

Comment on: “Unsecured Credit markets Are Not Insurance Markets” by Kartik Athreya, Xuan S. Tam and Eric R. Young*

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1 Introduction

This paper contributes to the recent literature analyzing the consequences of the increased idiosyncratic income risk experienced by US households over the last 30 years.¹ The major result of the paper can be summarized as follows: in a model in which households can use only competitively priced unsecured credit to insure against income risk, an increase in income risk translates almost one to one into an increase in consumption risk, and it does so whether or not bankruptcy is allowed.

In this comment I will complement, empirically and theoretically, this result. First I will provide, using household level data, some measures of the magnitude of the increase in income risk and of how much of it has actually resulted in increased consumption risk. My main finding is that household idiosyncratic risk has increased but consumption risk has increased much less. Since the paper suggests that the use of unsecured credit cannot be responsible for this stable consumption risk in face of an increasing income risk, I will then explore possible reasons that prevented the rise in consumption risk.

*Data and codes used to produce table 1 in this comment are available on the author’s website. The views expressed herein are those of the author and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

¹See, for example, Krueger and Perri 2004, Blundell, Pistaferri and Preston 2008, Heathcote, Storesletten and Violante 2008

2 Measuring changes in income and consumption risk

Measuring income or consumption risk faced by households can be a difficult task. Risk is reflected in both cross sectional dispersion and individual time series volatility, but it is not the only factor affecting them. Cross sectional level dispersion is also affected by household fixed effects (which are not risk from the household point of view) while individual time series volatility is also affected by predictable changes (which are also not risk from the household point of view). In order to control for household fixed effects it is common practice to focus on the cross sectional dispersion of income/consumption changes (as opposed to levels). Indeed there is a fairly large literature documenting changes and most studies find an increase in the dispersion of income changes (as a measure of individual volatility) from the late 1970s to the early 2000s.² Most of these studies though do not attempt to isolate unpredictable income changes, which are a better measure of risk. Also there is much less evidence regarding changes in consumption risk over the same period and on how these changes are connected to the changes in income risk.³

In this section I provide a more systematic measure of the changes in idiosyncratic income and consumption risk in US over the period 1979-2007 using the (limited) panel dimension of the Consumer Expenditure Survey (CE). I measure risk by isolating unpredictable (from the econometrician point of view) components of growth rates in household real income and real consumption in a given group of households. In particular I select all households who are complete income respondents, whose head is between the age of 25 and 55 and which have positive income and consumption for two periods.⁴ Consistently with the concepts of income and consumption in the paper income is measured as real total household disposable (after taxes) income while consumption is real total expenditures on non durable goods and services, small durable goods and services from durables, including housing services from owned or rented property and services from vehicles.⁵ Both variables are divided by the number of

²See Dynan et al. 2008 for a recent comprehensive survey of this literature

³Few studies (see Krueger and Perri, 2006 Battistin et al. 2007 among others) document the evolution of cross sectional consumption inequality in US over the last 25 years but, as discussed above, changes in cross sectional inequality and changes in risk and not necessarily the same object. Davis and Kahn (2008) recently document change in household consumption volatility across consumption deciles for the period 1980-1992 v/s the period 1994-2004 and find a mild increase in consumption risk but they do not compare it with the corresponding changes in income risk.

⁴These households report annual income and quarterly consumption in two interviews which are 9 months apart.

⁵The measure of consumption is the same as in Krueger and Perri, 2006. See there for details on deflation

adult equivalents in the households and then differences in log income and log consumption are computed. In order to purge the data from predictable changes and from aggregate risk (which is not analyzed in the paper), log-differences are regressed a series of individual controls which include time and education dummies, a quartic in age and age-education interactions. The residuals from those regressions, denoted as g_y and g_c , are an approximate measure of idiosyncratic unpredictable income and consumption changes.⁶ Finally the the variances of g_y of g_c , the key measures of income and consumption risk, are reported, for the early and late years of the CE sample, in the first two lines of Table 1 below.

