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INSTITUT INTERNATIONAL POUR L'UNIFICATION DU DROIT PRIVE

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Item No. 5 on the agenda: International Interests in Mobile Equipment –

(b) Possible preparation of other Protocols to the Cape Town Convention

(i) Agricultural, mining and construction equipment

(Memorandum prepared by the Secretariat)

Summary	*Update on activities undertaken by the Secretariat.*
Action to be taken	*To consider the desirability of developing an additional Protocol to the Cape Town Convention on matters specific to agricultural, mining and construction equipment*
Mandate	*Work Programme 2011-2013*
Priority level	*Medium*
Related documents	*C.D. (91)4(c)*

INTRODUCTION

1. The *Convention on International Interests in Mobile Equipment* was opened for signature on 16 November 2001. Article 2(3) of the Convention anticipates that the initial three protocols will cover aircraft, railway rolling stock and space assets. Protocols related to aircraft, railway rolling stock and space assets were consequently adopted in 2001, 2007 and 2012 respectively. The possibility of adopting additional protocols is left open, Article 51 of the Convention providing that the process to be followed for the development of additional future protocols would involve the creation of working groups.

2. The desirability and feasibility of preparing a fourth protocol, on mining, agricultural and construction equipment (hereinafter "MAC"), has been under consideration by the Governing Council for a number of years.[1] This document describes the latest developments in connection with the proposed fourth protocol.

I. BACKGROUND

3. At its 91st session (Rome, 7 – 9 May 2012), the Governing Council discussed future work on a possible fourth protocol on mining, agricultural and construction equipment, in the light of the findings of the forum that the Secretariat had convened on 10 November 2011 on "Possible Benefits of Extending the Cape Town System to Agricultural, Mining and Construction Equipment".

4. The Secretariat also informed the Council that, following the forum, it had received an offer from the *Center for Economic Analysis of Law (CEAL)* (Washington D.C.) to undertake an economic assessment of the proposed Protocol. An agreement had been reached for the Center to undertake this work on a *pro bono* basis.

5. At its meeting in 2012 a first, preliminary, draft analysis presented by the CEAL was submitted to the Council. In the light of this preliminary document, the Council voiced a number of concerns, which in essence related to the lack of information on various points, including the extent to which financing of MAC equipment is provided by domestic (i.e. in-country) financial institutions or international institutions, and the need to include information about the mobility of MAC equipment in practice, how it moves across borders and with what frequency. Other points included the question of the equipment being "uniquely identifiable", bearing in mind the number of potential categories/models of equipment within the scope of the protocol, and the absence of (uniform) system(s) of identification and the registration regime.

6. The Council, therefore, requested the Secretariat to develop further the scope and terms of reference for the study and the factors to be taken into account in the economic impact analysis.

7. The CEAL was informed of the concerns of the Council and has since attempted to address them through various revisions and amendments to its economic impact analysis, the final version of which is contained in the Annex to this document.

II. THE CEAL STUDY ON EXTENDING UNIDROIT'S CAPE TOWN CONVENTION TO MINING, AGRICULTURAL, AND CONSTRUCTION EQUIPMENT: ECONOMIC ISSUES

A. General Considerations

8. The CEAL study, prepared by Mr Heywood Fleisig, Director of Research at the Center for the Economic Analysis of Law (CEAL), examines the possible economic impact of the proposed Protocol on trade in equipment. The opinion of the author is very much in favour of a fourth protocol and to illustrate this conviction he explains what the situation is as regards access to credit, both for individuals and for dealers.

9. The CEAL study observes that the Cape Town Convention has a positive economic impact on equipment financing because it reduces the risk of lending. It permits mobile equipment to serve as good collateral in jurisdictions where national laws do not permit that. When borrowers offer high quality collateral to lenders, lenders respond by offering better lending terms than they do on

[1] See documents C.D. (85) 7(c), C.D. (86) 8(d), C.D. (88) 3(c), C.D. (89) 4(c), C.D. (90) 4(c), and C.D. (91) 4(c).

unsecured loans. They offer lower interest rates, larger loans relative to borrower income or cash flow, and longer periods to repay.

10. This increase in borrowing ability permits the business to earn more profit. This increased profit, added up over all borrowing firms, produces higher GDP, in total and per person. The total change in GDP would include, in addition, the additional profit of the financing firm and the additional profit of firms supplying other inputs required in the investment. It would also include any higher wages of workers, who would be in greater demand because of the increase in the deployment of mobile equipment.

11. A Protocol to the Cape Town Convention specific to agricultural, mining and construction equipment would facilitate using about $2 trillion in mining, agricultural and construction equipment as collateral for loans and would increase sales of MAC equipment by about $600 billion over a period of five to seven years. These expanded MAC equipment sales could increase world GDP by as much as $3 trillion.

12. Turning to the expected effects of a fourth protocol, the study concludes that in countries that export or import the equipment concerned, in countries that have not yet modernised their secured transactions laws, or have only done so partially, more MAC equipment would be used to produce more mining, agricultural, and construction output.

13. Countries that produce and export MAC equipment would thus experience an increase in the demand for the machinery they produce, which would have a ripple effect on the economy.

14. Countries where the fourth protocol would ease financing constraints would purchase more MAC equipment and increase their GDP by producing more mining, agricultural, and construction output.

15. Some countries that produce, use, import, and export MAC equipment would experience both effects. On the demand side, from the expansion of their MAC exports; on the supply side, from their expanded import and use of other MAC equipment.

B. Responses to the Concerns of the Governing Council

16. The first, preliminary report submitted to the Governing Council in 2012 gave rise to a number of concerns. Below, a summary of these concerns and the replies provided by the study.

1. There was a need for more detailed information on the extent to which financing of MAC equipment is provided by domestic (i.e. in-country) financial institutions or international institutions.

17. Private national and international lenders provide most of the world's MAC equipment credit financing. Private lenders are most active in countries where national laws permit the economically effective use of MAC equipment as the sole collateral for a financing loan.

18. For other countries, private lenders usually will not finance MAC equipment when the borrower can offer only MAC equipment as collateral. This includes domestic private lenders as well as international equipment finance companies.

19. State-run lenders and guarantors are sometimes refinanced or augmented by funds from international public lenders and donors (multilateral development banks, the IMF, foreign aid agencies). As a practical matter, those public and publicly-guaranteed financing sources typify most low-income countries.

20. Export credit agencies (ECAs) have limited penetration in the highest income OECD countries because their credit terms are usually less attractive than the most efficient private lenders.

2. There was a need to understand the economics of repossession in the context of MAC equipment: does the rate of depreciation make repossession less valuable as a remedy?

21. As regards the speed of repossession, its cost, and the ease of resale several dealers told the CEAL that resale of specialized equipment even in small countries was not a problem. They reported that the regional sales representative for the manufacturer could arrange sales in other countries in the region, or even to distant countries.

22. The US Department of Commerce estimates the life of MAC equipment at 9 - 14 years.

3. There was a need to include information about the mobility of MAC equipment in practice: how does it move across borders, and with what frequency?

23. A substantial amount of MAC equipment crosses an international border at least once.

24. Another possible demonstration of the international character of some MAC equipment might arise if MAC equipment crosses borders during normal use.

25. MAC equipment, from a technical perspective, is not intrinsically different from aircraft or rail rolling stock. In the case of aircraft, about 50% of US aircraft does not leave the United States.

4. There was a need to include information on practices outside Europe and the USA (e.g. there were many construction equipment manufacturers in Japan/Korea/North Asia).

26. Details in reply to this concern are to be found in Table 3, on page 18 of the study.

5. Several members of the Council indicated that the project should not be about using any future protocol as a substitute for a domestic registration regime, the protocol should be focussed/justified in relation to transactions with international aspects (though recognising the potential to apply to purely domestic transactions).

27. The study points out that as an economic issue, the fourth protocol cannot fully substitute for domestic registration or notice filing systems because its scope of coverage is only a small fraction of the movable physical capital stock.

28. For most countries there cannot be competition between a domestic registry and the international notice filing archive because their present laws do not envision filing a security interest in movable property. Even where the filing system envisioned in the fourth protocol would, in principle, compete with the activities of domestic filing archives, this competition would be substantial only among a few countries with the most advanced systems: Canada, the United States, New Zealand and Romania. In the remaining countries, the pledge against movable property has so many problems that private lenders will not use it.

29. If the signatory country so wishes, there should be no technical problem in hooking up the local registry to the internet filing system. Equally, there should be no problem in collecting a filing surcharge at the central registry to be paid to the national registry.

30. A single security interest could be filed for all the jurisdictions in which the property could possibly be, as opposed to filing multiple security interests in several jurisdictions. This would be particularly important for MAC equipment which has an enormously high unit value and will rarely be shipped with third party financing unless it is covered by a reliable security interest. This is a

burden for all MAC producers, but is particularly heavy on small and medium scale producers and dealers who may not have much of a presence in the importing country. It should also be pointed out that divided registration systems cause conflicts in priority rules.

6. Several members of the Council expressed concern about whether a protocol, and its international registration system, would be able to address the question of the subject equipment being "uniquely identifiable", bearing in mind the number of potential categories/models of equipment within the scope of the protocol, and the absence of (uniform) system(s) of identification.

31. The study states that CEAL believes that MAC equipment has one or more serial numbers, typically at least on the chassis and the engine or motor. Furthermore, there is typically no property registration or titling system for MAC equipment.

32. All imported and exported goods must be classified for Customs purposes. Each separate product is assigned a particular classification code. Most countries classify goods in accordance with the World Customs Organization harmonized commodity description and coding system, popularly known as the Harmonized System (HS), which came into effect in 1988.

33. To identify MAC equipment, the fourth protocol might simply refer to the WCO classifications. It could specify the list of MAC equipment covered at whatever level of detail it chose: 2 digits, 3 digits and upwards.

34. World equipment manufacturers, exporters, and importers have already familiarized themselves with these HTS schedules and considered how to organise their equipment in these codes. That is because the classification of the product will affect its tariff treatment. For these reasons, the fourth protocol can simply and unambiguously inform signatories what equipment it covers.

ACTION TO BE TAKEN

35. With the aid of the economic impact analysis presented by the CEAL, the Council is requested to consider the desirability of maintaining the preparation of an additional Protocol to the Cape Town Convention on matters specific to agricultural, mining and construction equipment in the 2014-2016 Work Programme or deferring the proposed project to a later Work Programme cycle.

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Extending UNIDROIT's Cape Town Convention to Mining, Agricultural, and Construction Equipment: Economic Issues

Heywood Fleisig**, **CEAL

February 18, 2013

Extending UNIDROIT's Cape Town Convention to Mining, Agricultural, and Construction Equipment: Economic Issues[1]

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February 2013

[1] The author thanks Nuria de la Peña (CEAL), Lena Peters (UNIDROIT), Timothy Schnabel (US Department of State), Henry Gabriel (Elon University), and Padraic Sweeney (US Department of Commerce) for their advice and helpful comments. He also thanks John Atwood, Peter Bloch (US Department of Transportation), Bill Choi (Equipment Leasing and Finance Corporation(ELFA)), Katrin Frauchiger (Caterpillar Finance), Alejandro Garro (Columbia University, CEAL), K. Koro Nuri (Export-Import Bank of the United States), Ralph Petta (ELFA), and Peter Winship (Southern Methodist University, CEAL). He also thanks the manufacturers and trade association representatives who participated in many conference calls. This paper need not reflect any official position of UNIDROIT, its staff, or its member countries. The author alone is responsible for any remaining errors and welcomes further comment at hfleisig@ceal.org.

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Figures and Tables

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I. Summary and introduction

UNIDROIT is considering a Fourth Protocol to the Cape Town Convention that would facilitate using about $2 trillion in mining, agricultural and construction (MAC) equipment as collateral for loans. A strong[3] and widely-adopted Fourth Protocol would increase sales of MAC equipment by about $600 billion over a period of five to seven years.

