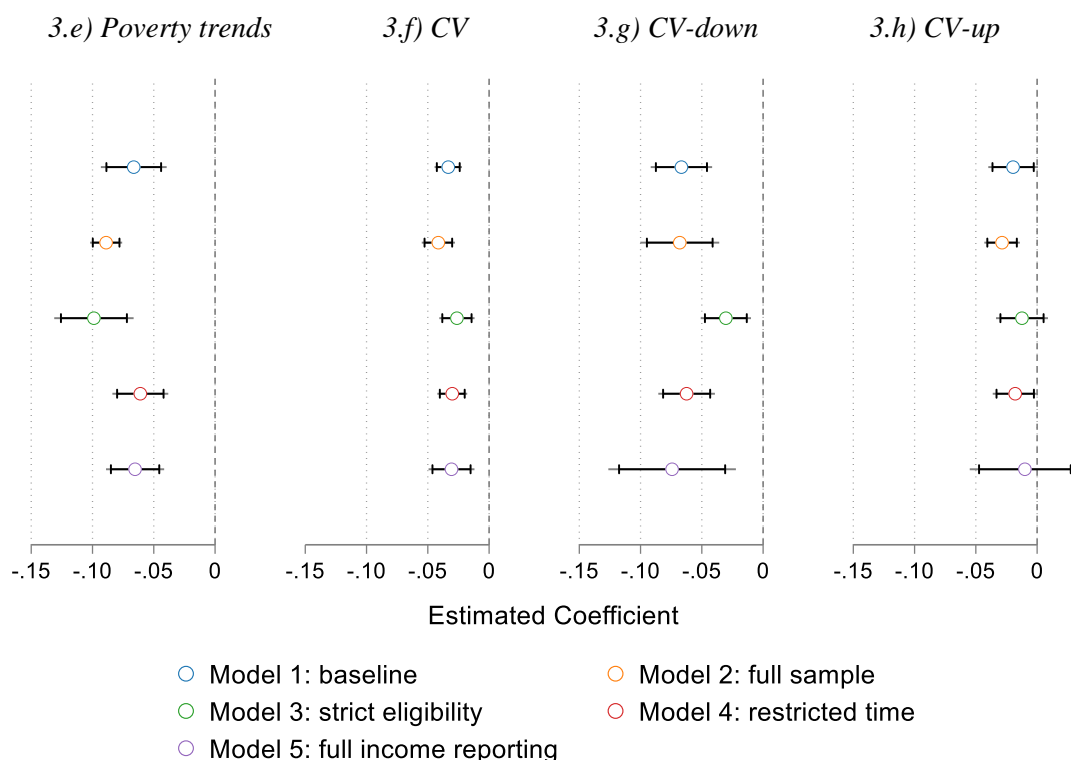
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<sup>19</sup> Tables with all coefficients are available in Appendix B (Tables B4 and B5).

restricts the analysis period to the years before 2014 to avoid potential bias from the PROGRESAR program implementation. Finally, Model 5 only keeps households that have declared all their income, and drops those where at least one household member has a non-declared source of income over the period. For each alternative model, the conclusions remain similar, with estimates of the program's effect very close to those of the baseline specification (Model 1). The inclusion of households with a shorter follow-up period does not change the results and tends to increase the program's estimated effects, particularly for the CV-up indicator. The other alternative specifications have only minor effects on the coefficients found, confirming the stability of these results.

**Figure 3: Robustness - Effect of the AUH on income stability at alternative sample sizes**





Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: The coefficients shown correspond to the interaction term of difference-in-difference estimates based on equation (2). Confidence intervals at 90% and 95% are shown. The poverty trends indicator (a) measures the time spent in poverty by a household during its observation period, i.e. income per capita below \$5.5/day (PPP 2011). The CV (b) is the coefficient of variation of household income. The CV-down and CV-up indicators (c and d) are calculated for households with a drop and increase in income respectively between the first and second year of observation. For (a) to (d): the sample is composed of households with at least one minor child and belonging to the corresponding poorest deciles (D2 to D5) of the household per capita income distribution in the first year of appearance in the survey. For (e) to (h): The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Model 1 is the baseline main model, where a household is eligible if the child's parents are either informal workers, domestic employees, unemployed or inactive, or retired without health coverage over its first observation year. In Model 2, the sample also includes households with two interviews over time, instead of three or more. In Model 3, only eligible and non-eligible households over the entire observation period are kept, instead of the first year. In Model 4, the analysis period is restricted to 2004-2013 instead of 2004-2015. Finally, Model 5 drops households in which a member has not reported income over the observation period. Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors by large urban areas.

#### 4.2.3 Matching

The third exercise combines the DD strategy with a kernel-based matching adapted for repeated cross-section data (Heckman et al., 1998; Blundell and Dias, 2009).<sup>20</sup> As the sample of households changes over the survey years due to the data's rotating structure, the DD framework with repeated cross-section data may suffer from compositional change for the

<sup>20</sup> The -diff- Stata package is used to implement the kernel-based matching estimator (Villa, 2016), as well as the -psmatch2- package to create the matching quality graphs (Leuven and Sianesi, 2003).

control and treated groups over time. The combination of matching and DD methods can control for differences in the composition of the two groups before and after the treatment (Fernández and Villar, 2017). The matching procedure uses the same control variables as the DD framework. More details on the matching process and quality are provided in Appendix A (Figures A6 to A8). Table (4) shows the results of the benchmark exercise. Again, similar results are found for each dependent variables, with and without controls. The magnitude of the impact on the different dependents variables is very similar to the DD model without matching, except for the CV-up indicator for which the estimated effect is stronger and roughly equal to that found for the CV-down. All these results point in the same direction and demonstrate the program's reducing impact on income instability.<sup>21</sup>

**Table 4: Robustness Matched DD - Effect of the AUH on income stability**

| Dependent variables                 | (1)<br>Poverty trends         |                               | (2)<br>CV                     |                               | (3)<br>CV-down                |                              | (4)<br>CV-up                  |                              |
|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|
|                                     | (i)                           | (ii)                          | (i)                           | (ii)                          | (i)                           | (ii)                         | (i)                           | (ii)                         |
|                                     | After*Eligible                | <b>-0.1071***</b><br>(0.0099) | <b>-0.0608***</b><br>(0.0104) | <b>-0.0237***</b><br>(0.0080) | <b>-0.0338***</b><br>(0.0078) | <b>-0.0242**</b><br>(0.0113) | <b>-0.0368***</b><br>(0.0115) | <b>-0.0238**</b><br>(0.0098) |
| Eligible                            | <b>0.2614***</b><br>(0.0094)  | <b>0.2129***</b><br>(0.0114)  | <b>0.0869***</b><br>(0.0081)  | <b>0.0957***</b><br>(0.0081)  | <b>0.0753***</b><br>(0.0108)  | <b>0.0839***</b><br>(0.0122) | <b>0.0937***</b><br>(0.0088)  | <b>0.1034***</b><br>(0.0084) |
| After                               | <b>-0.1555***</b><br>(0.0109) | -0.0132<br>(0.0118)           | <b>-0.0191***</b><br>(0.0066) | -0.0049<br>(0.0089)           | -0.0099<br>(0.0097)           | -0.0088<br>(0.0101)          | <b>-0.0194**</b><br>(0.0079)  | -0.0037<br>(0.0121)          |
| Controls, time and regional dummies | No                            | Yes                           | No                            | Yes                           | No                            | Yes                          | No                            | Yes                          |
| R-squared                           | 0.1954                        | 0.3686                        | 0.0315                        | 0.0539                        | 0.0236                        | 0.0490                       | 0.0357                        | 0.0615                       |
| Observations                        | 25,735                        | 25,735                        | 25,735                        | 25,735                        | 8,500                         | 8,500                        | 17,235                        | 17,235                       |
| Average                             | 0.256                         |                               | 0.345                         |                               | 0.308                         |                              | 0.361                         |                              |

*Source:* Author's calculation based on the EPH microdata, 2004-2015.

*Note:* Matched difference-in-difference estimates. Column (1) measures the effect of the program on the probability of a household falling below the poverty line during its observation period. i.e. income per capita below \$5.5/day (PPP 2011). Column (2) measures the effect on the coefficient of variation of household income. Columns (3) and (4) on the sub-samples of households with the same change in income between the first and second year of observation (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of observation. After variable takes the value one for the periods after the AUH implementation (2010-2015), otherwise zero (2004-2009). Variables used for the matching include household head age, gender, whether single parent, number of children under and over 18, household size, parents' highest level of education, whether parents have multiple jobs. Control variables are the same as those used for the matching plus an interaction term between the treatment variable and the PJJHD variable, as well as time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.

