UNIT VALUES OF MINERAL PROPERTY TRANSACTIONS IN CANADA, USA, MEXICO, CENTRAL AMERICA AND SOUTH AMERICA 2007-2013

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ABSTRACT

A study of mineral property transactions for various commodities has been carried out for the period 2007 to 2013 to investigate the effect of the financial crisis of 2008 on the junior mining companies in Canada and the western hemisphere. For early stage exploration properties, the number of transactions per year have averaged 125, 31, 20, and 15 in Canada, South America, USA, and Mexico, respectively. Transactions of advanced properties have averaged 21, 16, 11, and 7 in Canada, USA, South America, and Mexico, respectively. Results show that unit values of properties in Canada are considerably lower than those in the USA and South America.

KEYWORDS

Unit Values, Mineral Property Transactions, Grassroots Exploration Properties, Properties with Mineral Resources

INTRODUCTION

The purpose of this paper is to examine the trend of unit values of mineral properties (Canadian dollars per hectare, or $/ha) for the period 2007-2013, to investigate the effect of the financial crisis of 2008 on the junior mining companies in Canada and the western hemisphere. This paper provides results of a survey of transactions of mineral properties from 2007 to 2013 that are available to the public. It deals mainly with gold, silver, porphyry Cu-Mo, and volcanogenic massive sulphide (VMS) properties – the commodities which are more commonly explored for in the northern and southern hemispheres – and not with other commodities, such as graphite and rare earth elements (REE), which may be popular for brief periods. The transactions are recorded in a database which contains information from company press releases and publications, such as StockWatch, Junior Mining Network, CNW Group News Archive-Yahoo Finance, Yahoo Finance-Market Wired, Marketwire News Archive-Yahoo Finance, company annual reports and websites, and The Northern Miner. The database only contains information that is available to the public, i.e., not all the transactions of mineral properties which took place during 2007-2013 may be disclosed to the public. Nevertheless, results of the survey indicate clear trends in unit values of mineral properties in North America and other regions of the world. Since the inflation rate for the prices of consumer goods in Canada has been very low for the period 2007-2013, all unit values for this study are considered in constant Canadian dollars.

From 2007 to 2013, there were approximately 2,110 transactions of mineral properties worldwide. Of these, approximately 1,090 (52%) were for properties located in Canada, 341 (16%) were for properties in South America, 265 (13%) were for properties located in the USA, and 145 (7%) were for properties located in Mexico (Figure 1). These numbers indicate that approximately 1,810 transactions (87%) were for properties located in northern and southern hemispheres of the Americas. This paper will focus on these areas, since they represent the bulk of the transactions worldwide.

Database

The database for the current survey is populated by valuations of individual transactions based on information released in public documents. These valuations include cash components, issuing of shares of the company acquiring the mineral property, and commitments of expenditures – commonly exploration work – planned to be carried out by the company acquiring the property. Commonly, the acquisition terms include a period of three to five years. Occasionally, the acquisition terms include only cash or lease payments, such as in the USA, which may extend over ten years or more. In such cases the total payments are assumed to be made over a period of five years in order to provide a uniform time span for all the mineral property transactions in the database.

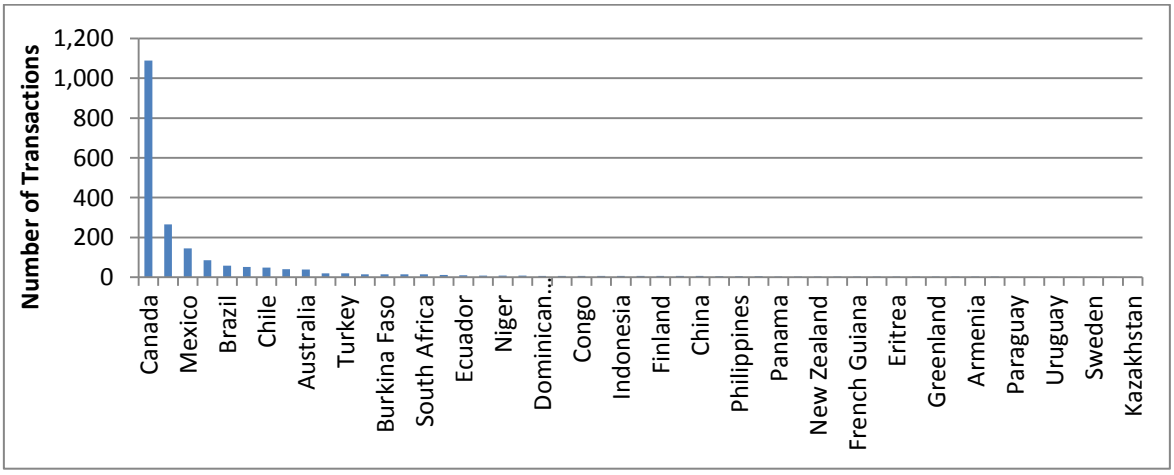

Figure 1 – Mineral property transactions worldwide (2007-2013)

The valuations of the transactions also are based on the probabilities for each type of expenditure, such as cash payment, issue of shares, and exploration work, over the term of the earn-in period, e.g., a probability of 100% for the first year, 50% for the second year, 25% for the third year, 20% for the fourth year, and 10% for the fifth year and thereafter (Agnerian, 1996). The valuations also reflect the total property value, based on the terms for each acquisition. The total property value is then divided by the area of the property to arrive at a unit value of dollars per hectare ($/ha). To indicate a trend in the unit values over time, the mean and average unit values are calculated and shown in the figures below.

Since the database includes properties with various sizes, it is divided into three types; small properties of less than 1,000 ha; mid-size properties ranging from 1,000 ha to 10,000 ha; and large properties of greater than 10,000 ha in size. Since the database also contains information on properties at different stages of exploration and development, it is divided into two groups; early stage exploration (or Grassroots) properties, and properties with reported Mineral Resources and/or Mineral Reserves. For this study, mineral resources are treated equally, i.e., whether they are historical resources or National Instrument 43-101 (NI 43-101) compliant Mineral Resources. In general, however, they are NI 43-101 compliant Mineral Resources.

DISCUSSION

Canada

There were 890 transactions of grassroots properties with various commodities in Canada during the period 2007 to 2013, ranging from 105 to 170 transactions per year. In general, however, they ranged from approximately 110 to 125 transactions per year. Surprisingly, the blip of 170 transactions happened only a year after the Financial Crisis of 2008 (Figure 2). In decreasing order of frequency, the transactions of properties for commodities were as follows; gold (49.8%), volcanogenic massive sulphide deposits (VMS, 13.3%), uranium (11.8%), Ni-Co-Cu-Pt-Pd deposits (5.1%), graphite (4.7%), rare earth elements (REE, 2.3%), Cu-Mo deposits (1.6%), diamond (1.5%), and others (9.9%) including coal, potash, asbestos, and industrial minerals.