These expanded MAC equipment sales could increase world GDP by as much as $3 trillion. Low-income countries[4] would account for $1 trillion to $2 trillion of this increase. With the Protocol facilitating using MAC equipment as collateral for loans, borrowers in low-income countries will present less risk. Consequently, lenders will offer better credit terms for purchasing MAC equipment: they will reduce the interest rates they charge and increase the amount they lend relative to borrower income and the value of collateral. For low-income countries, the increase in GDP arises mainly from the Protocol's effect on supply: adding $600 billion to their existing stock of MAC equipment would expand mining, agricultural and construction output by about $1.2 to $1.8 trillion more GDP.

For high income counties, GDP would rise by another $1 trillion. This increase results from the effects of higher MAC exports would increase demand and, thereby, GDP.

Some low-income countries that both use and export MAC equipment -- Brazil, China, and India -- will experience both effects.

The size of the economic gain from the Fourth Protocol depends, first, on whether the Protocol can establish a framework for secured lending for MAC equipment that is economically equivalent to the strongest national reforms in industrial countries. Second, the impact depends on who adopts it. The greatest gains in income arise first, in the low-income countries where the credit constraints most strongly impede the purchase of MAC equipment. The second greatest gain arises in the countries that manufacture and export this equipment. Their MAC equipment exports can only increase if the low-income countries actually purchase more MAC equipment.

Roughly reckoning, the gain outweighs the cost by many fold, far more than in the typical public investment project. To put the Fourth Protocol in some development perspective, the World Bank considers a successful project one that earns 12%. On its portfolio of about $300 billion, therefore, it produces a gross social gain of about $36

[3] By "strong", we mean equivalent in economic impact to the legal frameworks of secured lending in Canada, New Zealand, the United States, and Romania.

[4] "Low-income" is used here to mean countries with low per capita incomes. For this paper, that group includes all developing countries, all economies in transition, and the bottom third of the members of the OECD. "High-income" here mean the OECD countries in the top 2/3 of OECD countries when ranked by per capita income.

billion in a highly successful year. Other multilateral development banks and aid agencies probably do no better.

The expected gain from the Fourth Protocol dwarfs this. It arises from improving efficiency, by enabling MAC equipment producers, financers, and buyers to better match costs, risks, and rewards. All parties gain. This would be a mighty achievement for any project, even more remarkable coming from a small organization like UNIDROIT.

II. How will the Cape Town Convention[5] and the proposed Fourth Protocol support MAC equipment?

UNIDROIT's Cape Town Convention permits taking security interests in internationally mobile equipment. All economic benefits from this Convention arise from setting in place a minimal legal framework for taking security interests in mobile equipment and creating a global filing archive that determines priority by the time of filing of a notice of the security interest. In such a legal framework, the mobile equipment can itself serve as collateral for a loan that finances its purchase.

A. Economically-important legal barriers to using mobile property as collateral

The legal systems of many countries, and all low-income countries, do not permit creditors to take mobile property as collateral in a way that inexpensively reduces their risk. Consequently, firms seeking to buy mobile equipment must either pay cash or offer some guarantee other than the equipment itself -- collateral such as immobile property, the personal guarantee of someone else who owns immobile property, or the guarantee of the state.

To summarize a lengthy literature[6], in developing and transitional economies (as well as many advanced ones) multiple legal problems exist in the creation, perfection, filing, and execution of security interests against mobile equipment. To list them briefly[7]:

Creation: problems that exclude goods, agents, and transactions

- *Limits on who can be a party to a security agreement*
- *Limits on coverage of goods and transactions*
- *Limits on using a general description of collateral or a floating security interest*
- *Limits on creating a security interest in after-acquired collateral or after-created debt*

Priority: problems that undermine lenders' security

- *No priority rules for future advances*
- *Limits on the continuation in proceeds and products of a security interest*
- *Limits on creating security interests in fixtures*
- *Hidden tax liabilities and superpriority for the state, including loans and guarantees of state banks*
- *Divided registration systems that cause conflicts in priority rules*

[5] UNIDROIT (International Institute for the Unification of Private Law), Convention on International Interests in Mobile Equipment
(Cape Town, 2001), available at http://www.unidroit.org/english/conventions/mobile-equipment/main.htm

[6] Fleisig, Safavian, and de la Pena (2006)

[7] Fleisig, Safavian, and de la Pena (2006), chapters 3, 4, 5.

Publicity: problems that hamper filing or retrieval of records of security interests

- *Restrictions on access to registry records*
- *Requirement for inspection of documents*
- *Requirement for filing documents rather than simply notices*
- *Multiple and unlinked registries*
- *Lack of advance filing and blocking*
- *High fees for filing*
- *No Internet-based systems for filing or information retrieval*
- *Uncompetitive supply of registry services*

Enforcement: problems that prevent rapid seizure and sale of collateral

- *Court-administered sales*
- *Homestead and exempt property provisions*
- *Delay caused by bankruptcy procedures*

B. Confirmation of the importance of these barriers

The foregoing list of problems can be constructed from a desk study. However, CEAL has seen their effects on the ground. CEAL has interviewed equipment dealers in more than thirty countries, including those representing most manufacturers in industrial exporting countries. Broadly, for private loans, neither dealers nor banks will accept mobile equipment as collateral. The dealers do not accept the buyers' mobile equipment as collateral; the dealers do not sell on credit taking the equipment as collateral. The banks accept neither the buyers' nor the dealers' mobile equipment as collateral. Real estate often is acceptable as collateral. Or, the personal guarantee of the business owner may be acceptable if the business owner has unencumbered real estate. But acceptable collateral always points ultimately back to real estate.

Private equipment dealers nibble at the edges of these restrictions. Sometimes they will sell a machine on credit to a buyer with a government contract; sometimes they repossess and sell outside the law; sometimes they finance loans out of their own capital to customers in whom they have enormous confidence; sometimes they have connections to state development banks that will finance a limited amount of this equipment.

But dealers themselves, like their clients, have limited access to credit. Parent company exporters typically limit the value of machines they put on consignment with local dealers because they face the same problems of collecting against mobile equipment. Stocks of used machines, an essential element in the typical equipment cycle of "buy new"/"trade in old", are nearly always financed with the dealers' own capital with no outside support. When dealers cannot finance the trade-in, they cannot sell the new equipment.

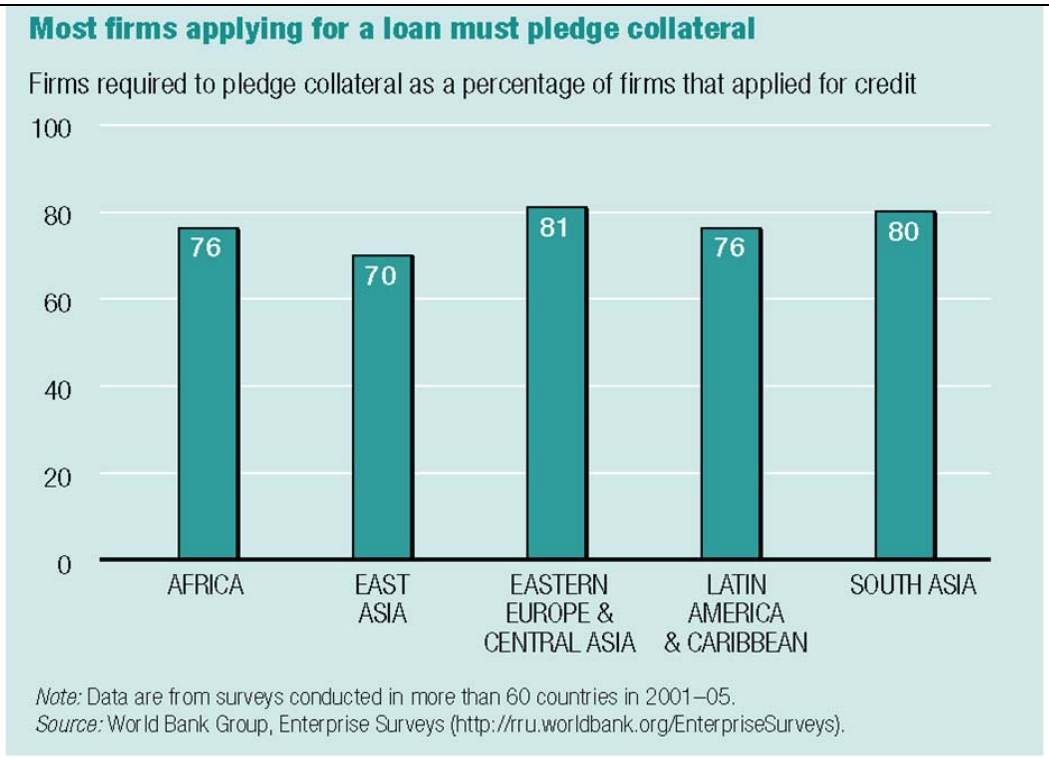
Dealers in most countries report that their own lines of credit from local banks amount to little more than would the mortgage on their real estate. Appearances deceive. Often banks take as collateral all the dealer's property, fixed and movable, as well as accounts receivable. Banks then report that they take mobile equipment and intangible property as collateral. Many dealers are under the same impression. However, in reality,

banks lend only an amount that can be covered by the sale of the real estate offered as collateral. That is, mobile equipment, even when taken nominally as collateral, adds nothing to dealer credit. Equipment has no economic value as collateral -- it provides no additional financial support to the dealer's operation.

Nor can dealers in such countries use sales contracts they generate to refinance their operations with their affiliated international finance companies. The sales contracts secured by mobile equipment are themselves risky because their underlying collateral gives little financial comfort. Moreover, the same legal limits on using mobile equipment as collateral apply to security interests against the sales contracts of the dealers. This cuts off dealers and consumers in countries representing at least $22 trillion in GDP -- about 1/3 of world output -- from dealer and manufacturer finance companies, the cheapest and most expansive sources of private credit in the world.

For developing countries, the effects on access to credit are crippling. The World Bank's "Doing Business" survey found that most firms in developing countries must pledge collateral to get loans (Figure 1). Since the only collateral that is acceptable is real

Figure 1 Most firms applying for a loan must pledge collateral



estate, only those with real estate -- typically the most wealthy -- have access to credit. This restrictive access to credit has two effects on developing countries. First, it perpetuates very unequal distributions of income because diligent and smart business operators cannot finance good projects. Second, because the credit needs of efficient enterprise are not necessarily related directly to real estate. Therefore, profitable firms that are supporting country growth by investing in mobile equipment have more limited access to credit and grow more slowly. At the same time, firms not making large contributions to growth but possessing real estate can get credit and grow faster. Consequently, credit and resources are not allocated to the uses that produce the greatest economic growth in the country.

C. Cape Town Convention: a limited but unique remedy

Cape Town provides a limited remedy for this problem that is itself very socially valuable. Of course, it cannot substitute for a full domestic legal reform. Existing protocols to the Cape Town Convention have covered economically important classes of equipment: about $1.5 trillion in aircraft; $566 billion in rail equipment, and space assets (Table 1). In the proposed Fourth Protocol, UNIDROIT would extend the Cape Town convention to about $2 trillion in mining, agricultural, and construction (MAC) equipment. While this coverage is large, it is only a small fraction of the world's stock of real and financial movable property.

While the Fourth Protocol cannot replace a domestic legal reform in the breadth of its coverage, it is unique in that it has, once adopted, the force of law. This has important implications for many issues.

