OUTLOOK 2023

ECONOMIC CYCLE & INVESTMENT STRATEGY

FPT Securities

PREFACE

The economic cycle viewpoint is widely accepted and proven in practice. The economic cycle is comprised of concerted cyclical upswings and downswings in the broad measures of economic activity. We consider the cyclicality of investment activities in the stock market as a guiding factor. We do not attempt to forecast the subsequent movement of the economy or changes in macro, political or social factors. The study of the cyclicality of the economy is the basis for bringing up more direct issues affecting each industry and the market

The running theme through the FPTS OUTLOOK 2023 REPORT is "**ECONOMIC CYCLE & INVESTMENT STRATEGY**" consisting of three major contents:

- Analyzing Vietnam economic situation over periods, in 2022 and 2023F.
- Industry analysis with classification: The industries are strongly affected by the economic cycle, and the industries are less affected by the economic cycle.
- Stock market cycles and market commentary from a technical analysis perspective

To ensure objective and accurate research, we use data for as long as possible, depending on each analysis factor. Data mining and processing to smooth and point out the cyclical characteristics will be presented in the Appendix section related to Decomposition Methodology.

HOW TO USE OUTLOOK 2023 REPORT? Combining macroeconomic, industry and stock market factors to make investment decisions.

A. VIETNAM ECONOMIC CYCLE

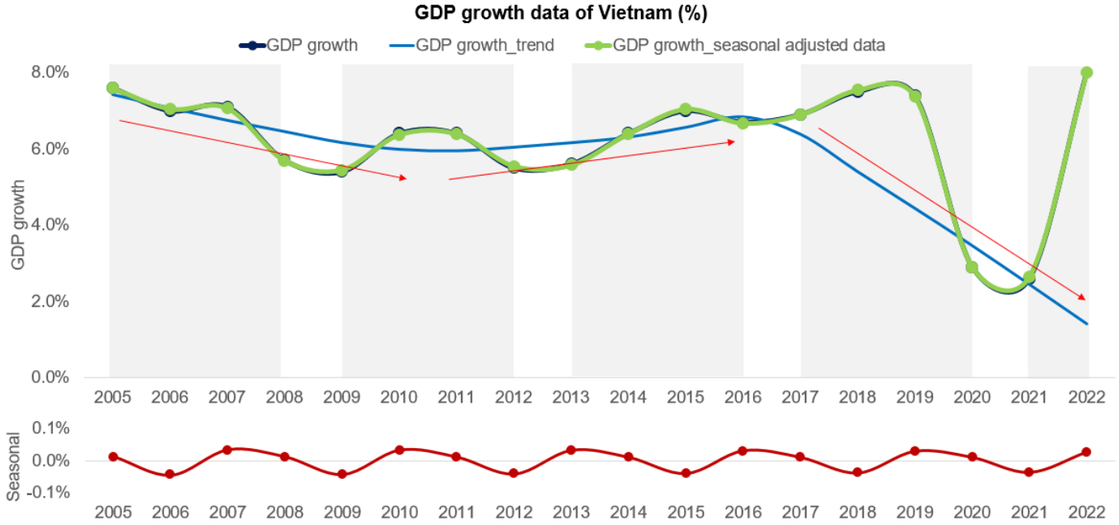
I. VIETNAM'S ECONOMY IS IN THE DECLINE PHASE OF AN ECONOMIC CYCLE STARTING IN 2017

1. GDP growth is the key factor to determine stages of an economic cycle

After removing the seasonal factor from the GDP growth data, we found that Vietnam's economy has repeatedly been following a short cycle lasting for 4 years (2005 – 2008, 2009 – 2012, 2013 – 2016, 2017 – 2020) and a long cycle lasting for 12 years (the decline phase lasted from 2005 to 2010 and the growth phase lasted from 2011 – 2016). Recession or economic crisis events corresponded to the end of a mini-cycle, such as the financial crisis of 2007 – 2008, the European debt crisis in 2012, the Brexit event in 2016, and the global recession caused by the Covid pandemic in 2020.

Based on the theory of economic cycle and data analysis of GDP growth rates, we believe that Vietnam is in the up phase of the minor cycle 2021 – 2024 and the down phase of the big cycle lasting from 2017.

GDP growth data of Vietnam (%)



Source: General Statistics Office (GSO), FPTS Research

The recovery of economic growth in 2022 was a good start for the 4-year economic cycle from 2021 to 2024, with a low comparative base in 2021. Quarterly gross domestic product (GDP) increased by 5.1%, 7.8%, 13.7%, and 5.9%, respectively, over the same period last year. For the whole year of 2022, GDP growth reached 8.02%. Vietnam's economy was considered a bright spot in the region in 2022. GDP growth in the first three quarters was usually high: Vietnam (5.1%, 7.8%, 13.7%), Philippines (8.2%, 7.5%, 7.6%), Malaysia (5.0%, 8.9%, 14.2%), Indonesia (5.0%, 5.4%, 5.7%), Thailand (2.3%, 2.5%, 4.6%). According to the World Economic Outlook Report of the International Monetary Fund (IMF), October 2022, Vietnam's GDP in 2022 has been forecast to grow at the highest rate compared to other countries in the region: Vietnam (+7.0%yoy), Philippines (+6.5%yoy), Malaysia (+5.4%yoy), Indonesia (+5.3%yoy), Thailand (+2.8%yoy).

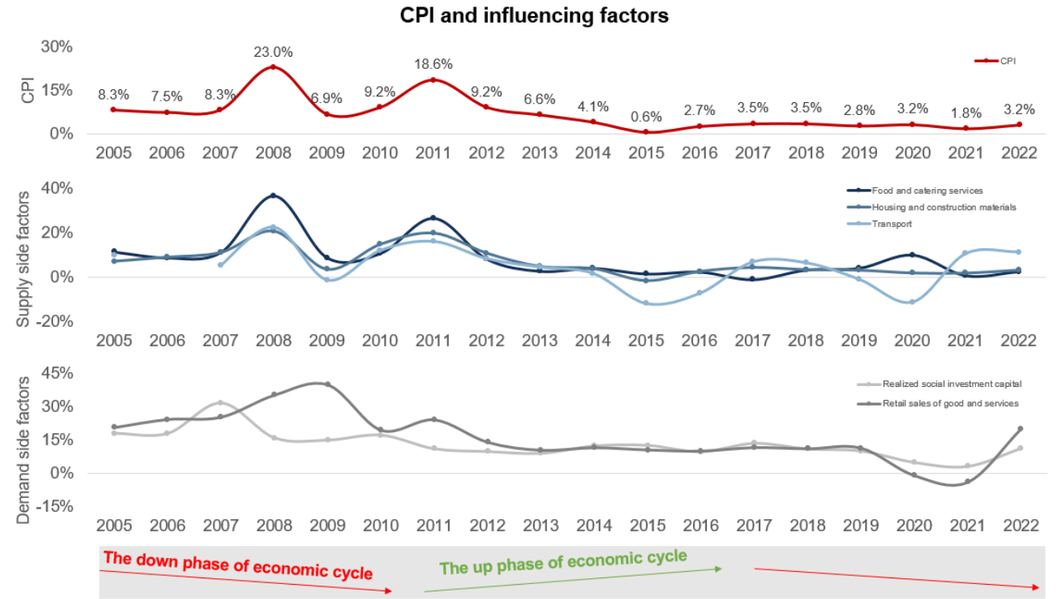
GDP growth of Vietnam and some countries in the region (%)

Source: FPTS Research, (*) Estimated data of the IMF

2. Inflation always goes up during the decline phase of a long economic cycle

Looking back at the previous economic cycle, during the declining phase lasting from 2005 to 2010, the annual average consumer price index (CPI) was constantly at a high level, above 7% compared to the previous year. CPI in this period was well under pressure from both supply-side factors (grain food and foodstuff prices, prices of input materials for production such as gasoline, iron and steel, and fertilizers, etc., fluctuated greatly) and demand-side factors (demonstrated by the high growth rate of total social realized investment capital and total retail sales of goods and services). Vice versa, during the growth phase of the economic cycle (2011 – 2016), when supply and demand factors gradually became more stable, the annual average CPI decreased and remained well below 4%. Moving into a new economic cycle with a decline starting in 2017, influencing factors have tended to be more volatile – especially during the Covid epidemic period – which has put upward pressure on inflation.

CPI and influencing factors



Source: GSO, FPTS Research

The average CPI in 2022 increased by 3.15% compared to the previous year. The Government's target of controlling inflation below 4% was achieved. However, the average monthly CPI was in an upward trend. High inflation was a result of the increase in the price of gasoline, raw materials, and input fuels. Specifically, the average price index of the transport group (accounting for ~10% of CPI) increased sharply, reaching 11.27%yoy. The price of housing and construction materials group increased by 3.11% compared to 2021. Prices of grain food and foodstuffs were also uptrend since the beginning of the year. Specifically, the domestic rice price increased according to the export rice price. The pork price rose along with the increase in feed prices and the seafood price rose due to the increase in the gasoline price, which pushed up the cost of fishing.

The average monthly CPI (yoy)

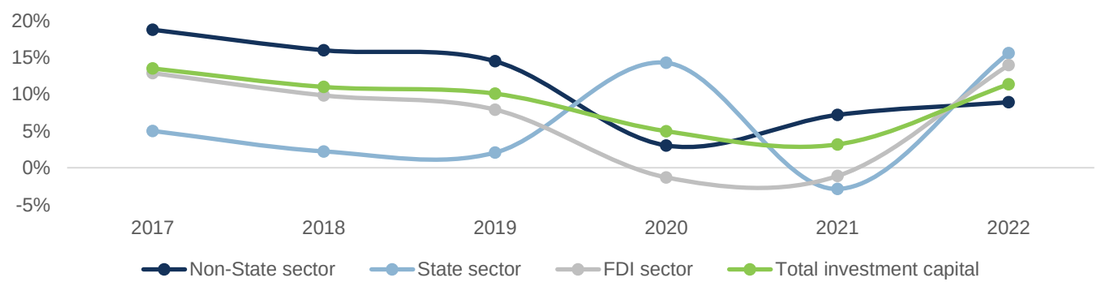
Source: GSO, FPTS Research

II. VIETNAM'S ECONOMIC SITUATION 2022 IN REVIEW

1. Total realized investment capital grew above the low-level base in 2021 while the value of newly registered FDI capital decreased over the same period.

The implementation of the development investment support package (investment in medical examination and treatment facilities, infrastructure development, etc.) under the program of socio-economic recovery and development has created momentum for the growth of mobilizing and executing investment capital. Total realized investment capital in 2022 reached nearly VND 3,220 trillion, corresponding to a growth rate (+11.2%yoy) on the low base of 2021 - the COVID-19 period with profound impacts on economic activities. In particular, the investment capital of the State sector reached VND 825 trillion (+15.6%yoy); the non-State sector gained VND 1,873 trillion (+8.9%yoy); the FDI recorded VND 522 trillion (+13.9%yoy).

Investment capital growth (%)



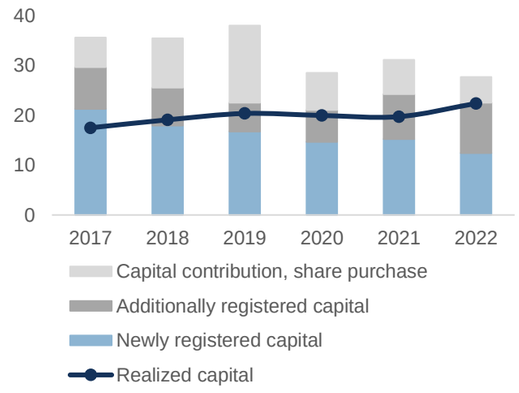
Source: GSO, FPTS Research

Registered FDI inflows decreased with the proportion of real estate business groups increasing sharply.

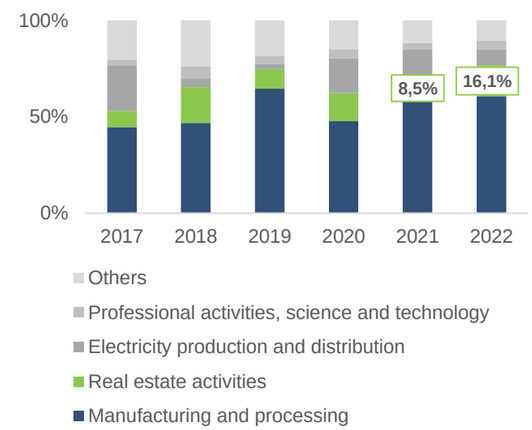
In 2022, the total registered FDI capital reached USD 12.45 billion, which decreased by 18.4% over the previous year. The main reason is the interruption of anti-epidemic measures in 2021 and the volatility of the geopolitical conflict in Europe, which has negatively affected the outflow of capital investment of major economies, especially investment partners of Vietnam. Contrary to the downtrend of registered capital, realized investment capital grew very positively, reaching USD 22.4 billion (+13.5%yoy).

The proportion of FDI invested in the real estate sector improved significantly. FDI inflows into the sector in 2022 reached more than USD 4.45 billion (accounting for 16.1% of total registered FDI), while capital inflows into this field in 2021 only reached about USD 2.64 billion (accounting for 8.5% of total registered FDI). This is the bright spot of the real estate sector in the context that credits have been strictly controlled, and bond issuance has been facing difficulties.

Foreign Direct Investment (FDI - Billion USD)



Allocation of registered capital by sector

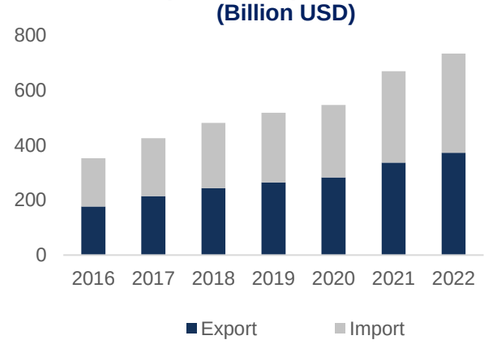


Source: Ministry of Planning and Investment

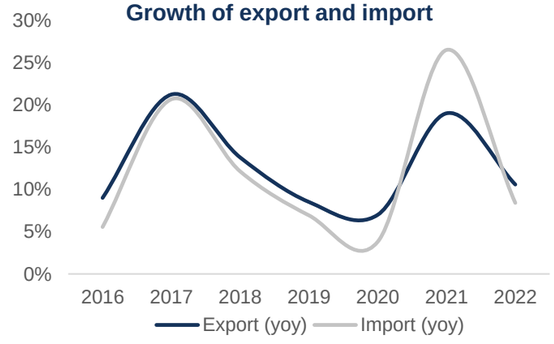
2. The export and import growth decelerated in the last months of 2022

The scale of Vietnam's import and export of goods has continuously increased. Total export and import turnover of goods in 2022 gained about USD 732.5 billion (+9.6%yoy). Export turnover increased consecutively and reached USD 371.9 billion (+10.6%yoy), and import turnover rose to USD 360.7 billion (+8.4%yoy).