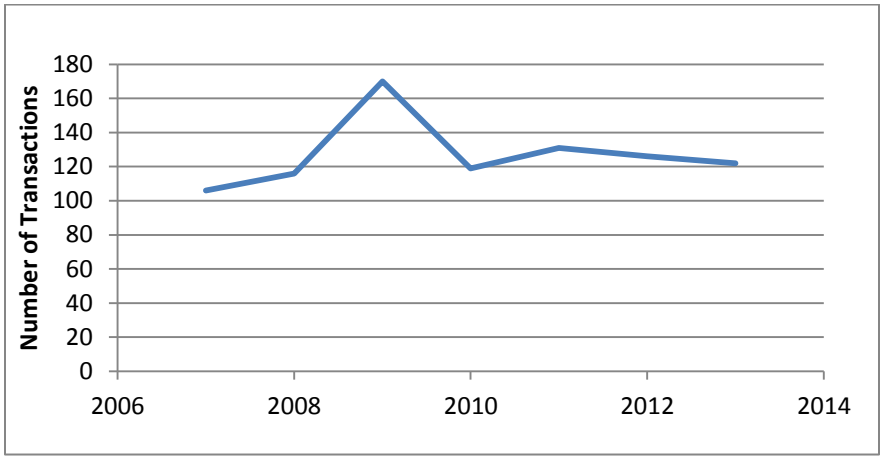

Figure 2 – Number of grassroots mineral exploration property transactions in Canada (2007-2013)

Gold Properties

Grassroots Exploration Properties

The results of grassroots gold exploration properties in Canada are presented in Figures 3, 4, and 5.

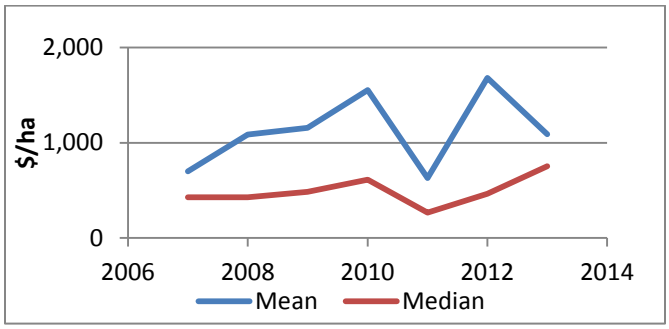

Figure 3 – Small grassroots gold properties in Canada (2007-2013)

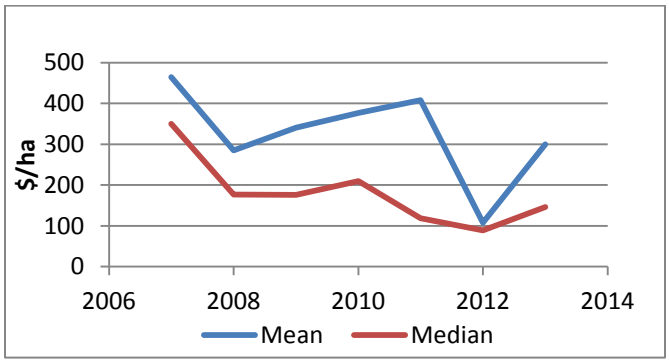

Figure 4 – Mid-size grassroots gold properties in Canada (2007-2013)

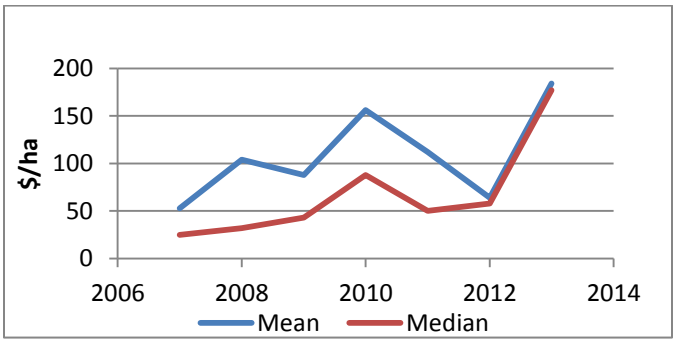

Figure 5 – Large grassroots properties in Canada (2007-2013)

Figures 3, 4, and 5, show that the size of the property is inversely related to the unit value, as expected. The large properties have average unit values ranging from $50/ha to $150/ha, the mid-size properties have average unit values ranging from $350/ha to $110/ha, and small properties have average unit values ranging from $630/ha to $1,090/ha. The peaks in the figures are due to low number (generally one or two) of transactions. They also show that the median values are lower than the mean values, sometimes by a margin of 50%.

Properties with Mineral Resources

There were 149 transactions of properties with reported mineral resources of various commodities in Canada during the period 2007 to 2013, ranging from 9 to 28 transactions per year. From2009 to 2013,

the average was approximately 25 transactions per year (Figure 6). In decreasing order of frequency, the transactions of properties for commodities were as follows; gold (53.7%), VMS deposits (13.4%), Ni-Co-Cu-Pt-Pd deposits (6.0%), graphite (6.0%), uranium (4.7%), iron (4.0%), Cu-Mo deposits (2.0%), lithium (2.0%), Zn-Pb-Ag sedex deposits (1.3%), diamond (1.3%), and others (5.6%) including REE, coal, potash, asbestos, and industrial minerals.

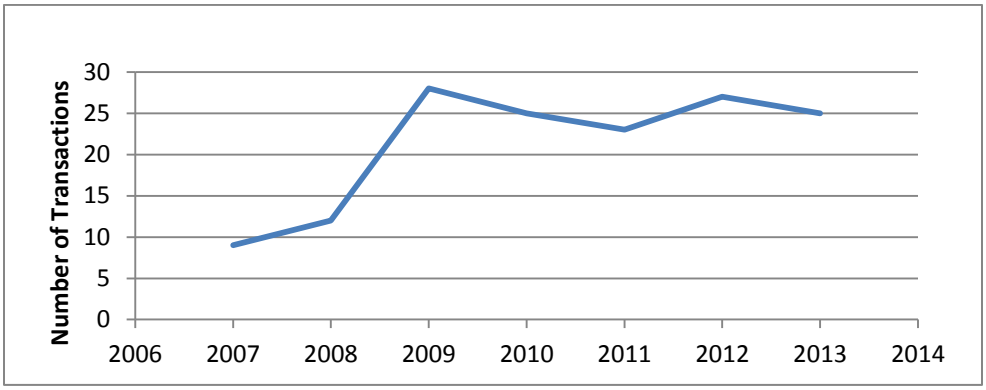

Figure 6 – Number of transactions of properties in Canada with reported mineral resources or mineral reserves (2007-2013)

Figure 6 shows that the number of transactions in Canada has increased from a low of less than 10 in 2007 to an average of approximately 25 for the period 2009-2013. As with the grassroots gold exploration properties, the property size is inversely related to the unit value. The mid-size properties have average unit values ranging from $650/ha to $4,250/ha, and small properties have average unit values ranging from $1,700/ha to $12,090/ha (Figures 7 and 8). The "peaks" and "valleys" in these values for both small and mid-size properties are due to relatively few transactions in these categories. There are only a few transactions per year of gold properties with reported mineral resources to provide sufficient data for statistical purposes.

