$|\hbar\rangle$ Quantum Consultants

02 October 2020

Manager, Policy Framework Unit
Treasury Langton
Cres. Parkes ACT 2600
By email: FIRBStakeholders@treasury.gov.au

RE: Major Reforms to the Foreign Investment Review Framework Consultation

I am writing to provide feedback on the Foreign Investment Reform Bill exposure draft. Thank you for this opportunity to comment and provide my views on the proposed major changes to the foreign investment review framework.

The development of quantum technology has been a major part of Australian academic Research and Development since the late 1990's when the field first started. Australia has had a long and extremely distinguished history in this field. The Silicon quantum computer and the optical quantum computer were effectively invented by researchers at the University of New South Wales and the University of Queensland and Australian researchers have been instrumental in every aspect of quantum technology development for over 30 years.

Just as this field is beginning to move out of the academic space and into serious commercial development, with significant and rapidly increasing investment from both the private and public sectors, Australia is poised to shoot itself in the foot through the unintended consequences of this draft legislation. The increased level of global investment, the current lack of quantum experts to fill positions and the over-representation of experts within Australia is a perfect storm for a massive brain-drain of talent that Australia has invested over 30 years in building if expanding the quantum industry in this country becomes prohibitively difficult.

I am a quantum physicist, the co-founder and managing partner of h-bar consultants. H-bar is the first consultancy firm that is deals exclusively with the quantum technology sector. Founded by myself and Prof. Jared Cole of RMIT University, h-bar has become a highly influential member of the global quantum community. H-bar is a founding member of both the US Quantum Industry Coalition, responsible for lobbying congress for the newly established $1.2 Billion US national quantum initiative and a founding member of the EU Quantum World Association. H-bar has provided due diligence services for over 20 venture capital firms and has been an intricate part of over $40M in venture capital funding to quantum startups all over the world. We have provided strategic consultancy services to the Japanese Government, the US Department of Energy, multiple fortune 500 companies and numerous universities in Europe, the US and Japan. H-bar was featured heavily within the recent CSIRO Quantum Technology Industry Roadmap as one of several success stories in the Australian quantum technology sector.

Being a technology consulting firm, h-bar has a unique vantage point on the global quantum industry. We specialise in understanding the needs of corporations or equity investors and understanding the capabilities of the actual technology and the researchers who are developing it. We are currently seeing a dramatic swing away from Australian interests in the quantum technology space in favour of the US, European Union, China and Japan and this proposed legislation will further exacerbate this problem.

While Australia and Australian researchers have been pioneers within the field of quantum technology, we are rapidly being overtaken as the rest of the world expands its R&D efforts, while Australia remains stagnate. The Vice President of the IBMQ network - the largest operational network of quantum computers in the world - is Australian. The co-founders of the most valuable quantum startup in the world

(PsiQuantum) are Australians. The founder of Canada's most valuable quantum hardware startup (Xanadu) is Australian, the head of quantum architectures at Google is Australian and Director of Baidu's quantum computing centre is Australian. Yet none of these individuals or businesses are in Australia. Our impact on this field is unarguable and our talent base is extraordinary. Australians already lead this field, but Australia does not, even though it could.

The broad definitions of "national security businesses" in this draft legislation would encapsulate effectively everything in the quantum technology field, from computers to communications systems to sensors and simulators and would effectively kneecap the Australian quantum technology industry before it gets started. Investment in Australia is already difficult due to our shortcomings in the domestic venture capital space, incentives put in place by governments especially in the US and EU to encourage domestic investment and the perceived lack of seriousness in quantum technology development due to Australia being one of the only OECD nations without a national quantum R&D program. Further impediments to investment will simply divert capital away from Australia causing the quantum research ecosystem in Australia to atropine and talent to move away.

The legislation, as currently drafted, will significantly impact the growing quantum technology industry in unintended but important ways, including:

- Putting up significant barriers for foreign investment in early to mid-stage quantum startups in Australia and forcing these companies to potentially engage in a national security review with investors that will be extremely averse to.
- Curtail the growth of the quantum startup community in Australia by potentially cutting off significant sources of capital from friendly nations and allies at the same time as both federal and state government investment is trying to incentivise the creation of a startup ecosystem within Australia - for example the $35M NSW government investment in the Sydney Quantum Academy.
- Force Australian quantum technology startups offshore to gain access to capital.
- Curtail technology development activities of Australian startups and SME's to avoid any interaction with the defence or intelligence sectors to avoid the appearance of being a "national security business".

Australia has spent the last 30 years positioning itself as one of the leading nations in quantum technology development and was a member in a very small group of countries that identified quantum as being as impactful in the 21st century as the digital revolution was in the 20th century. After decades of steady research and government investment, we are now on the cusp of reaping the rewards of a very shrewd decision. However, without addressing the barriers that this draft legislation will construct for early stage quantum startups and SME's, that early investment and the Australian quantum talent it produced will be very quickly lost overseas. This will further impact other sectors in Australia, especially education and training, as without the reputation for being world leaders in this field, foreign students will have little reason to invest in an education from Australian universities or entities such as the Sydney Quantum Academy.

We are keen to work with the Treasurer to develop amendments which ensure the stated goal of protecting Australian national security while avoiding unintended consequences that could hobble this industry. We encourage further discussions between government and stakeholders in the nascent quantum technology field to ensure we can come to a healthy balance of protecting national security and also protecting the quantum expertise and potential that Australia has spent 30 years investing in.

Yours Sincerely

Dr. Simon J. Devitt
Managing partner and co-founder
H-bar: Quantum Consultants.