Export and Import turnover (Billion USD)



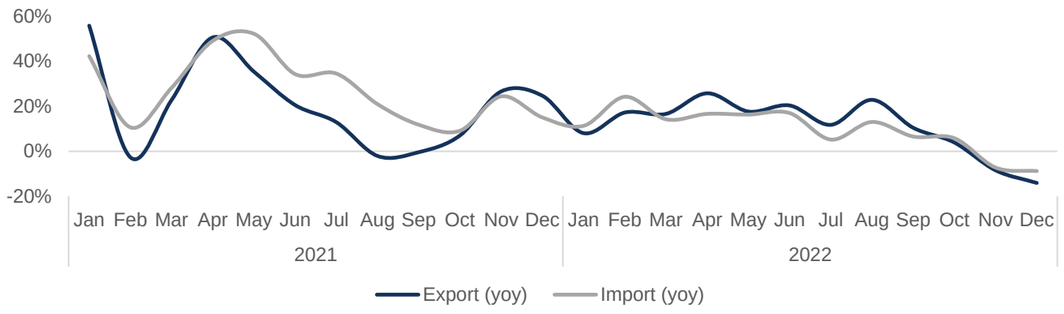
Growth of export and import



Source: GSO, FPTS Research

However, the monthly import and export growth has been decelerating in the last months of 2022. Compared to the same period last year, the export and import of commodities fell in November and December, whereas they rose significantly in the same period in 2021. The main reasons were: (1) the demand for imported commodities, especially non-essential consumer items in Vietnam's main export markets declined in the context of high inflation, and (2) the change in USD/VND exchange rate was detrimental to the import of many raw materials for export.

Growth of import and export of goods by month



Source: GSO, FPTS Research

The bright spot of import and export activities in 2022 was that the trade balance of goods continued to have a trade surplus. Since 2015, the trade balance of goods has been steadily moving toward a trade surplus. Over the years, the goods trade surplus grew steadily and reached a record high of around USD 20 billion in 2020. In 2022, the trade balance of goods had a trade surplus of USD 11.2 billion. The improvement of the trade balance goods was mainly due to (1) the positive and increasingly diversified shift of the structure of export products towards the processing industry group and (2) the contribution of the region's FDI.

The trade balance of services was still in deficit. Contrary to the trade balance of goods, the trade balance of services was always in deficit, especially in periods of economic recession such as 2008, and 2021. In the group of export services, tourism services suffered the most in the period 2020-2021 due to the pandemic, declining by nearly 90% compared to the pre-epidemic period (2018, 2019).

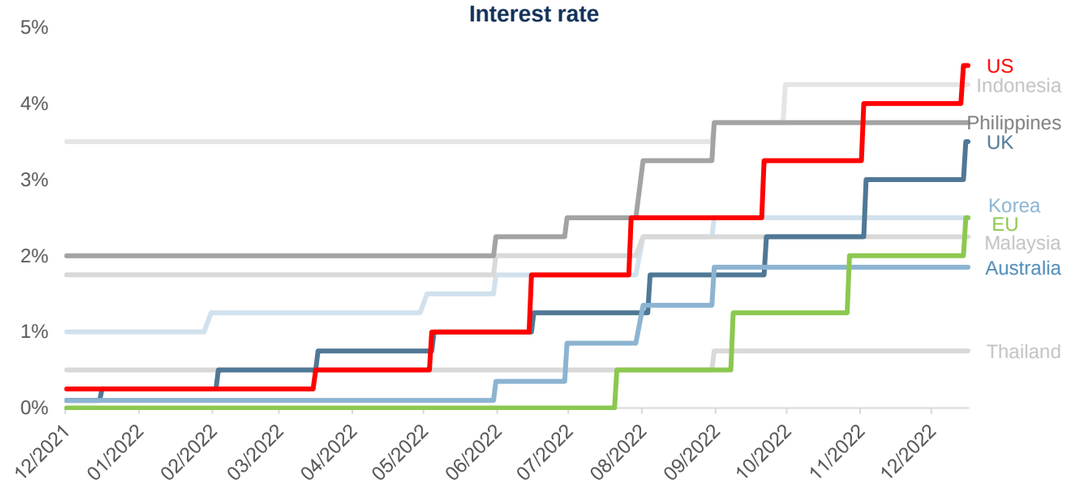
Trade balance in 2022 (Billion USD)

Source: GSO, FPTS Research

3. Tight monetary policy with continuous intervention from the State Bank of Vietnam (SBV)

In 2022, the Federal Reserve System (FED) continuously raised the target interest rate to deal with inflation. As a result, the interest rate ceiling increased from 0.25% to 4.5%. After the Fed, many central banks of major countries have accelerated monetary tightening by raising interest rates rapidly with large margins. Some Southeast Asian countries have also started to raise interest rates in the second half of the year by smaller margins. Furthermore, the international foreign exchange market also fluctuated wildly according to the rapid appreciation of USD/VND exchange rate, which put pressure on interest rates and exchange rates of Vietnam.

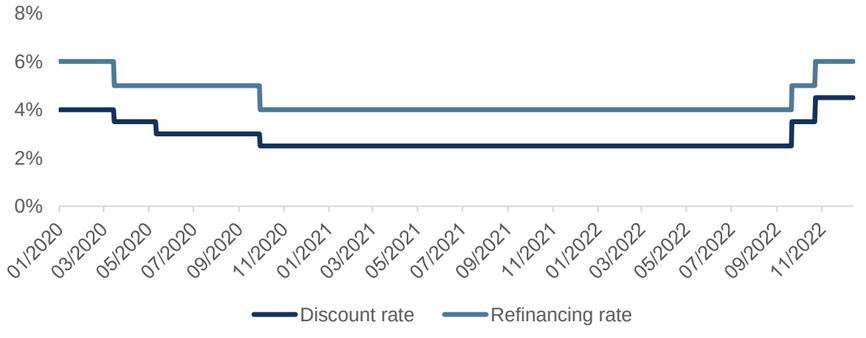
Interest rate



Source: Bloomberg, FPTS Research

The SBV adjusted the discount and refinancing rate twice in 2022. In the first nine months of the year, Vietnam's interest rates remained the same as in 2021 despite the FED continuously increasing the interest rate. The SBV adjusted the discount and refinancing rate twice at the end of September and October, and increased by 1% each time, bringing the interest rate back to the level before the pandemic.

Discount and refinancing rates

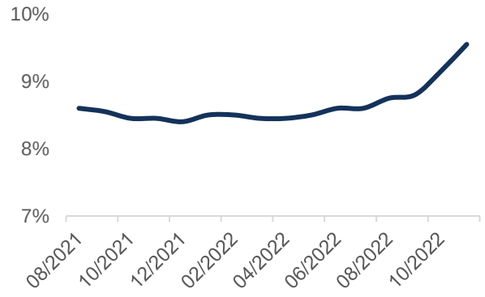


Source: SBV, FPTS Research

The deposit and lending interest rates remained high. After the SBV adjusted to increase the interest rate and the deposit rate ceiling for less than six months at the end of September and October, the deposit interest rate rose sharply. There was a big difference between the deposit rates increase in banks. According to statistics from 8 commercial banks (accounting for 71.6% of total outstanding loans), the deposit interest rate level of the SOEs increased by 1.8 pp YTD, while that of the four large commercial banks was up by 3.7 pp YTD. The average lending interest rate for new loans and existing loans was up to 9.6% (+0.8 pp YTD). At the end of December, with the call of the Banking Association, 16 banks registered to reduce lending interest rates by a reduction of 0.5% - 3%.

Deposite interest rate

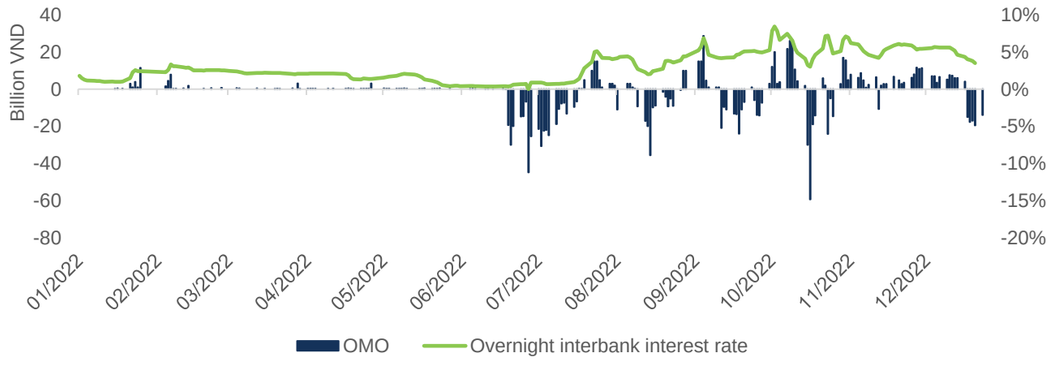
The average lending interest rates for new loans and existing loan



Source: SBV, SOEs (VCB, CTG, BID, Agribank), VPB, TCB, MBB, STB

The SBV actively engaged in open market operations (OMO). The SBV has had many injections and withdrawals in the second half of 2022 through the open market to control the bank's short-term liquidity. In the last months of the year, the SBV consecutively injected money into the system to support the bank's liquidity. From the beginning of October to December 26, 2022, the total accumulated net injection value in the open market was VND 92.4 trillion after a net withdrawal of nearly VND 361 trillion in Q3-2022. The interbank interest rates in the last two months of the year were more stable. As of December 23, 2022, the overnight interbank interest rate was at 3.49%, a decrease of 4.95 pp compared to the beginning of October.

OMO and Overnight interbank interest rate

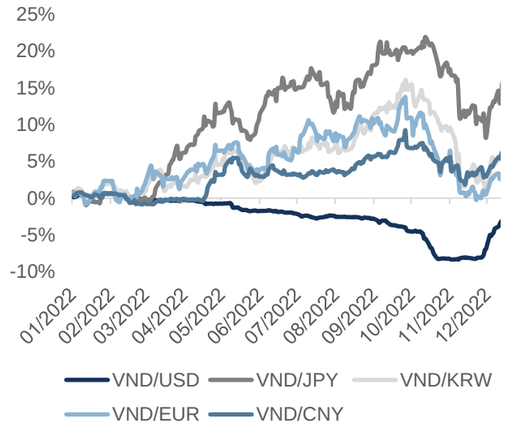


Source: FPTS Research

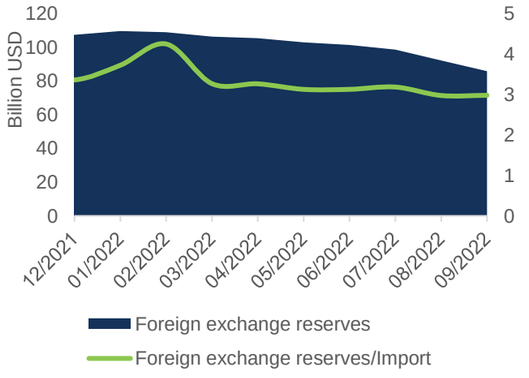
Vietnam's central exchange rate in 2022 fluctuated roughly and was under massive pressure from the foreign exchange market. The exchange rate was stable in the first six months, fluctuating between 23,057 at 23,188 USD/VND. From July to October, it constantly increased sharply. During this time, the SBV continuously net sold foreign exchange reserves, reaching a total net selling volume USD of 21.6 billion (equivalent to 20.1% of foreign exchange reserves at the beginning of the year), adjusted the band of the central exchange rate from +/-3% to +/-5% in mid-October. The central rate was gradually stable and tended to decrease slightly in the last months of the year. As of December 26, 2022, it was at 23,626 USD/VND and downed 0.3% compared to the end of October but still high compared to the beginning of the year (+2.1% ytd).

In 2022, Vietnam's national currency depreciated against the USD while it increased in value relative to many other foreign currencies. From the beginning of the year to December 26, 2022, VND depreciated by 3.5% versus USD – the devaluation of VND narrowed compared to the period of October and November – the period when the local currency depreciated up to 8.3%. Compared with other foreign currencies such as EUR, KRW, CNY, and JPY, the VND has consistently increased in value. After rising significantly in the first ten months of 2022, the appreciation margin of VND narrowed (December 26, 2022: VND/JPY +11.0% ytd, VND/KRW +4.0% ytd, VND/EUR +3.1% ytd, VND/CNY +5.9%ytd).

Foreign exchange rates



Foreign exchange reserves and Foreign exchange reserves/Import



Source: Bloomberg, FPTS Research

III. ECONOMIC OUTLOOK IN 2023

1. Vietnam's economic growth is forecast to slow down as expected from the general gloomy prospects of global economy

The world economic outlook is forecast to be pessimistic in 2023. According to the World Economic Outlook Report, in October 2022, IMF lowered its forecast of global economic growth in 2023 to 2.7% - a decrease of 0.2 percentage points as compared to its expectation in July. As tightened financial conditions have been occurring in most nations, the central government banks have been raising interest rates to control inflation, the prolonged blockade. This resulted in the real estate market crisis which had taken place in China while food and energy prices increased sharply. The world's three largest economies, namely the US, China and the EU, are also projected to stagnate in 2023.

Vietnam's economic growth will probably slow down. The instability of the world economy in general, along with the economic slowdown of major trading partners (including the US, China, and the EU), will negatively affect Vietnam's economic growth prospects in 2023. IMF forecasted Vietnam's GDP growth rate in 2023 at 6.2% (lower than 8.02% in 2022). In the Asian Development Outlook Supplement, December 2022, the Asian Development Bank has also revised Vietnam's GDP growth in 2023 to 6.3% (a decrease of 0.4 pp compared to the forecast in September). In the Resolution on the Socio-Economic Development Plan in 2023, the National Assembly has cautiously set a target of 6.5% GDP growth.

