Review of Economic Dynamics 22 (2016) 21–51

Contents lists available at ScienceDirect

Review of Economic Dynamics

www.elsevier.com/locate/red

How large is the stock component of human capital? ☆

Mark Huggett [a,*], Greg Kaplan [b]

[a] Georgetown University, United States
[b] Princeton University and NBER, United States

ARTICLE INFO

Article history:
Received 14 July 2014
Received in revised form 26 May 2016
Available online 15 June 2016

JEL classification:
D91
E21
G12
J24

Keywords:
Value of human capital
Idiosyncratic and aggregate risk
Incomplete markets

ABSTRACT

This paper examines the value of an individual's human capital and the associated return on human capital using U.S. data on male earnings and financial asset returns. We measure the size of the stock component of human capital and assess the implications for life-cycle portfolio decisions. We find that (1) the value of human capital is far below the value implied by discounting earnings at the risk-free rate and (2) the stock component of the value of human capital is smaller than the bond component at all ages and typically averages less than 35 percent of the value of human capital. Data properties that increase the stock component of the value of human capital also act to lower the stock share held in financial wealth.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

A common view is that by far the most valuable asset that most people own is their human capital. We provide a detailed characterization of the value and return to human capital, and their implications for portfolio choice over the lifecycle. We estimate a statistical model for male earnings and stock returns to describe how earnings move with age, education and a rich structure of aggregate and idiosyncratic shocks. We then embed this statistical model into a decision problem of the type analyzed in the literature on the income-fluctuation problem. We use the stochastic discount factor produced by a solution to this decision problem to value future earnings after taxes and transfers.

We highlight two main findings. First, the value of human capital is far below the value that would be implied by discounting net earnings at the risk-free interest rate. The most important reason for this is the large amount of idiosyncratic earnings risk that we estimate from U.S. data. An agent's stochastic discount factor covaries negatively with this component of earnings risk.

This finding is particularly relevant with respect to the view that various legal impediments, including personal bankruptcy laws, hinder greater skill investment and greater risk sharing in an individual's future earnings. The finding that individual human capital valuations are far below the value implied by discounting earnings at the risk-free rate suggests that individual valuations are well below market valuations. If so, then absent these impediments there is ample scope for alternative financial arrangements to arise to share some of this idiosyncratic risk.[1]

☆ This work was previously entitled "The Money Value of a Man".

* Corresponding author.
E-mail addresses: mh5@georgetown.edu (M. Huggett), gkaplan@princeton.edu (G. Kaplan).

[1] Nerlove (1975) discusses the early literature on the potential for market arrangements to arise to better share future earnings risk.

http://dx.doi.org/10.1016/j.red.2016.06.002
1094-2025/© 2016 Elsevier Inc. All rights reserved.

Our second main finding involves decomposing the value of human capital at each age into a stock, bond and orthogonal value component. We find that the stock component is typically below 35 percent of the value of human capital. This holds for two different educational groups (high school or college educated males) under a wide range of attitudes towards risk-aversion. We determine the stock share by projecting the sum of next period's earnings and human capital value onto next period's bond and stock returns. We then value these components using the individual's stochastic discount factor.

This finding is relevant for the portfolio allocation literature. Much of this literature tries to understand two findings: low participation rates in the stock market and the age profile for the average stock share of the financial wealth portfolio, conditional on participation. Explanations are often framed in terms of deviations from a benchmark model (e.g. Samuelson, 1969), with one safe and one risky financial asset and constant-relative-risk-aversion preferences, that implies constant portfolio shares.

There are two main views in this literature. One view holds that adding a realistic labor income and financial asset returns process to the benchmark model does not produce these two findings. Thus, an explanation lies elsewhere. For example, adding fixed costs of entering equity markets, a housing choice or imperfect information and learning may help to reduce participation rates, especially at young ages, to be closer to those in data.[2] An alternative view is that realistic labor income and financial asset returns alone go a long ways towards producing both findings. Benzoni et al. (2007) and Lynch and Tan (2011) argue for this view.

There are three curious things about this literature. First, the former papers believe that the stock share implicit in the value of future earnings is small, whereas the latter papers believe it is large. Second, Benzoni et al. (2007) is the only paper to calculate this stock share even though it is central in all papers. They calculate that the stock share is 50 percent at age 20 and remains at 50 percent for the first half of the working lifetime. This leads to non-participation in equity markets early in life with sufficiently high relative risk aversion. Third, none of these papers go very far towards estimating the relationship between aggregate earnings risk and stock returns or estimating how the variance or skewness of idiosyncratic earnings shocks covaries with aggregate risk. Thus, differences in model portfolio choice implications are partly due to differences in assumptions rather than the weight of evidence viewed through estimated statistical models.

We find that the average stock share of the value of human capital is positive, but is robustly below the 50 percent value calculated by Benzoni et al. (2007). A number of model features lead to a positive stock share. For example, social security retirement benefits that are positively linked to the level of average earnings, a left-skewed distribution of idiosyncratic shocks, cyclical variation in the variance and skewness of idiosyncratic shocks and a positive conditional correlation between stock returns and the aggregate component of individual earnings all contribute towards a positive stock share. They also have support in US data. We do not find much empirical support for the claim that allowing cointegration between the aggregate component of earnings and stock returns is key to producing a large stock share. Benzoni et al. (2007) calculate the stock share after roughly calibrating such a cointegrated process. In contrast, all our work is based on estimating the relationship between earnings and stock returns.

Our work is most closely related to two literatures. First, a long line of work values human capital by discounting future earnings using a deterministic interest rate or discount factor.[3] Our work differs as discounting is done using an individual's stochastic discount factor, which produces an individual-specific value of human capital. Huggett and Kaplan (2011) is more closely related. They put bounds on individual human capital values using knowledge of the earnings and asset returns process and Euler equation restrictions. Second, there is a vast literature on financial asset allocation decisions. While our work relates to this literature, it differs by its focus on decomposing the value of human capital based on an earnings-stock-returns process estimated from micro data.

The remainder of the paper is organized as follows. Section 2 presents the theoretical framework. Sections 3 to 5 present our main findings. Section 6 explores the robustness and the key drivers of these findings. Section 7 concludes.

2. Theoretical framework

This section presents the framework, defines and decomposes the value of human capital and illustrates the value and return concepts with a simple example.

2.1. Decision Problem

An agent solves Problem P1. Lifetime utility $U(c)$ is determined by a consumption plan $c = (c_1, ..., c_J)$. Consumption at age j is given by a function $c_j : Z^j \to R^1_+$ that maps shock histories $z^j = (z_1, ..., z_j) \in Z^j$ into consumption. All the variables that we analyze are functions of these shocks.

Problem P1: $\max U(c)$ subject to

(1) $c_j + \sum_{i\in\mathcal{I}} a^i_{j+1} = \sum_{i\in\mathcal{I}} a^i_j R^i_j + e_j$ and $c_j \geq 0, \forall j$

(3) $a^i_{J+1} = 0, \forall i \in \mathcal{I}$

[2] See Coco et al. (2005), Gomes and Michaelides (2005), Coco (2005) and Chang et al. (2015).

[3] See Farr (1853), Dublin and Lotka (1930), Weisbrod (1961), Becker (1975), Graham and Webb (1979), Jorgenson and Fraumeni (1989), Haveman et al. (2003). Some of this work calculates an aggregate value of human capital.

Download English Version:

https://daneshyari.com/en/article/7388241

Download Persian Version:

https://daneshyari.com/article/7388241

Daneshyari.com