Online Appendix for "Five Facts About the Distributional Income Effects of Monetary Policy Shocks"

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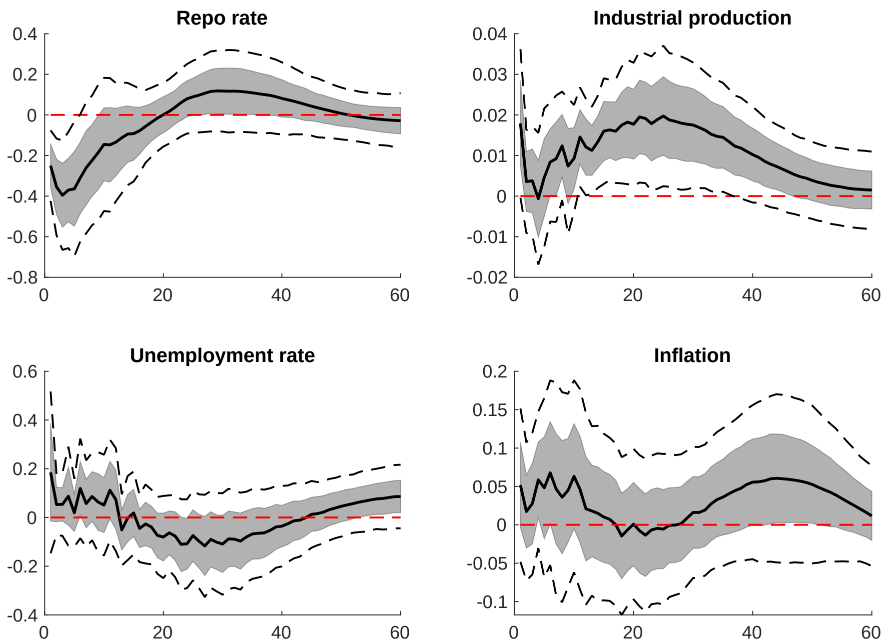
Appendix A. Aggregate Effects of the Monetary Policy Shock

In this section, we validate our monetary policy shock series by estimating a proxy-VAR and studying the induced aggregate dynamics. More specifically, we use the monthly monetary policy surprise series described in Section I.C as an external instrument in a VAR that includes the following variables: the repo rate, the log of industrial production, the unemployment rate, and a measure of underlying inflation published by Sveriges Riksbank. The VAR includes 12 lags, a constant, and a linear time trend, and the estimation strategy follows Gertler and Karadi (2015) and Jarociński and Karadi (2020). Moreover, we use the moving blocks bootstrap that has recently been recommended by Jentsch and Lunsford (2019) for proxy-VARs in order to appropriately take into account the uncertainty about the relation between the structural shocks and the instruments and thus to obtain consistent confidence bands. The first-stage F-statistic is 9.02, which implies that weak-instrument problems are unlikely to be a major concern for the analysis.

Figure A1 shows the results of the proxy-VAR where we normalize the impulse responses such that the repo rate falls by 25 basis points in the impact period. The lightly and darkly shaded areas indicate 90 and 68 percent confidence bands, respectively, obtained from 1,000 bootstrap repetitions. The exogenous fall in the repo rate leads to a significant increase in real economic activity with a peak response after around two years. After a mild increase in the first periods, the unemployment rate falls and then slowly converges back to its pre-shock level. In addition, inflation increases already on impact and shows a positive response until the end of the forecast horizon. Overall, these responses are broadly in line with the standard monetary policy transmission mechanism at the aggregate level, which validates the use of our monetary policy shock series when studying the individual-level effects of monetary policy shocks.

Figure A1: Proxy VAR



Solid lines show point estimates in response to an exogenous fall in the repo rate by 25 basis points in the impact period. The darkly and lightly shaded areas correspond to 68 and 90 percent bootstrapped confidence intervals, respectively. The unit of the horizontal axis is a month and the sample is 1999M1-2018M12. The data on the inflation rate and the repo rate were obtained from Sveriges Riksbank (2020*a*) and Sveriges Riksbank (2020*b*), respectively, while the unemployment and industrial production series are from OECD (2021*a*) and OECD (2021*b*), respectively.

Appendix B. Details on the Imputation of Taxes Owed

We impute taxes owed for each individual-year observation in our sample on the basis of the structure of the Swedish tax system in 2018. As labor income and capital income are taxed separately, we first explain how each component is computed, and then how they are added together.