Economic growth forecast 2023

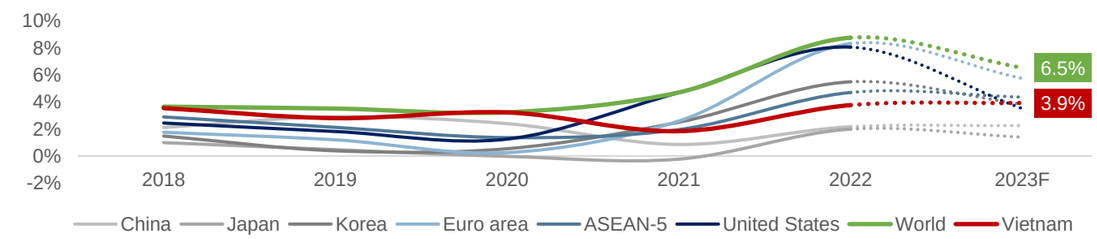
Source: IMF, FPTS Research

2. Pressure from controlling inflation in 2023

Global inflation is forecasted to decrease but remain at a high level. The IMF believes that tightened monetary policies help control inflation. Accordingly, inflation is forecast to peak at 8.8% in 2022 and then decline to 6.5% in 2023, and 4.1% in 2024.

Vietnam will be under high pressure in making efforts to control inflation in 2023. According to economists, inflation in Vietnam often lags behind the world. The explanation for the inflation pressure in 2023 is (1) the increasing cost of imported raw materials, (2) the increasing base salary, and (3) the boosting of public investment spending. According to the socio-economic development plan, the National Assembly has also raised the target of the consumer price index to 4.5% instead of 4% as in previous years.

Forecast of inflation in Vietnam and major trading partners



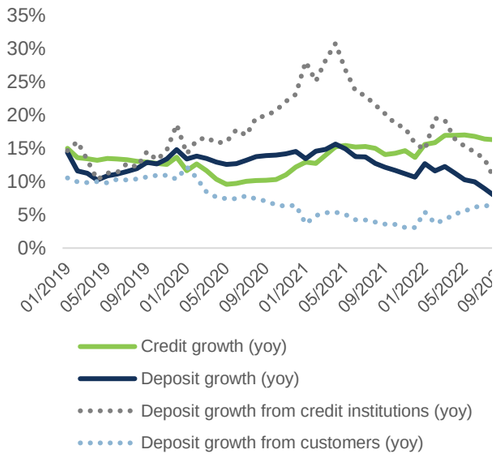
Source: IMF, FPTS Research

3. The continued tightened monetary policy put pressure on the banking system in terms of liquidity and the government closely regulated corporate bonds

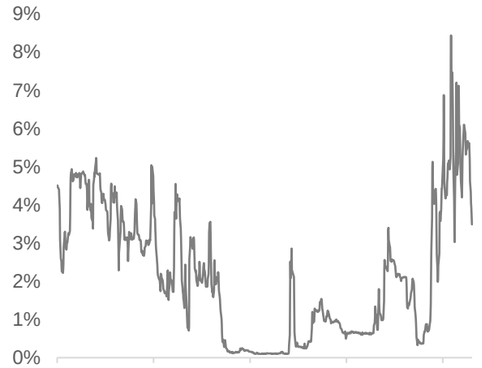
3. 1. The continued tightened monetary policy and the liquidity pressure on the banking system

The liquidity of the banking system will still require monitoring in 2023. The widening gap between the growth of total outstanding loans and total deposits has created liquidity pressure for the banking system when it had to maintain liquidity-relevant ratios like the LDR (Loans/Deposits), significantly when the SBV loosened the credit room in October 2022. The growth rate of deposits from credit institutions has considerably decreased since the second quarter of 2022 up to the present, as shown through observations of the rise of total deposits. The interbank interest rates have also rapidly increased.

Credit and deposit growth



Interbank rate

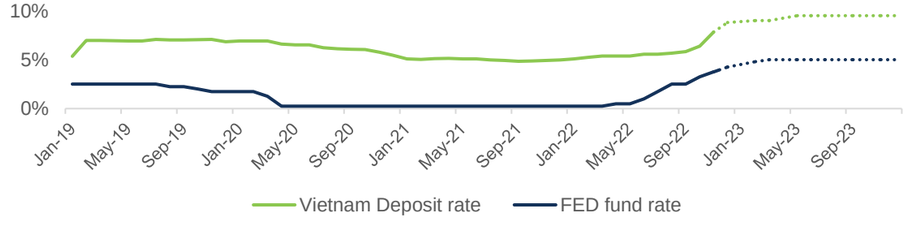


Source: SBV, Bloomberg

In 2023, problems related to the imbalance between deposits and credit growth will need time to be resolved, thanks to interventions from the SBV. Therefore, investors still need to monitor the liquidity problems of the banking system in 2023.

Interest rates are expected to increase in 2023 and begin to cool down when the Fed takes steps to cut interest rates. We predict that in 2023, the deposit interest rate of the Vietnamese banking system will rise by 1% to 2% as long as the FED keeps raising interest rates to control inflation. The Fed interest rate scenario is given based on the views of economists and statisticians by Bloomberg. The picture of Vietnam's deposit interest rate scenario is based on the actual situation of commercial banks at the end of 2022 and the SBV's strategy in flexibly offering interest rate and exchange rate policies.

Interest rate forecast



Source: Bloomberg, FPTS Research

3. 2. Handling corporate bonds and challenging issues relating to legal changes

The issuance of corporate bonds was less active in 2022 and is expected to decrease gradually as there are still concerns from investors. Following the approval of Decree 65/2022/ND-CP, the value of private and public bond issuance in 11M2022 reached nearly VND 170 trillion and significantly decreased (-70.7%yoy). The stricter changes from the new decree and violations involving corporate bonds have significantly and negatively impacted investor sentiment.

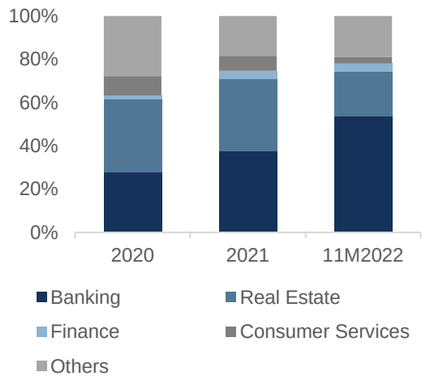
Corporate bond issuing value

**Issuing value does not include international corporate bonds*

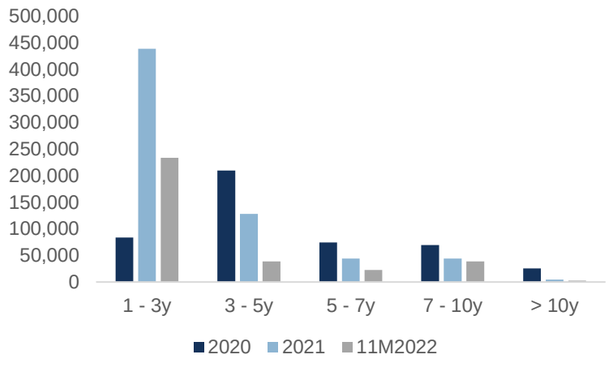
Source: VBMA

The proportion of the issuance value decreased sharply in the Real Estate sector (accounting for 20.5% of the value of 11M2022), and the newly issued bonds were mainly in the Commercial bank sector (54% of the 11M2022 value).

Issued value by sectors



Issued value by tenors

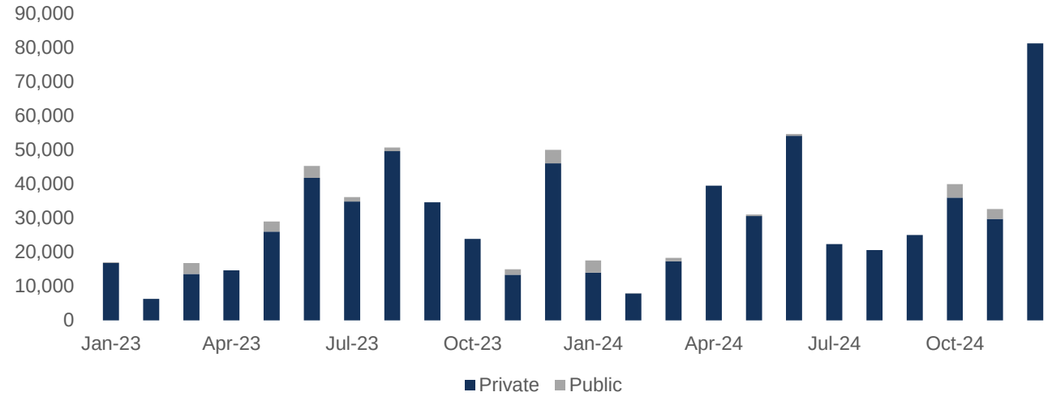


Source: VBMA

The pressure comes from corporate bonds maturing in 2023 and 2024. Concerns about the issue of individual corporate bonds also have had a substantial impact on the financial market's overall capital when companies announced their plans to buy back bonds before maturity.

According to statistics from VBMA, the value of corporate bonds mature is nearly VND 340 trillion in 2023 and about VND 400 trillion in 2024. The most pressure is in Q2/2023, Q3/2023, Q2/2024, and Q4/2024.

Value of corporate bond mature from Jan 2023 to Dec 2024



Source: VBMA

Waiting for legal changes. According to the draft amendment of Decree 65/2022/ND-BTC, the proposed amendments include the following:

- Defer the implementation within one year of regulations on determining the status of professional securities investors. From January 1, 2024, these regulations will continue to be implemented.
- Extension of implementation time for mandatory credit rating requirements (January 1, 2024, instead January 1, 2023).
- Increase the bond distribution time (30 days to 90 days); from January 1, 2024, the distribution will be made in 30 days.
- Allow extended term of issued bonds, maximum extension time is two years.

The draft aims to solve complex problems in balancing cash sources in production and operating activities and paying obligations due in 2023 due to liquidity difficulties and the confidence crisis. Decree 65 is assessed to support the sustainable development of the corporate bond market in the medium and long term. We believe that investors need to monitor the legal changes related to this content to assess how they will affect both the corporate bond market and the stock market.

CYCLICAL INDUSTRIES

REAL ESTATE
CONSTRUCTION
STEEL
CEMENT
CONSTRUCTION PLASTIC
OIL AND GAS
GARMENT
FISHERIES

NON-CYCLICAL INDUSTRIES

SUGAR
LIVESTOCK
FERTILIZER
TIRE AND RUBBER
POWER

REAL ESTATE INDUSTRY
LIQUIDITY CRISIS POST CHEAP-MONEY ERA

I. THE REAL ESTATE INDUSTRY IS HIGHLY CYCLICAL IN THE PERIOD OF 1991 – 2022

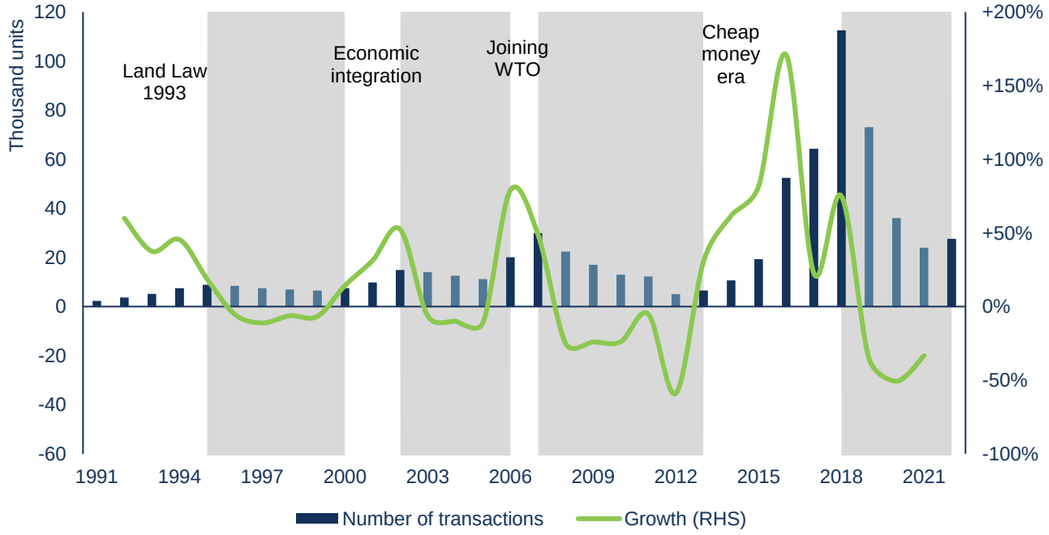
The real estate industry has been highly cyclical in the past 30 years, mainly driven by changes in legal and credit policies. Since 2018, the industry has been in decline, mainly due to investment license tightening at new commercial projects. On the other hand, monetary policy easing during this period has supported both developers with clean land bank and real estate customers.

From 2022 to 2023, the real estate industry will face even more difficulty under legal policy uncertainty and monetary policy tightening:

1. Policy uncertainty will continue to limit legal procedures progress, at least until the Amended Land Law is finished, with guidance circulars and decrees issued.
2. Monetary policy tightening will both increase cost of capital and limit credit channels.

Despite these short-term challenges, this shake-out period will help stabilize the industry in the long run by (1) filtering out businesses with weak financial and legal capacity, and (2) restructuring toward products that serve real needs (social, worker, and affordable housing, etc.) instead of the high-end products prevalent today.

Number of primary real estate transactions



Source: FPTS Research

The 30-year history of Vietnam's real estate industry can be divided into 04 main cycles (each lasts about 06 – 09 years) with the main driving legal and credit factors as follows:

Cycle name	Growth phase	Decline phase
Land Law 1993	**1991 – 1995:** 1993 Land Law officially formed the real estate market.	**1996 – 1999:** Interest rates rose sharply to counteract the Asian Financial Crisis effects.
Economic integration	**2000 – 2002:** International integration policy (joining ASEAN, APEC, signing the Vietnam - US bilateral trade agreement ...) promoted the economy in general and real estate demand in particular.	**2003 – 2005:** 2003 Land Law cut off the "land fever" through farmer land allocation limits.
Joining WTO	**2006 – 2007:** Officially joining the WTO after 12 years of negotiations helped Vietnam to attract large amounts of international capital, a significant part of which flowed into real estate.	**2008 – 2012:** Lending rates peaked at ~15% to combat inflation in 2008 and 2011.
Cheap money era	**2013 – 2018:** Easing legislation and low interest rates (~07%) during the global financial crisis recovery period.	**2019 – 2022:** Commercial project licensing has tightened since 2019. Credit policy has also gradually tightened since 2017, especially in 2022.

