**Flying to the Freedom** by Zhang Xin

# FINANCING SPACE ASSETS
# 6 THINGS YOU SHOULD KNOW

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KING&WOOD MALLESONS
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**Financing space assets has many of the hallmarks of financing aircraft and related assets. However, it does operate in its own unique environment, with its own significant opportunities and pitfalls.**

The 2020 NASA / SpaceX *Demo-2* was the first commercially-operated crewed orbital spaceflight. The mission signalled a turning point in the development and execution of space assets.

This new trajectory was confirmed by *Inspiration4* in 2021, the first orbital spaceflight with only private citizens on board, and *Axiom-1* in 2022, the first commercially-operated and privately crewed mission to the International Space Station.

The success of these missions sparked a fresh wave of private sector interest across the world in what has traditionally been viewed as a highly specialised, but predominantly *public sector*, arena. One result was the 'Space SPAC' explosion that took place in 2020 - 21, as early-stage space companies sought public listings via special purpose acquisition companies.

By 2022, the global space economy had grown to more than USD450 billion, with 186 successful launches taking place – the most ever, representing a 30% increase over 2021's launch count.

In 2023, interest remains high as commercial space activities continue to expand beyond traditional telecommunication satellites, into a world of satellite constellations, cargo freighters, reusable launch vehicles and crewed commercial spacecraft (such as Crew Dragon, the SpaceX spacecraft that was used in *Demo-2*, *Inspriation4* and *Axiom-1*).

Development is rapid, ambitions are being realised.

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**THE GLOBAL SPACE INDUSTRY IS ESTIMATED TO REACH MORE THAN USD1 TRILLION BY 2040.**

Morgan Stanley, Space: Investing in the Final Frontier, July 2020

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All of this requires capital. For financiers, this means opportunities to expand beyond traditional aviation and trade finance, into emerging technologies that will shape a vast industry. Having sound financing structures in place for space activities will be critical, particularly given the macroeconomic environment. Early movers will have the advantage of building track record and shaping future regulation.

So here we go – 6 things you should know about financing a space asset.

KEY POINT 1

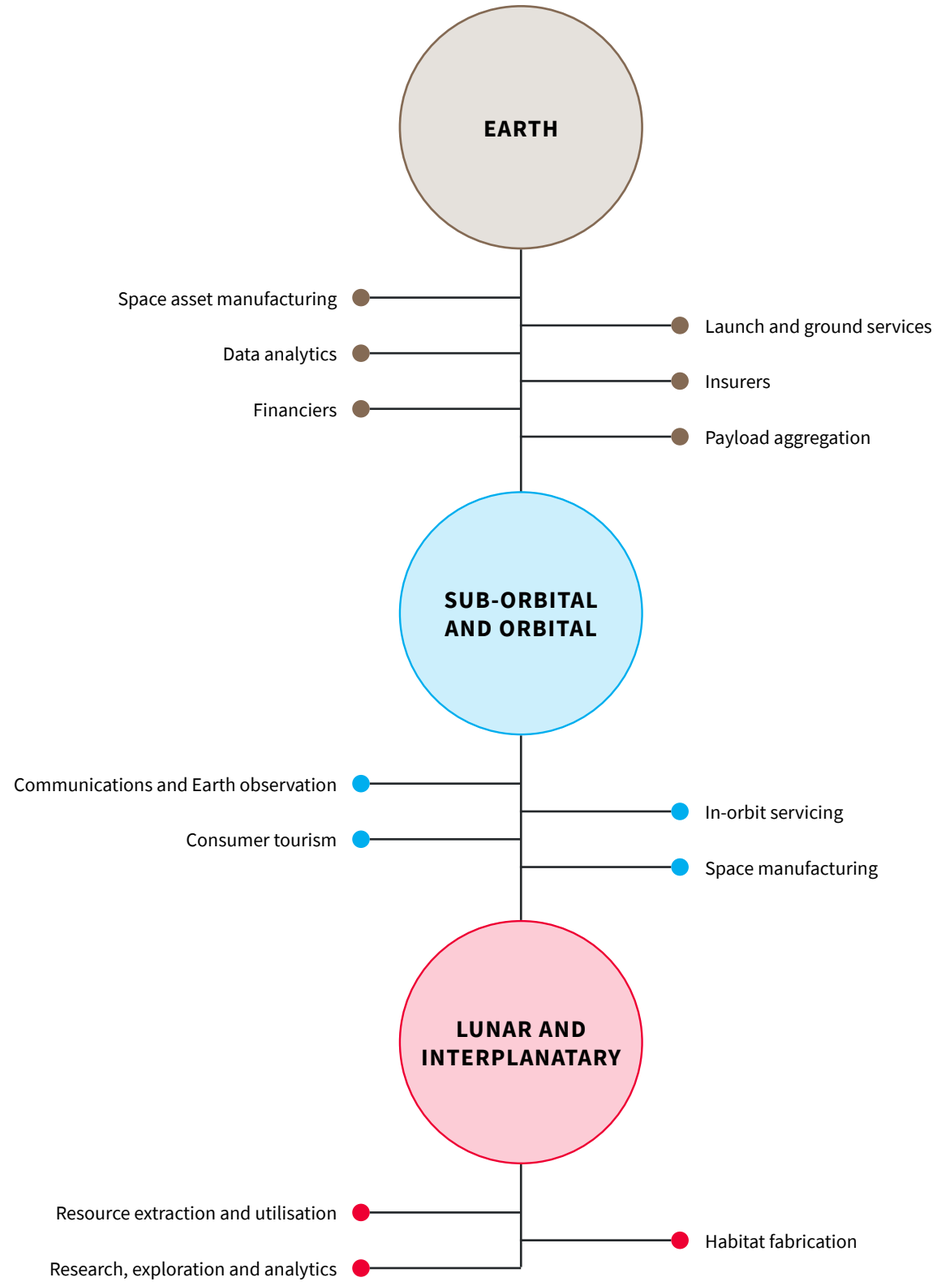
# THE SPACE SECTOR HAS MULTIPLE PLAYERS, WITH A VIBRANT AND GROWING APAC INDUSTRY



