

**The Copper Journal**  
**Monthly Report**  
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**JE Gross**

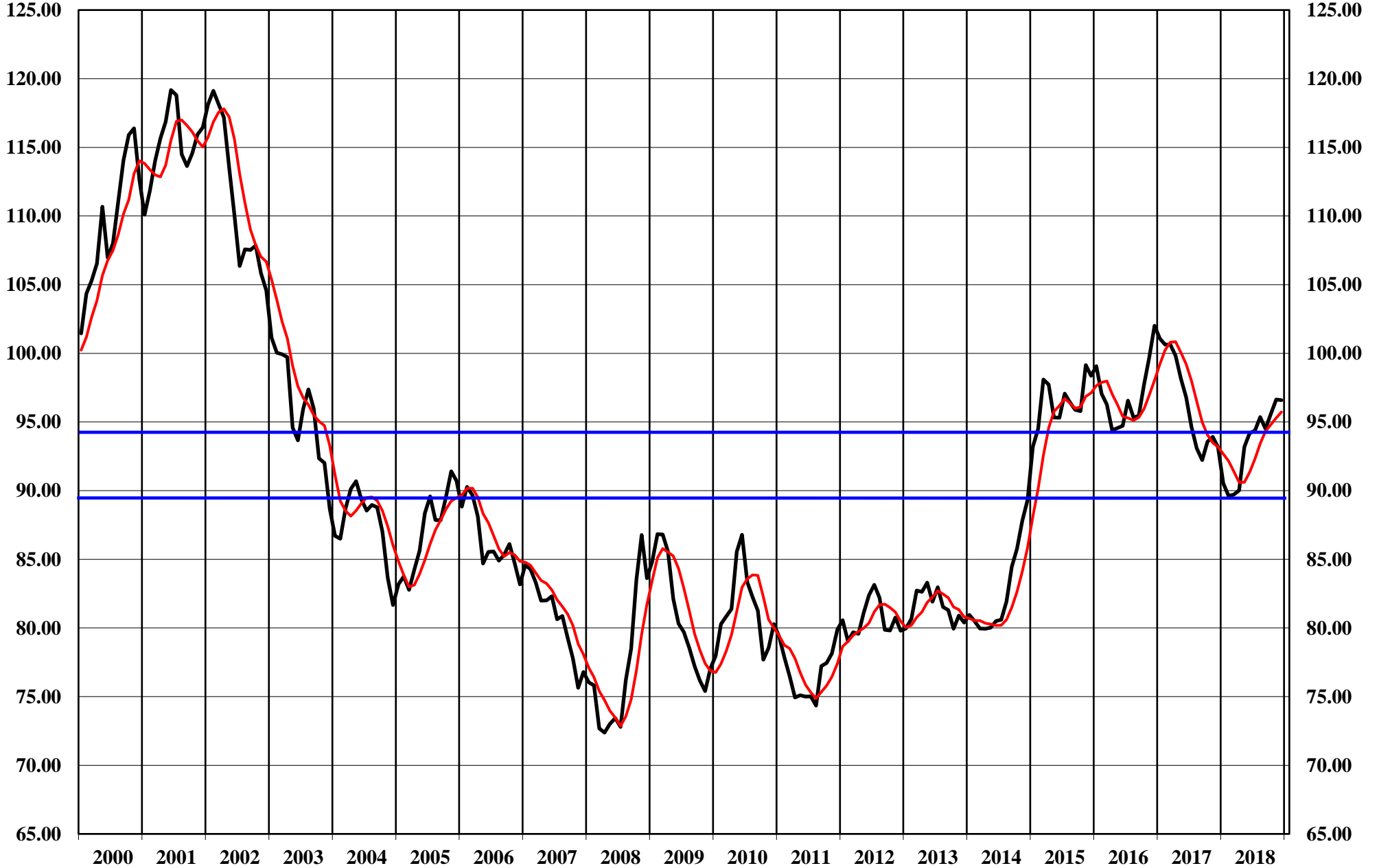
**The Copper Journal**  
**Monthly Price & Inventory Report**

|                             | Prices          |                 |                 |                 |                   |               |                   |                |                   |                |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|-------------------|---------------|-------------------|----------------|-------------------|----------------|
|                             | Monthly Average |                 |                 |                 | Change            |               |                   |                |                   |                |
|                             | December 2017   | December 2017   | November 2018   | December 2018   | Mo / Mo           |               | YTD               |                | Yr / Yr           |                |
| US \$ Index (ICE)           | 93.16           | 93.16           | 96.63           | 96.59           | (0.04)            | (0.0%)        | 3.43              | 3.7%           | 3.43              | 3.7%           |
| \$1 US = € Euro             | € 0.8450        | € 0.8450        | € 0.8800        | € 0.8787        | (\$0.0013)        | (0.1%)        | \$0.0337          | 4.0%           | \$0.0337          | 4.0%           |
| 1 € Euro = \$ US            | \$1.1834        | \$1.1834        | \$1.1363        | \$1.1380        | \$0.0017          | 0.1%          | (\$0.0454)        | (3.8%)         | (\$0.0454)        | (3.8%)         |
| Cx Silver                   | \$16.13         | \$16.13         | \$14.30         | \$14.71         | \$0.41            | 2.9%          | (\$1.42)          | (8.8%)         | (\$1.42)          | (8.8%)         |
| Cx Gold                     | \$1,265.57      | \$1,265.57      | \$1,219.24      | \$1,252.25      | \$33.01           | 2.7%          | (\$13.32)         | (1.1%)         | (\$13.32)         | (1.1%)         |
| NYM Platinum                | \$908.12        | \$908.12        | \$850.64        | \$794.01        | (\$56.63)         | (6.7%)        | (\$114.11)        | (12.6%)        | (\$114.11)        | (12.6%)        |
| NYM Palladium               | \$1,030.83      | \$1,030.83      | \$1,137.99      | \$1,215.39      | \$77.40           | 6.8%          | \$184.56          | 17.9%          | \$184.56          | 17.9%          |
| Base Metals Barometer *     | 2.44            | 2.44            | 2.25            | 2.24            | (0.01)            | (0.4%)        | (0.20)            | (8.2%)         | (0.20)            | (8.2%)         |
| Cx Copper                   | <b>\$3.0983</b> | <b>\$3.0983</b> | <b>\$2.7510</b> | <b>\$2.7234</b> | <b>(\$0.0276)</b> | <b>(1.0%)</b> | <b>(\$0.3749)</b> | <b>(12.1%)</b> | <b>(\$0.3749)</b> | <b>(12.1%)</b> |
| LME Copper                  | \$3.0847        | \$3.0847        | \$2.8088        | \$2.7640        | (\$0.0448)        | (1.6%)        | (\$0.3207)        | (10.4%)        | (\$0.3207)        | (10.4%)        |
| LME Aluminum                | \$0.9391        | \$0.9391        | \$0.8787        | \$0.8759        | (\$0.0028)        | (0.3%)        | (\$0.0632)        | (6.7%)         | (\$0.0632)        | (6.7%)         |
| LME Lead                    | \$1.1377        | \$1.1377        | \$0.8798        | \$0.8913        | \$0.0115          | 1.3%          | (\$0.2464)        | (21.7%)        | (\$0.2464)        | (21.7%)        |
| LME Tin                     | \$8.81          | \$8.81          | \$8.68          | \$8.72          | \$0.0400          | 0.5%          | (\$0.09)          | (1.0%)         | (\$0.09)          | (1.0%)         |
| LME Nickel                  | \$5.17          | \$5.17          | \$5.10          | \$4.91          | (\$0.1900)        | (3.7%)        | (\$0.26)          | (5.0%)         | (\$0.26)          | (5.0%)         |
| LME Zinc                    | \$1.4479        | \$1.4479        | \$1.1758        | \$1.1906        | \$0.0148          | 1.3%          | (\$0.2573)        | (17.8%)        | (\$0.2573)        | (17.8%)        |
| NYM Crude Oil               | \$57.95         | \$57.95         | \$56.69         | \$48.98         | (\$7.71)          | (13.6%)       | (\$8.97)          | (15.5%)        | (\$8.97)          | (15.5%)        |
| NYM Natural Gas             | \$2.78          | \$2.78          | \$4.09          | \$3.92          | (\$0.17)          | (4.2%)        | \$1.14            | 41.0%          | \$1.14            | 41.0%          |
| S&P 500                     | 2,664           | 2,664           | 2,723           | 2,567           | (156)             | (5.7%)        | (97)              | (3.6%)         | (97)              | (3.6%)         |
| Shanghai Composite          | 3,294           | 3,294           | 2,630           | 2,568           | (62)              | (2.4%)        | (726)             | (22.0%)        | (726)             | (22.0%)        |
| 2 Year Treasury Bond Yield  | 1.84%           | 1.84%           | 2.86%           | 2.68%           | (0.0018)          | (6.3%)        | 0.0084            | 45.7%          | 0.0084            | 45.7%          |
| 10 Year Treasury Bond Yield | 2.40%           | 2.40%           | 3.12%           | 2.83%           | (0.0029)          | (9.3%)        | 0.0043            | 17.9%          | 0.0043            | 17.9%          |

