

## Harsh Narsinghani, CFA Senior Investment Analyst Empire Life Investments Inc. Off the Cuff Video November 30, 2021

Over the past decade global chip manufacturing and the technological knowhow to manufacture the most advanced chips have become quite concentrated amongst a small number of companies in a few locations, namely TSMC in Taiwan, and Samsung Electronics in South Korea. In addition to this concentration, the recent US-China geopolitical tensions and semiconductor shortages have made chip manufacturing a strategic issue for many countries.

Many countries are now trying to lure chipmakers through financial subsidies to build manufacturing facilities, also called fabs, within their respective borders. Some recent examples include TSMC partnering with Sony to invest \$7bn to build a fab in Japan with about half of that capital expected to be funded by the Japanese government. Also, Samsung Electronics plans to invest \$17bn to build a leading-edge fab in Texas, where they are expecting to receive incentives from the local, state and federal governments.

The United States, Europe and Japan, are working towards increased policy support to regain their lost market share in chip manufacturing. At the same time, countries such as South Korea and China are doubling down on subsidies to defend their share. Some industry insiders have told us that they haven't seen such high levels of government involvement and capital investments in this industry ever before.

In our portfolios there are a few companies that could potentially benefit from these developments. One such example is a company called ASML, which is based out of the Netherlands. Although it might not be a household name, we think it is a high-quality company and is critical to maintaining the pace of semiconductor innovation. More specifically ASML manufactures lithography equipment that are used in fabs to print chip patterns at miniscule scale, for reference that scale is many times tinier than a strand of human hair.

They have invested billions of dollars over the past two decades to manufacture their most technologically advanced lithography machines, known as EUVs which can cost up to \$200m. ASML essentially has a monopoly on these, most technologically advanced, machines as its competitors exited this space years ago. Currently it would not be possible to build most leading edge fabs without ASML's EUV machines. We think ASML is positioned well to benefit from these increased levels of capital spend to build new fabs.

In addition to these structural tailwinds and a strong market position, ASML has a number of other key attributes we look for – namely, a strong management team, strong balance sheet, high returns on invested capital to name a few.

To summarize, we believe we are in the midst of an incentives arms race in chip manufacturing, one that could have long term implications for the industry.

That's all I wanted to talk about today and I hope you found this useful. Thank you so much for watching.

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