Table 1: Mobile equipment in different Cape Town protocols

UNIDROIT Cape Town Convention

Mobile equipment in different Cape Town protocols

[Billions of dollars; 2010 year end US data and CEAL estimates

	United States	Other high income	Developing and Transitional	World
First Protocol				
Aircraft	**322**	**636**	**536**	**1494**
Second Protocol				
Railroad equipment	**122**	**241**	**203**	**566**
Third Protocol				
Space Assets	**#N/A**	**#N/A**	**#N/A**	**#N/A**
Fourth Protocol (proposed)				
Agricultural machinery	*171*	*337*	*284*	*792*
Construction machinery	*184*	*363*	*306*	*853*
Mining and oilfield machinery	*70*	*137*	*116*	*322*
	424	**838**	**706**	**1968**
Total, all protocols	**868**	**1716**	**1444**	**4028**

Source: *U.S. data taken from U.S. Department of Commerce, Bureau of Economic Analysis, Table 3. Current-Cost Net Stock of Private Fixed Assets, Equipment and Software, and Structures by Type. Data published August 24, 2011. Available at http://bea.gov/national/FA2004/DownSS2.asp?3Place=N#XLS. Remaining entries are CEAL estimates, constructed as described in the text.*

First, even if all the countries of the world were to adopt, tomorrow, economically acceptable legal frameworks for secured lending, a fundamental problem would remain of linking those frameworks together for goods that move internationally. As is discussed below, a protocol for MAC equipment would permit substantial expansion in the use of secured lending to finance international trade. That this argument applies to all traded goods does not diminish its relevance to the Fourth Protocol.

Second, the Fourth Protocol would in no sense be inconsistent with possible future domestic reforms. Rather, it would extend them to international transactions. All of CEAL's proposed draft laws, for example, have specifically included passage of the relevant UNIDROIT and UNCITRAL security protocols and conventions. While CEAL's proposals often contain controversial elements, the extension of the proposed reform to international protocols has never concerned reviewers in reforming countries.

Third, domestic reform, as is discussed later, has been very slow in coming. A smaller high quality reform such as the Fourth Protocol would produce benefits much sooner. Smaller benefits now can be economically more important than larger benefits later, especially when "later" is not in sight. Far from replacing domestic reform, a successful application of the Fourth Protocol might advance the cause of domestic reform by giving unreformed countries a firsthand look at how such a system operates.

Finally, the Fourth Protocol has the force of law. This makes it powerful in a different way from the very valuable advisory work of UNCITRAL, with its handbook of secured transactions and, possibly, a future model law; or the EBRD's intensive efforts to reform legal frameworks and its own draft model law; or the reform efforts of the World Bank, IFC, Asian Development Bank, Inter-American Development Bank and USAID; or, indeed, of CEAL's own work in domestic reform.

III. The Fourth Protocol increases MAC equipment investment and exports

The Cape Town Convention has a positive economic impact because it reduces the risk of lending. It permits mobile equipment to serve as good collateral in jurisdictions where national laws do not permit that. When borrowers offer high quality collateral to lenders, lenders respond by offering better lending terms than they do on unsecured loans. They offer lower interest rates, larger loans relative to borrower income or cash flow, and longer periods to repay.

For example, one lender[8] (Table 2) would offer a business borrower with a cash flow of $500,000 a loan of somewhat more than $1 million when that borrower offered as collateral motor vehicles whose purchase prices was about 5% greater than the loan value. The business borrower would pay an interest rate of 5.0%. However, the same lender would offer the same borrower only $573,000 at an interest rate of 8.5% if the borrower offered no collateral. We know the lender perceives the secured loan as less risky than the unsecured loans because the lender charges a lower interest rate on a larger loan to the same borrower when that borrower offers collateral. It is only the collateral that makes the difference (Table 2).

Table 2 A modern framework for secured lending increases access to credit

	Cash Flow	Maximum permitted debt service payments	interest rate	maturity of loan in years	Maximum debt possible	DS/cash flow
Unsecured	$ 500,000	$ 175,000	8.5%	4	$ 573,229	35%
Secured by a vehicle	$ 500,000	$ 175,000	5.0%	7	$1,012,982	35%
Access to credit secured/unsecured					177%	

Source: Wright Patman Congressional Federal Credit Union; author's calculations

This increase in borrowing ability permits the business to earn more profit. This increased profit, added up over all borrowing firms, produces higher GDP, in total and per person. We can work out this effect starting from the firm level. Setting out those links allows us to see clearly the link between the economic effect of the Fourth Protocol

[8] The lender shown is the Congressional Federal Credit Union. Similar terms for MAC equipment dealers are available on the web.

on borrowers and lenders and how that is transmitted to the GDP of the producing and importing countries.

Suppose that a firm thinks of a new line of business that allows it to earn 15% annually on an investment in motorized farm vehicles. The firm puts up 5% of the purchase price of the equipment, a down payment amounting to $53 thousand and borrows $1.013 million to purchase a total of $1.066 million in equipment. It earns a gross return (after non-interest costs) of $150 thousand (15% of $1.066 million invested); it pays an interest expense of $51 thousand (5% of the borrowed $1.013 million). The profit to the firm is the difference, $109 thousand. The profit is a minimum estimate of the resulting increase in GDP. The total change in GDP would include, in addition, the additional profit of the financing firm and the additional profit of firms supplying other inputs required in the investment. It would also include any higher wages of workers, who would now be in greater demand because of the increase in the deployment of mobile equipment.

Without a legal framework for secured lending, the firm will make less profit from its new idea. Without collateral - or having only movable property that cannot itself serve as collateral -- the lender offers the firm a loan of only $573 thousand. Together with the firm's capital of $53 thousand, the firm can now purchase only $626 thousand in equipment. It earns a gross return after non-capital expenses of $94 thousand (15% of $626 thousand) and pays an interest expense of $49 thousand (8.5% of the borrowed $573 thousand). The profit to the firm is the difference, $49 thousand. As before, this is a minimum estimate of the increase in GDP. However, because the overall project is smaller than when secured lending was available, the overall gain in GDP will be about half the size.

Even this account minimizes the beneficial effect of an effective legal framework for secured lending. Secured lenders typically scale secured loans based on the value of the property offered as collateral and limited only by borrower cash flow and ability to service debt. The secured borrower can offer twice as many vehicles as collateral for a loan that is twice the size; the unsecured lender, offering his payment record and reputation, cannot offer twice as much of these intangibles.

Lenders making unsecured loans, by contrast, typically cap the size of unsecured loans. This lender (Table 2), for example, caps unsecured loans at $35,000. That is, even though the borrower has a cash flow sufficient to support a $573 thousand loan, the lender will offer only $35,000 without collateral. Working through the same numbers for a project size of $88 thousand ($53 thousand in owners' capital plus $35 thousand in loan), the increase in profit and minimum estimate of increase in GDP falls to $10 thousand. That is, less than 10% of the gain from the project undertaken when the legal framework for secured lending existed and permitted using the mobile equipment as collateral.

These are the natural economic consequences of the difference in loan terms used in this example.

A legal framework for secured lending, by reducing lending risk, increases the

return on firm investment and makes it profitable to increase both capital and capital per worker. GDP in these examples increases by a factor of 2-10.[9]

If the Fourth Protocol increases investment in mobile equipment, it also will increase economic growth and productivity change. Some productivity change occurs without investment in physical capital; for example, improved worker education and training can increase output of both new and old equipment, as can general improvements in management. Other improvements in productivity require only selective capital investments: for example, computerized production controls can increase the productivity of legacy equipment.

But the bulk of productivity improvements require purchasing the equipment that embodies the new technology. If you need to move a lot of earth or harvest a lot of grain, better planning, or the "idea" of the latest earth moving equipment or grain harvester will not help much -- you need the machine itself.

[9] It raises the rate of return on investments in movable capital relative to investments in fixed capital, ordering investor returns closer to overall social returns on investments.

IV. Greater MAC equipment investment and exports increase GDP

The Fourth Protocol will ease equipment financing and increase the desired stock of MAC equipment. Investment in the reforming countries will increase until producers attain their higher desired stock of equipment, possible with the more relaxed lending terms. That increased demand will increase exports from MAC equipment exporting countries.

The rise in investment and exports will increase GDP through two different channels. In previously unreformed or partially reformed countries, more MAC equipment will be used to produce more mining, agricultural, and construction output. That is, MAC equipment will increase the "supply" of gross domestic product.

In MAC equipment producing countries, the increase in demand for MAC equipment will increase the "demand" for GDP -- the export demand for the MAC equipment and its subsequent ripple effects on the economy. This second "demand" effect will be greater when there is slack capacity, as at present. It will be smaller as the MAC equipment producers are close to full employment and must divert resources from other uses to produce the additional MAC equipment. Countries like the United States and Canada, that have fully reformed systems, will see little supply side effect. Unreformed low-income countries will see the bulk of the supply side effect. The demand effect will be felt by major exporters, such as the United States and Germany. Some countries, like Brazil and China, that have both unreformed systems and export MAC equipment will experience increases in GDP from both supply and demand effects.

In estimating these benefits, the paper examines only the greater use of MAC equipment by low income countries and the effects of increased exports on the MAC-equipment producing countries. This paper does not consider the likely additional related GDP gains in low income countries, the gains from expansion of the chattel paper market, the reduction in the cost of trade finance, or the savings from an integrated filing archive for security interests in MAC equipment. Taking account of these effects would further increase estimated gains (See Annex 1 for further discussion)

A. Estimated world stock of MAC equipment

Data for holdings of MAC equipment for many countries are not readily available, so it is necessary to estimate the amount of MAC equipment presently in use in the world. Numerous studies indicate that the ratio of capital to GDP for most countries falls between 2 and 3.[10] We assume that relationship holds for MAC capital. This assumption might produce substantial error for any single country for a specific category like MAC equipment, but it is reasonable over the larger groups of countries being discussed here. With a GDP of $15 trillion in 2011, the United States held an actual stock

[10] Nehru and Dhareshwar (1993) on capital/output ratios and the other studies cited therein.

about $424 billion of MAC capital (Table 3). This is MAC equipment as defined by the US Department of Commerce. (The options for defining MAC equipment for the purposes of a Fourth Protocol are discussed below).Within the range of a capital/GDP ratio of 2-3, we estimate that other countries holdings of MAC equipment totaled $1,968 billion in MAC equipment in 2011.

Table 3 Fourth Protocol increases world demand for MAC equipment

[$ US billions, 2011 data and estimates]					
		MAC equipment			
Region	GDP	Pre-reform stock	Credit impact of reform	Post-reform stock	Increase in stock
World	70,012	1968		2572	604
Advanced economies	44,912	1262		1325	62
United States	15,094	424	0	424	0
Advanced econmies In need of reform	5,790	163	+ 38%	225	62
Other advanced economies not in need of r	24,028	675	0	675	0
Emerging and developing economies	25,100	706	+ 75%	1247	541

Source: CEAL estimates and IMF. World GDP data from International Monetary Fund, ***World Economic Outlook*** , available at http://www.imf.org/external/pubs/ft/weo/2011/02/weodata/download.aspx. Credit impact of reform based on discussion of Tables 2, this paper. US stock of MAC equipment from Table 1. Other derivation as discussed in text.

B. Estimating the size of increased investment in MAC equipment

The effect of the Protocol in increasing investment depends on the present treatment of the mobile equipment in the legal system. Countries that now make little provision for movable property as collateral will have the greatest increases in investment; countries with the most advanced systems will see little investment in MAC equipment.

1. Countries where domestic use of MAC equipment will increase most

Most low-income countries have financial systems where mobile equipment cannot serve as economically-useful collateral. In some, because the legal system simply does not contemplate such collateral. In others, because the law lays out such a complex and risky path to that collateral, it provides no risk reduction or other economic comfort to a lender.

A full reform of those legal frameworks, therefore, should permit MAC equipment to itself independently serve as collateral for well-secured loans and increase the supply of credit relative to borrower cash-flow available to buy MAC equipment by 75%, as explained above in the discussion of Table 2. That projection assumes that MAC equipment purchasers in those countries are credit constrained and when credit conditions are relaxed, these purchasers will purchase as much as they can at the new terms. The fact that their incomes per person are lower tells us that capital per person is lower and, therefore, that the rate of return on investment in MAC equipment is, on average, higher in these countries than in industrial countries.

2. Countries where domestic use of MAC equipment will not increase

In countries with advanced legal frameworks for secured lending, credit terms inside their countries are unlikely to improve because of the proposed UNIDROIT Fourth Protocol. These countries include Canada, New Zealand, Romania and the United States. These countries have legal frameworks for secured lending that equal or exceed the reforms proposed by the Cape Town Convention. With the Fourth Protocol producing no improvement in credit terms in these markets, we expect no increase in the domestic use of MAC equipment.

