CHAPTER 23

Afterword to Part VI

23.1 Bullionist Periods (Chapter 20)

Chapter 20 was originally published in 2008, in *The Second Palgrave*.[1] Much of the chapter is based on Officer (2000). A later work (Officer 2007a) extends the latter study in various ways. Together, the three publications compose a set of innovations, or at least contributions. What are these characteristics, and how well have they held up since that time?

First, the three clearest bullionist periods (Swedish, English, Irish) are considered together.[2] Subsequent pertinent studies are Joshua R. Hendrickson (2018, 2020) and Nils Herger (2020). Hendrickson (2018) is restricted to the English experience, while Hendrickson (2020) refers to all three periods.[3] Herger's work is confined to the Swedish period.

Second, alternate models (bullionist, anti-bullionist, and their variants or offshoots) are presented via "chains of causation." Only Herger adopts that technique of stringing theories together to compose a model.[4] Third, contemporary empirical investigations—or, more broadly, studies antedating modern time-series analysis—are included in the survey. This is done by both later authors.[5]

Fourth, the data contributions of Officer (2000), confined to the Bank Restriction Period, are accepted by Hendrickson[6] Fifth, both Hendrickson and Herger are critical of time-series techniques in Officer (2000), although Herger partly follows Officer's methodology. Sixth,

L. H. Officer, *Essays in Economic History*,
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Officer's econometric findings of strong evidence in favor of the anti-bullionist model combined with mixed results for the bullionist position are reversed.[7]

Seventh, perhaps for lack of awareness, Hendrickson ignores the innovations in Officer (2007a): new data series (corrected mint parity between the pound and Flemish schilling, London-Hamburg "peace-time" gold points), pound-depreciation measures (both prospective and retrospective), and resumption analyses (traditional and via gold points).[8]

23.2 Dollar-Sterling Exchange Market (Chapter 21)

23.2.1 Reception

Hugh Rockoff (2000, p. 941) kindly states: "Lawrence H. Officer has written a number of influential papers and a book on the efficiency of exchange-rate arbitrage under the gold standard." *Between the Dollar-Sterling Gold Points* (Officer 1996) was reviewed in prime economic-history outlets and in major general economics journals. Ranald C. Michie (1997, p. 207) has a substantial criticism, but states: "Otherwise it is an excellent piece of scholarship." After expressing "minor cavils," Angela Redish (1997, p. 2085) concludes: "Economic historians will thank Officer for his work and show their appreciation by using it." Together with the other reviewers, Richard Tilly is constructively critical: "the importance of Officer's labors still remains to be seen…It will be interesting to see whether financial historians will take up the challenge and opportunity that this new book offers."

I was flattered by the assessments of Marc Flandreau and Alan M. Taylor. "The book is a beautiful example of the best kind of analysis of market micro-structure, and deserves to be on the shelves of any serious student of the history of the dollar-sterling exchange rate" (Flandreau 1998, p. 1223). "The work leaves open some interesting doors for more sophisticated econometric analysis that could engage future scholars, but in many other respects this is the final word" (Taylor 1998). Also, Anna J. Schwartz kindly writes in the back cover of Officer (1996): "Students of Dollar-Sterling exchange rates will find this book to be a superb US-British financial history of the period 1791–1931 as well as an original statistical and analytic study of how the gold standard worked."

Culmination chapters of Officer (1996) constitute Chapter 21 of the present book. To understand the selection, a synopsis of the earlier part of the book is useful. Contributions of the book consist of data series (parity, exchange rate, gold points), exchange-market integration (exchange-rate, internal, external), and efficiency (market, regime)—the last represented in Chapter 21.

23.2.2 Data Series

23.2.2.1 Parity

Dollar-sterling par value ("parity"), denoted as **M** and expressed as dollars per pound, is treated in Officer (1996, ch. 5; 2006a). For 1791–1934 (ending January 30), the concept is "true mint parity," which is "based on the gold content of the sovereign and eagle after 1834, and for the period before 1834 on the silver content of the dollar and the world (Hamburg) gold-silver price" (Redish 1997, p. 2084). "We find that from 1837, until 1931, after its initial wavering, the dollar-pound parity rate settled at the famous 4.8665635 point for well nigh a century" (Taylor 1998). For 1939 (beginning September 5)–1978 (ending March 31), the U.K. official exchange rate (midpoint of the Bank of England fixed buying and selling rate) is taken, followed by the par value of the pound under the International Monetary Fund. A continuous series 1791–1934 is shown in Officer (1996, Table 5.2), and the extended annual equivalent series 1791–1978 (except for 1935–1938) listed in Officer (2006a, series Ee612).