Labor income taxation in Sweden takes its starting point in assessed earned income (*fastställd förvärvsinkomst*), which is obtained by summing labor income, self-employment income, unemployment benefits, and pension income. A basic deduction (*grundavdrag*) is then subtracted from the assessed earned income, which yields taxable earned income (*beskattningsbar inkomst*). The labor income taxes owed is then computed on the basis of taxable earned income as follows. First, taxable earned income in its entirety is taxed according to the municipal tax rate in the individual's municipality of residence. Second, any part of taxable earned income exceeding a certain threshold (*brytpunkt 1*) is subject to an additional 20 percentage points in central-government tax. Third, any part of taxable earned income exceeding a second, higher threshold (*brytpunkt 2*) is subject to an additional five percentage points in central-government tax. Finally, an earned-income tax credit (*jobbskatteavdrag*) is deducted from the sum of municipal and central-government taxes owed to obtain the final labor income taxes owed. The respective sizes of the basic deduction and the earned-income tax credit are determined by formulas in which the arguments are the assessed earned income, the basic deduction, and the PBB (basic price amount, or *prisbasbelopp*).[B1]

When computing labor income taxes owed, we use the average municipal tax rate in 2018 (32.93 percent) throughout the entire sample period. For the computation of the basic deduction and the earned-income tax credit, we use the actual PBB in every year, but follow the formulas determining their respective sizes as of 2018. Similarly, we use the actual thresholds for central-government tax in every year—these thresholds are automatically increased every year by the inflation rate plus two percentage points, unless parliament actively decides on some other change. In this way, we compute labor income taxes owed in a way that is consistent over time, while avoiding drift in

[B1]The PBB is a reference number used in various parts of the Swedish public-finance system and changes every year in line with the consumer price index. The formulas used for computing the basic deduction and the earned-income tax credit in 2018 are specified in Tables 3.4 and 3.10 in Swedish Ministry of Finance (2018).

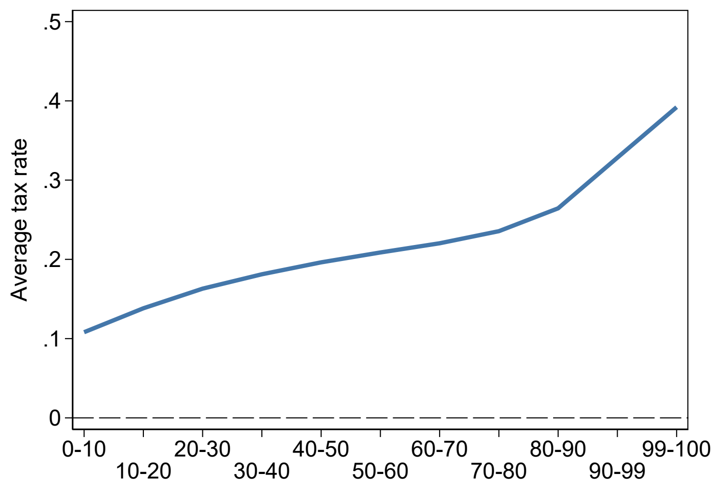
the shares of individuals falling in the various tax brackets.

Capital income is generally taxed at a flat rate of 30 percent in Sweden. The effective tax rate is lower for a few important asset classes, however, as only a fraction of the income from these classes is subject to taxation—the effective tax rates on capital incomes therefore vary between 20 and 30 percent depending on asset class. We do not observe the incomes from all asset classes separately and can therefore not apply the exact effective tax rate for the incomes from each asset class when imputing capital income taxes. Instead, we use the weighted average of the effective tax rates across all asset classes—which amounts to 23.5 percent—in the computations (Lundberg, 2019, Table 12). Interest expenses give rise to deductions, which amount to 30 percent for expenses up to 100,000 SEK, and to 21 percent for expenses exceeding 100,000 SEK.

Labor and capital taxes are then summed to obtain total income taxes. In cases where capital income taxes are negative—i.e., when capital losses and interest expenses exceed capital gains and other capital incomes—the negative amount is deducted from labor income taxes owed. Note, however, that the sum of labor and capital taxes is not allowed to be negative; hence, when capital taxes are negative and exceed labor taxes in absolute value, total income taxes owed are set to zero.

Figure B1 plots the average tax rate—defined as total income taxes divided by total pre-tax income—by income group for the sample period 1999–2018. The progressivity of the tax system is evident, with the average tax rate increasing monotonically over the income distribution, from around 10 percent in the bottom decile to around 40 percent in the top percentile.

Figure B1: Average tax rate by income group



This figure shows the average tax rate—defined as total income taxes divided by total pre-tax income—by income group for the sample period 1999–2018. See the main text in Online Appendix B for details on the imputation of income taxes.

Appendix C. Additional Tables and Figures

This appendix provides additional tables and figures referred to in the main text of the paper. Table C1 presents descriptive statistics by income group; Table C2 the decomposition results for all income groups (i.e., including the groups that were omitted from Table 2); Figure C1 a comparison of our monetary shock series with an analogously constructed series based on STINA contracts; Figure C2 the total after-tax income responses when the financial crisis is excluded from the estimation sample; Figure C3 the total after-tax income responses when retirement-age individuals are included in the sample; Figure C4 the labor-income responses when only continuously employed individuals are included in the sample; and Figure C5 the effects of a –25bp monetary policy shock on total after-tax income and the three main components of pre-tax incomes for estimation horizons $h = 0$ and $h = 1$.