A second group of countries includes those that have economic problems in their legal frameworks for secured lending. The UK, for example, has a system that excludes non-corporate borrowers. In Japan, Germany, and Switzerland, the legal systems do not envision movable equipment serving as collateral for a loan. Nonetheless, these countries, as witnessed by their high per capita incomes, seem to have devised alternative systems for financing mobile equipment that seem to work.[11] CEAL has not worked in these countries and, at the moment, has no view on how they effectively substitute for a legal framework that permits taking movable property as collateral. For the purpose of this estimate, however, we have also set at zero the estimated impact of the proposed Fourth Protocol on domestic demand for MAC equipment in other high income OECD countries.

[11] We know of no complete study of these issues. Some suggestions include the hire/purchase system in the UK; judicial institutions that appear to rapidly enforce claims against mobile equipment in Germany under the sale with retention of title; the bailiff system in the Netherlands; French state banks and guarantee funds that finance mobile equipment but seem considerably better managed than equivalent institutions in developing countries; cooperative lending systems in Germany and Austria. The bottom line is whether equipment purchasers in these countries can get the same credit terms as those in the reformed countries when offering only mobile equipment as collateral for loans.

3. Countries where domestic use of MAC equipment will increase moderately

A third group of countries comprises the low-income OECD. These countries have no obvious barrier to using the same amount of mobile equipment relative to workers as their high income counterparts. Levels of general education are higher than most developing countries, sometimes approaching those of middle and upper income OECD countries; the general macroeconomic climate does not obviously limit investment. These countries do, however, have legal systems that present major problems in accepting mobile equipment as collateral. Their lower per capita incomes are consistent with their unreformed legal frameworks for secured lending and, broadly, consistent with the supposition that unlike high-income unreformed countries, they have not developed other laws and institutions to compensate for the defects of their legal frameworks for secured lending.

Those facts are consistent with the possibility that the inability to finance such equipment may be retarding economic growth. In this group, we include Korea, Spain, Greece, Italy Taiwan Mexico and Turkey. The estimate (Table 3) arbitrarily estimates that complete reform of the legal framework for secured lending as it affects MAC equipment would give them half of the maximum increase in the stock of MAC equipment that we would expect with countries with lower per capita incomes.

C. Increased MAC equipment exports will increase GDP

The foregoing estimates examine the supply side of GDP. That is, countries where the Fourth Protocol eases financing constraints will purchase more MAC equipment and increase their GDP by producing more mining, agricultural, and construction output.

However, countries that produce and export MAC equipment will experience an increase in the demand for the machinery they produce. Currently annual world exports of MAC equipment amount to just under $150 billion (Table 4). Assuming that reforming countries adjust to their new capital stocks of mobile equipment over a 7-10 year period[12], we would expect the new capital stock increase in developing and low-income OECD countries to be accomplished over the same period with annual exports of $60 billion - $85 billion higher annually than without the Fourth Protocol.

With present slack capacity, such a rise in overall demand should produce a rise in GDP annually of about $120 - $170 billion for the adjustment period of 7-10 years. To put it on the same footing as the measured rise in GDP of the countries deploying the equipment, such a change in industrial country GDP has a present value of about $1 trillion.

[12] Unfortunately, there are very few successful reforms and so very few countries whose experiences would give us an idea of the speed of adjustment. Seven years is based on a rough evaluation of Romania's reform, the only reform able to demonstrate its success by publicly available data on filings in their archive.

The major beneficiaries of the "demand side" boost in GDP appear in Table 4. This group includes many countries that will probably not see much increase in domestic usage of MAC equipment arising from the Fourth Protocol: the United States, Canada, Germany, and Switzerland.

Some countries that produce, use, import, and export MAC equipment will experience both "demand" and "supply" effects. On the demand side, from the expansion of their MAC exports; on the supply side, from their expanded import and use of other MAC equipment. Brazil, China, and India are important countries in that group.

Table 3 World Exports of MAC Equipment, 2010

(Major country and regional groups, $US billion)

	Mining and Construction Equipment*	Tractors **	Farm Equipment***	All MAC equipment
World	***95.6***	***17.1***	***28.9***	***141.6***
Americas	***21.4***	***3.5***	***6.4***	***31.3***
USA	18.0	2.7	4.5	25.2
Canada	2.0	0.3	1.2	3.4
Brazil	1.5	0.5	0.7	2.7
Asia	***29.7***	***2.9***	***2.4***	***34.9***
Japan	12.2	1.7	0.5	14.5
China	7.3	0.3	1.9	9.6
Korea, Rep. Of	5.6	0.3	0.0	5.9
Singapore	4.5	0.0	0.0	4.5
India	0.0	0.5	0.0	0.5
Europe	***27.8***	***8.9***	***15.1***	***51.8***
Germany	8.2	2.9	4.9	16.0
Italy	2.9	1.7	2.4	7.0
United Kingdom	4.0	1.2	0.7	6.0
France	3.3	1.1	1.6	5.9
Netherlands	3.1	0.0	1.8	4.9
Belgium	3.1	0.3	1.3	4.6
Austria	1.5	0.6	0.6	2.7
Sweden	1.7	0.0	0.5	2.2
Denmark	0.0	0.0	0.7	0.7
Belarus	0.0	0.7	0.0	0.7
Poland	0.0	0.0	0.6	0.6
Finland	0.0	0.4	0.0	0.4
Countries not listed above	***16.7***	***1.9***	***4.9***	***23.5***

*SITC 723 **SITC 722 ***SITC 721

Source: For discussions of these data, I am obliged to Padraic Sweeney, Supervisor (Acting), Machinery Team, Office of Transportation and Machinery, International Trade Administration, U.S. Department of Commerce. Data from United Nations, ***International Merchandise Trade Statistics (***by commodity), available at http://comtrade.un.org/pb/CommodityPagesNew.aspx?y=2010

V. Suitability of MAC equipment for treatment under Cape Town

Concerns have been expressed about the characteristics and nature of MAC equipment and whether that equipment is suitably treated under the Cape Town convention.

This is not an economic question. Rather, it deals with UNIDROIT's mission and the interpretation of that mission by UNIDROIT's secretariat, its Governing Council, and its member states. These are largely questions in law and political policy that may have economic aspects but are not settled by the tools of economics. This section, therefore, comments only on the economic aspects of those questions, which may be useful in the larger discussion.

A. What is MAC equipment?

Concern has been expressed about possible ambiguity in the definition of MAC equipment. Existing Cape Town protocols deal with well-defined things like planes, space equipment, and railroad equipment. For example, for aircraft, the plane is clearly a plane while the truck carrying meals to the plane is obviously a truck and not a plane. However, the truck used in mining may be an ordinary truck or a specialized piece of mining equipment designed to move ore. The same problem applies to a tractor that might also be licensed to travel on public roads. As a practical matter, how could a Protocol for MAC equipment distinguish among these machines?

Fortunately, organizations have pondered this question before UNIDROIT. For example, all imported and exported goods must be classified for Customs purposes. Each separate product is assigned a particular classification code. Most countries classify goods in accordance with the World Customs Organization harmonized commodity description and coding system, popularly known as the Harmonized System (HS), which came into effect in 1988.[13] A sample list, showing only tractors used in agriculture, appears in Table 4.[14]

To identify MAC equipment, the Fourth Protocol might simply refer to the WCO classifications. It could specify the list of covered MAC equipment at whatever level of detail it chose: 2 digits, 3 digits and upwards.[15]

Or it could use such a list as a starting point. In that strategy, UNIDROIT might add some particularly suitable pieces of equipment that might be missing; it might remove some that seemed particularly unsuitable. In this reorganization, it could continue to use the HTS codes. That would permit UNIDROIT to control the list at the same time

[13] Available at http://www.wcoomd.org/en.aspx.

[14] If UNIDROIT cannot get a satisfactory list from WCO, CEAL offers to assist in compiling that list.

[15] I am obliged for this suggestion to Padraic Sweeny, (Supervisor (Acting), Machinery Team, Office of Transportation and Machinery, International Trade Administration, U.S. Department of Commerce), and to him and his colleague Kit Rudd for help in assembling the list

that it did not require equal expertise in the nature of all the equipment therein. As an economic issue, of course, the broader the list, the greater the economic gain.

Administratively, this is a simple and appealing solution. World equipment manufacturers, exporters, and importers have already familiarized themselves with these HTS schedules and considered how to organize their equipment in these codes. That is because the classification of product will affect its tariff treatment. For these reasons, the Fourth Protocol can simply and unambiguously inform signatories what equipment it covers. Annex 3 discusses the use of HS codes in details and explains, practically, how users may access them.

Table 4 WCO classification of agricultural machinery, an example

AGRICULTURAL HANDTOOLS	8201
AGRICULTURAL MACHINERY	
for baling straw or fodder	8433.40.0000
for cleaning eggs, fruit or other produce	8433.60.00
for cleaning seed, grain or dried leguminous vegetables	8437.10.0000
for grading eggs, fruit or other produce	8433.60.0010
for grading seed, grain or dried leguminous vegetables	8437.10.0000
for harvesting	8433.51.00-8433.59.0090
for mowing grass or hay	8433.11.00-8433.20.0060
for preparing animal feeds	8436.10.0000
for sorting eggs, fruit or other produce	8433.60.0010
for sorting seed, grain or dried leguminous vegetables	8437.10.0000
for threshing	8433.51.00
for projecting, dispersing or spraying liquids or powders	8424.81
for soil preparation or cultivation	8432
knives and blades for	8208.40
AGRICULTURAL TRACTORS	8701.30.10, 8701.90.10
bodies for	8707.90.1000, 9902.25.79
chassis for	8706.00.3000

Source: available at US International Trade Commission, Harmonized Tariff Schedule, available at http://hts.usitc.gov/

B. Is MAC equipment uniquely identifiable?

CEAL believes that MAC equipment has one or more serial numbers, typically at least on the chassis and the engine or motor. There is typically no property registration or titling system for MAC equipment. One agricultural equipment manufacturer reported that all of their MAC equipment have individual serial numbers. For machines with cabs, there is a second cab serial number. They also have the ability on a limited number of machines to track remotely, and this technology will expand in the future.

Of course, not all MAC equipment will have the same type of specific identification. Trade custom may vary among types of equipment and even among

manufacturers of the same lines of equipment. But even if Cape Town must require specific identification, there is no reason in terms of the underlying economics of loans secured by specifically-identified goods that they share the manner of identification. As an example, filing a security interest against an automobile in the United States, in online registries, has a "drop down" box where the filer enters the vehicle identification number (VIN) of the automobile. The MAC filing archive could accommodate different types of identification by having two drop down boxes, one giving a checklist of acceptable means of identification and the second specifying the indentifying characters. The programming difference is trivial for a filing archive with two identifying fields rather than one. The search time of the archive data base would not change in any way that a user could perceive.

If specific identification is central to the application of the Cape Town convention, it would still not be necessary that all MAC equipment be specifically identified. UNIDROIT could make the Fourth Protocol applicable only to MAC equipment with the specific identification considered necessary for the Cape Town Convention. Manufacturers hoping for financing under the aegis of the Fourth Protocol would then alter their identification systems sufficiently to permit coverage. As before, the more restrictive the application, the lower the economic benefit.

C. Is MAC equipment international in nature?

Some legal reviewers have asked that the CEAL paper give more evidence that MAC equipment is international in nature. This is less an economic question than a question for legal reviewers of the Cape Town convention, UNIDROIT staff, the Governing Council and members of UNIDROIT. For an economist, "internationality" is a somewhat metaphysical question. Economists think of things that can be shipped across a border as international in nature (exportable), whether or not anyone actually exports them. In this world view, my backyard and the service of frying a hamburger are not exportable; but any piece of MAC equipment is.

Some reviewers have responded that such a definition is too broad and ask for more restrictive criteria. From the economic point of view, this reduces the benefits of the Cape Town convention without reducing its cost. There are few areas in private international law that suffer more from lack of uniformity than trade finance. Internationally-shipped goods are typically subject to at least three sets of laws of secured transactions: those of the exporting country, the importing country, and the country of registration of the ship or airplane. While in principle legal figures exist to address this problem, in fact loans secured by such property in international transit are highly risky.