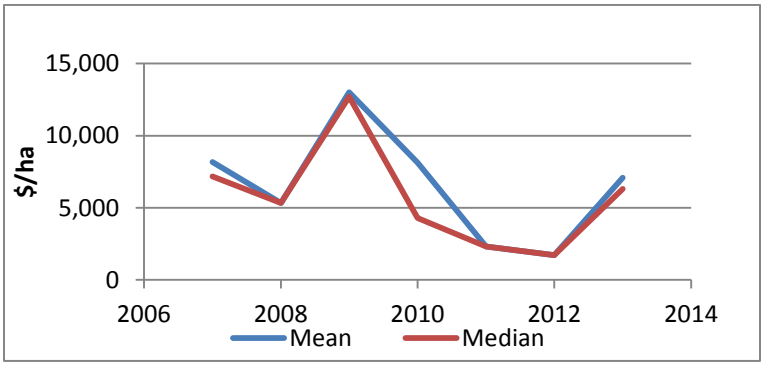

Figure 7 – Small gold properties with reported mineral resources (Canada: 2007-2013)

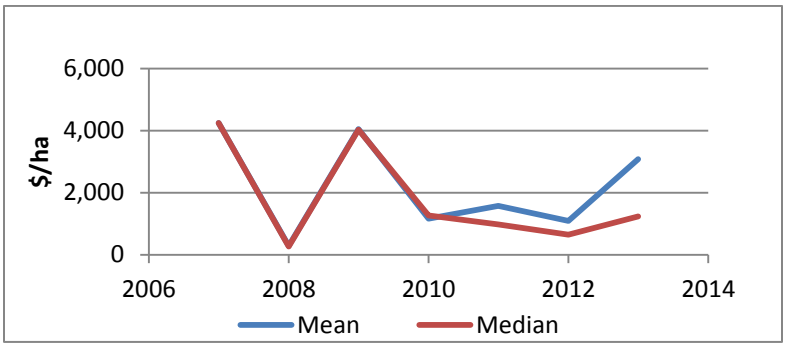

Figure 8 – Mid-size gold properties with reported mineral resources (Canada: 2007-2013)

VMS Properties

Figures 9 and 10 illustrate the results of grassroots VMS property transactions in Canada. They indicate a gradual decrease from 2007 to 2009, but a noticeable increase in unit property values thereafter, except for 2012.

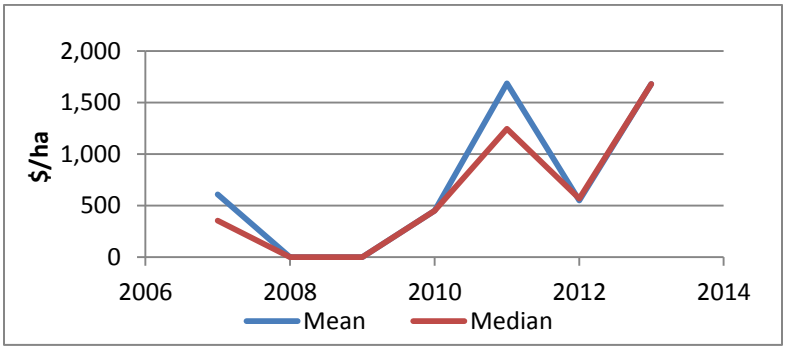

Figure 9 – Small grassroots VMS properties (Canada: 2007-2013)

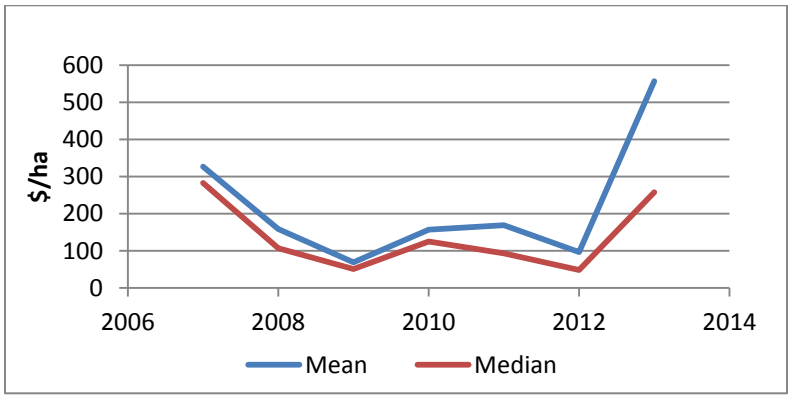

Figure 10 – Mid-size grassroots VMS properties (Canada: 2007-2013)

USA

Grassroots Exploration Properties

There were 136 transactions of grassroots properties with various commodities in the USA during the period 2007 to 2013, ranging from 11 (in 2007) to 27 (in 2009) transactions per year (Figure 11). During the last three years of the survey they range from 17 to 29 transactions per year. In decreasing order of frequency, the transactions of properties for commodities were as follows; gold (71.3%), Cu-Mo porphyry-type deposits (12.5%), uranium (4.4%), silver (3.7%), VMS (1.5%), and others (6.6%) including Ni-Cu-Co-PGE, potash, iron, and industrial minerals.

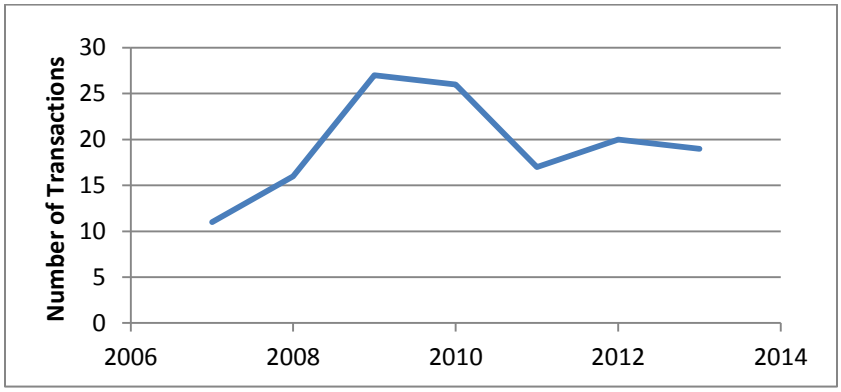

Figure 11 – Number of grassroots mineral exploration property transactions (USA: 2007-2013)

The values for small properties show a gradual increase from approximately $1,200/ha in 2007 to a high of $3,500/ha in 2011, but have decreased since that time (Figure 12). For mid-size properties, the values show a marked decrease in the early period (2007-2008) a modest increase in the middle period (2010-2012) and a decrease in the last year (2013) (Figure 13).

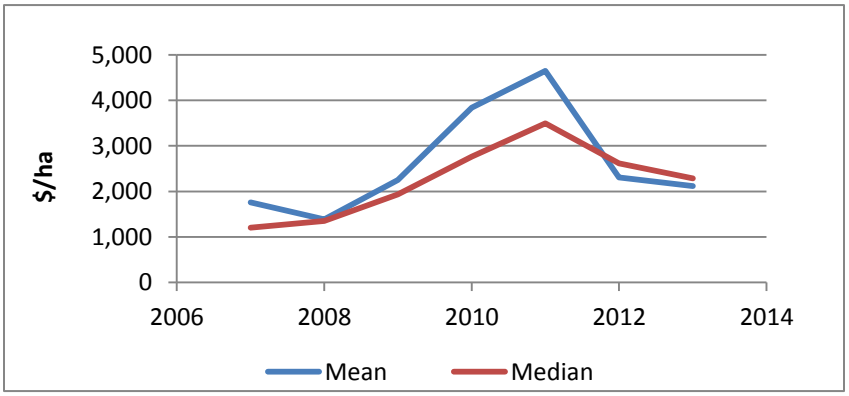

Figure 12 – Small grassroots gold properties (USA: 2007-2013)

