Entropy*

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1 Introduction

Literature:

Muggleton et al. (2020) find that consumption entropy over categories correlates with financial distress.

Davenport et al. (2020) study the impact of COVID-19 on the spending and savings behaviour of MDB users.

Baker and Kueng (2021) summarises literature that uses mass financial transaction data to study household financial behaviour.

Becker (2017) finds that access to a fintech money management app increases first-time savings and savings account balances among 65,000 customers of a large European bank but that update is negatively correlated with financial sophistication.

Colby and Chapman (2013) has useful literature review on short-term savings and suggests that subgoals can increase willingness to forego short-amounts in the present because they move the reference point in a prospect-theory framework.

Paper:

Independent variable: entropy over categories and others

Outcome variables: first-time saving, average monthly savings

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2 Data

2.1 Preprocessing

Duplicate transactions

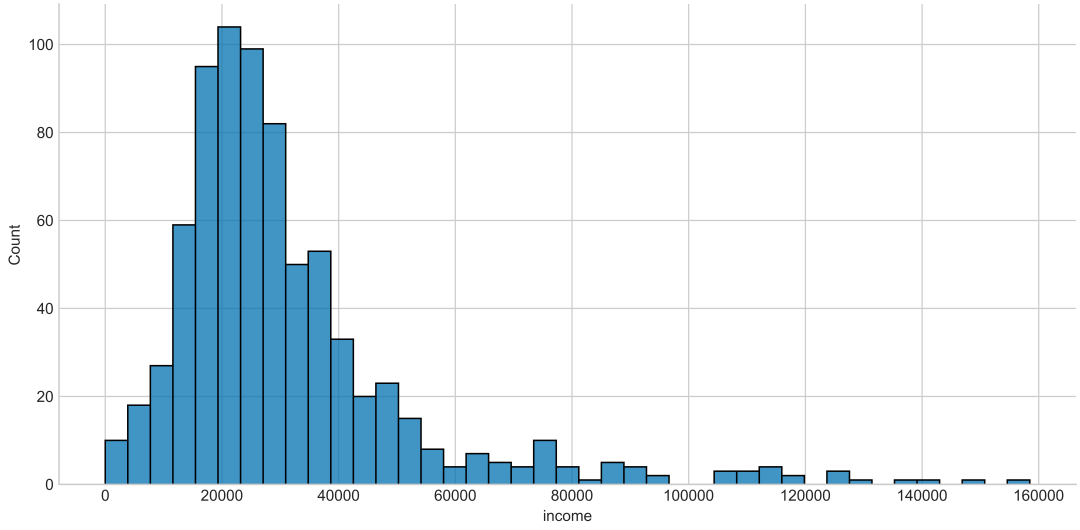
2.2 Sample selection

Table 1: Sample selection

	Users	Accounts	Transactions	Value (£M)
Raw sample.	2,730	13,272	6,767,171	1,195.3
At least 6 months of data	2,432	12,589	6,714,000	1,185.3
At least one current account	2,304	12,234	6,516,526	1,162.9
At least 5 monthly debits totalling GBP200	1,516	7,878	4,776,243	868.5
Income payments in 2/3 of all observed months	1,105	5,900	3,499,222	651.5
Yearly incomes between 5k and 200k	583	3,103	1,861,702	324.8
No more than 10 active accounts in any year	538	2,312	1,585,314	236.6
Debits of no more than 100k in any month	509	2,159	1,472,944	188.5
Current and savings account balances available	266	1,041	771,901	100.6
Working-age	220	858	673,277	85.8
Final sample	220	858	673,277	85.8

2.3 Sample description

Figure 1: Distribution of user incomes

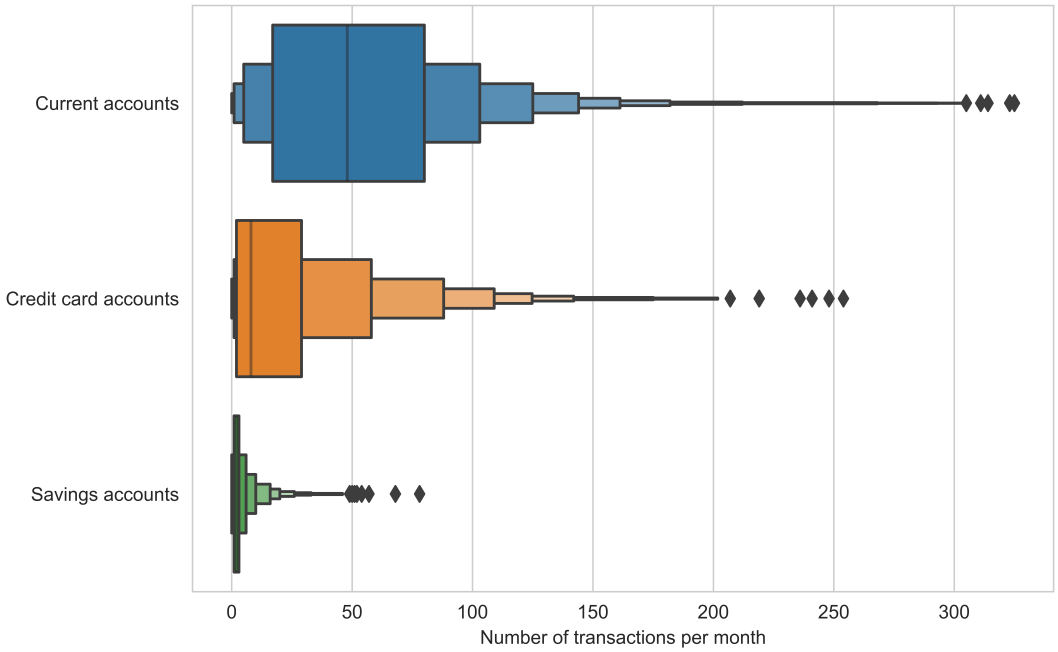


2.4 Dependent variable

Types of balances, from Becker (2017), who treats balance at end of each month as observations:

- Current account balance

Figure 2: Monthly transactions by account type

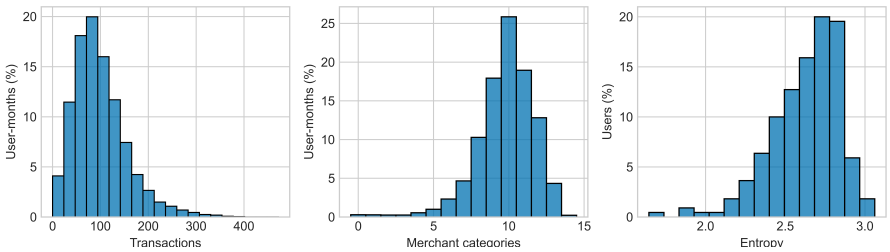


Notes: The innermost boxes in the letter-value plots are identical to that of a boxplot, with the center line corresponding to the median and the left and right edges to the first and third quartiles, or half of the remaining data on either side of the median. Additional boxes on either side extend that principle by corresponding to half of the remaining data on that side. For instance, the second box to the right of the median in the current accounts plot indicates that half of all account-month observations to the right of the third quartile have fewer than about 105 transactions. Boxes of the same height correspond to the same level, individually drawn observations are outliers.

- Debit balance (savings and current account balance)
- Pure savings (savings account balance only)
- Credit balance (loans and negative current account)
- Pure credit (loans only)
- Wealth held (debit - credit balance)

2.5 Independent variable

Figure 3: Distribution of entropy



Notes: Explanation of what's going on.

References

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