National governments in industrial countries, the World Bank and other major development banks in low-income countries have invested hundreds of millions of dollars to set up state-run export-finance units to provide the financing that the private sector finds too risky. Since these state lenders do not actually reduce the risk, the way the Protocol would, they simply transfer the losses that the private sector won't bear onto the books of the government.

Why won't the private sector finance these transactions -- at the same that it finances domestically hundreds of billions of such equipment? Because there is no international legal framework for secured lending and there is often no second best network of economically acceptable national systems of secured lending.

In this broad category of issues the International filing archive for security interests is a key element. A single security interest could be filed for all the jurisdictions in which the property could possibly be, as opposed to filing multiple security interests in several jurisdictions. This is particularly important for MAC equipment which has an enormously high unit value and will rarely be shipped with third party financing unless it is always covered by a reliable security interest. This is a burden for all MAC producers, but is particularly heavy on small and medium scale producers and dealers who may not have much of a presence in the importing country.

1. International character: exports of new equipment

Much MAC equipment is made in one country and exported to another. Much of it is so specialized that one exporting country commonly imports from another exporting country. A substantial amount of MAC equipment crosses an international border at least once.

Even when exporting from a country with a working legal framework for secured lending, the exporter cannot use the equipment as collateral for a financing loan because the property will leave the jurisdiction with a working system. If the importing country lacks a system, then the exporter cannot maintain a security interest at the other end. If a manufacturer has a trusted dealer at the other end of this trade, the risk is reduced. Consequently, large manufacturers usually let some of their most trusted dealers have some equipment on consignment -- a little better than an unsecured loan in most jurisdictions but not much.

A manufacturer without a trusted dealer at the other end may wind up exporting to customers without them seeing the equipment; or holding the material in a bonded warehouse. These are very costly steps in the distribution chain, and typically reduce sales.

Accordingly, an international security interest in MAC equipment permits a cheap and effective security interest at every stage of the trade process. This reduces cost and the risk associated with export finance. Of course, it may be objected that this is not a unique feature of MAC equipment but is true of most exports, whatever the good. That is correct. And it is an economic pity that Cape Town cannot apply to all such goods. The fact that it applies to all traded goods, however, does not reduce the force of its application to MAC equipment.

2. International character: exports and re-exports of used equipment

Further proof of the international character of MAC equipment might follow if it is traded across international boundaries more than once. CEAL is presently examining

MAC exports from non-producing countries. These exports presumably are re-exports of used equipment, reinforcing the usefulness of international security interests in MAC equipment. CEAL is expanding the paper's trade data to cover this and will distribute it as a supplement when it is complete. As a qualitative indicator, one agriculture equipment manufacturer reported rising trade in used machines both from country to country and from continent to continent. Combines and high horsepower tractors are the most important examples

3. International character: cross-border use of equipment

Another possible demonstration of the international character of some MAC equipment might arise if MAC equipment crossed borders during normal use. As a model of this, consider the Aircraft Protocol to the Cape Town convention where airplanes and rail rolling stock that might routinely cross international boundaries in their basic function.

It should be noted, of course, that aircraft and rail rolling stock are not exclusively or even mainly involved in international operations. About 50% of US aircraft, for example, do not leave the United States. It is highly probable that the statistic is similar for other large countries such as China, Russia, Brazil, India, and Canada. That is, for most of the world's population.

It is highly probable that an even smaller fraction of rail rolling stock crosses international borders. Rail rolling sock faces the same incentives as aircraft to remain within national boundaries when located in a large country, a problem aggravated by different track gauges that can make some international borders impassable. So MAC equipment, from a technical perspective, exists in a continuum of equipment in terms of its international mobility. It is not intrinsically different from aircraft or rail rolling stock.

We have found no readily available data on cross border use of MAC equipment. We know that offshore drilling rigs routinely cross international boundaries in their typical operations. Grain combines travel thousands of miles within Argentina and the United States, following the harvest. One agricultural equipment manufacturer confirmed that the company supplies to several custom harvester operations in Russia that also operate in other CIS areas, much like the practice within the United States and Argentina.

4. International character: foreign sale of repossessed MAC equipment?

During CEAL's overseas legal reform projects, we always try to interview MAC equipment dealers. They, typically, understand clearly what, practically, can serve as collateral and what cannot. In these discussions, we ask about the speed of repossession, its cost, and the ease of resale. Several dealers told us that resale of specialized equipment even in small countries was not a problem. They reported that the regional sales representative for the manufacturer could arrange sales in other countries in the region, or

even to distant countries. We witnessed in Bolivia the sale of huge warehouse of mining equipment, repossessed from defaulting miners, sold to a buyer in Peru.

Such re-export of repossessed equipment is an important potential contribution of the Fourth Protocol to national secured transactions systems: it means that even in small countries, the right legal framework would make MAC equipment better collateral because once it was repossessed; dealers could resell it in the world market. This would give synergy to any domestic legal reforms. Once again, we have made inquiries of manufacturers and trade associations about the extent of these practices and will report this information when we get it.

D. Does MAC equipment depreciate more rapidly making repossession less valuable as a remedy?

The US Department of Commerce estimates the life of MAC equipment at 9 - 14 years. This is somewhat less than the service life of assets covered by other Cape Town protocols: aircraft at 12-20 years; railway rolling stock at 28 years; and space assets at 15 -20 years (Table 5).

However, a modern secured lending system, as envisioned in the Cape Town Fourth Protocol, would have repossession and sale at speeds and costs fully consistent with the maintenance of the value of MAC equipment as collateral. Motor vehicles have lower service lives of 5 - 15 years (Table 5). Nonetheless, they are routinely sold in the United States and Canada, financed with only the motor vehicle serving as collateral for a loan. In those countries, the national legal framework for using movable property as collateral meets or exceeds Cape Town standards.

Movable property with even shorter service lives can serve as excellent collateral. Some countries with otherwise unreformed legal systems for secured lending have warehouse arrangements wherein collateral can be repossessed and sold quite rapidly. One warehouse operator in Guatemala, for example, stored coffee that was securing a dollar loan made by a coffee importer located in the Netherlands. The loan bore an interest rate lower than the dollar interest rate on the debt of the government of Guatemala. Coffee, correctly graded and stored, has a determinate and hedgeable international price. When it can be repossessed and sold fast and inexpensively, it is excellent collateral. In this case, the bonded warehouse combined with collateral quality gave more assurance to lenders than the sovereign but unsecured guarantee of the government of Guatemala.

The Cape Town Protocol would also envision using the associated rights or chattel paper secured by MAC equipment as collateral for loans. Such receivables often have lives no greater than 3-5 years but nonetheless can serve as excellent collateral in the right legal environment.

Table 5 Service lives of equipment in Cape Town Protocols

Type of asset	Service life (years)
Aircraft	
Transportation by air, depository institutions, and business services:	
Before 1960	16
1960 and later	20
Other industries, aircraft:	
Before 1960	12
1960 and later	15
Aircraft -- state and local government	15
Space assets:	
Space programs -- missiles	20
Aerospace equipment -- non-defense, general government	15
Railroad equipment	28
MAC equipment	
Farm tractors, private, non-residential	9
Construction tractors, private, non-residential	8
Agricultural machinery, except tractors	14
Construction machinery, except tractors	10
Mining and oil field machinery	11
Agricultural machinery and equipment	9
Construction machinery and equipment	10
Memorandum: Other important mobile equipment	
Passenger and freight motor vehicles	
Trucks, Buses, truck trailers, and Automobiles	
Local and interurban passenger transit/10/	14
Trucking and warehousing; and auto repair, services, and parking/10/	10
Other industries	9
Trucks -- government, non-combat	6
Vehicles -- non-defense, government.	5
Vehicles -- US postal service	7
Motor vehicles -- state and local government	10
Motorcycles -- state and local government	10

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Table 3.—BEA Rates of Depreciation, Service Lives, Declining-Balance Rates, and Hulten-Wykoff Categories, Available at http://www.bea.gov/scb/account_articles/national/0797fr/table3.htm#fn11

E. How is MAC equipment now financed?

Some readers felt a need for more detailed information on the extent to which financing of MAC equipment is provided by domestic (i.e. in-country) financial institutions or international institutions. We have little comprehensive data on this question. We are still analyzing the US data but, because of the advanced state of secured lending in the United States, the US data will be only a rough guide.

We can set out some partial data and qualitative findings that draw mainly on CEAL's experience in interviewing dealers and user associations in about thirty low-income countries (Table 5).

Private national and international lenders provide most of the world's MAC equipment credit financing. Private lenders are most active in countries where national laws permit the economically effective use of MAC equipment as the sole collateral for a financing loan. Sometimes these countries have national legal regimes that include the main principles of Cape Town; sometimes they have devised alternative legal regimes that seem to give about the same economic impact.

For other countries, private lenders usually will not finance MAC equipment when the borrower can offer only MAC equipment as collateral. This includes domestic private lenders as well as international equipment finance companies. Those companies typically will not accept paper from countries where the legal framework for secured lending is weak. They will provide some limited ostensibly secured advances to well-trusted dealers, but these loans really operate under the logic of unsecured loans. That is, they are based on long relationships of trust and are typically not scalable depending on the amount of collateral involved.

In these countries, purchasers self-finance or draw on a more limited system of government lenders and government guarantors. These state-run lenders and guarantors, in turn, are sometimes refinanced or augmented by funds from international public lenders and donors (multilateral development banks, the IMF, foreign aid agencies). As a practical matter, those public and publicly-guaranteed financing sources typify most low-income countries.

Export credit agencies (ECAs) operate in the middle range of these groups. They have limited penetration in the highest income OECD countries because their credit terms are usually less attractive than the most efficient private lenders. They also have limited penetration in countries with the least legal development because the governments of such countries often cannot give a credible sovereign guarantee for the ECA funding.

Except in cases of massive financial disorder, the absence of private local or international financing for MAC equipment usually demonstrates the existence of economic problems in the legal framework for lending secured by MAC collateral. Since public lenders face the same legal framework and the same collection problems as would private lenders, public lending programs cannot effectively substitute for a good legal

framework with private lenders. The public lending programs tend to be interrupted by periodic financial stringency and sometimes collapse. Instead of being well-funded profitable private activities, the weak legal framework forces public equipment financing to vie for scarce public funds against other important public needs.

Table 6 Availability of credit for MAC equipment, preliminary qualitative estimate

[$ US billions, 2011 data and estimates]

Region	GDP	Estimated stock of MAC equip-ment	Can MAC equipment serve as sole collateral for a private loan in current national law?	Sources of existing credit secured by movable property				
				Private domestic	Private foreign	Local public lenders/guarantors	Export credit agencies	Multilateral development banks, IMF, foreign aid
World	70,012	1968						
Advanced economies	44,912	1262						
United States, Canada, New Zealand, Romania	15,094	424	equal to or better than Cape Town	most		very little	very little; not competitive	Romania possible; otherwise no
Other advanced economies not in need of reform	24,028	675	ad hoc but economically effective reform	less than US, more than others		more than US, less than others	more than US, less than others	None
Less advanced economies In need of reform	5,790	163	no reform or economically ineffective reform	very little		more than local private lenders	more than local private lenders; rely on borrowing government guarantee	some; limited by income of borrower; IMF may refinance state lenders
Emerging and developing economies	25,100	706	economically ineffective finance of movable property; falls short of Cape Town	less than 1% of equipment		greater percentage than US	often off cover	major source of external funding; IMF and MDBs often refinance state lenders

Source: CEAL estimates and IMF**.** World GDP data from International Monetary Fund, ***World Economic Outlook***, available at http://www.imf.org/external/pubs/ft/weo/2011/02/weodata/download.aspx. Credit impact of reform based on discussion of Tables 2 and 3, this paper. Other derivation as discussed in text.

VI. Substitutes for Cape Town or a legal framework for secured lending?

Can we get the same results as the Fourth Protocol with different strategies? At the same cost? Within the same time period?