23.2.2.2 Exchange Rate

The dollar-pound exchange-rate data are presented in Officer (1996, ch. 6; 2006b). Taylor (1998) provides a good summary:

> Officer ... present[s] data on the dollar-pound exchange rate for the entire period at quarterly frequency. In addition, monthly series are constructed for some periods: 1890-1906; 1925-1931; and, for a Bretton-Woods era comparison, 1950-66. Pre-1879 great care is taken ...to adjust the bills of exchange to a uniform zero ("sight") maturity. This ensures temporal consistency with the later cable rates; it also reflects the ultimate dominance of the sight bill as an instrument in the 1879-1914 heyday of the gold standard...Care is also taken to find a mid-point of the buy-sell rates...and further care to correct the exchange rate for devaluations of paper during

> paper standard periods. This level of care exceeds previous studies, and survives testing for the consistency and homogeneity of the series. This is probably the best quality data for the dollar-sterling exchange rate we now have for the entire period; it will be an essential series for future scholars.

Also, Michie (1997, p. 206) writes: "…the price of sterling bills of exchange in the United States. This revises the work of others, through detailed attention to the type of bill, frequency of observation, place of quotation, etc. Throughout there is a striving for accuracy that has to be admired."

The periods for quarterly data are shown in the first column of Table 23.1. The exchange-rate series, described as the "sight-equivalent exchange rate," is listed in annual form in three complementary series in Officer (2006b):

Table 23.1 Exchange-rate statistics (percentage points of parity)

Period	*Mean*		*Standard deviation*	
	Algebraic values (mean $\boldsymbol{R}$*)*	*Absolute values (mean* $\lvert\boldsymbol{R}\rvert$*)*	*About mean (stdev* $\boldsymbol{R}$*)*	*About zero [sqrt* $\{\sum \boldsymbol{R}^2/(N-1)\}$*]*
1791–1800	−2.70	4.55	5.06	5.75
1801–1810	3.46	4.17	3.48	4.93
1811–1820	0.97	4.57	6.19	6.27
1821–1830	1.23	2.01	2.06	2.40
1831–1840	−0.72	1.47	1.87	2.01
1841–1850	−0.73	1.11	1.26	1.46
1851–1860	0.42	0.65	0.68	0.80
1861–1870	0.32	0.87	1.20	1.25
1871–1880	−0.16	0.37	0.44	0.47
1881–1890	−0.19	0.33	0.36	0.41
1891–1900	0.02	0.25	0.30	0.51
1901–1910	−0.03	0.14	0.19	0.19
1911–1914[b]	−0.04	0.12	0.15	0.15
1919[c]–1925[b]	−0.12	0.24	0.27	0.29
1925[d]–1931[b]	−0.14	0.22	0.20	0.25
1950–1966	0.02	0.26	0.32	0.32

[a]Percent sterling premium over parity, with a negative sign denoting a sterling discount
[b]Second quarter
[c]Fourth quarter
[d]Third quarter
Source Officer (1996, Table 7.1)
$\boldsymbol{R}$ = exchange rate, percentage deviation from parity, quarterly data

Ee618 without correction for paper-currency depreciation, dollars per pound, denoted as **RS**.

Ee619 without correction for paper-currency depreciation, percentage deviation from parity, denoted **S** and computed **S** = 100 *[(**RS** – **M**)/**M**]. The monthly **S** series is plotted as "Exchange rate" in Figs. 21.1–21.3 in Chapter 21.

Ee620 corrected for paper-currency depreciation, percentage deviation from parity, denoted

R and computed **R** = **S** – **A**, where **A** is the adjustment term.[9] **R** is a series with the counterfactual basis that both countries remained on a specie standard throughout 1790–1931 (ending second quarter), excluding 3Q 1914 to 3Q 1919.

