FRMO Corp.
2023 Shareholder Letter

Dear Fellow Shareholders,

In 2023, the focus of FRMO was to continue to develop inflation-related business opportunities. One such focus is cryptocurrency, and in this regard the company continued to expand gradually. This is quite unlike other companies in the cryptocurrency space that engage in far more aggressive capital investment.

In order to understand the need for gradualism, one must understand that because of the so-called Bitcoin "halving" every four years, the selling prices of the equipment needed to mine bitcoin must also decline. This is made clear by data from the Luxor Bitcoin ASIC Price Index (see data hashrateindex.com). According to this index data, on November 4, 2018, the then state of the art devices consuming between 38 and 68 joules/terahash (J/TH) of electric power sold at an average price of $51.79 per terahash. The same device today is virtually obsolete, excepting such cases where miners have access to extremely low-cost electric power. These now trade at $8.83/TH. A state-of-the-art device now consuming less than 25 J/TH can be purchased for an average price of $19.99/TH.

However, one should resist the impulse to simply compare $51.79/TH with $8.83/TH and simply conclude that prices have declined by 83% since November 4, 2018. This is because mining devices were not purchased with dollars, but with bitcoin. Thus, on November 4, 2018, at a bitcoin selling price of roughly $6,376, one could purchase 123.112 TH of processing power. Not five years later, on August 14, 2023, a bitcoin, trading at $29,284, could purchase 3,316.421 TH of processing power.[1] Viewed in this light—denominated in Bitcoin, which is the operating currency of mining—the price of the now virtually obsolete device has declined by about 96%.

This device has become obsolete because it consumes far too much electric power per terahash. The current state of the art device, the S-19 XP, operates at 140 terahash/second and draws 3,010 watts, yet the approaching halving will render even this device obsolete.

These fairly dramatic capital equipment functionality improvements and associated price declines illustrate the danger of investing too much capital in any one device iteration. Therefore, if one's investment policy is based upon the reasonable presumption that the cost of processing power is almost always in decline in relation to the bitcoin price, the strategy of accumulating bitcoin in a gradual, patient manner will always be able to increase processing power—expending ever fewer bitcoin for more devices that are more power-efficient. This has been the practice of FRMO in its own cryptocurrency mining efforts. This gradualist approach has also been followed by the two mining enterprises in which FRMO has invested. These are Winland Holdings (WELX) and Consensus Mining & Seigniorage Corporation (CMSC).

The gradualist approach has also been followed in the accumulation of additional Winland Holdings shares. On May 31, 2022, FRMO owned 1,418,776 shares of Winland. This was increased to 1,501,171 shares as of May 31, 2023. Additional shares have been acquired subsequent to FRMO's fiscal year-end.

[1] That is, $6,376/$51.79 = 123.112, and $29,284/8.83 = 3,316.

It was our expectation that CMSC would be publicly traded at the end of the 2022 calendar year. Unfortunately, this did not happen. To come public, it is necessary for CMSC not only to complete a conventional audit, but a cryptocurrency audit for its entire existence. This is in the process of being done and should be complete or at least nearly complete at the time of this writing. It is our expectation that CMSC will be publicly traded shortly.

CMSC has continually grown its cryptocurrency holdings as well as its aggregate processing power, known in crypto industry parlance as its hash rate. Moreover, this has been accomplished while maintaining its balance sheet cash. Most firms involved in cryptocurrency maintain modest cash balances and even borrow money on the entirely reasonable presumption that dollars are being debased in relation to cryptocurrency. Therefore, it is argued, the dollars should be invested in devices to mine more cryptocurrency.

On the other hand, the data suggest that although inflation does reduce the purchasing power of dollars, the purchasing power of the dollars is increasing in relation to the mining equipment. In other words, mining equipment is a deflationary asset with a short useful life that should ordinarily be three years unless one can access very low-cost power. Even in this instance, as seen in the Bitcoin ASIC Mining Index figures, the equipment lost 97% of its value due to the fact that a halving will never be more than four years away.

FRMO's largest cryptocurrency investment is the direct and "look-through" holding in the Grayscale Bitcoin Investment Trust (GBTC). As of May 31, 2023, this had a market value of $14,270,000. The majority of the investment is contained in various Horizon Kinetics managed funds in which FRMO is invested. At fiscal year-end, GBTC traded at an approximate 44% discount to net asset value. That means that if it were to merely trade at net asset value, even with an unchanged bitcoin price, GBTC would appreciate by about 78% from the fiscal year-end figure. Additional shares of GBTC have been purchased since fiscal year-end. One possibility for value realization is that GBTC will be given permission to convert into an Exchange Traded Fund and will by definition trade at net asset value. Another possibility is that shareholder litigation will compel GBTC to permit redemption even while retaining its status as a trust. In either instance, this asset would benefit.