<sup>21</sup> Estimated coefficients over time for the matched DD specification are available in Figure A9 (Appendix A).

### *4.3 Heterogeneous effects*

This section explores the potential heterogeneous effects of the AUH program on income stability according to household composition and structure. Table (5) reports the triple and double interaction term coefficients for each indicator. Globally, the addition of triple interaction does not significantly alter the overall effect of the program (double interaction term) which remains significant and stable according to the different specifications. Two main results stand out.

First, the reducing effect of the AUH on the proportion of periods in poverty during the observation period is stronger among households with three or more children (1.c), and those with a young child under 6 (1.d). In both cases, the program reduces the proportion of periods in poverty by around 24% compared to the counterfactual, instead of 13% for the others. Also, the impact on the CV-down indicator is roughly three times more efficient in households with a young child (3.d) compared to those with older children (-22% vs -7.3%). Given that these households are poorer on average in the sample, the AUH represents a proportionally higher share of their total income. Similarly, as households with young children have high expenses (nursery, specific food, and products for infants), this additional source of income helps mitigate the impact of adverse income shocks on household income.

Second, there is a significant gap in the program's effectiveness between men and women heads of household (1.a). The estimated impact for an eligible household headed by a woman is four times less than for a man-headed household (-5.5% vs -21%) for the poverty trends, and around two times lower for the CV-down (-9% vs -19%). While this result may be surprising, the family structure of women-headed household differs significantly from that of men, since most of these women are single (76%). Similarly, the effect is roughly the same when specifically looking single heads of household (1.b). These results suggests that the program's effectiveness in

stabilizing incomes is more limited in households that are the least resilient to shocks, such as those with low flexibility in work or time use.

**Table 5 : Heterogeneity Triple DD model - Effect of the AUH on income stability**

| Dependent variables                                               | (1)<br>Poverty trends         | (2)<br>CV                     | (3)<br>CV-down                | (4)<br>CV-up                  |
|-------------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| <i>(a) Woman head of household</i>                                |                               |                               |                               |                               |
| After*Treated*Woman                                               | <b>0.0687***</b><br>(0.0142)  | <b>0.0177*</b><br>(0.0099)    | <b>0.0488***</b><br>(0.0116)  | 0.0116<br>(0.0144)            |
| After*Treated                                                     | <b>-0.0924***</b><br>(0.0141) | <b>-0.0421***</b><br>(0.0045) | <b>-0.0835***</b><br>(0.0148) | <b>-0.0268***</b><br>(0.0077) |
| <i>(b) Single parent household</i>                                |                               |                               |                               |                               |
| After*Treated*Single                                              | <b>0.0512***</b><br>(0.0164)  | -0.0152<br>(0.0124)           | 0.0001<br>(0.0148)            | -0.0088<br>(0.0173)           |
| After*Treated                                                     | <b>-0.0847***</b><br>(0.0115) | <b>-0.0360***</b><br>(0.0052) | <b>-0.0748***</b><br>(0.0149) | <b>-0.0226**</b><br>(0.0097)  |
| <i>(c) Three or more children</i>                                 |                               |                               |                               |                               |
| After*Treated*Children                                            | <b>-0.0400***</b><br>(0.0113) | <b>-0.0146*</b><br>(0.0072)   | 0.0191<br>(0.0211)            | <b>-0.0303***</b><br>(0.0094) |
| After*Treated                                                     | <b>-0.0490***</b><br>(0.0159) | <b>-0.0271***</b><br>(0.0067) | <b>-0.0780***</b><br>(0.0211) | -0.0072<br>(0.0124)           |
| <i>(d) Young child in the household (<math>\leq 5</math> y.o)</i> |                               |                               |                               |                               |
| After*Treated*Young                                               | <b>-0.0462***</b><br>(0.0145) | <b>-0.0651**</b><br>(0.0292)  | <b>-0.0694**</b><br>(0.0273)  | <b>-0.0604*</b><br>(0.0322)   |
| After*Treated                                                     | <b>-0.0416**</b><br>(0.0169)  | 0.0022<br>(0.0185)            | <b>-0.0270**</b><br>(0.0099)  | 0.0128<br>(0.0245)            |
| <i>(e) Grand-parents in the household</i>                         |                               |                               |                               |                               |
| After*Treated*Grandparents                                        | 0.0147<br>(0.0181)            | <b>-0.0310*</b><br>(0.0170)   | -0.0086<br>(0.0158)           | -0.0379<br>(0.0261)           |
| After*Treated                                                     | <b>-0.0669***</b><br>(0.0142) | <b>-0.0283***</b><br>(0.0064) | <b>-0.0655***</b><br>(0.0140) | -0.0131<br>(0.0133)           |
| Controls, time and regional dummies                               | Yes                           | Yes                           | Yes                           | Yes                           |
| Observations                                                      | 25,808                        | 25,808                        | 8,532                         | 17,276                        |

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: Estimation of a triple difference-in-difference model. Column (1) measures the effect of the program on the probability of a household falling below the poverty line during its observation period. i.e. income per capita below \$5.5/day (PPP 2011). Column (2) measures the effect on the coefficient of variation of household income. Columns (3) and (4) on the sub-samples of households with the same change in income between the first and second year of observation (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of observation. After variable takes the value one for the periods after the AUH implementation (2010-2015), otherwise zero (2004-2009). Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

#### 4.4 Effects on household financial behavior

This final section explores other potential effects of the AUH program on households' financial behavior, i.e. on the strategies for coping with income risk. When a households are affected by a shock, various strategies can be adopted to maintain their consumption or well-being.



Households may resort to internal strategies (sale of assets, dissaving) or external strategies (charity from associations or the community, taking loans) to help overcome a temporary shock. However, these can also alter the standard of living or the financial pressure exerted on a household (informal loans with high interest rates). Receiving an additional and stable source of income should modify households' financial behavior, particularly with regard to last-resort strategies to avoid poverty.

Table (6) shows the results of the AUH's effect on the probability of using one of the financial strategies during the observation period.<sup>22</sup> After the implementation of the program, the proportion of eligible households that rely on monetary or in-kind donations fell by 20.6% and 13.7% respectively (Columns 1 to 3). Similarly, households eligible for the AUH are also 10% less likely to take out an informal loan from to cover expenses (Column 5), while the proportion taking out a formal loan is on the rise, but remains marginal (Column 7). These figures should be treated with caution, however, given the low proportion of households reporting the use of some of these strategies.

Overall, the stabilization of household income induced by the AUH also seems to be modifying household financial behavior. In line with previous results, households eligible for the program are less likely to resort to monetary and in-kind donations from the public or private sectors to cope with financial difficulties. They are also less inclined to take out informal loans, which can significantly increase the risks of over-indebtedness and financial pressure on the household.

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<sup>22</sup> The question asked in the survey for each strategy is: "In the last three months, have the members of this household lived from...".