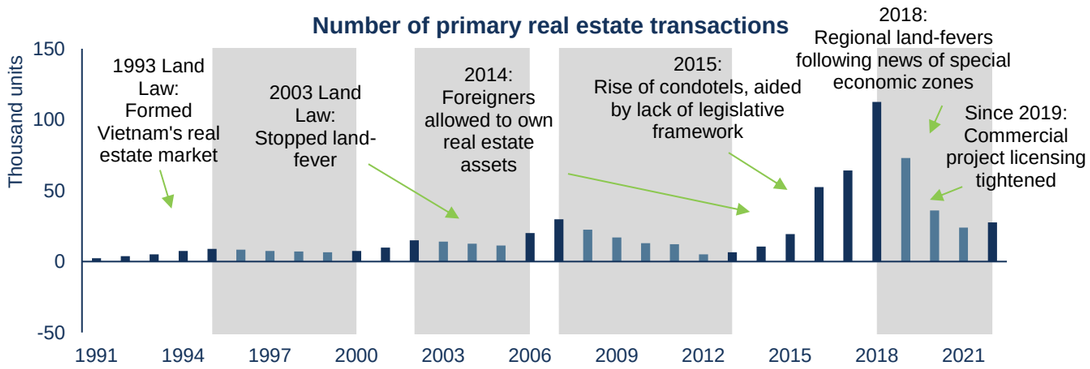
Source: FPTS Research

The real estate industry is currently in the decline phase of the Cheap money era cycle (as shown by transactions decreasing ~26%/year from 2018 – 09M2022), mainly due to limited supply while commercial project licensing is gradually tightened. On the other hand, real estate businesses and customers could still access low-cost credit capital relatively easily until early 2022.

Large developers with clean land banks were clearly the winner of this period, benefiting from significant price increases during this period as supply was limited and demand remained high.

1. Legal policies: The Government closely supervises real estate industry activities

Legal policies have direct impacts on the real estate market due to the Government's supervision of entire industry value chain (from preparation, construction, sales, handover, operation, to even maintenance).



Source: FPTS Research

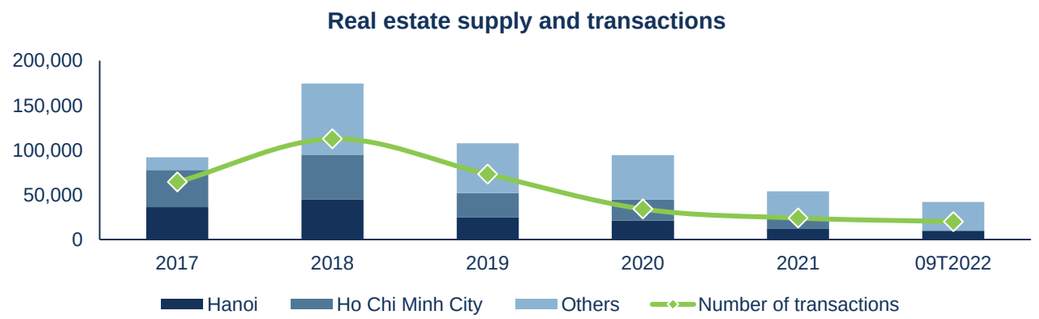
Since 1991, legal changes have twice kicked off the real estate industry's growth phase, namely (1) the 1993 Land Law officially forming the real estate market by recognizing people's ownership and land use rights, and (2) the 2014 Housing Law allowing foreigners to own real estate assets.

In contrast, tightening legislation has also caused real estate market to decline twice, specifically (1) the 2003 Land Law putting an end to land fever (by setting land allocation limit for farmers. If violated, ownership duration will be halved and land use tax will be required afterward), and (2) tightening commercial project licensing since 2019 (due to strengthening inspections and uncertainty induced by legal policy changes).

Legal policy tightening was the main reason for real estate market's decline during 2018 – 2021. After 2018, housing supply in the two largest markets in Vietnam (Hanoi and Ho Chi Minh City) has decreased sharply by ~37% per year, mainly due to:

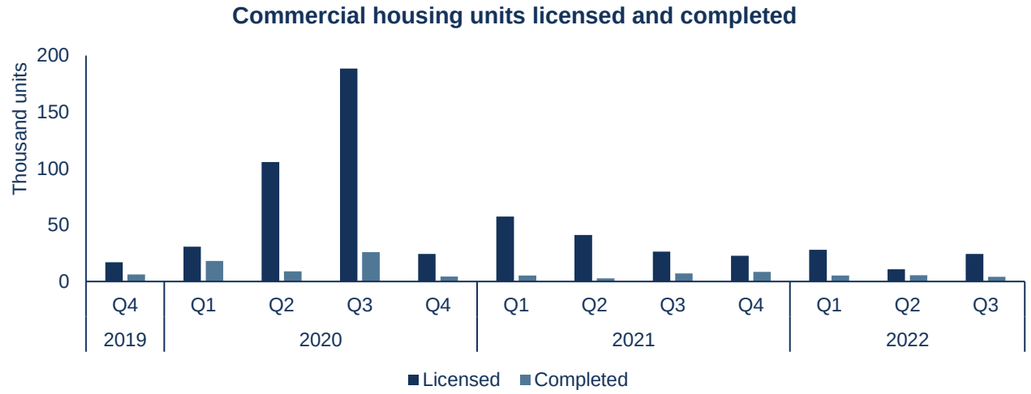
a. The Government strengthened inspection of regulation and procedure compliance at commercial projects;

b. Licensing of new projects has stalled due to changing legal regulations (on land use conversion, site clearance, land bidding, etc.) without clear instructions on administrative procedures.



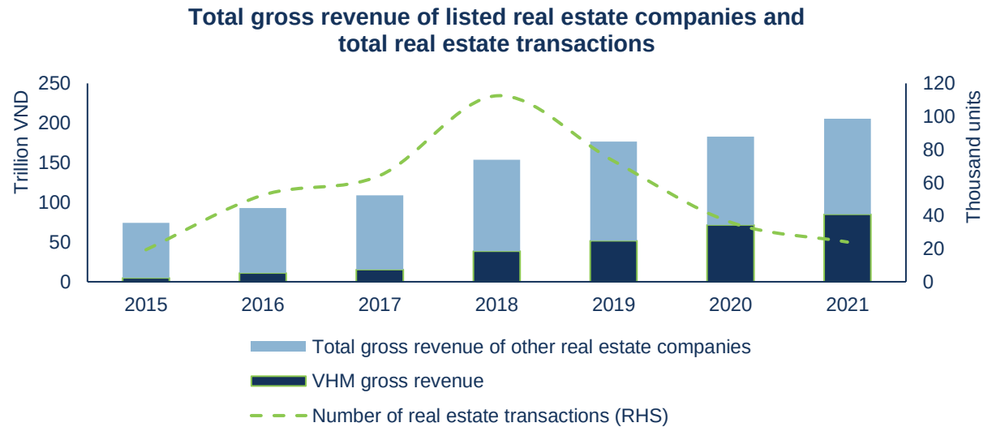
Source: VARS, Ministry of Construction

In 2020, legal bottlenecks in these cities have pushed developers to neighbor markets, as shown by the sharp increase in the number of licensed commercial apartments in Q2 – Q3/2020. However, legal progress in these localities was also tightened soon after – similarly due to (1) increased review and inspection and (2) reluctance in project licensing due to changes in the regulatory framework. This was reflected in the minimal number of licensed and completed commercial housing units in 2021 – 09M2022.



Source: Minitry of Construction

Limited supply and increased product prices due to tightening regulations in 2019 – 2021 were very favorable for large real estate developers with clean land bank, as shown by the total revenue of listed real estate enterprises increased by ~10%/year in this period (contrary to the number of national transactions decreased by ~26%/year). Particularly, Vinhomes (HSX: VHM) has benefited the most with revenue increasing by 30%/year (equivalent to ~40% of the total revenue of listed enterprises, up sharply from 25% in 2018), mainly from delivering mega projects such as Vinhomes Ocean Park, Vinhomes Grand Park, Vinhomes Star City… In addition, this group's the average gross profit margin also improved from ~30% to ~45% in the same period (VHM alone nearly doubled to ~57%).

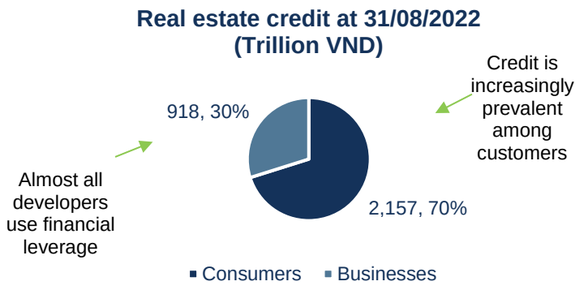


Source: Financial Statements

2. Credit: Both real estate businesses customers are dependent on loans

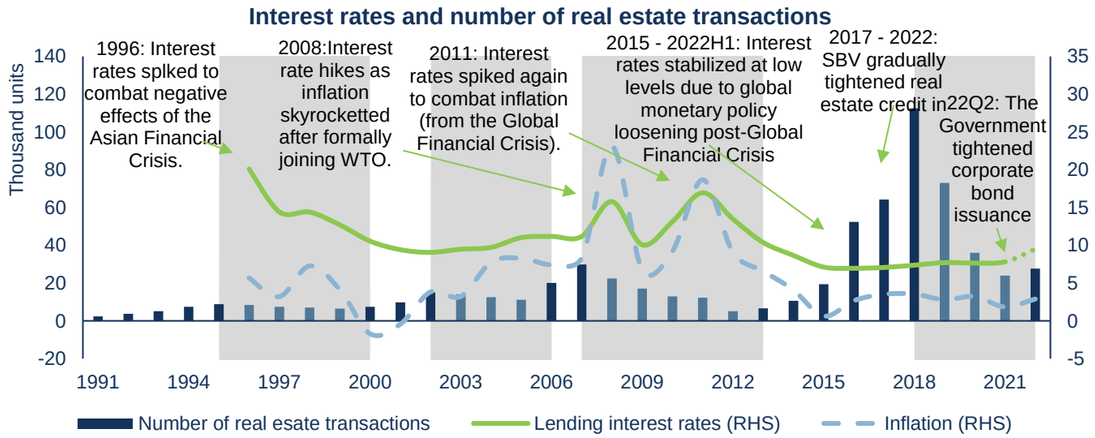
Credit has significant impact on both real estate customers and businesses, respectively accounting for 68% and 32% of the total 2.4 million billion VND in real estate credit balance on 31/08/2022.

- More and more homebuyers are using loans (up to 50 – 60%, according to *batdongsan.com*) and are expected to keep increasing (developed countries at ~70 – 80%).
- Real estate developers often utilize financial leverage to meet high initial investment needs (credit accounts for ~04-26% of the total capital of these businesses, according to *VARS*).



Source: SBV

Low and stable interest rates proved very favorable for the real estate market. In contrast, interest rates rising too quickly could put very high pressure on homebuyers (who often borrow long-term at floating rates) and limit demand from potential customers. For developers, rising financing costs and declining demand can cause them to lose liquidity, leading to a prolonged market freeze.



Source: FPTS Research

Since 1991, Vietnam's lending interest rate has passed over 15% three times, primarily to combat inflation affected by world economic fluctuations:

1. 1996 – 1997: Interest rates reached 20% due to the Asian Financial Crisis. Specifically, real estate market problems caused sharp devaluation of property and currency in some Asian countries (Vietnam was impacted but only slightly).
2. 2008: Interest rates increased up to ~16% to combat inflation from both demand-pull (Vietnam's formally joining the WTO attracted large amounts of foreign currency) and cost-push (oil prices increased sharply).
3. 2011: Interest rates peaked at 17% as inflation rose sharply due to the Global Financial Crisis.

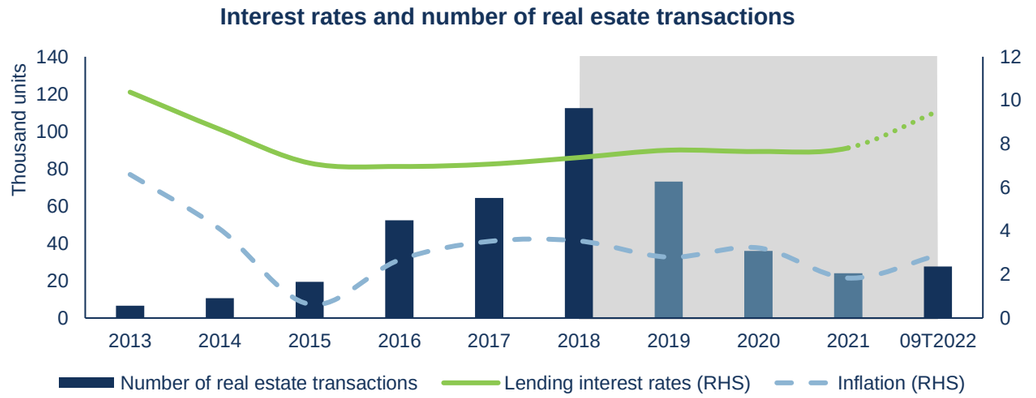
These sharp interest rate increases caused real estate market to plummet into a prolonged freeze, and real estate asset prices fell by 70 – 80% from the peak in the period 2011 – 2013.

In contrast, low and stable interest rates during 2015 – 22Q2 (the Cheap money era) were one of the main driving factors of the industry in 2013 – 2018. Low interest rate is favorable for both project development and sale as developers started partnering with banks to integrate credit packages. Correspondingly, the percentage of homebuyers using loans increased from about 10 – 15% before 2014 to about 50 – 60% today.

Contrary to tightening regulations, **in the decline phase of 2018 – 2021, low-cost and accessible credit has been very favorable for both real estate developers with clean land bank and customers**.

Interest rates: stable and low from 2015 to 2021

The average lending rate is only ~7.4% in this period, partly thanks to well-controlled inflation and support mechanisms during the Covid-19 epidemic in 2020 – 2021.