Table 1. Measuring changes in income and consumption risk

	1979-82	2005-2007	Change
Observations	2688	2746	
$Var(g_y), \%$	21.8	28.4	+6.6
$Var(g_c), \%$	11.6	11.7	+0.1
$g_y^{10}, \%$	-60.8	-73.6	-12.8
$g_y^{90}, \%$	+60.7	+71.4	+10.7
$g_c g_y^{10}, \%$	-8.2	-10.2	-2.0
$g_c g_y^{90}, \%$	+4.8	+8.2	+3.4

The main finding from the table is that income risk has increased sizeably ($Var(g_y)$ increases by more than 6 percentage points) while the change in consumption risk has been much smaller ($Var(g_c)$ is basically constant). The last four lines of the table provide another measure of the change of income and consumption risk, which focuses on households which experience large absolute changes and uses information on the joint distribution of income and consumption. In particular these statistics measure the size of income shocks experienced by households on the tails of the distribution of income changes and how much the households which experienced those shocks adjusted their consumption.

The lines labeled g_y^{10} and g_y^{90} report the median value of g_y in the bottom and top decile of the distribution of g_y . Note how both statistics increase (in absolute value) over time, reflecting larger income risk. For example the median change in the bottom 10% of the

and on how imputed services from durables are computed

⁶Obviously the procedure used to control for predictable component of income changes uses only information available to the econometrician. As households members might have better information on future income prospects, the procedure might underestimate the components of income changes that are truly predictable and thus overestimate the level (and potentially the change) of risk.

distribution was -60.8% in the early 1980s and changed to -73.6% in the mid 2000s, suggesting that “unlucky” households suffer much larger percentage income losses now than they did 20 years ago. The rows denoted by $g_c|g_y^{10}$ and $g_c|g_y^{90}$ measure the median consumption changes of the groups of “lucky” and “unlucky” (in terms of income) households described above. The rows show that even for households with large income changes only a fraction of higher income risk has translated into higher consumption risk. For example, still focusing on the “unlucky” households, the table shows that in the 2000s they experienced an income drop which is 12.8 percentage points larger than the one experienced by “unlucky” households in the 1980s. Yet their consumption has dropped only an additional 2 percentage points, relative to the consumption drop experienced by the “unlucky” households in the 1980.

3 Why higher income risk does not translate into higher consumption risk?

The findings from the previous section show that in the US higher income risk has resulted in only marginally higher consumption risk. The main result of this paper suggests that a model with unsecured debt plus bankruptcy is not consistent with this fact. What are then the mechanisms that have allowed households to shield their consumption from the increased income risk? In this section I will briefly explore potential explanations.

3.1 The nature of increase in income risk

In order to fully understand the effect of increased income risk it is crucial to assess the nature of the increase income risk. To fix ideas assume that household log income y_t is described by the commonly used process (a process similar to this is used in the paper) which includes a transitory component v_t , a persistent component z_t , and a predictable (to the household but not to the econometrician) deterministic component p_t

$$\begin{aligned} y_t &= z_t + v_t + p_t, \\ z_t &= \rho z_{t-1} + \eta_t \quad \rho \simeq 1 \\ \eta_t &\rightarrow N(0, \sigma_\eta^2) \quad v_t \rightarrow N(0, \sigma_v^2) \end{aligned}$$

Let the symbol Δ denote changes over time (say from 1979-82 to 2005-2007) in a given statistic. It is easy to show that the change in measured income risk $\Delta var(y_t - y_{t-1})$ can be decomposed

as

$$\Delta var(y_t - y_{t-1}) = 2 \frac{\Delta \sigma_\eta^2}{1 + \rho} + 2 \Delta \sigma_v^2 + \Delta var(p_t - p_{t-1})$$

