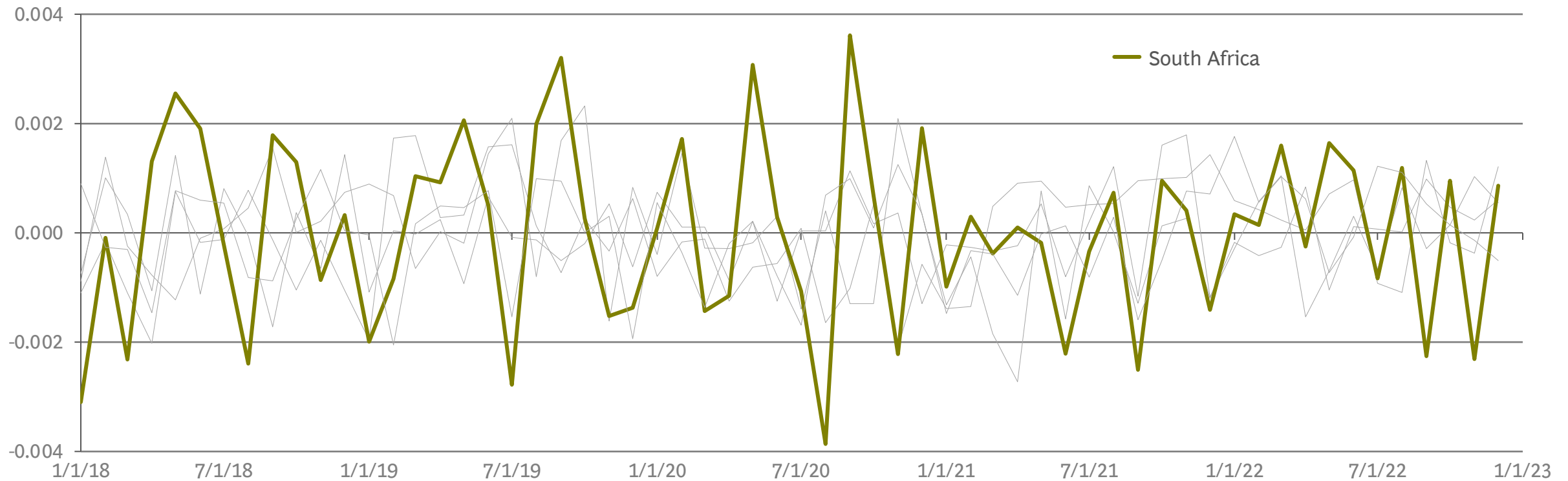


South Africa experiences the greatest volatility in the exchange rate but the fluctuations remain centered around the mean with little temporal variance

