
The Cheque Is the Easy Part

What families should understand before backing frontier technologies



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Last week I spent three days in Oxford at a private salon on quantum, photonics and frontier technologies. The science was demanding, as expected. What stayed with me was a different issue: whether families with capital can develop enough judgement to back fields they do not yet properly understand.

That issue matters well beyond quantum. It applies to defence technology, AI infrastructure, advanced materials, space and new energy systems. These are areas where the opportunity may be real, the language is specialised, expertise is unevenly distributed and the pressure to enter early can be strong.

Families with serious capital can usually get access. They are invited into funds, introduced to founders and included in private conversations. They can write the cheque. The harder question is whether they know what the cheque is really buying.

This memo is about what should happen before that first cheque is written, and what a family should hope to learn from it once it is.

Access Is Not the Same as Judgement

I have watched the same pattern play out across several themes over the years. Something new begins to form. The language is technical and the early winners are unclear. A few well-known names move in, governments start paying attention, specialist funds appear. Before long the founders are turning up at family office gatherings, and the question has quietly changed from "what is this?" to "are we missing it?"

That moment needs more discipline than it usually gets.

Not because the field is unattractive. Often it is the reverse. Frontier technologies may reshape industries, national security, supply chains, health systems, information systems and the sources of future advantage, and families with long horizons may be unusually well placed to take part.

But a long horizon is not the same as an informed one.

I have become wary of the phrase "patient capital." In the right hands it is a real advantage, but it does nothing about the knowledge problem. A family can have time, reputation and access and still be following someone else's conviction.

So I would not start with "Can we get into the deal?" I would start with "What would we need to understand before this deal deserves our capital?"

Being close to conviction is not the same as having it. Borrowed conviction is common in new fields, and it rarely looks borrowed. A respected investor is in. A leading professor advises the company. There is a government programme behind the sector, and a strategic buyer has shown interest. The founder speaks the language fluently. Allocation is scarce and the round is closing.

Any one of those facts may matter. None of them is enough.

The family still has to know what it believes, what it does not yet understand, which assumptions really drive the outcome, which risks can be priced, and which cannot be owned at all.

That is judgement. Advisers can support it. I do not think it can ever be delegated completely.

Why This Question Is Becoming More Urgent

I want to start with a few numbers, because I think they explain why this issue is not going away.

McKinsey's 2026 quantum work reports that investment in quantum technology start-ups reached \$12.6 billion in 2025, 6.3 times the 2024 level. The same chart states that the 2025 surge was driven overwhelmingly by private capital-market and venture investments, with public sources accounting for only 3% of investment in 2025, compared with one-third in 2024.¹

Three per cent. The year before, it was a third.

I read those figures with mixed feelings. They show seriousness, not maturity. What I see is private capital being drawn quickly into a field where the range of outcomes is still wide and the language can easily run ahead of the evidence.

McKinsey's 2025 Quantum Technology Monitor estimated that the total quantum technology market could reach up to \$97 billion by 2035, while also noting wide ranges because technological progress, adoption rates and scaling opportunities remain uncertain.² I would read that sentence slowly, and give the caveat at least as much weight as the headline.

Family offices already live in a world where private and alternative assets sit at the centre of the portfolio. UBS's 2026 Global Family Office Report, based on 307 family offices across more than 30 markets with average family net worth of \$2.7 billion, reports that alternative assets accounted for 42% of strategic allocations in 2025. It also reports that 60% of family offices planned to change their strategic asset allocation over the following 12 months, the highest share in any edition of the report.³

I want to be careful here. These figures do not say families are investing in quantum. They say something more basic. The family office portfolio is no longer a public-market portfolio with a few diversifiers around the edges. It is increasingly private, alternative, selective and operationally demanding.

Now add frontier technology to that.

Defence and dual-use technology offers an instructive contrast. NATO's DIANA programme gives selected companies access to 23 accelerators, 182 test centres, mentoring from scientists, engineers, industry partners, end users and procurement experts, and pathways into 32 Allied markets.⁴ That is a good deal more than funding. It is a structured way of forcing a technology to meet reality.

The better investors I know work on the same instinct. They do not stop at whether the story is exciting. They want to know where it has been tested, who has challenged it, which customer has a real need, what the path to adoption looks like, and what has to be true for the technology to matter commercially.