23.2.2.3 Gold Points

Gold points (generally, "specie points") differ for gold-point arbitrage (GPA) and gold-effected transfer of funds (GTF). While both involve purchasing specie in one country and transporting it to be sold in the other country, only GPA also includes a direct foreign-exchange transaction in the other direction. GTF is less than GPA, in absolute value. Gold-point estimates, with the United States as the domestic country, are generated in Officer (1996, ch. 9)—and Taylor (1998) again has a nice synopsis:

> To construct gold points requires information on costs of freight, insurance, brassage, knowledge of any gold devices used by the monetary authorities, and interest costs due to the time delay of shipment across the Atlantic Ocean. All of these are put together with the same thoroughness as the exchange rate data. The care taken places these estimates on a far firmer footing than earlier estimates which had typically cut corners...Essentially Officer proceeds with a laborious first-principles approach: each and every arbitrage cost component is individually estimated, then summed up, at each point in time. This consumes 62 pages; it is hard to imagine any improvement on these series for gold import and export points in this market, and this is the model for similar work on any other market.

Similarly, Flandreau (1998, p. 1223) writes: "the author…studies with extreme care those transformations in shipping, coining, and information technology which were liable to modify the spread of the gold

points…this book will become a reference in the analysis of UK-US gold points."

Gold points may be expressed alternatively as follows.

GX = gold export point, dollars per pound
CX = cost of gold-export arbitrage or gold-effected outward transfer of funds, percent
= gold export point, percent of parity
GM = gold import point, dollars per pound
CM = cost of gold-import arbitrage or gold-effected inward transfer of funds, percent
= *minus* gold import point, percent of parity
where $\mathbf{GX} = \mathbf{M} \cdot (1 + \mathbf{CX}/100)$
$\mathbf{GM} = \mathbf{M} \cdot (1 - \mathbf{CM}/100)$

The GPA gold points estimated for the periods of the study are in Table 23.2.[10] For 1950–1966, Bank of England dollar-buying (dollar-selling) point serves as the U.S. gold export (gold import) point.[11]

23.2.3 Exchange-Market Integration

Exchange-market integration means the extent of perfection of the American foreign-exchange market. Statistics of the exchange-rate **R** offer a set of measures, shown in Table 23.1 and discussed in Officer (1996, ch. 7).[12] By any measure, there was a phenomenal improvement in integration over time.

The gold-point spread (more generally, specie-point spread, in percentage terms [percent of parity]), is the difference between the gold points: Because gold points are asymmetrical, it is useful to redefine **R**, **CX**, **CM**, **GX**, and **GM** as the percentage deviation from the midpoint of the gold-point spread. Consider the following notation:

RM = spread midpoint, dollars per pound
GS = gold-point spread, percentage points of parity
SM = spread midpoint, percentage deviation from parity
R* = **R** re-expressed as deviation from spread midpoint, percentage points of parity

Table 23.2 Gold points and exchange-market integration, Gold-point arbitrage (percentage points of parity)

Period	*Gold points*		*Integration*		
	Export ***CX***	*Import* ***– CM***	*Exchange-rate Mean* ***|R*|***	*External* ***EI***	*Internal* ***II***
1791–1800	6.1583	−8.1002	4.1854	7.1292	0.6208
1821–1830	3.6998	−4.2148	2.1443	3.9573	0.1656
1831–1840	2.3170	−4.9061	1.4438	3.6115	−0.3619
1841–1850	1.7476	−3.2960	1.0414	2.5218	−0.2195
1851–1860	1.3306	−1.8631	0.8634	1.5968	0.0650
1861–1870	1.4830	−1.4962	0.8703	1.4896	0.1255
1871–1880	1.1414	−1.0657	0.3791	1.1036	−0.1727
1881–1890	0.6585	−0.7141	0.3207	0.6863	−0.0224
1891–1900	0.6550	−0.6274	0.2470	0.6412	−0.0736
1901–1910	0.4993	−0.5999	0.1466	0.5496	−0.1282
1911–1914[a]	0.5025	−0.5915	0.1167	0.5470	−0.1568
1925[b]–1931[a]	0.6287	−0.4466	0.2764	0.5376	0.0076
1950–1966	0.6371	−0.6371	0.2564	0.6371	−0.0622