The cryptocurrency exposure could be characterized as follows. This is a meaningful proportion of the $169.282 million of FRMO shareholders' equity on May 31, 2023.

	Exposure at 5/31/2023
Grayscale Investment Trust (GBTC)	$14,270,000
Crypto Mining Assets	1,330,754
Winland Holdings	3,225,952
Consensus Mining (CMSC) (cost)	393,169
HM Tech (cost)	14,979
Digital Currency Group	76,261
Directly owned crypto coins	*

*See Appendix for coin investments

It is difficult to limit the cryptocurrency exposure to only those investments formally considered to be cryptocurrency. This is because securities exchanges are very likely to play a salient and, quite possibly, *the* salient role in the further development of cryptocurrency. In order to become an accepted asset class, trading of cryptocurrency assets must be transparent and must abide by a system of trading rules. The regulated exchanges are the logical venue for the further development of cryptocurrency.

Cryptocurrency trading, should the asset class develop as anticipated, would be a significant addition to normal exchange business. For instance, according to Coinmarketcap.com, the trading volume of Bitcoin expressed in U.S. dollars on August 14, 2023 was $10.29 billion over a 24-hour trading period. Bitcoin is traded every day of the week at every hour of the day. The normal trading volume of Apple, which happens to be the largest capitalization stock in the S&P 500, and the largest market capitalization of any stock in the world, is $9.977 billion. Thus, Bitcoin is already trading more daily dollar volume than Apple. However, the comparison makes no adjustment for the fact that Apple only trades on five days per week whereas Bitcoin trades every day of the week. The proper comparison should be on a 5-day-week equivalent basis.

It will be recalled that at one point FRMO owned investments in the Minneapolis Grain Exchange and the Bermuda Stock Exchange. These were merged into the existing Miami International Holdings, resulting in a substantial investment in the latter company for FRMO. This investment takes two forms. The first is the direct investment, with a fiscal year-end value of $4,626,030. The second is via FRMO's investment in South LaSalle Partners, worth $8,559,585 on May 31, 2023.

Miami International Holdings is an investor in the new cryptocurrency exchange known as EDX, alongside Charles Schwab, Citadel, Fidelity, and Virtu Financial, among others. EDX will commence by trading Bitcoin, Bitcoin Cash, Ether, and Litecoin.

The other important exchange investment is CNSX in Canada, which operates the Canadian Securities Exchange. CNSX competes with the Toronto Securities Exchange and has grown greatly since it was recognized as an exchange by the Ontario Securities Commission in 2004.

About one year ago, Horizon Kinetics launched an ETF called Blockchain Development ETF (BCDF). The working premise of the fund is that regulated exchanges are the gateway to the legitimization of cryptocurrency as an asset class. There are a variety of different investment products that can be created using exchanges, since these have the occasional faculty of participating in the creation of a new asset class.

The reason that this aspect is so important is that an increase in trading volume creates an increase in revenue upon the same trading platform asset and expense base. Therefore, marginal revenue is highly profitable. In fact, measured by net profit margin, securities exchanges are among the most profitable businesses in the world. Exchanges normally comprise a significant exposure in a typical Horizon Kinetics investment portfolio.

Active investment advisors generally have been losing market share to passive investment strategies for at least the past 15 years. Horizon Kinetics is no exception to this trend. A sense of this trend is obtained by a study of ETF assets under management. According to ETF.com, on

August 16, 2023, ETF assets crossed the $7 trillion level. Although there now exist actively managed ETFs, there can be no question that the bulk of ETF AUM is of the passive variety.

Another problem for active managers that perform research is fee compression. In the mutual fund area, according to the Investment Company Institute, the average equity mutual fund fee declined by three basis points to 44 basis points in 2022. This is a decline of 6.38%. In other words, an active manager would need to increase AUM by 6.38% just to equilibrate the loss of fee income. And that equilibrates only for fee revenue, not fund management expenses, such as platform fees, that are deducted from management fees and exacerbate the revenue loss when ultimately reduced to net income.