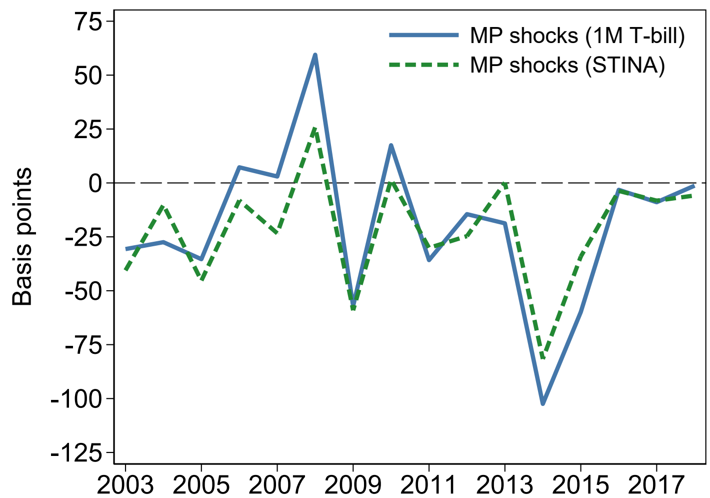
Table C1: Descriptive statistics by income group

	Income group										
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-99	99-100
A. Total income											
Average pre-tax income (1,000s)	144	196	226	252	278	305	336	376	445	651	1,852
Average after-tax income (1,000s)	123	164	185	204	221	239	259	285	323	427	1,144
B. Average shares of total pre-tax income											
Labor income	0.50	0.59	0.70	0.78	0.85	0.88	0.90	0.91	0.91	0.89	0.74
- Wage income	*0.41*	*0.54*	*0.66*	*0.75*	*0.82*	*0.86*	*0.88*	*0.89*	*0.89*	*0.87*	*0.72*
- Self-employment income	*0.09*	*0.05*	*0.04*	*0.03*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*
Capital income	–0.01	–0.04	–0.05	–0.04	–0.04	–0.03	–0.03	–0.02	–0.01	0.02	0.16
- Realized capital gains	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.02*	*0.02*	*0.03*	*0.07*
- Dividends and interest income	*0.03*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.02*	*0.02*	*0.04*	*0.14*
- Interest expenses	*–0.07*	*–0.07*	*–0.07*	*–0.07*	*–0.06*	*–0.06*	*–0.06*	*–0.05*	*–0.05*	*–0.05*	*–0.05*
- Other capital income	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.01*	*0.01*
Transfer income	0.52	0.45	0.35	0.26	0.19	0.15	0.12	0.11	0.10	0.09	0.10
- Pension income	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*	*0.04*	*0.05*	*0.08*
- Unemployment benefits	*0.07*	*0.08*	*0.08*	*0.06*	*0.04*	*0.03*	*0.02*	*0.01*	*0.01*	*0.01*	*0.01*
- Other transfer income	*0.42*	*0.34*	*0.24*	*0.17*	*0.12*	*0.09*	*0.07*	*0.06*	*0.05*	*0.03*	*0.02*
Taxes	–0.11	–0.14	–0.16	–0.18	–0.20	–0.21	–0.22	–0.24	–0.26	–0.33	–0.39
C. Other characteristics (means)											
Male	0.41	0.34	0.32	0.36	0.42	0.51	0.59	0.64	0.68	0.75	0.84
Age	41.9	42.5	43.5	44.4	45.2	45.8	46.3	47.2	48.1	49.8	52.0
Less than high-school education	0.28	0.20	0.17	0.17	0.16	0.16	0.15	0.14	0.11	0.06	0.05
High-school education	0.41	0.48	0.54	0.56	0.57	0.54	0.51	0.47	0.40	0.29	0.22
Post-secondary education	0.31	0.32	0.28	0.27	0.27	0.30	0.33	0.39	0.49	0.65	0.73

