

# **The Distributional Impact of Inflation: Tax Incidence and Financial Strategies of Argentine Households**

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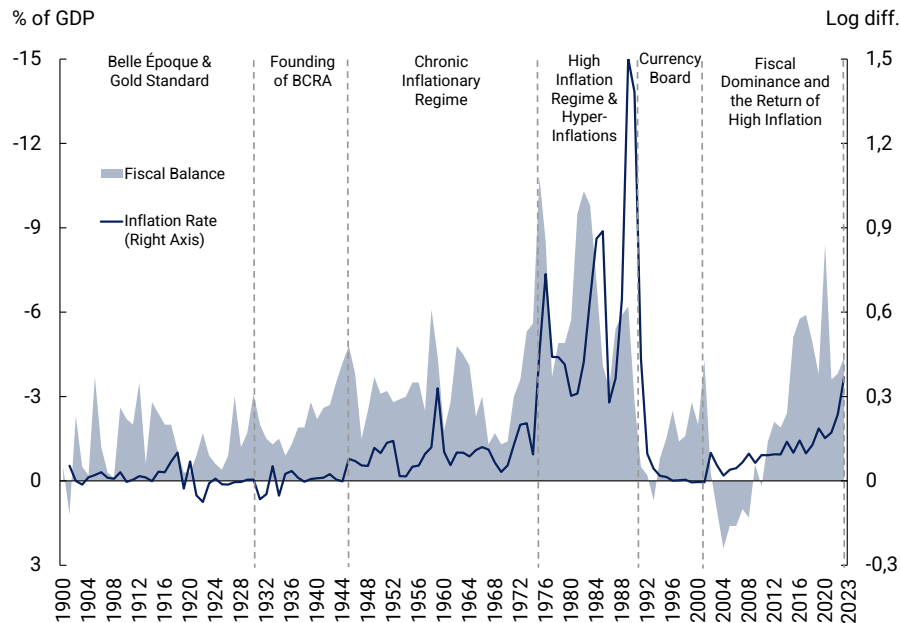
BANCO CENTRAL  
DE LA REPÚBLICA ARGENTINA

- 1 | Motivation
- 2 | Distributional impact of inflation
- 3 | Inflation tax incidence: back-of-the-envelope and econometric approach
- 4 | Households' financial strategies
- 5 | Concluding remarks

**Note: all views expressed are the authors' own and do not necessarily represent those of BCRA**

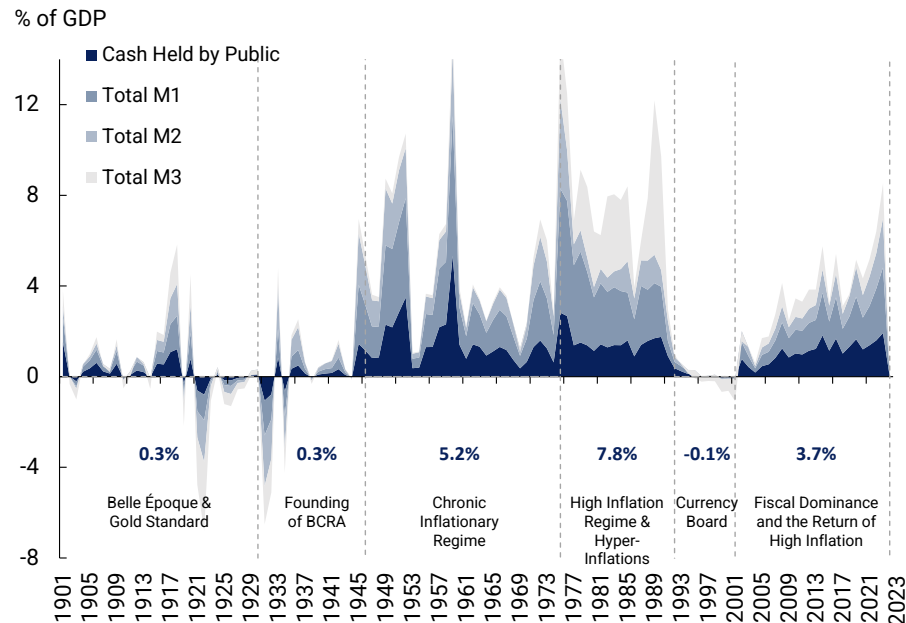


## Fiscal deficit and inflation



Source: based on INDEC and Ministry of Economy data.

## Inflation tax on monetary aggregates



Source: based on INDEC and BCRA.

Our  
contribution



1. New estimates of the **incidence of the inflation tax** by income quintile of households' income for 2017-2024, estimating money demand functions using micro data from Argentina's latest national survey of household expenditure.
2. Link between inflation tax incidence and **households' financial strategies**, particularly decisions on indebtedness, employing quarterly data from Argentina's permanent household survey.

For Argentina:

- First money demand estimation based on granular data.
- First measurement of inflation tax incidence and its link to financial strategies based on household level data

Caveat: **Work in progress - preliminary**



The inflation  
tax is  
regressive

- **Incidence** on low income households is **3x** that on high income ones...
- ... and **rises from around 1% to 8% of income** as monthly inflation accelerates from 2% I-Q 2017 to 25% Dec-2023.
- Lower inflation in 2024: **gains of around 6 p.p. of income** for first-quintile households and of 1,5 p.p. for fifth-quintile households.



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Households  
adapt

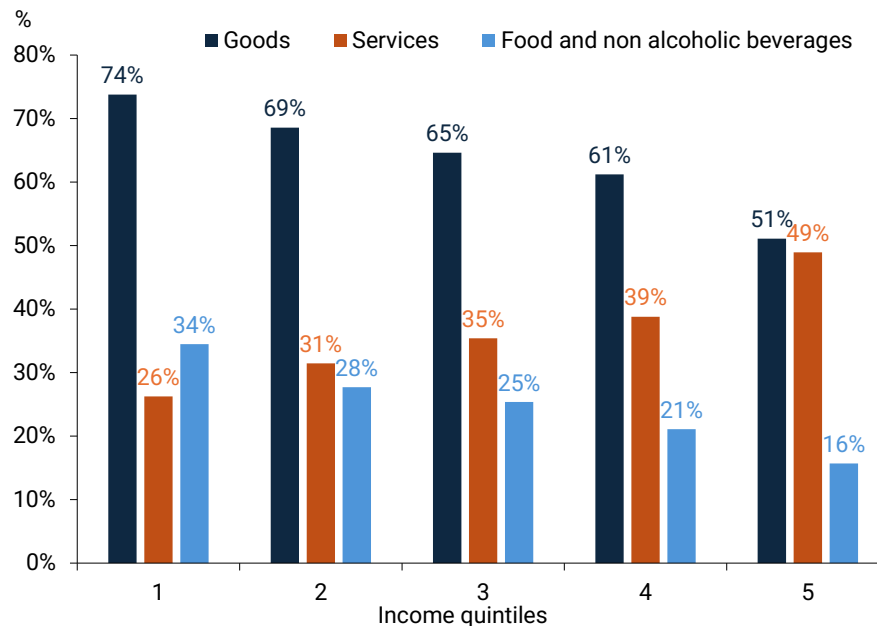
- Poorer households react to inflation tax by **borrowing from family members or friends**, while **better-off households can access financial services that allow them to pay in instalments**, thus shielding against inflation.
- **In-family borrowing becomes more significant** as inflation accelerates.
- We find **little evidence to link inflation tax incidence to bank borrowing or use of savings** to finance current spending.