[a]Second quarter
[b]Third quarter
Source Officer (1996, Tables 9.20, 11.1)
CX = cost of gold-export arbitrage
CM = cost of gold-import arbitrage
R* = exchange rate re-expressed as deviation from spread midpoint
= **R** − (**CX** − **CM**)/2
EI = half gold-point spread
= (**CX** + **CM**)/2
II = **mean** |**R***| − **EI**/2

CX* = gold export point (**CX**) re-expressed as deviation from spread midpoint, percentage points of parity
CM* = *minus* gold import point (−**CM**) re-expressed as deviation from spread midpoint, percentage points of parity

$$\mathbf{SM} = 100 \cdot [(\mathbf{RM} - \mathbf{M})/\mathbf{M}] = (\mathbf{CX} - \mathbf{CM})/2$$
$$\mathbf{GS} = \mathbf{CX} + \mathbf{CM}$$
$$\mathbf{R}^* = \mathbf{R} - \mathbf{SM}$$
$$\mathbf{CX}^* = \mathbf{CX} - \mathbf{SM} = (\mathbf{CX} + \mathbf{CM})/2 = \mathbf{GS}/2 = -\mathbf{CM}^*$$

External integration is measured as half the gold-point spread (in percentage points of parity): **EI** = **GS**/2 = **CX***. Shown in Table 23.2,

external integration is the amount of integration yet to be achieved, and this integration improves greatly over time.[13] Michie (1997, p. 206) describes external integration as "the degree of integration that existed in the exchange market…across the Atlantic." Taylor (1998) writes:

> The decline of gold point spreads mirrors that of the decline of exchange rate volatility, as expected. After 1880, this spread was at an all-time low level (even looking forward to 1925-1931 and Bretton Woods) of just above 1.0% for gold arbitrage. (Compare with around 5% in 1780, falling to about 2% in the 1840s). Officer sees this as improved "external" integration (external to the gold points) over time.

Internal integration is the amount of exchange-rate variation, measured as mean $|\mathbf{R^*}|$, given external integration. Internal integration pertains to "the internal US market" (Michie 1997, p. 206). The "expected" or "full" or "normal" value of internal integration is taken to be the midpoint of either gold point, that is, half external integration. Thus the level of internal integration, the amount of internal integration yet to be achieved, is $\mathbf{II}$ = mean $|\mathbf{R^*}| - \mathbf{EI}/2$. Internal integration over time is presented in Table 23.2 and discussed in Officer (1996, ch. 11). A negative value means that internal integration is "overfull," beyond the norm. Again quoting Taylor (1998):

> For the criterion of "internal integration" as Officer terms it, the focus is on whether "on average" the deviation of the exchange rate from parity is less than half the gold point spread, looking at absolute deviations. Again, by this measure, integration rapidly increases prior to the 1870s, then holds steady. A big jump is seen in the 1820s.

As apparent in the table and noted by Flandreau (1998, p. 1224), "external integration (measured as the reduction in the gold-point spread) dominated internal integration (measured as the reduction of exchange rate movements within the spread)." Improvements in Atlantic transportation and communication trumped the roles of banks (Second Bank of the United States, House of Brown, other New York private banks, incorporated banks).

23.2.4 *Market and Regime Efficiency*

The stage is set for market efficiency and regime efficiency (Chapter 21). Excluded from this chapter but presented in Officer (1996, chs. 13–15) are tests of efficiency of interest arbitrage (covered and uncovered) and forward speculation, which are confined to the 1925–1931 period. Market efficiency involves the behavior of private parties in response to profit opportunities. Regime efficiency refers to maintenance of the gold standard with the existing parity.[14] Michie (1997, p. 207) describes the conclusions well:

> Apart from imparting confidence to the exchange market through a commitment to buy gold at a fixed price, governments and central banks had little role to play before 1931. In the early years it was willingness to do nothing to hinder the movement of gold that was all important, not intervention. Similarly, even in the 1925-31 period it was the operations of the brokers and dealers that made the system work, not the activities of governments or central bankers.