Table C2: Decomposition results for all income groups

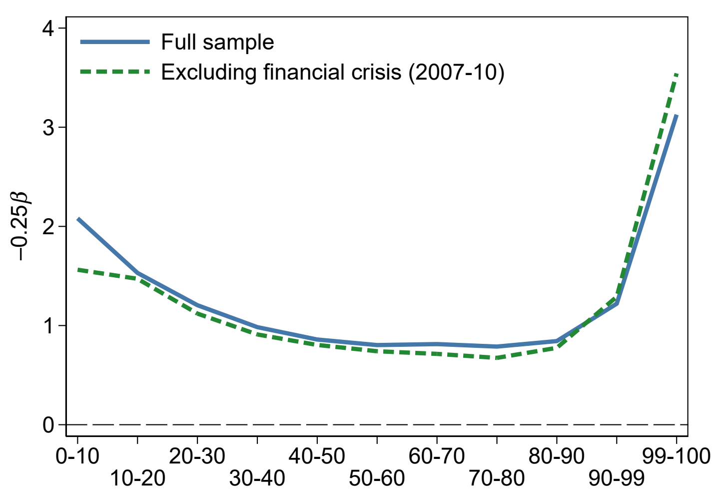
	Income group										
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-99	99-100
1. Labor income	2.0	1.0	0.3	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.8
1a. Wage income	*1.9*	*0.9*	*0.3*	*0.1*	*0.0*	*0.1*	*0.2*	*0.2*	*0.2*	*0.2*	*0.8*
1b. Self-employment income	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
2. Capital income	0.5	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.3	1.9	4.0
2a. Realized capital gains	*0.3*	*0.3*	*0.4*	*0.4*	*0.4*	*0.5*	*0.5*	*0.6*	*0.8*	*1.2*	*3.0*
2b. Dividends and interest	*–0.1*	*–0.1*	*–0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.2*	*0.6*
2c. Interest expenses (–)	*0.3*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.3*	*0.3*	*0.4*	*0.4*	*0.4*
2d. Other capital income	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
3. Market income	**2.6**	**1.6**	**1.0**	**0.8**	**0.8**	**0.8**	**1.0**	**1.1**	**1.5**	**2.1**	**4.9**
4. Transfer income	0.1	0.3	0.5	0.5	0.4	0.3	0.2	0.2	0.0	–0.1	–0.1
4a. Pensions	*0.0*	*0.1*	*0.1*	*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.0*	*–0.1*	*–0.1*
4b. Unemployment income	*–0.4*	*–0.3*	*–0.1*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
4c. Other transfers	*0.4*	*0.5*	*0.5*	*0.4*	*0.3*	*0.2*	*0.2*	*0.1*	*0.1*	*0.0*	*0.0*
5. Total pre-tax income	**2.6**	**2.0**	**1.5**	**1.3**	**1.1**	**1.1**	**1.2**	**1.3**	**1.5**	**2.1**	**4.8**
6. Taxes (–)	–0.5	–0.4	–0.3	–0.3	–0.3	–0.3	–0.4	–0.5	–0.6	–0.8	–1.6
7. Total after-tax income	**2.1**	**1.5**	**1.2**	**1.0**	**0.9**	**0.8**	**0.8**	**0.8**	**0.8**	**1.2**	**3.1**

Figure C1: Comparison of monetary policy shock series (1M T-bill versus STINA)



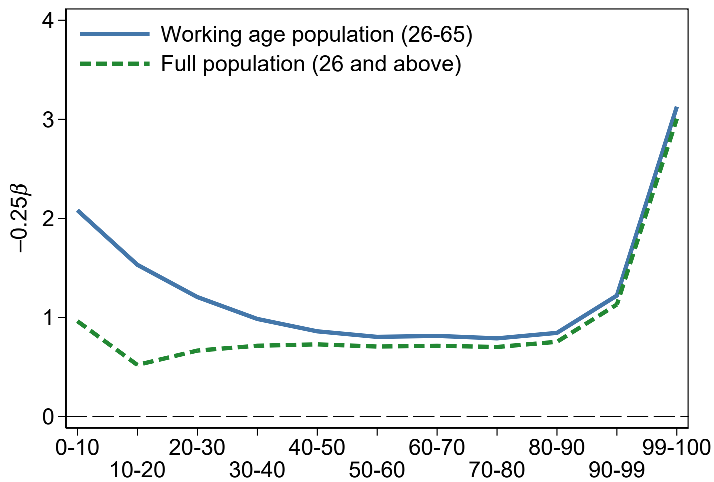
This figure compares the monetary policy shock series used in the paper (solid blue line) with an analogously constructed series based on three-hour changes in overnight index swap rates around monetary announcements (STINA contracts; dashed green line) over the period for which we have data on STINA contracts. The data on STINA surprises are from Laséen (2020).

Figure C2: Total after-tax income results with and without financial crisis ($h = 2$)



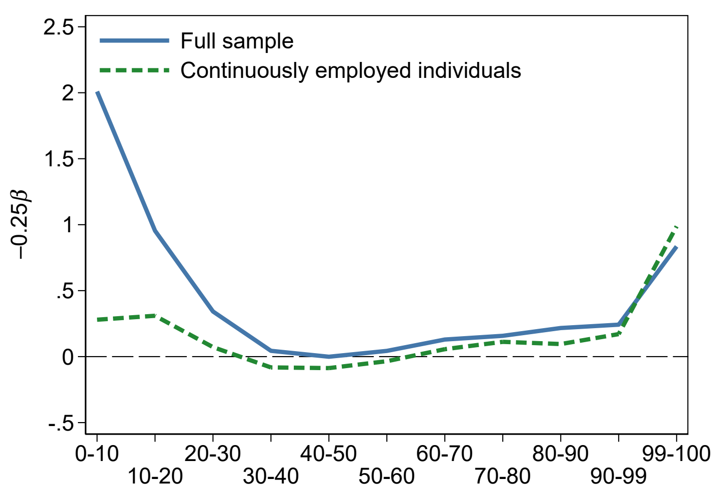
This figure shows the effects of a –25bp monetary policy shock on total after-tax incomes, as estimated using (1), when the financial-crisis years (2007–10) are included and excluded, respectively, from the estimation sample. The estimation horizon is $h = 2$.

