Demographic changes, financial markets, and the economy

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As the title suggests, this *Financial Analysts Journal* research paper by Rob Arnott and Denis Chaves looks at demographics and its impact on the real and financial economy. The paper expands on the effects of each individual age cohort on GDP and asset class returns. While the research scope is arguably more comprehensive than previous literature – the authors looked at 22 countries across a span of 60 years – the conclusion (with relevant caveats, of course) is the same. Arnott and Chaves are proponents of the theory that a country's population life-cycle is, at an aggregate level, a key driver of economic performance.

Intuitively, an accelerating workforce percentage plays a big part in dictating economic growth – or, more specifically, per capita growth. Naturally, assuming productivity remains stable, a higher ratio of workers means more output per capita. Looking at productivity (essentially a proxy for technology and experience), we see that those near career peaks (aged in their 30s to 40s) contribute significantly more than any other part of the age spectrum. In the next five to 10 years, the developed world is going to experience a demographic headwind led by a dwindling labour force and a mounting retirement base. Basically, dependency rates are going to rise while participation rates are set to fall. The economic cost on GDP per capita is tipped to range from 1% to 2% with the extreme scenario, Japan, expected to lose 5% per annum over this period. Australia is heading for a 2% decline per capita. On the other side of the equation, developing economies – excluding some of the key BRIC nations – are forecast to benefit from the same forces that drove the US and Japan in the 1960s to 1980s.

From a financial market perspective, the link between excess stock and bond returns and demographics is based on a relationship of consumption. Consider, for example, young adults. This group is in a phase of building towards a family and will look to deploy capital to housing rather than equities or bonds. Conversely, those in their 40s and 50s have arguably settled down and will have more money to invest in riskier securities. Meanwhile, a high of proportion of those in the 70+ age bucket will unsurprisingly detract from both bonds and equities as they typically sell down assets to fund their retirement lifestyles. Similar to GDP, there is again a compelling level of intuition behind these patterns – but, unlike the above variable, the results for the next decade have been partially reversed.

A case in point is that developed countries with low or declining fertility rates (eg. Australia and the US) can still look to demographics as tailwind for traditional asset classes, albeit

Also refer to the associated Due Diligence Forum Presentation in the Conference 2014 Resources Kit.

marginally. On the other hand, countries with a growing population of young adults, predominantly in Africa, won't be expected to share in this structural advantage.

Although it may seem counter-intuitive at first, the disparity in influence has a logical explanation. The simple reality is that regions of high young adult representation are a meaningful contributor to GDP as they transition from education to employment. Unfortunately, at this stage, they don't have the necessary capital to invest, thereby creating an asynchronous gap best described by Arnott and Chaves in the paper: "[there is] about a 20-year spread between peak impact on GDP and peak impact on stock and bond excess returns".

There is an enormous list of alternative factors that impact share prices, bond yields and GDP growth. And, even if demographics were the only material driver, it doesn't mean it will continue to be so going forward. That said, the academic findings in this and many other research papers should not be discounted. The empirical data in this apper is robust and supports a reasonable case for investors to pay attention not only to fundamentals but also social issues.

<div align="center">Read "Demographic changes, financial markets, and the economy"</div>

Note:
The methodology used in the paper is different to what has been used in the past. The historic approach has been to regress ad-hoc age cohorts against whichever variable is being tested, be it stock returns, PE ratios, yields, etc. However, Arnott & Chaves have instead applied a polynomial equation to the coefficients. The reasoning behind this design is twofold. Firstly, as the research is looking at every single age cohort (ie. 0-4, 5-9, 10-14, etc), polynomials need to be used to reflect the smooth incremental impact of each group. Secondly, it effectively increases explanatory power (ie. the robustness of the model in describing the relationship between the variables) and also, to some extent, improves its predictive ability. The variance in technique doesn't detract from prior research.

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