

Written Testimony of Jorge Vazquez
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to
The United States Trade Commission
Public Hearing on
Aluminum 332-557 Investigation
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HARBOR Aluminum Intelligence, is an independent, privately-owned research firm that specializes in the global aluminum industry and its various sub markets. HARBOR compiles, develops, and analyzes aluminum industry data and market intelligence for more than 300 companies across the aluminum supply chain and around the globe. HARBOR is headquartered in Austin, Texas.

I am Founder and Managing Director of the company and have more than 20 years of experience studying the global aluminum industry.

It is an honor to stand before you and serve my country with the aluminum industry data and market intelligence I have access to.

I would like to summarize, in five points, my views on the topics I was asked to opine on.

1. The global aluminum industry has overproduced.

The global primary aluminum industry has produced metal in excess of demand in eleven out of the last fifteen years (2001-2015) and in three out of the last five years (2011-2015). According to HARBOR's estimates, about 60% of the overproduction generated since 2001 has been produced by China and the other 40% by the rest of the world.

Global stocks have increased to record highs. I estimate that global total primary aluminum stocks (which includes reported and non-reported stocks but excludes working inventories at consumers' hands) tripled from 5.7 million mton at the start of 2001 to a record high of 16.3 million mton by the end of 2015. This equates to over 15 weeks of global consumption, almost two times the historical industry's average of 8.5 weeks.

However, most of this excess primary metal is found outside China, as most of China's overproduction has been absorbed by its upstream and downstream industries. According to HARBOR, about 88% of the record aluminum stocks that existed around the world at the end of 2015 were located outside China (mainly West Europe, but also in North America and South East Asia). The remaining 12% were in China. This is because as much as 80% of what China has overproduced has been mainly absorbed by its rapidly expanding upstream and downstream industries as working inventory and buffer stocks, but also exported in the form of what I call "P1020 semis" (in my estimate, around 10-12% of total semis exported). Conversely, most of the primary aluminum overproduction that has taken place outside China has been stored as excess stock. This explains why, at the end of 2015, the world outside China had aluminum stocks that equated to 28 weeks of consumption, an all-time record high and double what it was in 2001. Conversely, China had less than 4 weeks of consumption, well below world standards. This is explained by the fact that: a) an important portion of the primary aluminum that is produced in China is shipped in the form of molten metal and can't be stored, b) primary aluminum consumption has been expanding at an average annual rate of over 15% for more than 10 years (from 3 million mton in 2001 to over 31 million mton in 2015).

World stored excess metal is about 90% non-Chinese, but also includes over 1.3 million mton of Chinese "remelt semis". According to HARBOR, about 60% of the 14 million mton of aluminum inventories that were stored outside China at the end of 2015, were of Eastern/Central European origin and 17% of North American origin, and another 14% of several other origins. This is because the biggest exporters of aluminum (P1020 and value added products) in the last fifteen years have been Russia, Canada, and the Middle East.

Although China is not really an exporter of primary aluminum given a 15% export tax, I estimate that 9% of the stockpiles outside China at the end of 2015 were what I call "P1020 extrusions or P1020 semis". These were mainly found in Vietnam, Mexico, the US and Malaysia (in order of magnitude) but have been almost entirely reallocated to Vietnam during the course of this year. I consider these metal units as a substitute to primary aluminum, given that it can be re-melted back to an unwrought aluminum form and can displace other primary or secondary aluminum units. In my view, "P1020 semis" are exported out of China in order to avoid a 15% export tax on Chinese primary aluminum exports and to obtain instead a 13% VAT rebate.

2. Global production costs have fallen to a 13-year low amid China's smelting transformation.

Average world production cash costs for molten aluminum have declined 30% since 2011 to around \$1,375 per mton. Today's production costs are the lowest ever, if we adjust them by inflation.

Although world production costs have fallen around the world, the biggest change has taken place in China, which in 2015 produced 54% of the world's primary aluminum. Production costs for molten metal in China fell 40% to less than

\$1,375 per mton between late 2011 and early this year. In fact, China's primary aluminum expansions are entering the market at the first quartile of the cost curve (in many cases below \$1,225 per mton) with an estimated average electricity price of \$15 per MW/h (vs \$27 per MW/h which is the average for new expansions outside China).