Approach	Description	Representative Studies	Main Findings
<b>(1) Inflation and income inequality (macro approach)</b>	Uses aggregate indicators (e.g., Gini coefficient, quintile ratios) to study the relationship between inflation and income inequality across countries.	Albanesi (2007); Aparicio & Araujo (2011); Binder (2019); Süßmuth & Wieschemeyer (2022)	High and volatile inflation generally increases inequality, though the effect may reverse when lower-income households are more indebted or tax indexation adds progressivity.
<b>(2) Inflation incidence through consumption baskets (micro approach)</b>	Uses household expenditure surveys to estimate “effective inflation” faced by each income group, based on their spending patterns.	Ciambezi & Pietropaoli (2024); Basso et al. (2023); Amores et al. (2024).	Poorer households experience higher inflation because they spend more on basic goods (food, energy, rent) whose prices rise faster.
<b>(3) Inflation tax incidence (money demand approach)</b>	Estimates the loss of purchasing power of households’ financial holdings (cash and liquid assets) as a share of income. Often uses estimated money demand functions.	Erosa & Ventura (2002); Attanasio et al. (2002); Ferreira et al. (2023); Chafwehe et al. (2024).	The inflation tax is regressive, as lower-income households hold a larger proportion of non-interest-bearing assets.



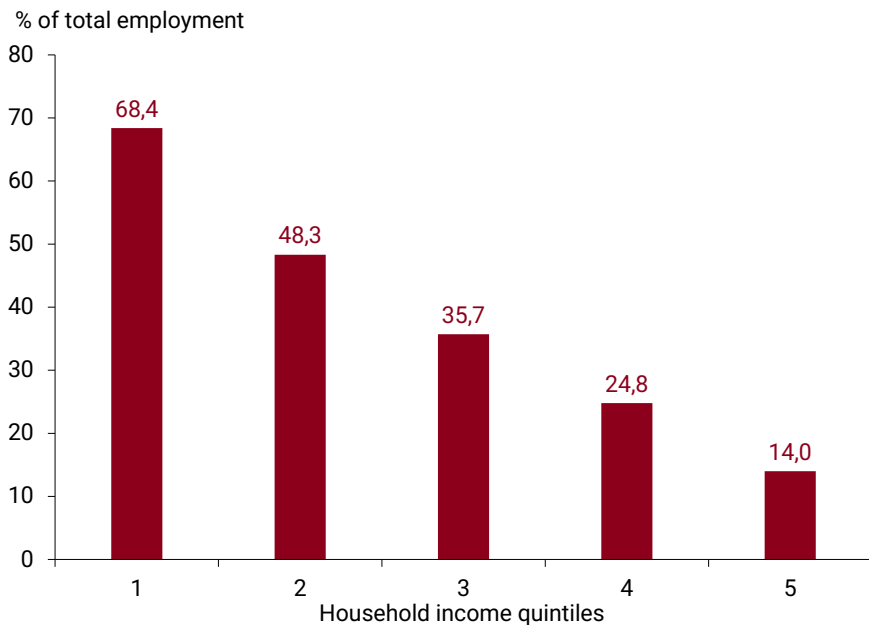
Paper	Country / Sample	Methodology	Main Findings
<b>Canavese et al. (1999)</b>	Argentina (1980s–1990s)	Estimates aggregate money demand and computes inflation tax incidence by income quintile	The inflation tax is regressive: lower-income households hold a higher share of cash relative to income.
<b>Capello et al. (2015)</b>	Argentina (1993–2014)	Updates Canavese et al. using a revised money demand function	Confirms the regressive nature of the inflation tax, though the intensity declines during the 2000s.
<b>Satorre (2012)</b>	Argentina (ENGHO 2004–05)	Uses household expenditure microdata to estimate effective inflation by income quintile	Inflation weighs more heavily on poorer households due to their higher spending on food and basic goods.

### Share of household spending allocated to goods and services



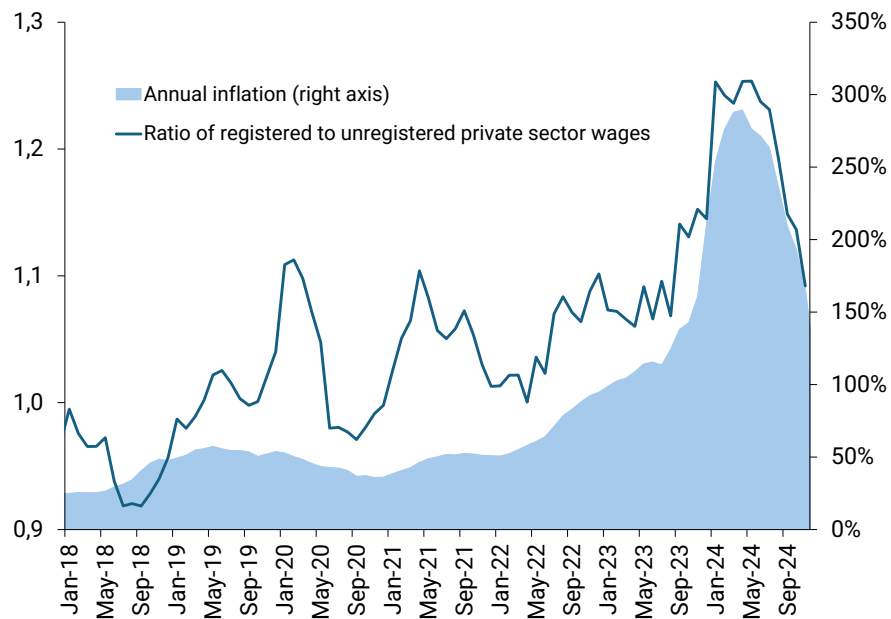
Source: based on data from INDEC (Household Expenditure Survey 2017-18).

Share of unregistered wage earners in total wage earners



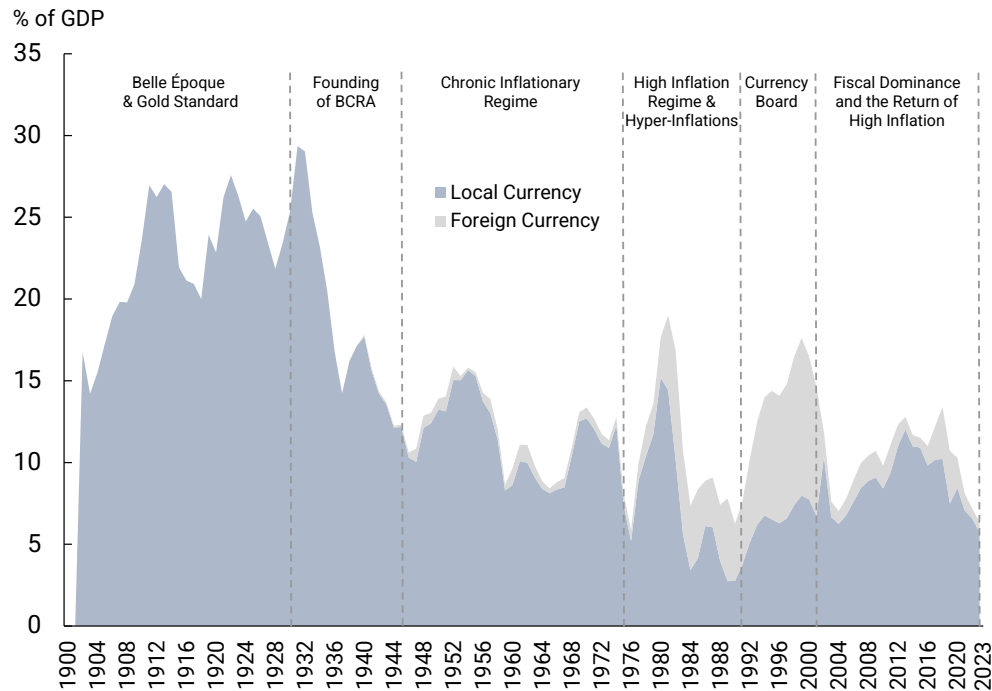
Source: based on data from INDEC.

