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A MARKET ANALYSIS FOR A PRIVATELY OWNED AND OPERATED SPACE STATION

Abstract

This paper presents a market analysis for a hypothetical human-tended, privately owned and operated space station following the deconstruction of the International Space Station (ISS) and considers the financial and policy implications of such a station. We interviewed over 70 experts in government and the private sector to identify revenue-generating activities that can be conducted on a space. Revenue-generating activities we examine include: providing a human habitat; satellite assembly and other activities supporting the satellite sector; manufacturing products for use in space and on earth; research and development, technology testing, and earth observations; and media, advertising, and education. We make assumptions on launch costs for humans and cargo in the 2027 timeframe, which range from 50% to 75% less than what NASA currently pays for launch services to the ISS. Using two sets of market and price assumptions representing optimistic and pessimistic scenarios, we generate a high and a low revenue estimate for each activity. Total revenues for all activities range from \$455 million on the low side and \$1,187 million on the high side. These estimates do not take into account competition from other space stations (both private and sovereign), robotic platforms, or alternative microgravity manufacturing options such as parabolic flights. We estimate amortized construction and annual operations resupply costs and used other expert estimates that are publicly available to compare total annual expenditures. Annual costs to the station owner range from \$463 million for our low estimate to \$2.5 billion on a publicly available expert's estimate. Venture capitalists whom we interviewed noted that the projections of revenues and costs are so uncertain that they would have no interest in financing a space station until projected revenues from these activities show signs of materializing. Sovereign nations could participate in the private space station market with early stage investment, advance purchase or lease agreements, and direct purchases of space station services.