Topic: What do you believe will be the most important for ensuring Australia's future economic prosperity, and why?

"Economics deals with the real world" and it is messy (Dan Rodrik, Economic Rules). One cannot simply separate one factor to others, as the changes in one aspect can directly or indirectly enhance or impede the development of others, not to mention the ripple effect at play. However, that does not deny the existence of "key drivers" of the economy — factors the impacts of which can be predicted and controlled, to some extent. According to Dr Ken Henry , "demography, international integration and technology" are mentioned as the three major influences in the past and for the future to come for Australia (CEDA, 40th anniversary annual general meeting dinner Sydney, 19 November 2001, p.). This essay highlight the importance of globalisation and technology on the future Australia's economic health, specifically increasing technology applications on Australian export products to increase Australian competitiveness in global environment.

It is not surprising that technology play a crucial part in economic development. In fact, there has been many theorem proves its indispensable role to the long run growth of any economy. For instance, Solow - Swan model suggests that, in the very long run, without any technology progress, growth would completely stop eventually (when that economy reaches the steady state and settle down). Or conventionally, technology advancement means becoming more productive, thus given the same restrictive amount of resources, the economy can adapt better and produce more than before and therefore, flourish. This is true to not only Australia but also many other countries.

However, the term "technology" is a very broad concept. What is discussed and focused here should be preferred as the degree of technology application, that is whether or not the technology can actually help foster the productivity level or creating specialised products with high value and lowest possible cost. Even if the technology level was very high, the economy which cannot take advantage of that due to the technology not meeting the industry's needs or lack of appropriate workforce will waste such advantage. Furthermore, integrating new technology into production

and decreasing the intensity of natural resources usage have become the trend of economic activities. This can be seen in the decreasing usage of raw material as a percentage of GDP (Sapsford 1985). As a natural resources abundant country, Australia has even stronger motivation in improving its products through applying indigenous technology or adapting imported one to compensate for the fading advantages of raw material export. In Australian economic history, natural resources advantage has created the “mining boom” events, and the most recently one has boosted real per capita household disposable income by 13 percent over the decade to 2013 (Downes P, K Hanslow and P Tulip 2014, the effect of the mining boom on the Australian economy”, RBA Research Discussion Paper No 2014-08). It also create the boom which was powerful enough to alleviate the effect of global financial crises, and eventually helps Australia escape the GFC (Keri Phillips 2016 the mining boom that changed Australia). Therefore, to maintain the economic competitiveness and prosperity, nourishing applications based on new innovation is vital. It is worth noticing that even when the advantage was still strong,the enlargement of further processing of mineral before export, which was an instance of technology application, was among most important development in the mining expansion period (Ergas 1984, Roth Well and Zegveld 1985, Australian economic history… p.234-p.235).

With all the sayings, technology integration should definitely be encouraged. There are many ways to enhance this, two of which are deemed to be significant. First of all, the link between theory and reality should be strengthened, specifically research projects should be carried out under the response to industry needs. In fact, there are evidences supporting the idea that technology introduction into industry can be facilitated by interaction between inventor and adopter (Carmel Maguire, Robin Kench, Social Studies of Science, Vol.14, No. 3(Aug, 1984), pp. 371-397). The second problem is whether the labour market can supply enough workforce that can adopt the newly introduced innovation. As technology advanced, higher-quality workers, mainly graduates, are needed more than ever before. This forces many university to switch their priority to providing workers with relevant level of knowledge and skills (Strengthening the connection between education and employment, 31 Aug 2016,

http://monitor.icef.com/2016/08/strengthening-connection-education-employment/)

Export plays a critical role in Australian economy for many reasons. Firstly, domestic market is small (). As a result, to expand production and output, strong demand is required to absorb the amount of goods produced. Therefore, it is natural and unavoidable that firms turn their target to worldwide markets. Furthermore, one of three determinants of pace of technology change is demand, besides technological capability and industrial structure. In other words, larger demand will increase the incentive to innovate. Expanding the export sectors will act as a stimulus to technology advancement, which is desirable. There are also evidences that most successful inventive efforts steam from the export sector, which have always been oriented toward foreign market (). Export grows to be even more crucial when globalisation becomes a significant phenomenon. Since the main drivers of increasing international integration is technology development and decrease in transportation and transaction cost (Globalisation and Structural adjustment, May 2005, https://www.oecd.org/eco/outlook/38628438.pdf), globalisation is especially beneficial to Australia. This is simply because her transportation cost is naturally high due to geographic factor. As the natural disadvantage diminished, thus the trade cost, Australia will become relatively more competitive and improvement in export activities will continue to encourage innovation.

One should be aware that technology integration on export sector is not the only important things for the future of Australian economy. Unemployment rate, inflation, and education are all irreplaceable problems of any economy, just to name some. Despite that, It is still reasonable to prioritise innovation application. Technology enhancement itself generally has huge positive spill over effect on many fields. Let’s take education as an example. The implementations can be applied to improve education quality through facility and learning equipment or expand virtual education which depends heavily on communication technology. Consequently, Australian international education will not only grow faster but also become more competitive in worldwide market. This will likely lead to great growth in the total export, subsequently the economy as a whole, as strong growing

education exports have become the largest service export and the third largest export, following only coal and iron ore (Australia's exports of education services, RBA, June 2008, https://www.rba.gov.au/publications/bulletin/2008/jun/pdf/bu-0608-2.pdf). Communication technology changing may also contribute to decreasing natural unemployment rate as the cost of recruiting and finding jobs decrease drastically through the use of internet. Some may argue that unemployment may be negatively affect by these development. By improving technology, automatic field will advance and machines may replace many works that should be done by labour. Although it is true many jobs will undoubtedly be destroyed, new ones will also be created thanks to the same reason, especially workers with higher level of skills. In case of Australia's digital economy, It is estimated that more than 70000 jobs can be created through application of smart technology in many fields such as transportation, health, energy or water within a few years (Access Economics, The economic benefits of intelligent technologies, May 2009, p.37). The amount of jobs gain and lose varied significantly among industries. What should be taken into consideration here is whether adopting new invention can create net job creation and whether the labour capacity can satisfy the demand for workers with high level of skills. Encouragement of integrating new ideas, methods and findings should be strong in area with great job generated relative to loss and there are enough qualified institutions (university, vocational education) that could guarantee a certain amount of graduates in the future.

In conclusion, enhancing Australian competitiveness through innovation adoption in export activities is a crucial factor for sustaining the economy prosperity. However, the degree of stimulation and which area to focus the investment will have to depend on theirs possible effects on other aspects of the economy, especially unemployment.