Registered and registered private sector wages



Source: based on data from INDEC.

## Bank credit to the private sector



Source: based on INDEC and BCRA.

## Seniorage and inflation tax

$$\frac{\Delta M_t}{P_t} = \frac{M_t}{P_t} - \frac{M_{t-1}}{P_t} = m_t - m_{t-1} \frac{P_{t-1}}{P_t}$$

$$\frac{\Delta M_t}{P_t} = (m_t - m_{t-1}) + m_{t-1} \left( 1 - \frac{P_{t-1}}{P_t} \right)$$

$$\frac{\Delta M_t}{P_t} = (m_t - m_{t-1}) + m_{t-1} \left( \frac{\pi_t}{1 + \pi_t} \right)$$

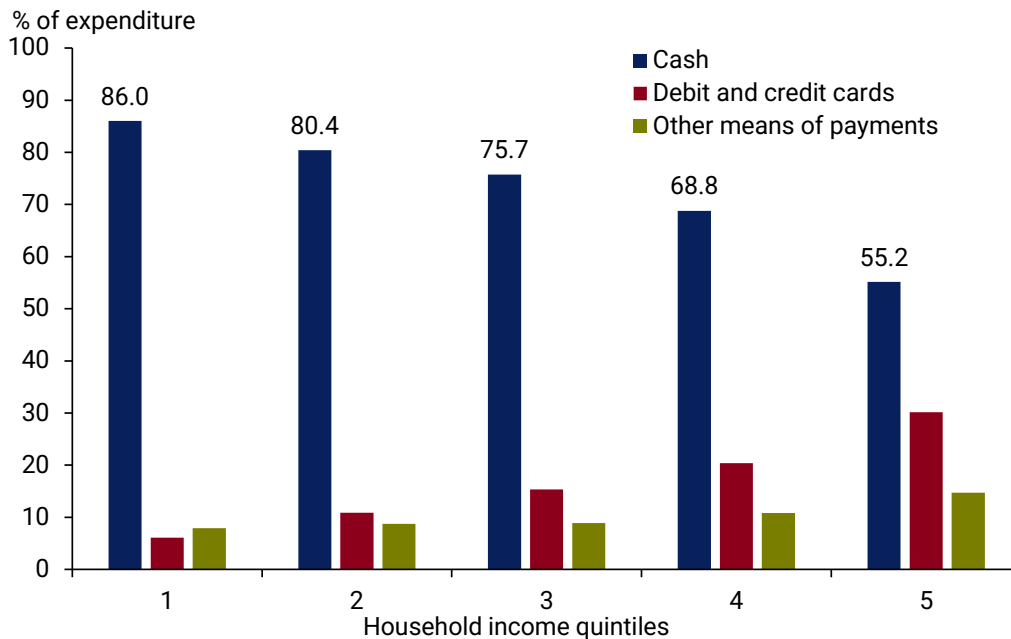
### **National Household Expenditure Survey (ENGHo)**

- conducted by the National Institute of Statistics and Censuses (INDEC): information on the living conditions of the population and access to goods and services produced by society; CPI consumption basket.
- National coverage
- Typically carried out every ten years on average. Most recent edition, ENGHo 2017–2018, covered urban areas with 2,000 or more inhabitants between November 2017 and November 2018.
- Based on a probabilistic, multistage, and stratified sample of 44,914 private households distributed over 52 weeks of data collection.

### **Permanent Household Survey (EPH)**

- Conducted by INDEC, main source of labour market statistics.
- National coverage, continuous quarterly data since 2003 (semi-annual, 1973-)
- Based on a probabilistic, stratified sample with two selection stages for the 31 urban agglomerates and a third stage for selection of localities within each province. The total sample size is approximately 26,000 households.
- two questionnaires: one for households, collecting information on housing characteristics, living conditions, organization, and coping strategies; and another for individuals, covering personal characteristics, employment conditions, and income.

### Consumption means of payment by income quintiles

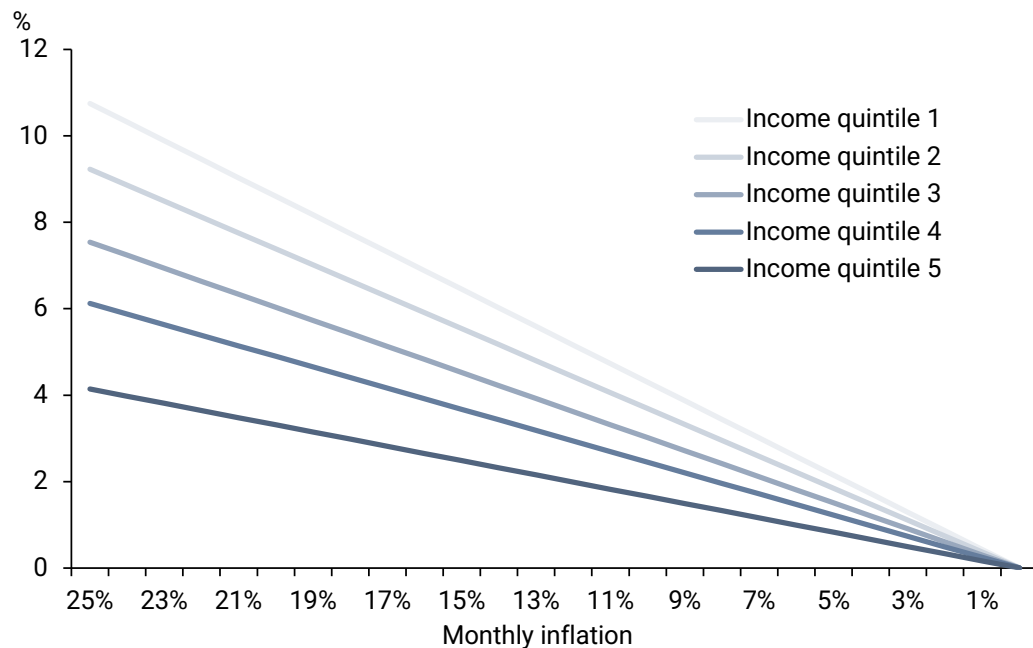


Source: based on data from INDEC (Household Expenditure Survey 2017-18).

	Household Survey 3Q-24	Households expenditure survey 2017-18		Households expenditure survey 2017-18			Monthly inflation		Monthly inflation	
							25.0%		2.0%	
Average household income quintiles	Average household income (pesos)	Household expenditure as % of income	Monthly household expenditure (pesos)	% of expenditure paid in cash	Use of cash during the month (pesos)	Monthly average cash holdings (pesos)	Purchasing power loss (pesos)	As % of household income	Purchasing power loss (pesos)	As % of household income
1	318,411	100%	318,411	86.0	273,860	136,930	34,232	10.8	2,739	0.9
2	629,587	92%	578,150	80.4	464,866	232,433	58,108	9.2	4,649	0.7
3	926,983	80%	738,305	75.7	559,229	279,615	69,904	7.5	5,592	0.6
4	1,377,553	71%	980,744	68.8	674,656	337,328	84,332	6.1	6,747	0.5
5	2,832,502	60%	1,701,744	55.2	938,536	469,268	117,317	4.1	9,385	0.3
			Quintile 1/quintile 5 ratio					2.6	2.6	