The legal framework for secured lending is a great intellectual achievement with enormous economic impact. Many substitutes have been offered, but none that are economically equivalent. This section discusses several approaches sometimes offered as alternatives to reforming this legal framework. None of them is as economically effective as UNIDROIT's proposed Fourth Protocol; none of them is so cheap to execute.

A. Self-finance?

Could the firm not simply save until it had accumulated the purchase price of the equipment? This is the de facto practice in most low-income countries today.

They can and they will self-finance; indeed, most of them must self-finance. However, when self-financed, projects take considerably longer to undertake than they would take in a system with secured lending. That extra time exacts a heavy price in lost GDP.

Suppose the firm in the example that could not get credit secured by the movable property in the planned project. Suppose instead, though, that the firm was above were able to reinvest its earnings at the 15% return on invested capital earned by the project (assuming the firm takes the unsecured loan and nets 15% on its initial capital of $53 thousand). Investing its capital of $53 thousand in smaller versions of the project, it would take about 17 years to accumulate enough capital to fund the full $1.07 million project. During that period, the firm's profit is lower, as is the project's effect on GDP.

Even this calculation is optimistic. The firm may not be able to earn the project rate of return on an investment that is only a fraction of the full project size. Earning the 15% return might require the full $1.06 million. For example, the project might require a single machine of that value, or a fleet of, say, mining trucks necessary to bid on a contract, In such a "lumpy" project, the firm could not earn the 15% project return on anything less that the full purchase price. Suppose instead, then, that the firm deposited its funds with the lender in the example (Table 2). That particular lender pays 1% interest on term accounts. At that rate of interest, the firm would require 70 years to save the funds to undertake its $1.06 million project. The country would wait 70 years for the increase in GDP to materialize.

Self-finance retards economic development. It slows the shift of capital from low-return uses to high return uses, the central task of economic growth everywhere.

B. Unsecured lending?

In place of a Fourth Protocol, could we improve access to credit by using unsecured lending? Many such improvements have been proposed: credit bureaus and their legal frameworks, credit information systems, microcredit, and petty claims courts are a few promising areas being promoted by multilateral development banks and aid agencies.

While these improvements are desirable, unsecured lending cannot ever provide the same level of assurance as a legal framework for secured lending. The economic gain from secured lending emerges mainly from the logical consistency of the priority framework and the existence of an inexpensive and readily accessible filing archive where lenders can easily and cheaply establish and determine first-to-file priority.

Both secured and unsecured lenders have the legal right to initiate proceedings to seize and sell the property of the debtor in default. For the secured lender, the difference is that the first lender can readily confirm when making the loan that no other lenders have a higher priority. At the same time, the original lender knows that subsequent lenders cannot dilute the first lender's claim against the property. We know this effect is powerful from examining unreformed jurisdictions with mortgage priority and registry laws that function for real estate. Even where it may take years to take possession and sell real estate securing loans in default, private lenders will still offer better loan terms for real estate loans than they offer for unsecured loans. This shows that they consider loans secured by real estate as less risky than unsecured loans, even when execution times might be similar.

A clear framework for setting first-to-file priority and a functioning archive system for practically establishing that priority is missing from the logic of unsecured loans. These loans always face the risk of dilution of borrower debt servicing capacity by the subsequent loans. Improvements in the legal framework for unsecured lending are often worth pursuing because they pay back more than they cost. However, an unsecured lending system cannot match the legal framework for secured lending in providing access to large amounts of credit at lower interest rates and providing a system where financing can be scaled to project size because total loan size is linked to the amount of collateral. Nothing compares in supporting rapid economic growth.

C. Leasing?

Can't this problem addressed by the Fourth Protocol be solved more simply with a leasing law?

Financial leasing will be one of the legal forms for a security interest in MAC equipment under the Fourth Protocol. Leasing will work better in previously unreformed countries that adopt the Fourth Protocol. However, without the Fourth Protocol, a leasing law cannot by itself solve the financing problems facing MAC producers and users.

In a few jurisdictions, a full legal framework for secured transactions is embodied in its leasing law. However, typically, leasing works in low-income jurisdictions by the lessor retaining title to the equipment. Financial lessors in these jurisdictions use the title to prove that the leased property is theirs, enabling them to dispose of the collateral for the financial lease without an expensive and time consuming court-administered sale. In most low-income jurisdictions, however, this process will work for property where the law provides title -- typically vehicles operating on public roads, airplanes, and ships. MAC equipment will usually not have such a title. Lessors can offer contractual title instead but often courts will not recognize such non-traditional titles. Sometimes lessors use the same strategy to get judicial orders for rapid repossession. However, typically, leasing does not solve the problem of repossession. Moreover, as jurisdictions grow in judicial sophistication, these financial leases are recognized as secured loans and the unreformed secured lending legal framework is imposed on them.[16] Any defects in the legal system for secured transactions are then passed to the financial leasing framework.

The International Finance Corporation (IFC, member of the World Bank group) has supported leasing reform in many low-income countries. In examining these operations, CEAL has not found that they spearhead overall secured transactions reform. The IFC operations restrict themselves to legally titled goods, are assisted somewhat by operating in the shadow of the World Bank/IMF preferred creditor arrangements, and otherwise demand guarantees other than the movable property that is the object of the financial lease before fully qualifying a lender. All leasing operations CEAL has interviewed in unreformed countries have welcomed the full reform of the system for treating leases as security interests in movable property, reflecting their incomplete status as full reforms in and of themselves.

D. Covenants?

Can't lenders write covenants into otherwise unsecured loan agreements to reduce risk? For example, Lender A and a borrower might agree that the borrower will first pay Lender A, even though no law sanctions that priority system and no filing archive exists in which to practically demonstrate the priority of Lender A's loan. Can such voluntary covenants replace a legal framework for secured lending?

Such a covenant would be of little value in reducing lender risk. The threat to the lender lies in claims by other lenders and creditors, third parties who are not bound by the covenant. Such a covenant would give the lender an additional claim for damages on the grounds of breach of contract, but that is likely to be worth little more when confronting a defaulting debtor whose ability to service the underlying debt is in question.

E. State lenders, state guarantees?

Can the problems created by faulty legal frameworks for secured transactions be sidestepped by creating government lending and guarantee programs that finance

[16] Efforts by the World Bank's International Finance Corporation to promote financial leasing its financial support programs suffer from these problems.

equipment at the same terms as those offered by private secured lenders without having such a legal framework?

This is the most common attempt to solve the equipment finance problem in low-income countries, and some high income countries, too. Equipment is financed by government banks or by private banks that receive loan guarantees from the government.

However, the equipment financing problems that exist without a legal framework for secured lending cannot be addressed by government loans and guarantees, or loans from state-controlled or state-subsidized lenders. Of course the government can issue a loan or guarantee at the same repayment terms as would a private lender in a legal framework that supports secured lending. However, since the government lending program does not reduce the risk of unsecured or poorly secured lending; government programs will simply lose what the private sector believed it could not collect, which led it not to lend in the first place. Such government programs simply transfer the risk to the citizens at large. These money-losing state programs are often refinanced by multilateral development banks, foreign aid agencies, and advances from the International Monetary Fund. However, refinancing them also does not reduce the risk or size of their loss. That merely transfers the risk from the domestic taxpayers to foreign supporters of these development banks and aid agencies.

State lenders in industrial countries, especially when correctly budgeted for the risk of their portfolios, weigh carefully the quality of collateral. The major export credit agencies, for example, give a discount for financing done under the framework of Cape Town's Aircraft Protocol (Annex 1).

Loans and guarantees issued by governments of low-income countries in environments where movable property cannot serve as collateral face an additional problem. Equipment finance is typically denominated in a major trading currency -- dollars, sterling, euros, and yen -- and so are the loan contracts. In a system with a good secured lending system, the lender has collateral that can be sold in the world market at a determinable and relatively stable price in one or more of these currencies. So the lender faces little currency risk in making the loan. However, the sovereign guarantee of the government of a low-income country for payment in a key currency typically is worth no more than the trading value of its foreign currency bonds, which may be far from par. So an equipment seller will often prefer the collateral of the machine to the guarantee of the government of a low-income country.[17]

When state lenders operate in the absence of a strong legal framework for secured lending, the institutions tend to have chronic financial problems, fund projects insufficiently, and must compete for resources with other, often more worthy, government programs. Reforming the legal framework can enhance the operation of these institutions. More important, having private sector lenders operating within a strong legal

[17] Of course, a sovereign guarantee in the home currency is relatively valuable because the foreign government has a monopoly right to print the home currency and, except for strange conditions, can pay home currency denominated debts. However, we have found few large equipment sales denominated in the home currencies of low-income countries in CEAL's overseas interviews.

framework for secured lending, changes equipment finance from a burden on the government to a vibrant private industry.

F. Domestic legal reform?

As noted above, as a logical matter, even a complete reform of domestic legal systems would not eliminate the economic benefits from the Fourth Protocol: these would remain from their application to MAC equipment in being traded internationally, filing notices of security interests in a single filing archive, and to cross border uses of MAC equipment.

There is another reason not to delay a Fourth Protocol on the grounds that domestic legal reform can do the job: very few reforms of legal systems for secured transactions have succeeded. This failure occurs despite the many efforts of UNCITRAL, the multilateral development banks, donors, and NGOs. The bottom line for secured financing laws -- whatever their approach, structure, or legal heritage -- is not encomiums from participants, reviewers, and observers. The bottom line is whether economic actors use the legal framework to provide security for their financial operations. Examining data from the filing archives of reformed countries, the answer, sadly, is that except for Romania, most have negligible filings relative to their movable property and are not using their new legal frameworks for financing. So UNIDROIT's effort could not replace the reform of security interest laws, but it might help pave the way for them.

VII. Filing archive versus registration under the Fourth Protocol

The Fourth Protocol would propose a notice filing archive -- an online database in which a notice of the existence of a security interest would be filed. This is not a registry that conveys rights -- like the real estate registry or the motor vehicles registry. It will not provide evidence of ownership; it will not require notarizations, document checks by registrars, or the providing of evidence of the existence and validity of the security interest.

A notice filing system permits a potential lender to search the notice filing archive with Google-like search devices for a *notice* of a security interest. If one is found, the searcher may ask the borrower for information about this security interest, including the borrower's permission to contact the named creditor for details. Whether or not the lender and borrower agree to exchange this information is up to them. Such a notice filing system exists in all the 50 of the United States, all Canadian provinces, and in some reformed countries like Romania.

A well-designed notice filing system can operate very inexpensively and with little inconvenience to the users. The filer (creditor, dealer, leasing company, or other) goes online, enters a password, enters the identifying serial numbers of the equipment, identifies the debtor, and indicates that the creditor has a security interest in that property. It is no harder than buying something from Amazon or Ebay. CEAL has a model archive set up online at http://ceal.org/marc/ that gives an idea of the simplicity of these systems.[18]

The Romanian system charges about $20/filing; it runs at a profit. Fees in most US states are considerably lower -- for example, Colorado charges $1 per filing -- but we do not know if they are subsidized.

Notice filing systems are simple and cheap. They are in the interest of the entire community of MAC equipment users. In jurisdictions where local registration is presently not possible, the proposed notice filing system is central to permitting the transaction. Even where local registration is now possible, creditors still gain. Large manufacturers and their financing affiliates, even those who have already invested in local contacts to permit local registration, will see their registration costs decline; get a reliable and inexpensive way to search for security interests; and receive a security interest is enforceable under the Cape Town Convention. Smaller manufacturers receive the same benefits. In addition, they save the cost of developing local reliable contacts for

[18] In the course of discussions of this paper, some outlandish estimates of the cost of the filing archive have appeared. To help move the debate ahead, CEAL offers to set up the CEAL model archive for the Fourth Protocol, at no upfront cost, the purchase price to be paid from future filing fees. CEAL offers this for $150,000, confident that many qualified providers will materialize below that price, including the information technology departments of many of the manufacturers and trade associations in the MAC industry. In the surprising event that this does not occur, CEAL will deliver the archive at these terms.

undertaking local registration. That also means they are more likely to get international financing in place of local state banks and leasing companies, which often require political connections.