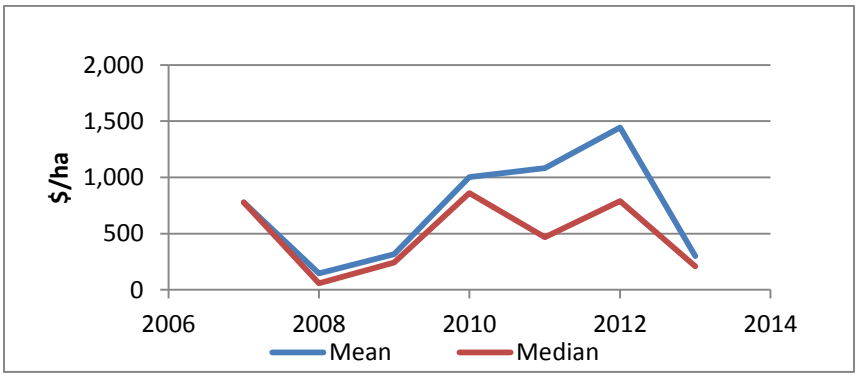

Figure 13 – Mid-size grassroots gold properties (USA: 2017-2013)

Properties with Mineral Resources

There were 113 transactions of properties with reported mineral resources of various commodities in the USA during the period 2007 to 2013, ranging from a low of 9 transactions per year in 2007 to a high of 23 transactions per year in 2009 (Figure 14). In decreasing order of frequency, the transactions of properties for commodities were as follows; gold (52.2%), Cu-Mo porphyry-type deposits (15.9%), silver (11.5%), uranium (9.7%), silver (3.7%), Zn-Pb-Ag sedex deposits (2.7%), and others (8%) including VMS, Ni-Cu-Co-PGE, iron, and industrial minerals.

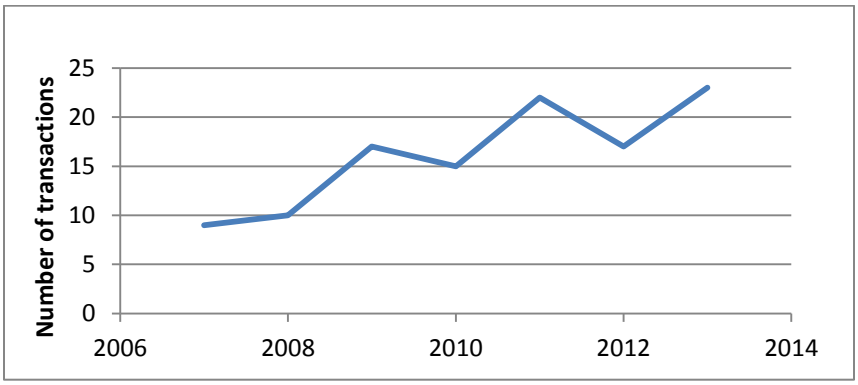

Figure 14 – Property transactions with reported mineral resources (USA: 2007-2013)

The values for small properties show a gradual increase from approximately $7,400/ha in 2007 to a high of $17,350/ha in 2013 (Figure 15). The zero value for 2008 is due to the lack of any transactions of small properties with reported mineral resources during that year. For mid-size properties, the values show a marked increase from $100/ha to $5,200/ha in the early period (2007-2010) and values ranging from $2,400/ha to $4,900/ha in the latter part of the period (2011-2013) (Figure 16).

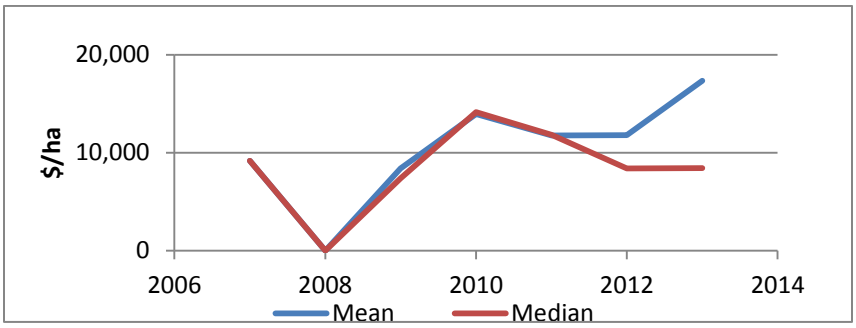

Figure 15 – Small properties with reported mineral resources (USA: 2007-2013)

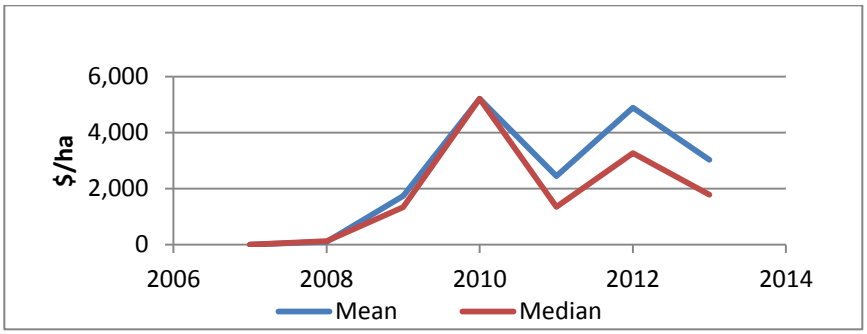

Figure 16 – Mid-size properties with reported mineral resources (USA: 2007-2013)

Mexico and Central America

Grassroots Exploration Properties

There were 103 transactions of grassroots properties of various commodities in Mexico and Central America during the period 2007 to 2013, with an average of approximately 15 transactions per year (Figure 17). In decreasing order of frequency, the transactions of properties for commodities were as follows; gold (61.2%), silver (22.3%), VMS deposits (6.8%), Cu-Mo porphyry-type deposits (3.9%), and others (5.8%) including Ni-Cu-Co-PGE, Zn-Pb-Ag sedimentary-exhalative (sedex) deposits, iron, graphite, and industrial minerals.

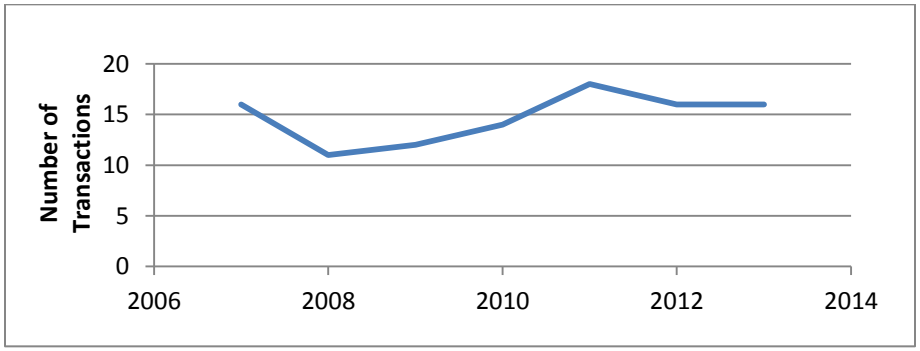

Figure 17 – Number of grassroots mineral exploration property transactions in Mexico and Central America (2007-2013)

The values for small properties show a dramatic decrease from approximately $9,900/ha in 2008 to low values in the order of $700/ha from 2009 to 2013 (Figure 18). For mid-size and large properties, there are only limited numbers of transactions to provide values for statistical purposes.