Figure C3: Total after-tax income results without and with people above 65 ($h = 2$)



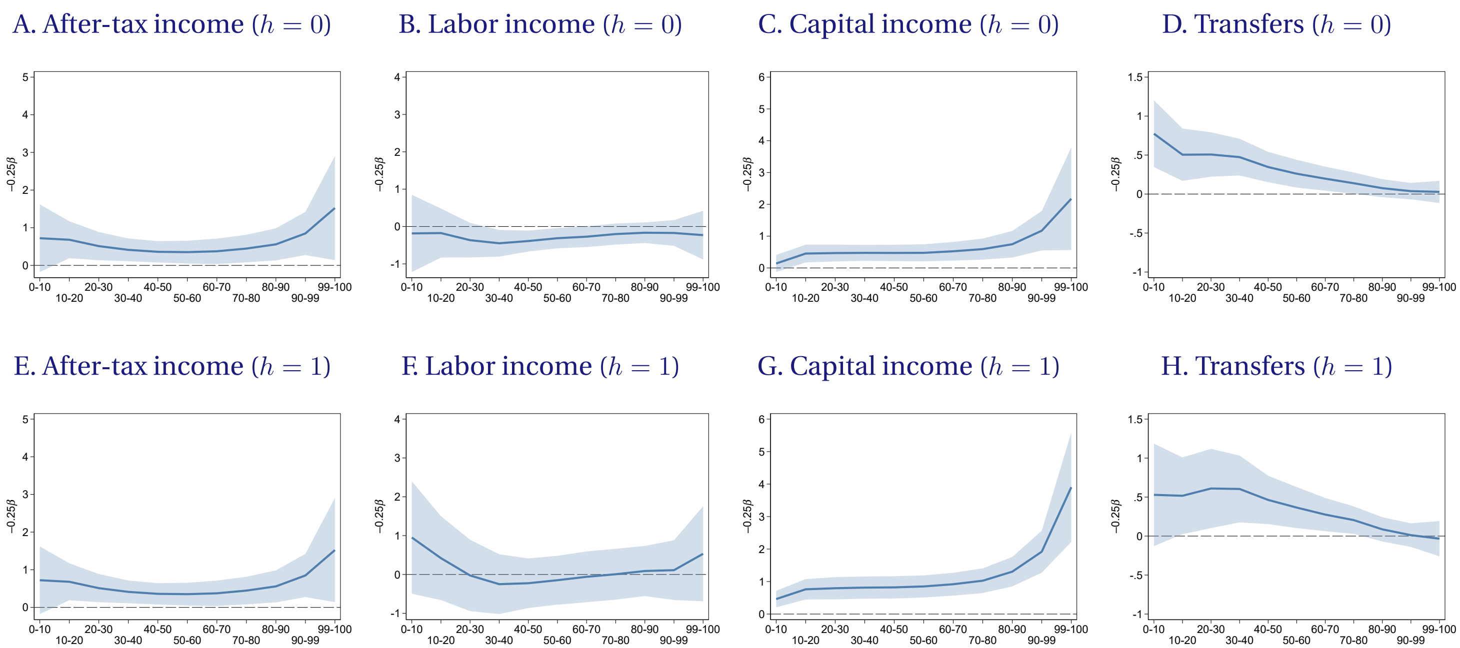
This figure shows the effects of a –25bp monetary policy shock on total after-tax incomes, as estimated using (1) on samples comprising only prime working-age individuals (26-65 years old; solid blue line) and all individuals older than 26 years (dashed green line), respectively. The estimation horizon is $h = 2$.

Figure C4: Labor-income results for continuously employed individuals ($h = 2$)



This figure shows the effects of a –25bp monetary policy shock on labor incomes, as estimated using (2) on the full sample (solid blue line) as well as on a sample comprising only continuously employed individuals (dashed green line). The latter comprises individuals whose labor income is at least half of the median of annual labor income in Sweden in both $t-1$ and $t+h$. The data on median labor income are from Statistics Sweden (2021). The estimation horizon is $h = 2$.

Figure C5: The effects of a –25bp shock on total after-tax income and its components ($h = 0$ and $h = 1$)



This figure shows the effects of a –25bp monetary policy shock on total after-tax income—as well as on the three main components of total pre-tax income—across the income distribution, as estimated using (1) and (2). The estimation horizon is $h = 0$ in Panels A–D and $h = 1$ in Panels E–H. Shaded areas represent 90 percent confidence bands.