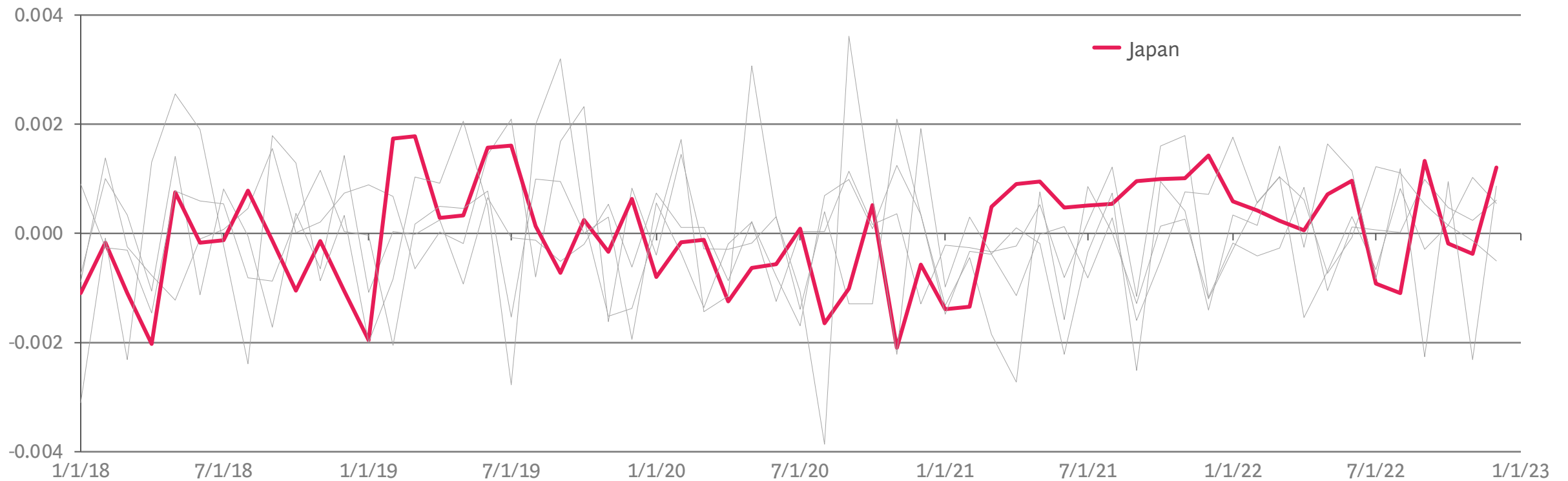
Normalized exchange rate from local currency to USD



1. The price dataset does not specify the typical basket of goods or the general weights assigned to these products. It only provides the unit of measurement. Therefore, it is assumed that the basket of goods includes one unit of each item 1 liter of milk, 1 loaf of bread, and 1 carton of eggs etc. 2. Source: Vital Prices Dataset from Kaggle

Japan exchange rate to USD faces the highest temporal variability

Normalized exchange rate from local currency to USD

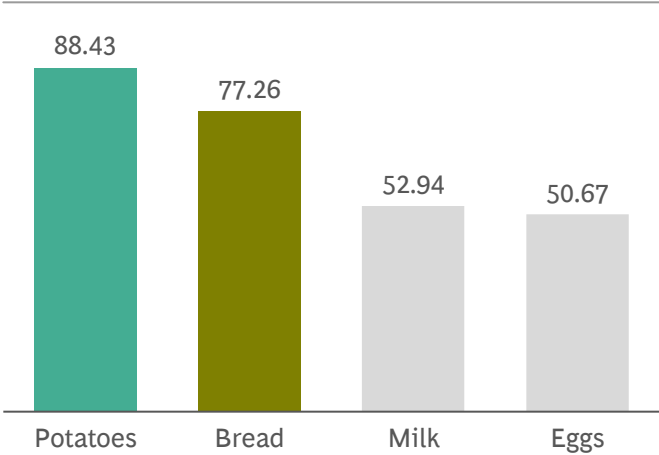


1. The price dataset does not specify the typical basket of goods or the general weights assigned to these products. It only provides the unit of measurement. Therefore, it is assumed that the basket of goods includes one unit of each item 1 liter of milk, 1 loaf of bread, and 1 carton of eggs etc. 2. Source: Vital Prices Dataset from Kaggle

Maximize arbitrage opportunity by targeting potato and bread trades between South African and Canadian markets

Potatoes and bread are target products for trade

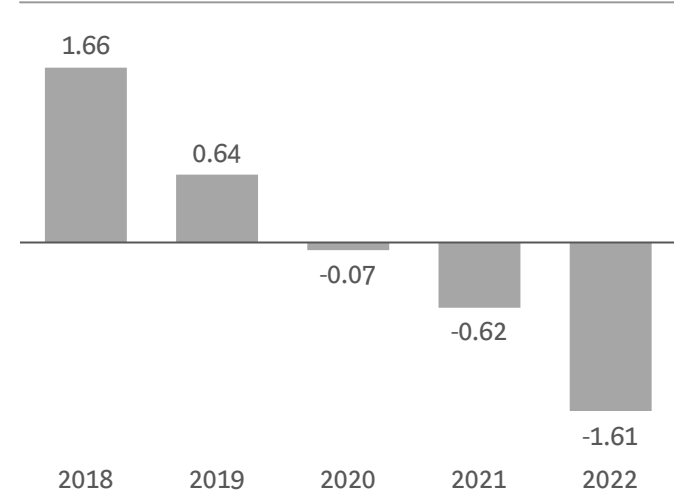
Average percent gain profit [perc over buy price]



