

# Silver ETFs: Multiple anomalies detected



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Recently, we have developed a computer program to conduct data mining on the inventory of publicly available silver ETFs -- namely, iShares SLV managed by JP Morgan, and the London-based ETF Securities funds.

What we found was unusual.

## **Abstract:**

A data analysis was conducted of the inventory holdings of two publicly available silver ETFs: iShares SLV and London-based ETF Securities. Custom software was written to analyze published silver bar information for anomalies. Multiple anomalies were found. We detected numerous duplicate bar entries within both lists, which comprised 11.88% and 0.4619% of the SLV and ETFS bar totals, respectively. In addition, we found several 'perfect duplicate' entries within the iShares SLV bar list: that is, the same weight, manufacturer, and serial number were listed multiple times. These comprised 0.0025% of the SLV bar totals. More disturbing, however, was our accidental discovery of the presence of what we have termed 'rough internal duplicates' -- bars with near-identical serial numbers, identical weights, and identical brands. The reason the latter are more problematic is their very low-statistical probability, suggesting some level of fraud and or accounting incompetence is present. We noticed other data anomalies as well, including large amounts of low serial number clustering, which was identified by our industry sources as 'unusual'. Furthermore, we tested for the presence of 'weight duplicates' -- which upon exclusion -- reduced the bar inventories by an astonishing 82% and 50% for the SLV and ETFS funds. We suspect the number of 'weight duplicates' lie well outside the expected Gaussian distribution, but leave this for the subject of future research. Finally, we found multiple cross-referenced bars with identical brands and serial numbers present in both the London and U.S. funds -- funds ostensibly with different custodians. Taken together with evidence of 'revisions' published to the public ETFS data after exposure of the initial flaws, these data suggest there is a degree of systematic fraud or gross incompetence in these funds -- perhaps both.

## Introduction:

Silver has functioned as money in human activities for over 5000 years, well prior to its gradual demonetization in the late 19th century. One question most intelligent students of world finance will ask themselves sooner or later, is how precious metals might be expected to function under a world oligopoly? Due to silver's historical role as currency, as well as its competition for the position of government funds and central bank bonds vis-a-vis the US Treasury complex, one might expect Western governments and megabanks to be openly hostile towards silver. Indeed, after three failed CFTC investigations and one 'Gibson's Paradox' paper, this position appears to be the case. From a systems perspective, we may consider the first step required to create a functional world oligopoly is likely to both displace and suppress the monetary metals in favor of centrally administered paper. This gives us a possible motive for what we characterize here.

The unique position of silver, and the subject of the present paper concerns, is that unlike gold -- silver is not carried as a reserve asset on global central bank balance sheets. This presents a unique problem in terms of 'cartel management' for the global monetary authorities. The problem could be written, "How do you manage the price of an item of which you do not possess large supply?". As silver expert Ted Butler has articulated over the past decade or more, above ground stores of silver have been rapidly consumed post-WWII at such a rate that silver is now several times more rare than gold. The question is not "Why would the price of silver be suppressed?" -- as that should be obvious to any student of 20th century history and decaying empires -- but rather how?

The answer is through the settlement process -- and ultimately through perception itself. Indeed, the scam is very old, and we see it repeated to the present day through the likes of Bernie Madoff, all the way up to our chief scam artists and criminals at the Federal Reserve and US Treasury Department. The scam is: "Sell more of something than you actually have, and hope not everyone asks for their money at the same time." Recently, new developments have come to light regarding the details on how the US/UK financial fraud syndicate manages to accomplish this charade. Many thanks are deserved to Ted Butler, GATA, Rob Kirby, Bob Chapman, Adrian Douglas, Mark Anthony, and countless others.

The recently emerging details on how silver prices are kept low without a large bank inventory are multi-faceted. Besides the obvious hundreds of \$trillions in OTC interest rate swaps which keep the toxic US Tbond complex afloat (in direct competition to the monetary metals), there is the process of the commodity exchanges -- specifically of the highly concentrated unhedged silver futures position by four large banks, of which our sources indicate the top two include JP Morgan and HSBC. Ted Butler has detailed the math at length, but suffice to say the concentration of large amounts of paper futures within the COMEX, minus spreads, in the hands of four banks goes a long way towards enabling world silver price management and a functional oligopoly for the elite.