Source: FPTS Research, World Bank

Easy access to credit

In addition, loans were also very accessible in 2017 – 2021, reflected in the total real estate credit balance increasing by 19.3%/year in this period (one and a half times the growth of total credit at 12.5%/year). In particular, consumer debt balance increased by 25.7% per year, mainly due to developers' integration of credit packages (with attractive initial interest rates and preferential conditions) into the sales process.

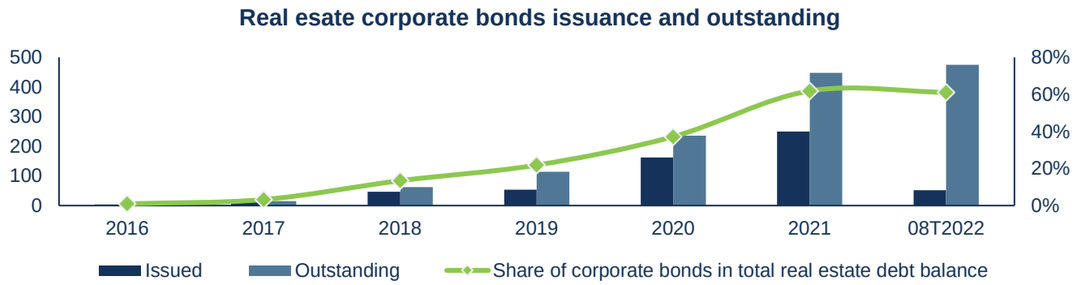
Real estate business debt balance also increased by ~10.4%/year thanks to corporate bonds issuance:

a. Outstanding loans at credit institutions decreased by 13.7% per year (estimated figure) due to the State Bank of Vietnam's tightening:

(1) Increased risk factor for real estate business loans from 150% to 200% (the highest among asset groups of credit institutions), according to *circular 06/2016/TT-NHNN*.

(2) Capped the percentage of short-term capital that can be used for medium and long-term loans of credit institutions to 60% in 2017 then gradually further to 34% in 2021, according to *circular 06/2016/TT-NHNN* and *22/2019/TT/NHNN*, respectively.

b. In contrast, corporate bond issuance quickly became the main credit channel with outstanding debts up to ~447 trillion in 2021 (increasing ~130%/year from 2017, accounting for 64% of total real estate business debt balance).

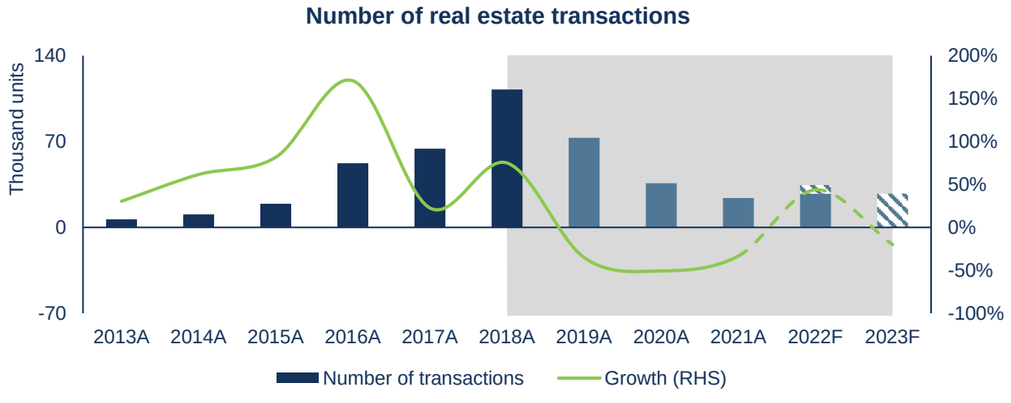


Source: FPTS Research

Corporate bond issuance was very convenient for real estate enterprises but also created significant risks in the system, mainly from (1) large issuance volume with high interest rates at 08 – 13%/year, (2) ~29% of which have no collateral or only secured by shares, and (3) inadequate bondholder protection mechanisms (information disclosure requirements, capital use management, etc.). This has prompted the Government to request the Ministry of Finance to inspect and review in December 2021 and then issue Decree 65/2022/ND-CP in 2022 to tighten supervision of corporate bond issuance.

II. 2022 IN REVIEW – OUTLOOK 2023: DECLINE PHASE TO CONTINUE

We expect the industry to continue declining in 2022 – 2023 as both legal and credit factors are negative, respectively due to (1) policy uncertainty while the Amended Land Law is being completed (expected in 2023) and (2) monetary policy tightening started in 22H2 as the Global Inflation Crisis looms. Specifically, we expect the number of transactions to reach ~34.5 thousand apartments in 2022 (+44% YoY from the very low level of 2021) and ~27.6 thousand units in 2023 (-20% YoY).



Source: FPTS Research

1. Legal policies – Project licensing will continue to be limited during the Land Law revision period

We believe that new commercial projects licensing will continue to be limited in 2023, mainly due to policy uncertainty pending the completion of the Amended Land Law (expected in 2023) and subsequent guiding circulars/decrees.

The real estate industry's challenges can also be demonstrated by communication between developers and the Government in 2022. In October 2022, there were about 100 commercial residential real estate projects in Ho Chi Minh City that were on hold because of licensing problems, mainly due to inadequacies in investor recognition conditions and urban planning compliance requirements (many of which have been asking for help from the city officials since 2019), according to *the Ho Chi Minh City Real Estate Association*. In November 2022, many large real estate developers in both North and South regions have met with the Ministry of Construction and the Government in order to alleviate current issues in the real estate industry (the vast majority of which stemmed from legal and administrative procedures) but could not arrive at any specific solutions.

Despite these short-term disruptions, we expect the Amended Land Law to help the real estate industry develop sustainably in the long term as landowner's rights are better protected and market transparency increases. Specifically, resolution 18-NQ/TW sets out the following objectives for the Amended Land Law:

a. Protecting landowner's interests: determining land prices according to market principles instead of land price brackets; requiring resettlement arrangements prior to land acquisition…

b. Promoting sustainable development of the real estate market: increasing transparency (completing the national information system and database on land; implementing compulsory registration of land use rights and all land transactions; allocating land mainly through auctions and bidding …) and limiting speculative activities (increasing land use tax for people with large areas of lands or multiple houses).

c. Tightening inspection and handling of violations, resolving complaints, anti-corruption…

While the goals above are expected to help the real estate industry develop sustainably in the long term, it should be noted that legal reforms (especially systemic changes such as law amendments) often take a long time to be effective in practice.

2. Credit – Monetary policy tightening will raise interest rates and limit credit

In 2022 – 2023, the real estate industry in general will face difficulties as Vietnam has to tighten monetary policy in order to combat the global inflation crisis through interest rate hikes and credit restrictions – contrary to the easing period of 2015 – 2022H1.

2. 1. Interest rates are expected to keep rising in 2023

The average lending rate has increased by 1.5 pp in 2022 and is expected to increase by about 01 – 02 pp in 2023 as many major countries are also tightening their monetary policies to fight the global inflation crisis. This is particularly negative for both real estate customers and businesses:

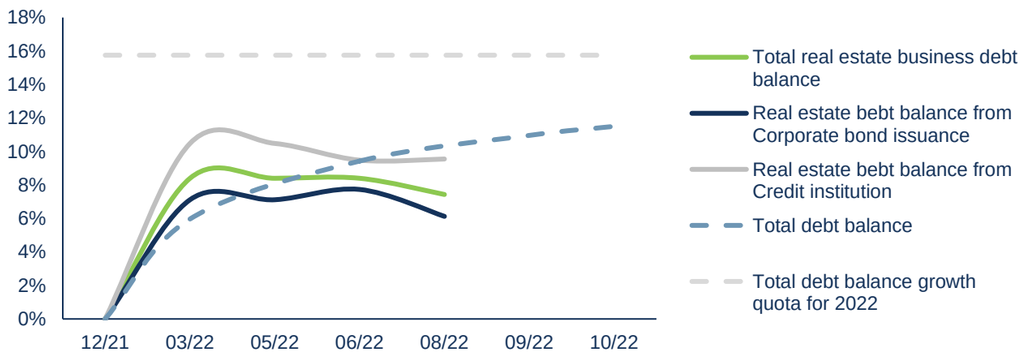
(1) Purchased customers: monthly home mortgage payment can increase by about 5.5% with each percentage point of interest rate increase, assuming an initial interest rate of 09% and a term of 15 years (the lower the initial interest rate or the longer the loan period, the greater the increase).

(2) Real estate businesses: Not only do financial costs increase, interest rate hikes also directly limit real estate demand as potential customers will delay their home-buying decision. In 22Q3, the two main reasons why customers have not bought real estate are (a) ~23% not being able to borrow capital, and (b) ~48% are worried about the negative real estate market outlook, according to *batdongsan.com's survey of ~500 brokers*.

2. 2. Credit tightening in both financial institutions and corporate bonds

Real estate businesses will face major liquidity challenges as (besides declining demand) credit from both main channels will be more tightly controlled in 2022 – 2023[1]. Credit access has already started to tighten since Q2/2022, as shown by the total real estate business debt balance tapering after Q1/2022 (real estate credit increased ~8.4% in Q1/2022 compared to the whole system at ~6.0% but has declined since then).

Real estate business credit growth compared to end of 2021



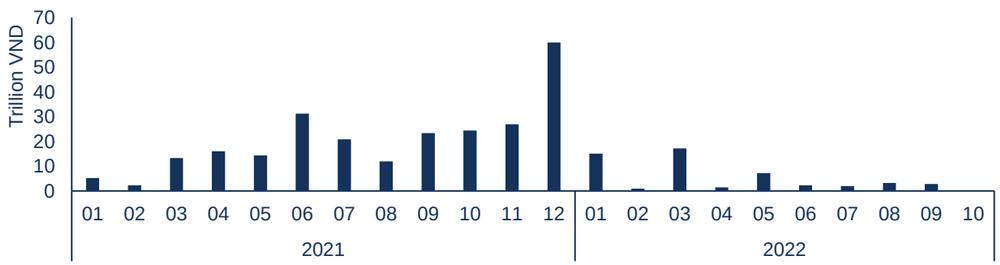
Source: SBV, FPTS Research

Credit tightening moves in 2022 – 2023 include:

(1) From Credit institutions: Continue to tighten as (a) the ratio of short-term capital that can be used for medium and long-term loans further decreased from 34% to 30% from 01/10/2022, according to *circular 22/2019/TT/NHNN*, and (b) the State Bank imposed credit growth quota for the whole economy and at each bank.

(2) From corporate bonds: The Government has tightened corporate bond issuance supervision in order to protect bondholders' interests, according to Decree 65/2022/ND-CP. As soon as news about this decree being drafted broke, corporate bond issuance value has fallen sharply (real estate bonds alone only reached ~16 trillion VND in 05 – 09/2022, 54% lower than Q1/2022 alone, correspondingly 09M2022 issuance value decreased by 63% YoY). Contrary to the issuance value, pre-maturity repurchased value increased by 67% YoY for the entire economy (reaching 142 trillion VND) in 09M2022 (partly due to the bond repurchase requirement in Decree 65), further stressing developers' financial situation.

Real estate corporate bonds issuance value



Source: FPTS Research

Although the policy uncertainty period has passed, higher requirements for issuers in decree 65 will still limit the value of bonds issued, especially from developers with poor financial capacity and legal records.

Specifically, decree 65/2022/ND-CP (issued on 16/09/2022) mainly aims to ensure the interests of bondholders as follows:

i. Requiring issuers to provide more financial information and report on capital use every 06 months after issuance, and in some cases require a credit rating.

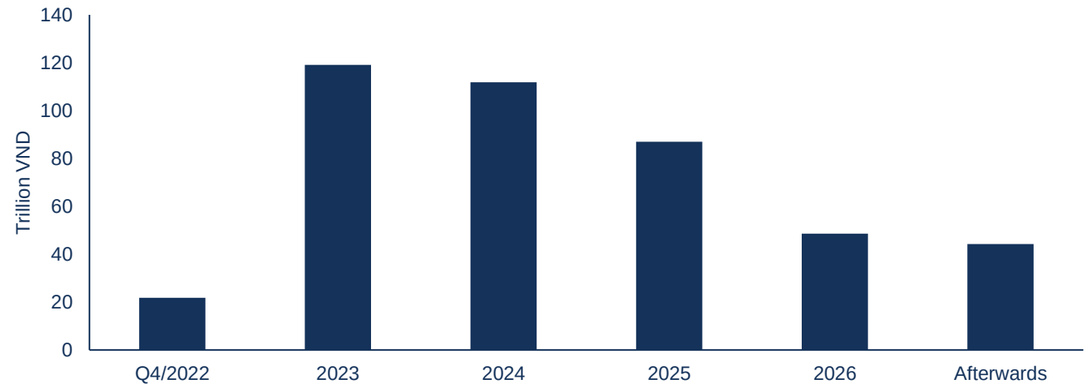
ii. Mandatory buyback at the request of the bondholder if the issuer violates the law or the issuance plan.

iii. Investors are entitled to vote if the issuer wants to change the terms (requiring at least 65% for approval).

iv. Tightening capital terms of use: can be used to restructure debt, but only for the issuing business itself – not for subsidiaries.

In addition, real estate businesses will be under high debt repayment pressure, largely from the amount of bonds previously issued. Besides repurchased bonds, the remaining real estate bond is estimated to mature ~141 trillion in Q4/2022 – 2023 (~31% of the total outstanding real estate corporate bonds) and ~200 trillion VND in 2024 – 2025.

Real estate corporatve bond maturity



Source: HNX, FPTS Research

Credit tightening in 2022 has a more negative impact on the real estate industry than 03 years of legal policies tightening (2019 to now) because it limits both demand for new products and developers' ability to develop existing projects. This has forced many developers to find alternative solutions such as (1) asking bondholders to swap bonds for housing units of the project with discounts up to 40 – 50%, (2) increasing early payment discounts (up to 05 – 15% for land and 15 – 35% for apartments), (3) cutting both the number of employees (up to 50%) and salaries, even (4) restructuring by selling projects or shares.

CONSTRUCTION INDUSTRY DRIVEN BY INFRASTRUCTURE INVESTMENT

I. CONSTRUCTION INDUSTRY: CYCLICAL INDUSTRY, STRONGLY INFLUENCED BY THE ECONOMIC ENVIRONMENT

In Vietnam, the construction industry's growth during the last 30 years is highly cyclical. However, the industry's growth is expected to be lower and less volatile, due to (1) the difference between growth peaks and troughs is getting smaller, and (2) the cycles are getting longer (the current cycle has lasted for ~07 years compared to about the average of ~03 – 05 years before).