Some reviewers have forwarded some reports that some manufacturers and dealers have expressed concerns that the Fourth Protocol would add another international layer of expensive registration costs to any existing state and national registrations. For the reasons set out here, these concerns are unfounded.

A. Would a Fourth Protocol notice filing archive displace domestic registration systems?[19]

Some readers expressed concern that the protocol might be aimed at substituting for a domestic registration regime.

We consider here only the economic aspects of this question. As an economic issue, the Fourth Protocol cannot fully substitute for domestic registration or notice filing systems because its scope of coverage is only a small fraction of the movable physical capital stock. It is a smaller fraction of the entire physical capital stock plus financial instruments based on that capital stock, which in turn comprise collateral for other loans.

The Fourth Protocol includes a filing system that would be a partial substitute for a domestic filing archive. If all the countries in the world had similar laws governing security interests, if they were all equally effective, if all had equally effective filing archives, and if filing simultaneously in several hundred filing archives were as cheap as filing in one, then no economic advantage would arise from the filing system in Fourth Protocol. But these conditions are not met, so there is an economic advantage from the Fourth Protocol.

For most countries there cannot be competition between a domestic registry and the international notice filing archive because their present laws do not envision filing a security interest in movable property. Even where the filing system envisioned in the Fourth Protocol would, in principle, compete with the activities of domestic filing archives, this competition will be substantial only among a few countries with the most advanced systems: Canada, the United States, New Zealand and Romania. In the remaining countries, the pledge against movable property has so many problems that private lenders will not use it. For example, among Civil Code countries, the Pledge against Cattle exists in the legislation of Uruguay and Argentina. However, it is used only by government-run banks.[20] Private lenders, in interviews, would not give loans secured by it; private farmers, in interviews, confirmed this. For common law countries, a recent

[19] This paper uses the term "filing" rather than "registration". "Filing" refers to filing a notice of the existence of an agreement. "Registration" often means depositing a copy of the agreement with the registry, along with some kind evidence of its authenticity, and sometimes even checking of the proofs of authenticity by staff of the registry. For a variety of reasons, modern secured lending systems use notice filing, not registration. For a discussion of these issues, see Fleisig, Safavian, and de la Peña.

[20] In Uruguay, chiefly *Banco República Oriental de Uruguay*; in Argentina, chiefly *Banco de la Nación Argentina* and provincial development banks.

investigation of Nigeria, a country of more than 100 million people, revealed no security interests against movable property filed in its central registry. These experiences are common among low-income countries. So the Fourth Protocol will not replace existing registry business; nor will the Fourth protocol work in the absence of its own central registry. So displacement of existing registries, as an economic issue, is likely to be trivial.

In many countries, the existing registries are politically powerful or have legal authority that may extend to hitherto unused systems of filing. If the signatory country wishes, there should be no technical problem in hooking up the local registry to the internet filing system. Equally, there should no problem in collecting a filing surcharge at the central registry that will be paid to the national registry. Each such increase in cost reduces the economic benefit.

VIII. Overall economic assessment of the Fourth Protocol as a UNIDROIT project

The Fourth Protocol, in principle, could increase the GDP of low-income countries by about $1 trillion - $2 trillion. Their GDP will rise because expanded use of MAC equipment permits producing more mining, agricultural and construction output. It could also increase the GDP of MAC equipment-exporting countries by $1 trillion. GDP will increase there because greater exports of MAC equipment, and the subsequent ripple effects from those exports, will increase total demand and overall GDP in the presence of recession-induced slack capacity.

Such numbers exist only in the dreams of development institutions. For example, the World Bank with its portfolio of $300 billion in loans[21] considers its performance acceptable if it earns 12% overall return -- generating about $36 billion/year in GDP for low-income countries -- and even that before they pay interest on the World Bank loan. Most observers would be surprised if other MDBs and aid agencies did better.

If UNIDROIT's Fourth Protocol could do this, it would be a mighty achievement. From an economic point of view, these gains are enormous relative to the small amount of resources absorbed by UNIDROIT. Moreover, this reform represents a pure gain to the world that results from permitting mobile equipment, by serving as collateral, to reduce the risk associated with unsecured lending -- these gains to purchasers and producers come at no-one else's expense.

Whether UNIDROIT's Fourth Protocol actually has this economic impact, however, will depend on several factors. First, how closely the Fourth Protocol can mirror the full reform of legal systems for secured lending for MAC equipment in the most legally advanced secured transactions systems. Second, the extent of effective adoption in low-income countries. All the supply-side increase comes there. The demand side effects on industrial country GDP will only materialize if the projected increase in exports to the low-income countries occurs. Adoption only by the high income industrial countries will produce no economic gain.

21 http://issuu.com/world.bank.publications/docs/annual_report_2012_en?mode=window&backgroundColor=%23222222

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Annex 1. How the Fourth Protocol might lower export credit agency loan and guarantee rates

Sometimes the export credit agencies (ECAs) of the OECD-member countries charge rates that vary with the quality of the collateral. OECD ECAs offer a standard and automatic 10% discount on aircraft financing to signatories of UNIDROIT's Cape Town convention (the "Cape Town Discount").

These ECAs may also offer, at their discretion, a discount for good collateral in transactions not qualifying for the Cape Town Discount. This note estimates this discount, as a percentage of the loan, at 0 - 9 bp annually.

This note further suggests that no economic reason exists for denying MAC equipment a discount at least as large as that offered for aircraft, so long as the MAC Protocol provides the same or better legal protection to lenders as does the Aircraft Protocol.

Finally, the note asks why both discounts appear considerably lower than market discounts for well-secured loans. These discounts amount to 500-650 bp below interest rates for otherwise similar unsecured loans, when undertaken in jurisdictions whose laws and institutions permit mobile equipment to serve as economically effective collateral.

As the proposed Fourth Protocol aims at establishing such a financing environment, supporters of the Protocol may wish to discuss further revisions of rates with the OECD and their ECAs the regulatory framework governing such discounts for well-secured official export credit finance.

A. The "Cape Town Discount" for aircraft export finance

OECD export credit agencies, including the Export-Import Bank of the United States, have agreed to a schedule of minimum premium rates (MPRs) for asset-based lending using as collateral aircraft frames and engines. These MPRs vary with country and borrower credit rating (Table 7). For signatories to the Aircraft Protocol of the Cape Town convention, the Aircraft Understanding of 2012 offers a 10% discount from these MPRs. CEAL estimates that these discounts range from 14 to 26 basis points annually or 77 to 147 basis points on an "up-front basis (In Table 7, the CEAL estimate appears in the rightmost two columns).

The OECD agreement permits signatory ECAs to apply a discretionary maximum discount for an asset-based security of .25% (Table 8). This discount is taken off the buyer risk portion of the exposure fee (which is an upfront rate rather than annual rate) and not from the entire exposure fee.

Table 7 OECD export credit minimum premium rates and estimated Cape Town Discount

				CEAL Estimate Cape Town Discount	
Risk Category	**Risk**	**Spreads**		**Spreads**	
	Classification	**Per Annum**	**Up-Front (%)**	**Spreads**	**Up-Front (%)**
		(bps)		(bps)	
1	AAA to BBB-	137	7.72	13.7	0.77
2	BB+ and BB	184	10.44	18.4	1.04
3	BB-	194	11.03	19.4	1.10
4	B+	208	11.85	20.8	1.19
5	B	234	13.38	23.4	1.34
6	B-	236	13.50	23.6	1.35
7	CCC	252	14.45	25.2	1.45
8	CC to C	257	14.74	25.7	1.47

Source:: Organization for Economic Co-operation and Development, Trade and Agriculture Directorate, Participants to the Arrangement on Officially Supported Export Credits, ***Arrangement on Officially Supported Export Credits***, 1 September 2012", Table 5, page 76, (TAD/PG(2012)9; Paris: OECD, 27-Aug-2012). Available at http://www.oecd.org/tad/exportcredits/theexportcreditsarrangementtext.htm . Columns labeled "CEAL Estimate" apply the 10% Cape Town Discount to the MPR as explained in the notes to the original table.

Table 8 OECD export credit enhancement factors		
Credit Enhance-ment	Definition	Maximum CEF
Assignment of Contract Proceeds or Receivables	In the event a borrower has contracts with strong off-takers, whether offshore or local, a legally enforceable assignment of the contract provides rights to enforce the borrower's contracts and/or make decisions under major contracts in the place of the borrower after a default under the loan. A direct agreement with a third party in a transaction (a local government agency in a mining or energy transaction) allows Lenders to approach a government to seek remedies for expropriation or other violation of contractual obligations related to the transaction. An existing company operating in a difficult market or sector may have receivables related to the sale of production with a company or companies located in a more stable environment. Receivables would generally be in a hard currency but may not be the subject of a specific contractual relationship. Assignment of these receivables could provide asset security in the accounts of the Borrower, giving the Lender a preferential treatment in the cash flow generated by the Borrower.	.1
Asset Based Security	Control of an asset shown by: (1) mortgage on very mobile and valuable piece of property and (2) property that has entire value in itself. An asset based security is one that can be reacquired with relative ease such as a locomotive, medical equipment or construction equipment. In valuing such a security, the ECA should take into consideration the legal ease of recovery. In other words, there is more value when the security interest in the asset is perfected under an established legal regime and less value where the legal ability to recover the asset is questionable. The precise value of an asset-based security is set by the market, with the relevant "market" being deeper than a local market because the asset can be moved to another jurisdiction. NOTE: The application of an asset based security credit enhancement applies to the buyer risk, where the asset based security is held internally within the country in which the transaction is domiciled.	0.25
Fixed Asset Security	A fixed asset security is most typically component equipment which may be constrained by its physicality such as turbine or manufacturing machinery integrated into an assembly line. The intent and value of the fixed asset security is to provide the ECA with more leverage over the use of the asset in recouping losses in the event of default. The value of a fixed asset security varies dependant on economic, legal, market and other factors.	0.15
Escrow Account	Escrow accounts involve debt service reserve accounts held as security for the lenders or other forms of cash receivable accounts held as security for the lenders by a party not controlled or sharing common ownership with the buyer/obligor. The escrowed amount must be deposited or escrowed in advance. The value of such security is nearly always 100% of the nominal amount in such cash accounts. Permits greater control over use of cash, ensures that debt is serviced before discretionary spending. NOTE: The application of an escrow account credit enhancement applies to the buyer risk, where the escrow account is held internally within the country in which the transaction is domiciled. Cash security significantly diminishes the risk of default for the covered installments.	Escrowed amount as % of credit up to a maximum of 0.10
Source: see source cited for Table 7, p. 131.		

To compute the effect of the CEF on the minimum premium rate, the CEF must be worked through the OECD formula. CEAL's understanding of that process appears in Table 8, showing potential savings from collateral not subject to the Cape Town Discount at 0-9 basis points over the life of the loan. These differences are substantially smaller than the Cape Town Discount. No economic reason would exist for this difference in treatment. This is an obvious point for discussion between exporters and their ECAs. ECA treatment of the MAC protocol in the same way as aircraft would increase the economic impact of the MAC protocol.

B. Market based discounts for collateral'

The discounts offered for the Cape Town Discount and for asset-backed security seem smaller than market discounts. In the United States, the legal framework for asset backed equipment loans is well developed. There, for example, one lender offers a 3 year unsecured loan with an interest rate of 6.99%. The same lender will make a 3 year secured loan to the same borrower for 1.99%, a discount of 500 bp for good collateral, such as a car. The discount rises with the maturity of the loan. The same lender will make a five year loan, unsecured, at a rate of 8.99% or a five year loan secured by a car at an interest rate of 2.49%, a discount of 650 basis points. The only restriction on one loan compared to the other is that the unsecured loan cannot exceed $35,000 while the loan secured by a car can be any size so long as the loan does not exceed 95% of the car value. Both loans would face the same limit expressed as the ratio of the borrower's monthly payment to the borrower's monthly income.