Greatest arbitrage gains come in potato and bread trades on average, even though eggs experiences price shock in 2022, it does not compensate for relatively market efficient prices in prior years.

No significant differences in opportunities between years

Yearly average percent profit compared to the overall average [perc over buy price minus average]



Yearly average percent profit stays stable in the range of 65-68% but the global markets slowly get more and more efficient across all goods. Price shock in 2022 does not yield market wide inefficiencies.

Buying in South Africa and selling in Canada is most profitable

Average percent gain profit [perc over buy price]

	Australia	Canada	Japan	Sweden
Australia	-	56.3%	26.9%	21.3%
Canada	8.3%	-	21.4%	3.3%
Japan	35.0%	61.1%	-	59.2%
South Africa	87.4%	140.6%	85.9%	79.2%
Sweden	85.7%	49.1%	76.3%	-

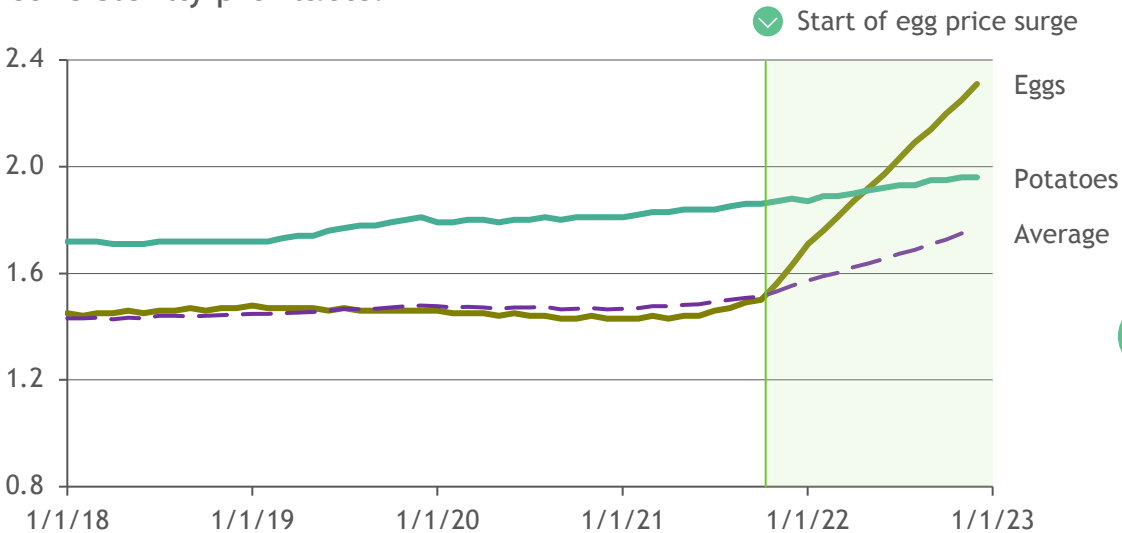
South Africa presents cheapest market to buy, with Sweden being the next optimal. Canada is the most expensive market and presents a great opportunity to sell.

1. Above analyses are not yet based on CPI-adjusted profits. Latter analysis will prove that markets are even more efficient over time than shown here.

