

# THE ECONOMIC ASSESSMENT OF THE SPACE ASSETS PROTOCOL TO THE CAPE TOWN CONVENTION

Souichirou Kozuka

Gakushuin University (souichirou.kozuka@gakushuin.ac.jp)

Fuki Taniguchi

Japan Aerospace Exploration Agency, Japan (taniguchi.fuki@jaxa.jp)

## ABSTRACT

The Space Assets Protocol to the Cape Town Convention, which is soon to be adopted, will introduce the legal framework for asset-based financing to be used by the commercial entities that are playing ever more important role in space activities. Although asset-based financing has not been popular as financing method in the space industry so far, this paper finds that the Protocol is likely to benefit the industry as the mechanism to solve the problems of incomplete information arising in financial transactions. The recent experiences of leveraged buy outs in satellite industry does not imply that the Protocol has limited use in this industry, as the economic studies indicate that the improvements of creditor's rights will not hinder, but rather facilitate, leveraged buy outs. The Space Assets Protocol will, indeed, be an international instrument suitable for the era of commercialisation of space activities.

## I. Introduction<sup>1</sup>

The efforts to produce the third protocol to the Convention on International Interests in Mobile Equipment (hereinafter as "Cape Town Convention"), one that deals with matters specific to space assets (hereinafter as "Space Assets Protocol") has finally reached the concluding stage. The International Institute for the Unification of Private Law (Unidroit) has

announced that the Diplomatic Conference for the adoption of the Space Assets Protocol will be held from 27 February 2012 in Berlin. The draft protocol and other related documents are published on the Unidroit's website.<sup>2</sup>

The Space Assets Protocol, which will be the first international treaty in thirty years since the adoption of the Moon Agreement in 1979, will mark an important step in the development of international space law.<sup>3</sup> As the first private law

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<sup>1</sup> The authors represented the Japanese government at the third and fourth sessions of the Committee of Governmental Experts to negotiate the Space Assets Protocol. However, the views expressed in this paper are solely personal ones and do not reflect those of the Japanese government or any other affiliations of the authors

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<sup>2</sup> <http://www.unidroit.org/english/workprogramme/study072/spaceprotocol/conference/main.htm>

<sup>3</sup> Stephan Hobe, *The Impact of New Developments on International Space Law (New Actors, Commercialisation, Privatisation, Increase in the Number of "Space-Faring Nations")*, [2010-3/4] *Uniform Law Review* 869, 878.

instrument in the outer space, it will lay the ground work for the commercialised space activities that are ever more growing. With the establishment of uniform and predictable rules on the creation and enforcement of international interests, the successful experience of the Aircraft Protocol is expected to be extended to the space industry.<sup>4</sup>

Still, the Aircraft Protocol and Space Assets Protocol have different industries as their targets. Accordingly, the provisions of the Space Assets Protocol differ in some important respects from those in the Aircraft Protocol. While the airline industry is a matured industry with the rather stable cash flow, the space industry is an emerging market and comprises of a variety of businesses, such as the communications satellite operation, remote sensing, PNT (positioning, navigation and timing) services and finally the space tourism, each having a different nature. Furthermore, the sector of communications satellite operation has seen the use of corporate financing in the form of leveraged buy out (LBO), rather than asset financing. Reflecting these features of the space industry, it deserves a thorough examination whether, and under what conditions, the Space Assets Protocol can bring

about the economic benefit to the industry.

This paper is structured as follows. First, the basic features of the Cape Town Convention and the major issues that arose from the negotiations over the Space Assets Protocol are reviewed (II). Then, the theories on secured transactions are applied to the space industry to consider the possible benefits expected of the Space Assets Protocol (III). Further, the impact of introducing the legal infrastructure for asset based financing to the industry that has recently experienced several cases of LBOs, is examined (IV). Then it concludes with the recognition of the utilities expected of the Space Assets Protocol (V).