|                     | Month End Inventories MT |                |                |                |                 |                |                  |                |                  |                |
|---------------------|--------------------------|----------------|----------------|----------------|-----------------|----------------|------------------|----------------|------------------|----------------|
|                     | Month Ending             |                |                |                | Change          |                |                  |                |                  |                |
|                     | December 2017            | December 2017  | November 2018  | December 2018  | Mo / Mo         |                | YTD              |                | Yr / Yr          |                |
| Cx Copper           | 191,572                  | 191,572        | 125,558        | 100,226        | (25,332)        | (20.2%)        | (91,346)         | (47.7%)        | (91,346)         | (47.7%)        |
| LME Copper          | 201,725                  | 201,725        | 136,175        | 132,175        | (4,000)         | (2.9%)         | (69,550)         | (34.5%)        | (69,550)         | (34.5%)        |
| Shanghai Copper     | 150,489                  | 150,489        | 131,042        | 118,686        | (12,356)        | (9.4%)         | (31,803)         | (21.1%)        | (31,803)         | (21.1%)        |
| <b>Total Copper</b> | <b>543,786</b>           | <b>543,786</b> | <b>392,775</b> | <b>351,087</b> | <b>(41,688)</b> | <b>(10.6%)</b> | <b>(192,699)</b> | <b>(35.4%)</b> | <b>(192,699)</b> | <b>(35.4%)</b> |
| LME Aluminum        | 1,101,925                | 1,101,925      | 1,052,450      | 1,271,200      | 218,750         | 20.8%          | 169,275          | 15.4%          | 169,275          | 15.4%          |
| LME Lead            | 142,250                  | 142,250        | 105,200        | 107,450        | 2,250           | 2.1%           | (34,800)         | (24.5%)        | (34,800)         | (24.5%)        |
| LME Tin             | 2,220                    | 2,220          | 3,000          | 2,175          | (825)           | (27.5%)        | (45)             | (2.0%)         | (45)             | (2.0%)         |
| LME Nickel          | 367,776                  | 367,776        | 213,570        | 207,330        | (6,240)         | (2.9%)         | (160,446)        | (43.6%)        | (160,446)        | (43.6%)        |
| LME Zinc            | 182,050                  | 182,050        | 117,550        | 129,325        | 11,775          | 10.0%          | (52,725)         | (29.0%)        | (52,725)         | (29.0%)        |

\* The Base Metals Barometer is a weighted index of non-ferrous metal prices. January 2000 = 1.00