**Table 6: Difference-in-difference model - Effect of the AUH on household financial behavior**

| Dependent variables                    | (1)<br>In-kind donations<br>(church, state,<br>association) | (2)<br>In-kind donations<br>(family, friends,<br>neighbors) | (3)<br>Monetary<br>donations (friends,<br>neighbors) | (4)<br>Drawing on<br>savings | (5)<br>Informal<br>loans      | (6)<br>Sales of<br>assets     | (7)<br>Formal<br>loans        | (8)<br>Credit card,<br>deffered payment |
|----------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------------------------------|
| After*Eligible                         | <b>-0.0397***</b><br>(0.0085)                               | <b>-0.0159**</b><br>(0.0069)                                | <b>-0.0140**</b><br>(0.0052)                         | -0.0081<br>(0.0062)          | <b>-0.0171***</b><br>(0.0040) | 0.0015<br>(0.0054)            | <b>0.0223***</b><br>(0.0058)  | -0.0207<br>(0.0199)                     |
| Eligible                               | <b>0.0675***</b><br>(0.0079)                                | <b>0.0459***</b><br>(0.0038)                                | <b>0.0522***</b><br>(0.0026)                         | -0.0029<br>(0.0057)          | <b>0.0355***</b><br>(0.0049)  | <b>0.0210***</b><br>(0.0043)  | <b>-0.0761***</b><br>(0.0068) | <b>-0.1254***</b><br>(0.0187)           |
| After                                  | <b>-0.0255**</b><br>(0.0096)                                | 0.0017<br>(0.0139)                                          | -0.0045<br>(0.0073)                                  | <b>-0.0521**</b><br>(0.0254) | <b>-0.0216**</b><br>(0.0083)  | <b>-0.0187***</b><br>(0.0060) | <b>-0.0333**</b><br>(0.0140)  | -0.0176<br>(0.0108)                     |
| Controls, time and regional<br>dummies | Yes                                                         | Yes                                                         | Yes                                                  | Yes                          | Yes                           | Yes                           | Yes                           | Yes                                     |
| R-squared                              | 0.1947                                                      | 0.1020                                                      | 0.2171                                               | 0.0716                       | 0.0638                        | 0.0323                        | 0.0757                        | 0.1433                                  |
| Observations                           | 25,808                                                      | 25,808                                                      | 25,808                                               | 25,808                       | 25,808                        | 25,808                        | 25,808                        | 25,808                                  |
| Average                                | 0.151                                                       | 0.071                                                       | 0.050                                                | 0.188                        | 0.150                         | 0.071                         | 0.113                         | 0.383                                   |

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: Difference-in-difference estimates. Each dependent variable represents the probability that a household uses the financial strategy during its observation period. Columns (1) and (2) respectively measure the effect of the program on the probability of relying on in-kind donations from the public and private sectors. Column (3) measures monetary donations from family and community (remittances); Column (4) measures the probability of drawing on savings; Column (5) measures taking out an informal loan (from a third party); Column (6) measures the probability of selling assets; Column (7) measures taking out a formal loan (from a banking institution); and Column (8) measures the use of credit cards and installment payments. The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. After variable takes the value one for the periods after the AUH implementation (2010-2015), otherwise zero (2004-2009). Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.

## 5 Summary and concluding remarks

This paper evaluates the impact of the AUH – the largest Argentina’s non-contributory program – on income stability within vulnerable households over the 2004-2015 period. The AUH aims to extend social protection system to children living in economically vulnerable households whose parents work in the informal sector. Household income stability is evaluated by looking at poverty transitions, i.e. the proportion of periods spent in poverty by a household during its observation period, and the coefficient of variation in income. A quasi-experimental DD method is employed to assess the intention-to-treat by comparing households eligible and non-eligible for the program. Fourth main results stand out.

First, results show that the AUH significantly reduces the proportion of periods in poverty for eligible households by 15% compared to the situation without the program implementation. This protective effect, stemming from a direct income boost, enables eligible and low-income households to avoid slipping back into poverty and reduce income swings that would lead to a return to poverty.

Second, the program effectively stabilizes household income streams, particularly among those whose income declined over the period, with an average 16% reduction in the CV for eligible households compared to the counterfactual. It confirms the program’s role in mitigating income losses through a predictable and consistent income source throughout the year.

Third, the program affects eligible households heterogeneously depending on their family structure. The program’s effect on poverty is higher for households with a young child and larger family sizes (more than two children), potentially stemming from their relatively poorer economic conditions in the sample. Conversely, the reducing effects on poverty and income-stabilizing effects are considerably reduced in women-headed households, the latter being

overwhelmingly single mothers. Those results suggest that the program may be not sufficient to stabilize these households' economic situation, whose adaptation to a shock is more challenging because of a lack of flexibility in work or a higher economic burden. These results warrant further investigation.

Fourth, the exploration of the program's effect on household financial behavior reveals that eligible households rely less on in-kind and monetary donations, and take out fewer informal loans after the introduction of the program. These findings further support the stabilizing role of the AUH for vulnerable households, reducing the need to adopt last-resort strategies against poverty.

However, several limitations warrant consideration. While the results show that the AUH helps reduce household income fluctuations, comparing eligible and non-eligible households fails to elucidate the duration of a household's program benefit. Antipoverty policies can inadvertently increase income instability, particularly for households teetering on the edge of eligibility or household members intermittently engaged in the formal sector (Wolf et al., 2014). Although the AUH has been promoted as universal, many households are still excluded from the program because of administrative barriers, geographical remoteness, lack of documentation, or processing of files (Pautassi et al., 2013). Also, the low frequency of household interviews per year (two interviews at most) makes it difficult to assess the program's impact on intra-year household income fluctuation. Finally, the EPH survey does not allow the examination of the underlying mechanisms driving the decline or increase in income and the specific shocks experienced by the household. Exploring potential changes in consumption or saving habits among program beneficiaries could offer valuable insights.

In conclusion, I believe the results found in this paper are relevant from a public policy perspective and show the benefits of extending access to social protection for households that are not only poor, but at high risk of poverty, whether due to family situations or precarious

employment status. The proliferation of non-contributory CT programs alongside formal contributory systems in Latin America may exacerbate the divide between the two systems, diverging from the universal ambit of family policies. It is needed to design more cohesive, unified, and sustainable social protection systems that cover risks common to all citizens, aligning with a universal social protection system.

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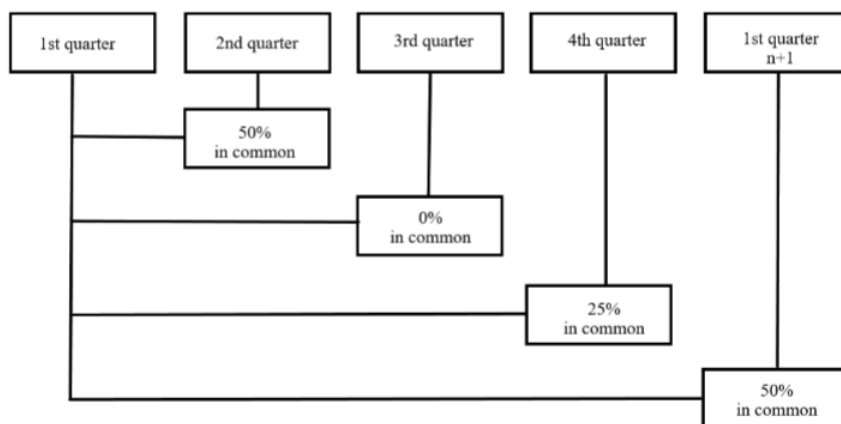
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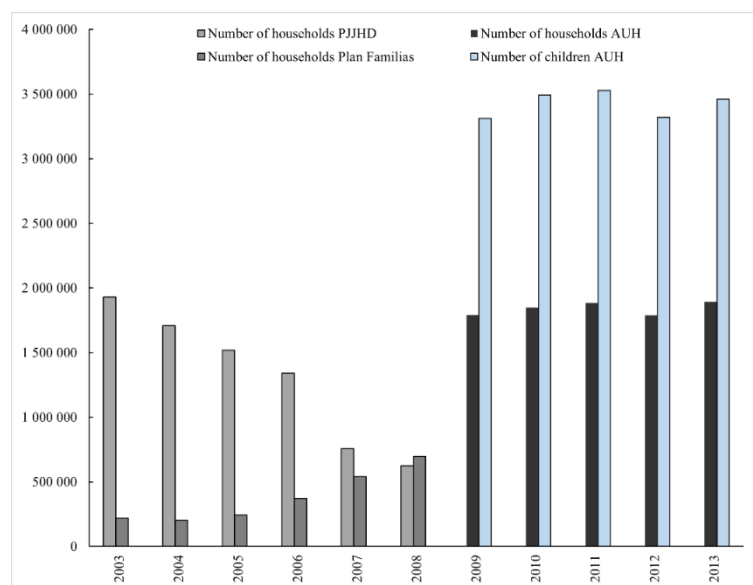
## Appendix A: Figures

**Figure A1: Structure of the EPH panel data**



Source: Author's adaptation of the EPH methodology (INDEC, 2003).