The last piece of the puzzle, which brings us back to our present topic of the ETFs, is that of the use of ETF shares as settlement on these very same COMEX futures exchange. The final piece was provided to us by GATA and Adrian Douglas in an article published on July 11, 2009 entitled "The Alchemists". Douglas notes that a year prior to the launch of the silver ETF, the COMEX published a rule change, on February 18, 2005, which allowed ETF shares to be used as settlement in lue of physical delivery of a commodity. Convenient timing. No doubt this impacts silver the most, as silver has the most concentrated and leveraged short position of any COMEX tangible. Gold comes a close second. The outcome of allowing ETF shares to be used as settlement instead of physical delivery -- as well as increasingly scarce global silver supply considerations -- is a byproduct of fifty years of industrial consumption and systemic fraud. This situation is both worsening and destabilizing despite increasingly draconian attempts at generalized 'price management' by the authorities, who are now seeking to consolidate their respective dictatorships in thinly-disguised global power plays. Needless to say, this will only end in tears.

Regarding our topic at hand of the silver ETF -- since the silver ETF shares are now used as settlement for price discovery on the futures market, one would think it would be imperative that there was careful accounting and open information in order to facilitate proper price discovery? After all, if one can deliver paper promises to the COMEX, there should be a physical asset backing up the paper, right? Unfortunately, our research on the matter indicates this is not the case, and in fact, there is now information to suggest data anomalies in the holdings of the silver ETFs and possibly even fraud.

## Methods:

Project Mayhem Research obtained the latest bar lists from iShares SLV managed by JP Morgan, and from the London ETFS silver funds managed by ETF Securities. After obtaining the lists, we converted both data sets to plaintext (flat-file) using open source tools on a Linux platform. We then constructed several iterations of custom Perl software (written in vi of course) which analyzed the data sets by loading silver bar information into memory, and cross referenced the information against itself as well as with the opposite list. Eventually we decided on three forms of indexing -- in other words, the selection of the primary key -- the first was to use a standardized manufacturer name appended to bar serial number, and the second, to use manufacturer name, bar serial number, and specific bar weight appended together, and the third, to use the manufacturer name appended to the four digit bar weight. After experimenting with various parameters, we conducted data runs to calculate various statistics on these data sets, mainly to include analysis of forms we initially termed 'collisions', perhaps better identified as 'duplicates'. We found numerous duplicates of various forms. These are characterized as follows:

### Definitions:

Internal Duplicate: A silver bar with identical serial number and brand, listed two or more times within a single inventory list.

Rough Internal Duplicate: A silver bar with an almost-identical serial number (AB1024 vs 1024), yet identical brand and weight, listed two or more times within a single inventory list.

Perfect Internal Duplicate: A silver bar with identical serial number, weight, and brand listed two or more times within a single inventory list.

Weight Duplicate: A silver bar with identical brand and weight listed two or more times on a single inventory list.

Cross Reference Duplicate: A silver bar with identical serial number and brand listed on two or more separate inventory lists.

## Results:

We found a large number of internal duplicates -- far more than we expected. Internal duplicates were much higher on the iShares silver ETF list than on the ETFS list, although they were present on both. Internal Duplicates comprise an astonishing 11.77% of the iShares SLV list and 0.4619% of the ETFS list. A common objection that may be raised is that perhaps many of these manufacturers duplicate their serial numbers -- but the bars can be told apart by their weights. We have taken this possibility into consideration. Our subsequent data run for perfect internal duplicates indicates this claim regarding bar weight may have some merit, at least on paper, as these forms of duplication comprised a substantially smaller fraction of the lists: 0.000242% and 0.00% respectively. Furthermore, the published weight of 281,863,452 ounces for the iShares SLV ETF is roughly consistent with our estimation -- one which includes internal duplicates yet excludes perfect duplicates from the published inventory list, which according to our calculations yields 281,670,356 ounces -- a figure relatively close, within three significant figures, yet not identical the published iShares figure.

