



“Platinum: a Commodity and Precious Metal”

Paul F. Gentle, Ph.D.*

Professor of Economics and Business, NCC British Higher Education at Guangzhou Institute of Technology Guangzhou, China.

*Corresponding Author

Paul F. Gentle, Ph.D.

Professor of Economics and Business, NCC British Higher Education at Guangzhou Institute of Technology Guangzhou, China.

Article History

Received: 22.09.2024

Accepted: 10.10.2024

Published: 31.10.2024

Abstract: Commodities are some of the basic inputs of an economy. An important contribution to the World’s economy is the input of platinum, which is a precious metal. Silver and gold are two others. This brief article describes platinum and some of the multitude of uses for platinum. Efforts to control pollution are one of the important uses of platinum via the prevalence of catalytic converters. The use of platinum in anti-cancer medicines have had mixed results. Surely any economist should be aware of some of the uses of platinum.

Keywords: Commodities, Platinum, Gold, Silver.

JEL Code: A1.

Cite this article:

Gentle, P. F., (2024). “Platinum: a Commodity and Precious Metal”. *ISAR Journal of Economics and Business Management*, 2(10), 88-90.

I. Characteristics and Uses of Platinum

A. Basics

Platinum is an element that is dense, malleable, ductile, highly non-reactive, precious, rust proof and silverish (Birdsall, 1919; Logowski, 2004; Hobson, 2018). Platinum Group Metals (PGMs) are used in a large range of applications, chemical catalysts and coatings, dental alloys, electronic components and computer hard discs, fuel cells for power generation, glassmaking equipment, and investment (Wilburn and Bleiwas, 2004).

B. Store of Wealth

Research indicates that platinum is a store of wealth (Vochazka et al, 2022). Platinum is used for coinage, high-value jewelry, and medicines, (Hobson, 2018; Corti, 2022; Wilburn and Bleiwas, 2024).

C. Catalytic Process and Fuel Cells

Platinum is used for more than a setting for gems. The precious metal helps clean motor vehicle exhaust. Using a catalytic process, pollution is controlled (Young, 1983; Hobson, 2018; Wilburn and Bleiwas, 2004). Importantly, with emission control legislation widely adopted and with the Kyoto protocol adopted in some countries, the demand for platinum group elements will significantly increase (Xiao et al, 2004). A particular significant use of platinum needs to be examined. There is the application for PGMs to the manufacture of fuel cells (Seselj et al, 2015; Huang et al, 2021).

D. Reliance of Imports for the United States

The United States is reliant on imports of platinum-group

metals (PGMs), which includes platinum, palladium, rhodium, ruthenium, osmium, and iridium. (Wilburn and Bleiwas, 2004). In 2002, the United States relied on imports for in the region of 93 percent of its platinum requirements and 69 percent of its palladium requirements (Huang et al, 2021; Wilburn and Bleiwas, 2004). Most production of PGMs originates from only two countries, Russia and South Africa (Wilburn and Bleiwas, 2004). In fact in 1993, 12 deposits in the Republic of South Africa are estimated to account for 96.7 percent of total recoverable platinum (Fogg and Cornellison, 1993). The worldwide physical supply of PGMs is influenced by different factors. These include cost of production, environmental consequences, government policies, industry decisions, market price, socio-cultural trends, substitution issues, and technological factors. (Wilburn and Bleiwas, 2004).

E. Glass Industry

Today platinum and its alloys are used in the glass industry. In the glass industry of today, platinum and its alloys are accepted as essential tools in the successful production of a wide variety of glass-ware, from the unassuming bottle to the premium optical glass, from the electric light bulb to the fibre glass insulating material (Preston, 1960; Morris et al, 2013).

F. Treatment for Cancer

An interesting use of platinum is in the treatment of cancer as has been pointed out. A large amount of patients on chemotherapy for cancer are on some derivative of platinum. There are significant side effects of platinum drugs, such as lack of selectivity, high system toxicity, that seriously limit their clinical application (Kedland et al, 2000; Degoize et al, 2002; Wheate, 2010; Johnstone, 2014; Zhang 2022).

G. Conclusion

We have discussed several of the applications of platinum. This list in no way has been an exhaustive conversation of the multitude of uses for platinum. Importantly palladium and platinum are separate elements, with their own characteristics (Dedieu, 2000).

II. Summary and Conclusion

This brief article provides some of the traits of platinum and its usage. Platinum is malleable, dense, ductile, rust-proof, silverish, precious and is highly non-reactive. The uses of platinum are broad. For example platinum is used as a chemical catalyst, electronic components, dental alloys, fuel cells, jewelry, and medicines and for other uses. A list of all the uses of platinum goes way beyond the items covered in this article.

