THE COMMODITY FUTURES STUDY

AN INVESTIGATION INTO THE POTENTIAL VIABILITY OF A SUSTAINABLE COMMODITY EXCHANGE IN SOUTH AFRICA

VIRTUAL METALS RESEARCH & CONSULTING LTD

COMMISSIONED BY

THE
FUND FOR RESEARCH INTO INDUSTRIAL DEVELOPMENT, GROWTH AND EQUITY

AUGUST 2005

CONTENTS

EXECUTIVE SUMMARY & RECOMMENDATIONS

The research brief in context

The research methodology

The report content

Acknowledgements

The key findings
- Current exchanges
- Rationale for establishing a futures exchange
- South Africa as a location
- How do you measure contract success?
- What determines contract success?
- Who might use the exchange?

Recommendations

CHAPTER 1 STATISTICAL AND STRUCTURAL BACKGROUND

Introduction
- Commodities futures trading

Contemporary global exchanges
- Commodity Exchange New York
- COMEX/Nymex
- Tokyo Commodity Exchange (TOCOM)
- London Metal Exchange (LME)
- Korea Futures Exchange
- Shanghai Futures Exchange
- Brazilian Mercantile & Futures Exchange
- Chicago Board of Trade (CBOT)
- The Istanbul Gold Exchange
- Chinese Gold and Silver Exchange (Hong Kong)
- Shanghai Gold Exchange

Charter and structures

Time zones and spheres of influence

Customer bases

Specific metals contracts

Most widely used contracts (tables)
- Gold
- Platinum
- Palladium
- Aluminium
- Ferrochrome

CHAPTER 2 ANALYSIS

Why should an emerging market establish a local futures exchange?

Is it significant that most successful exchanges are founded on the demand for the commodities rather than the supply?

Does South Africa's access to physical commodity supplies give the country a comparative advantage?

Why do some contracts work and others fail?
- First mover advantage
- Liquidity
- Fungibility and homogeneity
- Free market pricing structure
- Housed in viable exchange
- Contract design
- Fee structure
- High quality hedge in an illiquid market

How does the commissioning of a new contract affect market liquidity and the turnover on existing exchanges?

Can there be too many exchanges?

How does an exchange define and measure contract success? What is the critical mass for a contract to succeed?

What is the key to the success of existing exchanges?

Would a South African exchange be a competitor to existing exchanges?

Could a South African exchange co-partner any existing exchange? If so, which one and how?

Is the South African time zone an advantage or handicap?

Who would use a South African commodity exchange?

GLOSSARY OF TERMS AND ACRONYMS

REFERENCES

COPYRIGHT, DISCLAIMER AND CONTACT DETAILS

EXECUTIVE SUMMARY AND RECOMMENDATIONS

THE RESEARCH BRIEF IN CONTEXT

The Fund for Research in Industrial Development Growth and Equity (FRIDGE) commissioned this piece of research in March 2005. The overriding objective was to address the question: is a South African commodity exchange viable and sustainable? This report sets out to answer this and place the findings into an international perspective. The brief further requested that the potential of South African futures contracts specific to gold, platinum, palladium, ferrochrome and aluminium be considered. For ease of reference, much of the analysis is in question and answer form.

THE RESEARCH METHODOLOGY

The approach used in this research combined 3 courses of action:

- Virtual Metals reviewed the history of futures exchanges and analysed what factors encouraged the success of some and conversely what factors retarded the development of others. The same methodology was used to assess the success or failure of individual futures contracts
- Virtual Metals then listed and analysed the structures, charters and volumes of trading of the global exchanges that trade commodities in general and the five named metals specifically
- And finally Virtual Metals conducted industry interviews including office bearers and past and present board members of the London Metal Exchange (LME), the New York Mercantile Exchange (COMEX/Nymex) and the Tokyo Commodity Exchange (Tocom)

THE REPORT CONTENT

Apart from the balance of this chapter which summarises the research findings and proffers recommendations, the report contains the following:

- Chapter 1 – a detailed review of the history of futures exchanges and a description of the main commodity exchanges, their structures, charters and briefs and their products
- Chapter 2 – an analysis of what prerequisites are needed to ensure the success of a futures exchange and a discussion of why some exchanges and products have succeeded while others have failed
- Chapter 3 - a glossary of relevant terms and acronyms
- List of references cited

ACKNOWLEDGEMENTS

The research was conducted by the Virtual Metals Research team, specifically Jessica Cross, Matthew Turner and Tom Butler. The project also had the benefit of a South African learnership and Bubele Mahanjana is thanked for the very material contribution he made to the data collation and analysis. The Virtual Metals team would also like to thank Mark Lentin and Ashok Damarupurshad for their considerable support and intellectual contribution.

THE KEY FINDINGS

Current exchanges

In 2004 the annual volume of global exchange derivatives trading was 8.9bn contracts. Of this, financial derivatives accounted for 91%, leaving 9% for commodities. Metals accounted for just 2% of global turnover.

The leading futures exchanges that trade metals are the New York Mercantile Exchange and its Commodity Exchange division (Nymex/COMEX), the Tokyo Commodity Exchange (TOCOM), the London Metal Exchange (LME), the Shanghai Futures Exchange (SFE), the Chicago Board of Trade (CBOT), the Korean Futures Exchange (KOFEX) and the Brazilian Mercantile Exchange (BME).

The key to the success of existing exchanges is largely historic; their longevity is a good indicator of success. Exchanges which have been in existence for a significant period of time have by definition established a core of local users well accustomed to the exchange and its products. The exchanges also have track records with respect to their clearing houses and warehousing.

Potential new exchanges must either offer product differentiation of some sort or compete head-on with the established exchanges offering the same standard product. Neither of these options augur well for the challenging newcomer.

Where a proposed exchange elects to offer different products, the likelihood of success is low since the

established customer base is already very familiar with the existing products and it is very difficult if not impossible to wean them off them and onto something new. Where the same products are launched to compete head-on with existing ones, the exchange with the greater liquidity (by definition the existing exchange) will tend to dominant and stifle any potential shown by the new exchange. History has also shown that discounting the price of trading of a new product does not guarantee success for a challenger.

Apart from the importance of historic dominance, the success of an exchange and its contracts depends upon the following factors:

- high liquidity
- transactional efficiency
- products that fit organic, pre-existing demand
- good level of local speculator business
- international business from other time zones
- exchange acts as clearing house
- the right contracts
- innovation and minimal regulatory controls
- reputation for honesty and equity
- clear-cut rules
- location (at least originally)
- tradition of futures trading
- usually in consumer market

Rationale for establishing a futures exchange

The World Bank argues there are two distinct benefits from having a local futures exchange:

- Improved price discovery for local market
- A better correlation between the local cash market and the price of exchange derivatives

Further benefits include the enhancement of the host country's financial infrastructure, better standards of financial regulation, knock-on benefits for the economy from both of these, a direct economic benefit from the exchange providing employment and investment, and, finally, prestige for the host country and city.

South Africa as a location

In its favour South Africa has a legal infrastructure that can support an exchange, well established and functioning credit systems, good financial regulation, sufficient financial resources and banking skills and, in the Rand Refinery, a world-class gold depository.

Against are the country's limited cash markets in the metals under consideration, and the lack of first-mover advantage.

South Africa's pre-eminence in the production of minerals, especially gold, platinum group metals and ferrochrome, does not necessarily give the country a comparative advantage relative to the non-mining host countries of existing or potential exchanges.

The possession of strong metals' production is not a particular advantage. The reason for this is that a small percentage of futures contracts come to physical delivery (less than 1% in the case of gold and pgms and 20% or less in the case of base metals) and thus access to this metal, by virtue of proximity to the mines, is not of huge importance. Indeed, although South Africa produces these commodities, the annual output is overwhelmingly destined for export and thus there is little in the way of metal circulating in the local markets from where a physical market could logically develop into a derivatives one.

Of more importance, as already alluded to, is the access to and association with secure and reliable warehousing and safe transportation to and from the warehousing, which is usually found in terminal markets rather than in producing countries. However, there are examples of futures markets in producing countries (such as the tin market in Malaysia) suggesting that being located in the consuming market is not a necessary condition.

How do you measure contract success?

There is no set mathematical formula that can be applied. Given the emphasis on liquidity, the most obvious measure is trading volume of a contract, with Silber (1981) suggesting 10,000 contracts traded a year as a minimum. The Wall Street Journal only lists contracts that trade more than 1,000 contracts a day. Given contract size and value differs across products and exchanges, one can also look at the portfolio value of the volume traded.

Longevity of contract is also important as some contracts have very successful initial years and then peter out, while other contracts see the opposite.

Another measure is the ratio of trading volume to open interest, as this gives a good guide to how easily participants can enter into or liquidate positions.

What determines contract success?

There are two distinct considerations here. First, that there are participants who want to use a futures contract in the respective metals. Second, that these participants want to use *this* futures contract in the respective metals. The first point usually requires the presence of speculators and hedgers to provide both sides to the market (as one assumes risk and the other offloads it). This is covered in more detail under the next heading.

Factors determining which *specific* contracts do better are:

- First-mover advantage. Of 25 contracts introduced on the London International Financial Futures Exchange between 1982 and 1994, 11 had "first-mover advantage"; 73% were still trading in 1994, whereas of 14 where it did not have first-mover advantage only 36% were still trading. This emphasises the importance of liquidity to contract success, as there are many examples of contracts that are better designed failing to compete with ones that are less well-designed but have greater liquidity.
- Contract design. The contract needs to meet the requirements of market participants. Important features include fungibility and homogeneity, with standardisation of contract size, quality and grade, and widespread recognition and acceptance of the specifications. Nevertheless, as noted above, good design is not a sufficient factor.
- Underlying cash market. The more liquid, transparent and freer its price-setting mechanism the greater the chance of a successful futures contract.
- Housed in a successful exchange. New contracts from well-established and large exchanges appear to have a better chance of survival than ones from smaller or new exchanges.
- Fee structure. All other things being equal, a cheaper exchange will attract business from other exchanges. However, this cannot make up for poor contract design or a lack of liquidity.

Who might use the exchange?

Producers of precious metals, especially gold, can and do make extensive use of derivatives, but these tend to be OTC transactions entered into directly with bullion banks rather than exchange traded products. While some of the risk associated with these transactions might ultimately be offset indirectly on a futures exchange, it is rare that a gold miner will make use of a standardised futures contract. This existence of a large OTC market on the back of plentiful and cheap central bank lending of gold is the main reason for the absence of the gold producers on an exchange floor. More specifically, the derivatives associated with gold producer hedging tend to be complex and non-standard and therefore the futures exchange contract is considered too limiting by the mining companies. Furthermore, gold hedging on the part of the producers is often executed in volume and frequently as part of a financing package structured by a lending bank.

At the same time, the consumers of gold, primarily jewellers, tend not to make much use of price risk management instruments. The global jewellery industry is made up of numerous, often small, operations and their individual metal usage falls short of the volumes deemed sufficient to make use of a standardised futures contract. Moreover, many of the jewellers confess that price risk management is too sophisticated for them. In some instances the use of a futures contract might reveal the true level of business, which a manufacturing jeweller might wish to keep hidden from a country's fiscal authorities.

With respect to platinum and palladium, agreements between producers and consumers of the metals (primarily manufacturers of industrial and automotive catalytic converters) tend to be long-term arrangements entered into directly by the two participants.

When considering banks as potential users of commodity futures contracts in South Africa, the local banks appear to be the ones most likely to make use of these products. Their numbers and financial presence in the markets may be of consequence but, critically, the importance that they might ascribe to commodity trading is probably insufficient for them alone to generate trading in volumes sufficient to ensure contract success.

With respect to the potential of international banks, commission houses and trading houses making use of a local exchange, our research suggests that this is unlikely to emerge. Even where exchange membership is open to the international market, the presence of global banks and trading houses is not automatic. International financial entities have limited credit lines for commercial purposes in other countries. With respect to South Africa, these credit lines are set internally by the credit departments of these companies and will take into account their perceived sovereign risk. Thus, the representative offices of international banks in South Africa have credit limits applied to them from their head offices and allocate those limited lines as commercially prudently as possible. It is therefore possible, depending on the commercial activities engaged in locally by the banks, that they simply do not have the credit lines available to trade on a local exchange, even if they were permitted to become members and had the appetite for a local futures contract.