Appendix D. Replication of Guvenen et al. (2017)

This appendix reports the results of a 'scientific replication' (Hamermesh, 2007) of the findings in Guvenen et al. (2017)—i.e., a re-examination of their findings using precisely the same econometric methods, but with data from a different institutional setting. The replication is based on the matched employer-employee database RAMS, compiled by Statistics Sweden based on administrative data collected from the Swedish Tax Authority (Statistics Sweden, 1985–2015).[D1] RAMS is an annual panel comprising data on total labor income, main employer, and demographic characteristics for all residents in Sweden 16 years or older. The labor income reported in RAMS is the sum of earnings across all of an individual's employers during a given year and includes wages, salaries, bonuses, stocks and exercised stock options, bonds, and taxable employee benefits. In keeping with the definition in Guvenen et al. (2017), self-employment income is excluded from the earnings measure. The outcome variable in all estimations is real earnings growth, defined as the log change in real earnings between years $t-1$ and t. The nominal earnings figures in RAMS are deflated to real earnings using the GDP price deflator with 2010 as base year.

The sample covers the period 1987–2015 and is restricted to prime-age workers between 26 and 65 years old. In each year, the sample is sorted into four age groups (26–35, 36–45, 46–55, and 56–65) and twelve earnings bins (using cutoffs at percentiles 10, 20,..., 90, 99, and 99.9). The sorting into earnings percentiles is based on past average earnings—defined as average annual real earnings over the years $t-6$ to $t-2$—and is done conditional on gender and age group. For observations lacking earnings data in one or several years between $t-6$ and $t-2$, past earnings are calculated based on the longest consecutive period with available data, starting from year $t-2$ and going backwards. The data required for computing earnings growth and past average earnings means that a worker needs to have positive earnings in at least years t, $t-1$, and $t-2$ to be included in the sample.

Workers' exposure to systematic earnings risk are estimated in the form of "betas," defined as the slope coefficients from regressions of real annual earnings growth on the two risk factors under consideration: real GDP growth and real stock returns. More

[D1] RAMS is one of the individual registries that goes into the construction of LISA, which the empirical analysis in the main part of the paper builds on.

specifically, the GDP beta for a worker belonging to a given gender-age-earnings group g is estimated using the following regression specification:

$$\Delta y_{i,t} = \alpha_g + \beta_g \Delta y_t + \varepsilon_{i,t}, \tag{D1}$$

where $\Delta y_{i,t}$ is the log real earnings growth of worker i from year $t-1$ to t and Δy_t is the log real GDP growth from year $t-1$ to t. The estimation of equation (D1) is carried out using pooled OLS, separately for each group g. Stock return betas are estimated using the same specification, but with real annual stock returns as regressor.[D2]

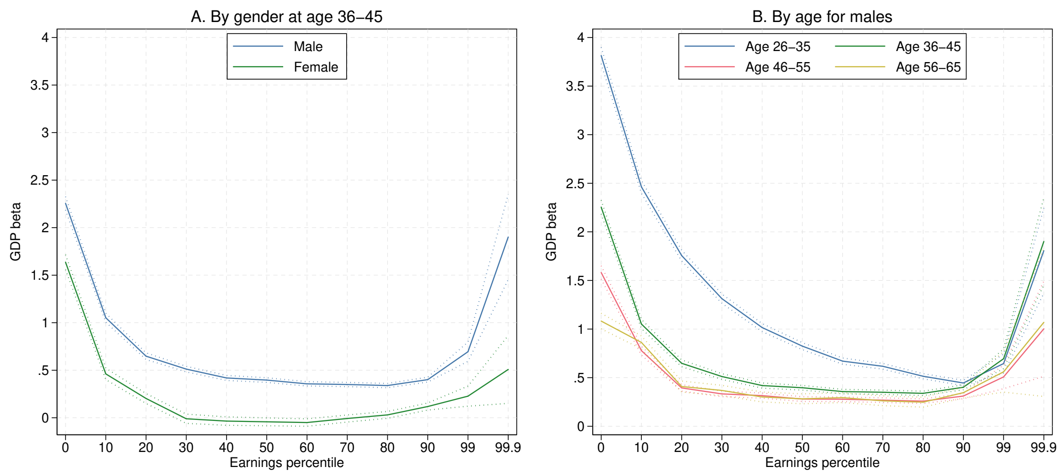
Figure D1 plots GDP and stock return betas for 36–45 year old workers by gender, as well as for males by age group (the dotted lines represent 95-percent confidence intervals). Both GDP and stock return betas are U-shaped with respect to the earnings distribution, which is to say that workers in the top and bottom of the distribution are most exposed to aggregate earnings risk; this pattern holds for both males and females (although it is less pronounced for high-earning females), as well as within each age group for males. Throughout the earnings distribution, males and younger workers are more exposed to aggregate risk than females and older workers. The highest GDP beta, 3.81, is observed for 26–35 year old males in the lowest decile of the earnings distribution. This group also has the highest stock return beta together with 26–35 and 36–45 year old males in the top of the earnings distribution.