The space sector is not limited to the United States and Europe. Mainland China is also a key player. The vibrant Chinese space industry includes established state-owned enterprises, such as China Aerospace Science and Technology Corporation, as well as private commercial ventures, such as i-Space. We are also seeing rapid growth across APAC – for example, Hong Kong has a robust satellite sector, India has developed world-class launch vehicles, Indonesia and Australia are rapidly developing launch sites, and Singapore is awash with space start-ups.

The growing commerciality of space activities – or "NewSpace" – extends well beyond satellites, through to practically any commercially-valuable object that can be launched into space – a "space asset".

A key feature of this new space age is that the key players are no longer just governments, export credit agencies, large state-owned enterprises and listed companies. Rather, space commercialisation continues to drive innovation and foster intense competition throughout the industry. Private companies are looking for financing to help them expand throughout the full space industrial chain.

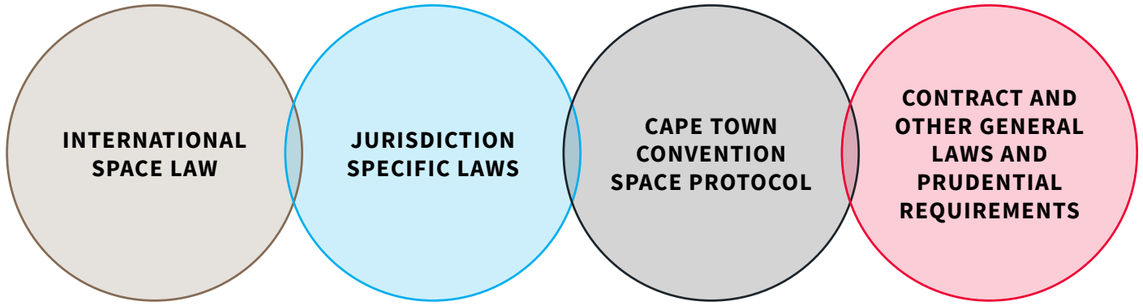


## KEY POINT 2

# THE LEGAL FRAMEWORK CONSISTS OF INTER-NATIONAL AND JURISDICTION-SPECIFIC LAWS



There are four key components relevant to financiers.




We briefly summarise the three space-specific components as follows. Key point 5 deals with contracts.