**The Copper Journal**  
**U.S. Dollar Index (ICE)**  
**2000 - December 2018**



— US \$ Index (ICE) —

The Copper Journal  
\$1 U.S. = Euro  
2000 - December 2018



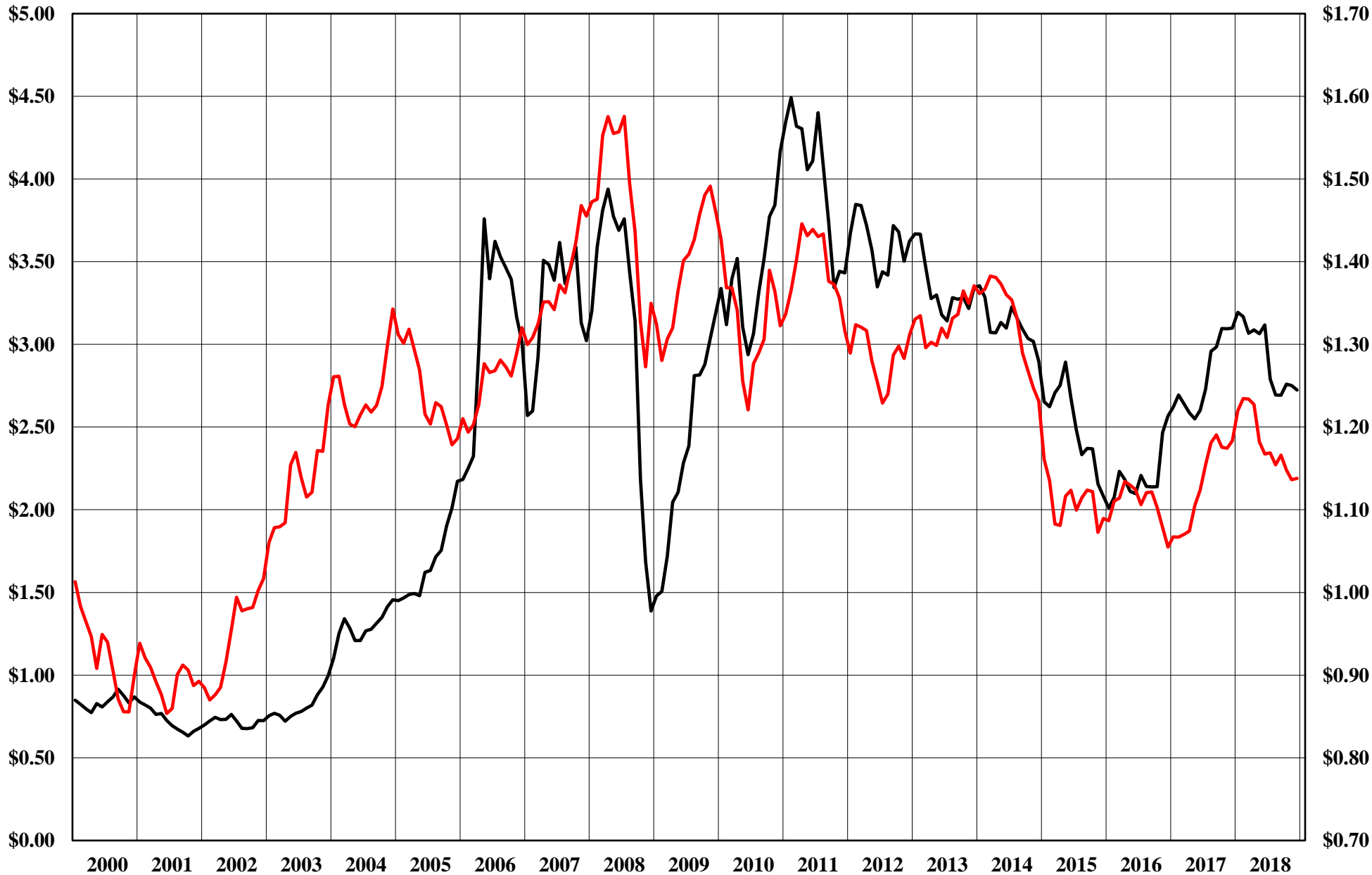
— US \$ = Euro — 5 Month Moving Average

**The Copper Journal**  
**1 Euro = \$ U.S.**  
**2000 - December 2018**



— Euro = US \$ — 5 Month Moving Average

**The Copper Journal**  
**Copper Vs Euro**  
**Monthly Average Price**  
**2000 - December 2018**



Copper - \$ Per Pound

Euro = \$ U.S.

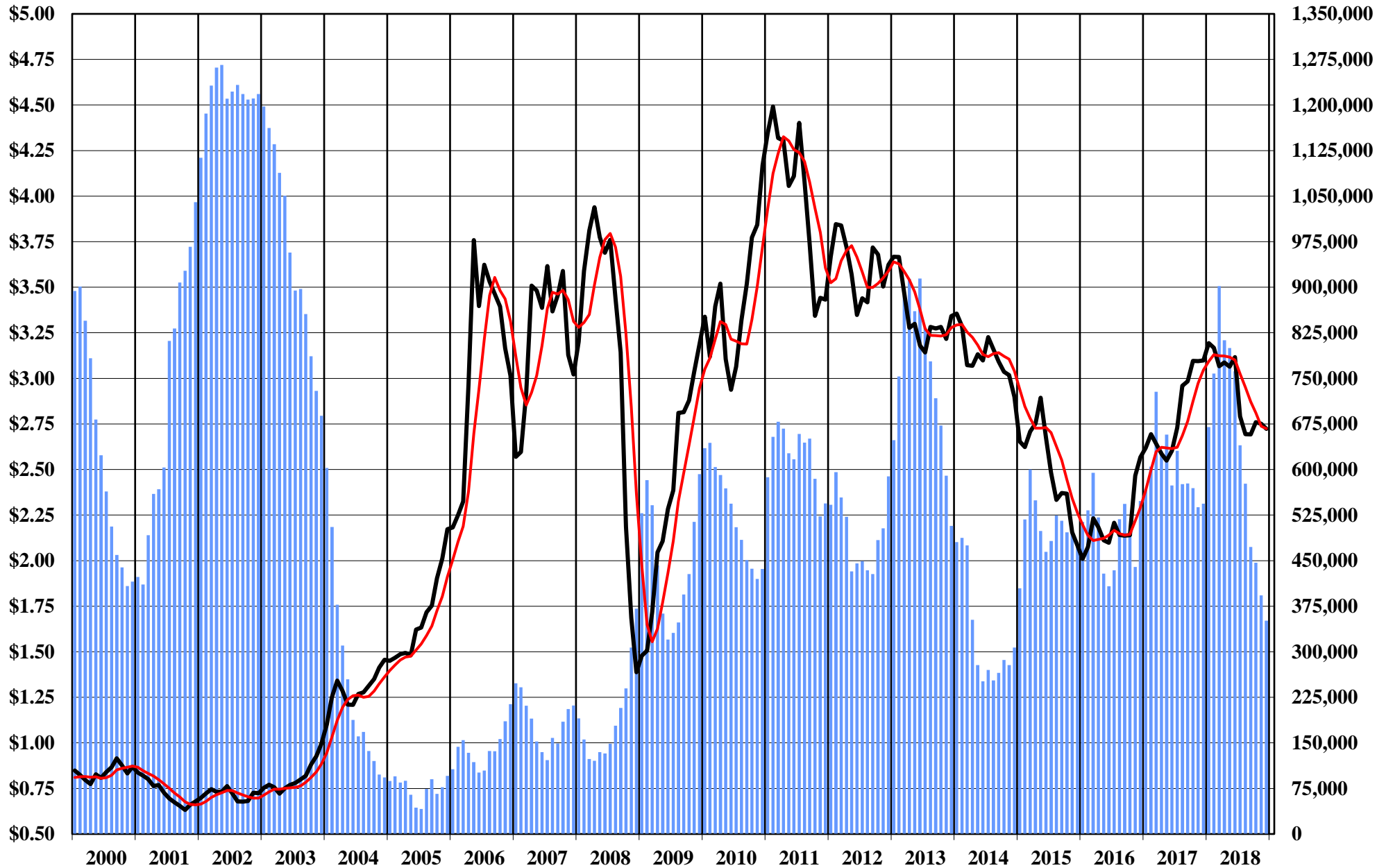
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**The Copper Journal  
Base Metals Barometer  
2000 - December 2018**