## II. The Outline of the Draft Space Assets Protocol

### 1. What is the Cape Town Convention?

The objective of the Convention is to facilitate asset based financing of mobile equipment that has high value and is likely to move across the border,<sup>5</sup> by registering the security interest according to the Convention and thereby ensure the prompt enforcement of security interest. The convention consists of three protocols, applicable to aircrafts, railway rolling stocks and space assets, respectively. The convention and each of the equipment-specific protocols are read and interpreted together as a

<sup>4</sup> Martin J. Stanford & Alexandre de Fontmichel, Overview of the current situation regarding the preliminary draft Space Property Protocol and its examination by COPUOS, [2001-1] *Uniform Law Review* 60, 64 (2001); Daniel A. Porras, The Preliminary Draft Protocol to the Cape Town Convention on Matters Specific to Space Assets, 5(2) *Convergence* 200, 202 (2009); Martin Stanford & Daniel Porras, The proposed UNIDROIT Space Assets protocol to the Cape Town Convention: recent developments, 10(1) *Space Law Newsletter* (International Bar Association Legal Practice Division) 19 (2009).

<sup>5</sup> Martin J. Stanford, A Broader or a Narrower band of Beneficiaries for the Proposed New International Regimen?: Some Reflections on the Merits of the Convention/ Protocol Structure in Facilitating the Former, [1999] *Uniform Law Review* 242, 242.

single instrument<sup>6</sup>.

The key characters the Convention that are considered useful in facilitating the asset-based financing and leasing are; (1) to establish the International Registry for each type of mobile equipment in order to realise the transparency of the priority among international interests, (2) to ensure the prompt enforcement of the international interest in the event of default by the debtor, and (3) to preserve the status of international interests during the bankruptcy proceeding (“asset-based financing principles”).<sup>7</sup> The unique feature of the working method is to involve related industries in the drafting work in order to reflect their benefits to the Convention and protocols.<sup>8</sup>

At the 3<sup>rd</sup> session of the Committee of

Governmental Experts on the Space Assets Protocol, however, some states proposed to postpone the drafting work because of the concerns expressed by the stakeholders in the satellite industry<sup>9</sup>. It was the first time that the industry did not welcome proceeding with the drafting of the protocol to the Cape Town Convention. However, the proposal was met by the strong support for the continuation of the work by many delegations.<sup>10</sup> By now, it has been confirmed that the concerns expressed at the third session of the Committee of Governmental Experts do not represent the view of the whole industry and that there is an expectation that the Space Assets Protocol will bring about the legal certainty necessary to enable the asset-based financing to be used by the space industry.<sup>11</sup>

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<sup>6</sup> The Convention was adopted at a diplomatic conference held in Cape Town in November 2001 and came into effect in March 2006. The Aircraft Protocol was adopted and brought into force at the same time as the Convention. The Protocol for railway rolling stocks was adopted at the Diplomatic Conference in Luxembourg on February 2007, but has not yet entered into force.

<sup>7</sup> Anthony Saunders & Ingo Walter, Proposed Unidroit Convention on International Interests in Mobile Equipment as Applicable to Aircraft Equipment Through the Aircraft Equipment Protocol: Economic Impact Assessment, 23 *Air & Space Law* 339, 353 (1998). See also, Ikumi Sato & Yoshinobu Zasu, Beyond Conflict of Interest: Lessons from the Cape Town Convention, 1 (1) *Asian Journal of Law and Economics* 1 (2010).

<sup>8</sup> Sato & Zasu, *supra* note 7, at 21; Mark Sundahl, The “Cape Town Approach”: A New Method of Making International Law, 44 *Columbia Journal of Transnational Law* 339, 349 (2006). For each Protocol, a working group was established to benefit from the industry representatives. See Martin Stanford, From Ottawa to Cape Town: Unidroit’s Role in the Modernisation of the Law governing Leasing and the Taking of Security, in: Iwan Davies (ed.), *Security Interests in Mobile Equipment* 397, 426-428 (Ashgate 2002).

## ***2. The main issues discussed during the negotiations over the Draft Space Protocol, as compared to the Aviation Protocol to the Cape Town Convention***

As mentioned previously, the space industry is still immature and the actors in the space activities are still mainly the states.<sup>12</sup> The shift toward the activities carried out by the private actors has only been gradual. As a result, the draft Space Protocol has faced some issues that did not matter in the case of the Aircraft Protocol. This section introduces some of such

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<sup>9</sup> UNIDROIT 2009 - C.G.E./Space Pr./3/Report, para.11.