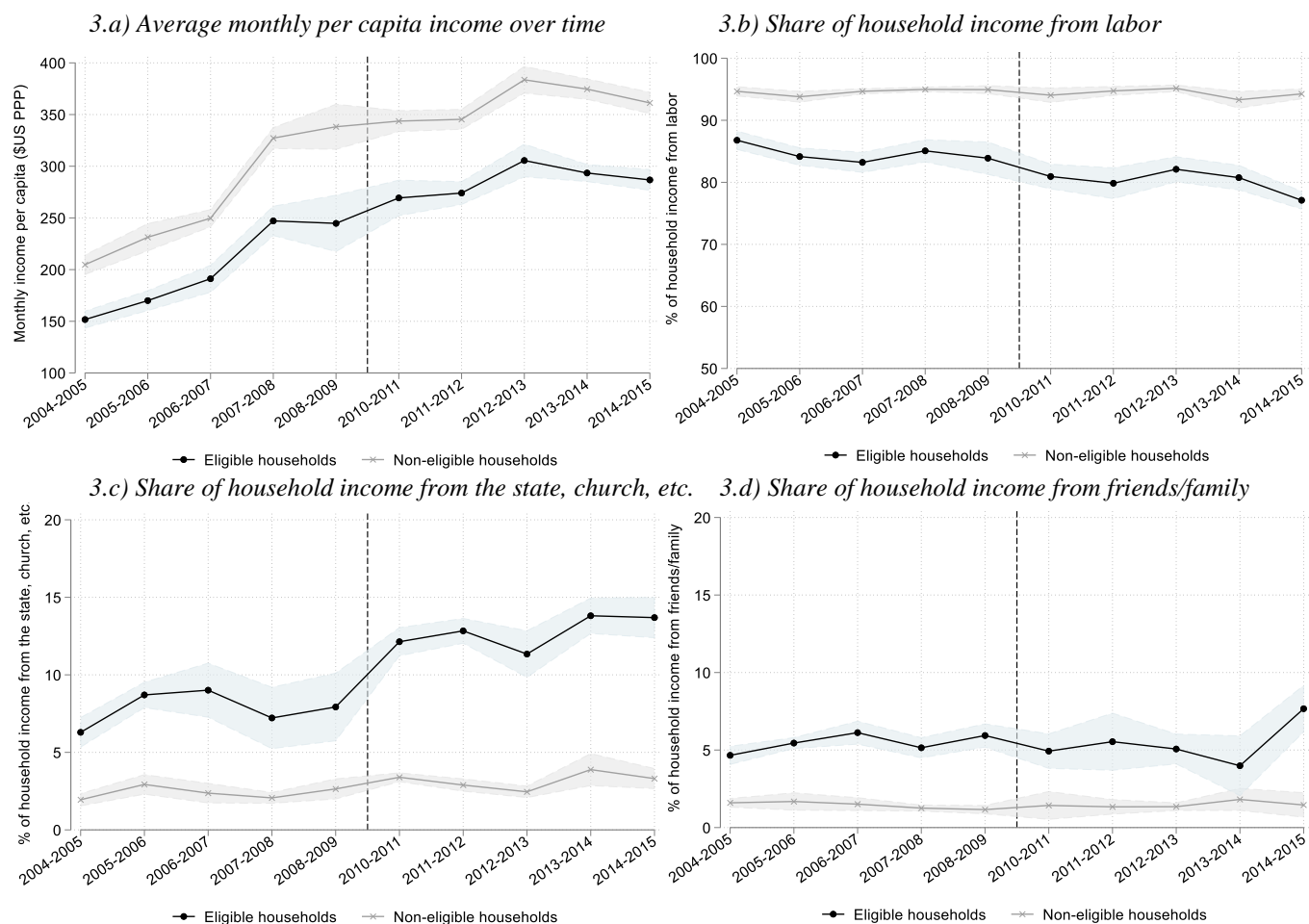
**Figure A2: Evolution of the main social programs in Argentina (2003-2013)**



Source: Data come from the Abiertos Asignaciones Universales (ANSES) for the AUH and from Fenwick (2013) for the PF (Plan Familias)/PJJHD programs

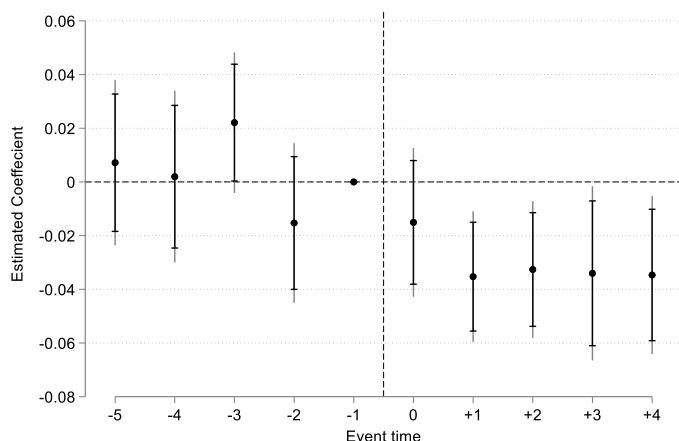
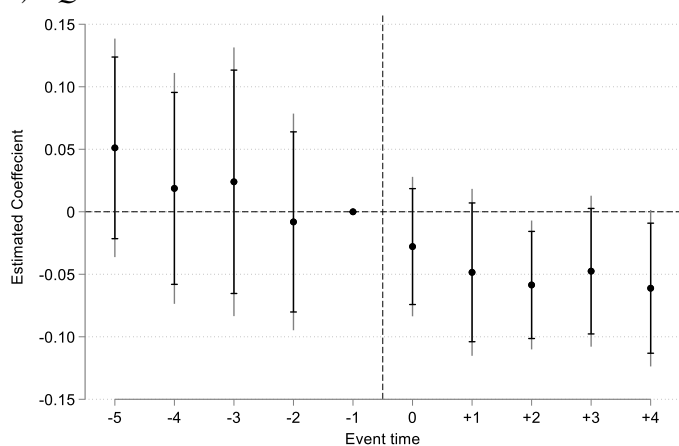
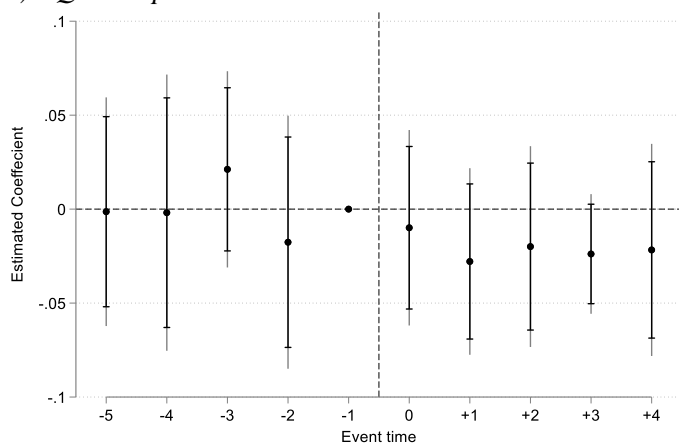
Note: PJJHD = Plan Jefes y Jefas de Hogares Desocupados ; AUH = Asignacion Universal por Hijo. The AUH was implemented in November 2009.