Construction real growth 1990 - 2021

Source: GSO, BMI, FPTS Research

The construction industry's demand is highly sensitive to the economic cycle, and construction companies have little control over both input prices and project pipelines. Specifically, the factors affecting the construction industry and their representative indicators are as follows:

(1) Investment and new construction demand: The total construction demand can be represented by total investment at current prices. More specifically, the demand for infrastructure and building construction is heavily influenced by public investment policies and the real estate industry.

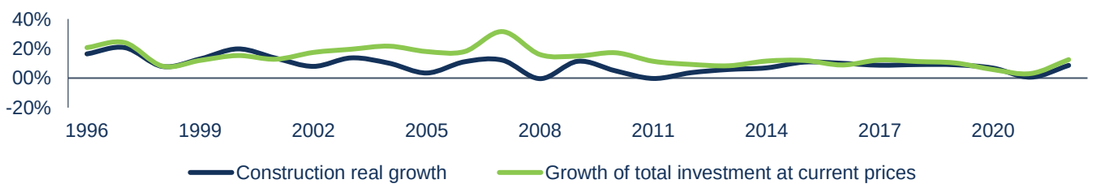
(2) Credit: Contractors routinely need to borrow short-term to complete their projects.

(3) Material price fluctuation: Contractors bear most of the risk of construction material cost, which accounts for ~70% of total costs.

1. Investment and new construction demand is represented through total investment at current prices

Capital investment is the main component of total investment at current prices, representing new construction demands of all economic sectors in Vietnam (including the State, Non-state, and Foreign-invested sector). Total investment has a direct impact on the construction industry, as shown by its high correlation with the industry's real growth in the past 25 years.

Construction real growth and growth of total investment at current prices since 1996



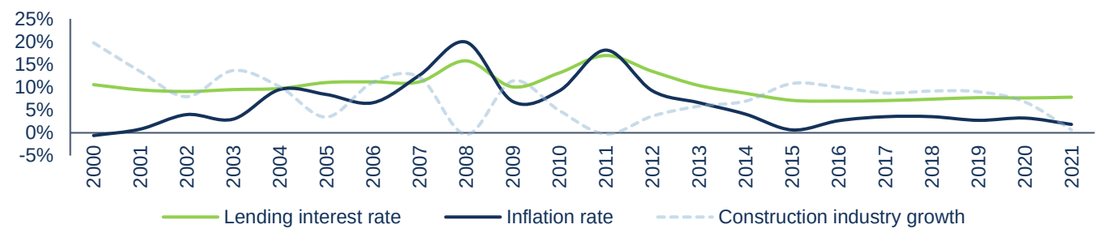
Source: GSO, FPTS Research

In 2007, total investment and construction industry growth both peaked (respectively at 31.5% and 12.2%) thanks to $20.3 billion FDI invested in Vietnam upon joining the WTO (+70% YoY), opening service industries to foreign investors and establishing a more complete legal environment (as per Vietnam's full commitment to adhere to WTO agreements). On the other hand, in the 2019 – 2021 period, the average investment capital growth was only 6.4%, and industry growth achieved 0.6% in 2021, mainly due to the global economic downturn caused by the COVID-19 pandemic.

2. Credit has a significant impact on construction activities

Credit has considerable influence on contractors, who often utilize short-term debt to complete projects. This factor is represented by the interest rate (borrowing cost). In addition, credit also significantly affects construction demand, especially for highly leveraged commercial projects.

Vietnam lending interest rate

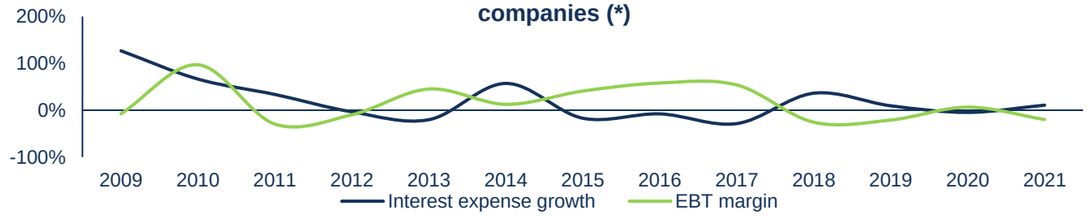


Source: World Bank, GSO, FPTS Research

Low interest rates stimulate investment demand and promote the construction industry's growth. In periods of low lending interest rates such as 2015 – 2018, the industry grew steadily at ~9.7%/year. In contrast, in 2008 and 2011 when lending interest rates peaked at 15.78% and 16.95% to curb inflation, the industry growth decreased to 0.38% and 0.30%, respectively.

Moreover, interest rates also directly affect the industry's profitability. On average, interest expenses account for 80% of the pretax profits of construction companies, mainly due to contractors' low gross profit margins (10 – 16%) and prevalent short-term borrowing in the industry.

EBT margin and interest expense growth of some listed construction companies (*)



Source: Financial Statements, FPTS Research

(*) Companies using data include: CTD, HBC, HTN, PHC, VCG, VC9, VC2, C4G, PC1, DPG, SJG, C47

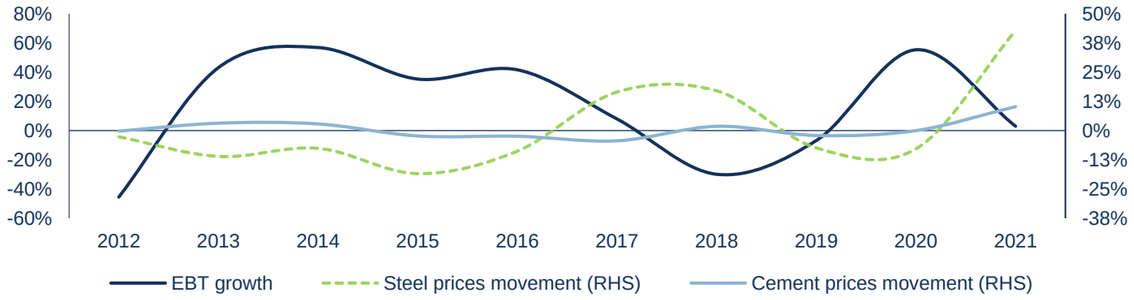
[1] In addition, rising interest rates also limit developer's ability to raise investment capital as cost of equity also increased accordingly. For publicly listed companies, their share prices have fallen sharply in 2022 to reflect both rising cost of capital and negative outlook.

3. Construction material price fluctuation

Material costs represent the biggest risk for contractors because (1) it accounts for ~70% of construction costs, (2) contractors have low gross profit margin (at ~10 – 16%), and (3) contractors usually bear this risk entirely during the contract period (which can be up to 02 – 03 years).

During the 2016 – 2018 period, as protectionist policies against Chinese steel imports took effect, domestic steel prices increased by about 20%, causing construction companies' Earning before tax (EBT) growth in 2018 to decrease by nearly 30 pp. In the 2020 – 2021 period, the recovery of construction activities post-Covid-19 was dampened by constantly changing construction materials. In 2021, the industry's EBT growth is only 3%, much lower than the 13.63% average of the previous 5 years (2016 – 2020).

Steel, cement prices and PBT growth of construction companies



Source: GSO, VSA, Vietnam Cement Association

II. CONSTRUCTION IN 2022 – OUTLOOK 2023: DRIVEN BY INFRASTRUCTURE INVESTMENT

In 2023, we expect the predicament of residential and non-residential construction to continue, respectively due to the negative outlook of the real estate industry and industrial production. In contrast, infrastructure construction's outlook is more positive, driven by a public investment plan to increase by 25% compared to 2022. Construction is expected to grow 7.8%, of which, residential, non-residential and infrastructure are expected to grow 6.0%, 7.5% and 10.0%, respectively.

Forecasted real growth of Vietnam's construction industry

Source: BMI, FPTS Research

1. Investment and new construction demand

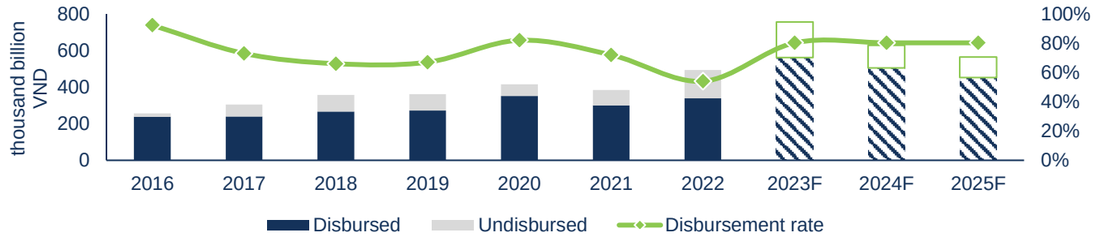
During 2022 – 2023, investment demand is expected to differ among construction segments. The expected increase of 25% in public investment in 2023 compared to 2022 (about VND140,000 billion) will promote infrastructure construction growth. On the other hand, sluggish real estate and industrial activities will limit residential and non-residential construction demand.

1. 1. Infrastructure

Public investment disbursement is an important driver for infrastructure construction growth in 2023, partly from (1) investment capital is planned to increase by 25% YoY from the Medium-term public investment plans and Socio-Economic Recovery and Development Program, and (2) the Government implemented policies to improve disbursement progress after reaching only 52.43% in 2022 due to excessive input costs and site clearance problems.

The National Assembly has approved a VND 700 trillion investment plan in 2023, an increase of about 25% compared to the 2022 plan and about 60% compared to the 2021 plan (the first year of the Medium-term public investment plan of 2021 – 2025). In 2023, the Socio-Economic Recovery and Development Program is also required to disburse all its capital.

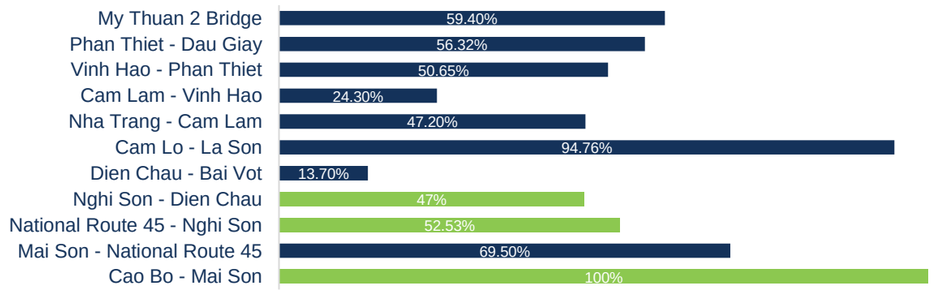
Public investment capital planned and disbursed



Source: GSO, FPTS Estimates

In 11M2022, public investment disbursed increased by 14.8% YoY. However, the disbursement ratio of 2022 still decreased by ~5.5 pp as key projects were delayed. Notably, the North-South expressway project Phase 1 only completed 77.6% of the assigned plan, due to (1) Construction materials shortage; (2) Lack of unit price adjustment mechanism as construction materials prices spiked, leading to delay or even completely stop in construction; and (3) Land clearance problems.

Progress of 11 North-South expressway projects phase 1 as of 10M/2022



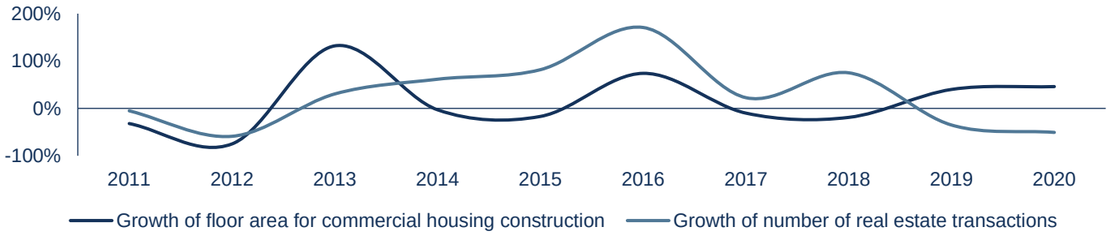
Source: Ministry of Transport, FPTS Research

The Government's efforts have produced initial results in 2022: (1) All North-South expressway component projects have committed to completion in 2022 – 2024; (2) 12/25 construction packages of North-South expressway Phase 2 have started, and the rest are expected to start before January 15, 2023, with VND 119,666 billion already allocated (VND 47,169 billion from the Medium-term public investment plan handed over to the Ministry of Transport and VND 72,497 billion from the Socio-economic recovery and development program to be delivered and disbursed in 2023).

1. 2. Residential

Residential construction demand is less affected by short-term changes in the economic environment, as about 93% of the residential construction market in Vietnam is self-built. However, large residential construction companies, whose main market is commercial housing projects, are likely to face difficulties in 2023 as the real estate industry outlook is negative (*details in the Real Estate industry*).

Correlation of real estate industry cycles and commercial housing construction activities



Source: GSO, FPTS Research

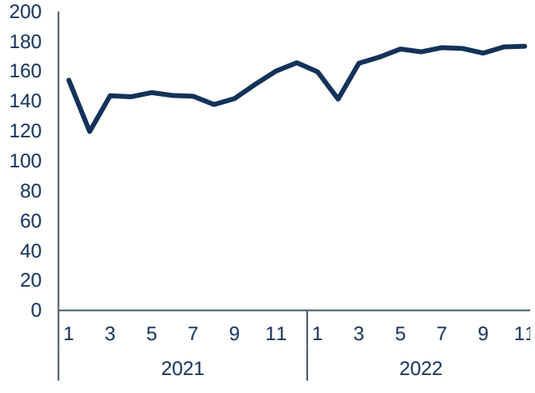
Specifically, the ability of real estate businesses to develop projects will be very limited in 2023 when monetary policy tightens, limiting both available capital and buyers' demand, as reflected by the number of real estate transactions expected to decrease by 20% in 2023.

1. 3. Non-residential

Non-residential construction demand is less positive in 2023 due to the poor recovery of Vietnam's industrial production and limited FDI due to tightening global monetary policy. Manufacturing PMI and IIP both decreased: PMI is in a downward momentum from May 2022 and reached below the neutral threshold of 50 points in August and November 2022, at 40.2 and 47.4 points, respectively, due to a steep decrease in the number of manufacturing orders, sales prices, and business confidence.