<sup>10</sup> *Id.*, para.12.

<sup>11</sup> Unidroit 2010 - C.G.E./Space Pr./4/Report, para.11; Unidroit 2010 - C.G.E./Space Pr./5/W.P.4, para.10.

<sup>12</sup> Hobe, *supra* note 3, at 874.

issues.

(i) Definition of a “space asset” and the enforcement over physically-linked assets

Unlike the aircraft equipment under the Aircraft Protocol, the “space asset” as defined by the preliminary draft Space Assets Protocol prepared by the Space Working Group included components, such as transponders, of a larger space asset, such as a satellite.<sup>13</sup> The inclusion of components raised two issues that caused lengthy discussion, namely: (1) whether it should be possible to create an international interest in the larger asset and another international interest in its component at the same time, and (2) if the Protocol should admit such parallel creation, what should be the rules on the enforcement of one of those international interests. The Committee of Governmental Experts set up the Working Group to discuss this issue.

As to the issue of (1), there was a conceptual approach that questioned about the subject of transactions under the Protocol<sup>14</sup> and a pragmatic approach that intended to maintain the current practice of creating international interests in the whole satellite and in components (transponders). The consensus finally reached was to illustrate some typical spacecrafts, such as a satellite and space module, and that whether a component (“a part of a spacecraft or payload”) should be the subject of registrable international

interests is left to the regulation<sup>15</sup>. It is expected that the supervisory authority will revise the regulation from time to time according to the developments of the practice in space business.<sup>16</sup>

As to the issue of (2), one view was that the Protocol should provide a rule, even if a derogable one, to resolve the possible conflict, while another view argued that such issue is to be regulated by the agreement between the parties to the contract, and that in the event the agreement fails to provide the solution, the conflict should be resolved by the applicable law. Since the Working Group failed to resolve this issue, three alternatives are included in the draft Protocol and tabled before the Diplomatic Conference.

(ii) Limitations for Reasons of Public Interest

In the case the creditor who has the international interest is the foreign entity, the enforcement of international interest by this creditor could entail the export of the space asset. It gives rise to two issues, namely: (1) whether the transfer of the space asset (or the command cord to take control of it) should be subjected to certain regulations or not, and (2) when the space asset is used for providing the public service, whether the creditor shall not affect this public service by enforcing his international interest.

As to the issue of (1), the draft Space Assets

<sup>13</sup> Art.I (2)(f)(ii) of the preliminary draft Space Assets Protocol (reproduced as Appendix III to Unidroit 2004 – C.G.E./Space Pr./1/Report rev.).

<sup>15</sup> Art.I (2) (1) of the draft Space Assets Protocol. It seems that there are few need for creating an international interest on space assets during production since the title inhere in manufacture at the stage during production, and creditor of the satellite operator create the claim right under the contract and security right under insurance in practice.

<sup>16</sup> See UNIDROIT 2011- DCME-SP - Doc.4, para.51.

Protocol provides that a contracting states may, by making a declaration, restrict or attach conditions to the exercise of the remedies where the exercise of such remedies would involve or require the transfer of controlled goods, technology, data or services, or would involve the transfer or assignment of a license, or the grant of a new license.<sup>17</sup> It was proposed at the fifth session of the Committee of Governmental Experts that the restrictions under this provision should be extended to the creation of a security interest and that the national security and international peace and security are included in the reasons for imposing such restrictions. This proposal, however, met serious concerns at the Committee and is kept in the draft Space Assets Protocol as the alternative text with square brackets.

As to the issue of (2), there was a strong concern that the limitation on remedies for reasons of the public service would harm the purpose of this protocol to facilitate financing to the space industry. Those who shared such a concern argued that the Space Assets Protocol should not provide any provision on this issue, while others maintained that the interest of the state that receives the public service must be clearly protected under the Protocol.