This the fourth article on commodities that was authored or co-authored by Paul Gentle. In Gentle, 2024 an examination of the relationship between the two commodities silver and gold; whereas Gentle (2024b) focuses on gold. If one is seeking to understand commodities as a group, Archarya et al (2009) provides a good starting point since an explanation of the CRB index is provided. CRB stands for Commodities Research Bureau. Understanding the concept of commodities is essential to understanding economics.

This article examines some of the foremost traits of platinum. Platinum is classified as a precious metal and a commodity (Chen et al, 2022). Since platinum has these two characteristics, platinum needs to be examined. Part I in this article conveys some of the uses and traits of platinum. A summary and conclusion in Part III completes this article.

References

1. Archarya, Ram N., Paul F. Gentle, and Krishna Paudel, (2009) "The CRB Index as a Leading Indicator of United States Inflation," *Applied Economics Letters*, 16(2), December.
<https://ideas.repec.org/a/taf/apeclet/v17y2010i15p1493-1496.html>
2. BaoYu Xia (2021) "Advanced Platinum-Based Oxygen-reducton Electrocatalysts for fuel cells, January 7.
https://www.researchgate.net/publication/348367808_Advanced_Platinum-Based_Oxygen_Reduction_Electrocatalysts_for_Fuel_Cells
3. Birdail, Edward T. (1919), "Rust Prevention," *SAE Transactions*, 14, pp. 118-126. [RUST PREVENTION](#)
4. Dedieu, Alain (2000) "Theoretical Studies in Palladium and Platinum in Molecular Chemistry," *Chemical Reviews*, 100, pp. 543-600. [Theoretical Studies in Palladium and Platinum Molecular Chemistry | Chemical Reviews](#)
5. Chen, James, Julie Mansa and Suzann Kuilhawg (2022), "Platinum: What it means and how it works," *Investopedia*, April 30. [Platinum: What It Means and how It Works \(investopedia.com\)](#)
6. Conti, Christopher W., (2022) The Evolution of Platinum Jewlry Alloys from the 1920s to the 1930s, 'Developments in New Alloys and Techniques, October, pp. 418-434.
<https://technology.matthey.com/content/journals/10.1595/205651322X16390711562364>
7. Degoize, Bernard and Clouide Madoulet (2002)"Particular Aspects of Platinum compounds used at present in Cancer Treatment" *Critical Reviews in Oncology/Hematology*, 42(5) June, pp. 317-325. [Particular aspects of platinum compounds used at present in cancer treatment - PubMed](#)
8. Fogg, Catherine J. and Joseph L. Cornellisson, (1993) *Availability of Platinum and Platinum Group Metals*, Washington D.C.: Department of the Interior - Bureau of Mines.
<https://babel.hathitrust.org/cgi/pt?id=mdp.39015095072370&seq=3>
9. Gentle, Paul F., (2024a) "Some Basic Facets of the Relationship between Gold and Silver". *IRJEMS International Research Journal of Economics and Management Studies*, Volume 3 Issue 1, February, pp.1-3. [Aduitum | 1127 |](#)
10. Gentle, Paul F., (2024b)" A Famous Commodity Money: Gold Standard in the United States," *IRJEMS International Research Journal of Economics and Management Studies*, pp. 80-82. <https://irjems.org/Volume-3-Issue-5/IRJEMS-V3I5P112.pdf>
11. Hobson, Peter (2018) "Currency Shocks Knocks Platinum to 10 year lows," *Reuters Business News*, August 17.
<https://web.archive.org/web/20180817141325/https://uk.reuters.com/article/uk-platinum-price/currency-shocks-knock-platinum-to-10-year-lows-idUKKBN1L219X>
12. Huang Lei, Shahib Zaman, Xinlong Tan,Zhitong Wang, Wen Sheng Fang and Bo Yu Xia (2021) "Advanced Platinum-Based Oxygen Reduction Electrocatalysts for Fuel Cells, *ACC Chem Res.* January 7.
https://www.researchgate.net/publication/348367808_Advanced_Platinum-Based_Oxygen_Reduction_Electrocatalysts_for_Fuel_Cells
13. Johnstone, Timothy C., Ga Young Park, and Stephen J. Lippard (2014) "AntiCancer Drugs – Phenanthriplatin" *Anticancer Research* 34(1) pp. 471-476.
[https://search.yahoo.com/yhs/search?hspart=shift&hsimp=yhs=&shift&p=Johnstone%2C+Timothy+C.%2C+Ga+Young+Park%2C+and+Stephen+J.+Lippard+\(2014\)+%E2%80%9C9CAntiCancer+Drugs+%E2%80%93+Phenanthriplatin%E2%80%9D+Anticancer+Research+34+\(1\)+pp.+471-476.&type=0_2001_102_8832_108_240606](https://search.yahoo.com/yhs/search?hspart=shift&hsimp=yhs=&shift&p=Johnstone%2C+Timothy+C.%2C+Ga+Young+Park%2C+and+Stephen+J.+Lippard+(2014)+%E2%80%9C9CAntiCancer+Drugs+%E2%80%93+Phenanthriplatin%E2%80%9D+Anticancer+Research+34+(1)+pp.+471-476.&type=0_2001_102_8832_108_240606)
14. Kedland, Lloyd R. and Nicholas P. Farell, (2000) *Drugs in Cancer Therapy*, New York: Humana Press ,
<https://pubs.acs.org/doi/10.1021/jm000304w>
15. Lagowski, J. J., ed. (2004). *Chemistry Foundations and*