— BMB      — 5 Month Moving Average

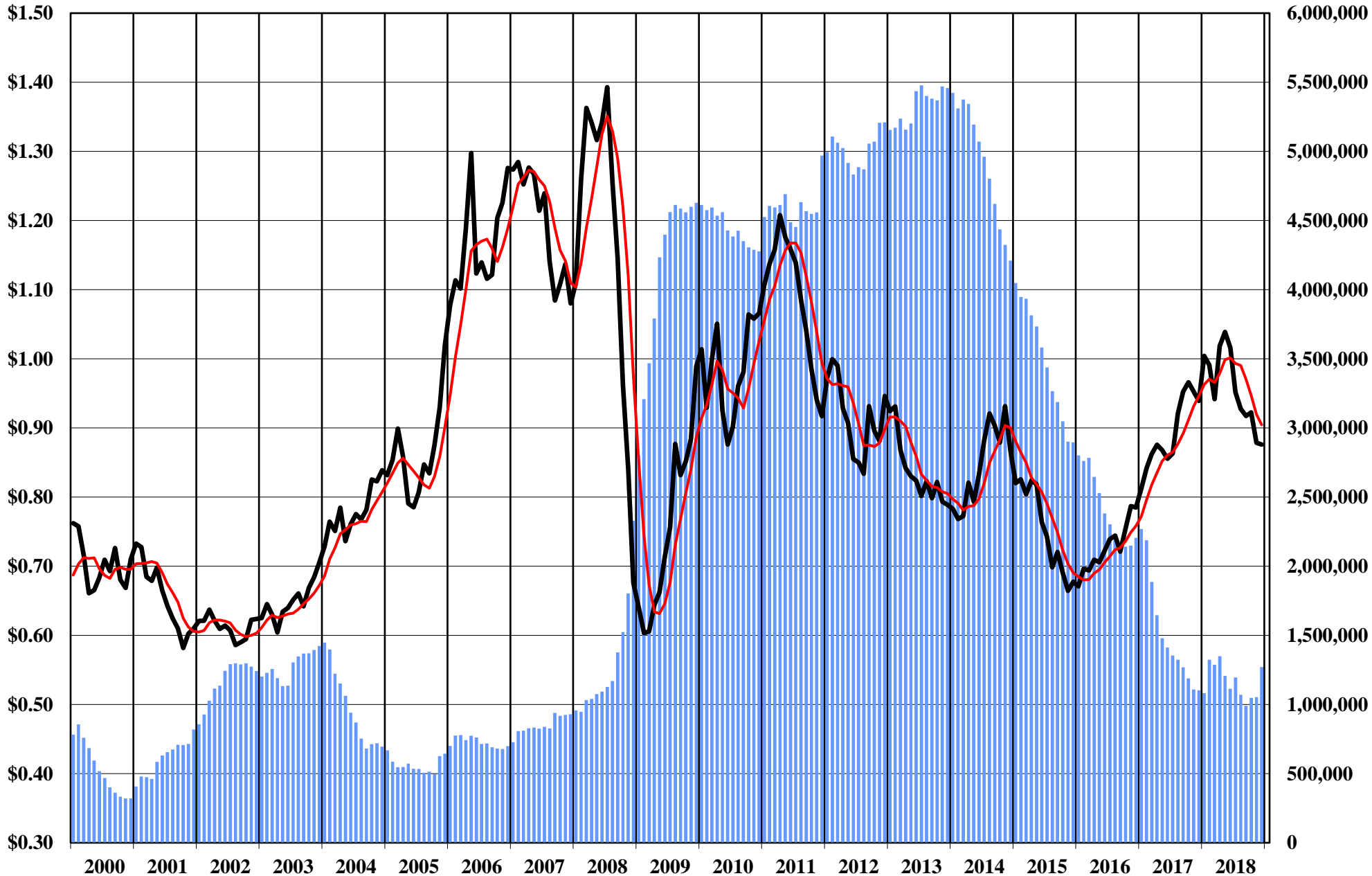
The Copper Journal  
Copper  
2000 - December 2018



■ Cx, LME & Shanghai Inventories    — Cx Copper Price \$/LB    — 5 Month Moving Average