### INTERNATIONAL SPACE LAW

There is a significant body of international space law, essentially in the form of five treaties developed under United Nations auspices. The core principles are established in the first of these treaties, the **1967 Outer Space Treaty**. Of particular relevance to commercial parties is Article VI of this treaty, which requires states to authorise and continually supervise their commercial space activities.
The five treaties are also supplemented by other international regulatory regimes such as the International Telecommunications Union.

Different states have different interpretations of the Outer Space Treaty, but a number of key states – including Australia, New Zealand, France, Singapore, Japan, South Korea, the United Kingdom and the United States – have all signed on to the Artemis Accords. The Artemis Accords operationalise the Outer Space Treaty by, amongst other things, affirming that the Outer Space Treaty does not prohibit space resource extraction and utilisation.

### JURISDICTION-SPECIFIC SPACE LAW

To meet their international law obligations, space-faring jurisdictions have adopted **jurisdiction-specific space laws**. While these space laws vary significantly across jurisdictions, they typically establish:

- a licensing regime for launches and other space activities;
- a national register for space assets; and
- in some cases, indemnification or insurance requirements for private space actors.

These laws are set out various ways. For example, Australia has a primary act – the *Space (Launches and Returns) Act 2018* - with subsidiary legislation. Similarly, Hong Kong has the Outer Space Ordinance (Cap. 523), supplemented by the Telecommunications Ordinance (Cap. 106). By contrast, Mainland China's space law is contained in a series of departmental regulations – primarily the *Measures for the Administration of Registration of Objects Launched into Outer Space 2001* and the *Interim Measures on the Administration of Permits for Civil Space Launching Projects 2002*. Other jurisdictions lack any specific space laws, and only target the spectrum and radiocommunications aspects of space activities.

### THE SPACE PROTOCOL

The Space Protocol to the Cape Town Convention is part of the framework of international space law, although it is **not yet in force**. Unlike other international space laws, the Space Protocol is focused on addressing the concerns of financiers (such as title to space assets, the priority of secured parties and remedies on an event of default, including rights of repossession). The Space Protocol is designed to facilitate the commercialisation of space assets (which includes, for example, space stations, space vehicles and reusable launch vehicles).

If and when it enters into force, private parties will be able to protect their financial interests in space assets by registering them on the International Registry and have access to the remedies available under the Cape Town Convention. Like the Aircraft Protocol to the Cape Town Convention, the Space Protocol would be enforceable by financing parties in national courts. However, to replicate the success of the Aircraft Protocol, the key countries with capacity to engage in space activities will need to become party. To date only four states have signed the Space Protocol – at this stage, the small group of signatories does not include the United States, Mainland China or any other APAC jurisdiction.

## KEY POINT 3

# SUCCESSFUL STRUCTURING REQUIRES CONSIDERATIONS OF THE UNIQUE ATTRIBUTES OF SPACE ASSETS

## FINANCING MODELS

Space asset projects require substantial financial investment. Financiers may consider using the usual models of equity finance, secured financing and project finance.

However, particular risks and challenges of financing space assets should be considered.

- Using **project finance**, financiers can be repaid through income generated by the space asset, such as income from transponder leases on satellites or revenue generated by space tourism.

  However, the challenges with taking effective security over the space asset should be considered when structuring the transaction, including the relevant applicable law and registration of the security.

  Security over insurance proceeds is often a key part of the security package.

- Under typical **secured financing**, given the practical difficulties with repossession of a space asset, the parties may agree for security to be taken over other valuable assets of the debtor on land, such as equipment, factories or intellectual property.

  Financiers may also consider taking assignments over agreements ancillary to the operation of the space asset (such as transponder leases, service agreements and customer agreements) and requiring the control codes of the space asset to be held in escrow until an event of default. Tripartite arrangements with the offtake counterparties will be necessary to ensure the value can be preserved in default scenarios.

  As a general trend, we expect Export Credit Agencies to continue playing a major role in the financing of the construction and launch of space assets.

## UNIQUE ATTRIBUTES OF SPACE ASSET FINANCING

Space asset financing arrangements must take the realities of the industry into account. In particular:

- the **design, manufacture and testing** of a space asset is specialised and highly technical, often involving layers of contractors and sub-contractors. And once a space asset is in orbit, repair - and in the case of asset-based financing, taking possession - is virtually impossible;
- **delay and lengthy timeframes** are common. It can take two to three years to manufacture a space asset. Launch is then subject to launch range availability, launch vehicle readiness and the vagaries of weather; and
- **political and regulatory sensitivity** is required. Some jurisdictions view space activities primarily through a military or national security lens, and impose restrictions accordingly.