With regard to investors, in South Africa hedge funds are increasing in popularity, but the country's domestic hedge fund industry, with an estimated R8.5bn under management in about 70 funds, is tiny compared to the more than the $1 trillion believed to be tied up in hedge funds worldwide. Thus, local

investor interest from funds is likely to remain limited.

The implication of all this is that the likelihood of the emergence of sufficient local trading interest in a South African commodity exchange does not look positive. Apart from concerns about credit, gold, platinum, palladium and aluminium can be traded actively on existing exchanges that command market dominance and which are associated with considerable turnover volume and liquidity. The South African contracts would have to compete head-on with the likes of the LME and COMEX/Nymex, where history has shown that latecomers to a competing market enter at a disadvantage. In the case of ferrochrome, the fact that the commodity is not freely traded via an unfettered international price suggests that a future contract considered anywhere in the world may not meet the requirements of industry, in that cash settlement would be difficult.

RECOMMENDATIONS

Virtual Metals' research revealed little in the way of cogent arguments to support the sponsors electing to proceed with the proposed phase two of this project.

The prognosis for a South African commodity futures exchange will greatly improve only once a cash or physical market for the commodities has evolved locally. While these commodities are exported to the exclusion of the local market, as is currently the case, a physical or cash market will have enough difficulty establishing itself let alone providing the grounding for the evolution of a viable futures market.

1 STATISTICAL AND STRUCTURAL BACKGROUND

INTRODUCTION

Commodity futures trading

A futures contract is a standardised agreement between a buyer and a seller to exchange a pre-agreed amount and standardised grade of an asset, at a specific price and future date. The item or underlying asset may be an agricultural commodity, a metal, mineral, energy or commercial commodity, a financial instrument or a foreign currency – essentially any instrument which can be traded and through which market participants can be exposed to price risk. Because futures contracts are derived from these underlying assets, they belong to a family of financial instruments called derivatives.

A futures or derivatives exchange is defined as a trading forum that links a central marketplace (such as a trading floor), where all those with buying and selling interests in a product designed to permit the shifting of risk can meet, with a mechanism (such as a clearing house), for intermediating, validating, and enhancing the credit of anonymous counterparts. Key to a successful exchange is the efficient transfer of risk among the exchange participants. This requires efficient trading systems, settlement and clearing mechanisms, membership structures and viable products (Tsetsekos et al, 2000).

Exchanges are established on the basis that they enhance the financial infrastructure of the host country since they link producers, consumers and speculators and thereby facilitate cash markets. By allowing participants to offset risk, the exchanges become self-fulfilling in that they attract additional users, creating liquid markets. Liquid markets attract further additional users.

Thus traders buy and sell futures contracts on an exchange (usually a non-profit organisation) – a marketplace that is operated by a voluntary association of members. The exchange provides buyers and sellers with the necessary infrastructure (trading pits or their electronic equivalent), legal framework (trading rules, arbitration mechanisms), contract specifications (size, grades, standards, time and method of delivery, terms of payment) and clearing mechanisms necessary to facilitate futures trading. Only exchange members are allowed to trade on the exchange. Non-members trade through commission merchants – exchange members who service non-member trades and accounts, for a fee.

Exchange history

The first recorded instance of futures trading occurred with rice in 17th century Japan, where merchants stored rice in warehouses for future use. In order to raise cash, warehouse holders sold receipts against the stored rice. These were known as "rice tickets." Eventually such rice tickets became accepted as a kind of general commercial currency. Rules evolved to standardise the trading in rice tickets and warehouse storage facilities.

In the middle of the 19th century, futures trading started in the United States in the grain markets. The Chicago Board of Trade was established in 1848 and introduced the first traded derivatives contract in 1859 in agricultural products. The first (non-precious) metals contract began trading at the London Metal Exchange (LME) in 1878, and over the next few decades a number of other commodities exchanges sprang up. Today, as well as the LME, the largest exchanges include the Chicago Board of Trade (CBOT), the Chicago Mercantile Exchange (CME), the New York Mercantile Exchange (COMEX/Nymex) and the Brazilian Mercantile & Futures Exchange (BM&F). Futures exchange trading is to be found in more than 20 countries, including the US, Canada, UK, France, China, Singapore, Japan, Australia and New Zealand.[1] The products traded range from agricultural staples like corn and wheat to rubber, gold and energy.

The biggest increase in futures trading activity occurred in the 1970s, when futures on financial instruments were first introduced in Chicago. Currencies such as the Swiss Franc and the Japanese Yen were the first to be traded. Interest rate instruments such as US Treasury Bonds and T-Bills were also to prove popular. In the 1980s, futures exchanges began offering more esoteric products such as stock market indices, for example the Standard & Poor's 500, and weather derivatives. This was largely the result of global deregulation of financial markets, which has, in turn, created a climate conducive to new investment and trading opportunities. The existing exchanges have continued to seek new ways in which market participants can manage risk.

The development of many emerging markets has recently given rise to the establishment of new exchanges, which have allowed market participants to access local terminal markets. These new exchanges have lowered transaction costs, enhanced the transfer of local information, and facilitated the geographical transfer of risk and cross-border transactions.

By 2004, the annual volume of global exchange derivatives trading was 8.9bn contracts, up 9% year-

[1] See Appendix I for a detailed list.

on-year. Financial derivatives (interest rate, equity indices, foreign currency and individual equities) dominated the exchanges, with 91% of trading by volume, leaving just 9% for commodities. Within this 9%, agricultural commodities are the largest single category with 4% of global volume, and energy products taking 3%. Precious and non-precious metals account for around 1% each (equivalent to 10% and 16% of commodity turnover respectively)[2].

Global derivatives trading (Futures and Options)

2004	000s of Contracts	Share
Interest Rate	2,271.25	26%
Equity Indices	3,775.43	42%
Foreign Currency	105.37	1%
Agricultural Commodities	326.15	4%
Energy Products	243.46	3%
Precious Metals	60.56	1%
Non-precious Metals	105.23	1%
Other	0.86	0%
Individual equities	2,002.43	23%
	8,890.74	**100%**

Source: Futures Industry Magazine. Totals may not add up due to rounding.

Exchanges constantly seek new products on which to trade futures. Because futures exchanges compete for traders, any new products they launch must appeal to the financial community. Very few of the new commodity markets they experiment with survive and grow into viable trading vehicles. Some examples of less than successful commodity markets attempted in recent years are Tiger Shrimp and Cheddar Cheese. Unsuccessful contracts may at times be inactive – the contract exists, but traders do not make use of it.

Futures contracts succeed or fail for many reasons. Successful contracts do however share certain basic characteristics:

- the underlying asset is homogeneous, durable, standardised (easily describable)
- its supply and demand is ample
- its price is unfettered, freely quoted and traded
- and all relevant information is available to all traders

These issues are dealt with in detail in Chapter 2 of this report. But it is pertinent to note at this stage that the large well-established futures exchanges have in general shown a pattern of evolution *over time*. History shows that they were initially established to serve the agricultural communities at the point of terminal market – where the farmers brought their product/s to market. Thus the most successful exchanges developed around the end user, rather than the producer. Once established, the exchanges then became more sophisticated in terms of the range of futures contracts they launched and offered. In other words, once established through their agricultural contracts, the exchanges then had the critical mass to expand and launch new futures products.

CONTEMPORARY GLOBAL EXCHANGES

The largest derivatives exchanges in 2005 are as follows, listed in order of futures contracts traded in 2004. The exchanges highlighted in blue trade base and precious metals contracts; the other exchanges do not trade metals.

Leading global exchanges

	2004	Volume	% of global
1	**Eurex**	684,630,502	7.7%
2	**Chicago Mercantile Exchange**	664,884,607	7.5%
3	**Chicago Board of Trade**	489,230,144	5.5%
4	**Euronext.Liffe**	310,673,375	3.5%
5	**Mexican Derivatives Exchange**	210,355,031	2.4%
6	**Brazilian Mercantile & Futures Exchange**	173,533,508	2.0%
7	**New York Mercantile Exchange**	133,284,248	1.5%
8	**Dalian Commodity Exchange**	88,034,153	1.0%
9	**The Tokyo Commodity Exchange**	74,447,426	0.8%
10	**National Stock Exchange of India**	67,406,562	0.8%
11	**London Metal Exchange**	67,171,973	0.8%
12	**Korea Futures Exchange**	65,261,326	0.7%
13	**Sydney Futures Exchange**	50,968,901	0.6%
14	**Zhenghou Commodity Exchange**	49,817,798	0.6%
15	**Shanghai Futures Exchange**	40,577,373	0.5%
16	**International Petroleum Exchange**	35,466,941	0.4%
17	**Central Japan Commodity Exchange**	33,193,259	0.4%

22	**JSE South Africa**[3]	19,811,664	0.2%
	Global Total	8,890,740,000	

Source: Virtual Metals and Futures Industry Magazine.

Of those that trade metals some do so primarily, like the LME, while for others, metals form only a small part of their turnover. The following table shows the exchanges that trade metals and the percent share of volume traded that is accounted for by the metals under consideration in this report.

[2] There are other methods of measuring contract success than volume, as we will examine later, e.g. open interest, or portfolio value (where the value of each contract is taken into consideration).

[3] The Johannesburg Stock Exchange offers a gold Kruger Rand futures contract.

Trading volumes of specific metal contracts

		% of volume traded in			
	Volume 2004	Gold	Platinum	Palladium	Aluminium
CBOT	489,230,144	0.5%			
BME	173,533,508	0.0%			
Nymex/COMEX	133,284,248	11.2%	0.2%	0.2%	0.1%
TOCOM	74,447,426	23.4%	18.7%	0.6%	0.4%
LME	71,906,901				43.8%
KOFEX	65,261,326	0.0%			
SFE	40,577,373				16.8%

Source: Virtual Metals' calculations.
Notes: Where left blank it means the exchange does not trade respective product. 0% means 0.5% and below.

In the following section we provide a succinct description of these leading global futures exchanges which trade precious metals and base metals, including a few wholly, or mainly spot market, exchanges which might adopt futures trading at some point in the future.

Commodity Exchange New York COMEX/Nymex

The Commodity Exchange (COMEX) and the New York Mercantile Exchange (Nymex) merged in 1994, forming the world's largest purely physical commodity futures exchange. Trading is conducted through two distinct divisions, the Nymex Division for crude oil, heating oil, gasoline, natural gas, propane, coal, electricity, platinum, and palladium trading; and the COMEX Division, for gold, silver, copper, and aluminium trades.

Nymex began life as The Butter and Cheese Exchange of New York in 1872, adopting its current name 10 years later. Platinum futures were introduced in December 1956, with palladium following in January 1968.

COMEX was established in 1933, following a merger of the National Metal Exchange, the Rubber Exchange of New York, the National Raw Silk Exchange, and the New York Hide Exchange. Silver futures were traded from the beginning and were joined by gold futures on 31st December 1974, when the passing of new legislation allowed US citizens to own gold for the first time in 40 years. This had been keenly anticipated, but initially turned out to be a non-event with the gold price spending the next 2½ years in the doldrums and the COMEX gold futures contract proving something of a disappointment. What spurred greater interest in the COMEX gold contract was sharp gold price rally as a result of the collapse of the dollar from 1977 onwards, the accompanying inflation, and the mounting sense of international crisis and confrontation, which culminated in the Iranian revolution and hostage drama, and the Soviet invasion of Afghanistan in 1979/1980.

Gold contracts were also made available on Chicago's International Monetary Market (IMM), the New York Mercantile Exchange, the Mid-America Exchange (Mid-Am) and the Chicago Board of Trade, but with the exception of the IMM, they were never seriously in the running as competitors for COMEX. Today, with the IMM contract gone, the only competitor is the far smaller CBOT contract. COMEX also saw off a gold futures contract offered by the Winnipeg Exchange in Canada, which had pioneered gold futures relatively successfully prior to the relaxation of American legislation. But once Americans could trade at home, Winnipeg's importance rapidly faded.

An aluminium contract was introduced by COMEX in December 1983 but was de-listed in February 1989, due to a failure to attract sufficient liquidity. The exchange's current aluminium contract was launched in June 1999.

