Why doesn't the PIH fit the data

1. Liquidity constraints. The most clearly false of the assumptions I made in lecture 1 was the assumption that there are no liquidity constraints -- thta people are free to borrow as much as they want and pay the same interest rate on their debts as they receive on their financial assets. This is grossly false. A key failure of the PIH is exactly the one would expect if some people were liquidity constrained -- predictable changes in income are correlated with changes in consumption. This is considered an explanation of the failure of the PIH as "no liquidity constrained consumers" is an essential part of the PIH

I personally think it is clear that this isn't the whole story. An estimate of the fraction of income which is caused by current not permanent income is about 50%. The fractions of households with zero financial wealth is lower (and they are poor and have lower than average consumption).

2. Non separability in consumption and leisure. The additive separability in consumption and everything else is very key to the rejected implications. In particular if people spend more when they have less spare time, the pattern is partly explained. The story would be for example that people can cook for themselves or buy prepared food (not just in restaurants). If people are working a low number of hourse, they have time to bake their own bread. Measured food consumption should include the value added to food inside the house (by cooking). But it doesn't. So maybe people spend more during booms because they are busy so they pay for things which they have time to do for themselves during recessions.

This would not be an explanation of the failure of the PIH -- it is an argument that the apparent failure is due to incorrect assumptions about the utility function (the assumptions about separability of the utility function are not essential parts of the PIH).

I think it is known that this isn't the full explanation. Some income variation is not associated with changes in hours worked. In particular pensions are indexed to inflation but are not adjusted every month. In the USA there is one cost of living adjustment every year. This is a very predictable change in income with no associated change in hours worked (or anything else). In the month preceding the increase, the increase can be calculated almost exactly using already published data on inflation in the past 11 months. The adjustment is correlated with higher consumption. This is pretty much a natural experiment.

3. People don't have rational expectations. The assumption that the mathematical expected value of variables (the conditional mean) is equal to what people expect is key to the derivation of the implications which are rejected by the data. The rational expecations assumption is very strong, so strong that no one thinks it is literally true (I once met someone who claimed to believe this but I think he was joking). It is used because it might be a useful approximation.

On the other hand it might not be. I think this is the correct explanation.

4. ~~Dynamic inconsistency~~ oops macroeconomists use that to mean subgame imperfection I mean ~~time inconsistency~~ oops macroeconomists use that to mean subgame imperfection, I mean present biased preferences. I personally don't think this is the main issue, but there is a very attractive story for why people choose consumption according to simple rules (like, say, consumption should be 90% of disposable income).

Note that one of the assumptions which I made (and the one which I didn't stress at all) was exponential discounting of current utility from consumption $(u(c_s))$ there were the factors $1/(1+d)^{(s-t)}$. All intertemporal utility functions used in this course will have a form like that. The only difference is that sometimes we use continuous time and the discount factor is $e^{-\rho(s-t)}$.

This is an absolutely standard assumption, but it is not at all innocent. Any other pattern of impatience has completely different and very strange implications. In particular it is easy for there to be "present bias". This means that the consumer at time 1 wishes he could keep his future self in time t from consuming as much as he will want to consume.

This corresponds to uh everyone's experience. It is typical to try to consume little but to actually consume a lot. If that is so, it can be rational to tell oneself to follow simple rules. It can be that if we make promises to ourselves, we find it painful to break those promises (this isn't in the standard utility function but it's the way we are). That pain can be enough to keep us from consuming as much as we are tempted to consume.

This means that it can be rational to make and stick to a simple rule rather than try to forecast future income and then choose optimal consumption.

Consider the platitudes which are arguments against consuming from permanent income "non dire gatto finché non é nel sacco" or "don't count your chickens before they hatch". These are explicit arguments against using the concept of permanent income. The fear is that complicated efforts based on difficult problems like forecasting will make us vulnerable to the sly insinuations of the sinister serpent of spendthriftiness. Uh that we will use fancy arguments to trick ourselves and so we should stick to simple rules to maintain self discipline.

Present bias can be illustrated with a consumer to lives three periods and who acts at time t to maximize

$$1)\ U = (C_t)^{0.5}+0.5(C_{t+1})^{0.5} + 0.4(C_{t+2})^{0.5}.$$

Here I am modelling death as just no further consumption is possible, so if t = 2 then $C_{t+2} = 0$ automatically and if t = 3 then $C_{t+1}=C_{t+2} = 0$ automatically. Assume r = 0 and w is always zero so budget constraint is just

2) $C_1+C_2+C_3$= K where K is initial wealth.

It is easy to see what happens in period 2.

The constraint has become

3) $C_2+C_3= K-C_1$

The consumer chooses

4) $C_2=4C_3$

So

5) $C_3=(K-C_1)/5$ and

6) $C_2=0.8(K-C_1)$

Now let's try to figure out what the consumer does in period 1.

A) First assume the consumer is rational, knows what he will want to do in period 2 and knows that he can't precommit to doing anything else. This consumer will choose C_1 to maximize 1) treating 4 and 5 as constraints. The consumer has two limits. One is the budget constraint. The other is whatever the consumer wishes at time 1, C_2 will be four times C_3. This is a rational consumer and the behavior is just like a consumer for 1/(1+d) = 0.5. The solution for C_1 is the one which maximizes

7) $(C_1)^{0.5}+0.5(0.8(K-C_1))^{0.5} + 0.4(0.2(K-C_1))^{0.5} =$

$(C_1)^{0.5} + (1.4)5^{-0.5} (K-C_1)^{0.5}$

---------It is best to skip this pointless algebra---------so the FOC is

$0.5(C_1)^{-0.5} - 0.5(1.4)5^{-0.5} (K-C_1)^{-.5} = 0$

so $(C_1)^{0.5} = ((5^{0.5})/1.4)(K-C_1)$

so $C_1 = (5/1.96)(K-C_1)$

so $C_1 = (5/6.96)K$

---- end skip ---

b) there could also be an irrational consumer who imagines that he can choose C_1, C_2 and C_3 subject to the budget constraint. This implies the two first order conditions

8) $0.5(C_1)^{-0.5} = 0.25\ (C_2)^{-.5} = 0.2(C_3)^{-.5}$

so

9) $C_1 = 4C_2 = 6.25C_3$

so $C_1 = K/(1.25 + (1/6.25))$

the silly consumer thinks that he will chose C_2 so C_2 will equal $(6.25/4)C_3$ but we know better. We know that C_2 will equal $4C_3$ because it will be chosen in period 2.

C) the consumer finds a way to precommit to not spending too much in period 2. This gives higher welfare than in case A.