

PREDICTIONS/TAKEAWAYS FROM CH. 6 & 7

See Barro Ch. 6 and 7

Trevor Gallen

SOME TAKEAWAYS

- ▶ The household's budget constraint, plus some obvious intuition about behavior, gives a lot of predictions.
- ▶ A few big, overarching concepts:
 - ▶ Income effect: when you get more money, consume more of all normal goods.
 - ▶ Substitution effect: when something is relatively more expensive, do less of it. (Do more of things that are relatively cheaper).
 - ▶ Leisure and consumption are both normal goods.
- ▶ For income effects, what matters is the household's **permanent** income (lifetime)
- ▶ Know how to draw budget constraints.

BUDGET CONSTRAINT

- ▶ Our basic budget constraint (see Barro Ch. 7 or notes for his version) is:

$$w_t L_t + (1 + r_t) s_{t-1 \rightarrow t} = c_t + s_{t \rightarrow t+1}$$

- ▶ Where, in order, we have:
 - ▶ Labor income $w_t L_t$
 - ▶ Gross capital income (from past savings) $(1 + r_t) s_{t-1 \rightarrow t}$
 - ▶ Consumption expenditures c_t
 - ▶ Gross capital savings $s_{t \rightarrow t+1}$
- ▶ Using savings, these can be combined into a two-period budget constraint (simplifying savings notation and assuming zero savings in the second period):

$$w_1 L_1 + \frac{w_2 L_2}{1 + r} + (1 + r_t) s_0 = c_1 + \frac{c_2}{1 + r}$$

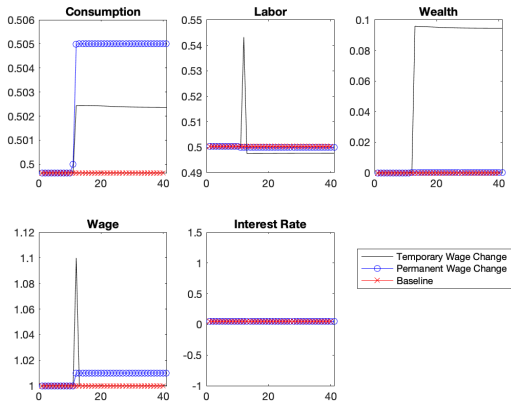
BUDGET CONSTRAINT

- ▶ Or we can derive the many-period budget constraint, which says that the net present value of all income must equal the net present value of all expenditures.

$$\underbrace{\sum_{t=1}^T \frac{w_t L_t}{(1+r)^{t-1}} + (1+r_t)s_0}_{\text{Lifetime income}} = \underbrace{\sum_{t=1}^T \frac{c_t}{(1+r)^{t-1}}}_{\text{Lifetime expenditure}}$$

- ▶ This makes clear that a small change in w_3 , say, makes little difference for your lifetime income.
- ▶ Now we'll think about predictions

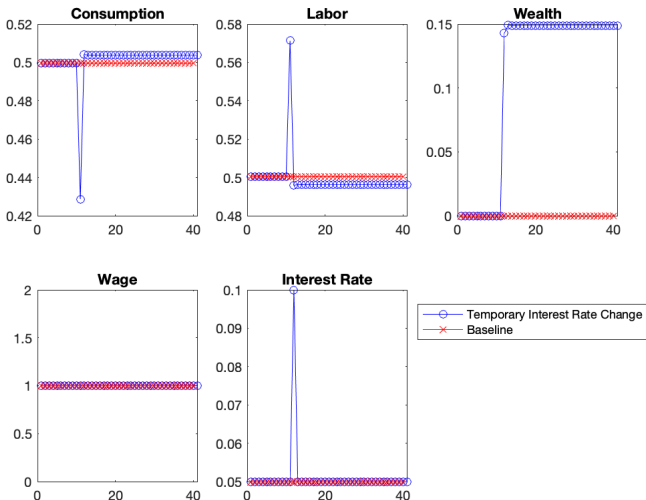
THEORY-PERMANENT AND TRANSITORY WAGE CHANGES



Transitory: work when valuable, then smooth (less labor, more consumption in all periods)