Tokyo Commodity Exchange (TOCOM)

The Tokyo Commodity Exchange (Tokyo Kogyohin Torihikijo), or TOCOM, was created on 1st November 1984 through the consolidation of the Tokyo Gold Exchange, the Tokyo Rubber Exchange and the Tokyo Textile Commodities Exchange. TOCOM took over the gold futures contract, priced in yen and originally launched by the Tokyo Gold Exchange, in March 1982, with the silver and platinum contracts launched in January 1984. TOCOM launched a palladium futures contract in August 1994 and options contracts on its gold contract in May 2004.

TOCOM offers crude oil, gasoline, kerosene, gasoil, gold, silver, platinum and palladium. Aluminium futures contracts are offered on TOCOM's electronic platform, and a rubber futures contract on its trading floor.

TOCOM's energy futures contracts constitute Asia's first successful energy derivatives market, recording 33m lots traded in 2002. TOCOM has more than ten years of experience in electronic trading, and updated its system at the beginning of 2003. Total lots traded in 2003 were 87.3m and in 2004 74.4m. All four of the precious metals contracts have been a success, although annual volume in the palladium contract is now less than a tenth of the 5.6m traded in 1999. (See Section 2 for further analysis of this contract.)

On 6th June 2003, TOCOM changed its clearing system and adopted an in-house clearing structure, following the practice of the US and European futures derivatives exchanges. In the past, TOCOM functioned only as an intermediary between members in the clearing process. Under the new clearing structure, TOCOM becomes a counterparty and now guarantees performance for each transaction.

TOCOM had, until recently, limited membership to local Japanese companies – something for which it

was often criticised. Membership has now been opened, with the process of membership approval starting at government level before being accepted by TOCOM[4].

TOCOM's customer base differs from those of other developed economies' exchanges in that it is made up of substantially more individual speculators. The reason for this is that Japan has not seen the proliferation of hedge funds as in North America and Western Europe. This implies that high net worth individuals wanting to speculate on TOCOM approach exchange members directly rather than indirectly through managed funds.[5]

London Metal Exchange (LME)

The origins of the London Metal Exchange (LME) go back to 1571, when traders of metals and other commodities began to meet on a regular basis, frequently in taverns and then later coffee houses, to conduct their business and exchange information. The LME is today the world's largest non-ferrous metals exchange; trading volumes can be as high as the equivalent of $10bn per day. The growth from its formal establishment in 1877 to the world's leading base metals exchange has taken, it should be noted, 400 years.

By the 19th century, trading metals had become a global activity. It was at this stage that the LME's tradition of the 'Ring' – the place where daily trading would occur – evolved. A merchant with metal to trade would draw a ring in the sawdust on the floor of a coffee house off the street called Cornhill, in the City of London. Those who wished to bid for his metal would assemble around the outside of the ring and make their offers.

Why then did London become the world's centre for metals trading in the 19th century? Essentially for two reasons: its pivotal place as a financial centre, and as a trading port for physical delivery of commercial products. It was possible to raise finance and credit through a fairly liquid and large financial market, and merchants ferrying metal from the Far East and South America would, for reasons of security, finance and centrality, generally use English ports – Liverpool, Plymouth and London especially – and their fleets, as the preferred mechanism for their business. The fact that Sterling at that stage was the major benchmark currency internationally also played an important role in this evolution of the Exchange. Moreover, through the industrial revolution of the 19th Century, England's demand for raw materials, particularly metals, was by far greater than that of any other nation.

The development of the LME was therefore a long-term and organic process, one that took a long time to mature. It grew up because it satisfied pre-existing needs. The LME's real success, historically, is largely due to the fact that it provided a vital solution to a real demand; it was not artificially generated and imposed.

The core function of the LME has always been the provision of a mechanism whereby metals traders can manage their price risks by hedging, i.e. by buying and selling future metals contracts to counter-balance price volatilities. This function arose from the need of metal merchants to protect themselves from such price risk simply because, in the days of sailing ships, the transportation of raw materials from far-distant countries such as Chile (copper) or Malaya (tin) usually took three months between those countries of origin and English ports. In those three months the price of the raw material could, and frequently did, fluctuate. The copper or tin bought in Santiago in January for one price might realise a very different price when marketed in London in April. The metal traders' businesses were seriously at risk from such price volatility.

From this arose the LME's system of daily trading dates for up to three months forward; and the three-months' contract is still widely regarded as the benchmark futures contract for base metals prices.

In 1994 the LME moved to its current permanent base, in Leadenhall Street, London. The LME has gradually introduced new contracts, branching out from the original copper and tin to now include contracts in lead and zinc (officially introduced in 1920), primary aluminium (introduced in 1978), nickel (1979), aluminium alloy (1992), and silver (1999), which has since ceased trading. In 2000 an index contract, called LMEX, was introduced, which gives investors the option of trading a basket of the six primary base metals (copper, tin, nickel, aluminium, lead and zinc) without the costs (such as physical delivery and storage) normally involved in trading the futures contracts of the individual metals. Today, the LME's eight metals contracts are: copper grade A, primary aluminium, standard lead, primary nickel, tin, special high grade zinc, aluminium alloy and North American Special Aluminium Alloy (NASAAC).

The LME today operates a combination of floor and inter-office trading, which is cleared by the London Clearing House (LCH). LME membership comprises more than 100 companies, mostly brokers attached to investment banks and other financial institutions, but also individual traders. Trading is via a combination of open outcry in brief, five-minute rings per metal twice a day, followed by an all-metal open outcry trading session in the afternoon, and outside those sessions by electronic 24-hour trading.

The specified delivery date of a futures contract is referred to as the prompt date, by which time either the position must be closed or a delivery will take

[4] Personal communication with TOCOM Board members.
[5] Ditto

place. On the LME, the final trading day, the last day a position can be closed, is two days before the prompt date.

LME metal futures contracts run on a daily basis for a period of three months. The use of daily prompt dates is an important difference between the LME and other futures exchanges. It means the Exchange combines the convenience of settlement dates tailored to individual needs with the security of a clearing house for its clearing members.

After the 3-month date, the daily prompts for forward trading are reduced to weekly and then monthly contracts out to 15, 27 or 36 months.

The US dollar is the major currency used for each contract, but Sterling, Yen and the Euro are also accepted for clearing purposes. The Daily Official Exchange rates are announced after the morning Ring session, at the same time as the official prices for the metals contracts.

An important aspect of LME futures contracts is that, with the exception of the LMEX contract, they are not settled until the prompt date. Initial margins and variation margins against risk exposure will be called during the term of a contract, but the value of a contract is not paid until delivery.

Korea Futures Exchange

The Korea Futures Exchange (KOFEX) was officially opened in April 1999, trading US dollar futures, interest rate futures, US dollar options and gold futures. KOFEX has the distinction of having the largest single traded contract, the Kospi 200 options[6]. Trading hours are from 09:00 through to 16:00 Monday to Friday local time.
On the commodity side, the only contract is in gold, which has had limited success in recent years, with short bursts of activity followed by long periods with no trades. However, the Chief Executive of KOFEX, Jungho Kang, wants the exchange to diversify into physical commodities, and in April 2004 agreed a memorandum of understanding with TOCOM to facilitate the introduction of commodity contracts.

Shanghai Futures Exchange

The Shanghai Futures Exchange (SHFE) was established in December 1999 after the merger of the Shanghai Metal Exchange, the Shanghai Cereals and Oil Exchange and the Shanghai Commodity Exchange. It is one of three commodities futures exchanges in China (the other two are the Zhengzhou Commodity Exchange and the Daria Commodity Exchange). It has more than 200 members, of which 80% are futures brokerage firms and the rest proprietary members trading on their own accounts. Trading is fully electronic, with more than 250 trading terminals nationwide. There are four futures products listed on the Shanghai Futures Exchange: copper, aluminium, natural rubber and fuel oil. Trading is in yuan and only companies registered in China or Chinese citizens may trade.

Trading hours are 9:00 am to 11:30 am and 1:30 pm to 3:00 pm. As mentioned, all of the trading on SHFE is executed electronically, and all outstanding contracts on expiration are for physical delivery. It is significant that there is no cash settlement. The underlying commodity must be delivered within the prescribed time at the specified date. The exchange designates the delivery warehouse that offers relevant services to both sides of delivery, which must be handled through its members.

Brazilian Mercantile & Futures Exchange

The Brazilian Mercantile & Futures Exchange (BM&F) was founded in July 1985 with trading starting in January 1986. Since then it has benefited from the consolidation in the Brazilian forwards market. In 1991, it merged operations with the Sao Paulo Commodities Exchange, an agricultural forward market that had been trading since 1917, and in 1997 it concluded a similar agreement with the Brazilian Futures Exchange. In 2002 the Brazilian Commodities Exchange was launched, uniting the commodities exchanges of the states, which became operation centres of the new organisation.
Today it trades a wide range of products, although almost all its trading volume comes from financial derivatives. Interest-rate derivatives alone account for 77% of volume traded. Agricultural commodities and energy products accounted in 2004 for just 0.58% and 0.27% of trading volume respectively, whilst gold accounted for 0.007% (and only a slightly larger 0.2% by value).

Chicago Board of Trade (CBOT)

The Chicago Board of Trade (CBOT) was established in 1848 to trade agricultural commodities. It introduced forward contracts in the late 1840s/early 1850s and the first standardised futures contracts in the 1860s. Metals were added later, followed by financial derivatives from the 1970s.

It currently has 3,600 members, 1,400 of which are full members able to trade any of the exchanges' products, which now total more than 50 different contracts.

---

[6] This is an option on the Kospi 200 share index. Looking at the volume might overstate their importance, as the contracts are of relatively small notional value. In terms of open interest it is only the 8th largest contract globally.

Trading was open outcry for more than 150 years but in 1994 CBOT introduced its first electronic trading system; it has frequently updated the system since. A number of commodities, including precious metals, are now traded only by electronic means.

CBOT began to trade precious metals in the 1960s and currently offers gold and silver futures contracts in full (100 oz for gold, 5,000 oz for silver) and mini (33.2 oz for gold, 1,000 oz for silver) form, though trading volumes are small compared to COMEX. All contracts are physical delivery, involving vault receipts. Currently HSBC Bank USA, Brinks Global Services USA, Scotia Mocatta Depository and Delaware Depository Services (for silver only) are used.

The Istanbul Gold Exchange

The Istanbul Gold Exchange (IGE) began its operations on 26th July 1995 and is a good example of a recent market entrant hosted in an emerging economy.

The exchange has three types of market: a physical precious metals market, a futures and options market, and a precious metals lending and precious metals lending certificate market.

Domestic or foreign banks, precious metals companies, currency offices, precious metals producing and marketing companies and precious metals refineries that have obtained a membership certificate from the Under-Secretariat of the Turkish Treasury, and have complied with the requirements set forth by the IGE Board of Directors, can trade on the exchange.

The market has been a success because only IGE members are eligible to import precious metals, and they, in turn, should submit the precious metal to the IGE vault within three business days after the metal's arrival. This has generated considerable interest in not only the Exchange, but also the specific gold contracts on offer. The Futures and Options Market was launched on 15th August 1997 on the IGE.

The Precious Metals Lending Market started its operations on the Istanbul Gold Exchange on 24th March 2000, for the purpose of bringing supply and demand into an organised market, lowering the production costs of the jewellery sector, and the securitisation of gold.

Two different types of transactions are realised on the Precious Metals Lending Market:

- Transactions for lending or borrowing physical precious metals and
- Certificate transactions, which involves the trading of certificates representing lending transactions.

The ability to borrow and lend physical metal via the exchange has supported the local jewellery manufacturing industry.

Chinese Gold and Silver Exchange (Hong Kong)

The Chinese Gold and Silver Exchange, based in Hong Kong, was established in 1910. It has 173 members, with 30 bullion group members, who can apply for accreditation to produce the exchange's standard bars. The basic contract is 100 taels (120oz) made up of five 990 fine gold bars, though there is also a 1kg bar of 999 fineness. Pricing is in Hong Kong dollars, and trading is open outcry, with transactions for same day settlement, although transactions can be carried over for a charge. Thus, this exchange does not offer futures trading.

Shanghai Gold Exchange

Launched on 30th October 2002, the Shanghai Gold Exchange (SGE) has 108 members, all Chinese, and includes 12 banks, 24 producers, 61 gold consuming corporations and three mints. Each member has met credit and probity requirements ratified by the People's Bank of China (PBOC). Like the Istanbul Gold Exchange, this is a good example of a new entrant into the market.