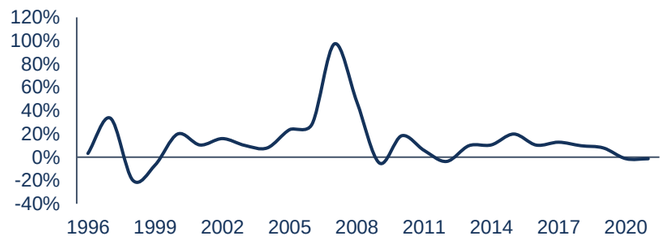
Vietnam Manufacturing PMI

Vietnam IIP



Although FDI inflows in 11M/2022 increased by 15.1% YoY, registered capital decreased by 18% YoY, as investors became more risk-averse in the face of rising global uncertainty. Fitch Ratings and the IMF have lowered their global economic growth forecasts to the range of 1.4% to 2%, due to geopolitical tensions, inflation, supply disruptions, exchange rate risks, etc.

FDI growth in Vietnam



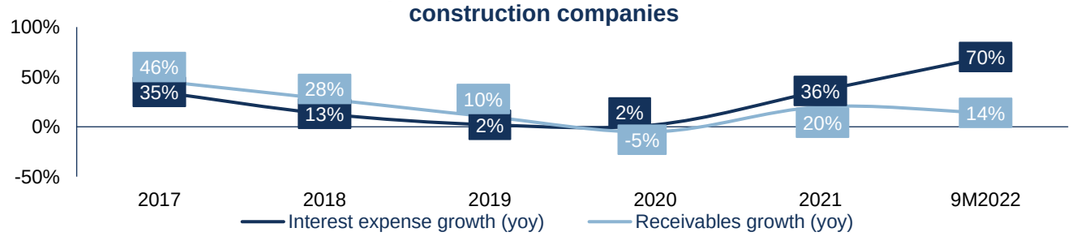
Source: GSO

2. Credit

Lending rates in 2022 have increased by 1.5 pp and are likely to increase by 01 – 02 pp in 2023, indirectly limiting construction demand (especially in commercial projects) and further stressing contractors' financial positions (*details in Macro analysis*).

In 2023, residential and non-residential contractors are expected to borrow more because real estate developers will be less liquid, facing pressure from a large number of real estate bonds maturing in Q3/2023.

Growth of interest expenses and receivables of some listed residential construction companies



Source: Financial Statements

Therefore, we believe that businesses that have more effective receivables collection policies and use less debt will achieve better business results in the current interest rate environment.

3. Material price fluctuation

In 2022, steel prices increased by ~25% in the first half of the year (mainly due to input costs pressure) but then cooled down to the same level in 2021 as demand was limited by the unfavorable conditions of domestic real estate and China market.

Cement prices have increased by ~12% in 2022 (to VND 1.6 million/ton) mainly due to pressure from coal costs (accounting for about 40% of cement production costs), especially Australian coal, which increased by 127% YoY. Thus, in 2022, despite steel prices dropping sharply, many other building materials such as cement are still anchored at high levels, exerting a lot of pressure on the construction industry.

It is expected that in 2023, these difficulties will be relieved as steel prices (accounting for ~40% of construction costs) are forecasted to decrease. Cement prices are expected to adjust slightly compared to 2022 but will still be anchored at high levels as international and domestic coal prices have not been back to pre-COVID-19 levels (*details in the Steel & Cement industry*).

STEEL INDUSTRY
LOWER MARGIN PRESSURE AS INPUT COSTS DROP

I. VIETNAM STEEL INDUSTRY IS HIGHLY CYCLICAL AND STRONGLY CORRELATED WITH VIETNAM CONSTRUCTION VALUE GROWTH RATE

Domestic demand for steel reflects the cycle of Vietnam steel industry

Vietnam steel industry's value chain includes four main parts from upstream to downstream; namely iron casting, billet casting, steel rolling and post-rolling steel processing. The added values in these stages are as follows: iron casting (433%), billet casting (18%), steel rolling (17% - 30%) and post-rolling processing (18% - 20%).

Billets in Vietnam are cast using two different technologies which are Basic Oxygen Furnace (BOF) and Electric Arc Furnace (EAF). The main inputs for BOF are iron ore and coking coal while EAF needs steel scraps. Due to limited domestic supply of these materials, Vietnamese steel manufacturers rely mainly on imports.

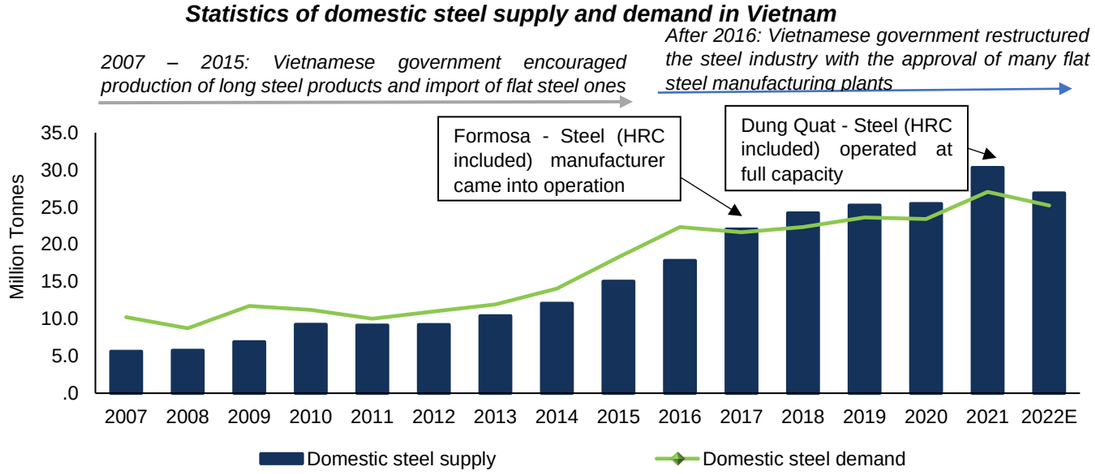
Vietnam's steel industry has been witnessing a paradox in recent years. While steel products for construction such as structural steel, rebar steel, alloy steel and carbon steel (made from long steel) are domestically oversupplied, Hot Rolled Coil (HRC) is constantly in excessive demand and Vietnamese manufacturers of steel pipes and galvanized steel coils still depend a lot on imports. Manufacturing hot rolled coils from flat steel is a weakness of Vietnam's steel industry as domestic HRC sources from only Dung Quat and Formosa can supply 67 percent of the total domestic HRC demand.

Given the fact that Vietnam's steel manufacturers still rely a lot on imports of input and HRC and Vietnam's steel exports have been growing positively in recent years, FPTS concludes that domestic demand for steel is the representative factor which strongly reflects the cycle of Vietnam steel industry.

Domestic demand for Steel = Domestic steel consumption + Steel Import volume – Steel export volume

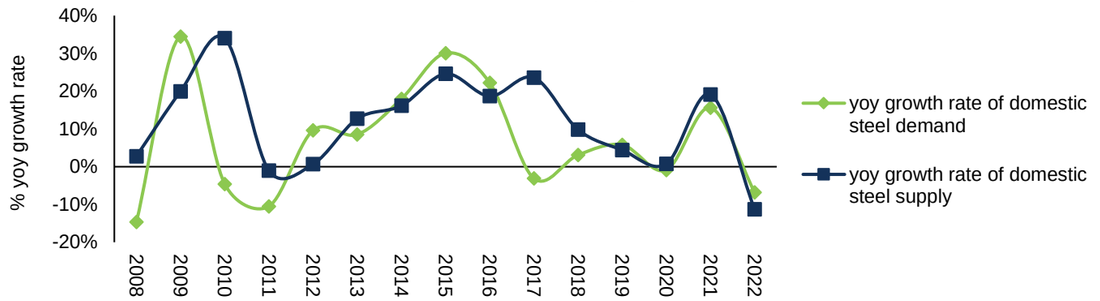
Because HRC and Cold-rolled coils (CRC) can be considered both as finished and semi-finished steel products, **FPTS calculated domestic demand volume for steel based on two main finished products which are long steel (construction steels of all kinds) and flat steel.**

Statistics of domestic steel supply and demand in Vietnam



Source: VSA, FPTS Steel Industry Report (2017).

YoY Growth rate of Vietnam's steel supply and demand



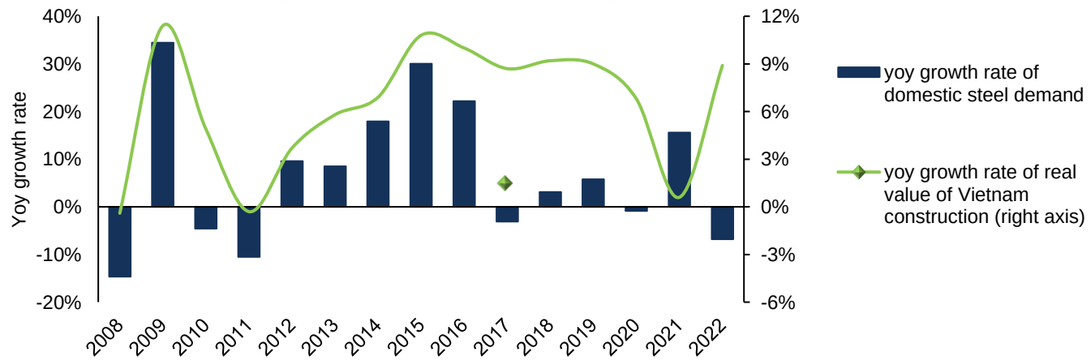
Source: VSA, FPTS Steel Industry Report (2017).

Vietnamese steel industry is currently in a declining phase of the latest cycle since 2017

Since 60% of the total Vietnam's steel output is long steel and the foundation for supporting industries in Vietnam is still weak to meet developments demands, the majority of the industry's products are for domestic construction. As a result, the growth of Vietnam's construction is the most influential factor which affects the domestic steel industry's consumption volume.

According to the data gathered from Vietnam Steel Association (VSA) and General Statistics Office (GSO), FPTS noticed that there exists a strong correlation between the growth rate of Vietnam's steel demand and the growth rate of the real value of Vietnam's construction.

The correlation between the growth rate of domestic steel demand and the real value of Vietnam's construction



Source: VSA & GSO.

Between 2015 and 2022, Vietnam steel industry has gone through three cycles. In which, the first one was from 2005 to 2011. The second was between 2011 and 2017. FPTS believed that the industry has been in its third cycle staring at 2017. Based on the annual growth rate of domestic steel demand, the industry has passed its peak and started to step into the declining phase in 2022.

4. Demand for Vietnam's steel industry mainly comes from construction (Construction Industry 2023 Outlook as reference)

Due to the strong correlation between Vietnam's steel and construction industry, the cycle of former has been heavily affected by the latter's cycle. The high growth rate of construction value helps boost demand for steel, especially construction steel of all kinds. Factors affecting construction growth include demand for construction and credits.

With regard to demand for construction, FPTS took the growth rate of total realized investment capital as the representative factor for construction needs of all economic sectors. In the past, when Vietnam joined the WTO in 2007, Vietnamese government's open door policy and international economic integrity helped increase foreign investment capital inflows whose growth was recorded at 31.5 percent. For residential and non-residential construction, the growth rate was 12.2 percent.

Besides new construction needs, credits are also an important factor to construction industry. Credits are represented by two factors which are loan interest rates and loan accessibility. If loan interest rates are high and the access to loans is limited, demands for construction in general and for steel in particular will drop significantly. In the past, in 2008 and 2011, loan interest rates remained too high, causing a sharp drop in construction and steel demands. Both recorded negative growth rates of 14.7 and 10.5 percent respectively.

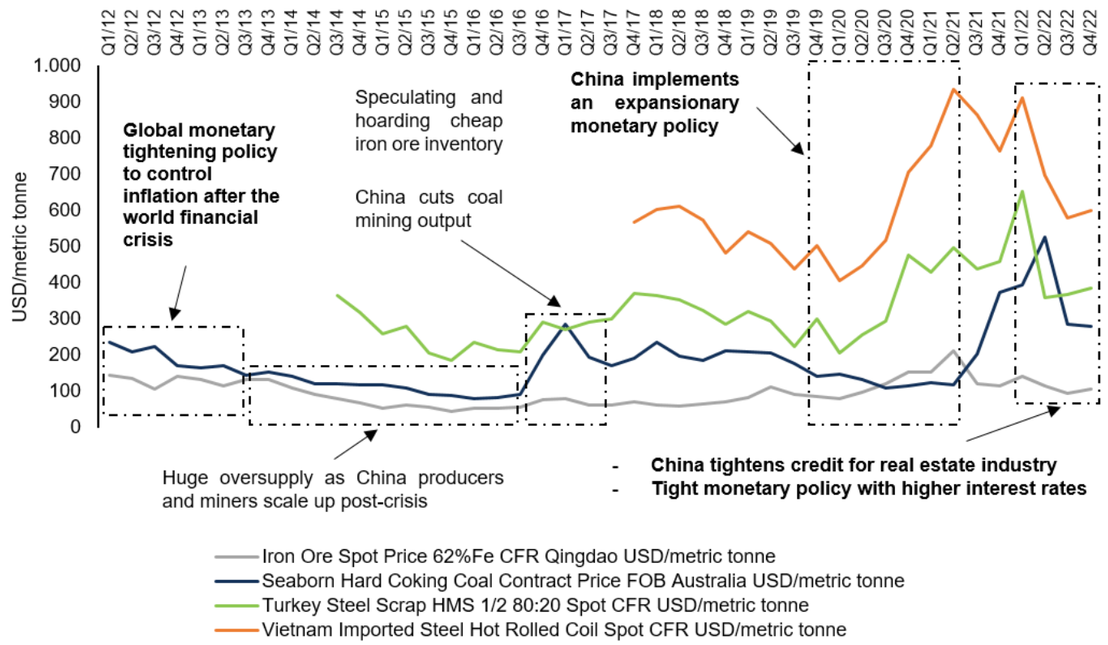
5. Vietnamese steel manufacturers' production costs mainly impacted by price trends of imported input materials namely iron ore, coking coal, scrap steel and HRC

Currently, Vietnam's steel industry has two technologies for iron and billet casting: BOF and EAF. In which, for BOF, iron ore and coking coal accounted for the highest proportion of total input cost with 29% and 25% respectively. For EAF, scrap steel and electricity are the two inputs with the highest input cost proportions with 55% and 26% respectively. Except for electricity, billet manufacturers depend heavily on imported sources of iron ore (due to the small scale of domestic mining), coking coal (because the quality of domestic coal is not high enough to serve the domestic industry), and scrap steel (because the domestic steel industry is still underdeveloped, leading to a small amount of annual domestic scrap).