**Figure A3: Evolution in the structure of household income among eligible and non-eligible households**



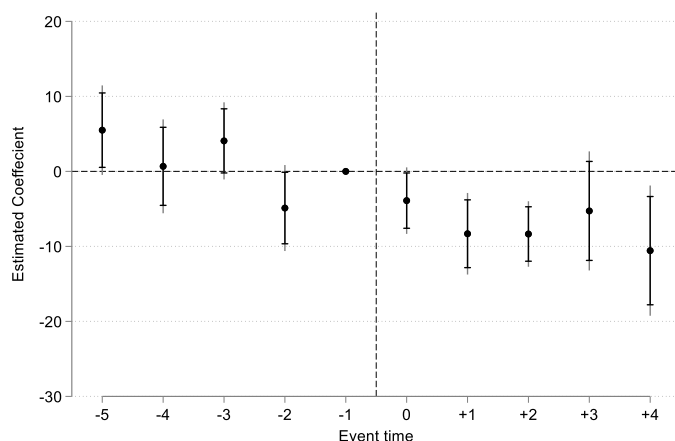
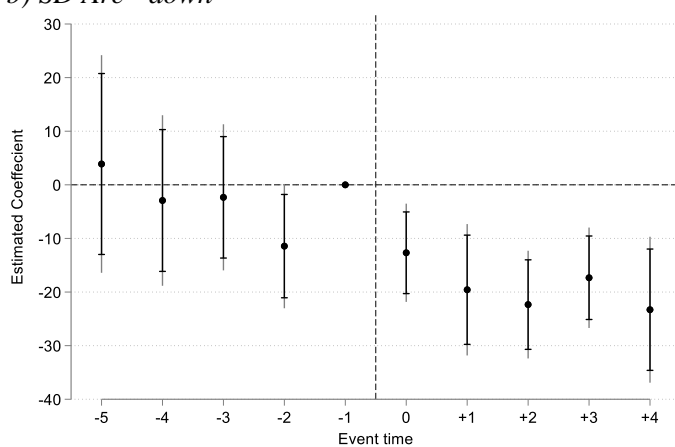
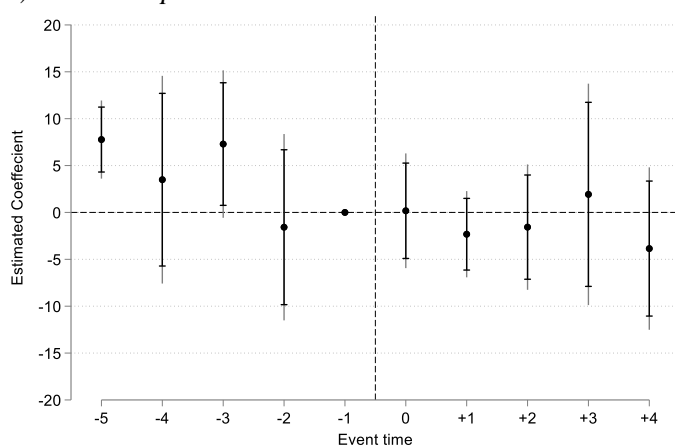
Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. A household is eligible for the program if a child has parents who are either working in the informal sector, domestic employees, unemployed or inactive, or retired without health coverage for the first observation year. Income from labor includes retirement pensions. Confidence intervals at 95% are shown.

**Figure A4: Estimated effect of the AUH on the CV indicator in equivalised household income**a) *EQCV*b) *EQCV – down*c) *EQCV - up*

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: The coefficients shown correspond to the interaction terms between the treatment variable and a time dummy based on equation (4). Confidence intervals at 90% and 95% are shown. The EQCV is the coefficient of variation of equivalised household income. EQCV-Down and EQCV-Up are the EQCV on the sub-samples of households with the same change in income between the first and second year of observation (negative or positive). The OECD equivalence scale is used (1 for the first adult, 0.5 for each additional member older than 14, and 0.3 for children under 14). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. A household is eligible if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors by large urban areas.

**Figure A5: Estimated effect of the AUH on the standard deviation of arc percentage change**a) *SD Arc*b) *SD Arc - down*c) *SD Arc - up*

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: The coefficients shown correspond to the interaction terms between the treatment variable and a time dummy based on equation (4). Confidence intervals at 90% and 95% are shown. The SD Arc is the standard deviation of arc percentage change in household income. SD Arc-down and SD Arc-up measure the SD arc percentage change on the sub-samples of households with the same change in income between the first and second year of interview (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. A household is eligible if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors by large urban areas.

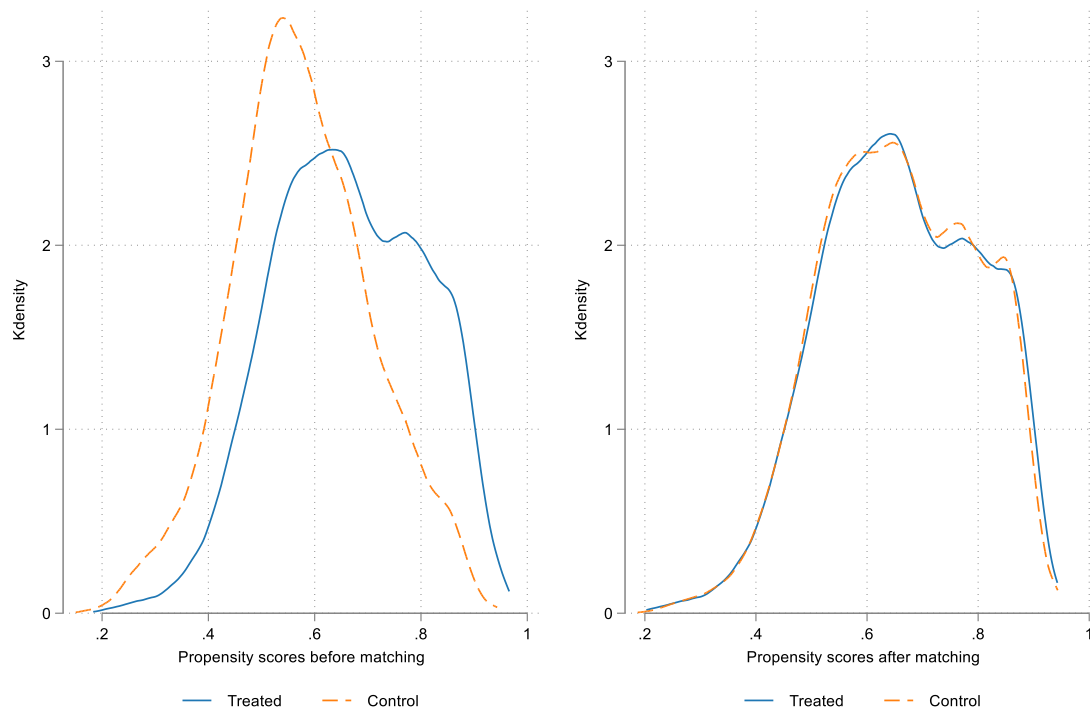


*Matching procedure and quality*

Since households in treated and control groups cannot be followed over the pre- and post-periods, three sets of weights are calculated independently according to the calculated propensity score (two sets of weights in the pre- and post-periods for the control group and one in the pre- period for the treated group). The variables used for the matching are the number of under-18 and over-18 children and its square, the household size, age of the youngest child, the parents' highest level of education, dummy indicating if grandparents live in the household, if a woman heads the households, if a single parent heads the household, if the parents have multiple jobs, the region, and the age and age squared of the head.

Figures A6 to A8 illustrate the quality of matching. Figure A6 and A7 show the distribution of the propensity score before and after matching, as well as the propensity score distribution by group between the post-treated group and the three other control groups (pre-treated, pre-control and post-control) to visually check the overlap of the region of common support. In each case, there is a wide common support the two groups with similar propensity score distributions. Figure A8 demonstrates that the matching clearly reduces standardized bias across covariates compared to the unmatched situation. Eligible and non-eligible households are more similar in terms of observable characteristics than in the unmatched model (apart from the age of the head of household, which differs slightly).

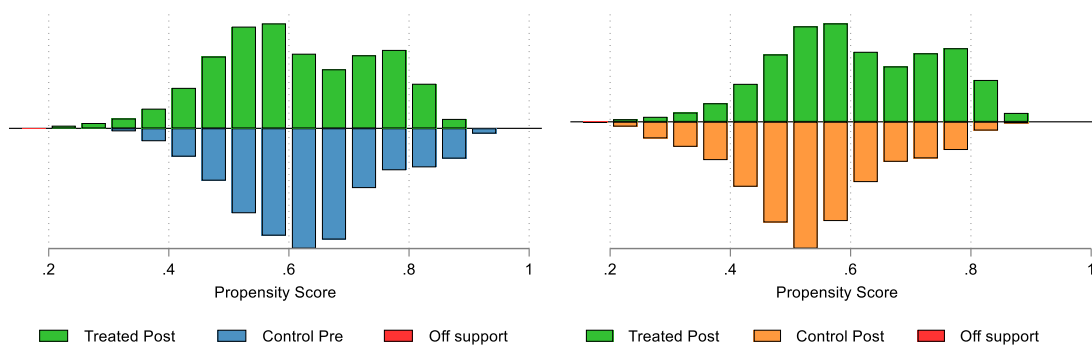
**Figure A6: Propensity score before and after matching**



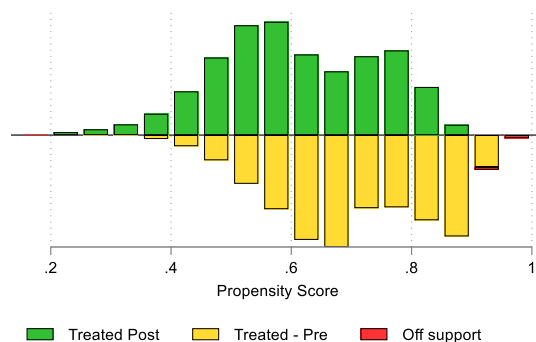
Source: Author's calculation based on the EPH microdata, 2004-2015.

