SECTORAL
ASSET MANAGEMENT

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Healthcare investing for patient impact and financial returns

Healthcare is a sector where the same dollar invested in a company has the power to create financial returns as well as generate impactful benefits for society. Value is inarguably generated by moving experimental treatments, step by hard-earned step, from the lab bench to the patient's bedside. Most professional healthcare investors derive a strong sense of personal meaning from furthering the development of innovative therapeutics, medical devices, and other healthcare modalities through their investments. This is the basis of "doing well by doing good".

This concept is also at the heart of the growing field of impact investing, which aims to create portfolios that generate a measurable and beneficial social or environmental impact, alongside financial returns. Traditional healthcare investing, for example investing in the public equities listed in the NASDAQ Biotech Index (NBI), has been a secondary (but growing) focus area for impact investors, representing 7% of impact AUM in 2019[1].

Like all professional investment firms today, Sectoral Asset Management is increasingly asked to justify the societal impact of its investment activities to its clients and partners. In 2020, as we navigated the global pandemic and set our sights on our next healthcare venture capital fund, we asked ourselves a simple question: "Are we, and should we be, impact investors?"

The answer to that question was more strategically complex, intellectually engaging, and informative than any of us would have expected.

Are we *doing well*?

We believe that *doing well* through healthcare investing means generating consistent above-market returns in the long-term. The healthcare sector has historically delivered strong financial returns: innovative healthcare has outperformed the overall market in recent years, with public market indices like NBI and MSCI World Healthcare more than doubling from 2015 to 2020 and the IPO window for biotechs experiencing an unprecedented 5-year bull market[2]. In the period 1990-2019, healthcare had the second-highest annual return, with significantly less volatility than most other sectors[3].

Looking forward, the drivers of future growth are robust. The twin demographics of an aging population and growth of the global middle class are likely to drive consumer demand for healthcare at rates higher than the overall growth of the economy. The supply of innovative healthcare offerings is also set to continue, as the pace of scientific innovation from academic research and private-sector R&D shows no sign of diminishing. Finally, healthcare investors know well that the imperative for big pharma and big medtech to refresh and refill their R&D

[1] Annual Impact Investor Survey 2020, Global Impact Investor Network

[2] https://www.forbes.com/sites/brucebooth/2020/09/21/evolution-of-the-biotech-ipo-markets-from-busted-to-booming

[3] Sectoral analysis, Bloomberg data

pipelines through "external R&D" has created a booming M&A market for privately-held and small-cap biotech and medtech companies.

We believe that financial returns are well in hand in the healthcare sector.

Are we *doing good*?

Healthcare innovations save lives and improve patient outcomes.

There is no more poignant example of this than the global vaccination effort playing out around us at this very moment. Within one year of identifying the novel SARS-CoV-2 coronavirus, the biopharmaceutical industry produced not one, but several, highly effective vaccines. By shifting global supply chains, re-igniting worldwide manufacturing capacity, and mobilizing massive national and local public health efforts, more than a billion doses are expected to be manufactured and administered by year's end. One of the leading companies in this effort, Moderna, barely had time to celebrate its 10th birthday. These feats are nothing short of outstanding.

History is full of breakthrough biomedical innovations that have had massive societal benefits. It is an industry that has and continues to cure diseases, save lives, and improve patient survival rates. Antibiotics; vaccines for deadly diseases like polio, measles, smallpox; insulin; statins; cancer immunotherapy; and gene editing are but a few concrete examples. Biopharma alone does not have a monopoly on life-saving technologies: medical device engineers have revolutionized healthcare with technologies like laparoscopic surgery, advanced imaging techniques like MRI and PET imaging, artificial heart valves, and neurostimulation devices.

We believe that judicious investment of capital at all stages of the healthcare innovation cycle is good for society, whether that means governments funding fundamental biomedical research, private sector investors backing innovative companies to translate scientific discoveries into real-world therapeutics, or healthcare systems around the world making evidence-based purchasing decisions to supply innovative therapeutics to those most in need.

How can we measure (non-financial) impact?

Healthcare investors come from all walks of life. Our firm alone has a host of scientists, engineers, and finance experts, with an alphabet soup of advanced degrees and professional certifications: Ph.D., M.D., CA, CFA, MBA, the list goes on. What unites us all is an unshakeable dedication to rigorous analytics and fact-based decision-making. We use tried and tested tools like the scientific method, discounted cash flow modeling, and modern financial accounting.

To us, it is intuitively obvious that we have impact beyond generating financial returns. All our portfolio companies are developing novel therapies that improve patient outcomes. That's precisely why we all do what we do. But intuition does not generate facts, it leads to formulating hypotheses. We needed an analytical tool to *test* the hypothesis that our investment dollars really do generate net positive societal impact.

The analytical approach we sought needed to quantitatively measure the societal impact of new medicines and medical devices. In future, it could also be used to predict and forecast the impact of our investments *before* we make them. An investor making decisions from the rearview mirror cannot succeed for long. Lastly, our tool needed to hold us and our companies accountable to see if we actually achieved the impact we thought we would.