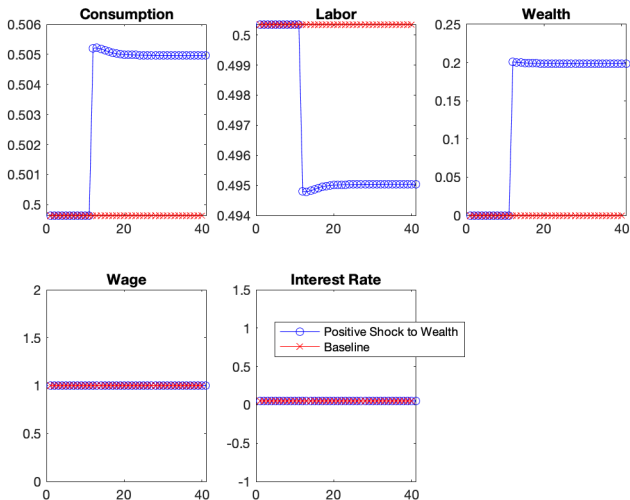
Permanent: income and substitution effects largely cancel (no change in labor, more consumption)

THEORY-INTEREST RATE SHOCKS



When interest rates rise, put off consumption (and increase labor) to get stream of benefits

THEORY-LUMP SUM TRANSFERS



When shock to wealth (pure income effect) consume more, work less

PREDICTION 1: INCOME TIMING

- ▶ **Prediction** is that it doesn't matter when in our lives we get our income. If we get it all now, we save it. If we get it all in the future, we go into debt then pay it off when we get the income.
- ▶ Data/Experiment: Alaskans get (or used to get) \$8000/person each year in fourth quarter
- ▶ Result: Alaskan households had smooth consumptions throughout the year: debt three quarters, save last quarter.
- ▶ Data/Experiment: Households get sometimes large or surprise tax refunds in U.S.
- ▶ Result: Households do not see large increases in consumption.

PREDICTION 2: MARGINAL PROPENSITY TO CONSUME

- ▶ **Prediction:** a large one-time increase in income should not be spent today, but instead smoothed over many periods
- ▶ Data/Experiment: Restitution payments to Israeli citizens from Germany (≈ 1 years income).
- ▶ Result: Total expenditure increased by 20% of amount (mostly in durable goods, which are savings)
- ▶ Data/Experiment: WWII veterans got a one-time life-insurance dividend of \$175 (4% annual income)
- ▶ Result: Expenditure rose by 35% of the amount, but again mostly in durable goods.
- ▶ Additional fact: a large **permanent** increase in income is met with approximately the same size increase in consumption.

PREDICTION 3: ANTICIPATED INCOME CHANGES

- ▶ Prediction: consumption should not change when income is predicted to change
- ▶ Data/Experiment: Alaskan example (Hsieh 2003) (they don't)
- ▶ Data/Experiment: Income tax refunds (Souleles 1999): consumption only increases by 10% of amount

PREDICTION 3: ANTICIPATED INCOME CHANGES

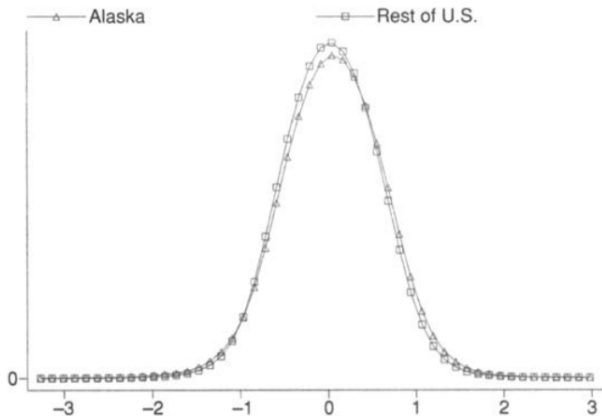


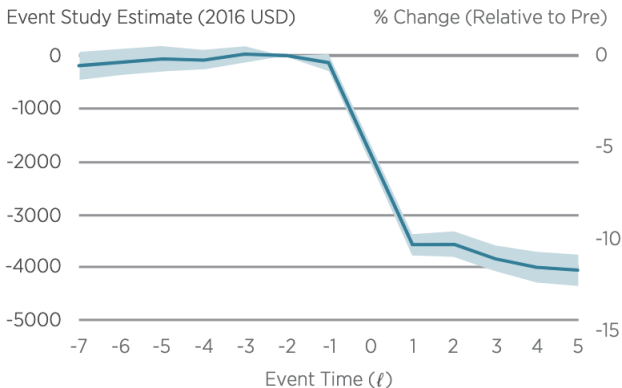
FIGURE 2. DISTRIBUTION OF $\text{LOG}(\text{CONSUMPTION } q4 / \text{CONSUMPTION } q3)$

