COMMODITY INSIGHTS

DIGEST

JUNE 2026

PRACTITIONER INSIGHTS

"RETHINKING HOW U.S. MINERAL SUPPLY CHAINS ARE FINANCED: WHY ROYALTY MODELS ARE GAINING GROUND"

BY SCOTT POLLAN,
EMERGENCY MATERIAL SERVICES, LLC, U.S.A.

THE CID IS AN ACADEMIC PUBLICATION FOCUSING ON COMMODITIES RESEARCH AND INSIGHTS

Rethinking How U.S. Mineral Supply Chains Are Financed: Why Royalty Models Are Gaining Ground

Scott Pollan
President, Emergency Material Services, LLC, U.S.A.

This article frames mineral supply chain financing as an emerging issue in applied economics, particularly within the context of critical materials policy and industrial strategy. It highlights how traditional capital allocation mechanisms, bank debt and equity, are often misaligned with the risk profiles, cash flow structures, and fragmentation of modern metals supply chains, especially in recycling and byproduct recovery. From an economic perspective, the piece emphasizes the growing role of royalty financing as a market-based solution that better aligns incentives between capital providers and operators. By linking returns directly to production and price dynamics, royalty models introduce a more flexible, performance-contingent form of capital that reflects the underlying variability in commodity markets. The discussion of silver serves as a case study in supply chain complexity and capital inefficiency, illustrating how dispersed production and secondary recovery challenge conventional project finance frameworks. The integration of technical and market intelligence into financing decisions further underscores a shift toward more information-driven capital allocation.

Introduction

Financing domestic mineral supply chains in the United States has become increasingly complex. Across mining, recycling, and refining, operators face a narrowing set of capital options at a time when demand for critical materials is rising.

Traditional bank financing remains difficult to access for many projects, particularly those involving early-stage development, non-standard feedstocks, or secondary recovery. Lenders often require predictable cash flows, hard collateral, and conservative risk profiles, criteria that much of the metals value chain, especially recycling and byproduct recovery, struggle to meet.

Equity financing, while more accessible, comes with its own challenges. It is often dilutive, expensive in volatile commodity markets, and misaligned with operators seeking to retain control while scaling production. For mid-sized and privately held companies, these tradeoffs can limit growth or delay investment altogether.

Against this backdrop, alternative financing structures are drawing renewed attention, particularly royalty and streaming models.

A Different Approach to Capital

Royalty financing has long been used in certain regions and commodities, especially in precious metals. Under this model, a capital provider funds a project in exchange for a percentage of future production or revenue, rather than ownership or fixed debt repayment.

This structure introduces several advantages:

- Non-dilutive capital: Operators retain equity ownership and governance control
- Flexible repayment: Financial obligations scale with production, rather than fixed schedules
- Reduced balance sheet pressure: No traditional debt servicing during ramp-up periods
- Alignment with performance: Investors benefit from output growth and price upside

However, these benefits come with tradeoffs. The effective cost of royalty financing can exceed that of debt over the long term, particularly in strong commodity price environments. For example, a 5% production royalty may appear modest initially, but over the life of a high-performing asset, it can represent a significant share of total value generated. As such, the model is best suited to situations where flexibility and access to capital outweigh absolute cost minimization.

Why Silver Is Well Suited

One area where royalty financing is particularly well aligned is silver. Silver occupies a unique position in the metals ecosystem. Its unparalleled electrochemical properties make it essential for the modern economy. While it is a precious metal, much of its supply is generated as a byproduct of mining for copper, lead, zinc, and gold. At the same time, secondary recovery, from electronic waste, photovoltaic panels, and industrial residues, is becoming an increasingly important source of supply.

This combination creates a fragmented and technically complex supply chain. Production is often dispersed across multiple operators, processes, and stages, from concentrators and smelters to refiners and recyclers. Traditional financing models, which favor large, single-asset projects, are not always well suited to this environment.

Royalty structures, by contrast, can be applied more flexibly:

- To byproduct silver streams within larger mining operations
- To recycling and refining businesses with recoverable metal inventories
- To midstream processing assets where value is tied to throughput and recovery rates

In addition, silver's strong industrial demand, driven by electronics, renewable energy, and advanced manufacturing, supports long-term production visibility, which is essential for structuring royalty agreements.

Integrating Capital with Market Intelligence

While royalty financing itself is not new, its application within complex, modern supply chains requires more than capital alone. Accurate underwriting depends on detailed knowledge of metallurgical processes, recovery rates, payable metal terms, logistics, and downstream market dynamics. This is where newer approaches are emerging. For example, Silver Crown Royalties Inc. is applying a silver-focused royalty model while integrating technical and market intelligence through its partnership with Emergency

Material Services, LLC. By combining capital deployment with granular analysis of production flows, across mining, smelting, refining, and recycling, the approach aims to better identify financing gaps and structure agreements that reflect operational realities.