Trading is primarily gold (and platinum) for physical delivery, spot priced and executed between members on the trading floor or a computerised platform. Contracts are standardised both to weight and metal fineness. In 2004, the SGE introduced T+5 trading (in which delivery occurs five days after payment), in addition to spot transactions, although the contract was suspended for a time due to lack of volume. It intends to expand further with derivatives products, moving into forwards.

There are four clearing banks: the International Commercial Bank of China, the Bank of China, the China Construction Bank and the Agricultural Bank of China. The unit of quotation is yuan/gram and the minimum delivery is six kilograms. Prior to each transaction, the buying member needs to deposit cash in an account specified by the SGE, and the seller must deposit the gold (or other metal) in one of 42 SGE-appointed warehouses across 32 cities.

Average daily volume traded has risen sharply since the exchange's launch, with volume in 2004 alone rising from just over 1 tonne a day in January to over 3 tonnes a day in December. February 2005 saw 3.97 tonnes a day traded, with a value of yuan 434m, a record for both. Nevertheless, in international terms, the amounts traded remain comparatively small.

CHARTER AND STRUCTURES

The preceding discussion reveals that the successful exchanges are not homogeneous in terms of their structures and charters and, in fact, exhibit a diverse range of characteristics.

Some exchanges, especially in the Far East, are closed to foreign membership, for example TOCOM (until very recently) and the Shanghai Gold Exchange. Closure to foreign membership is either direct, through the exchange's charter precluding it, or indirect, by making it extremely difficult or expensive for a foreign company to gain access. Under normal circumstances, the exclusion of international participants would suggest a barrier to the success of the exchange, in that its ability to attract liquidity would be limited to the local members. In the case of TOCOM and SGE, this does not appear to be an issue since the local markets are of sufficient financial size and there is strong enough interest to render them successful, based on local trades only. TOCOM's decision to open membership to non-Japanese companies came about through financial liberalisation in general and not because of concerns about the exchange's viability.

Other exchanges preclude the ability for contracts to be settled in cash, and physical delivery of the underlying asset is obligatory. The Shanghai Futures Exchange is an example of this and again this element of the exchange's charter does not appear to adversely affect the health of the entity. The converse, however, does not seem to be the case; our research did not reveal any successful contract or exchange where cash settlement is the only route to unwinding contracts and where physical delivery is not permitted.

In the case of precious metals, the level of trades that terminate in physical delivery is low, in the case of COMEX/Nymex, less than 1% of turnover. Physical delivery in the case of the non-precious metals contracts is substantially higher, in the case of aluminium in 2004 on COMEX/Nymex, it was just under 20%[7]. Despite the fact that the majority of metal futures contracts are cash-settled, it appears as though the option to take physical delivery is a necessary prerequisite for contract success.

The Istanbul Gold Exchange is a particularly interesting case in the context of looking at South Africa as a potential home for a precious metals futures exchange. This is because its charter has been structured around limitations with respect to the importation of precious metals. Only IGE members are permitted to import precious metals, thus giving international and local participants a substantial incentive to become members of the exchange, and then make use of the contracts that it offers.

The manner in which trading occurs appears to make no difference to the success of an exchange or a particular contract. Open outcry in either trading pits or LME-type rings, or purely electronic means, seem to work in all instances; in those cases where open outcry has been converted to screen trading, already successful contracts continue to trade successfully.

It is clearly important for the success of an exchange to have a centralised clearing system, whereby exchanges ensure uninterrupted and smooth conclusion of transactions. In instances where clearing mechanisms were not centralised within the exchange, for example on TOCOM, the exchanges have subsequently altered their structure to reflect the in-house clearing mechanisms characteristic of the North American and European exchanges.

TIME ZONES AND SPHERES OF INFLUENCE

The advent of electronic trading appears to have rendered the physical location of an exchange and time zone in which it operates much less important. The Ring trading on the LME occurs during relatively limited periods throughout the business day in European time. The fact that LME contracts can be traded off-exchange implies that the exchange is accessible on a continuous basis, irrespective of time zones, although there are prolonged periods during a 24-hour cycle when trading is thin and illiquid.

Where an exchange offers contracts denominated in local currencies, such as TOCOM and the exchanges in China, the spheres of influence are limited to local participants. Where competing contracts are available, international market participants might make use of contracts denominated in local currencies if they recognise arbitrage opportunities.

Those exchanges offering contracts denominated in dollars, irrespective of the currency of their location, such as the LME, naturally extend their spheres of influence and have the potential to appeal to a wider market. The most direct example of this is the LME aluminium contract, which is quoted in dollars and competes head-on with COMEX/Nymex for North American business.

History suggests that exchanges in different time zones will have a better chance of competing against each other than exchanges in the same time zone. The emergence of the COMEX/Nymex gold contract as dominant, at the expense of the gold contracts offered by the Winnipeg Exchange, the CBOT, the Mid-American and the IMM, appears to bear this out. In common time zones, the largest and

[7] Personal communications with COMEX/Nymex office bearer.

most well-established exchange will tend to draw liquidity and turnover away from the less well established competitors, unless the competitors can distinguish their product sufficiently to offer a unique, slightly different contract that creates a competitive advantage. This advantage might be in terms of the fee structure or warehousing arrangements, although even then it cannot be guaranteed that the competing contract will be able to establish itself at the expense of the turnover on the larger exchange.

Analysis of how existing exchanges have evolved also suggests that partnerships across time zones have not tended to be successful. The one exception to this appears to be the link between the Chicago Mercantile Exchange (CME) and the Singapore International Monetary Exchange (Simex) launched in 1984. The link joins the CME's Eurobond products and Simex's Euroyen products. In this instance it could be argued that the success is product-specific, since plans to trade a 100 ounce gold contract and currency contracts were dropped in the early days because of low volume on the CME (in the case of gold) and a failure to generate Singaporean business (in the case of currencies).

In 1985 COMEX and the Sydney Futures Exchange (SFE) agreed to establish a gold futures trading linkage. Gold output in Australia rose 14 times between 1980 and 1990. The mining companies involved were avid users of derivatives, both in terms of using gold loans for raising the finance necessary to bring these mines to fruition, and through the principal-to-principal forward market, to hedge gold price risk.

The agreement was the second of its type between a US and a foreign futures exchange. It required COMEX and the SFE to conform to certain uniform terms of trading practices, such as how trades are recorded and the kind of information provided for the clearing house operation. All clearing was to be done by the Comex Clearing Association Inc. in one process, immediately following close of trading on COMEX. The SFE dropped its previous 50 oz contract in favour of the COMEX 100 oz contract that was virtually identical in its specifications, including delivery points, warehouses and the 999 fine gold for delivery. Under the agreement, the linked trading day began in Sydney, where the contract opened at 7 p.m. (EST). Within three hours of the Sydney close, 1 a.m. (EST), the SFE transmitted the day's trading data to New York. The trading day continued when the COMEX contract opened at 9 a.m. (EST), concluding with the COMEX close at 2:30 p.m.

Despite the good omens – that is, a real organic need for the contract – this contract was eventually discontinued due to lack of local volume in Sydney. The reason for this was that the gold mining companies continued to make use of the OTC (over the counter) market via the major international bullion banks, which, if they were to offset any of their risk on an exchange floor, would naturally make use of New York. Additionally, the Sydney Exchange failed to attract the local speculators who would have generated the liquidity necessary for the link to have prospered.

Similarly, the SFE's link with LIFFE on T-bonds and eurodollars floundered for lack of activity. In 1995 they tried again, the SFE setting up a link with COMEX/Nymex's parent, Nymex, via the SFE's screen based trading system SYCOM, which allowed SFE members to trade Nymex's energy products, including the West Texas Intermediate crude oil contract. The alliance again proved less than successful and ended in 2004.

A partnership between two exchanges sharing the same time zone has yet to be tested. The most likely reason for this is that the exchanges would view each other as competitors rather than potential allies. This would be particularly true of exchanges located in terminal markets rather than one exchange located in a terminal market and the other partner situated where the underlying assets are produced, which, as our research has shown, has to date not emerged.

CUSTOMER BASES

The users of futures contracts are either directly or indirectly associated with an exchange.

Direct users are the paid-up members of the exchange, holding trading or ring seats. These members are publicly recognised and listed as such by the exchanges. They pay their annual fees and are subject to the rules and regulations of the exchange and any financial or regulatory authority whose brief it is to oversee the exchanges. These members trade the futures contracts either for their own account or they execute the orders placed by their clients who represent the indirect users of the exchanges. The direct members, in general, are metal merchants, trading houses, investment houses, brokers and banks. The term "locals" is often used to describe the active members of an exchange, although the term sometimes, more specifically, refers to individual rather than institutional members, who trade on their own account.

The indirect users of an exchange are the producers and consumers of the underlying assets, hedge funds, institutional funds and indeed the general public. These customers will place trading orders with the exchange members. The trading orders will then be executed and cleared by the exchange members on behalf of the customers.

Research reveals that while these definitions of exchange customers apply in general, each exchange tends to have a unique client base and, indeed, each contract traded on the same exchange can and often does have yet another subset of customers. For example, exchanges which have open international membership (such as COMEX/Nymex) will obviously have a globally representative membership base when compared to exchanges whose membership is closed to international participation (until recently TOCOM and still currently the exchanges in China). The fact that hedge funds are not widely established in Japan also affects the customer base of the associated exchanges but especially TOCOM.

Even where exchange membership is open to the international market, the presence of global banks and trading houses is not automatic. International financial entities have limited credit lines for commercial purposes in other countries. These credit lines are set internally by the credit departments of these companies and will take into account perceived sovereign risk. Thus, the representative offices of international banks will have credit limits applied to them from their head offices and will allocate those limited lines as commercially prudently as possible. It is therefore possible, depending on the commercial activities engaged in locally by the banks, that they simply do not have the credit lines available to trade on a local exchange, even if they were permitted to become members and had the appetite for a local futures contract.

SPECIFIC METAL CONTRACTS

The following table shows the major commodity futures contracts trading today. The metals–specific contracts are highlighted with their volume in bold. The most-traded metals contracts are the copper contract on the Shanghai Futures Exchange, with 42.5m contracts traded in 2004, and the London Metal Exchange's aluminium contract, with 29.4m contracts traded, and then its copper contract, with 18.5m contracts traded. The most traded precious metals' derivative contracts are the gold ones on TOCOM and COMEX/Nymex, with 17.4m and 14.9m contracts respectively, traded in 2004. The first placed platinum contract is also on TOCOM, with a volume of 13.9m.

Largest commodity futures contracts by volume traded, 2004

Contract	Volume
No.1 Soybeans	57,340,000
Light, Sweet Crude Oil	52,883,220
Aluminium	**29,417,634**
Brent	25,458,259
Soymeal	24,750,000
Corn	24,040,000
Hard Winter Wheat	23,170,000
Copper	**21,248,370**
Strong Gluten Wheat	19,310,000
Rubber	19,361,298
Soybeans	18,850,000
Copper	18,278,757
Natural Gas	17,441,942
Gold	**17,385,766**
Gold	**14,959,617**
Platinum	**13,890,300**
Heating Oil	12,884,511
New York Harbor Gasoline	12,777,442
Zinc	10,281,471
Non-GMO soybeans	9,970,000
Sugar 11	9,770,000
Rubber	9,680,000
Gas Oil	9,355,767
Aluminium	**6,829,499**
Silver	**5,006,125**
Lead	**3,793,177**
Copper	**3,190,625**
Nickel	**3,184,759**
Fuel Oil	2,818,855
Gold	**2,620,696**
Silver	**1,473,370**
NASAAC	**1,192,175**
Silver	**1,065,933**
Tin	**971,782**
e-miNYsm Light, Sweet Crude Oil Futures	720,421
Natural Gas	648,665
Palladium	**438,934**
Aluminium Alloy	**429,459**
Aluminium	**321,131**
Platinum	**295,695**
Palladium	**267,552**
PJM Electricity – Monthly	198,045
e-miNYsm Natural Gas Futures	136,123
Palladium	**120,907**
Aluminium	**72,169**
Platinum	**82,496**
Propane	14,764
Other metals contracts	
Gold futures	**2742**
Gold	**969**
Gold forwards	**15**

Legend
COMEX/Nymex
TOCOM
DCE [Dalian Commodity Exchange]
TGE [Tokyo Grain Commodity Exchange]
Zhengzhou [Zhengzhou Commodity Exchange]
CBOT
CBOT
IPE [International Petroleum Exchange]
SFE
LME
KOFEX
BME

Source: Virtual Metals compilation from Exchanges

The measure we have used so far to gauge the importance of futures contracts, is volume traded. There are good reasons for this – the brokers and market makers, on whom a contracts' success largely depends, thrive on large trading volumes. In a thinly-traded market it is difficult to make a living since it is more difficult to execute orders without affecting the price and the spreads become too wide which reduces profitability[8]. Nevertheless, for other market participants, factors other than trading volumes are important; for example, for hedgers it is the *value* of transactions that matter, and this is related to contract size.

