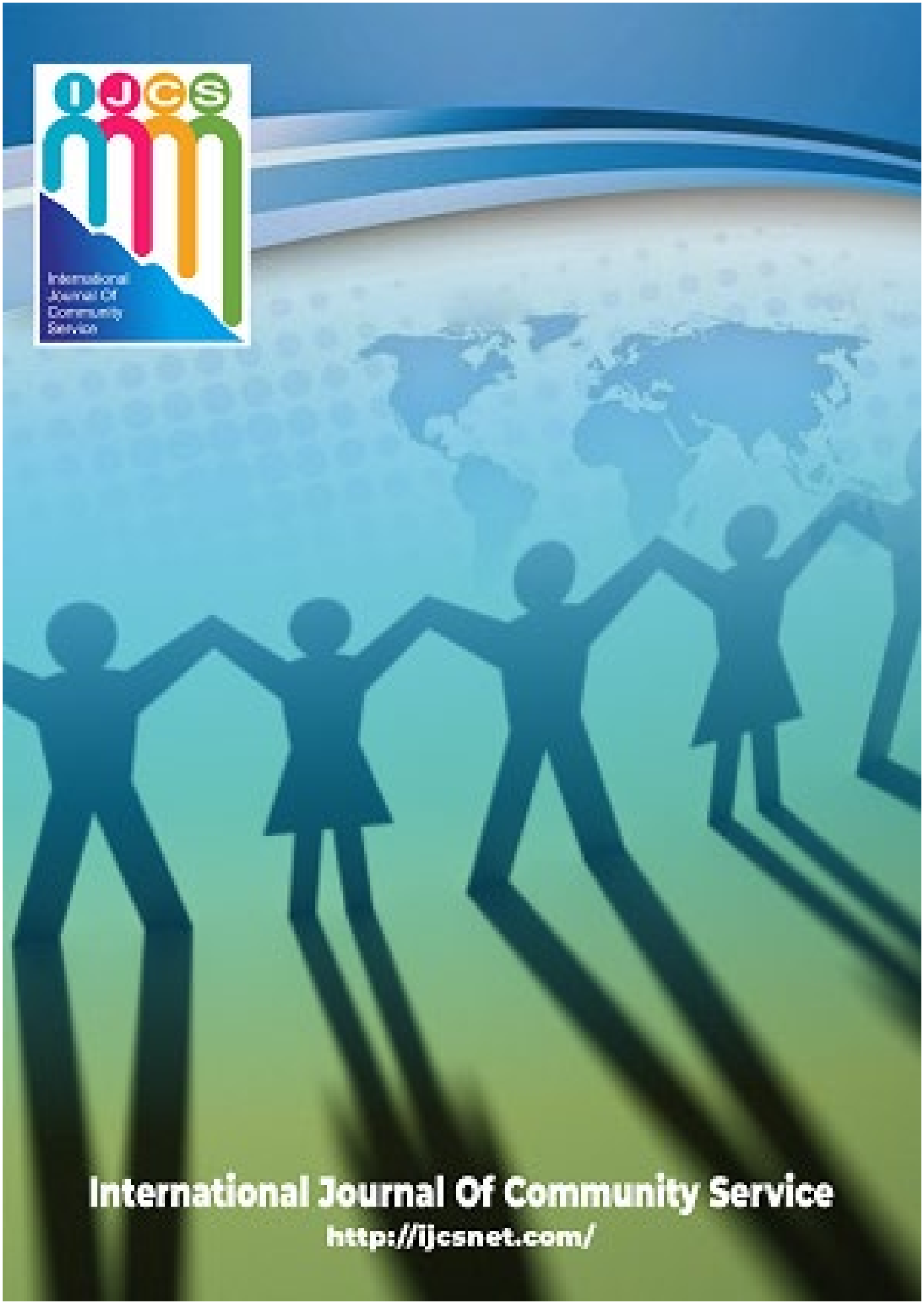
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Introduction and Consultation on the Indonesia's Oil and Gas Sharing Contract at CNG Co.

