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Australians are accustomed to looking at – and worrying about – the value of their superannuation portfolio, or the value of their Telstra shares or, for many, even the value of their home. One thing we’re not accustomed to is looking at the value of our Human Capital™, despite this being the most valuable asset for many people, especially for those gainfully employed and still early in their working life.

Human Capital can be generally described as an individual’s future earning ability, effectively their professional knowledge, skills, and capacity to produce. In this Ibbotson Insight, we explore the following questions. What is Human Capital? What is the relationship between Human Capital and Financial Capital, and how does this relationship change over time? Why is Human Capital unique to each individual, and how should it be reflected in investment decisions?

### Individual Balance Sheet and Human Capital

Human Capital is the actuarial present value of an individual’s future income. Much like a bond, where the value is determined by discounting all future coupons and principal payments back using the market yield, Human Capital is the value of all future income payments discounted back to today using an appropriate discount rate that reflects the certainty and stability of the cashflows.

# Human Capital™ – Beyond Traditional Wealth Concepts

**Figure 1.** Individual Balance Sheet.

Assets	Liabilities
<b>Financial Capital</b> <b>Human Capital</b> <ul style="list-style-type: none"> <li>▶ PV of Earnings used for Pre-Retirement Expenses</li> <li>▶ PV of Earnings directed towards Savings</li> <li>▶ PV of future Social Security and Pensions</li> </ul>	<b>Future Expenses</b> <ul style="list-style-type: none"> <li>▶ PV of Pre-Retirement Expenses</li> <li>▶ PV of Post-Retirement Expenses</li> <li>▶ PV of Bequest</li> </ul> <small>PV = Present Value</small>
<b>Surplus (Deficit)</b>	

Source: Ibbotson Associates.

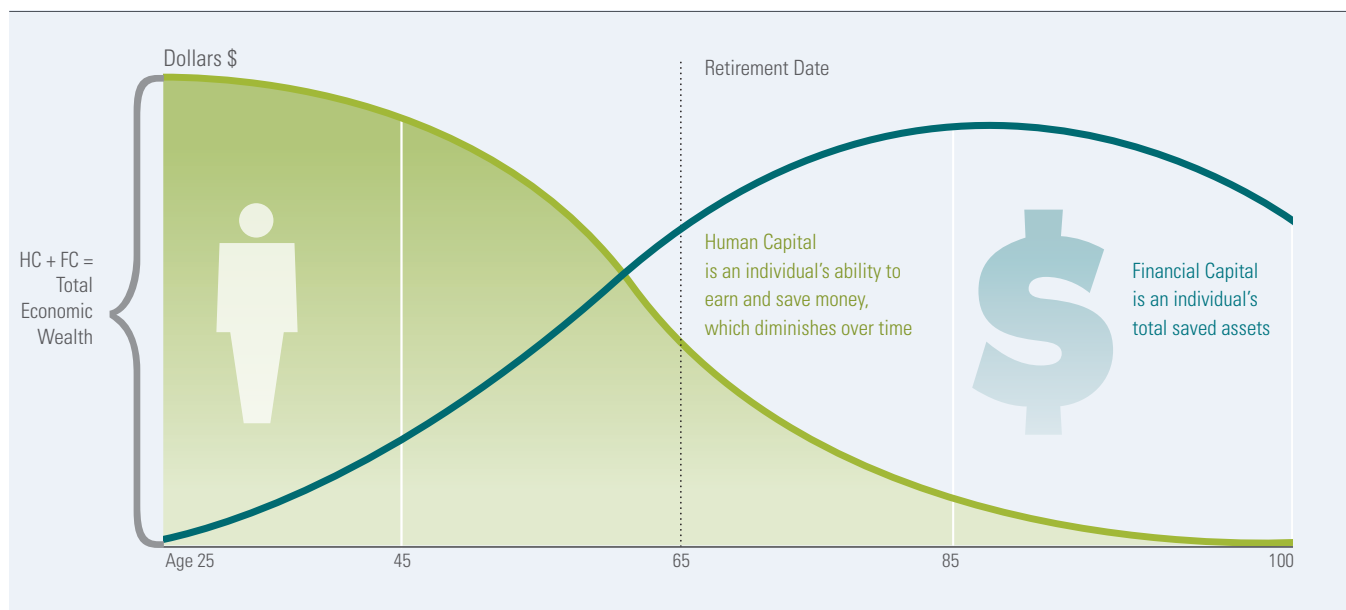
Just as corporations and businesses have balance sheets and income statements, so too do individuals (Figure 1). Importantly, the asset side of the balance sheet consists not just of Financial Capital, but also of Human Capital derived during an active lifespan from a chosen profession and also from compulsory superannuation contributions and the government age pension. These combined assets (Human Capital and Financial Capital) represent an individual’s total economic wealth, and are used to meet the liabilities listed on the right-hand side of the balance sheet. We refer to this as the individual balance sheet approach.