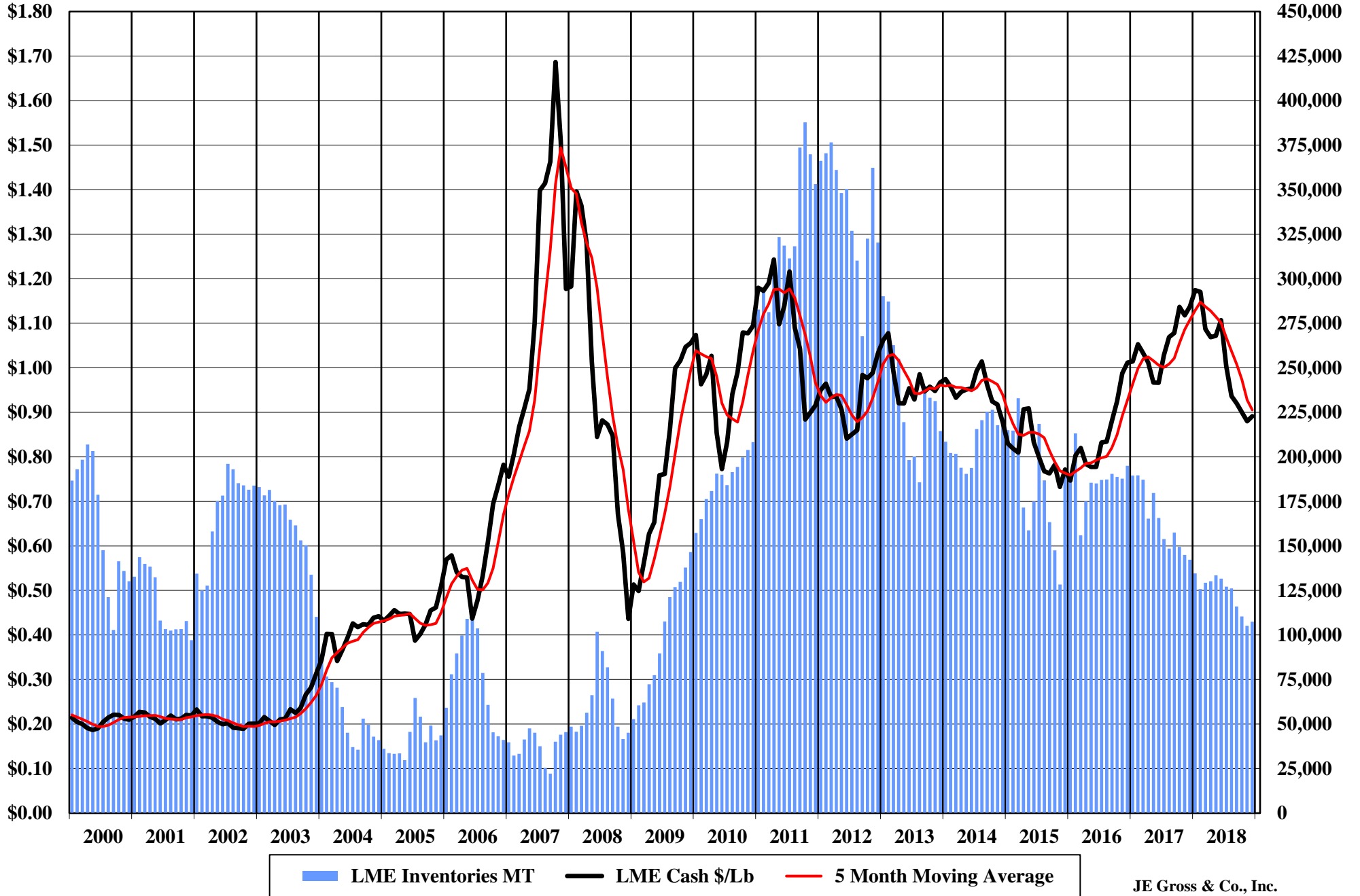


**The Copper Journal  
Aluminum  
2000 - December 2018**

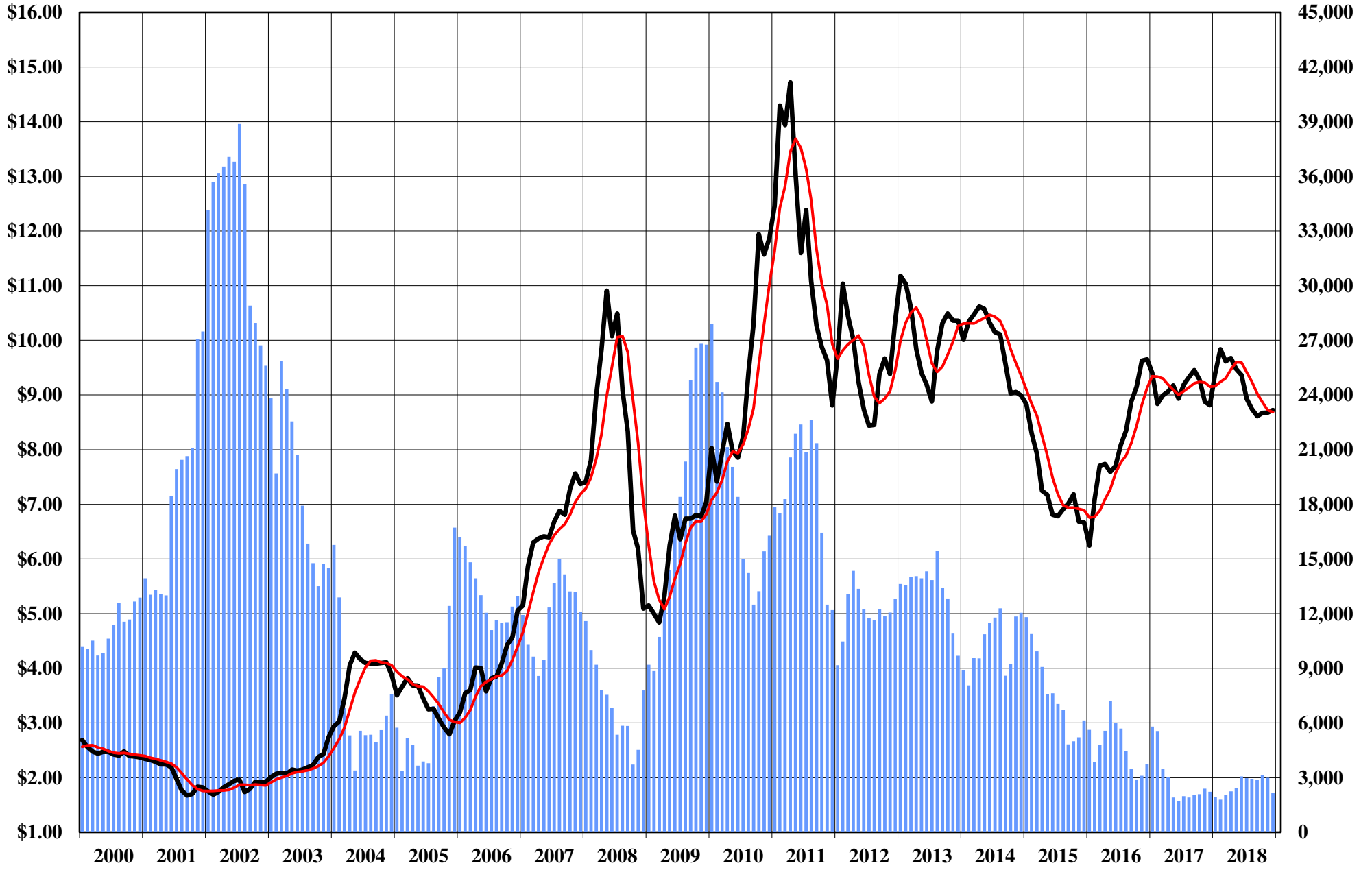


**LME Inventories MT**    **LME Cash Aluminum**    **5 Month