Families need their own version of that discipline. I am not sure many have built it yet.

The Sequence Is Often Wrong

The sequence I see most often is familiar. A family hears about a new theme. Someone it trusts introduces an opportunity. The founder or manager is impressive, the technical story is compelling and access appears limited. Diligence starts, but by then the clock is already running.

The family is not late to the investment. It is late to the learning.

I think the better sequence starts much earlier, before any transaction is on the table, when the family first recognises that a field may matter over the next ten or twenty years, and admits that its own understanding is not yet good enough.

At that stage the question is not "what should we buy?" It is "what would we need to learn before buying anything?"

Some will say this is slower. I am not convinced. It may be the faster route to a good decision, because the family is not learning the field while negotiating the terms. When those two things happen at once, I have usually found that the learning loses.

What the First Cheque Is Really Buying

One reason families get pulled into frontier sectors is that access can feel like proof. If we were invited, the opportunity must be good. If the round is oversubscribed, the company must be special. If a well-known institution has invested, someone must have reviewed the risk. If the science comes out of a leading university, the technology must be credible.

Sometimes that is true. Sometimes it is only partly true, and in my experience the missing part tends to be the one that matters.

The first cheque can buy several quite different things, and families should be honest with themselves about which one they are buying.

Exposure. That can be perfectly reasonable, as long as it is sized like exposure and not dressed up as conviction.

Access. Access to a field, a network, a manager or a founder has value, but access is not a return stream, and I have seen the two confused more than once.

Learning. I have no objection to that. In some areas it may be the most honest reason for a small first commitment, provided everyone says so and the learning is captured rather than left in a drawer.

Control or influence. This is a much higher bar. Board rights, strategic involvement, follow-on rights or partnership status need more than enthusiasm. They need the capability to be a good owner.

The trouble starts when these get mixed up. A family thinks it has bought control and has only bought exposure. It thinks it has bought conviction and has only bought access. Or it thinks it is learning, with no process for turning the experience into better decisions.

The first cheque should never be allowed to pretend it is buying more than it really is.

The Four Layers of Judgement

I would separate the work into four layers.

The domain. What is actually happening in the field? A family looking at quantum does not need to become a physics department, but it should understand the difference between computing, sensing and communication, and why commercial readiness is not the same as scientific progress. In defence, it should understand procurement, mission need, export control and integration, and the difference between a clever product and a deployable system.

The market. Who pays, when, and why? Some technologies matter to states long before they make sense as venture investments. Some are scientifically impressive and commercially premature. Others become infrastructure only after years of standards, manufacturing improvements and customer adoption.

The capital. What is the family actually buying? A direct investment, a specialist fund, a research relationship, a venture studio, a strategic partnership and listed exposure are six different decisions. They carry different rights, risks and liquidity, and teach different things.

The governance. Who makes the call, who challenges it, and who owns the follow-up two years later? A frontier investment without continuing governance is not really a long-term investment. It is a long-term hope.

Most of the mistakes I have seen come from collapsing all four layers into one question: "Do we like the opportunity?"

That question is too thin.

When External Expertise Helps, and When It Replaces Judgement

I believe strongly in external expertise. In technical fields it is essential. No family office can be a quantum physics department, a defence procurement office, a semiconductor lab and a cyber-intelligence unit, and none should try. But there is a line between using expertise and hiding behind it.

I have seen experts used in two very different ways. Sometimes they are brought in to challenge the thesis. Sometimes, often without anyone intending it, they are brought in to make a decision feel safer. The questions usually tell you which.

"Is this a good company?" is too broad. A better question is: "What would need to be true for this technology to matter commercially, and where are we most likely to be wrong?"

"Would you invest?" is too easy. "Which three facts would cause you to stop the process?" reveals far more, about the company and about the expert.

What I would look for is expert challenge, not expert endorsement. The first is worth paying for. The second mostly makes people feel better.

My suggestion is a small, independent bench of people who can test the thesis from different angles: science, commercial adoption, customer need, regulatory context, capital structure and governance. Not a large committee. The point is to avoid depending on the seller's version of expertise, which is, understandably, the version most readily on offer.