This circumstance has a logic that is based upon the Efficient Market Hypothesis. Security prices are said to already reflect all knowable information. By this reasoning, the active managers cannot conceivably add value. In such a case, an index fund carrying the lowest possible fees is the investment asset of choice. Accordingly, active managers are continually dismissed, and those investments funds continue to flow to the passive investment vehicles.

On the other hand, active managers, in accordance with the precepts of Modern Portfolio Theory, are the mechanism by which information is reflected in security prices. If one removes the active managers and still follows the logic of Modern Portfolio Theory, it is rather difficult to resist the conclusion that the capital markets are becoming less efficient.

If the markets are indeed becoming less efficient, valuation and perhaps weighting anomalies should emerge and be identifiable to investors. Indeed, one such anomaly is readily apparent. In the MSCI ACWI (All Cap World Index), the U.S. weighting is equal to 62.02% of the entire index as of August 17, 2023.

The U.S. population is 4.20% of world population. U.S. GDP, using the purchasing power parity method, is 15.39% of global GDP.[2] It is true that U.S. companies are far more profitable than Chinese or Indian or even Japanese companies when viewed on a net profit margin basis. The higher profits will obviously produce a higher market capitalization. And it is market capitalization (adjusted for float, net of insider holdings) that determines index weightings. This, stated simplistically, accounts for the very high U.S. weighting in the ACWI index.

A passive investor merely accepts this reality as axiomatic, and the position weightings follow from the float-adjusted market capitalizations of the constituent members of the index. An active investor will ask whether or not this is sustainable. In a world dominated by active managers, a certain subset of the managers would assume a contrary position and, through this mechanism, the market would gradually correct the anomaly.

But even in a world dominated by passive investors, there is still ultimately a corrective mechanism. It simply operates in a different manner. The valuation and weighting anomaly will be maintained as long as there is a ready supply of new passive investors created from the ranks of former believers in active management. The supply of passive investors must be finite, though,

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[2] www.statista.com, sourced from imf.org

since the supply of active investors is finite. All investors can be classified as either passive or active.

It should be observed that one need not completely exhaust the supply of active investors for the corrective mechanism to operate. It is only necessary that the supply of active investors—or their investment funds—entering the passive realm be less than the supply of passive investments on offer. Since passive management is now unquestionably the dominant investment strategy, there will always be passive investment liquidations on offer. This is because the funds are invested for a purpose. That purpose may be to fund pensions or perhaps college educations or even investment in newly emerging asset classes such as private equity. Consequently, the passive phenomenon should eventually exhaust itself.

In the interim, active management does not obtain a very high valuation, even using GAAP accounting on the FRMO financial statements. The balance sheet value of Horizon Kinetics in the FRMO financial statements is $14,607,525. The FRMO interest in Horizon Kinetics is 4.95%. The valuation of Horizon Kinetics in its entirety can be obtained by dividing $14,607,525 by 0.0495, or $295,101,515.

However, as of March 31, 2023, hard assets comprised almost exclusively of cash and marketable securities account for $134,986,973 of the Horizon Kinetics balance sheet. If this sum is subtracted from the prior Horizon Kinetics value of $295,101,515, one arrives at a figure of $160,114,542. This is, in principle, the value of the asset management portion of Horizon Kinetics. It would be equal to about 2.28% of assets under management. This is surely not a high figure and certainly less than the historical norm for active asset managers. Of course, every active asset manager, including Horizon Kinetics, must contend with the business challenges of the growing share of passive management and the fee compression that inevitably accompanies that growing share.

If one were to use the $160 million valuation in relation to Horizon Kinetics revenue for the 12 months ended March 31, 2023[3], and compare this to the $64.814 million of Horizon Kinetics revenue for the 12 months ended March 31, 2023, then Horizon Kinetics is trading at 2.46x trailing revenue. The price to revenue ratio of the S&P 500 at the time of this writing is 2.48x. Thus, Horizon Kinetics has virtually the same price to revenue ratio as the S&P 500. However, arguably, it has far more operating leverage in the success mode.

The other component of FRMO insofar as Horizon Kinetics is concerned is the so-called revenue share. This is a participation interest that entitles FRMO to 4.199% of the gross revenue of Horizon Kinetics. In the fiscal year period ended May 31, 2023, this amounted to a payment of $2,665,000. On the $10,200,000 balance sheet value of this revenue interest, this equates to a yield of 26.12%. It should be emphasized that this yield is at a time during which active management as such is rather depressed.

