OCBC TREASURY RESEARCH

OCBC Bank

DataSigns

12 June 2020

Wellian Wiranto
+65 6530 6818
WellianWiranto@ocbc.com

It Depends

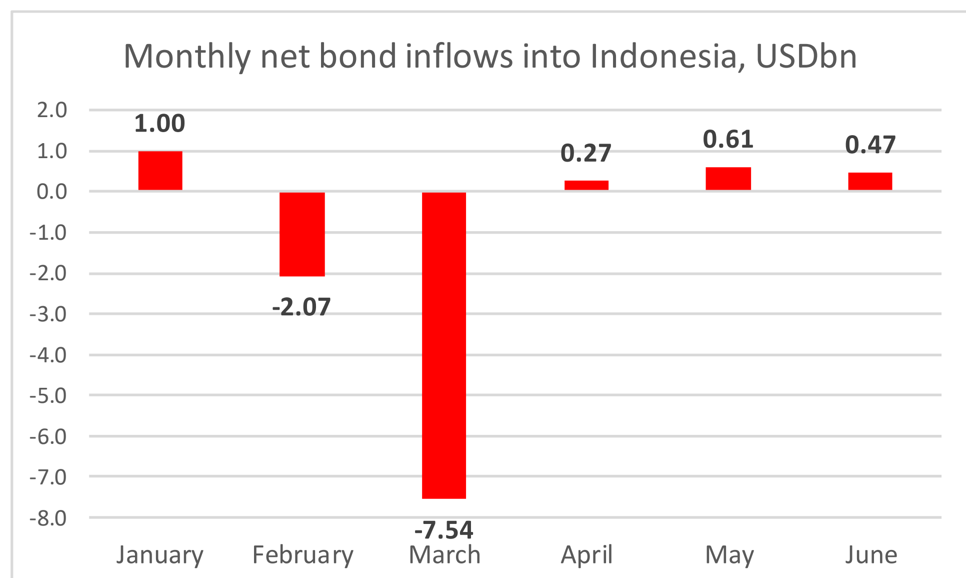
A look at what determines Indonesia's bond inflows

- Indonesian assets have had a good run recently. In particular, Rupiah, has strengthened past 14,000 against the USD at some point – a mean feat since, not long ago, Bank Indonesia itself had 15000 as the year-end target.
- One driver behind the stabilization seems to be a return of bond market inflows. Despite concerns about issuance uptick to fund ballooning fiscal deficit, foreign inflow into the bond market has returned, however gingerly.
- To have a gauge of what has been driving the inflows, we utilize a random forest model on 53 potential global and domestic factors. We find that the global factors, especially volatility of US Treasury and equity markets, outweigh domestic factors. Still, policy rate differential matters, suggesting that BI will remain cautious and would likely hold rate unchanged next week.

In this instalment of our DataSigns series, we take another leaf from the machine learning world to complement our economic models. Here, we utilize the random forest methodology to get a handle on what drives fund inflows.

Making up for March

Indonesia fund inflows have been ticking up of late, especially foreign inflows into the sovereign bond market. In net aggregate terms, foreigners have bought USD470mn worth of Indonesia's bonds so far in June, a tad lower than the USD610mn clocked in May but higher than the USD270mn in April.



Source: OCBC, Bloomberg. Note: June number reflects fund inflows of up to 10 June, the latest available data.

To be sure, even with the recent stabilization, there is still a long way to go before Indonesia can make up for the USD7.5bn that flown out in March during the height of the market scare. Year-to-date, the net bond outflow still stands at USD7.25bn, for one.

Still, given the circumstances, especially the uptick in bond issuances by the government to fund increasing budget deficit – now projected at 6.34% of GDP – any pickup in fund inflows would be especially welcomed by the authorities.

This and that

What's behind the recent stabilization?

Intuitively, we would have ascribed the inflows to be driven by a fortunate combination of global and domestic factors.

On the former, the massive reduction in global market stress would have been a natural candidate to explain the return of funds to Indonesia. (See our note from last week). The Fed's multi-layered dovish forward guidance overnight – that they are not even thinking about thinking about increasing interest rates – would have bolstered such thinking further.

On the latter, the decision by the central bank to hold rate unchanged on 19 May, despite Rupiah's gains even back then, ostensibly to keep the yield differential attractive for inflows, has helped too.