These cross-sectional patterns of earnings risk are qualitatively very similar to those for American workers reported by Guvenen et al. (2017). The *levels* of aggregate risk exposures are generally lower for Swedish workers than for American workers, however. For example, the GDP betas of 36-45 year old Swedish males in the bottom, middle, and top of the earnings distribution are 2.26, 0.40, and 1.90, respectively, whereas the figures for the corresponding groups of American workers are 2.88, 1.09, and 3.70 (i.e., about twice as high on average).

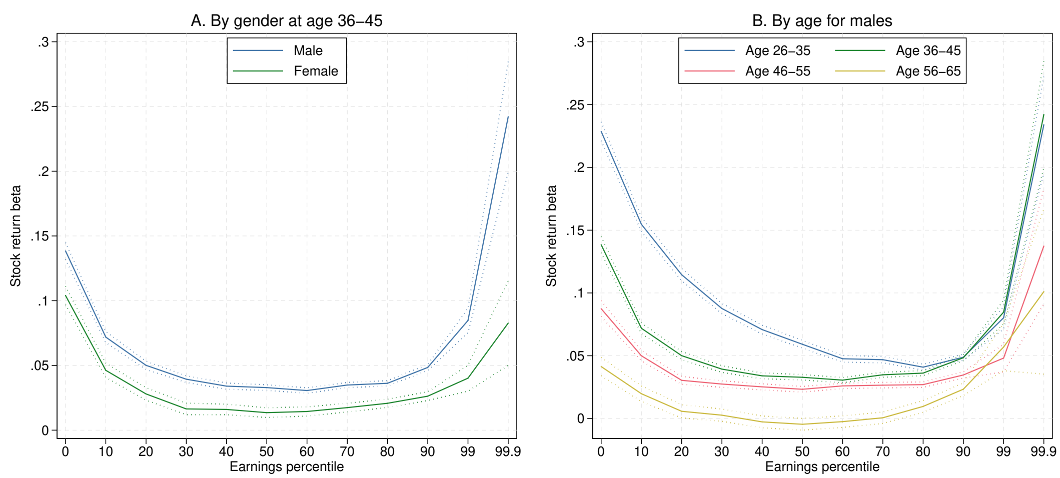
[D2] Real annual stock returns are calculated based on the nominal Swedish stock return index compiled by Waldenström (2014), deflated by the GDP price deflator. Stock returns are aligned with earnings growth using the beginning-of-period convention, i.e., earnings growth from year $t-1$ to t is aligned with real stock returns in year $t-1$. This produces a correlation of real stock returns and real GDP growth of 0.70 over the period 1987–2015.

Figure D1: Worker betas

A. GDP betas by gender and age



B. Stock return betas by gender and age



This figure reports GDP betas (Panel A) and stock return betas (Panel B) by age, gender, and earnings group, as estimated using the specification in (D1). Dotted lines represent 95-percent confidence bands, computed using heteroskedasticity-robust standard errors.

Appendix E. Effects of Monetary Policy Shocks on the Values of Individual-Level Asset Holdings

In this section, we assess the effects of monetary policy shocks on the values of individual-level asset holdings. The direct approach for doing this would be to estimate our baseline specification with the growth in the value of asset holdings, expressed as a share of total-after tax income, as dependent variable. Our wealth data—obtained from Statistics Sweden's Wealth Register (Statistics Sweden, 1999–2007)—only spans the years 1999–2007, however, which is too short to obtain precise and plausible estimates using this approach.[E1] Instead, we undertake an indirect, approximate assessment of the heterogeneous effects of monetary policy shocks on the value of asset holdings by combining our wealth micro data with estimates from the macroeconomic literature on the effects of monetary policy shocks on asset prices.

In our exercise, we consider two asset classes separately: stocks (including directly held stocks and equity mutual funds) and housing (including all types of real assets). For each asset class, we use our micro data to compute—for each of the eleven income groups—the average ratio of the holdings of the asset in question (at estimated market values) to after-tax income over the period 1999–2007. We then assume that the rate of return on each asset class is the same for all income groups in a given year, which allows us to take aggregate estimates of the effects of monetary policy shocks on asset returns from the empirical macroeconomic literature. Finally, by multiplying the estimates from the literature with the average ratios of asset holdings to after-tax income in the respective income groups, we obtain an estimate of the effect of monetary policy shocks on the values of asset holdings, expressed as a share of after-tax income, for each income group.[E2] That is, we estimate the effect of a 25 basis points expansionary monetary policy shock on the value of the holdings of asset type j for an individual in

[E1] Due to the existence of a wealth tax, the tax authorities collected information on individuals' holdings of financial and real assets from public registers and private institutions. When the wealth tax was abolished in 2007, the collection of wealth information stopped. For details on the wealth data, see, for example, Calvet, Campbell and Sodini (2007).