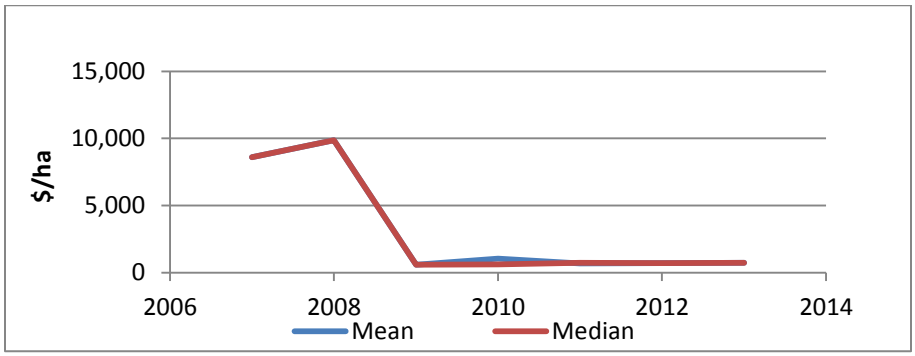

Figure 18 – Small grassroots gold properties (Mexico and Central America: 2007-2013)

Properties with Mineral Resources

There were 51 transactions of properties with reported mineral resources of various commodities in Mexico and Central America during the period 2007 to 2013. These ranged from a high of 13 transactions in 2007 to a low of 2 transactions in 2011, with a gradual increase to 9 transactions in 2013 (Figure 19). In decreasing order of frequency, the transactions of properties for commodities were as follows; gold (52.9%), silver (31.4%), VMS deposits (5.9%), Cu-Mo porphyry-type deposits (3.9%), Zn-Pb-Ag sedex deposits (3.9%), and Co-Cu deposits (2%).

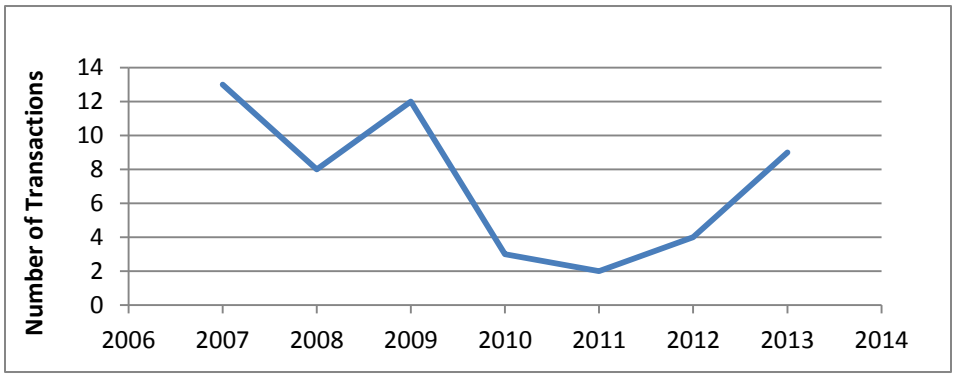

Figure 19 – Number of transactions of properties in Mexico and Central America with reported mineral resources (2007-2013)

South America

Grassroots Exploration Properties

There were 217 transactions of grassroots properties of various commodities in South America during the period 2007 to 2013, with an average of approximately 31 transactions per year (Figure 20). In decreasing order of frequency, the transactions of properties for commodities were as follows; gold

(53.1%), Cu-Mo porphyry-type deposits (21.8%), potash (5.7%), uranium (5.2%), lithium (4.3%), and others (9.9%) including Ni-Cu-Co-PGE, Zn-Pb-Ag sedex deposits, iron, graphite, manganese, and industrial minerals. The frequency of transactions for each country is shown in Figure 21.

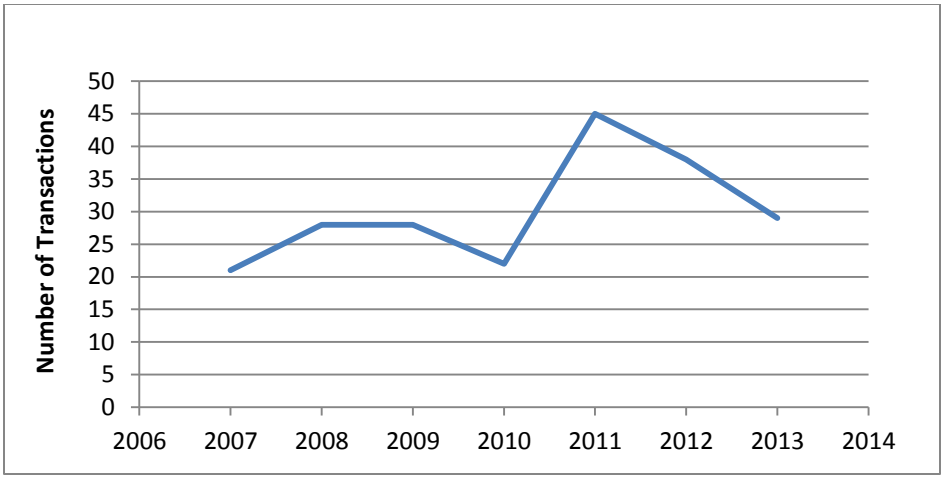

Figure 20 – Transactions of grassroots mineral exploration properties in South America (2007-2013)

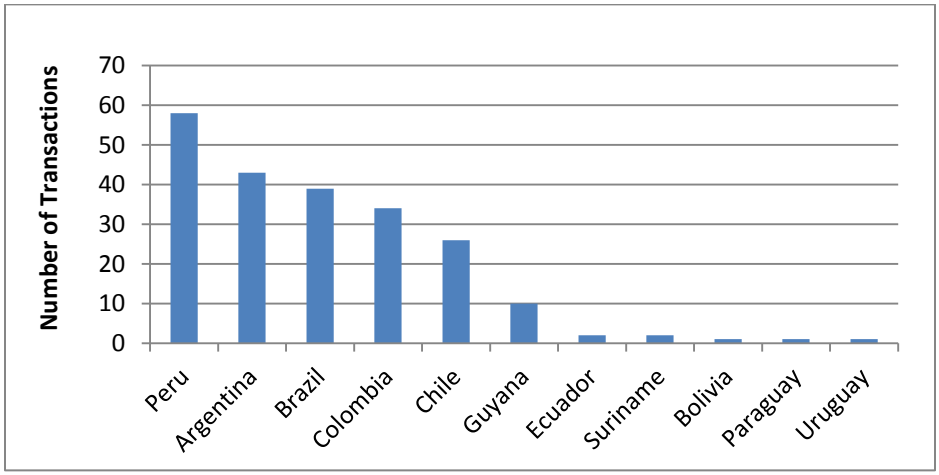

Figure 21 – Number of transactions of exploration properties in South American countries (2007-2013)

The unit values for the three different groups of gold properties in South America are shown in Figures 22, 23, and 24. The small properties show a dramatic increase from less than $5,000/ha to approximately $9,100/ha in 2011, but falls to the previous range of values in the order of $2,500/ha to $5,200/ha in 2012 and 2013 (Figure 22). The mid-size properties show a range of values from $270/ha to $1,070/ha (Figure 23), and the large properties show a range of values from $45/ha to $195/ha, except for a high of approximately $415/ha for the year 2012 (Figure 24).