Unfortunately we believe even these mildly positive facts are completely dispelled by our trials with what we have termed 'rough internal duplicates' and 'weight duplicates', among other disturbing ancillary information including statistical clustering. A 'rough internal duplicate' characterizes inventory bars with identical manufacturers and weight, and 'almost-the-same' serial numbers. 'Almost the same does' not mean sequential, but rather means simply the removal of alphanumeric prefixes or suffixes from the serial number. Our search algorithm returns twice as many hits on the iShares list when 'rough duplicates' are enabled. The presence of even a few rough internal duplicates is highly disturbing, as the mere presence of rough duplicates indicates possible bar 'cloning' -- where prefixes or suffixes are added to legitimate bar serial numbers in order to pad the list. Since the weight of these 1000oz bars is recorded to four significant figures, even a few numbers of bars with "almost-the-same" serial numbers (yet perfectly identical weights and manufacturers), gives us serious reservations regarding the veracity of these inventory lists -- due to the statistical unlikelihood of four significant figures being identical within the same manufacturer yet having an 'almost-the-same' serial number.

The second aspect of these rather disturbing anomalies are the presence of 'weight duplicates', internal to both lists, where we disregard the serial number in favor of using the manufacturer name and four digit bar weight appended together as the primary key to identify a bar. When using this method, the inventory of both these funds contract via an astonishing 82% and 50% for the SLV and ETFS funds, respectively. While obviously inventory can be expected to contract when disregarding the bar serial number, as a certain number of weights will overlap by chance, we suspect that the magnitude of these contractions lie well outside expected standard deviations (using a normal Gaussian distribution of bar weights centered on or around 950-1000oz.) We leave this as an open question and as a subject for future research by statisticians more capable than ourselves as to whether this is indeed the case. However, we would be remiss to point out that our finding here -- if indeed it lies outside the expected statistics -- this could be easily explained by bar "cloning" -- an explanation consistent with our findings of both 'rough internal duplicates' as well as 'weight duplicates'.

Another strange finding we discovered was evidence of unusual statistical clustering in the iShares SLV bar list. Many of the internal duplicates were clustered towards early bar serial numbers -- that is, those close to zero. We have consulted with an industry source who says this is unusual, as low serial numbers indicate older bars. We have yet to come up with a suitable explanation for why this anomaly would be present, and why internal duplicate concentration would cluster towards zero. We leave this particular item as another in an escalating series of problems with these funds and as another subject for future research.

Lastly we note the presence of 'cross-reference duplicates', where we found bars with identical serial numbers and manufacturers which occurred on both the iShares and the ETFS lists. This was despite these lists supposedly having different custodians. We detected 80 bars, listed in Appendix C, which appear on both lists yet have identical manufacturer and serial number. We believe this is unusual and cause for concern, especially since this number of bars comprises almost 0.5% of the full ETFS bar list. The brands involved in these anomalies include Krasnoyarsk, MET/Mex, Novosibirsk, and Nordeutsche.

## **Conclusions:**

During our research into the inventory lists of the iShares SLV and London-based ETFS physical silver funds, we discovered multiple anomalies which cannot be easily dismissed. These included the presence of internal duplicates, rough internal duplicates, weight duplicates, statistical clustering, and cross-reference duplicates. Taken together, these anomalies are cause for concern, and we suggest that more capable teams conduct further research into these issues, as they effect price discovery within the precious metals market, as these ETF shares are being used for settlement and possibly price-suppression on the COMEX.

If these problems are caused by accounting errors, they are disturbing and perhaps profoundly incompetent, and we suggest both these funds should have their senior management replaced. We cannot recommend these shares to anyone to do these glaring anomalies. In our opinions, the only way for all of these anomalies to occur together as noted in this paper, is via systemic fraud or gross accounting error bordering on jaw-dropping incompetence.

Unfortunately, our private considerations are for the former, especially considering 'revisions' published to the ETFS bar list after the appearance of Mark Anthony's July 14th 2009 article on Seeking Alpha regarding possible ETF fraud. The ETF Securities bar lists were changed after the Anthony's discovery of duplicate bars in the Great Wall brand. To us, this suggests criminal activity. We suggest immediate future research by others to investigate these findings.

