Prize Citation for Sixth Stephen A. Ross Prize in Financial Economics Awarded by Foundation for Advancement of Research in Financial Economics (FARFE)

The 6th Ross Prize has been awarded to "Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles," written by Ravi Bansal from Duke University and Amir Yaron from the University of Pennsylvania and currently serving as the Governor of the Bank of Israel. The paper was published in the Journal of Finance in 2004. The winning paper has been highly influential in asset pricing and related fields. It focuses on two open issues front and center in the asset pricing literature: what drives asset price movements and what determines risk premia. The insight of the paper is the observation that both asset price volatility and risk premia are highly sensitive to the properties of low-frequency fluctuations in fundamentals. The authors term these fluctuations "long run risk."

In the 15 years following its publication, the paper has broadly influenced how "long run risk" is incorporated, not only in the asset pricing literature, but in a diverse set of areas in both finance and macroeconomics. These include the modeling of interest rates, foreign exchange rates, and monetary and fiscal policy. The framework of the paper has also been extended in a number of directions. Recent research, for instance, has focused on endogenous determination of persistent shocks, belief formation, and time-variation in economic uncertainty.

Lucas (1978) and Breeden (1979) show that asset prices are closely linked to households' consumption across dates and states. Hansen and Singleton (1982) show that this connection seems tenuous empirically, and Mehra and Prescott (1984) show forcefully that the equity premium, that is, the difference between the expected return on stocks and the expected return on risk-free bonds, which is around 6% in the data, is hard to square with the consumption process of a representative household, which is not very volatile and thus implies a much lower risk premium; they term this the "equity premium puzzle."

Bansal and Yaron (2004) show that a small long-run predictable component in the growth rate of aggregate consumption, together with fluctuations in economic uncertainty and preferences that imply that households care more about consumption when economic growth prospects are poor or economic uncertainty is high (which is the case under appropriate assumptions with recursive preferences à la Kreps and Porteus, 1978, and Epstein and Zin, 1989), can justify the observed equity premium, thus providing a potential resolution of the puzzle. Their model moreover can generate plausible levels and dynamics for the risk-free rate, the volatility of returns, and the predictability of returns by the current dividend yield.

The focus on low-frequency growth rates parallels some earlier developments in macroeconomics. Indeed, Lucas (1987) argues that the economic costs of business cycles, that is, transient shocks, are relatively small, and that shocks to growth rates are much more consequential. This has led to an increased focus on understanding the determinants of economic growth.

The long run risk model of Bansal and Yaron (2004) has been extended in several ways. Kaltenbrunner and Lochstoer (2010) show that in a production economy in which technological growth is independent and identically distributed over time, households'

consumption smoothing behavior can endogenously result in long-run consumption risk. Ai (2010) considers a production economy in which households cannot observe the persistent productivity shocks perfectly, and shows that this raises the equity premium and stock market volatility, and reduces the volatility of consumption growth. Kung and Schmid (2015) study a production economy in which productivity growth is endogenously determined by innovation and R&D, resulting in innovation-driven low-frequency fluctuations in growth rates. Kogan, Papanikolaou, and Stoffman (2018) consider an economy in which benefits of technological innovation are persistent and distributed asymmetrically, showing that the resulting inequality among households can give rise to a high equity premium and low expected returns on assets benefiting from innovation shocks.

The implications of long run risk for cross-sectional differences in expected returns among different types of assets are considered by Bansal, Dittmar, and Lundblad (2005) and Hansen, Heaton, and Li (2008). Piazzesi and Schneider (2007) study the pricing of nominal bonds in the long run risk framework connecting inflation and future consumption growth. Colacito and Croce (2011) use a long run risk model to explain puzzles in international finance and exchange rate movements. Drechsler and Yaron (2011) show that the long run risk model generates a variance premium with time variation and return predictability that is empirically plausible. Hansen and Scheinkman (2009) develop an operator approach to reveal a long-run risk-return relationship. Hansen and Sargent (2010) and Dew-Becker and Bidder (2016) consider the role of model uncertainty and show that households slant probabilities pessimistically toward a model that puts long run risk into consumption growth. Collin-Dufresne, Johannes, and Lochstoer (2016) show that Bayesian learning about model parameters can also generate subjective long-run consumption risk. Ai and Bansal (2018) show that the type of preferences used in the long run risk model can explain why a substantial fraction of the equity premium is realized at times of macroeconomic announcements.

Several factors other than long run risk have been argued to affect the equity premium and asset pricing dynamics; these include: household heterogeneity (see Constantinides and Duffie, 1996), preferences with habit formation (see Campbell and Cochrane, 1999), rare economic disasters such as severe recessions and wars (see, for example, Rietz, 1988, Barro, 2006, and Nakamura, Steinsson, Barro, and Ursua, 2013), borrowing and solvency constraints (see Constantinides, Donaldson, and Mehra, 2002, and Chien and Lustig, 2010), and intermediaries (see, for example, Gromb and Vayanos, 2002, Brunnermeier and Pedersen, 2009, He and Krishnamurthy, 2013, and Rampini and Viswanathan, 2019).

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