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Prayang Sunny Yulia[1*], R. Hari Karyadi Oetomo[1], Arinda Ristawati[1], Aqlyna Fattahanisa[1], Riskaviana Kurniawati[2]

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Abstract.
Indonesia's oil and gas sector has traditionally employed Production Sharing Contracts (PSCs) to regulate the sharing of revenues between the government and contractors. Two key PSC models are used: PSC Cost Recovery and PSC Gross Split. The PSC Cost Recovery model allows contractors to recover their exploration and production costs before profits are shared, providing financial protection but reducing long-term profitability. Conversely, the PSC Gross Split model, introduced in 2017, offers a simpler revenue-sharing mechanism, eliminating cost recovery and directly splitting gross revenue between the government and contractors. This study analyzes the financial implications of both models using economic simulations, focusing on key indicators like net cash flow, net present value (NPV), pay-out time, and discounted cash flow (DCF) rate of return. Results show that the Gross Split model generates significantly higher gross revenue ($420.908 million) than Cost Recovery ($46.362 million), but at the cost of greater financial risks for contractors due to higher upfront investments and operating costs. The Gross Split model also provides higher long-term returns, with a net cash flow of $67.138 million compared to $8.252 million in Cost Recovery. However, the pay-out time is longer, and the DCF rate of return is slightly lower (29.95% vs. 31.8%). Ultimately, PSC Gross Split is more suited for contractors with higher risk tolerance and capital resources, while PSC Cost Recovery may be preferable for smaller contractors seeking to minimize financial risks. Both models offer distinct advantages depending on the contractor's financial capacity and risk appetite.

Keywords: *PSC Cost Recovery, PSC Gross Split, Oil and Gas and Sharing Contracts.*

I. INTRODUCTION

Indonesia, with its substantial reserves of oil and gas, has traditionally relied on Production Sharing Contracts (PSCs) to regulate the relationship between the government and oil and gas companies. Two main types of PSC schemes have been prevalent in the country's upstream oil and gas sector: PSC Cost Recovery and PSC Gross Split (Giranza & Bergmann, 2018; Irham et al., 2018; Pramadika & Satiyawira, 2018; Pratama et al., 2023; Yulia et al., 2023). These models dictate how revenues are shared between the government and contractors, significantly impacting the profitability of projects for companies, and of those companies is CNG Co.The PSC Cost Recovery model was introduced in the early days of Indonesia's oil and gas industry. In this scheme, contractors are allowed to recover their exploration and production costs before sharing the remaining profits with the government. Cost recovery encompasses expenses such as drilling, production operations, and equipment purchases. Once the contractor has recouped their costs, the profits are divided between the contractor and the Indonesian government according to a pre-agreed percentage (Anjani & Baihaqi, 2018).To address some of the shortcomings of the Cost Recovery model, Indonesia introduced the PSC Gross Split model in 2017 (Irham & Julyus, 2018).

This scheme represents a shift towards a simpler, more transparent approach to revenue sharing. Unlike the Cost Recovery system, the Gross Split model eliminates the need for cost recovery altogether. Instead, the contractor and the government agree on a predetermined "split" of gross revenue from production, independent of the contractor's costs (Fiqri & Irham, 2016; Sidqi et al., 2022; Timpal et al., 2023).In line with this problem, lecturers from FTKE Universitas Trisakti conducted the introduction and consultation on Indonesia's oil and gas sharing contract with CNG Co. The knowledge about both the PSC

Cost Recovery and PSC Gross Split models had been delivered, which had unique advantages and challenges. CNG Co., with its extensive experience in the sector, was well-positioned to adapt to these changes, ensuring efficient project execution and maximizing returns within Indonesia's dynamic oil and gas market.