Most commercial lenders in the United States and Canada have similar rate structures. From an economic perspective, a strong MAC protocol that changes the expected risk of equipment finance should be reflected in the relative financing rates charged by the ECAs. For some countries that will affect the possible portfolio size of the ECA relative to its budgetary impact. For the Export-Import Bank of the United States, for example, closer alignment of rates and risks would permit them to lend more with the same expected risk and budgetary impact.

Table 9 OECD Export Credit Minimum Premium Rates and CEAL estimate of maximum effect of asset based credit enhancement factor (CEF)

Risk Category	Risk Classification	Elements of Asset-based CEF						Asset based CEF?				Potential savings from improved CEF	
								NO		YES			
		C_{in}		HOR	QPF		PCF	CEF		CEF=.25			
		min	max		min	max		min	max	min	max	min	max
1	AAA to BBB-	0	0.630	12	0.9965	1.0035	0	0	0	0	0.00000	0	0.00
2	BB+ and BB	0	0.675	12	0.9935	1.0065	0.0034	0	0.03	0	0.02061	0	0.01
3	BB-	0	0.720	12	0.9850	1.0150	0.0049	0	0.04	0	0.03216	0	0.01
4	B+	0	0.810	12	0.9825	1.0175	0.0164	0	0.16	0	0.12157	0	0.04
5	B	0	0.621	12	0.9825	1.0175	0.0366	0	0.28	0	0.20797	0	0.07
6	B-	0	0.480	12	0.9800	1.0200	0.0588	0	0.35	0	0.25901	0	0.09
7	CCC	0	0.271	12	0.9800	1.0200	0.086	0	0.29	0	0.21390	0	0.07
8	CC to C												

Derivation: For a country classified in Country Risk Categories 1-7, MPR is given by the formula MPR = { [(a_i * max (PCC, PCP) / 0.95 * HOR + b_i) * (1-LCF)] + c_{in} * (PCC/0.95) * HOR * (1-CEF) } *QPFi * PCFi * BTSF. The contribution of the collateral enhancement factor is given, therefore, by the term c_{in} * (PCC/0.95) * HOR * (1-CEF) } *QPFi * PCFi * BTSF. In this formula c_{in} = buyer risk coefficient for buyer category n (the range of values is taken from the OECD reference; HOR = horizon of risk, taken to be the 12 year maturity of the typical loan; PCC = commercial (buyer) risk percentage of cover, set for convenience at .95; CEF = credit enhancements factor, set at 0 and .25 to illustrate the possible effect of coverage of Fourth Protocol merchandise as having the highest collateral rating. The remaining values are set from ranges shown in the OECD tables. These include QPFi = quality of product factor in country risk category i (i = 1-7);PCFi = percentage of cover factor in country risk category i (i = 1-7); BTSF = better than sovereign factor; LCF = local currency factor.

Source: Organization for Economic Co-operation and Development, Trade and Agriculture Directorate, Participants to the Arrangement on Officially Supported Export Credits Arrangement on Officially Supported Export Credits, ***Credits Arrangement on Officially Supported Export Credits***, 1 September 2012, Annex VI, "Calculation of the Minimum Premium Rate", pp. 118-121, (TAD/PG(2012)9; Paris: OECD, 27-Aug-2012). Available at http://www.oecd.org/tad/exportcredits/theexportcreditsarrangementtext.htm

Annex 2. Costs and benefits not estimated in the paper

A. Secondary GDP effects of expanded use of MAC equipment

Expanded use of MAC equipment in low-income countries will create many other profitable investment opportunities in low-income countries. These may appear first in sectors that supply other inputs to businesses that use MAC equipment and, as well, to sectors that use as inputs business that use MAC equipment. These effects would continue to spread beyond these areas of immediate impact. These new investment opportunities will produce more output, making further contributions to economic growth. The paper does not measure these secondary effects.

B. Chattel paper

Inventory of MAC equipment and chattel paper secured by MAC equipment are covered by the possible Fourth Protocol provided inventory and chattel paper come within the Convention's definition of "associated rights". Basically, the provisions enable a creditor (not debtor) to assign rights to payment/performance ("associated rights") if the obligations giving rise to the rights to payment/performance are secured against an object falling within the scope of the Convention. This is spelled out in the extract from the Official Commentary to the Cape Town Convention, dealing with Chapter IX of the Convention (on associated rights). That is, under present interpretation any paper itself secured by MAC equipment (roughly, "chattel paper") could itself serve as collateral under a possible Fourth Protocol.

As the entire $600 billion increase in equipment sales is predicted to occur only because of new secured financing enabled by the Fourth Protocol, the minimum initial increase in chattel paper would be approximately 80% to 95% of these sales or $480 - $570 billion. This about equals one year of all new equipment based financing as reported by ELFA. More important in terms of freeing up the balance sheets of dealers and MAC users is the refinancing of used equipment. As noted above, there is about $2 trillion in that equipment currently in use.

CEAL is still examining the possible impact on GDP of this increase in chattel paper financing.

C. Trade finance

The paper does not estimate the benefits arising from reducing the cost of trade finance by providing a continuous security interest in MAC equipment from the time it leaves the country of export to the time it arrives in the dealer in the importing

D. Reducing multiple registrations, inscriptions, and filings

The gain from having a single notice filing archive that replaces numerous local registrations is not included in the estimates of economic gain shown in the paper.

Annex 3. Defining MAC equipment -- an example

The main text suggests identifying MAC equipment by referring to the internationally-agreed classification of traded goods for customs purposes. This classification is set out by the World Customs Organization in its harmonized commodity description and coding system, popularly known as the Harmonized System (HS), which came into effect in 1988.[1] A sample list, showing only tractors used in agriculture, appeared in Table 4 in the main body of the paper.

A. Advantages of using HS

To identify MAC equipment, the Fourth Protocol might simply refer to the WCO classifications. It could specify the list of covered MAC equipment at whatever level of detail it chose: 2 digits, 3 digits and upwards.[2]

Or it could use such a list as a starting point. In that strategy, UNIDROIT might add some particularly suitable pieces of equipment that might be missing; it might remove some that seemed particularly unsuitable. In this reorganization, it could continue to use the HTS codes. That would permit UNIDROIT to control the list at the same time that it did not require equal expertise in the nature of all the equipment therein. As an economic issue, of course, the broader the list, the greater the economic gain.

Administratively, this is a simple and appealing solution. World equipment manufacturers, exporters, and importers have already familiarized themselves with these HTS schedules and considered how to organize their equipment in these codes. That is because the classification of a product will affect its tariff treatment. For these reasons, the Fourth Protocol can simply and unambiguously inform signatories what equipment it covers.

B. Details of items in MAC equipment appearing in HS schedules

Staff of the US Department of Commerce has kindly suggested items that might reasonably appear in compilations of MAC equipment. Their list here starts with the North American Industry Classification System (NAICS)[3] code for mining, agricultural, and construction equipment. However, UNIDROIT may freely choose any other classification or combinations thereof (e.g. European Union, United Nations); these classifications may be combined in any way UNIDROIT thinks appropriate. Moreover, it may change parts of the list without becoming experts on all elements of the list. For example, if UNIDROIT wishes that the convention not cover garden lawmowers, it may

[1] Available at http://www.wcoomd.org/en.aspx

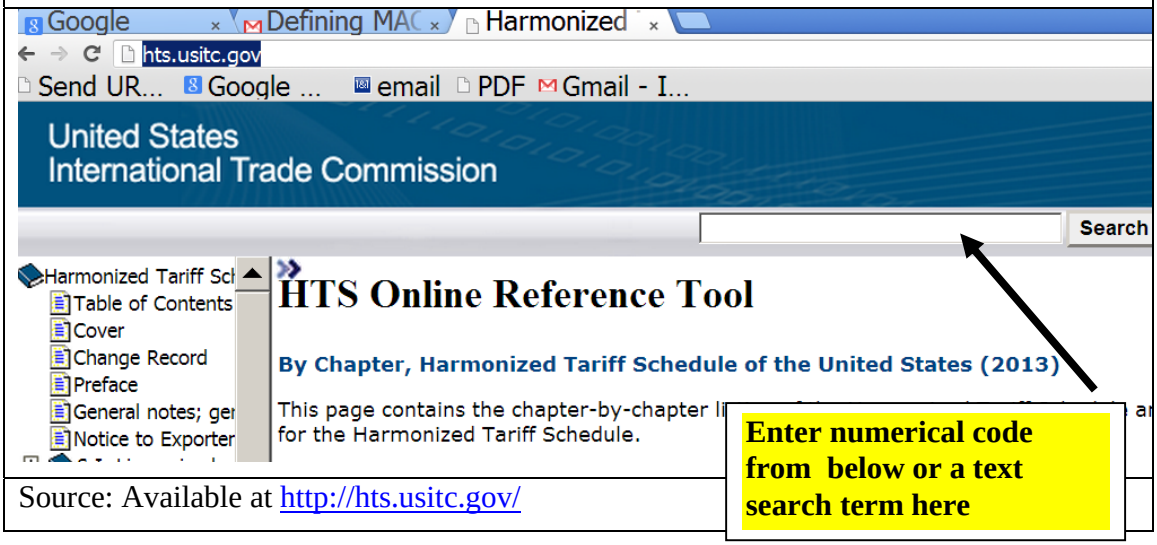
[2] I am obliged for this suggestion to Padraic Sweeney, (Supervisor (Acting), Machinery Team, Office of Transportation and Machinery, International Trade Administration, U.S. Department of Commerce), and to him and his colleague, Kit Rudd, for help in assembling the list

[3] Available at www.census.gov/eos/www/naics/

delete that code. Moreover, it may delete that code without even knowing, for example, exactly what is a "Track-laying tractors, Suitable for agricultural use, with a net engine power of less than 93.3 kW " as set out by code 8701.30.1015.

The following sections show the HS codes for those items. To see the full detail of what that code includes, the reader may enter any of these the codes in the search window at this web site http://hts.usitc.gov/ (see Table 10).

Table 10 How to access HS codes



Source: Available at http://hts.usitc.gov/

C. A suggestion about what constitutes MAC equipment and how to convert that list to items appearing in the HS schedules

The itemization prepared by US Commerce Department staff starts with the NAICS codes for MAC equipment and converts them HTS on the USITC Dataweb. This provides eight-digit conversions for the HTS counterpart, from which they derive six digit codes. The result is a unique list of six-digit level HTS codes derived from the above NAICS list.

The reader may use the codes below in conjunction with the web site given above to generate detailed lists of MAC equipment. For example, entering the code "870130" from the list below will produce an itemized list of 19 varieties and elements of "Track Laying Equipment". Text search terms may also be used: the table in the body of the text was generated by entering the word "tractor". CEAL uses the ITC website because it can be accessed free, in contrast to the WCO website which requires a membership; however, the classifications are largely the same.

While this system is complex to non-user lawyers and economists alike, the manufacturers, importers and exporters of this equipment have determined the precise classification of each element of MAC equipment entering international trade because their tariff treatment depends on it. If they have not done so, omitting them probably has little economic cost.

Agriculture

841280	843290	843390
841931	843311	843410
842111	843319	843420
842481	843320	843490
843020	843330	843610
843210	843340	843621
843221	843351	843629
843229	843352	843680
843230	843353	843691
843240	843359	843699
843280	843360	870190

Mining and Construction

870130,	843141,	846719,
870860,	847410,	870423,
842630,	847490,	841340,
842649,	847910,	842641,
842890,	842620,	843699,
842911,	842699,	847971,
842920,	843069,	847979,
842940,	843680,	842691,
842951,	870410,	842919,
842952,	870510,	843143,
842959,	842930,	847420,
843010,	843020,	847432,
843049,	843110,	843061,
843062,	843149,	843142,

847431, 820719, 840731,
870190, 843031, 840991,
843139, 840790, 840734,
847990, 840810, 840732,
870790, 840820, 841221,
870870, 840890, 841231,
843050, 840729, 847989,
870600, 841391, 841290,
870850, 841459, 841350,
820713, 848310, 841360,
843041, 840721, 841229,
843039, 840733, 841239,
846711, 840999,
842850, 841330,