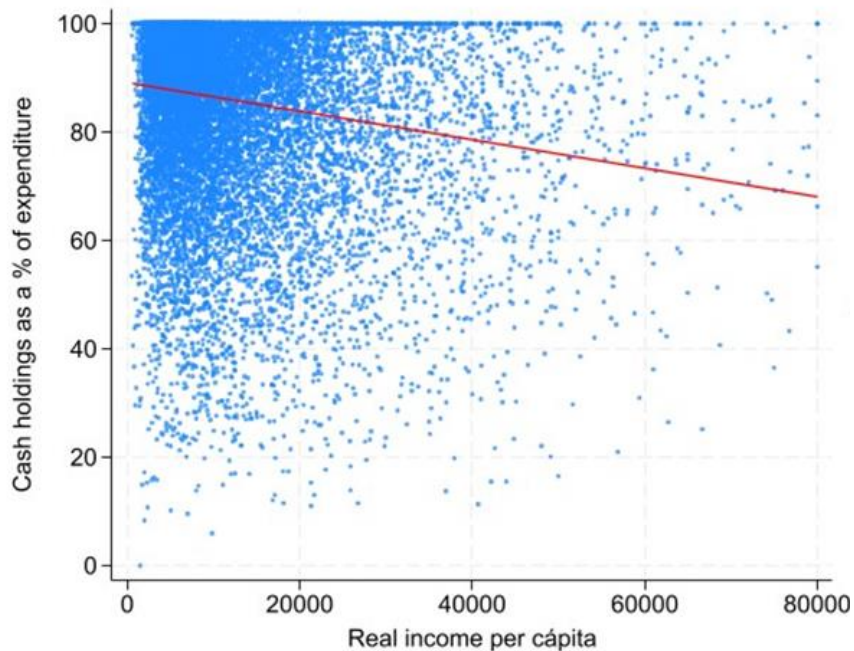


### Inflation tax incidence – static analysis (loss of purchasing power of money holdings as % of average total household income)

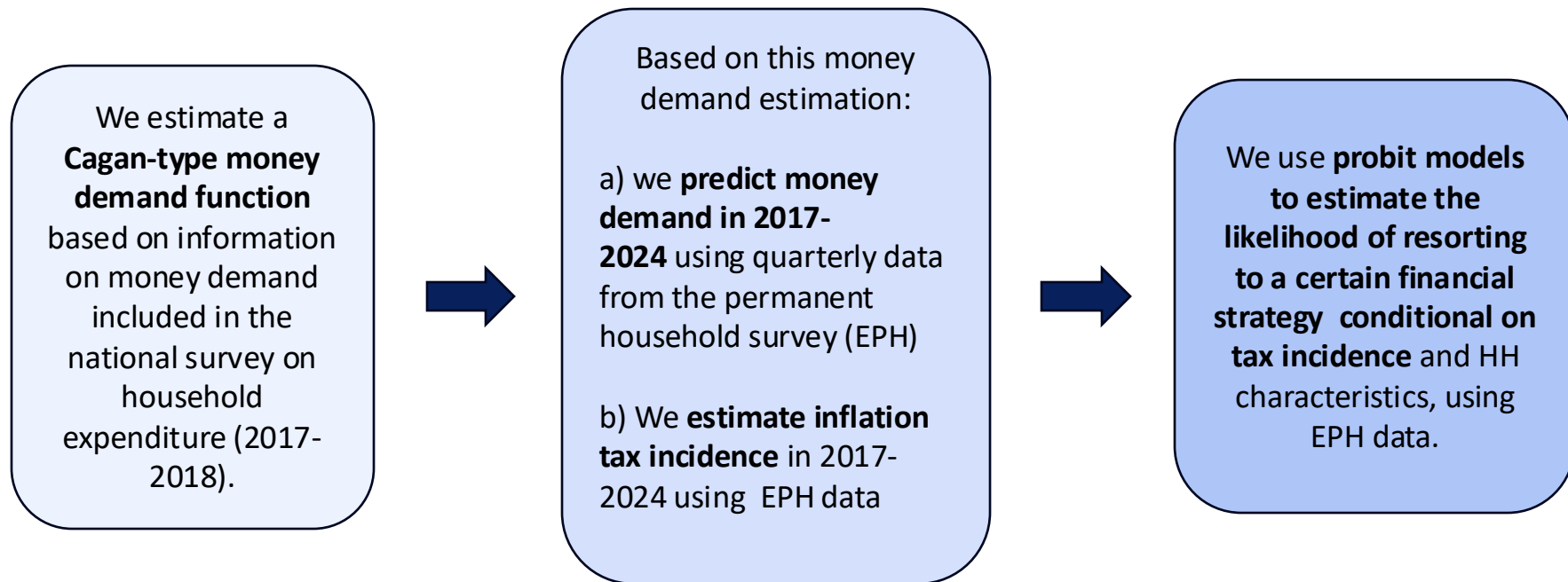


Source: based on data from INDEC (Household Expenditure Survey 2017-18).

### Expenditure using cash (as % of expenditure) and household real income. ENGHO, 2017-18



Source: based on data from INDEC (Household Expenditure Survey 2017-18).



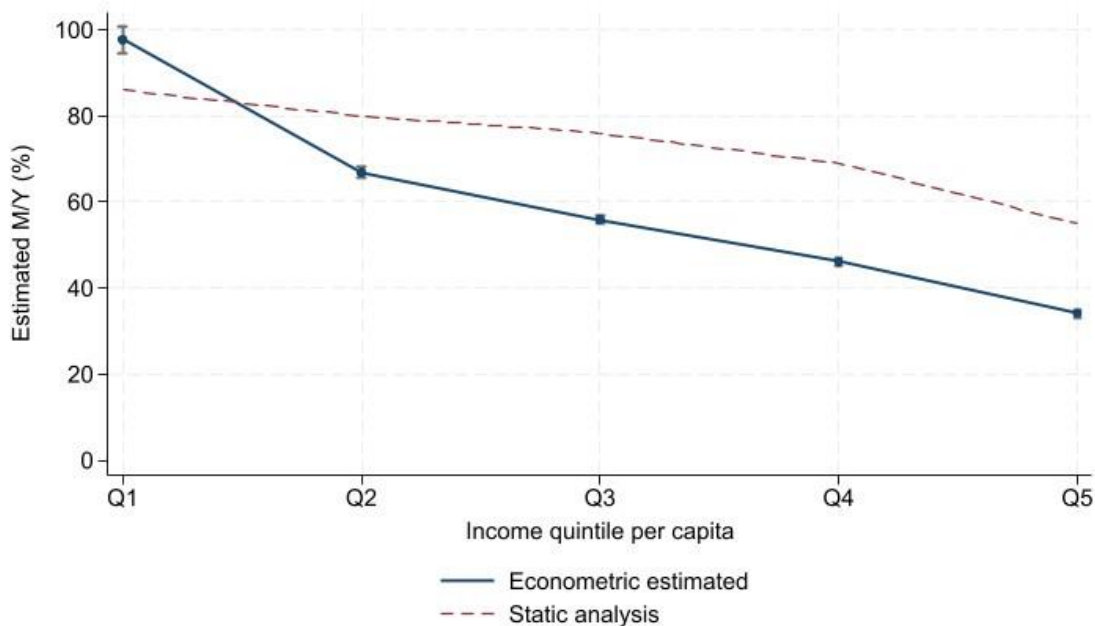
## Money demand estimation

$$\text{Log } m_{it}^{pc} = \beta_0 + \beta_1 \text{Log } y_{it}^{pc} + \beta_2 \pi_t^e + e_{it}$$

Dependent variable: Log real cash per capita	
Log real income per capita	0,546***
Expected inflation	-0,002*
Cons	3,690***
Observations	21.523
Robust standard errors in brackets (White)	
* p<0.10, ** p<0.05, *** p<0.01	

Source: own estimates.