The relationship between Human and Financial Capital is complex and dynamic (Figure 2). At a young age, while you normally do not have much accumulated savings, your Financial Capital is very small, but your future earning potential is

very high, as you have many more years to earn. As time passes, however, the mix of your total economic wealth changes as you convert Human Capital into Financial Capital by saving a portion of your earnings. By the time you approach retirement, your Financial Capital is likely to be larger than your Human Capital as your working years come to an end but you have – hopefully – accumulated financial wealth over a long career.

As an integral part of your total economic wealth, Human Capital defines your capacity to take risk. Importantly, age is not the only factor affecting your Human Capital. As we will show below, two otherwise very similar people employed in two different occupations can have very different Human Capital. This will then lead to significantly different investment decisions concerning their Financial Capital.

**Figure 2.** Life Cycle of Human Capital and Financial Capital.



Source: Ibbotson Associates.

Having introduced an individual's balance sheet with its components, we're now ready to move from the theoretical concepts to the more practical applications of our methodology.

### Human Capital of the Average Australian

At Ibbotson, we customise our analysis and advice for any individual or a group of investors, employees of an organisation, or people employed in a particular industry. However, for illustration purposes in this Insight we will quantify the Human Capital of the average Australian using the Australian income- and superannuation-related statistics from the Australian Bureau of Statistics, as depicted in Table 1.

Table 1 shows the average household income for various age brackets. We also show the superannuation contributions rate which is used as a proxy for the overall savings rate, as well as the average superannuation balance which – for the purposes of this analysis – we assume to be the only savings vehicle and therefore the proxy for individuals' Financial Capital. (For the purposes of quantifying the average investor's Human Capital (i.e. the present value of future labour income), we focus predominantly on earnings that are designated to fund retirement income, and exclude current and future earnings spent

on financing pre-retirement expenses or consumption.) Table 2 shows the results of this modelling.

These calculations represent the age-dependant value of the two assets of the individual balance sheet, Financial and Human Capital. The table includes two different estimates of Human Capital that we have categorised broadly as 'safe' and 'risky'. To incorporate Human Capital in total economic wealth, we also need to consider the risk and return characteristics of each individual's Human Capital.

We can think of 'safe' and 'risky' Human Capital as representing two average Australian citizens who receive the same income and make the same superannuation contributions. They also have the same accumulated superannuation balances, which we have assumed to be their only savings vehicle, and which therefore represent their total financial wealth.

What makes these two individuals different is their area of employment. As an example of 'safe' Human Capital, assume that one of them is a schoolteacher with a steady, well-defined future earnings ability, and therefore with Human Capital which can be described as predictable and 'safe'. The second individual may be a contractor to the mining industry who

currently receives approximately the same salary as the teacher, but whose future employment and earnings prospects are more volatile and unpredictable. Compared to the population averages, the mining contractor's Human Capital can therefore be described as relatively 'risky'.

We can observe from Table 2 that at age 25, the teacher's estimated value of Human Capital (\$225,000) is approximately \$48,000 greater than the estimated value of the mining contractor's Human Capital (\$177,000). This difference diminishes over time as they approach the end of their working careers. However, early in one's working life, the dollar value of the difference between 'safe' and 'risky' Human Capital is substantial. What is also important is how this difference in value, along with the risk and return characteristics of Human Capital, influence asset allocation decisions.

### How Human Capital Affects the Asset Allocation Decision

As described above, Human Capital is usually the dominant asset for young and middle-aged people – financial assets are generally a small fraction of their total wealth. It is therefore quite reasonable for young people to hold an all-growth investment portfolio (as represented by their Financial Capital), because they could easily offset any negative returns in the short

**Table 1.** Australian Income- and Superannuation-Related Statistics.

Age Group	Household Income \$A	Contributions Rate %	Superannuation Balance \$A
15–24	59,648	8.5	4,091
25–34	81,245	10.2	22,287
35–44	86,180	11.8	54,313
45–54	89,715	15.2	100,983
55–64	64,504	18.3	164,679

Source: Australian Bureau of Statistics.

**Table 2.** Ibbotson Estimates of ‘Safe’ and ‘Risky’ Human Capital.

Age	Financial Capital \$A	‘Safe’ Human Capital \$A	‘Risky’ Human Capital \$A
25	13,000	225,000	177,000
35	38,000	217,000	180,000
45	78,000	190,000	164,000
55	133,000	143,000	128,000
65	233,000	116,000	108,000

**Table 3.** Asset Allocation for Individual with ‘Safe’ Human Capital.

Age	Financial Capital \$A	‘Safe’ Human Capital \$A	Recommended FC Allocation to Growth Assets %	Recommended FC Allocation to Income Assets %
25	13,000	225,000	89.0	11.0
45	78,000	190,000	81.0	19.0
65	233,000	116,000	43.0	57.0

FC = Financial Capital.