[E2] Note that this approach only allows us to capture changes in asset holdings stemming from the effects that monetary policy shocks have on asset prices; changes stemming from the effects of monetary policy shocks on the composition of individuals' asset portfolios will, on the other hand, not be captured by our approach.

income group g as

$$-0.25 \cdot \beta^j \cdot \frac{K_g^j}{Y_g^T}, \tag{E1}$$

where $-0.25 \cdot \beta^j$ is the effect of a 25 basis points expansionary monetary policy shock on the price of asset type j, and K_g^j/Y_g^T is the average ratio of the holdings of asset type j to total after-tax income in income group g over the period 1999–2007. We take 1.5 percent as our estimate of the effect of a 25 basis points expansionary monetary policy shock on stock prices as well as on house prices.[E3]

The results of this exercise are reported in Table E1. Panel A reports the average values of asset holdings by income group, Panel B the average ratios of asset values to total after-tax income, and Panel C the effects of a –25 basis points monetary policy shock on the values of asset holdings. First, note that while the values of housing and stock holdings both increase monotonously over the income distribution, the average ratio of assets to after-tax income is U-shaped over the income distribution for both asset types, as incomes increase somewhat faster than asset holdings over the bottom half of the distribution. The values of asset holdings then increase sharply in the top, both in absolute values and expressed as a share of total income: total asset values in the top percentile are on average 12 times as large in absolute value, and 2.5 times as large relative to after-tax income, as in the middle of the distribution. This is mainly due to the strong concentration of stock holdings in the top of the distribution; the value of stock holdings of individuals in the top percentile is on average 65 times as large as in the middle, or 14 times as large expressed as a share of after-tax income. Housing is, on the contrary, fairly equally distributed across the income distribution, at least when expressed relative to after-tax incomes.

Next, Panel C shows that an expansionary monetary policy shock leads to large increases in the values of asset holdings throughout the income distribution, but especially so in the very top. In the first nine deciles, a –25bp shock generates an increase in the value of total assets amounting to around five percent of after-tax income, almost

[E3]For the house-price estimate, we rely on Williams (2015), who reports the effect of a one percentage point contractionary monetary policy shock on real house prices to be –6 percent. Williams' own estimate is very close to the average estimate of –6.9 percent across the eleven studies included in his meta-analysis (Williams, 2015; Table 1). For the stock-price estimate, we take the average of the main estimate of the effects of a –25bp shock on broad stock indices in Bernanke and Kuttner (2005) (1.2 percent), on the one hand, and the average of the four main estimates reported by Rigobon and Sack (2004) (1.7 percent), on the other; the average of the estimates from these two papers, then, amount to around 1.5 percent.

Table E1: The effect of monetary policy shocks on the value of asset holdings

	Income group										
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-99	99-100
A. Average value of asset holdings (1000s)											
Total assets	448	516	541	571	612	669	755	884	1,137	1,841	7,979
- *Housing*	411	478	501	525	559	607	678	781	977	1,495	3,936
- *Stocks*	36	39	41	46	52	62	77	103	160	345	4,044
B. Ratio of average value of asset holdings to average after-tax income											
Total assets	3.70	3.27	3.08	2.98	2.94	2.98	3.11	3.33	3.80	4.65	7.56
- *Housing*	3.40	3.02	2.85	2.74	2.69	2.71	2.79	2.94	3.26	3.78	3.73
- *Stocks*	0.30	0.25	0.23	0.24	0.25	0.28	0.32	0.39	0.54	0.87	3.83
C. Effect of a –25bp monetary policy shock on the value of asset holdings											
Total assets	5.55	4.90	4.62	4.46	4.41	4.47	4.66	4.99	5.70	6.98	11.34
- *Housing*	5.10	4.54	4.27	4.11	4.04	4.06	4.19	4.41	4.90	5.67	5.60
- *Stocks*	0.45	0.37	0.35	0.36	0.38	0.41	0.47	0.58	0.80	1.31	5.75

Panel A reports the average values of total assets, housing, and stocks by income group in thousands of SEK (deflated to 2015 SEK using the GDP price deflator). Panel B shows the ratios of the average values of asset holdings to average after-tax income in each income group. Panel C reports the effects of a –25bp monetary policy shock on the values of asset holdings, as estimated using (E1). The numbers in Panels A and B are based on all individuals in the main estimation sample over the period 1999–2007.

entirely due to the increase in the value of housing. In the top percentile, the corresponding effect is more than 11 percent of after-tax income, in equal measure due to the increases in the values of housing and stock holdings. Interestingly, the effects of monetary shocks on the value of stock holdings closely resemble the corresponding effects on realized capital gains reported in Table 2, both in level and in cross-sectional pattern. This is consistent with the observation that financial assets are traded—and thus that any gains or losses are realized—more frequently than housing assets are.

Appendix References

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