The largest position of FRMO remains Texas Pacific Land Corporation (TPL). FRMO increased its holdings during the fiscal year, and more TPL shares were purchased subsequent to May 31,

[3] Horizon Kinetics is on a calendar fiscal year and FRMO is on a May fiscal year, so that the March 31, 2023 financial statements for Horizon Kinetics were the latest available at the time that the FRMO financial statements were prepared.

2023. Shares of TPL have also been purchased by HK Hard Assets I using the cash resources of that entity. The investments in HK Hard Assets I and II are almost all inflation beneficiaries.

The favored inflation beneficiaries are those with revenue streams derived from tangible assets that require little human intervention and little, if any, additional capital expenditures. These assets should be of a very long duration. The investment theory is rather similar to the investment theory with regard to securities exchanges: Incremental increases in revenue require little, if any, incremental increases in expense. The incremental revenue ultimately becomes almost wholly incremental profit.

Most investments are in enterprises that require the assistance of human resources. In principle, a business can afford to increase the compensation of its employees at the prevailing rate of inflation only if its own revenue is increasing at least at the rate of inflation. Frequently, this does not happen. Corporate revenue or employee compensation, or even both, does not always rise at the rate of inflation. Some participants in society experience income increases well in excess of inflation. These individuals are enriched. Some participants experience revenue increases below that of inflation, and these individuals have no alternative but to accept a decline in their standard of living. To the individual in question, these results seem quite arbitrary. Indeed, these results *are* quite arbitrary. This is why inflation is so sociologically disruptive when it does occur. It can adversely impact one's circumstance in life despite the best efforts of a given individual.

Inflation still remains a very controversial topic. The consensus view seems to be that inflation can be avoided, despite the continual accumulation of debts and deficits by the G7 nations, if only interest rates are set at an appropriately high level.

The minority viewpoint, shared by the management of FRMO, is that high U.S. interest rates tend to increase the value of the dollar in relation to that of other currencies. Since all commodities are priced in dollars, this will raise the price of commodities for all nations importing commodities other than the United States. It is effectively the export of inflation to the other nations of the world. It is only possible to continue this policy if the U.S. dollar is the world reserve currency.

But it is possible for commodities to be priced in currencies other than the dollar. This would ease the import burden for many nations but would effectively end the role of the U.S. dollar as a world reserve currency. If this were to happen, it might become difficult to finance part of the U.S. debt externally, as is the current practice. This would necessitate monetization of new debt, with obvious consequences for inflation.

Although FRMO is positioned for such a scenario, it would be far better for the nation and the world if this does not happen. Unfortunately, the evidence that it will happen continues to gradually and inexorably accumulate. If circumstances should prove that inflation does not occur, it should be recalled that, in the past years, our investments have prospered even in the absence of inflation.

We thank our shareholders for their continued support, and we look forward to answering your always interesting questions at our forthcoming annual meeting. We will convene in a live venue for the first time in several years. If there are any subjects that anyone wishes to cover in the annual meeting, please do not hesitate to contact us in advance if such is your preference.[4]

Murray Stahl
Chairman and CEO

Steven Bregman
President and CFO

Appendix

FRMO Cryptocurrency Holdings Summary[2]
Data As Of 5/31/2023

	Held Directly[1]	Held Indirectly Through Public and Private Companies [1]
Grayscale Bitcoin Trust (GBTC) shares	8,685	604,516
Grayscale Ethereum Classic Trust (ETCG) shares	48	4,350
Grayscale Bitcoin Cash Trust (BCHG) shares	1,650	53,091
Grayscale Litecoin Trust (LTCN) shares	348	20,882
Grayscale Zcash Trust (ZCSH) shares		629
Bitcoin (BTC)	146.78	23.12
Litecoin (LTC)	1,920.12	4.78
Ethereum (ETH)	34.97	-
Ethereum Classic (ETC)	661.70	3.01
Bitcoin Cash (BCH)	6.74	0.32
Zcash (ZEC)	61.95	17.16
Bitcoin Gold (BTG)	-	232.30
Bitcoin Tracker One (COINXBT SS) shares	-	6,137

Important Notes regarding as of Dates

(1)Includes holdings of FRMO Corp. and Fromex Equity Corp.

(2)This data has been compiled in good faith by FRMO Corp. However, you should be aware that this information may be incomplete, may contain errors or may have become out of date. FRMO reserves the right to add, modify or delete any information at any time.

[4] You may send your questions to: info@frmocorp.com