Varied variables

Intuitions aside, to get a better sense of which factors are important in driving the bond inflows and to what extent, we are turning to a machine learning algorithm called random forest for some answers.

Specifically, we have wrangled in as many as 53 high-frequency variables that we thought might help to explain bond inflows for Indonesia. This includes the twenty market stress indicators that feed into the principal component analysis through which we have been constructing our Market Stress Index. If market is stressed, inflows should be minimal and vice versa.

Other global variables are included, such as total negative yielding bonds in the world, which we thought might be a good proxy for search-for-yield behaviour that contributes to fund inflows into high-yielding Indonesian assets.

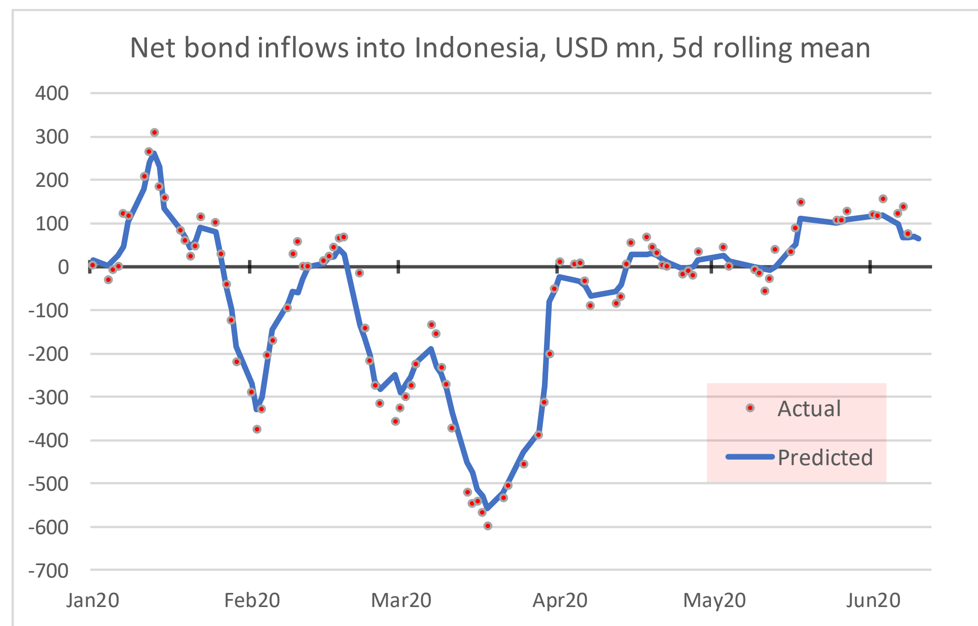
We add to the mix some Indonesia-specific variables such as measures on currency volatility and hedging costs, as well as risk premium indicators such as CDS spreads. To gauge Indonesia's relative standing versus developed markets, we have also included proxies such as interest rate gap between Indonesia and US in terms of policy rates as well as benchmark bond yields.

Can't do regression

If we were to have 'simply' plugged all these variables into a traditional linear regression model, alarm bells would have rung because of collinearity – the variables affect each other as much as they might affect what we want to predict. For example, just as the gap between Indonesia's and US policy rates might affect fund inflows, it would have an effect on USDIDR movement too – another variable in the model.

Here, a random forest model may come in handy. If a derivative decision tree already picks up one of the variables as a key predictor, any other highly correlated variables would not be treated as importantly, since what these can explain has already been largely explained by the first predictor.

With that in mind, let's take a look at how closely the model can predict fund flows. As it turns out, not too badly, with a R-squared value of 0.8, using 5-day rolling mean for both the set of variables and fund inflows data.[1]



Source: OCBC.

To be sure, because we utilize such a diverse set of variables in the model and at a daily frequency, it will have limited 'forward-looking' forecasting value. To forecast fund flows in, say, a month from now, we would have had to also forecast what each of the 53 variables would be. Doing so is not the primary aim of our exercise, even as it is useful as a gauge of the fund flows trajectory because the official data is released with a lag and often patchy.