**Figure A7: Propensity score by group and common support**

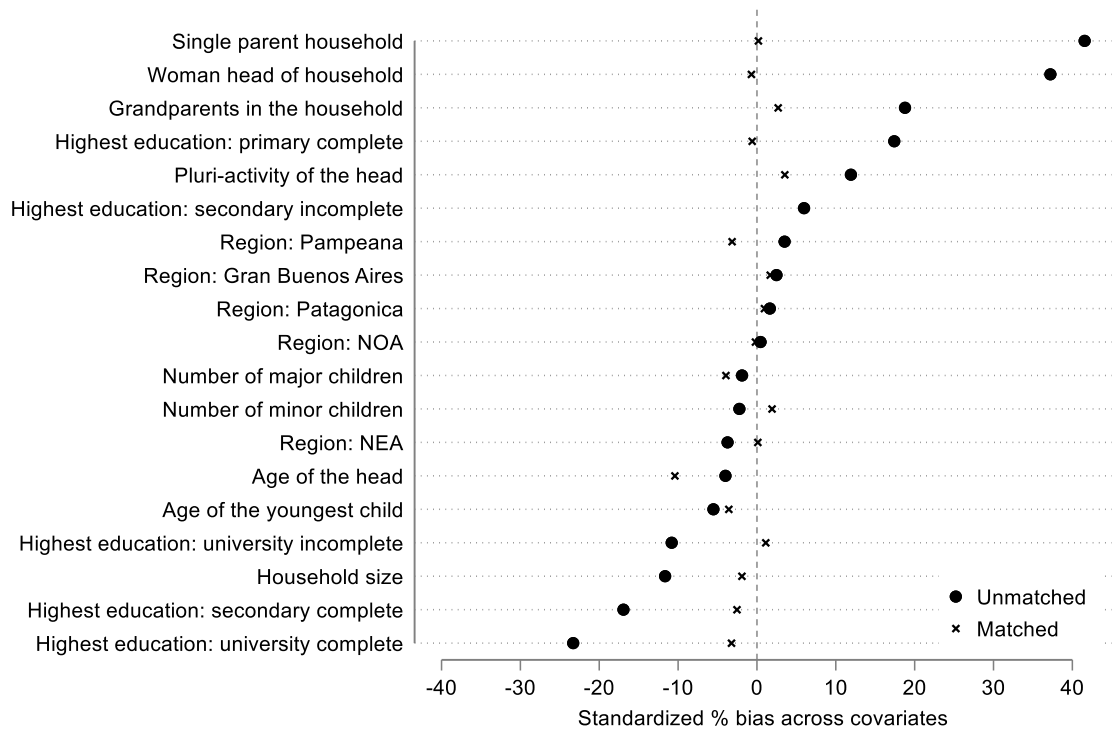
(a) Treated in post-period vs Control in pre-period (b) Treated in post-period vs Control in post-period



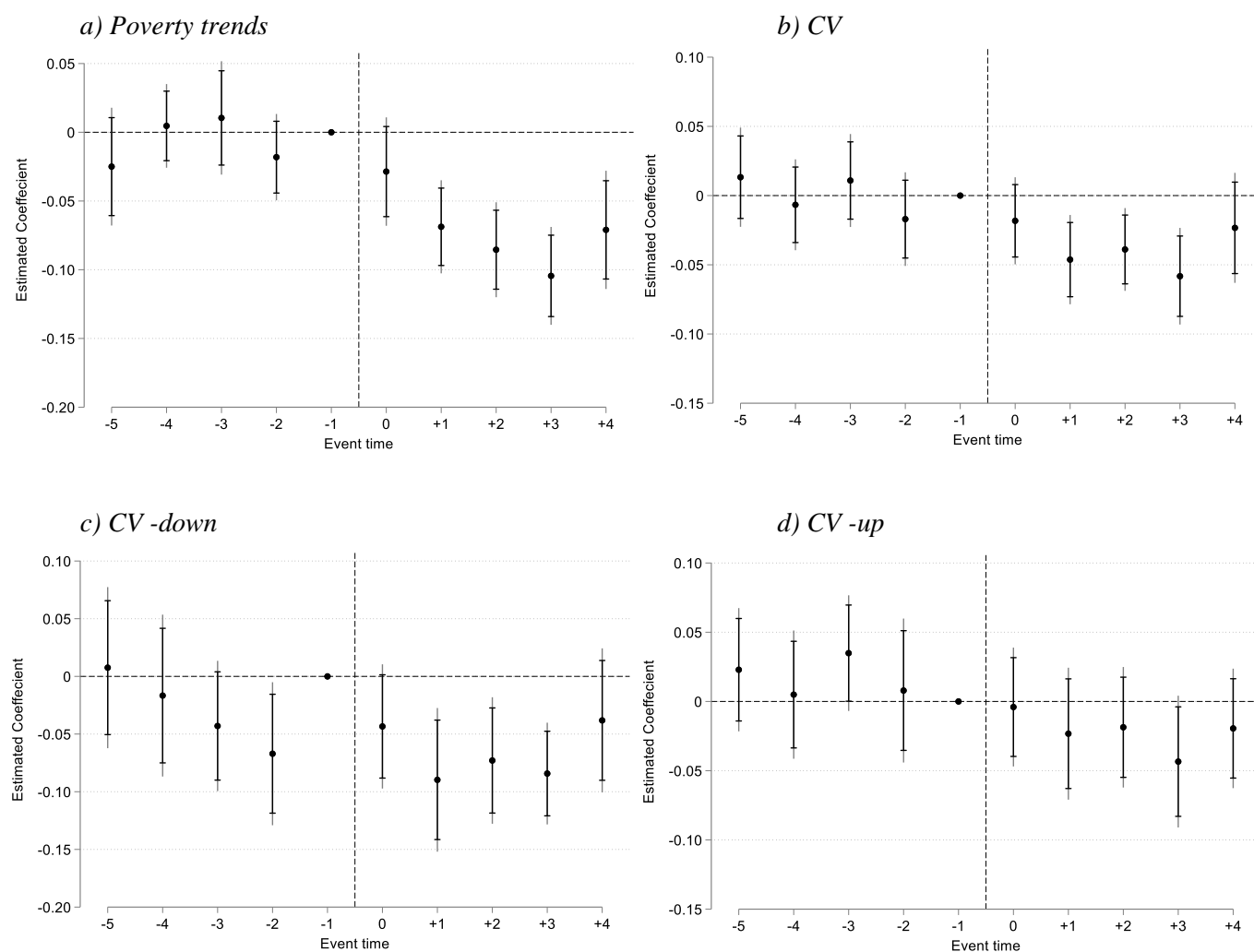
(c) Treated in post-period vs Treated in pre-period



Source: Author's calculation based on the EPH microdata, 2004-2015.

**Figure A8: Standardized bias before and after the matching**

Source: Author's calculation based on the EPH microdata, 2004-2015.

**Figure A9: Matched DD - Effect of the AUH on income stability over time**

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: Matched difference-in-difference estimates. The coefficients shown correspond to the interaction terms between the treatment variable and a time dummy based on equation (4). Confidence intervals at 90% and 95% are shown. The poverty trends indicator measures the time spent in poverty by a household during its observation period, i.e. income per capita below \$5.5/day (PPP 2011). The CV is the coefficient of variation of household income. CV-down and CV-up measure the CV of sub-samples of households with the same change in income between the first and second year of interview (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. A household is eligible if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. Variables used for the matching include household head age, gender, whether single parent, number of children under and over 18, household size, parents' highest level of education, whether parents have multiple jobs. Control variables are the same as those used for the matching plus an interaction term between the treatment variable and the PJJHD variable, as well as time and region fixed effects. Clustered standard errors are in brackets (by large urban areas).