Accordingly, financiers must carefully structure their financing arrangements to account for these unique features.

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**CHINA'S COMMERCIAL SPACE INDUSTRY MARKET VALUE REACHED US$180 BILLION IN 2021 AND IS ESTIMATED TO EXCEED US$270 BILLION IN 2023.**

China Astronautics Association For Quality

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KEY POINT 4

# REGULATORY DUE DILIGENCE REQUIRES KNOWING THE TOUCHPOINTS AND JURISDICTIONS IN PLAY



## TYPICAL REGULATORY TOUCHPOINTS

In addition to the usual checks that accompany financing, the launch of and operation of a space asset requires regulatory due diligence. This includes thinking about:

- **LAUNCH AND OPERATIONS LICENSING**
- **PAYLOAD REVIEW AND REGISTRATION**
- **ORBITAL DEBRIS MITIGATION APPROVAL**
- **RADIO-TRANSMITTER AUTHORISATIONS**
- **ORBITAL SLOT AND SPECTRUM COORDINATION**
- **IMPORT / EXPORT COMPLIANCE**

Further complexity arises when space activities involve new technologies, utilise nuclear power sources and/or carry life (human or animal). Besides space-specific laws, these issues can engage, for example, laws restricting the financing of weapons of mass destruction, sanctions or dual-use goods restrictions.

## JURISDICTIONAL NEXUS

A project's jurisdictional nexus impacts its regulatory treatment and requires close examination.

Questions to ask include:

- What is the provenance of the project assets?
- Where are relevant project companies involved?
- What is the nationality of any relevant individuals (eg crew)?
- Where will the launch take place?
- Where are the parties to the operation/service/customer agreements incorporated, and what is the governing law of these agreements?
- Where are the insurers, consultants and other financing parties based?
- From which location will the payload be operated?
- Where are payments made or received?
- Is any international cooperation required? For example, to access technology or expertise, to transit assets or otherwise?

Financing parties should be cognisant of the potential impact of these regulatory issues on any space-related project. Some issues, such as launch licence rejection, mean that the project will (quite literally) be grounded.

KEY POINT 5

# STRONG (SPACE-SPECIFIC) CONTRACTS ARE ESSENTIAL TO PROTECT FINANCIAL INTERESTS

From an operational and legal perspective, space is a unique environment. As such, contracts must be tailored to the specific project. This includes ensuring that the financing and security package considers the practical realities of the deal, including the specifics of taking and perfecting appropriate security, the legal liability regime for launch activities, appropriate conditions precedent (including realistic long-stop dates for any approvals), and even fundamentals such as time zones. The residual risks include those set out in Key point 6.

## TRANSPARENCY FOR FINANCIERS

In addition, a financier will need to ensure that they have access to all other relevant contracts, and (where necessary) that they can be assigned to them, upon the default of the borrower. The exact contracts in play for a space project will vary according to the structure and intended operations, but key documentation typically includes the following:

### LAUNCH SERVICES AGREEMENT

Depending on whether delivery of the space asset will take place in space or on the ground, this agreement will be between the launch service provider and either the space asset operator or space asset manufacturer.

### SPACE ASSET PROCUREMENT AGREEMENT

These agreements between the space asset manufacturer and the space asset operator often feature extensive limitations of liability. Bonding arrangements and security of pre-delivery payments need to be considered carefully as do risks of design, supply of rare parts, manufacturer default, regulatory change, and obsolescence.