In models in which the only available asset available to agents is a non contingent bond (as the model considered in the paper) the increase in measured income risk that translates into measured consumption risk depends crucially on whether the increase in income risk is due to the increase in the variance of innovations of the permanent component $\Delta \sigma_v^2$, to the variance of innovations to the transitory component $\Delta \sigma_\eta^2$, or to the variance of the changes in the predictable component $\Delta var(p_t - p_{t-1})$. Typically increases in $\Delta \sigma_v^2$ and $\Delta var(p_t - p_{t-1})$ have a limited impact on consumption risk because they have a very small (or literally 0 in the case of the predictable component) impact on permanent income risk.⁷ Instead, since ρ is typically estimated to be close to 1, increases in the permanent component $\Delta \sigma_\eta^2$ have a large impact on permanent income risk and thus on consumption risk. One reason why the authors find that most increased in income risk translates into consumption risk is that they calibrate the changes in income process (see section 4) to be in large part due to the increase in the innovations to the persistent component of income. Although this is a defensible calibration⁸ it is not the only one which is consistent with the evidence on income data. In particular Heathcote and al. (2008) using PSID data find that over the last 30 years the increase in the variance of innovation to temporary shocks has been much larger than the increase in the variance in the innovations to persistent shocks, suggesting that part of the reason for why consumption risk has not increased much might lie in the fact the increase in income risk is of temporary nature. Primiceri and Van Rens (2008) also suggest that large part of the increase of measure income risk is due to changes in the predictable components; if that were true it would also help explain why consumption risk has not increased.

The upshot of this section is that the exact nature of the increase in measured income risk matters a great deal for its effects, but measuring it precisely is difficult. One reason for why consumption risk is not fully affected by higher measured income risk might be that (at least part of) of the increased in measured risk is of temporary nature or due to predictable components.

⁷This conclusion holds in absence of borrowing constraints. When borrowing constraints are present even increases in σ_v^2 or in $var(p_t - p_{t-1})$ can affect consumption risk.

⁸See Krueger and Perri, 2006 for details on how such calibration is obtained using evidence on level and growth rates dispersion from the CE data

3.2 The nature of insurance markets

If a significant part of the changes in income risk is attributable to increase in the variance of innovation in the persistent component of income then in order to explain the facts in table 1 one must use a model in which additional insurance (over and above self-insurance) is available to households. Krueger and Perri (2006) explore this possibility by feeding an increase in persistent income risk in a model where households can insure against income risk by trading a full set of contingent assets, with the extent of trading in each asset being limited by imperfect enforcement of intertemporal contracts. In such an environment, for reasonable parameter values, changes in permanent income can be insured against and thus higher income risk does not necessarily translate into higher consumption risk. Indeed I have computed the increase in consumption risk generated by the Krueger Perri model and found it to be very close to 0, even in face of a substantial increase in the variance in innovations to the persistent component of income. So such an environment is consistent with the evidence discussed in section 2 above.

Another advantage of that set-up is that, by introducing endogenous borrowing limits, it generates an endogenous credit market expansion in response to an increase in risk. In particular since increase in income risk reduces the value of exclusion (which is the assumed punishment for default), it also causes an expansion of credit limits, which generate an increase in credit use which is qualitatively consistent with the US evidence over the last 30 years.

One issue with the set-up is that it predicts growing transfer of resources, in the form of insurance payments, to “unlucky” households. Where in the data can we observe these transfers? Obviously some of these transfers might happening in informal markets (such as friends or family) but one natural candidate is bankruptcy and discharge of existing unsecured debts, which can be interpreted as an implicit contingent transfer from financial markets to “unlucky” households. The key finding of this paper though suggests that the transfers associated with bankruptcy are not effective in shielding the consumption of “unlucky” households from income fluctuations. In the next section I explore whether different assumptions about changes in unsecured credit markets might help give bankruptcy a more important role in providing insurance.