23.2.5 *Criticisms*

Taylor (1998) criticizes the study for neglecting time-series properties of the exchange rate within the spread, while Flandreau (1998, pp. 224–225) finds fault in the explicit rejection of target-zone theory (Officer 1996, p. 285, note 1).[15]

Later works apply sophisticated econometrics—and time-series analysis in particular—to the issues that I explored. Pablo T. Spiller and Robert O. Wood (1988) and Elena Goldman (2000) have results supportive of my own; but Eugene Canjels et al. [CPT] (2004), using unique arbitrage-cost modeling, suggest that the gold-point spread in Officer (1996) is too wide.[16] It should be noted that these studies pertain only to time periods within 1879–1913. While the work of CPT is impressive, they do not identify the arbitrage-cost components that are responsible for Officer's gold-point overestimation. Nor do they address Goldman's contrary finding.[17] It appears that understanding the width of the gold-point spread during 1879–1913 might benefit from further research.

Another limitation of Officer (1996) is the absence of application to the broader economic history. "What is required is a chapter in which Officer draws conclusions from his evidence and analysis, for his research

has important implications for the functioning of both international monetary systems and the world economy" (Michie 1997, p. 207). "He [Officer] does not compare application of his series to economic history with that of other series in a systematic way. Missing from his study is a discussion of the historiography of how exchange markets affected the U.S. and U.K. economies in the period studied" (Richard Tilly 1998, p. 917).

23.3 U.S. Specie Standard (Chapter 22)

Chapter 22 is the only part of this book that appeared in the previous compilation (Officer, 2007b, ch. 10). As with most authors, there is one work self-considered as warranting more attention by other scholars—and this chapter is it! Richard Sylla (2007) generously comments:

> Chapter 11, "The U.S. Specie Standard, 1792–1932: Some Monetarist Arithmetic," is one that intrigued me when it first appeared in 2002, and it still does. Among other things, careful data work, a mark of all of Officer's scholarship, produces "a monetary base series that is consistent, complete in coverage, and continuous over a long period of time" [Officer 2007b, p. 185]...It is safe to say that future work in this area will have to build on, or at least contend with, Officer's data and insights. Officer himself uses the data to study eight different regimes during the 140 years covered in the study, and concludes that the classical gold standard regime (1879-1913) was superior to the others in most respects.

Sylla takes up the issue of whether the First and Second Banks of the United States were central banks:

> One intriguing argument of the chapter is that the two Banks of the United States (BUS) in early U.S. history were indeed central banks; Officer points to substantial evidence that BUS note and deposit liabilities were held as reserves by state and other banks. This is in contrast with analyses by Temin (1969) and others, which view the monetary base as specie (gold and silver) and the BUSs as very large banks but in other respects just like all the other banks in the system. Whether the two BUSs were central banks adding to the monetary base or ordinary banks operating on a specie base obviously bears on how one might model the U.S. money supply and its proximate determinants.

Consistent with my view, Michael D. Bordo (2012, p. 598) declares: "The Second Bank of the United States under Nicholas Biddle in the decade before the Bank War had developed into a first rate central bank."

In contrast, Jane Ellen Knodell (2013, 2017) argues that the Second Bank—and, by inference, presumably also the First Bank—was a "central" bank only in the context of its historical environment and not in the modern sense of "central banking." In itself that finding is not inconsistent with Chapter 22. However, contrary to the positions of Bordo and myself, she finds that "Second Bank notes…were not generally regarded as high-powered money, fully equivalent to specie, by the state banks" (Knodell 2017, pp. 99–100).

Thus Knodell (2017, pp. 3, 100, 177) states:

> Officer (2002) drew the closest analogy of all between the Second Bank and the Federal Reserve, going so far as to include the notes and deposits issued by the Second Bank in the monetary base in one version of his model of long-run monetary growth...just as the notes and deposits of the Federal Reserve make up the monetary base in contemporary arrangements. In so doing, Second Bank money is treated as a perfect specie-substitute...I define the ultimate reserve asset (sometimes called the monetary base or outside money) as specie (coined silver and gold). I do not include Second Bank liabilities in the monetary base, as Officer (2002) and Rutner (1974) did.