Another measure is *open interest*, which is the number of contracts outstanding (those contracts which have not been exercised or offset) at any point in time. In many markets, traders' positions are not permitted by exchange regulations to be more than a certain percentage of open interest, thus this can be a proxy for the depth of trades the market can do. *Trading velocity* is simply the volume traded divided by the open interest – some use this as a measure of liquidity.

Portfolio Equivalent Values take the concept further by looking at the value of each contract (i.e. of the underlying at the current spot price, so if it is 100 oz of gold it would be 100 oz X $435, or $43,500 per contract). This is a good measure to compare similar markets' relative financial importance, though care should be taken across markets as the contracts might represent very different types of risk. For example, a contract worth $100,000 where daily price changes tended to be only 1%, would have a much lower level of 'risk' than one where prices tended to move by 10% a day.

MOST WIDELY USED FORWARD CONTRACTS

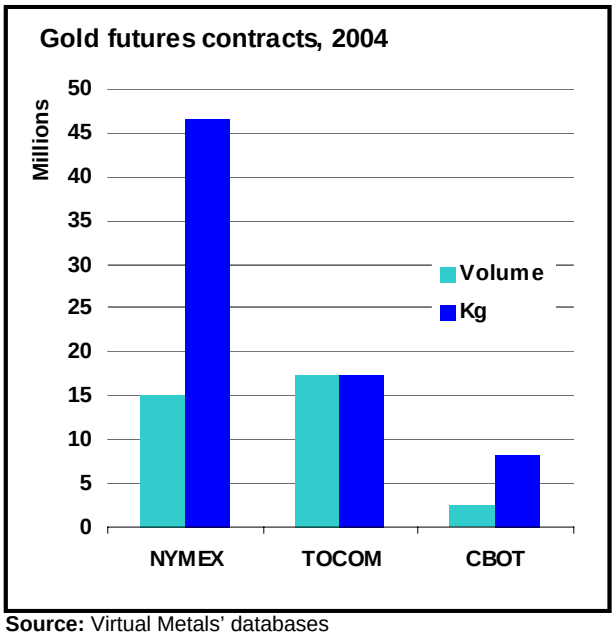
GOLD

Gold contracts[9]	2003	2004
TOCOM Gold	26,637,897	17,385,766
COMEX/Nymex Gold	12,235,689	14,959,617
CBOT Gold	2,167,492	2,620,696
BME Gold futures		2742
KOFEX Gold	56,998	969
BME Gold forwards	483	15

For contract specifications see the accompanying tables at the end of this Chapter.

As can be seen from the table above, by far the two most important gold futures contracts traded at present are the TOCOM and COMEX/Nymex contracts. In 2004, TOCOM saw the highest volume traded, at 17.4m contracts, though this was down on 2003's 26.6m contracts. COMEX/Nymex saw 15m contracts traded, up from 12.2m in 2003. Next largest was some way behind, with CBOT's gold futures enjoying volume of 2.6m contracts.

When allowance is made for the contract size (1kg on TOCOM, 100 oz on COMEX/Nymex and CBOT) COMEX/Nymex is the largest market, and CBOT gains relative to TOCOM, though the Japanese market remains considerably bigger. The chart below demonstrates this.



Source: Virtual Metals' databases

[8] Spreads: the difference between the bid (asking price) and the offer (selling price).

[9] Readers should note that the Central Japan Commodity Exchange (Chubu) and the Osaka Mercantile Exchange have both recently applied to list US dollar denominated gold futures contracts. The latest information is that the Japanese Ministry of Economy, Trade and Industry was considering which exchange would be given permission to list. Furthermore, COMEX/Nymex is currently investigating a possible link-up and partnership with Dubai to trade US dollar denominated gold futures.

PLATINUM

Platinum contracts	2003	2004
TOCOM Platinum	14,211,824	13,890,300
Nymex Platinum	268,305	295,695

For contract specifications, see the accompanying tables at the end of this Chapter.

PALLADIUM

Palladium contracts	2003	2004
TOCOM Palladium	275,322	438,934
Nymex Palladium	95,613	267,552

For contract specifications, see the accompanying tables at the end of this Chapter.

ALUMINIUM

Aluminium contracts	2003	2004
SFE aluminium	4,310,996	13,658,998
LME aluminium	2,392,466	2,625,457
TOCOM aluminium	329,565	321,131
Nymex aluminium	107,490	72,169

For contract specifications, see the accompanying tables at the end of this Chapter.

FERROCHROME

No ferrochrome futures contracts are traded.

Gold Contracts	BMFE Forward	BMFE Future	CBOT Futures	COMEX Futures	TOCOM Futures	Korea Futures
Trading Amount	250 grams	250 grams	100 troy ounces/33.2 troy ounces	100 troy ounces	1kg	1 kg
Trading Amount in Kg	0.25	0.25	3.11/1.03	3.11	1	1
Fineness			0.995	0.995	99.99%	99.99%
Content (Fine Ounces)						
Trading Currency	Reals	Reals		$US	Yen	KRW/gram
Trading Hours			19:16 - 16:00	08:20 - 13:30	09:00 - 11:00, 12:30 -	09:00 - 15:00
Trading Method			Electronic			
Margin Requirements				0 - 1099, 45000; 1100 - 1599, 60000; 1600 - 2099, 75000; 2100 -		
Minimum Price Fluctuation		0.001/gram	10c/oz	$0.01/troy ounce	1 Yen/kg	KRW 10000
Type						
Strike Price Fluctuation						
Maximum Daily Price Fluctuation		5% of previous day's settlemt price of third contract month		$ 75/ounce	1- 100, 30; 101 - 599, 40; 600 - 2099, 50; 3000 - inf, 60.	None
Trader Position Limits					6000 contracts	
Trader Accountability Levels				6000 net futures and max 3000 in spot		
Trading Hours						
Duration	Multiples of 5 up 180 days					
Close Out Months				All	Even numbered	
Trading Months		All	First 3 consecutive months; 2 Feb, 2 Apr, 2 Aug and 2 Oct; 5 Jun and 5 Dec	All		1st six consecutive even months and one odd numbered near month
Last Trading Day		last business day of month preceding contract month	Trading terminates at the close of business on the third to last business day of the	3rd - last business day of maturing delivery month.	3rd business day prior to delivery day	2nd trading day preceding final settlement day
Delivery Period/Day			The last business day of the delivery month		last of each trading month except in	
Delivery Points					Specified Warehouse	
Delivery					Physical	Delivery Settlement

Aluminium Contracts	NYMEX Futures	TOCOM Futures	LME Futures	Shanghai Futures
Trading Amount	44000 lbs	10 tonnes	25 tonnes	5 tons/lot
Trading Amount in Kg	19958	10000	25000	5000
Delivery Unit		50 tonnes		
Fineness/Purity (%)	99.7	99.70%		99.70%
Content (Iron(%), Silicon(%))	0.20, 0.10	0.20, 0.10		
Form (Ingots, T-bars, Sows)			(1,1,1)	
Trading Currency	Cents US	JPY/kg	$US	RMB/ton
Trading Hours	07:50 - 13:15, 14:00 -	09:00 - 11:00, 12:30 -		09:00 - 11:30, 13:30 -
Trading Method (Open Outcry, Electronic)	1,1	0,1		
Margin Requirements	Yes	0 - 149, 45000; 150 - 199.9, 60000; 200 - 249.9, 75000; 250 -		5% of contract value
Minimum Price Fluctuation	0.05/lbs; $	JPY 0.01/kg	$ 0.50/tonne	
Option Type (American, European)				
Strike Price Fluctuation (Gradations)				
Maximum Daily Price Fluctuation	0.20/lbs	0 - 149, 3; 150 - 199.9, 4; 200 - 249.9,		3% above or below previous day's
Trader Position Limits		5000		
Trader Accountability Levels (Net Futures, Max in Spot Month)	6000, 750			
Duration			3m, 6m, 63 months	
Close Out Months				
Trading (Contract) Months	25 consecutive	EM		All
Last Trading Day	3rd -last day of Delivery Month	3rd bd prior to Delivery Day		15th day of spot month
Delivery Period/Day/Dates			Daily, Every Wednesday, Every	16th - 20th day of spot month
Value Date				
Exercise Date				
Delivery Points	Specified	Specified		Approved
Delivery	Physical	Physical		Physical

2 ANALYSIS

There are two central questions for any planned new futures contract, in any commodity. They are:

1. what sort of competing futures contracts are already available?

2. and what new contracts might market participants be most likely to consider using?

Therefore, for optimal contract development, designers must consider existing market structures and conditions, from the outset. This was dealt with in Chapter 1, which revealed that, with the exception of ferrochrome, the metals under consideration in this study already have a wide range of well-established futures contracts that are traded globally. Aluminium is actively traded on the LME and COMEX/Nymex, and the precious metals on COMEX/Nymex and TOCOM.

This chapter therefore deals with the second question and, as a subsidiary, considers in more detail what factors render a contract successful or otherwise. It looks at each question in the South African context and draws from the discussion our overall conclusions.

WHY SHOULD AN EMERGING MARKET ESTABLISH A LOCAL FUTURES EXCHANGE?

The World Bank (Tsetsekos et al, 2000) suggests that there are two distinct benefits to be gained from establishing a futures exchange in a local emerging market, as opposed to local participants using already established exchanges.

Firstly, such an exchange is likely to lead to improved price discovery for the local market. In many lesser-developed countries' commodity markets, asset price determination is poor. A derivatives exchange aids this process by providing better and more transparent information on market prices, both current and future. This, however is not particularly relevant to the gold market, where there is a widely-known benchmark international price, but it might be relevant to the ferrochrome market where prices are set by producers.

Secondly, the presence of an exchange is more likely to lead to a better correlation between the local cash market and the price of the exchange derivatives, than derivatives on overseas' exchanges. Related to this is the potential advantage of the contract being denominated in local currency, thus removing exchange rate risk, particularly in a country such as South Africa which continues to have exchange controls. However, South Africa does not even have a cash market in the commodities concerned as mineral output is exported and very little remains in the country.

There are other benefits in having a successful local exchange. A country's financial infrastructure is likely to be enhanced, as the exchange draws in a wider range of participants. Further benefits could be realised if the establishment of an exchange leads to a general increase in standards of market regulation. Improved financial infrastructure is associated with knock-on benefits for other industries and the economy at large. A successful exchange adds to the prestige of its host city and country. There will also be a direct economic benefit (although it is likely to be relatively small) from the job creation possibilities and investment a successful exchange could bring.

These benefits need to be weighed against the benefits of using an existing exchange with already established liquidity, which, with its higher trading volumes, will tend to lower exchange transaction costs, offsetting the benefits of greater localisation from a domestic exchange.

Historically, most exchanges have been in developed market economies (DMEs). In recent years, however, the expansion of global derivatives trading and the growth in many emerging markets, particularly China, has seen exchanges in such countries move up the global rankings (see Chapter 1).

History suggests that there are a number of preconditions necessary for the successful establishment of an exchange in an emerging market. These include:

- established and well functioning cash markets
- a large number of traders and speculators
- a legal infrastructure which can support the exchange
- well established and functioning credit systems and mechanisms
- supportive government and policy makers
- access to secure and reliable warehousing
- sufficient financial resources to manage a clearing house and
- the absence of competing exchanges and products, or products that offer some differentiation between the local exchange and existing competitors

The large, well established exchanges tend to be located in terminal markets, where producers have brought their output to the end users. This is partly a function of the nature of commodity markets, where producers tend to be "price-takers", and partly

historic, as Chapter 1 demonstrates. This, however, does not imply that a futures exchange in a producing location will not succeed; this location issue is not in itself a sufficient barrier to market entry. There are instances where producer-located exchanges have fared well, for example in Malaysia (especially the tin contract, despite the vigorously traded tin contract on the LME) and Brazil. The most likely reason for the success of these contracts is that there was a cash market in existence out of which the futures product could feasibly emerge.