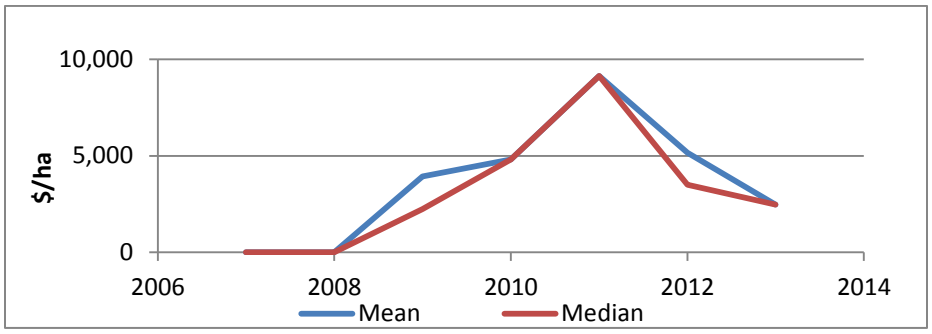

Figure 22 – Small grassroots gold properties (South America: 2007-2013)

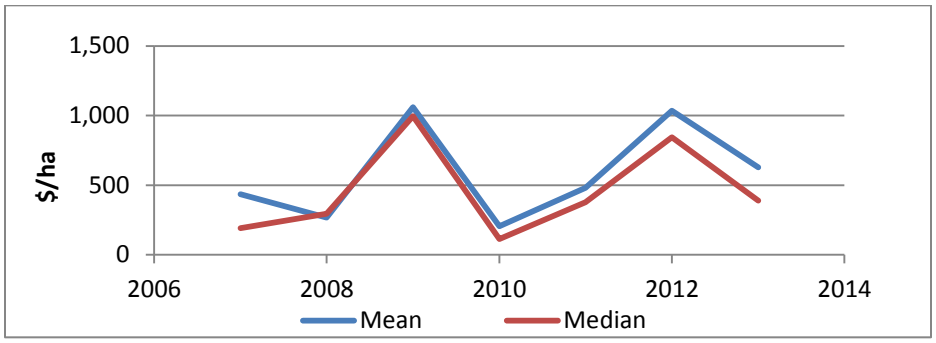

Figure 23 – Mid-size grassroots gold properties (South America: 2007-2013)

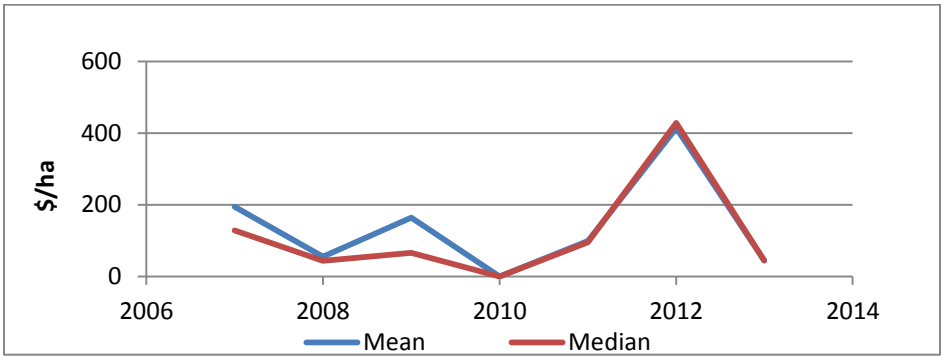

Figure 24 – Large grassroots gold properties (South America: 2007-2013)

Properties with Mineral Resources

There were 75 transactions of properties with reported mineral resources of various commodities in South America during the period 2007 to 2013. These ranged from a low of 6 transactions in 2007 to a high of 15 transactions in 2010 (Figure 25). In decreasing order of frequency, the transactions of properties for commodities were as follows; gold (62.2%), Cu-Mo porphyry-type deposits (24.3%), silver (4.1%), uranium (2.7%), and others including Ni-Co-Cu, Zn-Pb-Ag (sedex), iron, and tin deposits (6.7%). The frequency of transactions for each country is shown in Figure 26.

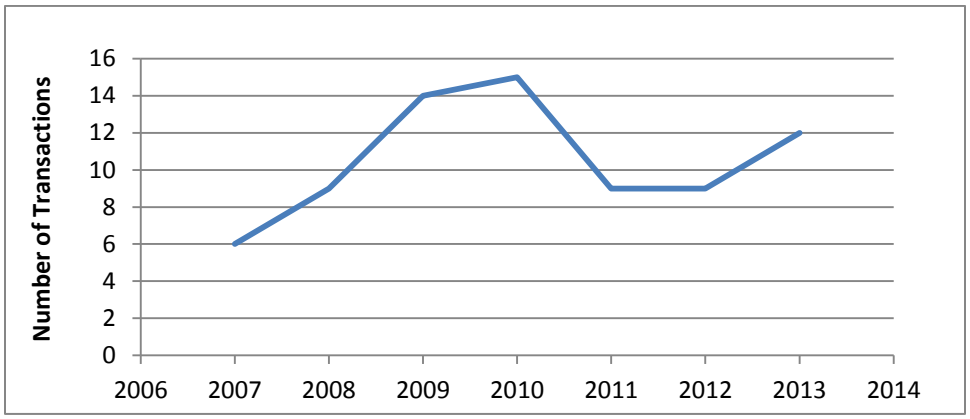

Figure 25 – Transactions of properties with reported mineral resources (South America: 2007-2013)

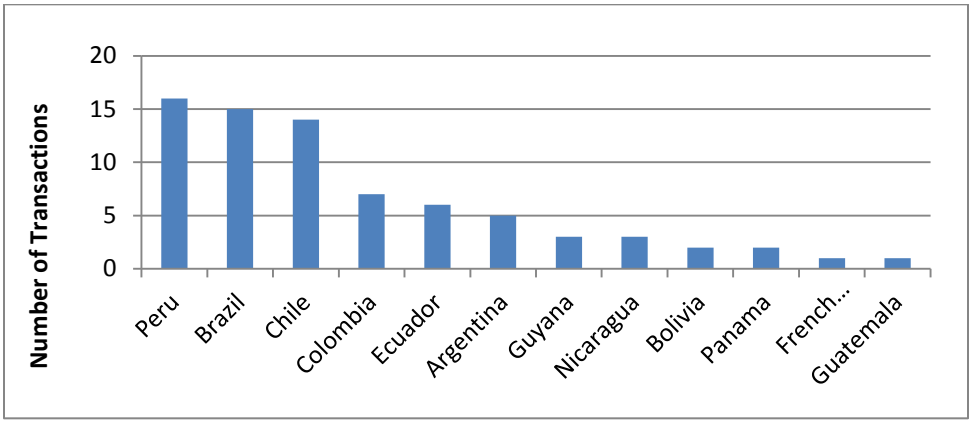

Figure 26 – Transactions of properties with reported mineral resources in South America (2007-2013)

Gold Properties

The unit values for the three different groups of gold properties with reported Mineral Resources in South America are shown in Figures 27, 28, and 29. The small properties show a significant increase from approximately $20,000/ha to approximately $69,000/ha in 2010, but falls to a range of values in the order of $1,600/ha to $8,700/ha in 2011, 2012 and 2013 (Figure 27). The mid-size properties show higher unit values ranging from $2,700/ha to $4,000/ha for the early years of 2007 and 2008, but a lower range of unit values from $220/ha to $1,900/ha (Figure 28). The large properties also show higher unit values a range of $2,700/ha to $7,700/ha for 2008 and 2009, but lower values of $145/ha and $7,700/ha for 2010 and 2013, with no recorded transactions for 2011 and 2012 (Figure 29).