In my analysis, several factors explain the transformation of China's smelting competitiveness: a) permanent closure of obsolete and inefficient capacity (3.9 million mtpy), b) construction of numerous mega smelters with state of the art technology and most of them backward integrated all the way to the coal mine, c) a 20% decline in electricity prices driven by falling coal prices (average electricity price paid by smelters is down from \$66 per MW/h in 2011 to \$30 per MW/h today), and d) a 9% depreciation of the Yuan vs the US Dollar.

3. China's improved metal economics and export policy coincide with booming Chinese exports of aluminum semis.

China has moved from being one of the world's biggest net importers of aluminum semis in 2001 (wrought aluminum) to becoming the world's biggest exporter of aluminum semis in 2015 (3.68 million mton), by a ratio of 7 to 1 to the next biggest net exporter (Germany). Almost 70% of China's aluminum semis exports are flat rolled products. In my view, this is explained by China's sharp improvement in its smelting economics but also by: a) cheap capex costs when building semis assets, b) cheap labor costs, c) construction of the world's biggest rolling mills and extrusion plants with state-of-the art technology (economies of scale and high productivity), d) in some cases backward integration all the way to the coal mine, and e) a VAT export rebate system that rewards Chinese exports of semis in order to maximize employment and overall industry competitiveness. It is important to note that capacity utilization rates in China's aluminum flat rolled and extrusion industries were estimated to be only around 60% by the end of 2015, which in my view has incentivized Chinese players to be price-aggressive when exporting to the rest of the world.

4. The US is the world's biggest exporter of aluminum scrap, but also the world's biggest importer of primary aluminum and flat rolled products given several structural factors.

The US is by far the world's biggest exporter of aluminum scrap (with 1.5 million mton in 2015), with over 70% of these exports destined to the Chinese market. This is explained by the fact that the US generates more aluminum scrap than any other country in the world, and that it is cheaper to export scrap to China from the US West Coast (zorra) than it is to ship it to the US Midwest (where most of the US aluminum remelt facilities are based).

Conversely, the US is the world's biggest importer of primary aluminum (P1020 and value-added products) with around 4 million mton imported in 2015 mainly from Canada, Middle East and Russia. US imports increased to a record high in 2015 to compensate for a long-term sharp decline in domestic primary production. China is not an exporter of primary aluminum to the US nor has been to the world since 2008.

Indeed, US primary aluminum production has been declining for more than three decades now. In 1980, the US produced around 4.6 million mton of primary aluminum (with 32 smelters operating). Since then, production has shown a multi-decade long decline. In fact, HARBOR expects US production to reach a multi-decade low of less than 900k mton in 2016 (only 5 smelters are operating). This long-term decline has occurred amid: a) high US electricity prices relative to countries (like Canada, Russia, Middle East and now China), b) growing domestic secondary production, c) lack of investment in the smelting industry (the average US smelter was built over 43 years ago while the newest smelter was built 26 years ago), and more recently a stronger US Dollar and lower all-in aluminum prices.

The US is the world's biggest importer of aluminum flat rolled products given lack of new capacity and conversion to autosheet production. The US is the world's biggest importer of flat rolled products. In fact, imports from China have more than doubled to 475k mton in the last four years. However, imports from other origins have remained relatively stable. In my view, growing imports of Chinese flat rolled products are the result of: a) the lack of investment in new US rolling capacity (newest DC rolling mill which was designed to primarily produce can sheet was built in 1983), b) a growing domestic focus on autosheet production at the expense of lower production rates of other less profitable rolled products (common alloy sheet, cansheet and foil), and c) imported Chinese foil and sheet prices that have resulted to be competitive. At the end, the US ships vast amounts of aluminum scrap to China, and gets from China a similar volume in the form of flat rolled products.

5. To promote and/or keep employment, most subsidies or discounts that many primary aluminum smelters receive are thorough electricity or energy prices. This is the case in the US, Canada, China, Australia, Europe, Russia, Brazil, South Africa, Middle East, among others.