Of the listed criteria necessary for exchange success in an emerging/producing market, South Africa has in its favour a legal infrastructure that can support the exchange, well established and functioning credit systems and mechanisms. Financial regulation is solid, and is being enhanced by the new Securities Services Act. South Africa also has sufficient financial resources and banking skills to manage a clearing house.

Less in the country's favour are its limited cash markets in precious metals, largely as a direct result of decades of exchange controls, as well as limited cash markets in the other metals. Until recently, the South African Reserve Bank (SARB) was the only bullion bank, and policy was to export all gold for foreign exchange. Access to a number of secure and reliable warehouses has yet to be established, although the Rand Refinery offers secure warehousing and an internationally recognised depository for precious metals. And finally, South Africa would find itself competing with very well established and liquid exchanges and products.

In addition to these observations, all our research and discussions have revealed a common pre-requisite for the success of any exchange contract, irrespective of its location. A contract needs to have demonstrable interest and support from the producers and end users of the underlying commodity. In other words, buy-in from local market participants is essential. Contracts without this firm foundation, and *raison d'être,* showed an inability to survive.

IS IT SIGNIFICANT THAT MOST SUCCESSFUL EXCHANGES ARE FOUNDED ON THE DEMAND FOR THE COMMODITIES RATHER THAN THE SUPPLY?

Research indicates that, currently, the physical location and establishment of a futures exchange close to terminal markets of the underlying commodities is not a deciding factor with respect to the potential success of the exchange. What is more pertinent is the demonstration of an exchange's ability to provide secure warehousing and be supported by adequate financial and legal infrastructure to ensure prudent exchange management and contract clearing.

This was an important factor historically, however. As discussed in Chapter 1, producers brought their products closer to a centralised location, from where sales of those products were executed. This then gave rise to a physical market place from where a futures market naturally evolved. The grain and meat markets of North America are examples of this, with the evolution of the Mid-America Exchange (Mid-Am) and the Chicago Board of Trade (CBOT).

The same can be said about the LME, where one of the original futures contracts is the 3-month copper contract. The important point to note here in this context is that the futures market for the metal evolved in London, (that being the terminal market), and not anywhere in Chile, where the metal was produced.

DOES SOUTH AFRICA'S ACCESS TO PHYSICAL COMMODITY SUPPLIES GIVE THE COUNTRY A COMPARATIVE ADVANTAGE?

Our research suggests that South Africa's pre-eminence in the production of minerals, especially gold, platinum group metals and ferrochrome, does not necessarily give the country a comparative advantage relative to the non-mining host countries of existing or potential exchanges.

Indeed, in some ways it may have put the country at a comparative disadvantage, particularly since legislation such as the Mining Rights Act restricts private ownership of precious metals.

While the physical access to these metals certainly does not detract from a new exchange's ability to compete, the simple possession of strong metals' production does not provide South Africa with a sufficient rationale upon which the decision to establish an exchange should be taken.

Local production does not automatically translate into a large local physical market, particularly in South Africa's case, where a limited domestic market and the need for foreign exchange means the metal mined has traditionally been exported. However, even if there was a large local physical market, it does not necessarily follow that a futures exchange would be a success. The reason for this is that a small percentage of futures contracts come to physical delivery (less than 1% in the case of gold and pgms and 20% or less in the case of base metals) and thus access to this metal, by virtue of proximity to the mines, is not a particular advantage.

Of more importance is the access to and association with secure, reliable warehousing and safe transportation to and from the warehouses. As far as the precious metals are concerned, the warehousing has everything to do with security of the high value low volume products. With base metals, the issue is

more about storage of large volumes of metals and to a lesser extent about security.

WHY DO SOME CONTRACTS WORK AND OTHERS FAIL?

As already discussed in Chapter 1, irrespective of time zone, exchange management and other parameters such as pricing and trading accessibility (all of which are relevant), it appears that the one critical element required for exchange success is the active presence of speculators and hedgers (commonly termed "locals" although these customers can of course be internationally based), without which exchanges will have difficulty establishing themselves. The trading executed by local players brings vital liquidity and turnover to an exchange and the individual contracts, without which contracts tend to fail.

In the absence of these locals, a futures contract is likely to show a trading profile of prolonged periods of minimal turnover, interspersed with short periods of sudden and high levels of trading usually executed by a producer or consumer of that underlying commodity.

In addressing the 5 commodities cited in this brief, we raise concerns about the degree to which there is a population of local traders and potential market participants in South Africa, which would be required to maintain contract turnover at levels high enough to deem the contracts successful. We return to this concern later in this chapter where we look in more detail to who would be the likely users of South African-traded commodity futures.

In attracting sustainable local speculative interest, the second vital factor is the provision, on the part of the exchange, of a standardised product. This is a prerequisite for attracting the necessary liquidity. This has long been recognised, as Cuny cites Telfer saying in 1981 "the demand for a fungible financial instrument traded in a liquid market is necessary for the creation of an organised futures market." (Cuny 1993, pg 58).

With respect to the 5 commodities considered here, we conclude that product standardisation would not be a problem for a South African exchange. This, however, would imply that, with the exception of ferrochrome, the South African contracts would compete head-on with very liquid and well-established products traded on the LME and COMEX/Nymex. The difficulties experienced by a contract that is not first mover are discussed in more detail later.

Analysis of the evolution of both already existing futures exchanges and the contracts they offer reveals that these entities have been, and still are, proactive in developing products, of which only a small proportion generate sufficient trading interest to succeed and survive. Two decades between 1960 and 1980 saw the greatest level of product development. Between 1960 and 1969 inclusive, 52 new futures contracts were launched and between 1970 and 1990 a further 102 different contracts were developed (Cuny 1993). Depending on how one defines and measures success of a contract (see later), it would appear as though as many as 75% of newly-launched contracts fail to survive.

As time has passed, the opportunities to develop new products have declined; many have already been tried and tested and the existence of commodities which underlie the futures contracts are finite. However, product innovation does still occur, with the latest example being the LME's new plastics contract launched in May 2005. The LME has invested more than two years and considerable financial resources in persuading the international plastics community to support the idea of plastics' futures; at the same time, the success of the new plastics contracts will only be able to be judged after perhaps as much as a full year's trading, and possibly even later. Thus while the LME appears to have done everything in its power to appropriately design the plastics contract and secure industry support for the product, there is no guarantee that it will succeed.

More pertinently, the LME has put on hold its plans for a proposed new steel contract, essentially because the large global steel producers informed the LME that they would be unlikely to trade the contract.

There are a number of reasons why a particular futures contract either succeeds or fails. We consider these in more detail as follows:

First mover advantage

The evolution of existing exchanges, and ones that have failed to survive, suggests that the first exchange to establish itself stands the greatest chance of competing successfully against later competitors. The same applies to an individual contract – the first contract of its type to be launched stands a greater chance of establishing itself than successive similar and competing contracts launched on other exchanges. Given the long track record of metal contracts traded on the LME and COMEX/Nymex, this is a very important consideration for South Africa.

A good case in point when considering the first mover factor is the relatively recent failure of a second attempt by the LME to launch a silver contract, as mentioned in Chapter 1. Discussions with market participants revealed that, in their opinion, the LME silver contract was in fact better designed than the one traded on COMEX/Nymex. However, the LME contract was not the first to be established. It failed to gain market share and was

subsequently de-listed. Another possible reason for the LME silver contract failure was the fact that it was listed with the base metals, whereas on COMEX/Nymex it is traded as a precious metal. Investors see the silver price's behaviour more akin to gold than an industrial metal.

A similar pattern can be seen with the London International Financial Futures Exchange (LIFFE), which was established in 1982. In the 12 years that followed, it introduced no less than 25 different contracts, twelve of which (or 48%) failed. Out of the 25 contracts, LIFFE was the "first in" exchange in 11 instances, of which 8 (73%) were still trading as of 1994 (Corkish et al, 1997). Of the 14 contracts where it was not first to market, only 5 (36%) survived.

Interestingly, it should be noted that LIFFE subsequently lost market leadership of its Bund futures contract to DTB in 1999, which suggests that "first mover" advantage is not a guarantee of continued success of the contract.

First-In Status for South Africa?	
Aluminium	No
Ferrochrome	Yes
Gold	No
Platinum	No
Palladium	No

Liquidity

Liquidity, or the depth of a market (as measured usually by turnover), is essential for contract success. For market participants a liquid market provides two essential factors. Firstly, trades can be executed without the risk of adverse price movements as a consequence of the trade and secondly, the bid-offer spreads are likely to be narrower in a more liquid market.

Liquidity depends on the number and type of market participants making use of the contract, and it appears that it is not sufficient for a contract to be traded by producers and consumers for it to be successful. As discussed earlier, the presence of local speculators appears critical as they assume risk, thus offsetting the hedgers and making a market.

Liquidity also depends on the number of other exchanges that offer a similar, competing contract. Competing contracts draw liquidity away from each other (at least until one wins out, as discussed later), provided the contracts are directly comparable in terms of their structure, and in broad terms, their transaction costs (see later). Since exchanges charge a fee per transaction, the greater the liquidity, measured by turnover, the greater the revenues for the exchange.

Where competing exchanges have succeeded in carving out a market niche and thus secured sufficient liquidity, the contracts are differentiated. For example, precious metals contracts traded by COMEX/Nymex are sufficiently different from those traded on TOCOM in terms of the currencies and the units they are expressed in. The aluminium contract traded by COMEX/Nymex competes successfully with the LME contract partly because the former has delivery cited in North America, and thus attracts mainly North American participants (including of course the local car industry) into what is otherwise a directly comparable contract.

Overall Global Market Liquidity	
Aluminium	Very Liquid
Ferrochrome	No Liquidity
Gold	Very Liquid
Platinum	Reasonably Liquid
Palladium	Reasonably Liquid

Fungibility and homogeneity

A successful contract needs to be standardised in terms of size (trading units), quality and grade, and these specifications must be widely recognised and accepted by all the potential users of the resultant contract. Most financial products, such as interest rates, currencies and equities, are homogenous by definition (though they can be far more country-specific than commodities). Commodities are not always homogenous, and contract specification can make or break a newly-launched contract.

Discussions with market participants suggest this is a key issue with respect to the potential success of metal contracts. Many maintain that the success of both the LME and COMEX/Nymex aluminium futures contract is that the underlying ingot of aluminium is a universally recognisable specification. In contrast, it is widely argued that the steel futures contract, proposed by the LME, is unlikely to be launched because the end uses of steel require such a wide and diverse range of product specifications that it will be difficult to arrive at a standardised product that is meaningful to the users and producers of steel. Homogeneity and fungibility are thus further factors essential to the longer-term success of any futures contract in commodities.

Free market pricing structure

In order for a futures contract to trade successfully, the underlying commodities need to exhibit a free market pricing system that is quoted internationally. In the absence of this, cash settlement, itself a pre-requisite for success, is not possible.

Free Market Pricing for Cash Settlement?	
Aluminium	Yes
Ferrochrome	No
Gold	Yes
Platinum	Yes
Palladium	Yes

With respect to the five commodities under consideration, in all instances, with the exception of ferrochrome, the metals are traded internationally within a free market pricing structure. In the instance of ferrochrome, the spot market is small, with the metal sold by contract after negotiation. The resulting producer price is only adjusted on a quarterly basis. This represents a barrier to market entry for an associated futures contract, irrespective of other elements of potential contract design.

Housed in a viable exchange

A new futures contract launched by an existing and well-established exchange appears to have a higher chance of survival and success than a similar contract launched by a smaller, less well-established exchange, or indeed by a new exchange. There are a number of reasons for this. The well-established exchanges have considerable experience in product development and the ability to isolate which contract has the greatest chance of success. Experienced exchanges are more likely to know which contracts are potentially viable in the first place. More important, though, is the fact that larger exchanges have greater marketing power and resources which are a necessity with respect to product launch. The wider the marketing drive to make potential contract users aware of, and support the product, the greater the chance of success. And finally, well-established exchanges have a large core of local end users through their memberships, which provide new contracts with a ready-made user base.