II. METHODS

The methods included an introduction to the PSC Cost Recovery and PSC Gross Split simulation, followed by consultation using a template to forecast the economic feasibility. The introduction began with a simulation on the PSC Cost Recovery template. The key variables considered in this model included gross revenue, investment costs (tangible and intangible), operating costs (OPEX), and contractor participation interests. These values were analyzed annually over the project's life cycle. To assess the economic viability of the project, several indicators were calculated, including: net cash flow for the contractor over the project's life; present value (PV) of the net cash flow at discount rates of 10%, 12%, and 15%; pay-out time, which indicated the time required for the contractor to recover the initial investment; and discounted cash flow (DCF) rate of return, which reflected the profitability of the project.Furthermore, the process continued with the simulation of the PSC Gross Split scheme template. The model incorporated several key variables, such as gas and crude oil production, operating costs, investment costs, base split, and tax rates. Under the gross split scheme, the total revenue was divided between the government and the contractor after accounting for the government's share and taxes. The contractor's income and cumulative net cash flow (NCF) were then calculated.

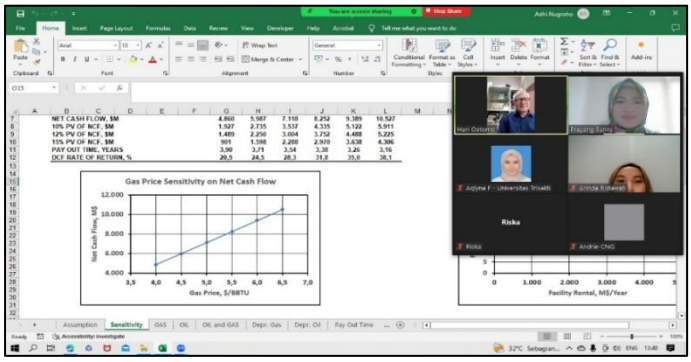
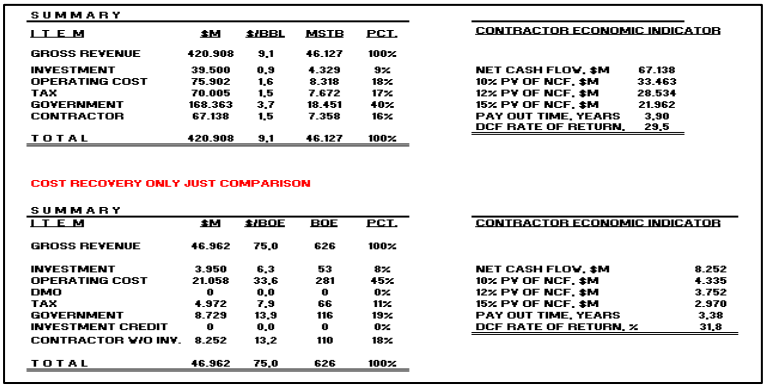


Fig 1. Consultation on oil and gas sharing contract system

III. RESULT AND DISCUSSION

According to the simulation, the PSC Cost Recovery and PSC Gross Split differed in how costs, profits, and returns were distributed between the contractor and the government. The comparison of these regimes provided insight into their financial and economic implications, as shown in Figure 2 below.



SUMMARY

ITEM	$M	$/BBL	MSTB	PCT.
GROSS REVENUE	420.908	9,1	46.127	100%
INVESTMENT	39.500	0,9	4.329	9%
OPERATING COST	75.902	1,6	8.318	18%
TAX	70.005	1,5	7.672	17%
GOVERNMENT	168.363	3,7	18.451	40%
CONTRACTOR	67.138	1,5	7.358	16%
TOTAL	420.908	9,1	46.127	100%

CONTRACTOR ECONOMIC INDICATOR

NET CASH FLOW, $M	67.138
10% PV OF NCF, $M	33.463
12% PV OF NCF, $M	28.534
15% PV OF NCF, $M	21.962
PAY OUT TIME, YEARS	3,90
DCF RATE OF RETURN,	29,5

COST RECOVERY ONLY JUST COMPARISON

SUMMARY

ITEM	$M	$/BOE	BOE	PCT.
GROSS REVENUE	46.962	75,0	626	100%
INVESTMENT	3.950	6,3	53	8%
OPERATING COST	21.058	33,6	281	45%
DMO	0	0,0	0	0%
TAX	4.972	7,9	66	11%
GOVERNMENT	8.729	13,9	116	19%
INVESTMENT CREDIT	0	0,0	0	0%
CONTRACTOR W/O INV.	8.252	13,2	110	18%
TOTAL	46.962	75,0	626	100%