What I Would Ask Before the First Cheque

If I were sitting with a principal or a family office CEO before the first commitment, these are the questions I would not want to skip.

What do we need to understand ourselves? Not everything, which would be impossible. But there are usually a few points the family has to own internally rather than rent from advisers. In quantum, it may be the distinction between scientific progress and commercial readiness. In defence, it may be procurement and deployment. In AI infrastructure, power, chips, data centres and customer concentration. If the family cannot name the two or three questions it must understand for itself, I do not think it is ready.

Are we backing a technology, a company, a manager or an ecosystem? These are separate decisions. A technology can be important while a company is poorly positioned. A manager can understand the field while the fund terms are unattractive. An ecosystem can matter while the investable assets are not yet mature. I would want the family to be precise about the unit of judgement.

What should we know after the first year that we do not know today? The first cheque ought to produce a better second decision. If it does not, the family has paid for exposure but not for learning. I would want a simple plan: what we will track, who reports back, which experts we revisit, which milestones matter, and when we decide whether to deepen, hold or stop.

What would make us pause, even if the access looks scarce? Scarcity is powerful, and families are often shown opportunities precisely because they are scarce. The better the access sounds, the more disciplined the red flags need to be. I would want to agree in advance what stops the process: unclear customer need, dependence on one grant, weak information rights, no independent technical review, governance terms that do not match the risk, or a manager who cannot explain where the thesis might fail. Agreeing them early matters, because once the excitement arrives, red flags tend to get reinterpreted.

Who has permission to say no? In family offices this matters more than people admit. When the principal is excited, when another family is investing, when a respected adviser made the introduction, or when the opportunity feels rare, who can slow things down? If the honest answer is nobody, the governance is weaker than it looks.

None of these is a bureaucratic question. They are ownership questions.

A family that answers them well will still make mistakes. In frontier fields that is unavoidable, and I would be wary of anyone who promised otherwise. But the mistakes will be smaller, more instructive and less likely to become part of a larger pattern.

The Family Advantage

I would not want any of this read as an argument against families engaging with frontier technology. I mean the opposite.

I think families may have real advantages here. They can think across generations and support ideas before public markets understand them. They can combine capital with reputation, networks and patient ownership, and convene scientists, founders, customers and policy people who would not otherwise sit at the same table. Oxford reminded me how much can happen when those people are in one place.

But the advantage only counts if it is matched by discipline.

As I see it, the family advantage is not the freedom to move without process. It is the freedom to design a better one than many institutions can, because a family is not forced to turn every emerging field into an immediate product or a quarterly performance story.

In practice, a family can spend time learning before it allocates, and build relationships before it transacts. It can bring the next generation into the work before authority formally changes hands, which I suspect is one of the quieter benefits of doing this properly. And it can accept that in some fields the first responsible act is not to invest at all, but to understand.

Used well, that is a powerful advantage.

Used carelessly, it becomes impatience dressed up as vision.

A Final Thought

Warren Buffett has often spoken about the importance of staying within one's circle of competence. I have always found the idea more demanding than it sounds. It is not an argument for staying with what is familiar. Investors who never stepped beyond what they already knew would never learn anything new.

The real discipline, I think, is knowing where the edge of the circle is.

For families looking at quantum, defence, AI infrastructure or other frontier sectors, that edge may be closer than they would like to admit. They may understand capital and ownership. They may even understand the industry into which a technology might one day be sold. What they may not yet understand is the technology itself, the adoption path, the dependence on government, or how long it takes for promise to become revenue.

There is no shame in that. It is where the work starts.

The cheque may open the door. It does not create judgement. In frontier investing, the family that learns before it allocates may not always move first. But it is more likely to know why it moved at all.

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1. McKinsey & Company, "Quantum investment surge" (24 June 2026), <https://www.mckinsey.com/featured-insights/charts/quantum-investment-surge>
 2. McKinsey & Company, "The Year of Quantum: From concept to reality in 2025" (23 June 2025), <https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/the-year-of-quantum-from-concept-to-reality-in-2025>
 3. UBS, "Global Family Office Report 2026" (2026), <https://www.ubs.com/content/dam/assets/wm/static/gfo/global-family-office-report-en-2026.pdf>
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