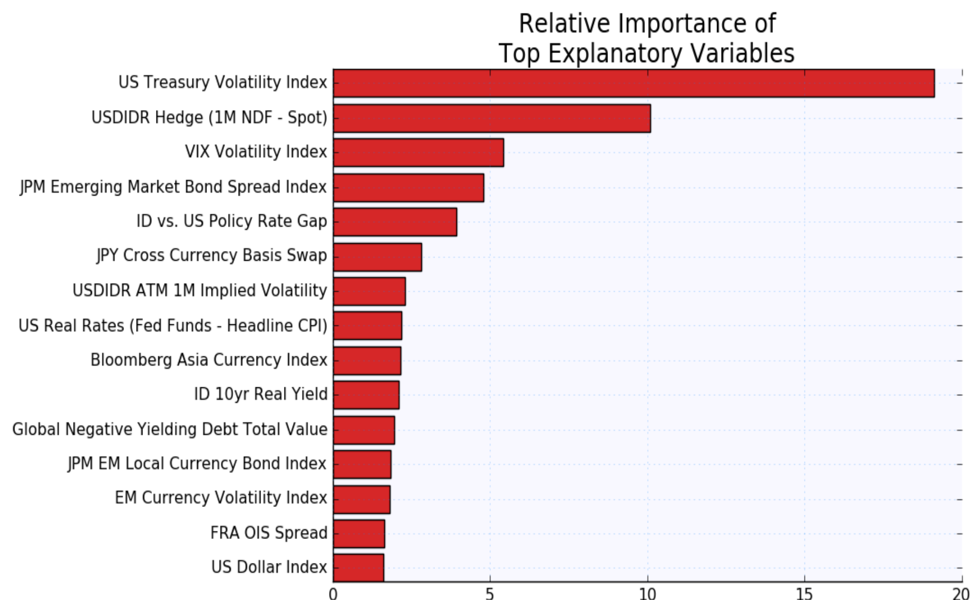
[1] Here, we have utilized random forest model with 1000 decision tree iterations, and a maximum depth of 14 per tree. While higher depths would yield marginally higher R-squared values, we are concerned about overfitting issue. To help minimize the overfitting problem further, we trained the model only on 70% of the sample, utilizing the rest as test set.

Our main motivation for the exercise, as alluded to earlier, is primarily to decipher the factors that have contributed to the ebbs and flows of foreign funds into Indonesia's government bond market. And the model is merely a steppingstone in that direction.

Look there to determine here

By looking at the relative variable importance of the random forest model, we gather that the US Treasury Volatility Index appears to have the most influence on fund flows into Indonesia, helping to explain about 20% of variations, much higher than the rest.

It must be said here that random forest model does not ascribe sensitivity level per se of the explanatory variable, the same way that traditional regression would have; hence we cannot say that if the volatility drops by *x* amount, fund inflows would go up by *y* amount, for instance. The model merely tells us that amongst all the variables, Treasury volatility is a key explanatory piece; take it out and the model would have suffered significantly in terms of its explanatory power.



Source: OCBC.

When the US Treasury volatility index shot up (or down, in the inverted scale of the chart above) during the worst days of the March scare, Indonesia also saw some of the worst days of outflows from its sovereign debt market during the period.

The recovery of the latter has coincided with a reduction in the gyrations in US Treasury market as well. Intuitively, this makes sense given that if market players get whipsawed by volatility in the world's most liquid and traded market, the last thing most want would be to dabble in an EM with perceived high risk.

Source: OCBC.

Outside of that, VIX index which tracks the volatility of the S&P 500 equity index, also appears to be another key driving force, albeit one that the model does not rank to be as important. Tellingly, overnight's pick-up in the VIX index may herald some pullback in the Indonesia's bond inflows ahead.

Source: OCBC.

Global domination

When it comes to domestically oriented factors, it appears that most are not important drivers of Indonesia's bond inflows. Among the top 15 variables which explain the variation in bond inflows the most, just 4 domestic factor feature – signalling that global factors play a much greater determining role.

On that account alone, it will be tempting to conclude thus that there is nothing that the Indonesian authorities can do to lure more inflows in (or curb the pace of any outflow episode).

That is too defeatist, however, especially when hedging cost of USDIDR and policy rate gap between Indonesia and US are ranked as the 2nd and 5th most important features. Among the two, arguably the central bank has enough control over its own policy rate to try and influence the inflows. After all, one side of the hedging cost of rupiah is also dependent on global risk factors.

BI in control

Hence, it is telling that, for all intents and purposes, about the only thing that is within the purview and fuller control when it comes to factors that have major influence on bond fund flows into Indonesia is the policy rate gap – which is effectively BI's own policy rate, given that the Fed has telegraphed its intention to keep its policy rate unchanged for a long time to come.