Moving Average**

The Copper Journal  
Lead  
2000 - December 2018

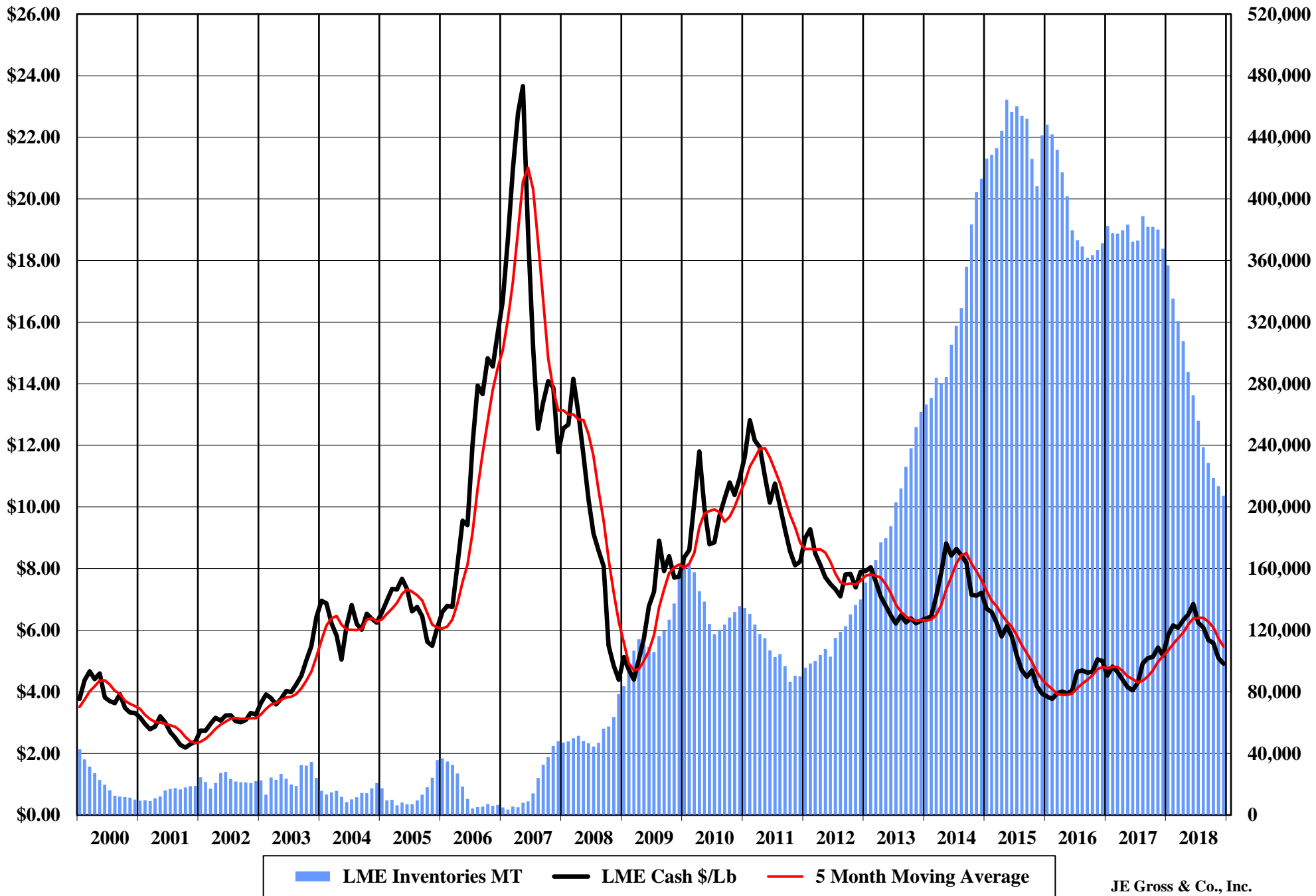


The Copper Journal  
Tin  
2000 - December 2018

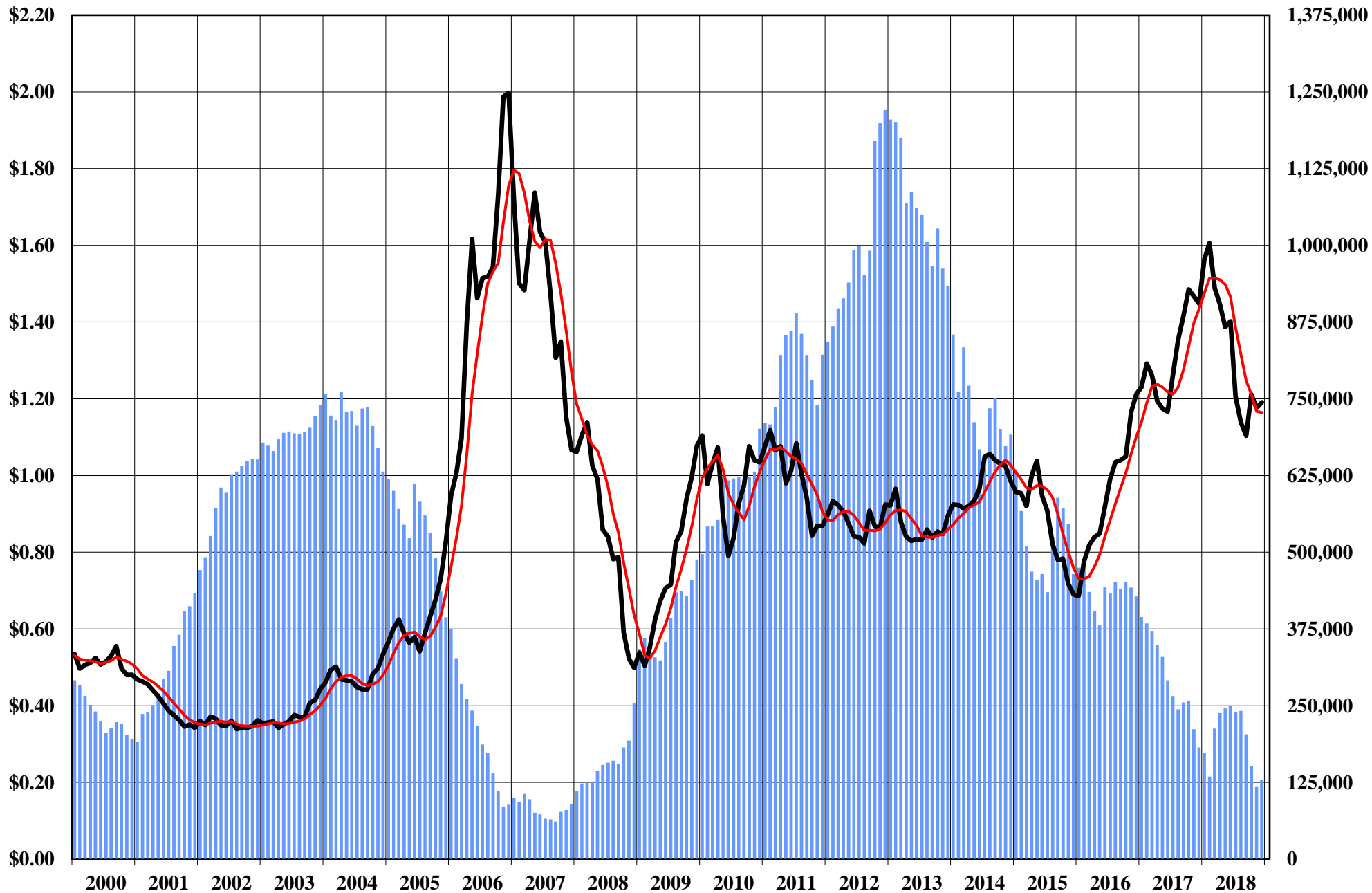