CONTRACTOR ECONOMIC INDICATOR

NET CASH FLOW, $M	8.252
10% PV OF NCF, $M	4.335
12% PV OF NCF, $M	3.752
15% PV OF NCF, $M	2.970
PAY OUT TIME, YEARS	3,38
DCF RATE OF RETURN, %	31,8

Fig 2. Comparison of PSC Cost Recovery and PSC Gross Split results

In the Gross Split model, the gross revenue was significantly higher ($420.908 million) compared to the Cost Recovery model ($46.362 million). This discrepancy arose because, in the Gross Split, all revenue was shared directly after production without considering cost recovery. In contrast, the Cost Recovery model required the recovery of costs before profit distribution, limiting the revenue available for direct allocation.

The Gross Split involved higher taxes ($70.005 million), and the government's share was $168.363 million (or 40% of the total). The Cost Recovery model, on the other hand, showed lower tax burdens ($4.972 million), but the government's share also reduced to $8.729 million. This suggested that while the Gross Split resulted in higher government revenue overall, the Cost Recovery model allowed the contractor to retain more until costs were fully recovered.In the Gross Split, the contractor received a substantial portion of revenue ($67.138 million), but only after taking on greater investment and operating cost burdens. In the Cost Recovery model, the contractor received less profit ($8.252 million without investment credit) but was less exposed to financial risks due to the ability to recover costs first.Key economic indicators reflected the profitability and risk associated with each model: Net Cash Flow: Gross Split produced a higher cash flow ($67.138 million) compared to Cost Recovery ($8.252 million); NPV (Net Present Value): The Gross Split had a higher 10% NPV of $33.463 million compared to $4.335 million in Cost Recovery.

Similarly, the 15% NPV in Gross Split was $21.962 million, while in Cost Recovery it was $2.970 million. These values indicated that Gross Split might provide higher returns to contractors in the long term; Pay-Out Time: The pay-out time in Gross Split was slightly longer (3.90 years) compared to Cost Recovery (3.38 years), reflecting the higher initial investment and operating costs required in the Gross Split model; DCF Rate of Return: Gross Split had a DCF rate of return of 29.95%, while Cost Recovery yielded a slightly higher return of 31.8%. Although the contractor's share was smaller in Cost Recovery, the faster cost recovery and reduced financial risk resulted in a higher rate of return.The PSC Gross Split generated higher gross revenue and government take but required contractors to bear greater financial risks through higher upfront investments and operating costs. Meanwhile, the PSC Cost Recovery model, by allowing contractors to recoup costs first, offered more financial protection but resulted in lower long-term profitability for the contractor. Both models had their merits depending on the contractor's risk tolerance and investment capacity. Gross Split might have been favorable for larger contractors with higher risk tolerance, while Cost Recovery could have attracted smaller contractors focused on minimizing risk.

IV. CONCLUSION

The PSC Gross Split model offered simplicity and higher gross revenue, benefiting the government through a larger share of taxes and revenue. However, it required contractors to bear greater financial risks due to higher upfront investments and operating costs, as there was no cost recovery mechanism. This model was more suited for contractors with higher risk tolerance and capital, as reflected by its higher net cash flow, net present value (NPV), and longer pay-out time. On the other hand, the PSC Cost Recovery model provided contractors with more financial security by allowing them to recover their costs before sharing profits with the government. This reduced the financial burden on contractors, especially those with lower risk tolerance or smaller capital reserves. However, it also resulted in lower long-term profitability and government revenue, as more of the early-stage revenue was allocated to covering costs.