This integration allows for:

- More precise valuation of silver-bearing streams
- Improved alignment between financing terms and processing economics
- Broader engagement across primary and secondary supply sources

A Broader Shift in Metals Finance

The growing interest in royalty financing reflects a larger shift in how mineral supply chains are funded. As supply becomes more distributed and technically specialized, capital structures are evolving to match.

In the United States, this evolution carries added significance. Strengthening domestic production and recovery capacity, particularly for materials tied to energy transition and advanced manufacturing, has become a strategic priority. Flexible financing models that can support both primary extraction and secondary recovery may play an important role in that effort.

Royalty finance is unlikely to replace traditional funding sources. But as part of a broader capital toolkit, it offers a pragmatic solution to a persistent challenge: how to fund complex, capital-intensive operations without constraining their growth. In that context, its expanding role in the silver market may be less an exception, and more a preview of where metals finance is heading.

Author Biography

SCOTT POLLAN
President, Emergency Material Services, LLC, U.S.A.

Scott Pollan is a commodity economist and author with deep expertise in derivatives trading, risk management, quantitative modeling, and market analysis. His professional experience spans a wide range of sectors, including commodities, foreign exchange, critical materials, mining, and recycling.

Mr. Pollan has held senior roles as a commodity trader and risk manager, specializing in automated precious metals risk management and market-making algorithms. His company, Emergency Material Services, has also provided consultancy services for high-net-worth individuals (HNWI) and ultra-high-net-worth individuals (UHNWI) in the metals and recycling industries, delivering bespoke economic analysis and risk management strategies. His career includes significant contributions to the mining and critical materials sectors, where he has conducted research on resource scarcity, developed mathematical models for mineral cartel formation, and advised on the economic impact of large-scale metals industry projects.

Mr. Pollan's experience includes positions (1) at Azcon Metals, where he serviced Class 1 railroads and raw material supply for steel mills, (2) at Zaner Financial Services, where he focused on middle and back-office clearing of futures trades, and (3) as a quantitative analyst, modeling commodity markets at the Colorado School of Mines. He has advised on complex financial products, including swap structures, and written extensively on topics such as copper market outlooks and the role of metals in

economic growth. He has also served as a public speaker, presenting at the E-Scrap Conference and at the Institute of Scrap Recycling Industries as well as contributing to publications such as *Kitco News* and *Recycling Today*.

His applied research has been shared at conferences and workshops hosted by institutions such as the Critical Materials Institute, the Federal Reserve Bank of Kansas City, and various international policy organizations. His expertise in economic policy and resource management is complemented by his work in developing marketing strategies for metals recycling and his insights into lithium and critical mineral markets. Mr. Pollan is a recognized leader in his field, with intimate knowledge of global mining networks, including close ties to industry professionals in the United States and globally.

Scott Pollan holds a M.S. in Mineral and Energy Economics from the Colorado School of Mines, a B.S. in Earth Science from Montana State University – Bozeman, and continues to engage in research and thought leadership, contributing to the advancement of knowledge in metals, mining, and market dynamics.

COMMODITY INSIGHTS
DIGEST

Commodity Insights Digest (*CID*, ISSN 2996-654X) is a publication of Bayes Business School, City St George's, University of London (U.K.), in association with Chicago-based Premia Research LLC (U.S.A.). The digest is co-edited by Ana-Maria Fuertes, Ph.D. in International Finance, and Hilary Till, M.Sc. in Statistics.

CID seeks to foster knowledge transfer between academics and practitioners by publishing:

- Scholarly research digest articles;
- Practitioner insights and interviews;
- Articles on economic history; and
- Book reviews.

Contributors to *CID* include (a) scholars seeking to enhance the impact of their research by delving into the practical implications of their theoretical or empirical studies; (b) consultants reporting on challenges faced by commodity market participants; and (c) industry economists providing analyses on their areas of market expertise.

Bayes Business School, City St George's, University of London is a world-leading provider of education and cutting-edge research. Bayes' unique location enables strong links with industry in the City of London.

The cover is a generated image in the style of Norman Wilkinson (1878-1971), whom, in turn, was a famous English marine painter. It is based on a depiction of the view across the Menai Strait in Wales, looking towards the Britannia Bridge. The original Britannia Bridge was a railway bridge designed by Robert Stephenson and completed in 1850. Wilkinson had studied art at Portsmouth and Southsea Schools of Art; he designed posters for several railway companies and organized the Royal Academy series of posters for the London & Midlands Railway (LMR) in 1924.

BAYES BUSINESS SCHOOL
CITY ST GEORGE'S
UNIVERSITY OF LONDON

Physical Address
Bayes Business School
106 Bunhill Row
London EC1Y 8TZ
United Kingdom

Website
bayes-cid.com

Contact
To submit articles, authors can contact the editors via editors@bayes-cid.com

City St George's is a member institution of the University of London

UNIVERSITY OF LONDON