## APPENDIX A -- iShares SLV 'Perfect Internal Duplicates'

***Perfect	Internal	Duplicate	Detected:	ASARCO_INC_AMARILLO_146230_997_8
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_1655_951_2
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_1804_1007_9
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_2283_966_8
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_2318_946_4
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_3491_995_8
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_5351_929_0
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_5394_978_9
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_5447_964_9
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_5764_962_9
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_6996_960_7
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_8021_906_5
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_V2029_977_3
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_W10613_956_3
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_W11430_1034_0
***Perfect	Internal	Duplicate	Detected:	BRITANNIA_REFINED_METALS_UK_W11436_1001_8
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_1_1038_6
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_2_1055_5
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_3_1050_7
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_4_1053_7
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_4_1064_7
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_7_1043_7
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_9_1042_7
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_10_1063_7
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_13_1059_8
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_15_1051_2
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_15_1052_3
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_15_1067_1
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_17_1056_0
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_22_1056_7
***Perfect	Internal	Duplicate	Detected:	COMINCO_LTD_TADANAC_CANADA_23_1066_6
***Perfect	Internal	Duplicate	Detected:	EMPRESA_MINERA_PERU_544_1050_4
***Perfect	Internal	Duplicate	Detected:	EMPRESA_MINERA_PERU_873_1027_4
***Perfect	Internal	Duplicate	Detected:	INNER_MONGOLIA_QIANKUN_GOLD_&_SILVER_62_1056_9
***Perfect	Internal	Duplicate	Detected:	INNER_MONGOLIA_QIANKUN_GOLD_&_SILVER_607230_987_8
***Perfect	Internal	Duplicate	Detected:	KGHM_POLAND_3107_1011_7
***Perfect	Internal	Duplicate	Detected:	KGHM_POLAND_3152_1009_8
***Perfect	Internal	Duplicate	Detected:	KGHM_POLAND_3188_1025_7
***Perfect	Internal	Duplicate	Detected:	KGHM_POLAND_5447_1022_6
***Perfect	Internal	Duplicate	Detected:	MET_MEX_PENILES_MEXICO_36860_1053_2
***Perfect	Internal	Duplicate	Detected:	NIPPON_MINING_JAPAN_9383_940_8
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1118_947_3
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1337_939_1
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1126_952_4
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_13411_959_9
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1423_956_2
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1453_947_8
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_16311_948_8
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1641_937_8
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1643_965_0
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1668_954_4
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_1941_952_2
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_19411_947_6
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_20210_951_5
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_2033_946_9
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_2044_976_8
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_2134_962_7
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_21911_957_7
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_2209_974_5
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_22211_970_5
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_2653_943_2
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_2916_953_4
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_2985_956_3
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_39910_948_0
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_5654_952_6
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_M1343_944_0
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_N2311_950_7
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_T0736_959_6
***Perfect	Internal	Duplicate	Detected:	RUSSIAN_STATE_REFINERIES_T981_975_8





\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1119  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1126  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1106  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1108  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1112  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1115  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1122  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1125  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1127  
\*\*\*Internal Duplicate Detected: KRASNOYARSK\_RUSSIA\_1111  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4611  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4512  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4540  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4614  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4542  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4610  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4612  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4517  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4524  
\*\*\*Internal Duplicate Detected: PRIOKSKY\_RUSSIA\_KP4544



Cross Referenced Duplicate Detected: NORDEUTSCHE\_GERMANY\_2609  
Cross Referenced Duplicate Detected: NORDEUTSCHE\_GERMANY\_2610  
Cross Referenced Duplicate Detected: NORDEUTSCHE\_GERMANY\_2611  
Cross Referenced Duplicate Detected: NOVOSIBIRISK\_REFINERY\_RUSSIA\_1395  
Cross Referenced Duplicate Detected: NOVOSIBIRISK\_REFINERY\_RUSSIA\_354  
Cross Referenced Duplicate Detected: NOVOSIBIRISK\_REFINERY\_RUSSIA\_355  
Cross Referenced Duplicate Detected: NOVOSIBIRISK\_REFINERY\_RUSSIA\_356  
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Cross Referenced Duplicate Detected: NOVOSIBIRISK\_REFINERY\_RUSSIA\_360