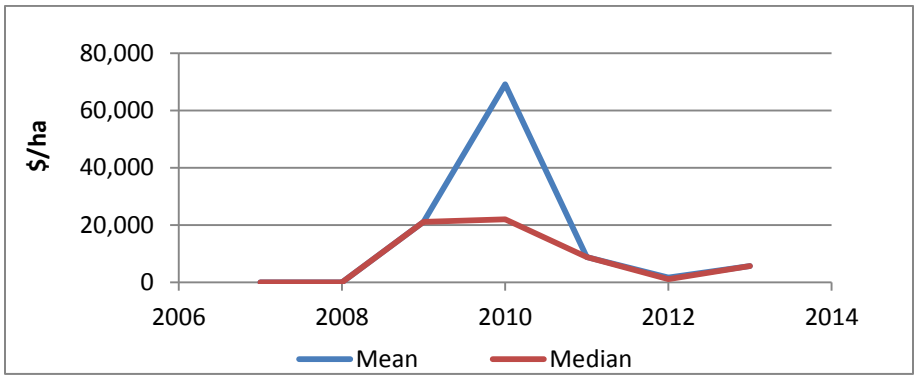

Figure 27 – Small gold properties with mineral resources (South America: 2007-2013)

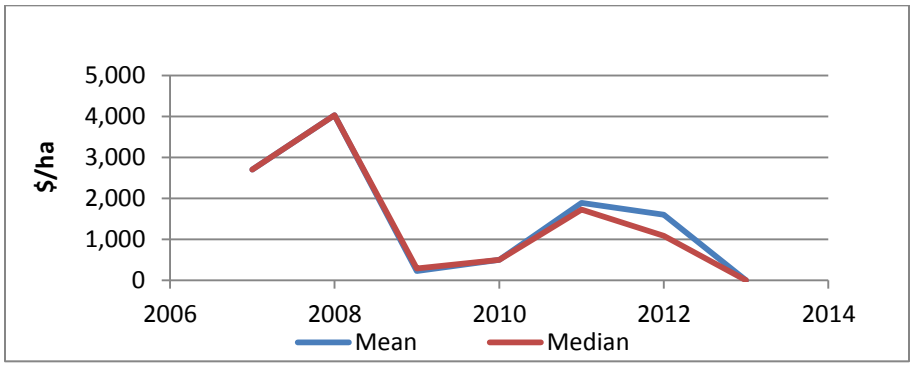

Figure 28 – Mid-size gold properties with reported mineral resources (South America: 2007-2013)

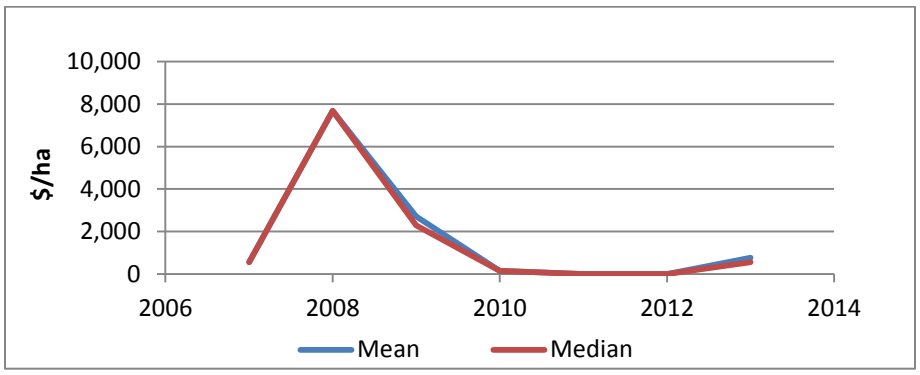

Figure 29 – Large gold properties with reported mineral resources (South America: 2007-2013)

Copper and Copper-Molybdenum Properties

The results of unit values for mid-size and large properties with copper and/or Cu-Mo porphyry potential in South America are shown in Figures 30 to 33. There were no records for small properties of less than 1,000 ha in size.

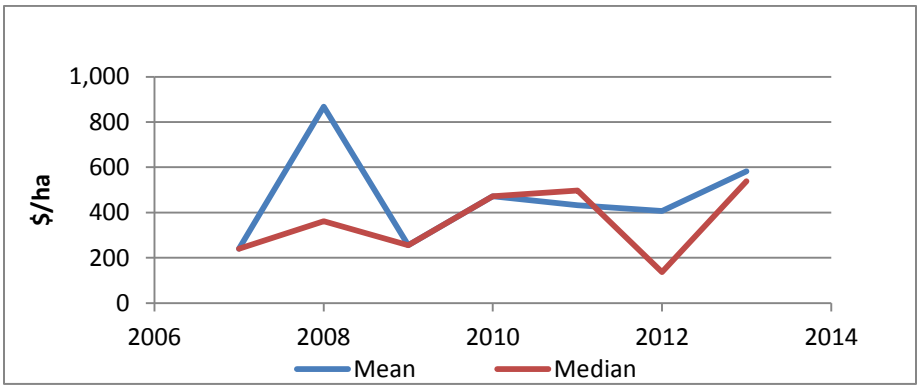

Figure 30 – Mid-size grassroots copper properties (South America: 2007-2013)

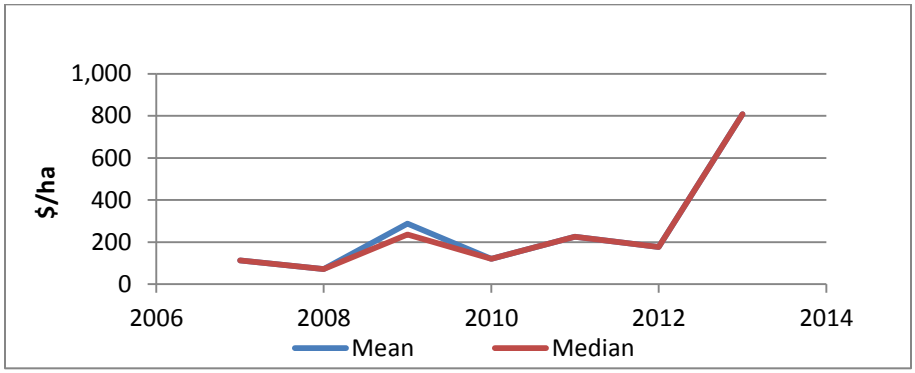

Figure 31 – Large grassroots copper properties (South America: 2007-2013)

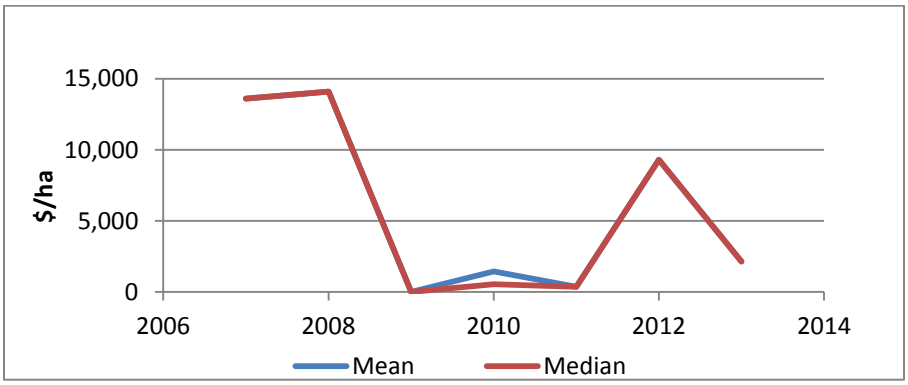

Figure 32 – Mid-size copper properties with reported mineral resources (South America: 2007-2013)