The Working Group set up to seek for a solution on this issue, after a long negotiation, defined exactly the case that requires the protection under the Protocol and introduced the system of posting a public service notice in the international registry that the space asset is used for providing the public service. The draft Space

Assets Protocol includes a provision that reflects this solution.<sup>18</sup>

### (iii) Identification Criteria for registration

At the Sub-committee on the future international registration system 3<sup>rd</sup> session of Governmental Expert it was agreed, according to the conclusion of the that the identification criteria for the registration of a space asset should be the name of the manufacture, the manufacturer's serial number and themodel designation, which are the same criteria used under the Aircraft Protocol.<sup>19</sup> However, a question was raised as to whether it is possible to examine the serial number by a physical observation. Accordingly, it was suggested that other criteria, such as the time of launch, launch site and orbital parameters, are used for identification after the space asset is launched. In response to this question, it was argued: (1) that the protocol should provide the same criteria for the period before and after the launch to exclude the possibility of duplicate registration, which harms the reliability of international registry, (2) that it is necessary to adopt the stable criteria, unlike the orbital parameters that could be changed, and (3) that in practice each component of a spacecraft has a stencil marking with the serial number of the manufacturer. Finally, it was agreed that the identification criteria for registration are solely the name of the

<sup>18</sup> Art. XXVII of the draft Space Assets Protocol.

<sup>19</sup> UNIDROIT 2009 - C.G.E./Space Pr./3/Report, para.45. Cf. UNIDROIT 2009 - C.G.E./Space Pr./3/W.P. 7 rev., pp. 7-8. It was also suggested that other information, such as the name of the asset or orbital slot, are used as optional criteria used to facilitate a search for the space assets.

<sup>17</sup> Art. XXVI of the draft Space Assets Protocol.

manufacture, the manufacturer's serial number and the model designation.<sup>20</sup>

#### (iv) Salvage interest

The practice of salvage means that in the case the insured asset is damaged seriously, insurer treats this damage as the total loss of the asset and pays the full amount of the insured value. In exchange for the full payment, the insurer acquires the whole or a part of the right to the benefit derived from the remaining asset. There are two kinds of salvage rights. One is the "title salvage" which makes the title to the space asset to be vested in the insurer, while the other is the "revenue salvage" which means that an interest in the rights of the owner of the insured space asset becomes vested in the insurer. In practice, these two kinds of salvage are both provided in the insurance contract and insurer can exercise the salvage right at their discretion.

Since there is no provision in Space Protocol to protect these insurer's right, the insurance underwriters' representative argued that the protocol should provide for these rights to be registrable with the International Registry. This request was accepted at the third session of the Committee of Governmental Experts<sup>21</sup>.

However, it was argued at later sessions of the Committee that if the insurer registers the revenue salvage and acquire the "debtor's right", there is a possibility to harm the creditor's interests.<sup>22</sup> It was also pointed out that it is not

appropriate to mention the revenue salvage because it is the question of the relationship between the insurer and the owner of the space asset, not of the relationship between the insurer and creditor. The session of Governmental Expert fail to reach consensus so that the provision of salvage has square bracket in preliminary draft protocol.

#### (v) Assignment of debtor's rights

Since the space industry is not so matured yet, it was considered that the creditors need more rights than just the title to the asset to secure its credit. In the draft Space Assets Protocol, there is a provision which defines the rights to payment or other performance due to the debtor as "debtor's rights" and enables these rights to be conferred to the creditor as "rights assignment". This raises the issue of priority between the rights assignment under the Space Assets Protocol and the assignment of receivables made according to the national law.

Although it was argued that the Protocol should protect the assignment of receivables made according to the national law before the rights assignment is recorded in the International Registry, the Committee of Governmental Expert decided not to adopt this proposal since it contributes to the certainty of transactions to provide that a recorded rights assignment has priority over any other assignment of receivables.<sup>23</sup>

<sup>20</sup> Art.XXX of the draft Space Assets Protocol.

<sup>21</sup> UNIDROIT 2009 - C.G.E./Space Pr./3/Report, para.38.

<sup>22</sup> UNIDROIT -2010 C.G.E./Space Pr./4/Report, para.26; UNIDROIT - 2011 C.G.E./Space

Pr./5/Report, para.30.