3.3 Expansion in unsecured credit markets and bankruptcy

If the only change which is fed into the paper's model is the increase in income risk observed in the data, the model predicts, going from the 1970s to the 2000s, a full pass-through of income risk into consumption risk but also falling equilibrium bankruptcy rates and credit. The intuition for this is that higher income risk induces, for any level of debt, higher default risk and thus lenders will charge, for any level of debt, higher interest rate, thus reducing equilibrium credit and bankruptcy. This implication is grossly counterfactual, as in US over the last 30 years we have seen a very large increase in the use of unsecured credit, in the fraction of households declaring bankruptcy and in charge-off rates on unsecured debt. For these reasons the authors introduce an additional change, better information in credit markets, which allows an expansion of credit supply and thus is able to generate, despite the increase in income risk and default risk, an increase in equilibrium credit and bankruptcy. Yet despite a substantial increase in credit, bankruptcy and charge-off rates income risk in the model still transmits one to one into consumption risk (this is the key result described in section 5.3 of the paper). I wished the the authors provided a bit more intuition for this result and, to understand it better, it would be helpful to see future work, either by the authors or by other researchers, that explores the following issues:

i) Why higher bankruptcy rates do not help unlucky households? As I mentioned earlier I view bankruptcy as an implicit transfer of resources from financial markets to "unlucky" households i.e. households who experienced bad realizations of their permanent income. So higher credit and higher bankruptcy rates should prevent consumption of these households from declining too much. But in the model this does not happen. Is it because transfers to defaulters are paid for, in the form of higher interest rates, by other "unlucky" households, so that the average "unlucky" household is not helped by bankruptcy? Or is it because the possibility of higher credit induces households to take on more debt, hence leaving them more exposed to income risk? Or is it simply because households who declare bankruptcy are not the "unlucky" ones? I do not have answers to these questions but I think it would be instructive, by inspecting the model's mechanism and results more closely, to get them.

ii) Is the result driven by the particular assumption regarding credit markets improvements, i.e. improved information? One way to check this would be explore alternative ways of modeling improvements in credit markets. One could consider a simple partial equilibrium set-up in which improvements in credit markets are modeled as changes in the (exogenous) interest rate on borrowing so to match observed patterns of credit, bankruptcy and charge-off rates in the

1970s and 2000s. Or one could model improved credit as driven by lower intermediation costs or more competition (see for example Drozd and Nosal, 2008). These experiments would help understand whether it is possible to give unsecured credit and bankruptcy a more important role in protecting households from income risk.

iii) Even though bankruptcy might fail to shield all households from income risk, it might be particularly effective in helping “unlucky” households. One way to check this is to produce, on data generated by the model, statistics like the one produced in last 4 rows table 1 above. Those statistics might give us a better sense of whether and how much bankruptcy helps households facing a large drop in income.

4 Conclusion

This paper improves our understanding of the relation between income risk and consumption risk. It challenges the view that increasing bankruptcy rates, which could be interpreted as increasing transfers to “unlucky” households, are an important mechanism shielding consumption risk from the higher income risk experienced by US households over the last 30 years. The paper shows that higher use of unsecured credit and bankruptcy, enabled by better information in credit markets, does not prevent higher income risk from translating almost one to one into consumption risk. This result suggests that there are three (non mutually exclusive) possible explanations for the finding, discussed in the first section of this comment, that consumption risk has been only mildly affected by higher income risk.

The first is that the increase in income risk is of predictable or transitory nature so it does not affect permanent income and consumption risk (regardless of bankruptcy). The second is that households have access to financial markets which allow them to insure against fluctuations in their permanent income. The third is that the use of unsecured credit and bankruptcy have increased for reasons different than better information (for example lower intermediation costs), and these reasons also allow households to use unsecured credit and bankruptcy as a more effective shields against higher income risk. An interesting avenue of future research would be to evaluate more precisely the scope of these three explanations.

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