

China's reliance on chips goes beyond the chips themselves

The West has fed the Chinese dragon to such an extent that now the dragon is going to devour the bear. When we want to decrease our dependence on them, events, causal or not, lead us to failure. But the West forgets that we not only depend on China to manufacture everything from toasters to solar panels, but that our dependence goes as far as the fact that they are the ones who control the deposits or the refining process of the elements with which these products are manufactured. Japan, and later the USA, have been working for almost ten years on new products that will eliminate Chinese dependence during the manufacturing process. Will they succeed? At present, thanks to the decision taken a few years ago to close all its nuclear power plants, Japan now has to import 90% of the electrical energy it consumes, so its own survival depends on its success. And, incidentally, our own.



By Miguel Ángel Temprano

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As if it were a bear, that is, a giant that wakes up after having lived a long lethargic winter, without caring about what happens outside its cave, the pandemic woke up the West, pummeling it during its lethargy.

We had fed, not the bear that is us, but the dragon that is the Chinese. But not because we let them grow, which is totally venerable, we are not an empire, but because with our inaction we were gradually becoming their subjects. Modern subjects, commercial subjects.

We had invested huge amounts of money in China in the heat of cheap labor and the differential benefits that production in China brought us.

The pandemic, the subsequent perfect storm in terms of production and logistics that disrupted our production chains, but above all China's haste in demonstrating its power by announcing its intention to dominate a market as critical as the chip market, woke us up.

Fortunately for us, in unison the market economy and globalization were quietly helping us.

"The West in the heat of low costs has created an economic monster that now loves its own hegemony not only economically but militarily."

The Chinese in their prosperity were becoming more and more a service economy, since their industrial hourly cost had gone from ridiculous figures to an average of \$8/hour, well above the other countries in the area, where it was below \$2.

00This was causing many foreign investments to relocate to other areas, such as northern India, Vietnam, Laos or Indonesia, creating a geopolitical zone around China.

"we think of our dependence on Chinese factories, forgetting that we also depend on them for metals to manufacture our products."

The West recently began a race to create industrial structures to become independent of China at full speed. Necessity ruled. China wants - and I am speaking in the present, because the past sounds distant but it is not - to take over the chip manufacturing market. But let's analyze this a little, because I think our myopia is playing a trick on us.

Chips need five "essential" minerals for their manufacture: silicon, indium, gallium, germanium and hafnium.

Silicon is the second most abundant element in the earth's crust after oxygen; Indium is not found in its pure state and is obtained as a by-product of zinc refining; Gallium, which is used in LED screens and high-speed semiconductors, is also a by-product of bauxite and zinc.

Germanium is also obtained by refining zinc and to a lesser extent copper, aluminum and silver; and finally, Hafnium is obtained from the purification of zircon and alvite.

As we see it is not only necessary to have the deposits of these elements, but also to have the

industrial structures for the refining of these metals. And to have them on a large scale.

Today, China produces between 60 and 70% of the silicon used in the world, 80% of gallium, 70% of germanium, and 50% of indium and hafnium.

We depend not only on its component factories, but also on its deposits and industrial refining structures.

But as if this were not enough, there are 17 elements, the so-called "rare earth metals", essential in the manufacture of the complex structures that carry chips such as solar panels, catalysts, permanent magnets, biomedical equipment, etc.

"According to the IEA, China will control virtually all solar panel production by the end of 2025."

These elements, generally referred to as lanthanides, because 15 of the 17 elements belonging to this family are known as rare earth metals. It is not that the element is scarce, in fact, some are very abundant, but that it is rare to find them in a pure or quasi-pure state, which is the only way they can be used.

Well, 80% of the known deposits of these rare earth metals are in China, 10% in the USA and 5%

in Australia. China's dominance and dependence is so great that even if we free ourselves from the yoke of the factories being under their control, we will not be able to free ourselves from them.

But the economy is very stubborn and above all it is pendulum swinging. If it catches you in favor of the current, everything is wonderful, but if it catches you against it, it will destroy you and that is what is happening to us.

Faced with the need for production, generated by the demand, in this case for solar panels, Westerners thought it was the perfect time to cut the first ties and mass-produce in the West. Well, I don't know if it was on purpose or by chance, the Chinese government started a wave of government aid for the production of this type of solar panels.

The production makes the so-called demand shock, in economics, swing to supply shock. That is to say, in the heat of the need and the high prices the industrialists begin to produce and they do it so much that more supply is generated than demand, causing a fall of prices so important that the western producers, mainly European, are forced to reduce their production since they cannot compete with the prices of the Chinese producers.

It seems that even if you want to break or at least reduce the dependency links, you cannot.

The International Energy Agency has stated that China will have almost complete control over the supply of critical parts in the solar panel production chain at least until the end of 2025.

This type of economic phenomena causes a very bad psychological effect on investors as it discourages investment due to bad memories.

A very similar effect to this was already experienced in the 1970s and 1980s. At that time, the now commonplace operations of leveraged mergers and acquisitions, i.e. through bank debt, were born. Managers, who were still small during the crisis of 1929, would not even hear of debt. This prevented this type of mercantile operations from developing rapidly, as happened later with the generational change.

"there is nothing more potent than necessity for progress and now necessity is called survival."

Many years ago, during my honeymoon trip I met a guide in Indonesia who spoke Spanish and I asked him where he had learned it. He told me there, but not at school or in an academy, because he had no money, but with the tourists, because he had to eat. I thought, this man is the example that the need makes the master.

Well, something similar is happening with this and therein lies our hope. The Japanese developed cells that instead of being based on polysilicon crystal, as we know, are based on iodine, forming crystalline structures called Perovskite.

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Miguel Ángel



This research is not only Japanese, but also American, and the final product is known as "tandem cells".

They are 10 to 40% more efficient than the well-known polysilicon panels, but they still have three problems to solve: cost; efficiency decreases as the size increases; and humidity degrades them, so their useful life is only ten years.

For Japan, this is more than a technological challenge, it is a necessity. Since its nuclear power plants were shut down because of the Fukushima

accident, Japan imports 90% of the electricity it uses.

The Prime Minister has steered the country in the direction of achieving the goal of large-scale operation, given that the panels, being so flexible due to their thinness, would allow installation in a multitude of locations with little economic effort.

If it works on a large scale as intended, before the end of 2025, the West or at least the bloc that encompasses it, including Japan, will have taken a step, in this case a bear step, to awaken from lethargy.

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Miguel Rojas