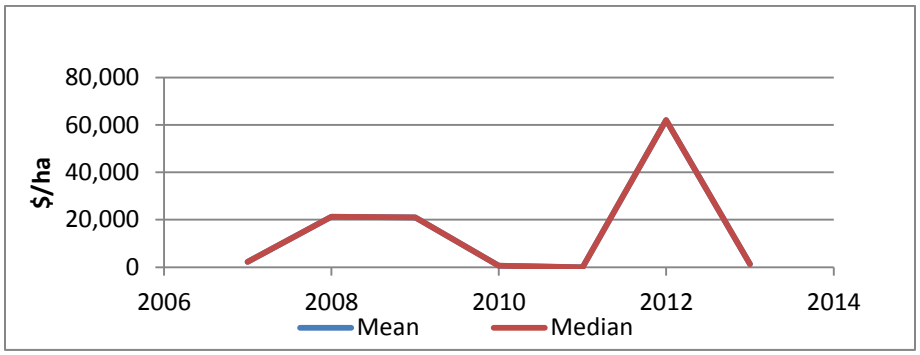

Figure 33 – Large copper properties with reported mineral resources (South America: 2007-2013)

SUMMARY

The trends of unit values of small grassroots gold properties for the period 2007-2013 clearly show that unit values in Canada and Mexico (especially from 2009 to 2013) are considerably lower than those in the USA and South America (Figure 34). In general, this relationship also holds true for mid-size grassroots gold properties (Figure 35).

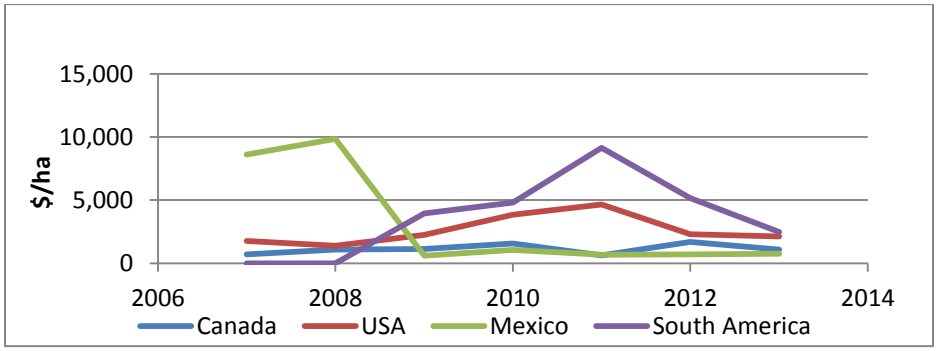

Figure 34 – Comparison of mean unit values of small grassroots exploration properties in Canada, USA, Mexico, and South America (2007-2013)

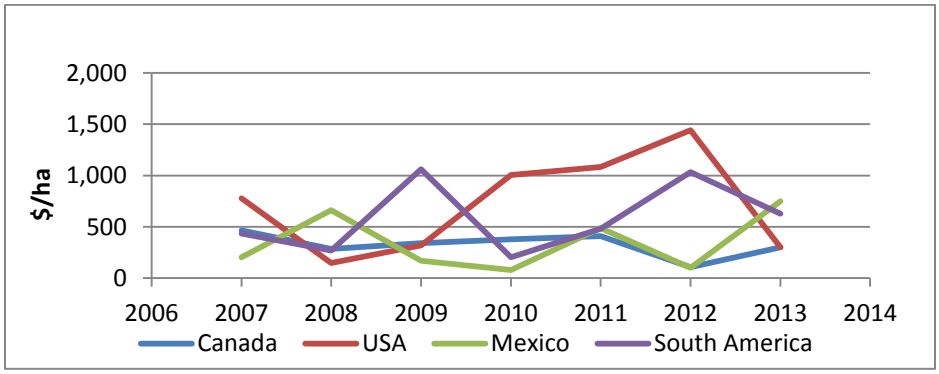

Figure 35 – Comparison of mean unit values of mid-size grassroots exploration properties in Canada, USA, Mexico, and South America (2007-2013)

The trends of values for gold properties with reported Mineral Resources also show that mineral properties in Canada have much lower unit values than in the USA or in South America (Figures 36 and 37). There are very few recorded transactions of Mexican properties to provide statistical data.

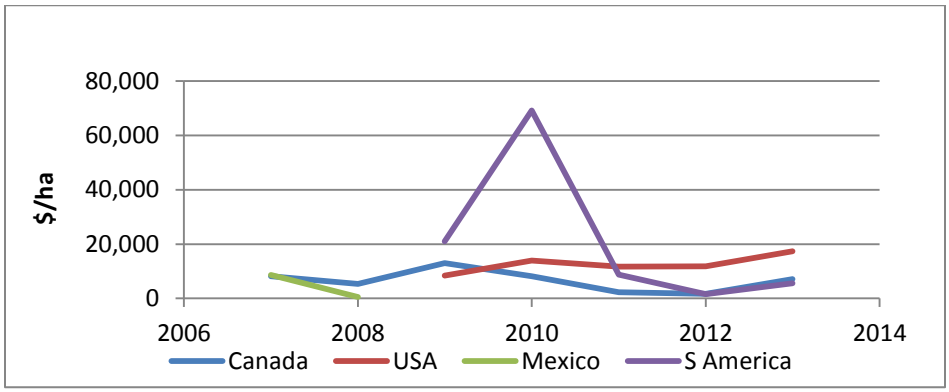

Figure 36 - Comparison of mean unit values of small properties with reported mineral resources in Canada, USA, Mexico, and South America (2007-2013)

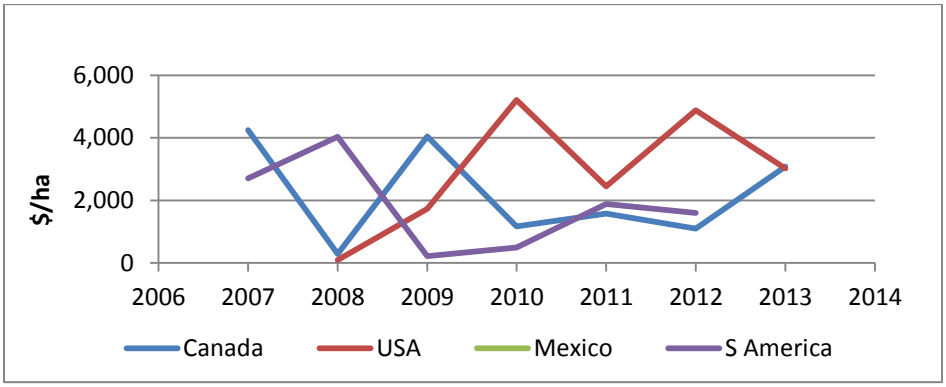

Figure 37 - Comparison of mean unit values of mid-size properties with reported mineral resources in Canada, USA, Mexico, and South America (2007-2013)

REFERENCES

Agnerian, H., 2006, Survey of Metal Values in the Ground 1987-2004, July 2006, CIM Bulletin.

Agnerian, H., 1996, Valuation of Exploration Properties; CIM Bulletin, Vol. 89, No. 1004, pp. 69-72, October 1996.