Resources Policy 42 (2014) 10–17

Contents lists available at ScienceDirect

Resources Policy

journal homepage: www.elsevier.com/locate/resourpol

Chinese steel market in the post-futures period ☆

Evren Arık *, Elif Mutlu [1]

Borsa İstanbul Research Department, Resitpasa M Tuncay Artun C Emirgan Sariyer, 34467 İstanbul, Turkey

ARTICLE INFO

Article history:
Received 28 April 2014
Received in revised form
8 August 2014
Accepted 8 August 2014
Available online 16 September 2014

JEL classification:
G13
L61

Keywords:
Steel futures
China
Commodity markets
Non-precious metal markets
Price discovery

ABSTRACT

We expand the research on commodity futures markets into a newly developed market: steel futures. We examine the most liquid steel futures market in the world, the Shanghai Futures Exchange, which counts for nearly all of the global trading activity. Our findings suggest that following the launch of the steel futures, steel has become a more "financial" product. We first explore the relationship between the spot and futures prices. Futures market finds its place in the price discovery process where the spot market continues to maintain its prominence. We also find evidence indicating that volatility in the spot market has decreased during the post-futures period. Our findings suggest that regulators should consider launching the steel futures so as to enhance the completeness of the market while also taking great care to preserve the link between the physical and the financial market.

Introduction

Unlike other precious and non-precious metals, such as gold, copper, and aluminum, steel futures markets have only been established recently. Although the physical trade volume of steel is one of the highest among industrial products, the development of its futures markets in terms of establishment and liquidity has lagged behind that of the other metals.

With steel futures' turning point only having occurred as recently as 2008, the commodity exchanges' offering of steel futures does not trace its roots very far into the past. Exchanges from the United States, United Kingdom, and China launched steel futures contracts in February 2008, October 2008, and March 2009, respectively.[2] Exchanges such as NYMEX (hot rolled), LME (billet), and SHFE (rebar) provide steel futures with each serving a separate section of the supply chain and having different contract specifications.

On the other hand, the steel community met the introduction of steel futures with skepticism, at the core of which was the potential impact on price volatility. Financial investors which would follow the introduction of the steel futures, were the potential "usual suspects". On the other side of the coin, however, came the "pledged" room for enhanced transparency and price risk management tools. As such, financial investors of steel futures build up liquidity which thereby enable steel producers and consumers to hedge themselves against potential price risks. Moreover, the steel futures bought and sold by the financial community are slated to cause an increase in the alignment of steel prices with other heavily traded metals.

Despite the debate on steel futures, there has been limited research following the debut of steel futures. As such, the goal of this study is to analyze the impact of steel futures on the spot steel market. To the best of our best knowledge, we provide the first comprehensive analysis of a steel futures market. We choose China as the case for our study, with the rationale behind this choice being that China is the world's largest steel producer (Fig. 1) and has, by a large margin, the most liquid steel futures market in the world (Table 1). We believe that an analysis of the Chinese market will not only serve the interest of those participating in the Chinese steel market, but will also shed light on the steel producers and regulators of those markets planning to launch steel futures.

☆The views expressed in this work are those of the authors and do not necessarily reflect those of Borsa Istanbul or its members.

* Corresponding author. Tel.: +90 2122982152.
E-mail addresses: evren.arik@borsaistanbul.com (E. Arık), elif.mutlu@borsaistanbul.com (E. Mutlu).
[1] Tel.: +90 2122982688.

[2] The first steel futures contracts began trading in the early 1990s in China. In fact, three different exchanges were established to trade steel price risk. By 1994 however, all of the exchanges were closed due to lack of business, possibly because they were lightly regulated and were seen more as exchanges for speculation and betting as opposed to risk management. The first attempt after this initial failure occurred in India. In March 2004, steel futures contracts were launched by Multi Commodity Exchange (MCX).

http://dx.doi.org/10.1016/j.resourpol.2014.08.002
0301-4207/

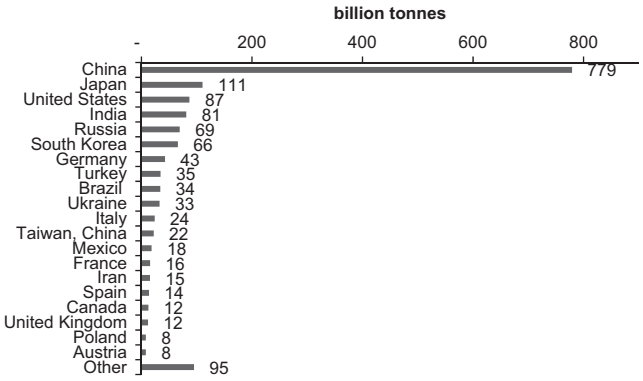

Fig. 1. Global Steel Production in 2013.
Source: World Steel Association.