V. ACKNOWLEDGMENTS

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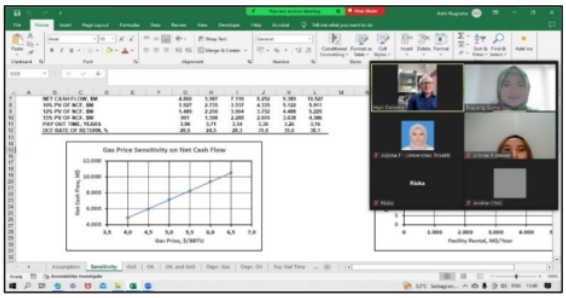

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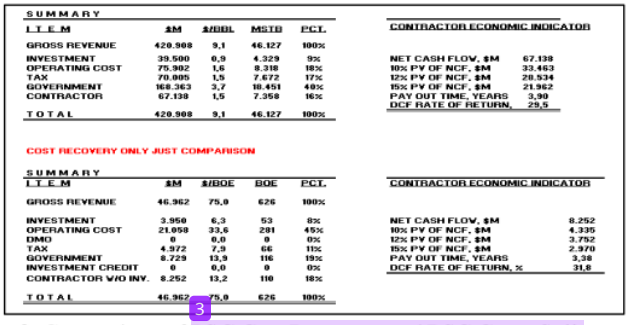

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Fig 2. Comparison of PSC Cost Recovery and PSC Gross Split results

In the Gross Split model, the gross revenue was significantly higher ($420.908 million) compared to the Cost Recovery model ($46.362 million). This discrepancy arose because, in the Gross Split, all revenue was shared directly after production without considering cost recovery. In contrast, the Cost Recovery model required the recovery of costs before profit distribution, limiting the revenue available for direct allocation.

The Gross Split involved higher taxes ($70.005 million), and the government's share was $168.363 million (or 40% of the total). The Cost Recovery model, on the other hand, showed lower tax burdens ($4.972 million), but the government's share also reduced to $8.729 million. This suggested that while the Gross Split resulted in higher government revenue overall, the Cost Recovery model allowed the contractor to retain more until costs were fully recovered.In the Gross Split, the contractor received a substantial portion of revenue ($67.138 million), but only after taking on greater investment and operating cost burdens. In the Cost Recovery model, the contractor received less profit ($8.252 million without investment credit) but was less exposed to financial risks due to the ability to recover costs first.Key economic indicators reflected the profitability and risk associated with each model: Net Cash Flow: Gross Split produced a higher cash flow ($67.138 million) compared to Cost Recovery ($8.252 million); NPV (Net Present Value): The Gross Split had a higher 10% NPV of $33.463 million compared to $4.335 million in Cost Recovery.

Similarly, the 15% NPV in Gross Split was $21.962 million, while in Cost Recovery it was $2.970 million. These values indicated that Gross Split might provide higher returns to contractors in the long term; Pay-Out Time: The pay-out time in Gross Split was slightly longer (3.90 years) compared to Cost Recovery (3.38 years), reflecting the higher initial investment and operating costs required in the Gross Split model; DCF Rate of Return: Gross Split had a DCF rate of return of 29.95%, while Cost Recovery yielded a slightly higher return of 31.8%. Although the contractor's share was smaller in Cost Recovery, the faster cost recovery and reduced financial risk resulted in a higher rate of return.The PSC Gross Split generated higher gross revenue and government take but required contractors to bear greater financial risks through higher upfront investments and operating costs. Meanwhile, the PSC Cost Recovery model, by allowing contractors to recoup costs first, offered more financial protection but resulted in lower long-term profitability for the contractor. Both models had their merits depending on the contractor's risk tolerance and investment capacity. Gross Split might have been favorable for larger contractors with higher risk tolerance, while Cost Recovery could have attracted smaller contractors focused on minimizing risk.

IV. CONCLUSION

The PSC Gross Split model offered simplicity and higher gross revenue, benefiting the government through a larger share of taxes and revenue. However, it required contractors to bear greater financial risks due to higher upfront investments and operating costs, as there was no cost recovery mechanism. This model was more suited for contractors with higher risk tolerance and capital, as reflected by its higher net cash flow, net present value (NPV), and longer pay-out time. On the other hand, the PSC Cost Recovery model provided contractors with more financial security by allowing them to recover their costs before sharing profits with the government. This reduced the financial burden on contractors, especially those with lower risk tolerance or smaller capital reserves. However, it also resulted in lower long-term profitability and government revenue, as more of the early-stage revenue was allocated to covering costs.

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