With that in mind, we reckon that BI – when it meets next on June 18th – will most likely keep its policy rate unchanged at 4.5% for now, continuing its stance from the May meeting. Even as the recent uptick in fund flows and the gain in Rupiah have been heartening, the reality is that the need to anchor such gains remains crucial.

This would be especially so as overnight's market action – where volatility has picked up sizably – serves as a reminder that the relative friendliness that we have seen in global indicators of late cannot be taken for granted at all.

Treasury Research & Strategy

Macro Research

Selena Ling
Head of Research & Strategy
LingSSSelena@ocbc.com

Tommy Xie Dongming
Head of Greater China Research
XieD@ocbc.com

Wellian Wiranto
Malaysia & Indonesia
WellianWiranto@ocbc.com

Terence Wu
FX Strategist
TerenceWu@ocbc.com

Howie Lee
Thailand, Korea & Commodities
HowieLee@ocbc.com

Carie Li
Hong Kong & Macau
carierli@ocbcwh.com

Dick Yu
Hong Kong & Macau
dicksnyu@ocbcwh.com

Credit Research

Andrew Wong
Credit Research Analyst
WongVKAM@ocbc.com

Ezien Hoo
Credit Research Analyst
EzienHoo@ocbc.com

Wong Hong Wei
Credit Research Analyst
WongHongWei@ocbc.com

Seow Zhi Qi
Credit Research Analyst
ZhiQiSeow@ocbc.com

This publication is solely for information purposes only and may not be published, circulated, reproduced or distributed in whole or in part to any other person without our prior written consent. This publication should not be construed as an offer or solicitation for the subscription, purchase or sale of the securities/instruments mentioned herein. Any forecast on the economy, stock market, bond market and economic trends of the markets provided is not necessarily indicative of the future or likely performance of the securities/instruments. Whilst the information contained herein has been compiled from sources believed to be reliable and we have taken all reasonable care to ensure that the information contained in this publication is not untrue or misleading at the time of publication, we cannot guarantee and we make no representation as to its accuracy or completeness, and you should not act on it without first independently verifying its contents. The securities/instruments mentioned in this publication may not be suitable for investment by all investors. Any opinion or estimate contained in this report is subject to change without notice. We have not given any consideration to and we have not made any investigation of the investment objectives, financial situation or particular needs of the recipient or any class of persons, and accordingly, no warranty whatsoever is given and no liability whatsoever is accepted for any loss arising whether directly or indirectly as a result of the recipient or any class of persons acting on such information or opinion or estimate. This publication may cover a wide range of topics and is not intended to be a comprehensive study or to provide any recommendation or advice on personal investing or financial planning. Accordingly, they should not be relied on or treated as a substitute for specific advice concerning individual situations. Please seek advice from a financial adviser regarding the suitability of any investment product taking into account your specific investment objectives, financial situation or particular needs before you make a commitment to purchase the investment product. OCBC Bank, its related companies, their respective directors and/or employees (collectively "Related Persons") may or might have in the future interests in the investment products or the issuers mentioned herein. Such interests include effecting transactions in such investment products, and providing broking, investment banking and other financial services to such issuers. OCBC Bank and its Related Persons may also be related to, and receive fees from, providers of such investment products.

This report is intended for your sole use and information. By accepting this report, you agree that you shall not share, communicate, distribute, deliver a copy of or otherwise disclose in any way all or any part of this report or any information contained herein (such report, part thereof and information, "Relevant Materials") to any person or entity (including, without limitation, any overseas office, affiliate, parent entity, subsidiary entity or related entity) (any such person or entity, a "Relevant Entity") in breach of any law, rule, regulation, guidance or similar. In particular, you agree not to share, communicate, distribute, deliver or otherwise disclose any Relevant Materials to any Relevant Entity that is subject to the Markets in Financial Instruments Directive (2014/65/EU) ("MiFID") and the EU's Markets in Financial Instruments Regulation (600/2014) ("MiFIR") (together referred to as "MiFID II"), or any part thereof, as implemented in any jurisdiction. No member of the OCBC Group shall be liable or responsible for the compliance by you or any Relevant Entity with any law, rule, regulation, guidance or similar (including, without limitation, MiFID II, as implemented in any jurisdiction).

Co.Reg.no.:193200032W