### Money demand estimates and income quintiles, ENGHO data (2017-18)



Source: own estimates.

## Money demand estimation with quintiles and regions

	Dependent variable: Log real cash per capita
Log real income per capita	0,420***
Expected inflation	-0,004***
Quintil	
2	0,087***
3	0,157***
4	0,261***
5	0,291***
Region	
2	0,122***
3	-0,002
4	-0,193***
5	0,046**
6	-0,221***
Cons	4,729***
Observations	21.523

Robust standard errors in brackets (White)

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Source: own estimates.

## Money demand estimation with HH controls

	Dependent variable: Log real cash per capita
Log real income per capita	0,558***
Expected inflation	-0,002
Age	-0,048***
Gender	0,018
Education level	0,001
Occupation	0,018**
Cons	3,728***
Observations	21.523

Robust standard errors in brackets (White)

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

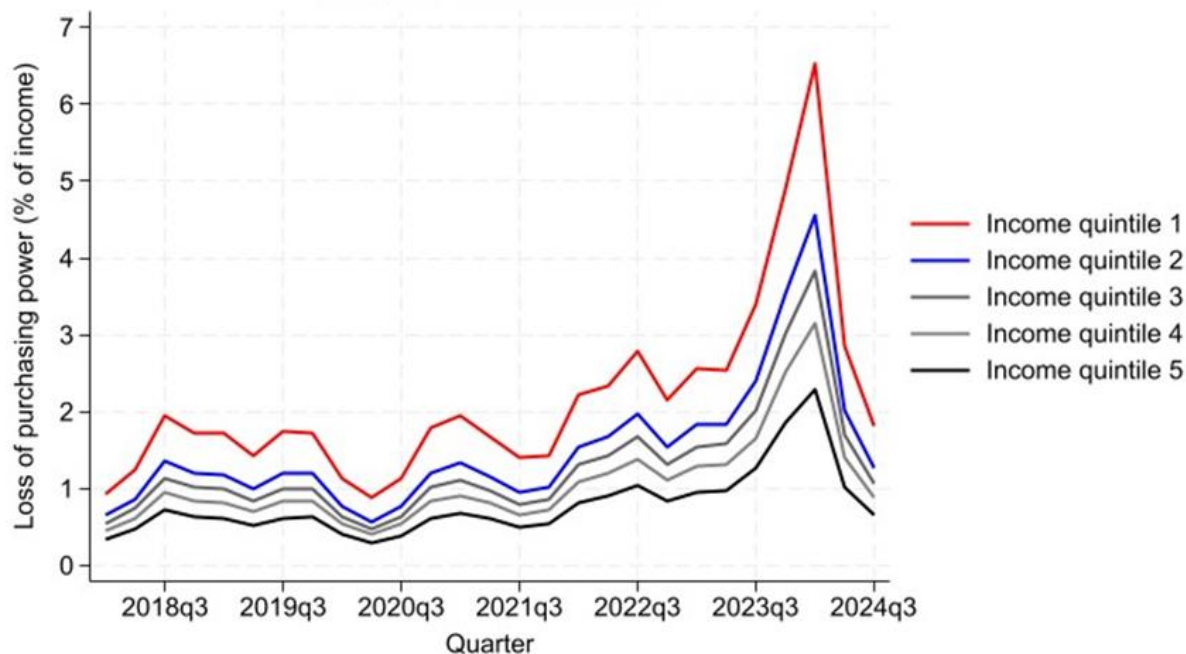
Source: own estimates.

**Inflation tax incidence- econometric analysis**  
(loss of purchasing power of money holdings as % of average total household income).

1 quarter 2017 ( $\pi$ : 2,0% m/m)			
	<b>Money demand (% of income)</b>	<b>Loss of purchasing power (% of income)</b>	
Quintile 1	42%	0,9%	
Quintile 2	31%	0,6%	
Quintile 3	26%	0,5%	
Quintile 4	21%	0,4%	
Quintile 5	15%	0,3%	
4 quarter 2023 ( $\pi$ : 15,5% m/m)			
	<b>Money demand (% of income)</b>	<b>Loss of purchasing power (% of income)</b>	<b>Loss of purchasing power (% of income) with dic-23 inflation</b>
Quintile 1	30%	4,9%	7,5%
Quintile 2	23%	3,5%	5,7%
Quintile 3	19%	3,0%	4,8%
Quintile 4	16%	2,5%	4,0%
Quintile 5	11%	1,9%	2,7%

Source: own estimates.

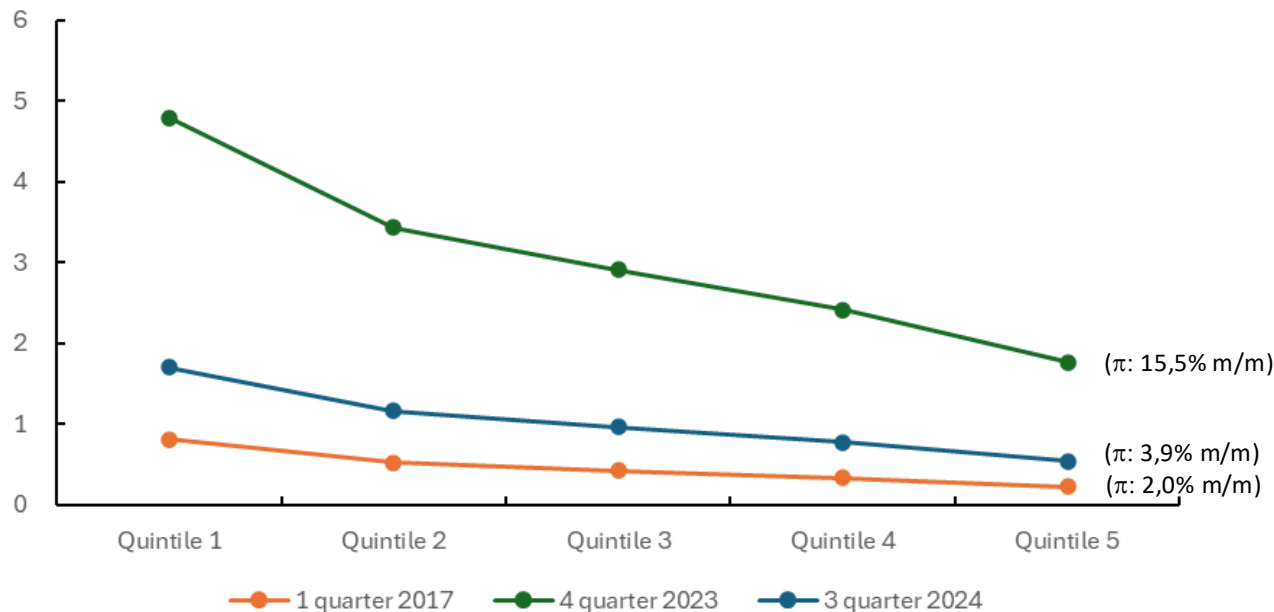
**Inflation tax incidence- econometric analysis (loss of purchasing power of money holdings as % of average total household income). First quarter 2017- third quarter 2024**



Source: own estimates.