- Applications [Chemistry Foundations and Applications](#). Vol. 3. Thomson Gale. pp. 267–268. ISBN 978-0- 02-865724-0.
16. MacroTrends (2024). [Platinum Prices vs Gold Prices | MacroTrends](#)
 17. Morris, Dominic and Rob McGrath, (2013). “ZGS Platinum Materials for Improved Glass Manufacturing Equipment and Laboratory Ware,” *Platinum Metals Review* 57(3), July, pp. 230-232.
<https://technology.matthey.com/content/journals/pmr/57/3>
 18. Preston, Eric (1960) “Platinum in the Glass Industry,” *Platinum Metals Review*, 4(1) pp.2-9.
<https://technology.matthey.com/content/journals/10.1595/003214060X4129>
 19. Seselj, NedjeljeljKo, Christian Engelbrekt, and Jingdong Zhang, (2015) “Graphene Supported Platinum Catalysts for Fuel Cells,” *Science Bulletin*, 60(9) pp. 864- 876.
[https://search.yahoo.com/yhs/search?hspart=shift&hsimp=yhs=&shift&p=Seselj%2C+NedjeljeljKo%2C+Christian+Engelbrekt%2C+and+Jingdong+Zhang%2C+\(2015\)+%E2%80%9CGraphene+Supported+Platinum+Catalysts+for+Fuel+Cells%2C%E2%80%9D+Science+Bulletin%2C+60%2C+9%2C+pp.+864-+876.&type=0](https://search.yahoo.com/yhs/search?hspart=shift&hsimp=yhs=&shift&p=Seselj%2C+NedjeljeljKo%2C+Christian+Engelbrekt%2C+and+Jingdong+Zhang%2C+(2015)+%E2%80%9CGraphene+Supported+Platinum+Catalysts+for+Fuel+Cells%2C%E2%80%9D+Science+Bulletin%2C+60%2C+9%2C+pp.+864-+876.&type=0) 2001 102 8832 108 240606
 20. Voechoza, Marek, Andrea Blahova and Zuzowe Rowland (2022). “Is Platinum a Real Source of Wealth?,” *International Journal of Financial Studies*, 10(3) pp. 1-23.
https://www.researchgate.net/publication/362801031_Is_Platinum_a_Real_Store_of_Wealth
 21. Wheate, N.J. S. Walker, S. Walker, G.E. Craig Roun (2010) “The status of platinum and cancer drugs in the clinic and clinical trials,” *Dalton Transactions*, 39(35) pp. 8113-8127.
<https://pubmed.ncbi.nlm.nih.gov/20593091/>
 22. Wilburn, David R. and Donald I. Bleiwas, (2004). *Platinum-Group Metals – World Supply and Demand U.S. Geological Survey Open File-File Report 2004- 1224*, Washington D.C. U.S. Geological Survey [U.S. Geological Survey Open-File Report 2004-1224 \(usgs.gov\)](https://www.usgs.gov/open-file/open-file-report/ofr-2004-1224)
 23. Xiao, Z. an A.R. Laplante, (2004) “Characterizing and Recovering the Platinum Group Minerals – a Review,” *Minerals Engineering*, 17, 9-10, September-October. pp. 961-979. [Characterizing the behaviour of platinum group minerals in a grinding circuit - ScienceDirect](https://www.sciencedirect.com/science/article/pii/S089266660400031X)
 24. Young, Gordon (1983). “*The Miracle Metal—Platinum*”. *National Geographic*. November, Vol. 164, no. 5. pp. 686–706. ISSN 0027-9358. OCLC 643483454
 25. Zhang. Chenyu, Chao xiu, Xueyan Gao, and Qigqiang Yao (2022) Platinum-based Drugs for Cancer Therapy and Anti-Tumor Strategies, *Theranostiice*, 12 (5), pp.2115-2132.
<https://pubmed.ncbi.nlm.nih.gov/35265202/>