<sup>23</sup> UNIDROIT - 2010 C.G.E./Space Pr./4/Report, para.34.

### (vi) The Supervisory Authority and The International Registry

The Supervisory Authority, appoints and dismisses the Registrar, and make or approve the regulation for the operation of the International Registry.<sup>24</sup>

At first, the possibility that the United Nations assume the role of the Supervisory Authority was sought for, but the Legal Subcommittee of the United Nations Committee on Peaceful Uses of the Outer Space could not reach consensus in giving consent to this offer.<sup>25</sup> Afterwards, ITU, ICAO and IMSO were considered as possible candidate for the Supervisory Authority. After IMSO communicated negative response, now the possibility is either ITU or ICAO are designated as the Supervisory Authority.

### **III. The functions of security interests**

#### ***1. Puzzle about the benefit of secured transactions***

The success of the Aircraft Protocol is considered to derive from the “asset-based financing principles” mentioned above (II.1.). It appears obvious that these conditions are appreciated by the secured creditor (holder of an international interest). However, under the assumption of complete information, the secured creditor can measure the extent to which the risk of its loan is diminished because of the existence of the security. The conditions (most typically,

interest rate) of the loan will become less stringent on the debtor exactly to the same extent. Therefore, the situation of the debtor will remain unchanged.

#### ***2. Incomplete information and the possibility of “moral hazard”***

Needless to say, the information is never complete in the real world. Theories of secured transactions predict that the security may be beneficial also to the debtor when the creditor finds it highly costly to observe the behaviour of the debtor after the loan is extended. In such a case, there is a possibility that the debtor shirks in conducting its business to save its cost, or even increase the risk of its business expecting the higher end of the riskier project. These misconducts of the debtor, which economists call “moral hazard,” can expose the creditor to a higher risk than was assessed at the time of extending the loan and, therefore, make the creditor hesitate to extend a loan. If the debtor can offer a security and ensure that the creditor enjoys a priority over the cash flow from the asset, the creditor can concentrate on monitoring the use of the secured asset, which is much less costly than monitoring the whole business of the debtor. Thus, the security paves the way for the debtor to have access to the credit that will otherwise be unavailable because of the incomplete information.<sup>26</sup>

<sup>26</sup> Thomas H. Jackson & Anthony T. Kronman, Secured Financing and Priorities Among Creditors, 88 *Yale Law Journal* 1143, 1149 et seq. (1979); R.M. Stulz & H. Johnson, An Analysis of Secured Debt, 14 *Journal of Financial Economics* 501 (1985); A.W.A. Boot et al, Secured Lending

<sup>24</sup> Art.17(2) of the Cape Town Convention.

<sup>25</sup> UNIDROIT 2009 - C.G.E./Space Pr./3/W.P. 7 rev., p.11.

The success of the Aircraft Protocol may be attributed to its usefulness as a device to address this type of information problem. In the airlines industry, the business model is matured and there is little room to innovate the use of the aircraft. Rather, the performance of each airline is largely due to the efficiency of the management, such as the failure to cut down the labour cost or operation of unprofitable routes. The Aircraft Protocol ensures that the creditor is not affected by such inefficient management and induces the creditor to offer the loan.

Among the space industry, a similar situation may be found with the communications satellite operators. The cash flow from communications satellites is stable and the primary risk with the operator is the “moral hazard” in its management, such as committing a different line of business with high risks. Therefore, the Space Assets Protocol may be useful for the satellite operators as the device to convince its creditor that the loan will be repaid from the cash flow, just as in the case of Aircraft Protocol. In particular, the satellite operators of emerging markets may benefit from the Space

Assets Protocol greatly, since they suffer from the lack of past record and need the legal mechanism to persuade the creditor into extending a loan.