PREDICTION 4: PURE INCOME EFFECTS

- ▶ When households get richer, they should work less
- ▶ Data/Experiment: Lottery winners
- ▶ Result: For every \$1 you get in “unearned” income, you reduce labor earnings by around \$0.17.
- ▶ Data/Experiment: Lottery winners (newer paper)
- ▶ Result: For every \$1 you get in “unearned” income, you reduce labor earnings by around \$0.50, consumption \uparrow \$0.60
- ▶ Data/Experiment: Bequests/inheritances
- ▶ Result: For every \$1 you get in “unearned” income, you reduce labor earnings by around \$0.09

PREDICTION 4: PURE INCOME EFFECTS

a) Winner Wage Earnings



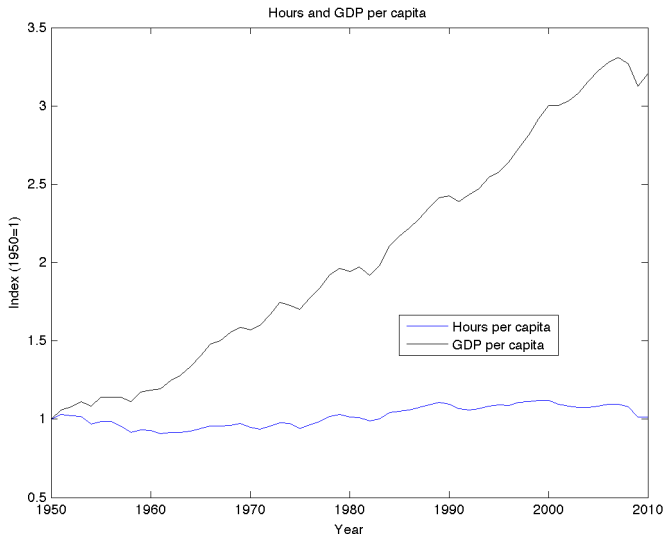
PREDICTION 5: INTEREST RATES

- ▶ Another prediction we have is that a higher interest rate reduces current consumption **compared to** future consumption c_2/c_1 .
- ▶ Also, Higher interest rates mean households should work now
- ▶ Data/Experiment: Longitudinal data on U.S. household purchases
- ▶ Result: A 1 percentage point increase in the interest rate increases c_2/c_1 by about 0.5 percentage points/year.
- ▶ Data/Experiment: Aggregate economy
- ▶ Result: A 1 percentage point increase in the interest rate increases c_2/c_1 by about 0.3 percentage points/year.
- ▶ Data/Experiment: Data on annual interest rates
- ▶ Result: A 1 percentage point increase in the interest rate increases L_2/L_1 by about 0.2-0.6 percentage points/year.

PREDICTION 6: PERMANENT WAGES CHANGES

- ▶ When households get permanently higher wages, it's unclear what they should do, income and substitution effects offset
- ▶ Data/Experiment: Long-run wage increases in U.S.
- ▶ Result: Little change in long-run labor

THEORY-LUMP SUM TRANSFERS



Even as wages ($\Delta \ln \text{GDP} \propto \Delta \ln w$) increase, L stays the same

PREDICTION 6: TEMPORARY WAGE CHANGES

- ▶ When households get temporarily higher wages, income effects are small but substitution effects are big: work more
- ▶ When wages will be higher in the future, move labor to the future
- ▶ Data/Experiment: Data on employee expectations about wages
- ▶ Result: An increase in expectations about w_2/w_1 by 1 percentage point increased L_2/L_1 by 1 percentage point.
- ▶ Data/Experiment: Exxon Valdez spill
- ▶ Result: A temporary increase in real wage rates by 1% increased hours worked per week by 2%