Contract design

The structure of a new contract is central to its potential viability. If the product design from the outset does not meet the needs of the market participants, then that contract will probably be doomed. Design flaws which have inhibited past contracts include features such as benchmarking a contract in local currency terms when denominating in Dollars would have generated the necessary turnover, or denominating a contract in a non-standard unit of the underlying asset, for example in kilogrammes, when troy ounces were more appropriate. The location of warehouses can also be a decisive factor, especially with respect to base metal contracts that tend to go more to physical delivery than precious metals.

Designing a contract where an existing product already has established market share is difficult. Product developers have to take the decision of whether to model the new contract on the existing one, thus engaging in a head-on battle with an already successful contract, or to deliberately differentiate the new product so that it might offer a viable alternative. In general there does not appear to be a straightforward solution to this dilemma. On the basis that “first in” contracts tend to dominate, competing product developers could look to alternative designs for the new contract. However, market participants tend to become accustomed to standardised product specifications and often demonstrate strong resistance to alternative specifications.

More specific products designed to serve niche markets, such as a precious metals alloy contract designed specifically for the jewellery trade, are also unlikely to succeed. This is because of the nature of the jewellery manufacturing sector, which is unlikely to make use of precious metals futures contracts, irrespective of the products’ design.

Fee structure

Similar contracts offered by competing exchanges will attract business away from each other if their fee structures offer a participant a particularly attractive financial advantage. However, merely discounting the fee structure does not guarantee that a contract will succeed over its more expensive competitor. A good example of this was the way in which the CBOT recently waived fees to market participants for a period of 3-4 months in an attempt to attract business away from COMEX/Nymex; a strategy that failed. Thus, while pricing is an important factor, it certainly cannot be regarded as a prime factor in the decision by market participants to make use of a contract at the expense of a competitor.

High-quality hedge in an illiquid market

In considering the potential success of a futures contract, the trade-off for the hedger between a high-quality or near perfect hedge in an illiquid contract, and a lower-quality (less perfect) hedge in a liquid contract, needs to be considered. Research has shown that some contracts have failed because of this trade-off. There have been instances where a less perfect hedge in a liquid market has been preferred by market participants over a more perfect hedge in an illiquid market.

A good example of liquidity being seen by market participants as more important than hedge quality was for a type of soft wheat for Pacific Northwest hedgers in the 1950s. With no contract in soft wheat trading, the hedgers of Pacific Northwest used the hard wheat contracts trading in Kansas and Chicago, even though such contracts were a very imperfect hedge. In 1950, the Chicago Board of Trade introduced a Pacific Northwest wheat contract, offering the hedgers a perfect hedge. Yet they preferred to remain with the hard wheat

contracts that offered greater liquidity and an imperfect hedge.

Cuny gave four other examples: the grain sorghums, which were better hedged with corn; 90-day commercial paper, which was better hedged with Treasury Bills; barley, again better hedged with corn; and flour, which was better hedged with wheat.

HOW DOES THE COMMISSIONING OF A NEW CONTRACT AFFECT MARKET LIQUIDITY AND THE TURNOVER ON EXISTING EXCHANGES?

There does not appear to be a single, clear-cut market response to the launch of a new contract and analysis of historical developments reveals variable responses.

In many instances (for example, new gold contracts launched in the Far East) there appears to be little adverse affect on global market liquidity and a new contract might indeed generate additional global liquidity by encouraging the local market to trade more actively.

In other instances (for example, the failed LME silver contract), the debut of a new contract can initially draw liquidity away from existing contracts being traded on competing exchanges as locals switch to using the new contract. This is particularly true if they are very similar contracts or if they are being traded in a similar time zone. What happens subsequently depends largely on whether or not the new contract gains a foothold and captures market share. History suggests that the new contract, after perhaps an initial surge in turnover, then settles down and turnover often dwindles away as locals return to the historically dominant contract.

In general it appears that, where two or more contracts of very similar design compete head on, one eventually emerges as dominant to the detriment of the others. Our research did not reveal any situation where similar contracts continue to compete for any length of time, thereby spreading the existing liquidity between them. These findings therefore rebut the theory that competing contracts can split the existing liquidity among themselves to the detriment of the total market.

The effect on market liquidity from the commissioning of a new contract depends very much upon what the contract is. If it is a totally new contract, such as the plastics contracts introduced on the LME, then only new liquidity will be generated as there was nothing in its place before.

If it is a specifically defined contract dealing with a particular grade or quality of a commodity, then we may see a decline in the market liquidity of the generic underlying commodity as the more specific contract is taken up, thus splitting liquidity. If it is a contract similar to existing contracts on other exchanges, then some increase in overall liquidity can be expected as local hedgers/speculators enter the market for the first time. There may be some redistribution of liquidity among the exchanges, however, if the new contract enjoys some measure of success in competition with other existing contracts.

CAN THERE BE TOO MANY EXCHANGES?

On the basis of the above findings, the answer to the question: can a surplus of exchanges be detrimental to a commodity? appears to be no, since among competing contracts one will emerge as dominant. As turnover of the less dominant contracts dwindles, the host exchanges tend to de-list them rather than maintain a moribund product. While it can be argued that a surplus of exchanges trading broadly the same product will tend to spread market liquidity too thinly, in practise this does not happen. The global economy does not suffer from parochialism and business tends to inexorably flow to those exchanges offering the greatest efficiency and liquidity, leaving rivals to stagnate, grow moribund, or withdraw their non-performing contract.

HOW DOES AN EXCHANGE DEFINE AND MEASURE CONTRACT SUCCESS? WHAT IS THE CRITICAL MASS BELOW WHICH A CONTRACT FAILS?

There are a number of yardsticks that can be used to measure a contract's success.

The most obvious is the turnover or trading volume of a contract – which, usually, is transparent information published by the exchanges.

Academic consideration of this by authors such as Silber (1981) places an arguably arbitrary level of 10,000 contracts traded annually, in conjunction with the number of years a contract had been traded, as a combined measure of success. Evidence suggests that emphasis on the longevity of a contract in itself is a less reliable gauge of success. While many contracts clearly demonstrate their inability to succeed within the first two years after launch, others have only established themselves in their third or even fourth year of trading. The COMEX/Nymex gold contract was a good example of a late starter[10]. Conversely, contracts that trade encouragingly in their first years of trading can disappoint in later years to the extent that they are de-listed after relatively optimistic debuts. Thus high volumes of turnover in the debut years are neither a sufficient nor a necessary condition for a contract to succeed. For example, the LIFFE Bobl contract (5

[10] See Chapter 1 for details.

year German bond, 1993-1994) traded over 4,000 contracts on average per day in its first year only to be delisted in its second year (Corkish et al, 1997); the much more long-lived FTSE-100 futures contract took six years to reach that volume.

In some instances, a market event can adversely affect an otherwise robust contract, to the extent that it is rendered moribund. The TOCOM palladium contract is a good example of this. Locals trading on TOCOM used to make regular use of the exchange's palladium contract until the international price of palladium soared to $1,000 per ounce in 2000. In the price run-up, the daily price variations set by TOCOM were breached and, under exchange regulations, trading was suspended (contract went "limit up"). Speculators were therefore unable to execute their trades in order to minimise their losses. TOCOM was obliged to close the exchange to palladium trades and the loss of confidence in the contract appears to have continued since the subsequent relaunch, impacting on trading volumes, which have been low. Conversely, contracts also have "limit down" levels below which trading would cease. Daily trading limits of this nature are put in to protect users of the exchange products.

In general, contract failure on exchanges has historically been high. Carlton (1984) reported that the majority of contracts failed within a decade of their launch and most failed within the first 2 years of trading. This author also found that the most successful contracts were hosted by the largest exchanges. With hindsight, we would suggest that the 1980s (when Carlton studied the markets) was a period of rapid development in derivative products and, with many product launches, the possibility of product failure was correspondingly high.

The ratio of turnover to open interest can yield a measure of product liquidity, whereas a high ratio (trading is high relative to the number of outstanding contracts) implies that participants can enter the market or liquidate their positions relatively easily, and vice versa for a low ratio. High ratios are associated with successful contracts and low ratios with unsuccessful products. Furthermore, tracking this ratio can be a lead indicator of the health of an existing contract. A falling ratio would suggest declining health of the contract, while rising ratios indicate that a contract is gaining momentum and possibly market share if it is competing head on with similar products. There is therefore ultimately no mathematically preordained formula which determines a contract's success or failure, as this depends upon a number of factors. The success or failure of a contract may depend upon the value of each contract. It will also depend upon the size of each individual market.

Some contracts get off to a brisk start and then peter out. It should also be borne in mind that the exchange may be prepared to weather low turnover for some time in the hope of a contract picking up, as some contracts have done in the past. It is safe to say, however, that if only tens of contracts are being traded per day after a year, then the exchange knows it probably has a failure on its hands.

WHAT IS THE KEY TO THE SUCCESS OF EXISTING EXCHANGES?

The key to the success of existing exchanges is largely historic, the fact that they have been established for decades. They have therefore established a core of local users well accustomed to the exchange and its products. The exchanges also have track records with respect to their clearing houses and warehousing. As an exchange becomes more successful, its total turnover increases and thus the unit cost of transactions falls because of substantial economies of scale. Furthermore, the longer an exchange has been in business, the more marketing experience it gains and the more it dominates its spheres of influence. Thus, once successful, an exchange tends to continue being successful and its prosperity tends to become self-fulfilling. The more successful the exchange, such as the LME, the more it can afford (both commercially and politically) to try out new contracts which run the risk of failure (silver and plastics).

WOULD A SOUTH AFRICAN EXCHANGE BE A COMPETITOR TO EXISTING EXCHANGES?

Our research has worked with the premise that any commodity futures contracts launched in South Africa would be US Dollar denominated with product specifications that would be equally standardised. This implies that these contracts would indeed compete with existing contracts on other international exchanges. The only exception to this from the list of 5 commodities, is ferrochrome.

The research indicates that South Africa would compete head-on with the LME in its time zone.

The fact that newcomers to the market tend to be at a disadvantage when launched against firmly established exchanges and contracts is a factor of considerable importance to the sponsors of this research.

The establishment of a South African commodities exchange would be seen as competition to New York's COMEX/Nymex, especially if the South African gold contract was priced in US dollars and was the same 100 oz size as that of COMEX/Nymex. This contract is traded internationally and the exchange's European customers would be the obvious target for a South African exchange.

Tokyo's TOCOM would not feel threatened by the South African contract as their own contract is essentially for domestic users, being priced in yen and with a 1 kg size. The new gold exchange due to open in Dubai would also be a competitor, with its natural catchment area being the Middle East, the Indian sub-continent and East Africa.

COULD A SOUTH AFRICAN EXCHANGE CO-PARTNER ANY EXISTING EXCHANGE? IF SO, WHICH ONE AND HOW?

Given the different time zones, it is suggested that COMEX/Nymex would appear to be the most obvious co-partner to any mooted South African exchange. It is difficult to see, however, what a South African exchange partnership could offer the LME that it does not already have in terms of location, access to locals, warehousing and clearing houses.

The other possible partnership could be the potential futures precious metals exchange, located in Dubai. The rationale for this is based less on the question of similar time zones, but rather on the fact that South Africa is the primary source of raw materials and Dubai a pre-eminent consumer of precious metals.

In May 2005, there were reports that COMEX/Nymex was due to sign an agreement with the Dubai government to create an exchange partnership. This announcement came shortly after talks of a partnership between COMEX/Nymex and the Singapore Exchange failed to come to fruition.

Tie-ups between exchanges in different time zones/continents do not have a history of being very successful. COMEX/Nymex has tried to transplant its gold contract to the Far East time zone twice with the Sydney Futures Exchange, but abandoned the experiment on both occasions. Similarly the CBOT tried its gold contract on Singapore's Simex but the enterprise also proved abortive.

As to which exchange any such link might successfully be established in order to achieve the best advantages, it should be an exchange with little or no overlap in trading hours, although the use of electronic trading has diminished the strict need for this. This would suggest Asia, despite the failure of former links, Latin America or one of the Chicago exchanges, although in the latter instance, the existing gold contracts are very illiquid compared with COMEX/Nymex.