■ LME Inventories MT    — LME Cash \$/Lb    — 5 Month Moving Average

The Copper Journal  
Nickel  
2000 - December 2018



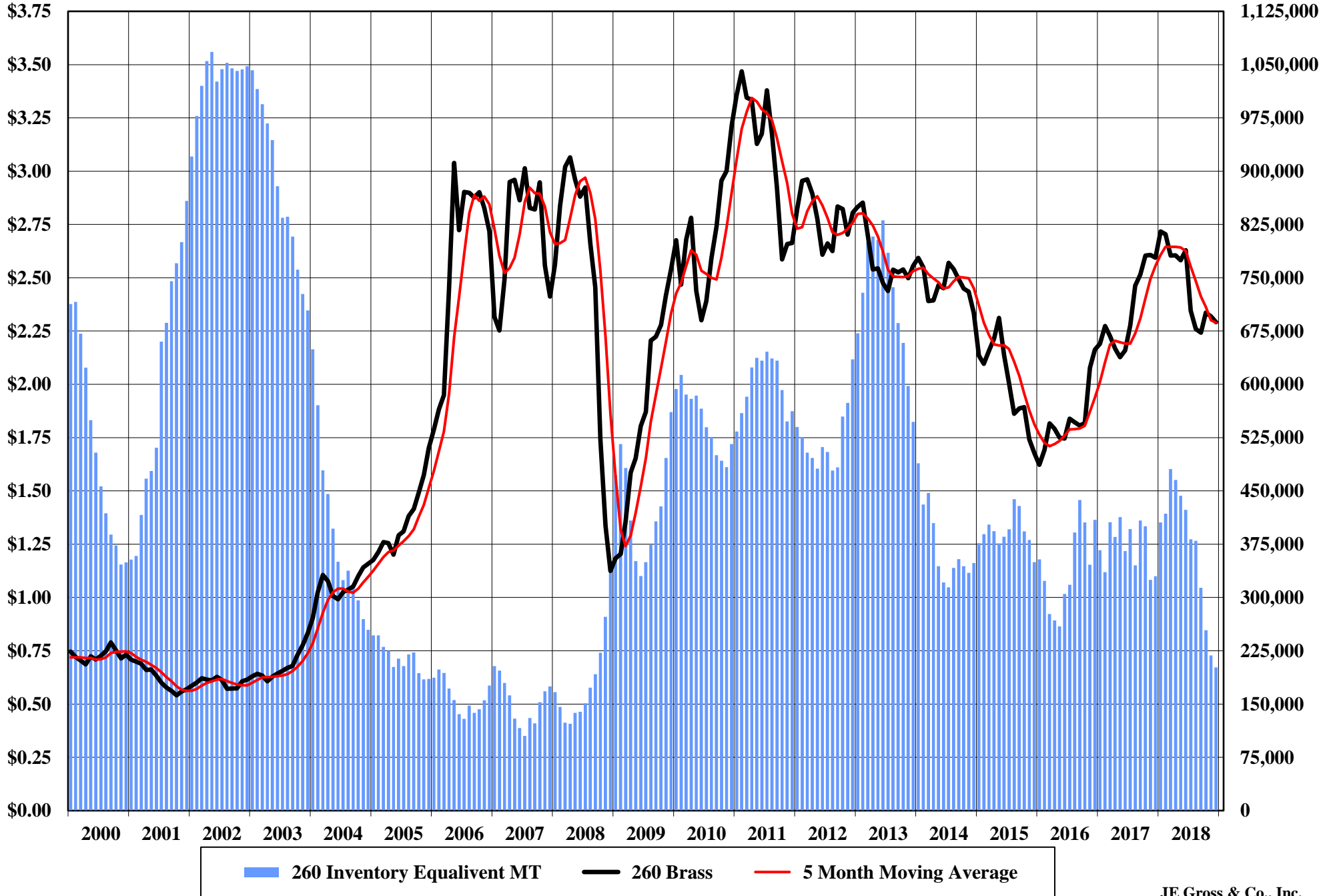
The Copper Journal  
Zinc  
2000 - December 2018