Table 1
Steel Futures Markets: number of contracts traded (2012).
Source: Bloomberg database. The numbers are adjusted for contract sizes. For instance, the contract size is 10 metric tons at the Shanghai Futures Exchange and 65 metric tons at the London Metal Exchange. Hence the adjustment formula is as follows: adjusted number of contracts$_{LME}$ = number of contracts$_{LME}$ × (contract size$_{LME}$/contract size$_{SHFE}$).

Shanghai Futures Exchange	360,201,656
London Metal Exchange	135,376
New York Metal Exchange	79,399
Multi-Commodity Exchange (India)	24,692

This study is one of the first studies on the steel futures market. We have three main findings. We analyze the price discovery process of the Chinese steel market by employing a vector error correction model (VECM) and find that there is a bilateral interaction between the price movements of the spot and the futures steel markets. However, while the leading role of the spot market is stronger in the long-run in terms of the equilibrium relationship, that of the futures market is stronger in the short-run in terms of lagged price changes. We also find that the correlation between the Chinese steel price and the other exchange traded metals has strengthened following the launch of the futures contracts. Furthermore, the Chinese spot prices have become cointegrated with the global metal indices (London Metal Exchange Index and the S&P GSCI Industrial Metals Index) in the post-futures period. Focusing on the pre-futures and post-futures periods, we find the volatility of steel prices to have declined during the post-futures period. Employing the rolling GARCH methodology, we find evidence supporting the notion that steel has become more financialized with the launch of the steel futures.

Our results shed light on the impact of steel futures on the spot market and present evidence supporting that, in contradiction to the concerns regarding its potential adverse effects; namely a boost on spot price volatility and a shrink in the role of the real (physical) steel market on price discovery, the introduction of the steel futures has not been to the detriment of the steel market. Our findings indicate that although steel has been a more financial product in the last decade, this dynamic has not disrupted the role of the physical market. Moreover, based on evidence from the Chinese data, this study offers an important policy implication for regulators and policy makers of steel producing countries; namely that such countries should not abstain from introducing steel futures due to its potential impact on the physical market. Yet in doing so, regulators should consider launching the steel futures so as to enhance the completeness of the market while also taking great care to preserve the link between the physical and the financial market.

Literature

There are at least two reasons why one can expect the commodity futures market to alter the information reflected in spot prices. First, futures trading attracts an additional set of traders—mainly speculators—to a commodity's market. Secondly, because transaction costs in the futures market are relatively low, speculators are provided with the incentive to close out their positions with an off-setting sale or purchase of futures contracts at the expense of accepting delivery of and selling the physical commodity (Cox, 1976).

Studies examining the price discovery process have focused on incumbent metal futures markets, such as copper and aluminum with studies on copper markets in particular maintaining dominance. To the best of our best knowledge, the only study on the relationship between spot and futures prices of steel is that of Bihari and Kotagi (2012), which shows the presence of cointegration between steel spot and futures markets in India. On the other hand, for the US and Japanese copper markets, Aruga and Managi (2011) find that the futures market plays an important role in transmitting price information to spot markets. Liu et al. (2008) document that, for the Chinese copper market, there exist significant two-way spillovers between the futures market and the spot market, with the spillovers from the futures market to the spot market being much more striking.

On the other hand, Tilton et al. (2011) argue that a surge in investor demand raising prices on the futures markets will have a direct and comparable effect on the spot market prices when these markets are in strong contango. However, when markets are in weak contango or backwardation, price movements in the futures markets have a much looser effect on spot prices. As a result, changes in investor demand on the futures markets may have little or no influence on spot prices in the absence of a strong contango. Instead, changes in fundamentals (that is, producer supply and consumer demand) and possibly changes in investor demand taking place directly on the spot market largely determine the spot price at such times.

Another strand of related literature has focused on the notion of financialization. Regarding the debate on the "financialization" of commodity markets, the results of Miffre and Brooks (2013) show that speculators have no significant impact on either the volatility or cross-market correlation. Figuerola-Ferretti and Gilbert (2001) argue that in determining the price variability in nonferrous metals, the extent of monopoly power is more important than the pricing regime. Whereas producers with market power used to carry out price smoothing in the copper market, since the producer pricing system ended in the late 1970s, purchasers of copper have had an incentive to engage in hedging activities through futures contracts. While Slade (1991) reported that the greater metal price volatility in the 1980s as compared to that of the 1970s may be explained by the increased reliance on commodity exchanges, rather than by the changes in the market structure and concentration variables, when Figuerola-Ferretti and Gilbert (2001) extend Slade's data to recent years, they illustrate that any earlier difference between the variabilities of producer and exchange prices had vanished during the period between which the studies were conducted.

Data and methods

Data

Our empirical analysis employs daily return series of both spot and futures steel markets. After having first obtained price series of the steel rebar futures contracts traded in the Shanghai Futures