Potatoes present the greatest arbitrage opportunity, eggs surge in '22 due to differentiated response to avian flu pandemic

Greatest arbitrage opportunity (profit) month-month for each product [USD]

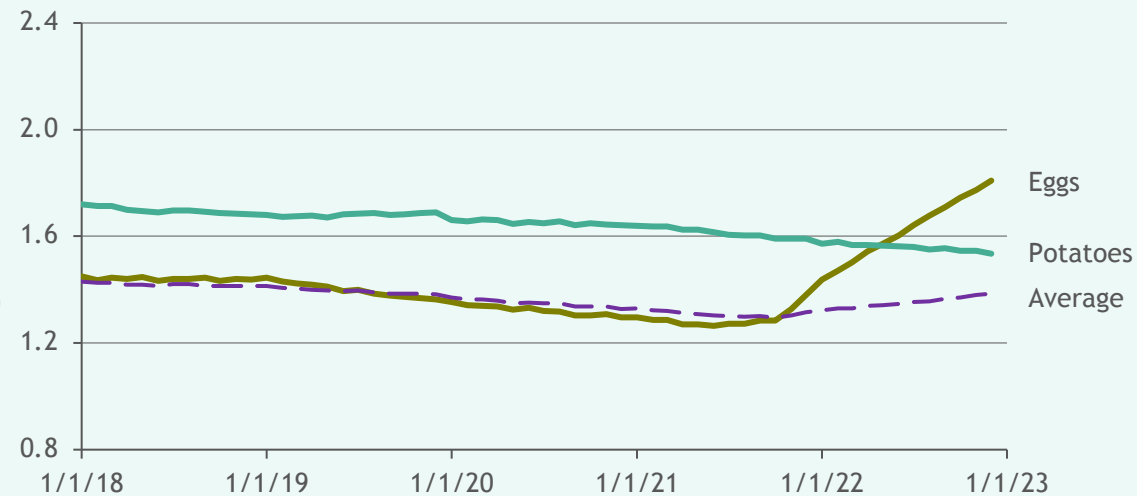
Eggs surge in profitability in the '22 due to avian flu. Potatoes are consistently profitable.



Ex-ante prediction of the arbitrage in egg prices would be difficult to impossible relying solely on price time-series data. There do not seem to be leading indicators in other markets.

1. Figure 1: shows maximum arbitrage opportunity for each good per month in nominal prices. 2. Figure 2: adjusts maximum arbitrage opportunity for each good per month based on global weighted CPI in USD. 3. CPI calculation uses weighting assumption mentioned previously.

Adjusting for the CPI, it becomes more clear that the arbitrage profits are relatively stationary even decreasing















To properly evaluate the profit opportunities we must adjust for inflation to get the arbitrage opportunity in real US dollars. The time-series becomes stationary. Technological progress ensures real price of manufactured goods decreases over time.

Caveat: The above statement might be an over-generalization. The real price of manufactured goods can increase over-time due to market rigidities or other factors.

Buying products in South Africa and selling elsewhere proves to be an effective strategy

Greatest country to country opportunities as calculated as an average across all years

Buy		Sell	Product	CPI Adjusted Profit [Real USD]	Profit Ratio
 South Africa	>	 Canada	Bread	\$1.39	1.99
 South Africa	>	 Japan	Potatoes	\$1.64	1.90
 South Africa	>	 Sweden	Bread	\$1.84	1.69
 South Africa	>	 Australia	Potatoes	\$1.31	1.52
 South Africa	>	 Canada	Potatoes	\$1.20	1.39
 Sweden	>	 Japan	Potatoes	\$1.43	1.34

A note regarding armington preference...

Even when assuming no external costs in transport or exchange rates, it is generally accepted that imported products are differentiated from domestic products.

While our dataset indicates that South Africa has lower prices for various goods, it is possible that consumers in other markets may not perceive these goods as perfect substitutes for domestic products or those from other markets.

Our analysis assumes perfect substitutability and price rigidity, but in reality, consumer preferences are more nuanced and complex.