Knodell's research is meticulous, but there are a number of issues unresolved in this controversy. First, Knodell makes no reference to the work of Joseph van Fenstermaker (1965), an integral component of my argument. Second, it is a matter of interpretation whether the Second Bank affected the monetary base definitionally via its liabilities as well as its gold holdings (my position) or whether (beyond its gold holdings) it affected the base only by its actions (Knodell's position). I acknowledge that Knodell's thesis makes sense, but she has not destroyed my alternative analysis (Sect. 22.1.2), let alone addressed all the points in that treatment.

Third, *if* one accepts the traditional dichotomy between high-powered and other money, then it is prima facie logical to include Second Bank notes (and arguably also the Bank's non-Treasury deposit liabilities) along with specie in the monetary base. The substitution with gold may not be perfect, but is arguably much closer than the substitution with state banknotes.

Knodell also objects to my finding that "the gold-standard period (1879–1913) outperformed the Second Bank period in terms of price stability, per capita income growth, and exchange market pressure," on grounds that "there were several banking crises during the US gold standard period, a criteria not considered in Officer's paper" and that "the Second Bank period is defined, poorly, as 1817–1838, which includes two years of monetary instability after the Bank's federal charter ended, and it continued business as the Bank of the United States of Pennsylvania" (Knodell, 2017, p. 131, note 1). Her statement is irrefutable, but the implications of the two grounds appear opposite in direction.[18]

Notes

1. Durlauf and Blume (2008).
2. Arguably, there was also a French bullionist period—during the 1790s and incorporating the famous "assignats" as well as other inconvertible currencies. See Officer (1982, pp. 42–43). In fact, that study considers the Swedish, French, English, Irish bullionist periods sequentially, albeit from the standpoint of purchasing power parity (Officer 1982, chs. 4–5).
3. It is strange that Hendrickson (2020), though largely a review of bullionist empirical evidence, makes no mention of my comparable survey (Chapter 20—originally published in 2008). Yet Hendrickson (2018, p. 211) does reference that survey.
4. His description (terse compared to mine) is "denoting a theoretical causality between economic variables by → "(Herger 2020, p. 921).
5. Hendrickson's earlier work defers to my survey. "This literature [antedating modern time-series analysis] is not summarized here both because much of this literature consists of subjective interpretations of charts and tabular data and because it is summarized adequately elsewhere (Officer 2008)" (Hendrickson, 2018, p. 211).
6. The data series are listed in Officer (2007a, pp. 266–267).
7. "There is little support for the Anti-Bullionist position. The evidence supports the Bullionist position" (Hendrickson 2018, p. 236). "In particular, the results… suggest that the increase in paper money…did cause a significant upsurge in inflation, and a depreciation of the exchange rate. Conversely, it is less clear whether non-monetary factors, such as balance-of-payments deficits, played a major role in these developments" (Herger 2020, p. 934).
8. Pamfili M. Antipa (2016) provides another analysis of resumption.
9. For paper-pound periods (1797–1821, 1919–1925), **A** is the percent currency premium over specie [typically negative, because a discount].

For paper-dollar periods (1814–1817, 1837–1842, 1857, 1862–1878), **A** is the percent specie premium over currency [typically positive].

10. For GTF (corresponding to GPA) gold points, see Officer (1996, Table 9.20).
11. Monthly GPA gold points are graphed in Figs. 16.1–16.3.
12. Table 23.1 is reproduced in Eugene Canjels et al. (2004, p. 869). The symbolic headings are introduced here.
13. Discussion of external integration is in Officer (1996, ch. 10). External integration is half the spread, for convenience in defining internal integration.
14. Nuno Palma and Liuyan Zhao (2021, pp. 893–897) apply the regime-efficiency model to the Chinese silver standard.
15. C. Paul Hallwood et al. (1996) had already investigated the extent to which gold standards were "well-behaved target zones."
16. Palma and Zhao (2021, p. 897) find favor in the CPT results.
17. "Officer's conclusion of a 'remarkably efficient' gold standard between 1890 and 1906…is confirmed by our estimate of unit root incorporating double truncation" (Goldman, 2000, p. 258).
18. Bordo (2012, p. 606), in counterfactual analysis, demonstrates that "had the Second Bank of the United States not been destroyed in 1836 that the US could have had a better history with respect to financial stability, price stability and overall macro-performance." This finding is in line with Knodell's sentiment.

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