The temptation for an exchange to try to export a tried and proven contract to another exchange in a different time zone, and increase turnover, has proved strong in the past, but a contract that has proved successful in one market may not be correctly tailored for another. It may be the wrong size, priced in the wrong currency or even the wrong commodity. This is the common explanation given for the lacklustre results of the IPE-SIMEX partnership, where the Brent Crude oil contract was no better suited to Asian requirements than the Texas-based energy products were in Sydney.

The economics of linkages offer exchanges in the developed world the possibility of incremental revenues with little additional costs. Most of the attempts to capture non-local trading business via after-hours trading have proven costly for the exchanges, and even costlier for their members, who were forced to maintain a duplicate infrastructure handling insufficient volumes. Thus the whole point of exchanges being co-partners is to broaden the distribution and customer base and therefore the potential pool of liquidity, by attracting participants who are located outside the traditional time zone of the exchange concerned. However, to date, attempted links between different gold contracts have only commonly resulted in the transplanted product failing to perform.

It may be that the way forward is to differentiate the product from others currently available. The introduction of a smaller contract, say 20 oz or 50 oz, may be more suitable for investors in some markets, while linking a gold futures contract to an exchange rate contract could remove the currency risk when trading in a commodity priced in a currency other than the domestic one. This might be of particular relevance when considering the establishing of a new South African commodities exchange.

IS THE SOUTH AFRICAN TIME ZONE AN ADVANTAGE OR HANDICAP?

With a growing trend for futures trading to be conducted electronically, rather than by traditional open-outcry in physical trading pits, the time zone of a particular exchange is of diminishing importance.

However, in terms of competing exchanges of potential partnerships, the South African time zone is a disadvantage relative to competing against the LME, although it could be considered an advantage with respect to a potential partnership with COMEX/Nymex.

With the South African time zone matching that of mainland Western Europe, there would seem to be a good opportunity for attracting European market activity to a new South African exchange, but one has to ask why there is not already a successful gold futures exchange in this time zone. The only attempt to launch one was in the 1980s, with the London Gold Futures Market, which proved to be a failure. Yet other commodities futures markets like the LME

and the IPE have flourished in this time zone. Why not gold?

What is different is that the physical bullion market in Europe has been content to use the well-established service provided by New York's COMEX/Nymex for its futures needs. COMEX/Nymex is efficient, liquid and enjoys a high turnover. Its trading floor is open during the European afternoon and its contracts can be traded at other times through electronic means. This means that any advantage that might have accrued to South Africa from sharing the same time zone as Europe has been rendered less important by the efficiencies of modern trading methods.

WHO WOULD USE A SOUTH AFRICAN COMMODITY EXCHANGE?

There are a number of potential users of futures contracts based on underlying commodities. These include:

- Producers of the commodities
- Consumers of the commodities in either semi-fabricated or final form
- Refiners
- Local banks
- International Banks
- Commodity brokers or trading houses
- Local speculators (small investors)
- Investors (institutional or hedge funds)

In the case of a new South African commodity exchange, where the prime focus would be precious metals, several pre-existing market factors need to be borne in mind.

Producers of precious metals, especially gold, can and do make extensive use of derivatives, but these tend to be OTC transactions entered into directly with the international bullion banks. While some of the risk associated with these transactions might ultimately be offset indirectly on a futures exchange, it is rare that a gold miner will make use of a standardised futures contract. This tendency is supported by the fact that such a small percentage of the gold futures turnover (less than 1%) ever comes to physical delivery.

This existence of a large OTC market on the back of plentiful and cheap central bank lending of gold is the main reason for the absence of the gold producers on an exchange floor. More specifically, the derivatives associated with gold producer hedging tend to be complex and non-standard and therefore the futures exchange contract is considered too limiting for the mining companies. Furthermore, gold hedging on the part of the producers is often executed in volume and frequently as part of a financing package structured by a lending bank.

The consumers of gold, primarily the jewellers, tend not to make use of price risk management instruments, with the exception of Gold Loan Schemes that have a price-risk management facility. The global jewellery industry is made up of numerous, often small, operations and their individual metal usage falls short of the volumes deemed sufficient to make use of a standardised futures contract. Moreover, many of the jewellers confess that price risk management is too sophisticated for them. In some instances, the use of a futures contract might reveal the true level of business which a manufacturing jeweller might wish to keep hidden from a country's fiscal authorities.

With respect to platinum and palladium, agreements between the producers and consumers of the metals (primarily manufacturers of industrial and automotive catalytic converters) are long term arrangements entered into directly by the two participants.

The presence of the producer and consumer of base metal futures contracts is substantially more direct, as reflected in the fact that almost 20% of aluminium futures traded on COMEX/Nymex in 2004 went to physical delivery.

Turning to the banks as potential users of commodity futures contracts in South Africa, the local banks appear to be the ones most likely to make use of these products. Their numbers and financial presence in the markets may be of consequence but critically, the importance that they might ascribe to commodity trading, is probably insufficient for them alone to generate trading in volumes that could ensure contract success.

With respect to the potential of international banks, commission houses and trading houses making use of a local exchange, our research suggests that this is unlikely to emerge. As discussed in Chapter 1, even where exchange membership is open to the international market, the presence of global banks and trading houses is not automatic. International financial entities have limited credit lines for commercial purposes in other countries. With respect to South Africa, these credit lines are set internally by the credit departments of these companies and will take into account their perceived sovereign risk. Thus, the representative offices of international banks in South Africa have credit limits applied to them from their head offices and allocate those limited lines as commercially prudently as possible. It is therefore possible, depending on the commercial activities engaged in locally by the banks, that they simply do not have the credit lines available to trade on a local exchange, even if they were permitted to become members and had the appetite for a local futures contract.

With regard to investors, in South Africa hedge funds are increasing in popularity, but its domestic hedge fund industry, with an estimated R8,5bn

under management in about 70 funds, is tiny compared to the more than the $1 trillion believed to be tied up in hedge funds worldwide. Thus local investor interest is likely to remain limited.

All this implies that the likelihood of the emergence of sufficient local trading interest in a South African commodity exchange does not look positive. Apart from concerns about credit, gold, platinum, palladium and aluminium can be traded actively on existing exchanges that command market dominance and which are associated with considerable turnover volume and liquidity. The South African contracts would have to then compete head-on with the likes of the LME and COMEX/Nymex, where history has shown that later comers to a competing market enter at a disadvantage. In the case of ferrochrome, the fact that the commodity is not freely traded via an unfettered international price suggests that a future contract considered anywhere in the world may not meet the requirements of industry, in that cash settlement would be difficult.

3 REFERENCES

Carlton, D., **Futures Markets: Their Purpose, Their History, Their Growth, Their Successes and Failures,** Journal of Futures Markets, 1984 (4), pages 237-71.

Cluny, C., J., **The Role of Liquidity in Futures Market Innovation** in The Review of Financial Studies, 1993, Volume 6, Number 1, pages 57-78.

Corkish, J., Holland, A., and Vila A., F., **The Determinants of Successful Financial Innovation: an Emperical Analysis of Futures Innovation on LIFFE,** Bank of England, 1997.

Silber, W., **Innovation, Competition and New Contract Design in Futures Markets** in Journal of Futures Markets, 1981 (1) pages 123-55.

Tsetsekos, G. and Varangis, P., **Lessons in Structuring Derivatives Exchanges,** in The World Bank Observer, 2000, Vol 15, No 1, pages 85-98.

GLOSSARY

A

ARBITRAGE
Risk-free or almost risk-free profit as a result of circumstantial and structural imperfections in a market

B

BM&F
Brazilian Mercantile & Futures Exchange

C

CASH SETTLEMENT
When a futures contracts is settled for in cash as opposed to physical delivery

CBOT
Chicago Board of Trade

CLEARING
Processing of transactions, including reporting, confirmation and matching of trades

CLEARING HOUSE
Entity through which exchange transactions are matched

CME
Chicago Mercantile Exchange

COMEX/NYMEX
New York Mercantile Exchange

COMPARATIVE (Advantage)
The advantage enjoyed by any entity by virtue of its access to natural resources

COMPETITIVE (Advantage)
The advantage enjoyed by any entity by virtue of the fiscal, financial or political policies under which it exists

CONTRACT
Transaction entered into by buyer and seller on an exchange

D

DELIVERY
The actual transfer of the ownership of gold or other underlying asset. It may not involve physical movement of the commodity but is usually completed by a simple paper transfer

DELIVERY DATE
The specified day on which the gold or underlying asset must be delivered in order to fulfil a contract

DERIVATIVE
A financial instrument derived from a cash market commodity or other financial instrument, traded on a regulated exchange or over-the-counter. Metals futures contracts are derivatives of physical commodities; options on futures are derivatives of futures contracts.

DME
Department of Minerals and Energy

DMEs
Developed Market Economies

DTI
Department of Trade & Industry

E

ELECTRONIC TRADING
Trading via electronic means. Contrast open outcry

EXCHANGE
Trading forum linking a market place where buyers and sellers meet to offset risk and where transactions are validated through a clearing house

EXCHANGE TRADED OPTIONS
Options on futures contracts offered by a recognised futures exchange such as COMEX/NYMEX.

F

FRIDGE
Fund for Research in Industrial Development, Growth and Equity

FUNGIBLE
The ability of a commodity to be traded

FUTURES CONTRACT
Standardised agreement between buyer and seller to exchange a pre-agreed amount of an asset at a pre-agreed price at a pre-agreed time in the future.

G

GOOD DELIVERY
The specification which a bar must meet in order to be acceptable for delivery in a particular terminal market or futures exchange

I

IDC
Industrial Development Corporation

IGE
Istanbul Gold Exchange

J

JSE
Johannesburg Stock Exchange

K

KOFEX
Korea Futures Exchange

L

LCH
London Clearing House

LIQUIDITY
Level of trading on an exchange or in a market

LME
London Metal Exchange

LOCALS
Regular users of an exchange; usually exchange members

LOT
Commonly used term for a standard futures contract.

M

MARGIN
The funds required to be deposited as security against an outstanding futures contract

MARGIN CALL
Additional margin expected to be deposited to reflect changes in the market price of an underlying asset

N

NASAAC
North American Special Aluminium Alloy

NEPAD
New Partnerships for Africa's Development

O

OPEN INTEREST
Number of contracts outstanding on an exchange at any point in time

OPEN OUTCRY
Trading executed in an open forum such as a trading floor, ring or pit. Contrast electronic trading

P

PBOC
People's Bank of China

PGMs
Platinum Group Metals

PRICE DISCOVERY
The establishment of a price of an asset

PRINCIPAL
Primary participant in a derivatives contract

R

RING
Trading area on the London Metal Exchange

RISK
The exposure to adverse market movements, mischance or the possibility of losing money.

S

SGE
Shanghai Gold Exchange

SHFE
Shanghai Futures Exchange

T

TOCOM
Tokyo Commodity Exchange

TURNOVER
Measured levels of trading of a futures contract

V

VALUE DATE
The date agreed between parties for the settlement of a transaction.

W

WAREHOUSE RECEIPT
A warehouse or depository receipt is issued when delivery is taken on a futures exchange. It specifies the quantity and fineness of metal held.

COPYRIGHT, DISCLAIMER AND CONTACT DETAILS

COPYRIGHT

DISCLAIMER

While Virtual Metals Research & Consulting has made all reasonable efforts to ensure that information in this report is accurate at the time of publication, there may be inadvertent errors and omissions and a lack of accuracy or correctness. VM makes no representation or warranty, express or explicit, as to the accuracy or completeness of the report. The report is not and cannot be construed as an offer to sell, buy or trade any securities, equities, commodities or related derivative products, and the report in no way offers investment advice.

Virtual Metals Research & Consulting Ltd and its employees, therefore, accept no liability for any direct, special, indirect or consequential losses or damages, or any other losses or damages of whatever kind, resulting from whatever action or cause through the use of any information obtained directly or indirectly from this report. Virtual Metals Research & Consulting also has no obligation to inform recipients or readers if, in the future, they revise their opinions or modify or correct information contained in the report.

CONTACTS

Virtual Metals Research & Consulting Ltd
85 Albany Street
London
NW1 4JL

Tel + 44 (0) 20 7487 3600

Jessica Cross
Jessica@virtualmetals.co.uk

Matthew Turner
matthew@virtualmetals.co.uk

Sarah Ross
sarahr@virtualmetals.co.uk