■ LME Inventories MT    — LME Cash \$/Lb    — 5 Month Moving Average

The Copper Journal  
260 Brass  
2000 - December 2018

70% Copper & 30% Zinc



The Copper Journal  
Silver  
2000 - December 2018



Comex Monthly Average - \$ Per Troy Ounce      5 Month Moving Average

The Copper Journal  
Gold  
2000 - December 2018



Comex Monthly Average Price - \$ Per Troy Ounce      — 5 Month Moving Average



**The Copper Journal  
Platinum  
2000 - December 2018**



**Nymex Monthly Average Price - \$ Per Troy Ounce**      **— 5 Month Moving Average**

**The Copper Journal  
Palladium  
2000 - December 2018**



**Nymex Monthly Average Price - \$ Per Troy Ounce**      **— 5 Month Moving Average**

The Copper Journal  
Crude Oil  
2000 - December 2018



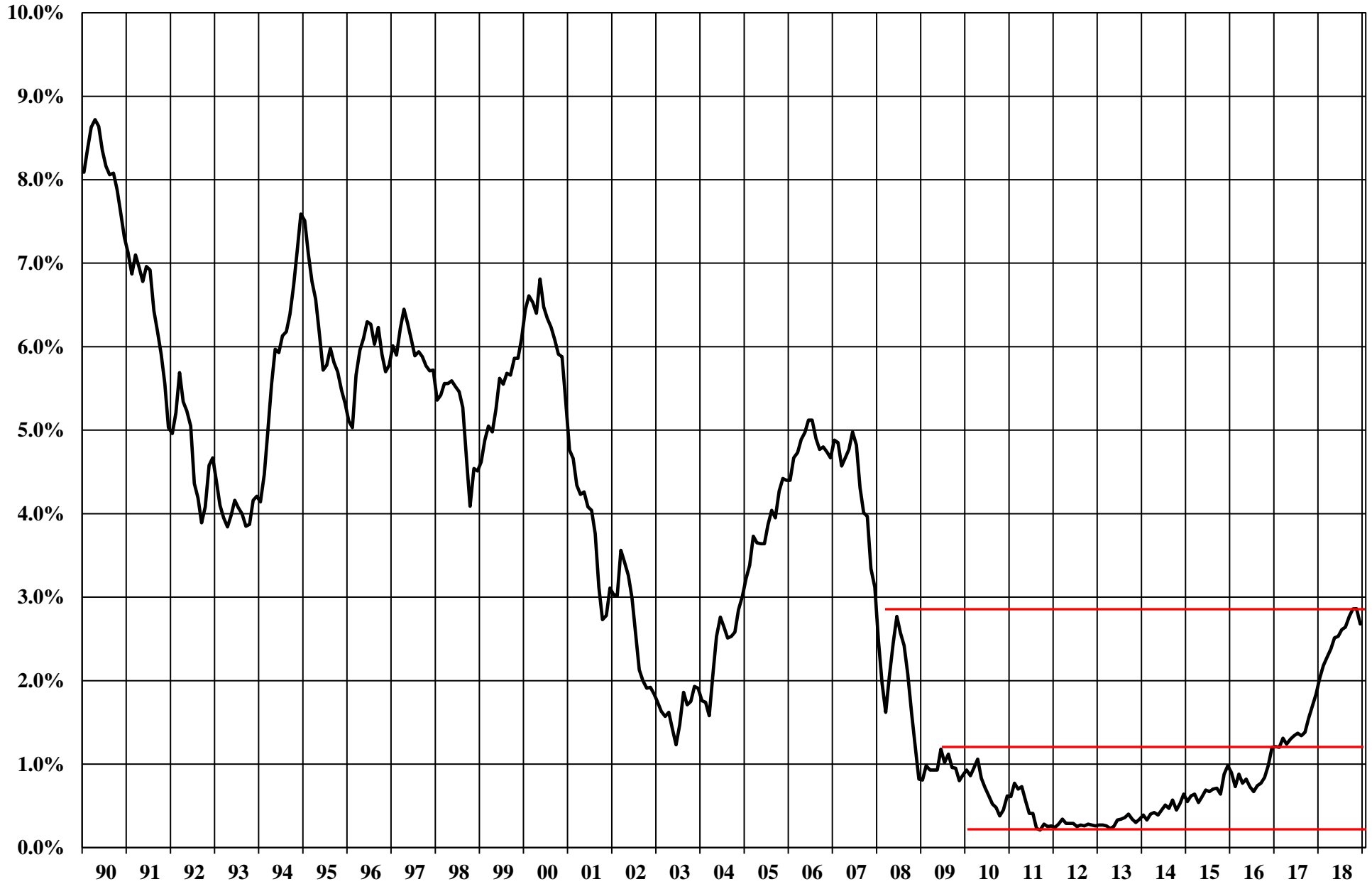
Nymex Monthly Average Price - \$ Per Barrel      5 Month Moving Average

The Copper Journal  
Natural Gas  
2000 - December 2018



Nymex Monthly Average Price - \$ MM Btu      5 Month Moving Average

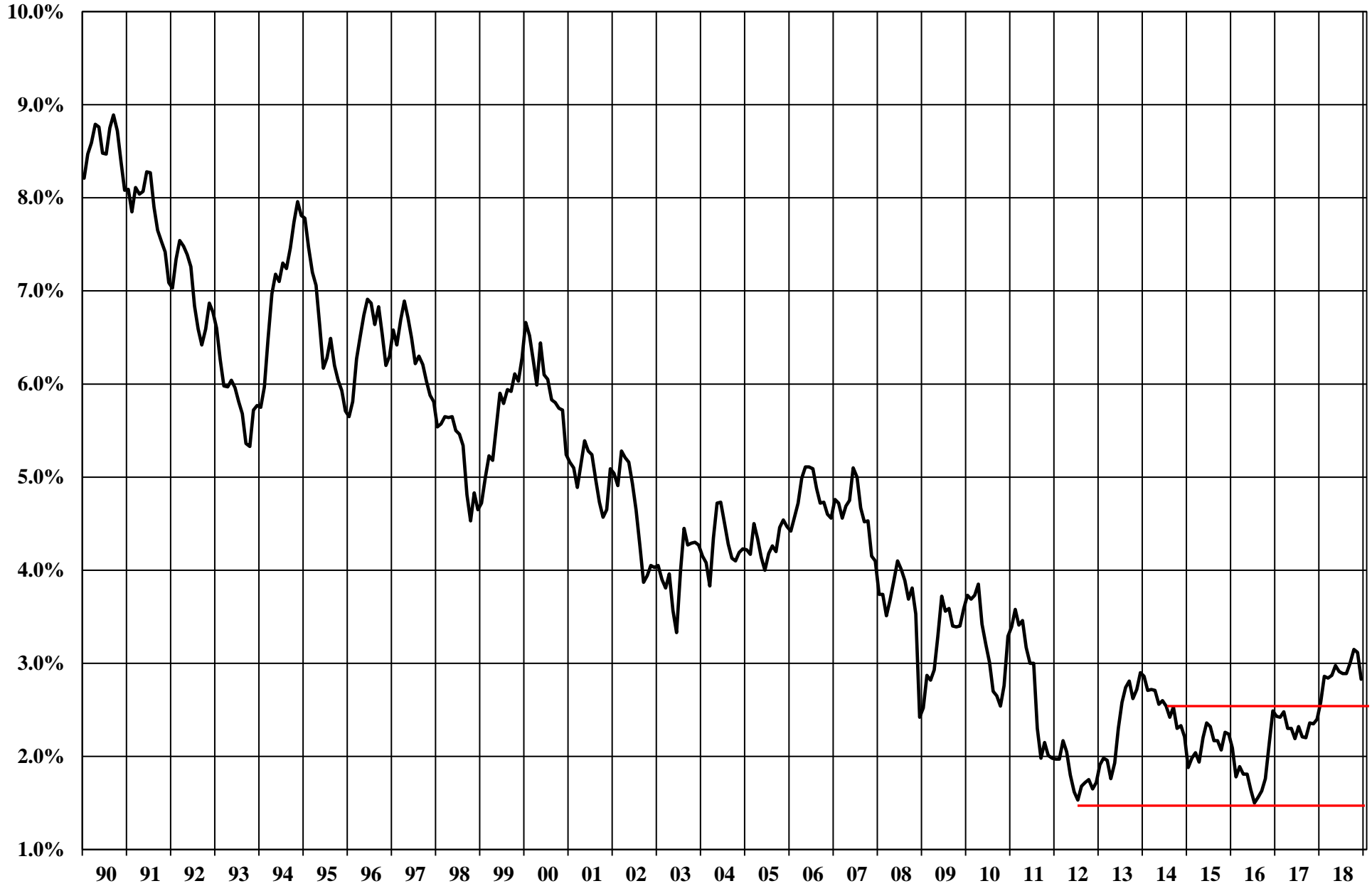
**The Copper Journal**  
**2 Year Treasury Bond Yield**  
**Monthly Average**  
**1990 - December 2018**



Source: Federal Reserve Bank of St. Louis

JE Gross & Co. Inc

**The Copper Journal**  
**10 Year Treasury Bond Yield**  
**Monthly Average**  
**1990 - December 2018**



Source: Federal Reserve Bank of St. Louis

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The Copper Journal  
S&P 500  
2000 - December 2018



— Monthly Average      — 5 Month Moving Average

The Copper Journal  
Shanghai Composite  
2011 - December 2018



— Monthly Average      — 5 Month Moving Average