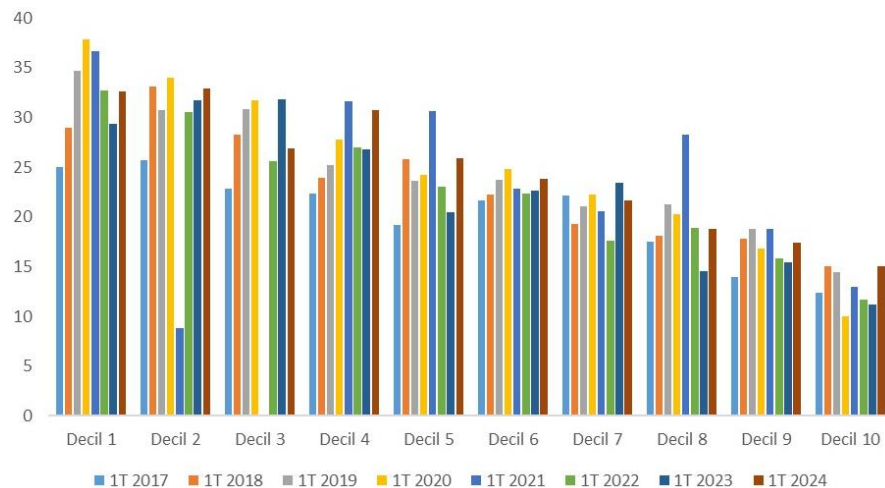


**Inflation tax incidence. Based on money demand estimates and National Household survey data. IQ 2017, IVQ 2023, IIIQ 2024**



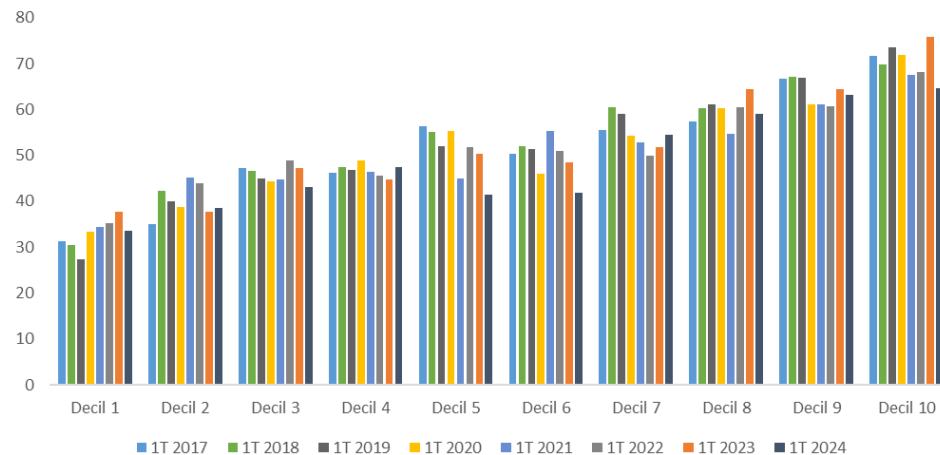
Source: own estimates.

**Households that borrow from family or friends  
(% of households)**



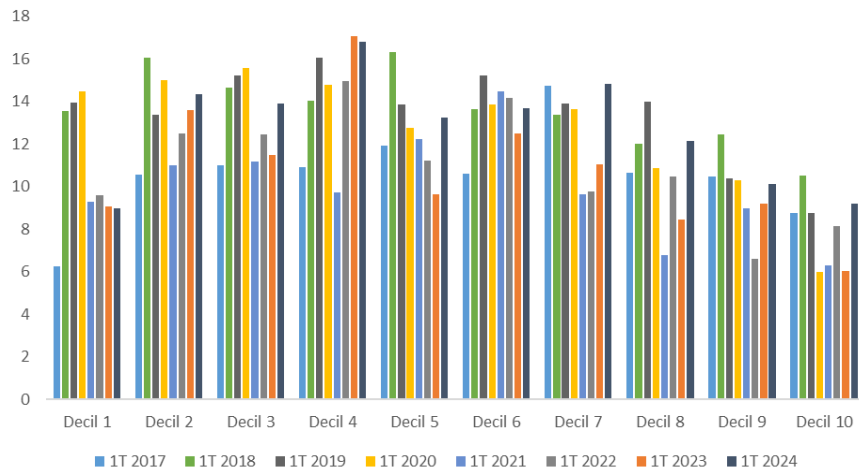
Source: based on EPH – INDEC data.

**Households that buy in instalments  
(% of households)**



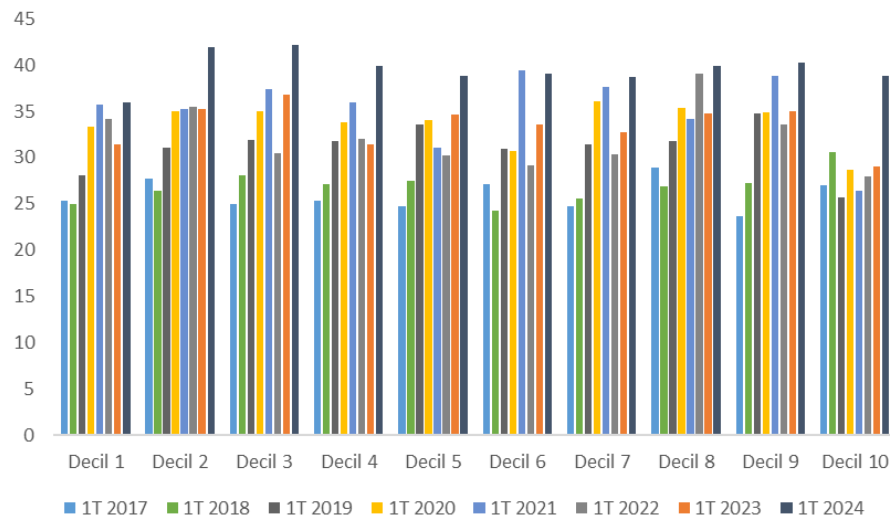
Source: based on EPH – INDEC data.

**Households that borrow from banks/financial institutions  
(% households)**



Source: based on EPH – INDEC data.

**Households that use their own savings  
(% households)**



Source: based on EPH – INDEC data.

**Inflation tax incidence and financial strategies: correlations,  
selected quarters**

1 quarter 2017 ( $\pi$ : 2,0% m/m)					
	Income incidence	Use of savings	In family borrowing	Banks borrowing	Paying in instalments
Income incidence	1,0000				
Use of savings	0,0040	1,0000			
In family borrowing	0,1017	0,2354	1,0000		
Banks borrowing	0,0300	0,1176	0,1163	1,0000	
Paying in instalments	-0,2147	0,0905	0,0241	0,1252	1,0000
4 quarter 2023 ( $\pi$ : 15,5% m/m)					
	Income incidence	Use of savings	In family borrowing	Banks borrowing	Paying in instalments
Income incidence	1,0000				
Use of savings	0,0035	1,0000			
In family borrowing	0,1447	0,2527	1,0000		
Banks borrowing	-0,0133	0,1106	0,1208	1,0000	
Paying in instalments	-0,1980	0,1241	0,0715	0,1262	1,0000

Source: own estimates.

