Discussion

Comment on: "Can financial innovation help to explain the reduced volatility of economic activity?" ☆

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1. Introduction

As Dynan, Elmendorf, and Sichel (henceforth DES) note, the volatility of economic activity fell substantially sometime from the middle of the 1980s to the early 1990s. This decline is documented by McConnell and Perez-Quiros (2000) and Kim and Nelson (1999). Indeed, as shown in Table 1 of DES, the standard deviation of quarterly GDP growth was 4.4% in the 1960–1984 period, but 2.1% in the 1985–2004 period. This decline was not confined to quarterly growth rates: annual growth rates were also affected. Annual GDP growth had a volatility of 2.8% in the earlier period, but 1.4% in the later period. Stock and Watson (2002) demonstrate that this volatility decline also occurred in a number of other macroeconomic time series, indicating that data construction is unlikely to be the explanation. Lettau et al. (2005) show that this decline can help to explain the sustained run-up in equity valuations that occurred in the 1990s. Clearly this decline in volatility is important, and understanding its underlying causes promises to be very useful.

Among the explanations given for the decline in macroeconomic volatility are a shift in the economy from production to services, changes in monetary policy, and changes in

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inventory management. It is also possible that the lower volatility is largely a consequence of luck: the economy has been favored by smaller shocks, as emphasized by Stock and Watson (2002). DES propose a different explanation: that financial innovation has led to this decline.

In assessing whether the ''great moderation'', as the decline is termed by Stock and Watson (2002), could have resulted in part from financial innovation, several questions arise. What is meant by the term ''financial innovation''? Would we expect financial innovation, properly defined, to reduce volatility rather than to increase volatility? If the effect does go in the right direction, how much of the decline in volatility is it able to explain?

2. What is financial innovation, and does it result in reduced volatility?

DES take a broad view of financial innovation, including changes in the market for consumer and business debt, changes to government regulation, and shifts in societal attitudes. The market-driven changes they have in mind can be grouped under the heading of ''democratization of credit'', meaning that credit is now available to individuals and businesses that were previously unable to borrow. Behind this trend lies improved assessment and pricing of risk, the rapid growth of secondary markets for loans, and a deeper market for distressed debt that allows direct access to financial markets for smaller or weaker firms.

In terms of government policy, DES emphasize the phasing out of ''Regulation Q''. As they explain, Regulation Q imposed a ceiling on the rate that banks could pay on deposits. As a result, an increase in market interest rates caused an outflow of deposits from banks; this forced banks to curtail the supply of lending. The phasing out of Regulation Q means that funds would be available even when interest rates are high.

Finally, DES cite the possibility of the reduced stigma of taking on debt (see Gross and Souleles, 1999) as another force for change in the economy. While this may not exactly be a financial innovation, it could be seen as part of a broad decline in financial frictions.

Could these changes result in reduced macroeconomic volatility? As DES point out, in theory the effect on volatility could go either way. On the one hand, improved access to credit could enable consumers to better smooth transitory shocks to earnings. In this way, volatility is reduced. On the other, consumers should be able to respond to a permanent shock to earnings by increasing spending more sharply than they would if credit markets were restricted. Thus, it is also possible that financial innovation could actually lead to increased consumption volatility. Outside of a formal model, theory therefore provides little guidance as to whether financial innovation results in reduced macroeconomic volatility.

3. How much of the decline in volatility can be explained by financial innovation?

Equally important is the question of the magnitude of the effect of financial innovation. That is, how much of the decline in volatility can be traced to this source?

Table 2 of DES breaks down the decline in GDP variance into its underlying components. Nearly half of the decline in variance can be attributed to the household sector, and most of this is attributable to the decline in the variance of PCE (personal consumption expenditure) growth, as well as the decline in the covariance between PCE

and residential investment. The other half of the decline arises almost entirely from a decline in the volatility of inventory investment. Business fixed investment accounts for only 3% of the total decline in macroeconomic volatility.

Given this breakdown, DES are justified in focusing attention on innovations that affect the household sector, and in particular PCE and residential investment. DES ask the following questions. First, did the marginal propensity to consume (MPC) out of income fall? Second, is housing investment less sensitive to interest rates?

To evaluate whether MPC fell, DES regress real PCE growth on contemporaneous income growth, an interest rate measure, the change in the unemployment rate, and lagged ratios of income to wealth, transfer payments and consumer spending. Figure 3 of DES shows the coefficient on contemporaneous income growth based on rolling 40-quarter samples. This coefficient does indeed fall over the period, though the wide standard errors (resulting from the relatively small amount of data in each regression) suggest that strictly differentiating the earlier from the later period may be difficult. This decline in MPC indicates that consumption growth appears to be less sensitive to income growth in the 1985–2004 period than in the earlier period.

This result is surely informative for researchers seeking an explanation for the decline in consumption volatility. However, the precise connection between MPC and the volatility of consumption growth is not clear. For this reason it is hard to evaluate how much of the decline in the volatility of PCE growth arises from this effect. A simple accounting exercise illustrates the problem. By definition, PCE = Income − Savings. Therefore,

$$\mathrm{Var(PCE)} = \mathrm{Var(Income)} + \mathrm{Var(Savings)} - 2\mathrm{Cov(Income, Savings)}.$$

The decrease in consumption volatility could therefore arise from a decrease in income volatility, in savings volatility, or an increase in the covariance between income and savings. The last seems the most in line with the hypothesis that financial innovation led to the decline in consumption volatility. Numbers reported in Tables 3 and 4 indicate, however, that there was a substantial decline in income volatility. For example, the volatility of nominal four-quarter growth in disposable personal income fell by 40%, nearly as much as the volatility of growth in consumption expenditure. While the correlation between income and savings rose, the covariance between income and savings actually declined. Thus, the evidence seems to point at least as much to an income-driven decline in consumption volatility as to a rise in the ability to smooth income.

The second question DES ask is whether housing investment is less sensitive to interest rates. Changes in aggregate real residential investment are regressed on four lags each of real residential investment, disposable income, and the 30-year mortgage rate. Figure 6 of DES shows the sum of the coefficients on the mortgage rate based on rolling 40-quarter samples. Figure 6 shows a marked decline in the magnitude of the mortgage rate coefficients, indicating that residential investment indeed became less sensitive to interest rates. Further empirical analysis in the paper links this decline more closely to Regulation Q through the spread between the bank-loan rate and the federal funds rate.

Like the evidence on the decline in the MPC, the evidence on the declining sensitivity of investment to interest rates will surely be part of a full picture of the changes in the macroeconomy taking place in the mid-to-late 1980s. However, the direct link between this fact and declining consumption volatility appears elusive. As shown in Table 2, the variance of residential investment contributes very little to the overall decline in volatility

of real GDP. For the effect of changes in residential investment sensitivity to be large, they must impact consumption volatility through an indirect channel.

4. Conclusion

DES document intriguing facts related to the decline in financial frictions. They show that the marginal propensity to consume out of income has declined over this period, as has the sensitivity of residential investment to changes in interest rates.

The connection between these facts and the remarkable decline in consumption volatility remains an exciting area for future research. It is possible that these facts, and financial more broadly innovation led directly to the decline in volatility, though the evidence is perhaps more supportive of an indirect link. Ultimately a data limitation bedevils any attempt to focus on a single explanation for the volatility decline: there are two data points—one before the decline and one after. Nonetheless, the explanation of financial innovation is an intriguing hypothesis and, especially given the evidence of DES, one deserving of further attention.

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