## Appendix B: Tables

**Table B1: Characteristics of the AUH beneficiaries (ENGHo, 2012)**

| <i>Household level</i>            |  |                       |            |
|-----------------------------------|--|-----------------------|------------|
| Household size                    |  | 4.94                  |            |
| Income per capita (\$US PPP 2011) |  | \$10.97/day           |            |
| <i>Parents level</i>              |  |                       |            |
|                                   |  | Head of household (%) | Spouse (%) |
| <i>Sex</i>                        |  |                       |            |
| Men                               |  | 65.7                  | 15.5       |
| Women                             |  | 34.3                  | 84.5       |
| <i>Age (years)</i>                |  |                       |            |
| Age composition                   |  | 41.2                  | 36.6       |
| <19                               |  | 0.0                   | 1.0        |
| 19-25                             |  | 7.2                   | 13.6       |
| 26-34                             |  | 27.3                  | 34.2       |
| 35-64                             |  | 60.3                  | 49.1       |
| >64                               |  | 5.2                   | 2.1        |
| <i>Education</i>                  |  |                       |            |
| Primary Incomplete                |  | 18.1                  | 15.3       |
| Primary complete                  |  | 29.9                  | 32.1       |
| Secondary incomplete              |  | 25.2                  | 24.9       |
| Secondary complete                |  | 19.8                  | 21.0       |
| University incomplete             |  | 3.6                   | 4.7        |
| University complete               |  | 2.2                   | 1.9        |
| Others                            |  | 1.2                   | 0.2        |
| <i>Labor status</i>               |  |                       |            |
| Employee                          |  | 54.6                  | 30.7       |
| Self-employed                     |  | 21.9                  | 12.7       |
| Employer                          |  | 1.7                   | 0.3        |
| Family worker                     |  | 0.0                   | 0.2        |
| Inactive/unemployed               |  | 21.7                  | 56.1       |
| Observations                      |  | 2806                  | 1970       |

*Source:* Author's elaboration based on ENGHo (2012)

*Note:* Income values are deflated in 2018 pesos and converted in \$US (PPP 2011) adapted for 2018. The factor conversion from the World Bank is 14.23.

**Table B2: Effect of the AUH on the CV indicator in equivalised per capita income**

| Dependent variables                 | (1)<br>EQCV                   |                               | (2)<br>EQCV-down              |                               | (3)<br>EQCV-up                |                              |
|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|
|                                     | (i)                           | (ii)                          | (i)                           | (ii)                          | (i)                           | (ii)                         |
|                                     | After*Eligible                | <b>-0.0183***</b><br>(0.0050) | <b>-0.0307***</b><br>(0.0041) | <b>-0.0418***</b><br>(0.0063) | <b>-0.0628***</b><br>(0.0119) | -0.0081<br>(0.0087)          |
| Eligible                            | <b>0.0882***</b><br>(0.0070)  | <b>0.0983***</b><br>(0.0084)  | <b>0.0971***</b><br>(0.0110)  | <b>0.1113***</b><br>(0.0179)  | <b>0.0878***</b><br>(0.0061)  | <b>0.0962***</b><br>(0.0056) |
| After                               | <b>-0.0209***</b><br>(0.0054) | -0.0087<br>(0.0095)           | 0.0032<br>(0.0056)            | 0.0154<br>(0.0118)            | <b>-0.0267***</b><br>(0.0071) | -0.0197<br>(0.0169)          |
| Controls, time and regional dummies | No                            | Yes                           | No                            | Yes                           | No                            | Yes                          |
| R-squared                           | 0.0399                        | 0.0697                        | 0.0374                        | 0.0705                        | 0.0425                        | 0.0765                       |
| Observations                        | 25,808                        | 25,808                        | 8,773                         | 8,773                         | 17,035                        | 17,035                       |
| Average                             | 0.303                         |                               | 0.256                         |                               | 0.321                         |                              |

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: Difference-in-difference estimates. Column (1) measures the effect on the coefficient of variation of equivalised household income. Columns (2) and (3) on the sub-samples of households with the same change in income between the first and second year of observation (negative or positive). The OECD equivalence scale is used (1 for the first adult, 0.5 for each additional member older than 14, and 0.3 for children under 14). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of observation. After variable takes the value 1 for the periods after the AUH implementation (2010-2015), otherwise 0 (2004-2009). Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.

**Table B3: Effect of the AUH on the standard deviation of arc percentage change in income**

| Dependent variables                 | (1)<br>SD Arc                 |                               | (2)<br>SD Arc-down            |                               | (3)<br>SD Arc-up               |                               |
|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|-------------------------------|
|                                     | (i)                           | (ii)                          | (i)                           | (ii)                          | (i)                            | (ii)                          |
|                                     | After*Eligible                | <b>-3.7622***</b><br>(1.1093) | <b>-7.5063***</b><br>(0.8398) | <b>-8.2934***</b><br>(1.8058) | <b>-15.1354***</b><br>(4.2705) | -1.4584<br>(1.9183)           |
| Eligible                            | <b>14.7949***</b><br>(0.7235) | <b>18.0895***</b><br>(1.3316) | <b>15.9946***</b><br>(1.5694) | <b>21.5001***</b><br>(3.9179) | <b>14.3954***</b><br>(0.8217)  | <b>16.8441***</b><br>(0.8710) |
| After                               | <b>-1.6963**</b><br>(0.7744)  | <b>3.5474*</b><br>(1.9999)    | 0.3755<br>(1.4472)            | 11.9980<br>(8.8328)           | <b>-2.5074*</b><br>(1.2643)    | -0.0414<br>(1.4356)           |
| Controls, time and regional dummies | No                            | Yes                           | No                            | Yes                           | No                             | Yes                           |
| R-squared                           | 0.0224                        | 0.0417                        | 0.0186                        | 0.0523                        | 0.0253                         | 0.0439                        |
| Observations                        | 25,808                        | 25,808                        | 8,532                         | 8,532                         | 17,276                         | 17,276                        |
| Average                             | 50.57                         |                               | 48.72                         |                               | 51.27                          |                               |

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: Difference-in-difference estimates. Column (1) measures the effect on the standard deviation of arc percentage change in household income. Columns (2) and (3) on the sub-samples of households with the same change in income between the first and second year of observation (negative or positive). The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of observation. After variable takes the value 1 for the periods after the AUH implementation (2010-2015), otherwise 0 (2004-2009). Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.

**Table B4: Effect of the AUH on income stability using alternative sample size**

| Dependent variables<br>Sample restricted to : ≤ | (1)<br>Poverty trends         |                               |                               |                               | (2)<br>CV                     |                               |                               |                               |
|-------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                                                 | D2<br>(i)                     | D3<br>(ii)                    | D4<br>(iii)                   | D5<br>(iv)                    | D2<br>(i)                     | D3<br>(ii)                    | D4<br>(iii)                   | D5<br>(iv)                    |
| After*Eligible                                  | <b>-0.0264**</b><br>(0.0115)  | <b>-0.0663***</b><br>(0.0132) | <b>-0.0777***</b><br>(0.0112) | <b>-0.0826***</b><br>(0.0114) | <b>-0.0535***</b><br>(0.0073) | <b>-0.0333***</b><br>(0.0055) | <b>-0.0295***</b><br>(0.0041) | <b>-0.0261***</b><br>(0.0046) |
| Eligible                                        | <b>0.1844***</b><br>(0.0088)  | <b>0.2049***</b><br>(0.0132)  | <b>0.2030***</b><br>(0.0126)  | <b>0.1995***</b><br>(0.0135)  | <b>0.1226***</b><br>(0.0182)  | <b>0.1120***</b><br>(0.0097)  | <b>0.1078***</b><br>(0.0065)  | <b>0.1077***</b><br>(0.0048)  |
| After                                           | <b>-0.0427***</b><br>(0.0112) | 0.0038<br>(0.0083)            | <b>0.0135**</b><br>(0.0061)   | <b>0.0185***</b><br>(0.0051)  | 0.0025<br>(0.0166)            | -0.0118<br>(0.0123)           | -0.0100<br>(0.0125)           | -0.0089<br>(0.0118)           |
| Controls, time and regional dummies             | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           |
| R-squared                                       | 0.4071                        | 0.3809                        | 0.3707                        | 0.3732                        | 0.0841                        | 0.0658                        | 0.0582                        | 0.0569                        |
| Observations                                    | 17,392                        | 25,808                        | 32,891                        | 38,757                        | 17,392                        | 25,808                        | 32,891                        | 38,757                        |
| Average                                         | 0.350                         | 0.227                         | 0.165                         | 0.130                         | 0.373                         | 0.353                         | 0.342                         | 0.332                         |
| Dependent variables<br>Sample restricted to : ≤ | (3)<br>CV-down                |                               |                               |                               | (4)<br>CV-up                  |                               |                               |                               |
|                                                 | D2<br>(i)                     | D3<br>(ii)                    | D4<br>(iii)                   | D5<br>(iv)                    | D2<br>(i)                     | D3<br>(ii)                    | D4<br>(iii)                   | D5<br>(iv)                    |
| After*Eligible                                  | <b>-0.0783***</b><br>(0.0248) | <b>-0.0667***</b><br>(0.0123) | <b>-0.0459***</b><br>(0.0112) | <b>-0.0375***</b><br>(0.0108) | <b>-0.0449***</b><br>(0.0103) | <b>-0.0196*</b><br>(0.0099)   | <b>-0.0218**</b><br>(0.0098)  | <b>-0.0198*</b><br>(0.0112)   |
| Eligible                                        | <b>0.1455***</b><br>(0.0412)  | <b>0.1238***</b><br>(0.0208)  | <b>0.1045***</b><br>(0.0167)  | <b>0.1034***</b><br>(0.0132)  | <b>0.1187***</b><br>(0.0114)  | <b>0.1114***</b><br>(0.0066)  | <b>0.1126***</b><br>(0.0046)  | <b>0.1119***</b><br>(0.0044)  |
| After                                           | 0.0120<br>(0.0180)            | 0.0230<br>(0.0166)            | 0.0093<br>(0.0112)            | -0.0070<br>(0.0062)           | 0.0000<br>(0.0283)            | -0.0269<br>(0.0218)           | -0.0199<br>(0.0212)           | -0.0097<br>(0.0175)           |
| Controls, time and regional dummies             | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           |
| R-squared                                       | 0.0798                        | 0.0647                        | 0.0559                        | 0.0559                        | 0.0936                        | 0.0734                        | 0.0674                        | 0.0644                        |
| Observations                                    | 5,144                         | 8,532                         | 11,685                        | 14,456                        | 12,248                        | 17,276                        | 21,206                        | 24,301                        |
| Average                                         | 0.313                         | 0.301                         | 0.304                         | 0.303                         | 0.392                         | 0.373                         | 0.358                         | 0.346                         |