### 3. Screening under incomplete information

Another theory of secured transaction focuses on the different type of problem from the incomplete information. It argues that the security brings benefit to not only the creditor but also the debtor when it is highly costly to distinguish a low risk debtor from a high risk debtor. The creditor, faced by the difficulty in assessing the risk of the debtor, offers two options to the debtor and let it choose: one is a loan with high interest but without the security requirement, while the other is with low interest but a security required. A low risk creditor will choose the loan with low interest and offer a security, as it knows that it is unlikely to fail in the business and lose the secured asset. Economists call such use of the security as “screening.”<sup>27</sup>

This theory supposes that the security interest is created in an asset not owned by the debtor himself. Because the debtor’s asset is anyway liquidated and used for collection of the loan upon default of the debtor, the security interest in the debtor’s asset cannot be useful as the screening device.<sup>28</sup> As the international interest under the Space Assets Protocol is most likely to be created in the space asset owned by the debtor, it may not serve as a screening device.

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and Default Risk: Equilibrium Analysis, Policy Implications and Empirical Results, 101 *Economic Journal* 458 (1991); George Triantis, Secured Debt Under Conditions of Imperfect Information, 21 *Journal of Legal Studies* 225 (1992); Hideki Kanda & Saul Levmore, Explaining Creditor Priorities, 80 *Virginia Law Review* 2103 (1994); George Triantis, A Free-Cash-Flow Theory of Secured Debt and Creditor Priorities, 80 *Virginia Law Review* 2155 (1994). The point of this argument is that even a creditor that does not intend to increase its risks faces the difficulty of gaining the loan, because there is no means to assure the creditor that it will never do so.

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<sup>27</sup> Helmut Bester, Screening vs. Rationing in Credit Markets with Imperfect Information, 75 *American Economic Review* 850 (1985).

<sup>28</sup> Though the security interest in the asset owned by the debtor will change the balance between the secured and unsecured creditors, the debtor gains no benefit in total.



Still, the screening theory justifies the rules in the draft Protocol on remedies in respect of public service, one of the most disputed issues in the Space Assets Protocol. The draft Protocol provides for the possibility of posting a public service notice by the public services provider (art. XXVII), which makes it difficult to liquidate the space asset upon the debtor's default. Under this rule, not posting the public service notice can be equivalent to offering an asset that does not belong to the debtor as a security. Because the debtor has the option whether or to consent to posting the public service notice under the draft Protocol, a debtor that is aware of the low risk of his business can withhold its consent and benefit from the more beneficial conditions, such as low interest rate. Thus, the framework under the draft Protocol can work as the effective screening device.

#### *4. Limits in the usefulness of the Space Assets Protocol*

Although the Space Assets Protocol may be useful as discussed above, it cannot be a panacea for the entrepreneurs that challenge starting up a space venture but suffer from the paucity of the capital. When there is no problem of incomplete information, either as regards the behaviour of the debtor after the loan is extended or in assessing the debtor's risk, one should not expect much from the secured transactions. It is the case with the business that is recognised by everyone as entailing high risk: the space tourism at this moment, for example. The high-risk project is more appropriate to be financed by equity, rather than debt.

This point deserves being noted in determining the scope of space asset registrable under the Space Asset Protocol. The draft Protocol leaves the determination about what kind of space assets can be registered with the International Registry to the regulation of the Supervisory Authority (Art.I (2) (1)). Before including some categories of space assets, the Supervisory Authority should consider whether the asset will be used for the business appropriately financed by debt.

#### **IV. Secured transactions and LBO finance**

The theories of secured transactions usually compare the use of security with not using the security at all. However, the Space Assets Protocol is not being introduced into a vacuum. In the recent years, the space industry has seen a series of leveraged buy outs of satellite operators. Therefore, in order to evaluate the economic impact of the Space Assets Protocol, it is necessary to examine how it is going to affect this practice.

The leveraged buy out (LBO) is an acquisition of the control of the target company by the equity investor (often a private equity fund), making use of borrowing from the lenders as the leverage. The shareholders of the target company sell their shares in exchange for the cash in the amount of the market price plus the premium. The textbook of corporate finance tells us that the ideal target of leveraged buy outs is a company with a predictable cash flow that has only limited opportunities for expanding its

business.<sup>29</sup> Such a company is better to refrain from investing its cash in unprofitable businesses and distribute it to its shareholders, who may know more profitable subject of investment. LBO forces the management to pay out the cash flow to its shareholders under the pressure of the borrowing.<sup>30</sup> The disgorged cash will return to the hands of the shareholders as the premium paid by the (leveraged) acquirer. It is also argued, however, that the shareholders and acquirers expropriate the existent creditors, such as the bondholders, of the target company by increasing the default risk of the company.<sup>31</sup>