## Inflation tax incidence and financial strategies. Probit models.

First quarter 2017 ( $\pi$ : 2,0% m/m)

Dependent variable:	In-family borrowing	Use of savings	Bank borrowing	Paying in instalments
Inflation tax incidence	0,1709*	0,0891	-0,4610*	-0,9013***
Income per capita	-0,00002***	-0,0069	-0,0208*	0,00001***
Cons	-1,0508***	-0,7244***	-0,9066***	0,4038***
Observations	14.021	14.021	14.021	14.021

Robust standard errors in brackets (White)

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ Fourth quarter 2023 ( $\pi$ : 15,5% m/m)

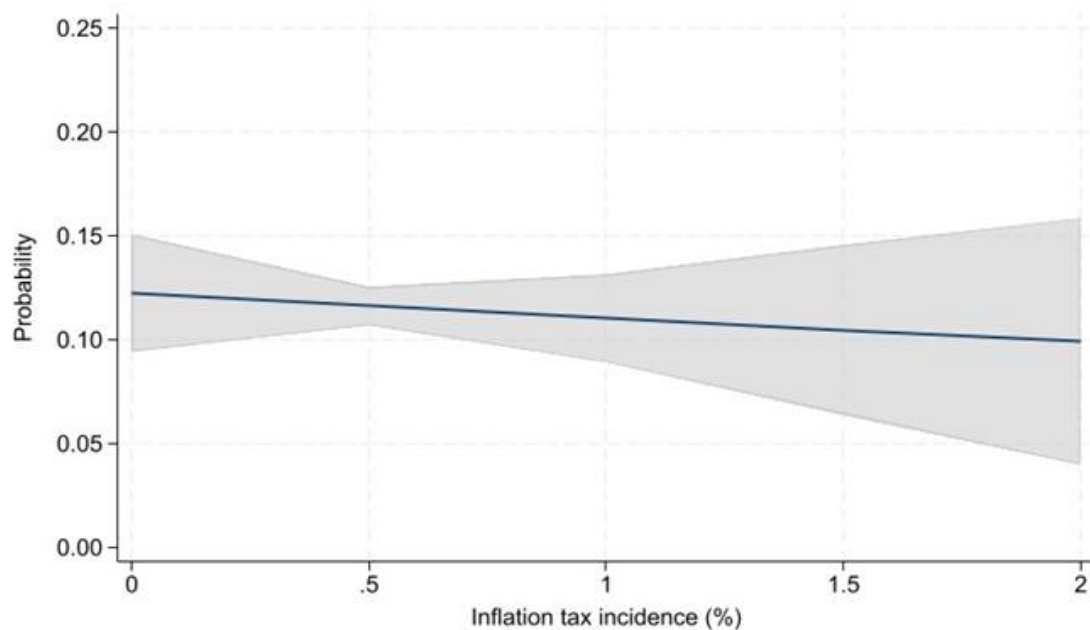
Dependent variable:	In-family borrowing	Use of savings	Bank borrowing	Paying in instalments
Inflation tax incidence	0,1123***	-0,0177	-0,053	-0,2168***
Income per capita	-0,0063***	-0,0018	-0,0026	-0,0017
Cons	-1,2663***	-0,2714***	-0,9059***	0,6233***
Observations	12.631	12.631	12.631	12.631

Robust standard errors in brackets (White)

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ 

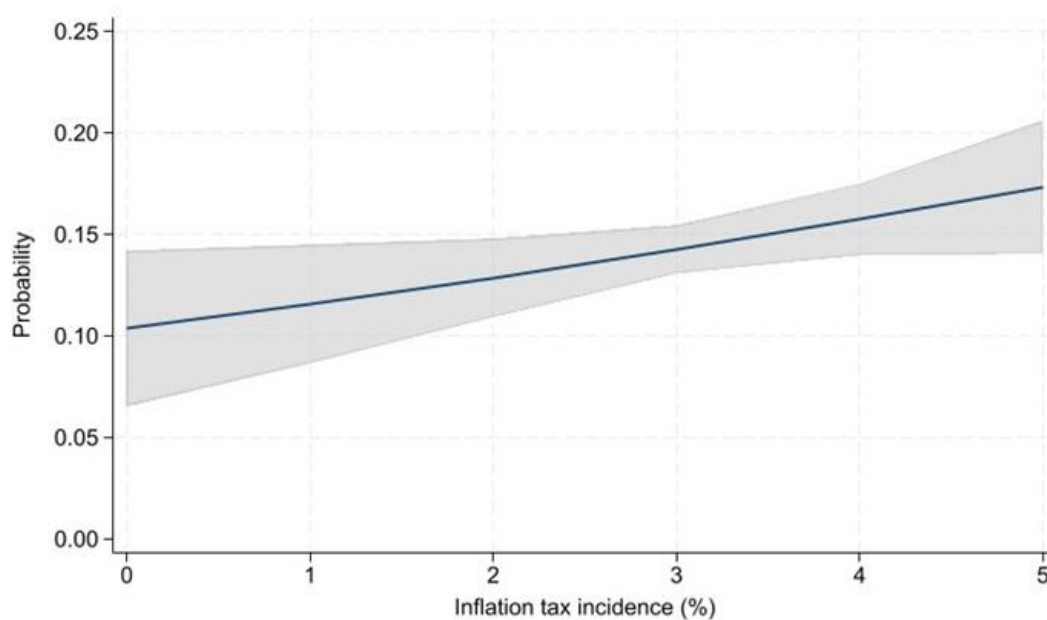
Source: own estimates.

### In-family borrowing and inflation tax incidence. Marginal effect estimates from probit model – I quarter 2017



Source: own estimates.

### In-family borrowing and inflation tax incidence. Marginal effect estimates from probit model – IV quarter 2023



Source: own estimates.

**Inflation tax incidence and financial strategies**  
**Probit models. I quarter 2017 ( $\pi$ : 2,0% m/m)**

<b>Dependent variable:</b>	<b>In-family borrowing</b>	<b>Use of savings</b>	<b>Bank borrowing</b>	<b>Paying in instalments</b>
Inflation tax incidence	0,078	0,0248	-0,4607	-1,0221***
Income per capita	-0,00002***	0,0059	-0,0201	0,00001***
Age	-0,0120***	-0,0047***	-0,0039***	-0,0063***
Gender	0,1547***	-0,0369	0,0016	0,0031
Education level	-0,0245	-0,0391**	-0,0587***	-0,0721***
Occupation	-0,0041	0,0249***	-0,0218*	-0,0129
Cons	-0,5232***	-0,3402***	-0,5128**	1,0290***
Observations	13.810	13.810	13.810	13.810

Robust standard errors in brackets (White)

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Source: own estimates.



**Inflation tax incidence and financial strategies**  
**Probit models. IV quarter 2023 ( $\pi$ : 15,5% m/m)**

<b>Dependent variable:</b>	<b>In-family borrowing</b>	<b>Use of savings</b>	<b>Bank borrowing</b>	<b>Paying in instalments</b>
Inflation tax incidence	0,0740***	-0,0193	-0,0397	-0,2291***
Income per capita	-0,0078***	-0,0018	-0,0018	-0,0015
Age	-0,0119***	-0,0033***	0,0019	-0,0061***
Gender	0,1675***	0,0054	0,1105**	0,0933**
Education level	-0,0081	-0,0302**	-0,0266	-0,0676***
Ocupation	0,0333***	-0,0038	-0,0238	-0,0223**
Cons	-0,8203***	-0,018	-1,1121***	1,0652***
Observations	12.462	12.631	12.462	12.462

Robust standard errors in brackets (White)

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Source: own estimates.

- I. We provide **new estimates of the incidence of the inflation tax on Argentina households, 2017-2024.**
- II. We explore how inflation tax incidence is linked to **households' financial strategies**, using data from the permanent household survey.

### We find that:

- I. At the peak of monthly inflation (25% - Dec-23), **inflation tax incidence reached almost 8% of monthly income of households in the first quintile.** The inflation tax is **regressive**: Inflation in poorer HH weighed **3x** more than in richer ones. As inflation decelerated during 2024, this involved gains of round 6 p.p. of income for first-quintile HH and of 1,5 p.p. for fifth-quintile HH.
- II. **Poorer households tend to react to the inflation tax by borrowing from family members or friends, while better off households pay in installments**, thus shielding against inflation. We find **little evidence to link inflation tax incidence to bank borrowing or use of own resources** to finance spending. **In-family borrowing becomes more significant** in a period of inflation acceleration.

### Scope / Limitations

- I. Inflation tax paid by currency holders: **we do not include broader forms of money** (returns can help partially offset inflation: foreign currency, digital wallets).
- II. **We do not factor in the real gains associated with debt holdings** being exposed to inflation.