Source: Author's calculation based on the EPH microdata, 2004-2015.

Notes: Difference-in-difference estimates. The poverty trends indicator (1) measures the time spent in poverty by a household during its observation period, i.e. income per capita below \$5.5/day. The CV (2) is the coefficient of variation of household income. The CV-down and CV-up indicators (3 and 4) are calculated for households with a drop and increase in income respectively between the first and second year of observation. The sample is composed of households with at least one minor child and belonging to the corresponding poorest deciles (D2 to D5) of the household per capita income distribution in the first year of appearance in the survey. Eligible variable takes the value 1 if the parents work in the informal sector, are domestic employees, are inactive, unemployed, or retired without health coverage, during their first year of interview. After variable takes the value one for the periods after the AUH implementation (2010-2015), otherwise zero (2004-2009). Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.

**Table B5: Effect of the AUH on income stability using alternative restrictions on the sample size**

| Dependent variables<br>Model:       | (1)<br>Poverty trends         |                               |                               |                               | (2)<br>CV                     |                               |                               |                               |
|-------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                                     | Model 2<br>(i)                | Model 3<br>(ii)               | Model 4<br>(iii)              | Model 5<br>(iv)               | Model 2<br>(i)                | Model 3<br>(ii)               | Model 4<br>(iii)              | Model 5<br>(iv)               |
| After*Eligible                      | <b>-0.0889***</b><br>(0.0064) | <b>-0.0989***</b><br>(0.0159) | <b>-0.0610***</b><br>(0.0112) | <b>-0.0653***</b><br>(0.0116) | <b>-0.0414***</b><br>(0.0066) | <b>-0.0262***</b><br>(0.0070) | <b>-0.0300***</b><br>(0.0060) | <b>-0.0307***</b><br>(0.0092) |
| Eligible                            | <b>0.2249***</b><br>(0.0090)  | <b>0.2729***</b><br>(0.0149)  | <b>0.2056***</b><br>(0.0127)  | <b>0.2108***</b><br>(0.0147)  | <b>0.1185***</b><br>(0.0125)  | <b>0.1156***</b><br>(0.0128)  | <b>0.1120***</b><br>(0.0098)  | <b>0.1068***</b><br>(0.0101)  |
| After                               | <b>0.0183**</b><br>(0.0072)   | <b>0.0212***</b><br>(0.0068)  | 0.0006<br>(0.0088)            | -0.0119<br>(0.0092)           | <b>0.0199***</b><br>(0.0064)  | -0.0133<br>(0.0110)           | -0.0139<br>(0.0123)           | 0.0014<br>(0.0080)            |
| Controls, time and regional dummies | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           |
| R-squared                           | 0.3632                        | 0.4250                        | 0.3806                        | 0.3931                        | 0.0583                        | 0.0765                        | 0.0659                        | 0.0652                        |
| Observations                        | 39,475                        | 19,849                        | 22,489                        | 17,593                        | 39,475                        | 19,849                        | 22,489                        | 17,593                        |
| Average                             | 0.221                         | 0.189                         | 0.227                         | 0.242                         | 0.340                         | 0.337                         | 0.353                         | 0.326                         |
| Dependent variables<br>Model:       | (3)<br>CV-down                |                               |                               |                               | (4)<br>CV-up                  |                               |                               |                               |
|                                     | Model 2<br>(i)                | Model 3<br>(ii)               | Model 4<br>(iii)              | Model 5<br>(iv)               | Model 2<br>(i)                | Model 3<br>(ii)               | Model 4<br>(iii)              | Model 5<br>(iv)               |
| After*Eligible                      | <b>-0.0680***</b><br>(0.0158) | <b>-0.0859***</b><br>(0.0240) | <b>-0.0624***</b><br>(0.0113) | <b>-0.0742***</b><br>(0.0255) | <b>-0.0286***</b><br>(0.0071) | -0.0124<br>(0.0104)           | <b>-0.0179*</b><br>(0.0090)   | -0.0100<br>(0.0221)           |
| Eligible                            | <b>0.1259***</b><br>(0.0197)  | <b>0.1875***</b><br>(0.0317)  | <b>0.1251***</b><br>(0.0217)  | <b>0.1220***</b><br>(0.0268)  | <b>0.1200***</b><br>(0.0094)  | <b>0.1011***</b><br>(0.0077)  | <b>0.1109***</b><br>(0.0066)  | <b>0.1029***</b><br>(0.0071)  |
| After                               | <b>0.0433**</b><br>(0.0190)   | <b>0.0480*</b><br>(0.0272)    | 0.0203<br>(0.0155)            | 0.0300<br>(0.0322)            | 0.0089<br>(0.0130)            | -0.0312<br>(0.0211)           | -0.0282<br>(0.0209)           | -0.0129<br>(0.0236)           |
| Controls, time and regional dummies | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           | Yes                           |
| R-squared                           | 0.0425                        | 0.1037                        | 0.0683                        | 0.0801                        | 0.0729                        | 0.0765                        | 0.0735                        | 0.0701                        |
| Observations                        | 14,043                        | 6,831                         | 7,246                         | 6,060                         | 25,432                        | 13,018                        | 15,243                        | 11,533                        |
| Average                             | 0.280                         | 0.239                         | 0.301                         | 0.292                         | 0.366                         | 0.366                         | 0.373                         | 0.340                         |

Source: Author's calculation based on the EPH microdata, 2004-2015.

Note: Difference-in-difference estimates. The poverty trends indicator (1) measures the time spent in poverty by a household during its observation period, i.e. income per capita below \$5.5/day. The CV (2) is the coefficient of variation of household income. The CV-down and CV-up indicators (3 and 4) are calculated for households with a drop and increase in income respectively between the first and second year of observation. The sample comprises households with at least one minor child, and belonging to the first three deciles of the national per capita income distribution in the first year of observation. In Model 2, the sample also includes households with two interviews over time, instead of three or more. In Model 3, only eligible and non-eligible households over the entire observation period are kept, instead of the first year. In Model 4, the analysis period is restricted to 2004-2013 instead of 2004-2015. Finally, Model 5 drops households in which a member has not reported income over the observation period. Control variables include household head age and squared, gender, whether single parent, number of children under and over 18 and squared, household size, parents' highest level of education, whether parents have multiple jobs, whether the household benefited from the PJJHD program during the period and its interaction with the treatment variable, and time and region fixed effects. Clustered standard errors are in brackets (by large urban areas). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The value in the last row corresponds to the average of the dependent variable for the control group before the AUH implementation.