Thus began our search for a tool that had the power to prospectively model out the predicted patient impact of our investments, track the actuals against the forecast, and report on our patient impact performance. We had our work cut out for us.

If you want it done right…

One of the immediate challenges we faced was measuring patient impact in a way that allowed apples-to-apples comparison of investment opportunities and outcomes.

In the world of healthcare, it's all too easy to default to providing the equivalent of glossy headshots and flashy sound bites. Our industry is perfectly suited to poignant patient testimonials, heart-wrenching stories of paediatric genetic disorders ameliorated by gene editing or enzyme replacement therapy, and big numbers around thousands or millions of patients treated and years of "healthspan" generated. But we are scientists, engineers, and financial investors. We need hard numbers, numbers that we can model, forecast, measure, report, and analyze. Most importantly, we wanted one set of numbers to use across all our portfolio companies, regardless of therapeutic area, stage of development, or product type.

By the end of our fund term, when all the capital has been committed, exits have been realized, returns generated and proceeds distributed, we can tell you precisely, literally down to the penny, how much *financial* value each investment dollar generated. But how do we do that for the more nebulous and diverse question of *societal* value?

How do you compare the societal value of a successful heart valve replacement versus extending the lifespan of a cancer patient, or even a more effective cervical disk replacement? What are the units of patient impact? Taking one step further, how do you set a *dollar amount* of societal benefit in a quantifiable way that helps you answer the fundamental question: **how much value did my dollar of investment in this company generate for society**?

Recently, an approach known as the Impact Money Multiple (IMM) was introduced, described as "a forward-looking methodology to estimate – before any money is committed – the financial value of the social and environmental good that is likely to result from each dollar invested"[4]. Inspired by the rigor and utility of the IMM approach, we set out to develop a similar approach, incorporating key elements of financing modeling (e.g. discounted cash-flow) and health economic modeling (e.g. quality-adjusted life years) to ultimately assign a dollar value to patient impact.

The basic steps of our methodology are fairly straightforward:

[4] Addy et al., "Calculating the Value of Impact Investing", *Harvard Business Review,* January-February 2019

1. We start with the discounted cash-flow model that we've already built to derive the present value of a portfolio company at the time of investment. This model includes detailed assumptions and forecasts around the number and type of patients treated on a yearly basis by each product in the company R&D pipeline as well as clinical trial timelines, probabilities of success, and expected market approval dates.
2. We strip out the *financial* output machinery of the model (things like average selling price, market share, revenues, cost of goods, and earnings) and replace it with *health economic* output. This is where we trade profits for QALYs (quality adjusted life-years). We use QALY estimates derived from the academic literature to calculate the incremental impact of the company's intervention versus standard-of-care treatment.
3. We convert the QALY output of the model into impact dollars using one consistent mid-range estimate of dollars per QALY across all our models. This allows us to directly model the economic dollar value of the incremental patient impact, and to apply time value of money through the discounting already built into the original financial model we started with.

Estimating, explicitly or implicitly, the dollar value of patient outcomes is used routinely, though not without debate, in many real-world applications. For example, health systems often use cost-effectiveness analysis to answer the population level question "how much QALY increase do I get per dollar spent?" We use it to ask three specific questions:

- *How much QALY increase has one portfolio company generated versus another?*
- *How does the dollar value of the QALY increase compare to the capital invested in the company?*
- *How does the realized patient impact compare to what we expected at the time of investment?*

We have refined, tested, and applied this approach in a retrospective manner to the entire portfolio of one of our legacy funds and several benefits have become clear.

First, the use of QALYs allows us to easily capture both dimensions of patient outcome – does the intervention increase the number of years lived and/or does it increase the quality of the years lived? Secondly, through the application of an estimated dollar value on QALYs, the model allows us to directly compare economic value generated to financial dollars invested. Finally, a significant and practical advantage of this approach is that we can use the exact same core model and assumptions for our financial return model and our patient impact model. The DCF model produces a *financial* value for the firm; and we replace average selling price (ASP) with QALYs and dollars per QALY to derive an *impact* value for the firm.

Using the same core models provides i) consistency, as we update assumptions in the financial model, we update the same assumptions in the impact model; and ii) a reality check, as actuals catch up with our forecast period, we can replace the assumptions with actuals reported by the company.

Conclusion

One of the great truisms of modern management theory is “you manage what you measure”.

In the same vein, we elected to make a simple but meaningful commitment to ourselves and our limited partners in our next venture fund: we will quantitatively measure and report the societal impact of our investments. Specifically, we will measure and report ***the incremental improvement in patient outcomes expected and/or realized by the development of the therapeutics and devices by our portfolio companies***.

We’re going to measure patient impact and report it transparently. That’s it, plain and simple.

As we develop this new dimension of our fund reporting, further steps are possible. We could have the numbers scrutinized and validated by an external auditor. We could grade ourselves on how well we do at achieving the patient impact we expected to achieve at the time of investment.

But that’s for further consideration, and for future fund strategies.

For now, we will start with holding ourselves accountable to truly doing well by doing good.