### Further work

- I. **Alternative money demand specifications.** Improve on the **opportunity cost** by computing inflation at the household level, consumption basket is available from the ENGHO. Out-of-sample extension less feasible, but more accurate in-sample estimates. Estimate money demand with the data included in the fifth quarters covered in the ENGHO as inflation accelerated in 2017-18, **exploiting household characteristics within the sample.**
- II. Estimate **financial strategies in response to inflation using quarterly data, 2017-24. Consider potential** endogeneity of financial strategies.
- III. Estimate possible **labour supply** changes linked to inflation tax.

# Thank you!

# Annex

## Permanent Household survey (EPH). Descriptive statistics for selected quarters.

		1 Quarter 2017		
		Real income per capita	Money demand to income (%)	Tax incidence to income (%)
Mean	Quintile 1	4.468	45,1	0,92%
	Quintile 2	9.087	30,7	0,62%
	Quintile 3	13.359	25,8	0,52%
	Quintile 4	20.587	21,3	0,43%
	Quintile 5	42.172	16,0	0,32%
Standard error	Quintile 1	1.947	15,5	31,4%
	Quintile 2	1.012	1,6	3,2%
	Quintile 3	1.482	1,3	2,6%
	Quintile 4	2.969	1,4	2,8%
	Quintile 5	22.257	2,3	4,7%
Min	Quintile 1	0	34,2	0,69%
	Quintile 2	7.139	28,2	0,57%
	Quintile 3	10.872	23,5	0,48%
	Quintile 4	16.321	19,0	0,39%
	Quintile 5	25.882	3,9	0,08%
Max	Quintile 1	7.127	253,5	5,1%
	Quintile 2	10.863	34,2	0,7%
	Quintile 3	16.295	28,2	0,6%
	Quintile 4	25.865	23,5	0,5%
	Quintile 5	862.152	19,0	0,4%

		1 quarter 2017			
		Age	Sex	Education	Occupation
Mean	Quintile 1	47	1	2	3
	Quintile 2	54	1	3	2
	Quintile 3	54	1	3	2
	Quintile 4	53	1	3	2
	Quintile 5	51	1	3	2
Standard error	Quintile 1	14	0	1	5
	Quintile 2	17	0	1	2
	Quintile 3	17	0	1	2
	Quintile 4	18	0	1	2
	Quintile 5	17	0	1	3
Min	Quintile 1	17	1	1	1
	Quintile 2	18	1	1	1
	Quintile 3	17	1	1	1
	Quintile 4	18	1	1	1
	Quintile 5	19	1	1	1
Max	Quintile 1	93	2	5	123
	Quintile 2	98	2	5	23
	Quintile 3	100	2	5	23
	Quintile 4	98	2	5	13
	Quintile 5	102	2	5	12

Source: own estimates.

## Permanent Household survey (EPH). Descriptive statistics for selected quarters.

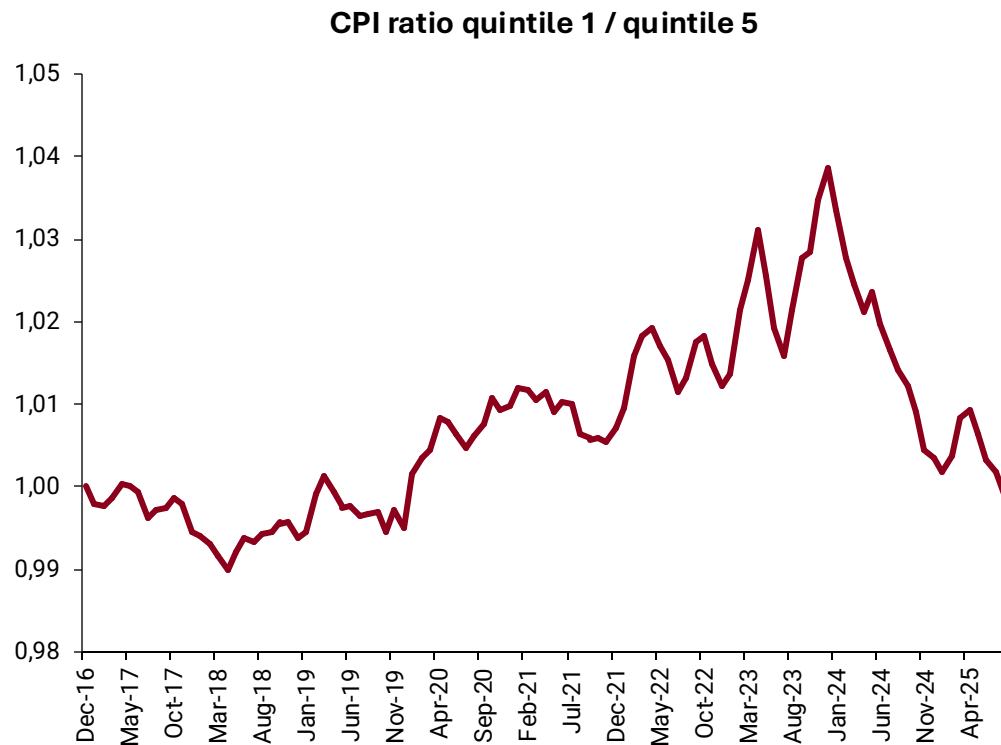
4 Quarter 2023

		Real income per capita	Money demand to income (%)	Tax incidence to income (%)
Mean	Quintile 1	3.489	31,5	4,89%
	Quintile 2	6.542	22,8	3,54%
	Quintile 3	9.293	19,4	3,01%
	Quintile 4	13.871	16,2	2,52%
	Quintile 5	30.288	12,0	1,86%
Standard error	Quintile 1	1.260	8,4	129,9%
	Quintile 2	730	1,2	18,2%
	Quintile 3	1.013	0,9	14,7%
	Quintile 4	1.720	0,9	13,8%
	Quintile 5	18.946	1,9	29,8%
Min	Quintile 1	0	25,1	3,89%
	Quintile 2	5.246	21,1	3,27%
	Quintile 3	7.707	17,7	2,75%
	Quintile 4	11.241	14,4	2,24%
	Quintile 5	17.727	1,0	0,16%
Max	Quintile 1	5.245	189,7	29,5%
	Quintile 2	7.690	25,1	3,9%
	Quintile 3	11.231	21,0	3,3%
	Quintile 4	17.707	17,7	2,8%
	Quintile 5	6.146.749	14,4	2,2%

4 quarter 2023

		Age	Sex	Education	Occupation
Mean	Quintile 1	47	2	3	3
	Quintile 2	54	1	3	2
	Quintile 3	54	1	3	2
	Quintile 4	52	1	3	2
	Quintile 5	48	1	3	2
Standard error	Quintile 1	14	1	1	2
	Quintile 2	17	0	1	2
	Quintile 3	18	0	1	2
	Quintile 4	17	0	1	2
	Quintile 5	16	0	2	3
Min	Quintile 1	16	1	1	1
	Quintile 2	18	1	1	1
	Quintile 3	18	1	1	1
	Quintile 4	15	1	1	1
	Quintile 5	18	1	1	1
Max	Quintile 1	100	2	5	13
	Quintile 2	97	2	5	23
	Quintile 3	102	2	5	13
	Quintile 4	98	2	5	12
	Quintile 5	95	2	5	12

Source: own estimates.



Source: based on INDEC data.



## Money demand estimation with controls

	Dependent variable: Log real cash per capita
Log real income per capita	0,558***
Expected inflation	-0,002
Age	-0,048***
Gender	0,018
Education level	0,001
Occupation	0,018**
Cons	3,728***
Observations	21.523

Robust standard errors in brackets (White)

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Source: own estimates.