### IN-ORBIT OPERATIONS AGREEMENT

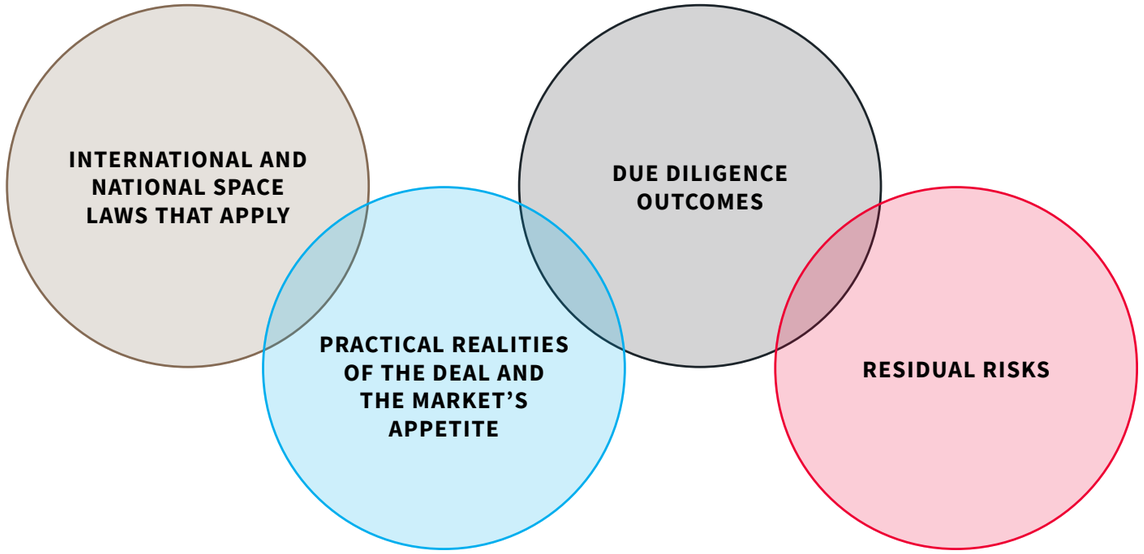
The agreement between the space asset user and the operations organisation responsible for controlling the asset.

### INSURANCE POLICIES

Multiple policies are often needed to cover the pre-launch manufacturing, launch and in-orbit / operational phases. Domestic legislation may require that the policy include specific named insureds - usually the government licencing the relevant activity – before a licence can be granted.

Depending on the launch jurisdiction, various cross-waivers of liability may also be inserted by operation of law into these agreements. Transponder leases, utilisation agreements and other commercial documents will then fill out the suite.

Operators should ensure that procurement agreements allow them to pass on to contractors the obligations which will typically be required from them by financiers, for instance regarding insurance to be procured by each contractor and decentralisation of lenders as beneficiaries loss-payees.



KEY POINT 6

# ADDRESS RESIDUAL RISKS



The residual risks will differ for each deal. They will generally only be fully scoped as part of due diligence and structuring.

Two common examples residual risk for space asset financing include the following:

CASE STUDY 1:

### HIDDEN DEFECTS AND BARRIERS TO RECOVERY

Space is an extremely harsh operating environment. This means that a hidden defect in a space asset or its launch vehicle often has catastrophic affects.

While contractual protections and insurance can cover many eventualities, contractual limitations on liability – and the difficulties of determining liability remotely – can present obstacles to recovery.

This in turn can increase the chances of borrower default, and should be factored into a financier's assessments.

CASE STUDY 2:

### DIFFICULTY OF TAKING PHYSICAL POSSESSION

If a space asset is used to secure financing, the financier must pay particular attention to how they can take effective possession of that space asset once it is in space.

This will often involve retention of command codes or similar control devices, but regulatory risk will also arise. For example, in the case of space assets, the national licences for the operation of that space asset will need to be transferred to the party taking effective possession.

This can be partially addressed in contract. However, in practice such transfer may not be possible: the regulator may simply refuse the transfer. This may leave the financier without effective recourse against a borrower whose only valuable asset may be a space asset and the offtake arrangements which depend on it.

## KEY RISK MITIGATION STRATEGIES

The key strategies for managing residual risks include the following:

### RISK ALLOCATION

as between the financier, manufacturer, insurers and borrower, and as between financiers if there are multiple.

### CONTRACT

precisely drafted representations, warranties, undertakings and indemnities;

### SECURITY PACKAGE

a sophisticated approach to the security package to ensure that the right assets and payment flows are selected to support the assessed credit risk, with appropriate levels of third party support.

### COLLATERAL MONITORING

utilising specialists as necessary.

### PROACTIVE REGULATORY ENGAGEMENT

where appropriate, comfort can be sought from national regulatory authorities regarding specific issues, such as licence transfers.

### DISPUTE RESOLUTION FORUM

evaluating pros and cons of arbitration over litigation, considering factors such as confidentiality, cost efficiency and enforcement procedure.

Please contact us if you would like to discuss your project. We would be delighted to help.

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