Recent empirical studies of the LBO transactions in the world report interesting observations with regard to the relationship between the LBO transactions and the creditor's rights under the law of the target company's country. According to them, where the creditor's rights are well protected, the premium paid to the original shareholders is lower, while the volume of LBO transactions tends to be greater.<sup>32</sup> These results may imply that the Space Assets Protocol, which improves the protection of the secured

creditor's rights, will not hinder the LBO transactions from taking place, though it might affect the balance between the shareholders and creditors.

The results of the empirical study may be interpreted as follows. On the side of the acquirer, it needs to be financed by debt to conclude the LBO transaction successfully. Therefore, the better protection of the creditor could facilitate the LBO transactions. On the target company's side, the availability of credit does not affect the value of the company, as the value of a company is determined by its productivity, not depending on how the company is financed.<sup>33</sup> As a result, the law on creditor's rights does not change the total amount paid for the target company. Taken together, the overall effect of the better protection of the creditor's rights turned out to be a larger volume of LBO transactions.

The improvement of the creditor's rights affects the distribution of wealth in case of LBO transactions. If the creditors are secured and well protected, as intended by the Space Assets Protocol, the acquirer must first pay out the existent debts of the target company before taking over the control of the latter. Because the total amount that the acquirer is willing to spend in a deal does not change, this will result in the smaller premium paid to the shareholders. The results of the empirical study, therefore, match exactly what the theory predicts.

Thus, the improvement of the protection of

<sup>29</sup> Ronald J. Gilson & Bernard S. Black, *The Law and Finance of Corporate Acquisitions* 403 (Foundation Press, second edition 1995).

<sup>30</sup> Michael Jensen, Agency Costs of Free Cash Flow, Corporate Finance, and takeovers, 76(2) *American Economic Review* 323 (1986).

<sup>31</sup> Arthur Warga & Ivo Welch, Bondholder Losses in Leveraged Buyouts, 6(4) *The Review of Financial Studies* 959 (1993). The "expropriation" mentioned here is one case of the "moral hazard" problem discussed above in **III.2**.

<sup>32</sup> Jerry X. Cao, Douglas Cumming, Meijun Qian & Xiaoming Wnag, Creditor Rights and LBOs, <http://ssrn.com/abstract=1086775> ; Jerry X. Cao, Douglas Cumming & Meijun Qian, Law, Investor Protection and LBOs, <http://ssrn.com/abstract=1100059>.

<sup>33</sup> This is the well-known Modigliani-Miller theorem. See, for example, Jean Tirole, *The Theory of Corporate Finance* 77 (Princeton University Press, 2006).

creditor's rights by the Space Assets Protocol is unlikely to disturb the practice in the satellite industry that has recently experienced several cases of LBOs. If it ever has an impact on the volume of such LBO transactions, it will be positive. The Space Assets Protocol might affect the distribution of wealth between the existent creditors and shareholders of the target company, resulting in the smaller premium paid to the target company's shareholders in case of an LBO transaction. This apparently adverse effect on the shareholders will, of course, be offset by the better conditions of the loan enjoyed by the target company, which the creditor is ready to offer now that it is less concerned about being expropriated afterwards.<sup>34</sup> No disturbing impact on the practice will occur.

## V. Conclusion

The Space Assets Protocol will introduce a uniform and transparent scheme for the secured transactions and improve the creditor's rights. Applying the theory of secured transactions to the space industry, we predict that it will effectively promote financing and thereby contribute to the interests of the debtor, not only the creditor. Such positive impact of the Space Assets Protocol is expected, in particular, when the cash flow is stable and there is the problem of incomplete information. At present, the communications satellite operators fit in this category the best. As the space industry matures, the use of the Space Assets Protocol will be more widespread. The

occasional use of LBOs in the space industry may not be disturbed by the Space Assets Protocol. Therefore, the Space Assets Protocol will play important role in the space business in the near future.

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<sup>34</sup> The mechanism was discussed above in III.2.