**Table 4.** Asset Allocation for Individual with ‘Risky’ Human Capital.

Age	Financial Capital \$A	‘Risky’ Human Capital \$A	Recommended FC Allocation to Growth Assets %	Recommended FC Allocation to Income Assets %
25	13,000	177,000	88.0	12.0
45	78,000	164,000	47.0	53.0
65	233,000	108,000	29.0	71.0

FC = Financial Capital.

run by adjusting future investment strategy, consumption, and savings. As the individual gets older, the proportion of Human Capital in total wealth becomes smaller, and therefore the financial portfolio can typically become more conservative.

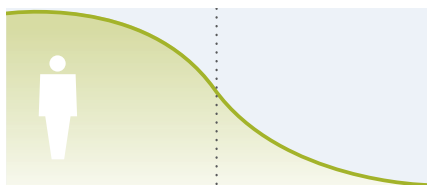
To illustrate the role Human Capital plays, let’s look again at the teacher example. Their relatively ‘safe’ Human Capital is less volatile and not significantly correlated to the sharemarket. The teacher is likely to remain employed even if the economy contracts and the sharemarket suffers a large correction, and so the teacher’s Human Capital is therefore almost bond-like in its return profile.

Let’s also assume, using a traditional asset-only approach to asset allocation, that the teacher’s risk tolerance indicates that they should invest their total portfolio with 40.0 percent allocated to growth assets such as shares and property, and 60.0 percent allocated to income assets such as government and corporate bonds and cash. Without considering Human Capital, a 25-year-old, 45-year-old, and 65-year-old teacher would get the same recommendation: to invest their financial assets in a 40.0 percent growth and 60.0 percent income portfolio.

When considering Human Capital, it’s appropriate for a teacher, particularly at a younger age, to invest in portfolios with a greater proportion of growth assets. For example, as Table 3 shows, a 25-year-old teacher should choose an 89.0 percent growth asset allocation, since they already have the majority of their total wealth (represented by their Human Capital) invested in bond-like assets. The combination of bond-like Human Capital with Financial Capital allocated 89.0 percent to growth assets results in the desired 40.0 percent growth/60.0 percent income allocation of the total portfolio. As the teacher reaches the retirement age of 65, Human Capital (as a percentage of total wealth) decreases and accordingly the allocation to growth assets becomes more conservative at 43.0 percent.

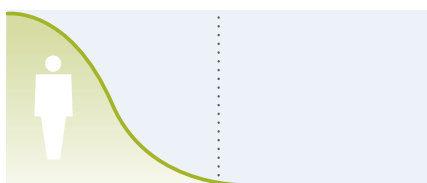
From this example, we show that when an investor’s Human Capital is considered to be similar to a bond investment, young investors should invest more into stocks than an investor closer to retirement given the same risk preferences. This also illustrates that as

### 'Safe' Human Capital



An individual with more job security, such as a teacher, has more sustainable Human Capital.

### 'Risky' Human Capital



An individual with variable compensation or who works in a quickly changing industry, such as a mining contractor, could face a rapid decrease of Human Capital.

investors get older, their Human Capital will reduce and their Financial Capital will increase. They will therefore gradually scale back the amount invested in growth assets.

At the same time, the 'risky' Human Capital of the mining contractor is much more exposed to global economic volatility, a sharp downturn in global growth having the potentially negative knock-on effects of mine closures or cutbacks to staff employment. In this example, the mining contractor's Human Capital is more equity-like and 'risky'. Therefore, with the capacity to take risk being reduced significantly, the same desired total portfolio allocation leads to more conservative allocations of Financial Capital (Table 4).

Taking these variations in Human Capital into account produces more appropriate asset allocations reflecting not only the risk preference but importantly the effective risk capacity of our two average Australian individuals. Ignoring the Human Capital-defined risk capacity may lead to investing in portfolios that are either too

conservative (in our example both the 'safe' and 'risky' Human Capital at the age of 25 or 45) or too aggressive (in our example the 'risky' Human Capital at age 65).

### Conclusion

The concept of Human Capital is very important for building more appropriate investment portfolios. The asset allocation of Financial Capital should be managed in conjunction with Human Capital, taking explicitly into account not just risk tolerance or age, but also occupation and other factors affecting an individual's earning ability. We consider the individual balance sheet approach as a genuine total portfolio perspective, including shares and bonds as well as that other important and highly-valuable asset, Human Capital.

The Ibbotson individual balance sheet approach is designed to assist advisers and investors balance these complex factors when determining the most appropriate asset allocation for an individual's needs. **■**

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