In addition, because HRC can only be manufactured by using BOF production technology while the number of domestic BOF furnaces accounts for only about 12.5% of the total number of billet furnaces in the industry (including other types of furnaces which are BOF, EAF and IF), domestic manufacturers of galvanized steel and steel pipes such as HSG, NKG or DTL still have to import HRC. Domestic supply from Dung Quat (Hoa Phat) and Formosa Ha Tinh furnaces can only meet about 8.5 million tons as compared to the total domestic demand of over 12 million tons.

Therefore, the world price trends of iron ore, scrap steel and coking coal have a great impact on the production costs of billet manufacturers while the impact factor for enterprises processing galvanized sheet and steel pipes is the price of HRC.

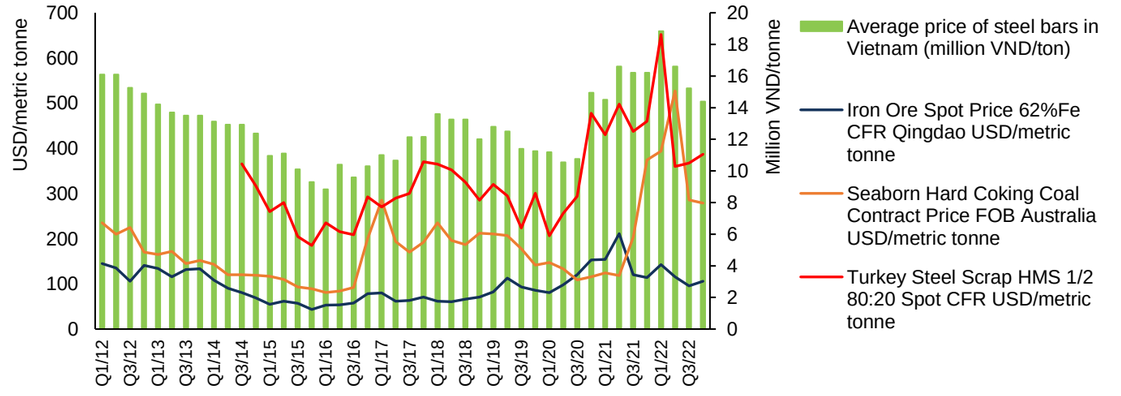
Price trends of input materials for steel industry & imported HRC in Vietnam



Source: Bloomberg, FPTS Research.

China is the main factor affecting the price movements of input materials of Vietnamese steel industry based on data from 2012 to present. The reason comes from the fact that China's long and flat steel manufacturing industry has the largest scale in the world, accounting for over 35% of global output. In addition, China's iron ore reserves are the largest in the world and 35% of global coal plants are located in the country.

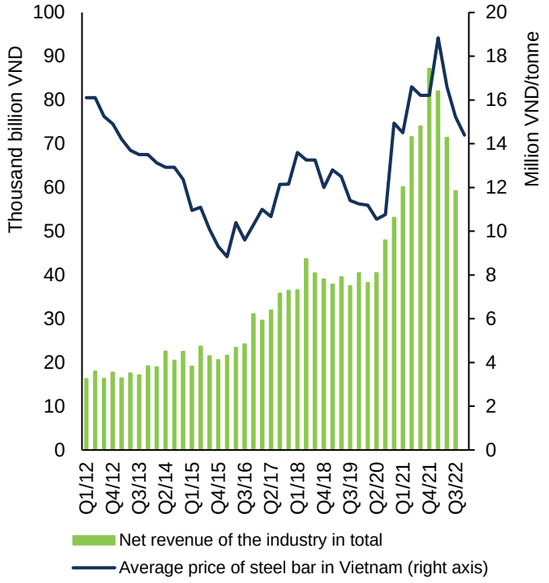
Correlation of domestic steel bar prices with the industry's input materials' prices



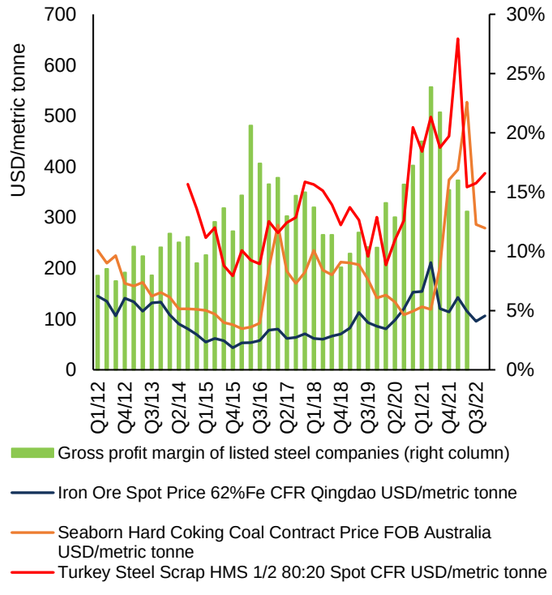
Source: Bloomberg, FPTS Research.

Based on data of domestic steel bar prices and input material prices of all kinds, FPTS found that there exists a very high correlation. Therefore, forecasting prices of input materials such as iron ore, coking coal and scrap steel serves to forecast steel prices, revenue fluctuations and gross profit margins of enterprises in the industry.

Correlation of average finished steel prices and total revenue of the industry*



Correlation of input material prices and gross margin of Vietnamese steel enterprises*



Note: (*) The group of listed Vietnamese steel enterprises includes: DTL, HMC, HPG, HSG, NKG, POM, SMC, VCA, VIS, VGS, KKC, KMT & SSM
Source: Bloomberg, FPTS Research.

II. VIETNAM STEEL INDUSTRY 2022 IN REVIEW & OUTLOOK FOR 2023

1. 2022 In Review - A gloomy year for steel industry because of sluggish construction activities and sharp rise of input costs

a) Steel demand declines in the context of gloomy and sluggish construction activities

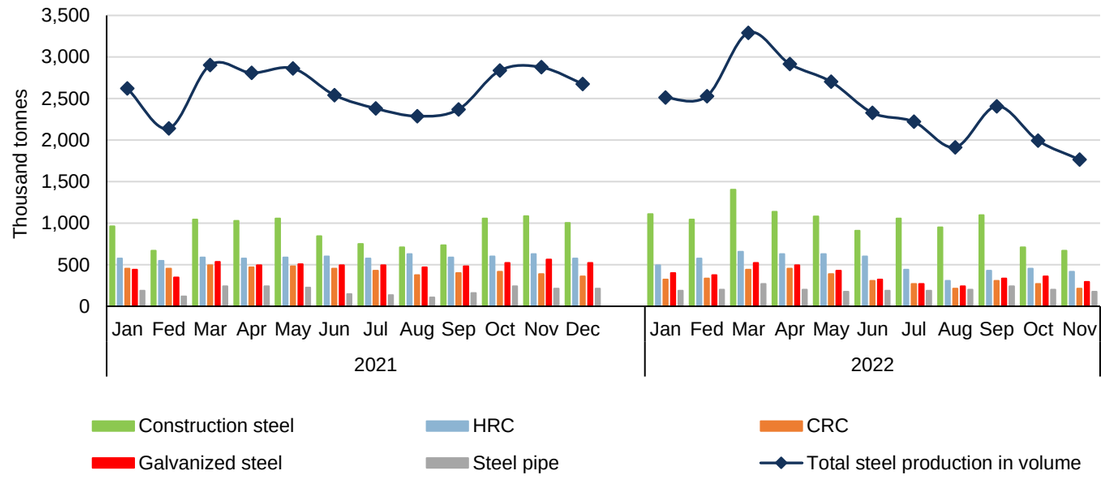
Vietnam's construction industry experienced a negative 2022 in the context of high construction material costs, sharp increase in loan interest rates and a gloomy real estate market as all credit sources were tightened. As analyzed above, domestic construction growth is closely related to apparent steel demand growth. In the context of a decline in domestic construction demand, steel production and sales in the first 11 months of 2022 recorded a decrease of 11.3% and 6.8%, respectively, over the same period.

The difficult consumption situation, especially in the third quarter of 2022, has caused many steel enterprises to cut output to survive. Most notably, the leading enterprise Hoa Phat has stopped 2 blast furnaces at Dung Quat Iron and Steel Complex and 2 blast furnaces at Hoa Phat Hai Duong Iron and Steel Production Complex. Pomina Steel JSC also stopped using BOF furnaces to focus on EAF ones. Although iron ore prices have been falling since the end of 2021, a sharp increase in coking coal prices in Q2/2022 and falling domestic steel prices have forced businesses to close furnaces and cut output.

Steel production output in 11 months of 2022 reached 27.1 million tons (-11,3% yoy)

Although construction steel and steel pipe production recorded positive growth with 11.2 million tons (+12.4% yoy) and 2.3 million tons (+10.0% yoy) respectively, production output of flat steel - finished product group including HRC, CRC and galvanized sheets recorded a decrease respectively of 13.3%; 26.9% and 24.5% yoy.

Vietnam domestic steel production volume by type



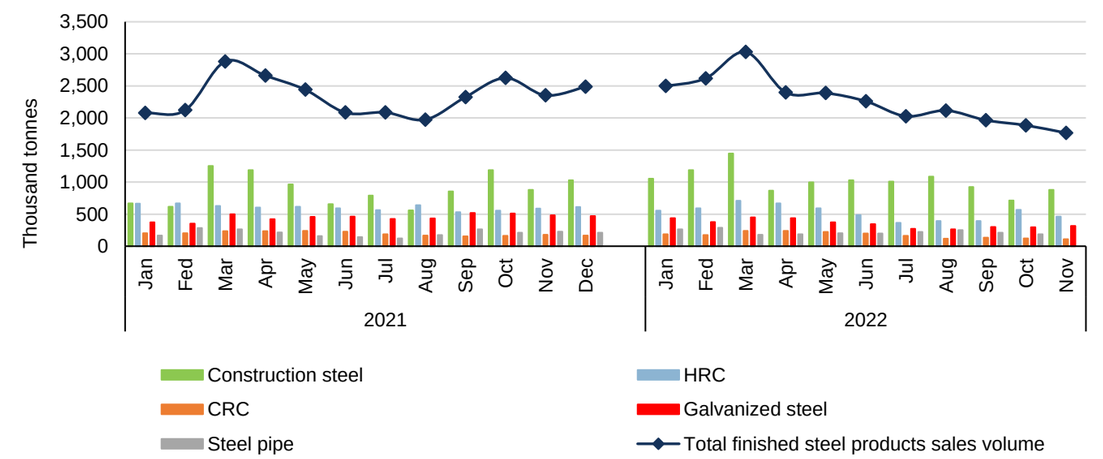
Source: VSA.

Sales volume of finished steel products reached 25.1 million tons, down 6.8% over the same period

With regard to sales volume, VSA calculated by adding the total domestic sales volume and export volume (mainly galvanized steel products and steel pipes). By the end of the first 11 months of 2022, domestic sales volume was estimated to account for about 77.0%.

Specifically, in the first 11 months of 2022, except for construction steel of which sales volume increased by 11.2 million tons (+16.4% yoy); HRC, CRC, galvanized steel and steel pipes all went down in terms of sales volume as compared to the same period of 2021. The decrease was respectively -13.0%, -13.0%; -21.5% and -1.9% yoy.

Sales volume of finished steel products by type

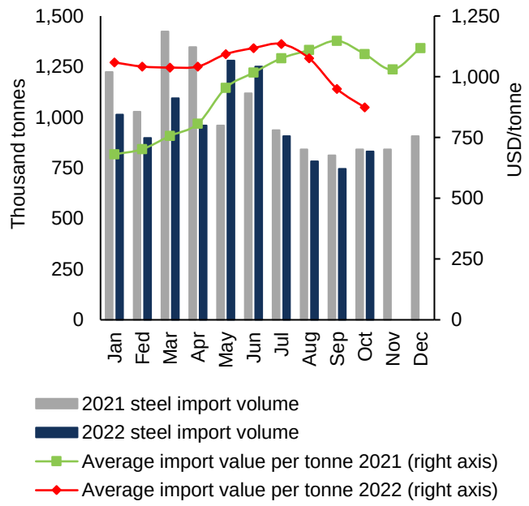


Source: VSA.

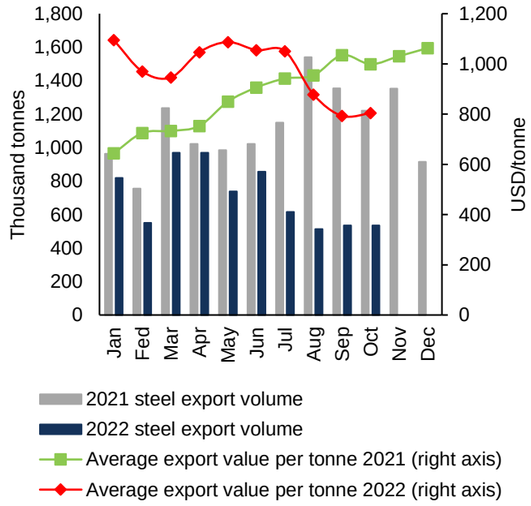
Steel import & export volume in the first 10 months of 2022 simultaneously decreased by 8.4% & 36.9% over the same period

According to World Steel, the global inflation situation and tightened monetary policy in 2022 negatively affected the growth prospect of Vietnam steel industry. In particular, rising energy prices and loan interest rates have led to a slowdown in the activity of steel-using industries. This can be seen clearly from Vietnam's steel industry since steel exports and imports declined sharply compared to the same period last year.

Vietnam's monthly steel imports



Vietnam's monthly steel exports



Source: VSA.

For imports, in the first 10 months of 2022, the volume and value reached 9.8 million tons and 10.3 billion USD respectively; equivalent to a change of -8.4% in volume and +6.8 % in value over the same period. The EAF furnaces account for a large proportion and the domestic flat steel supply has not yet met the demand, leading to the fact that enterprises still have to import HRC and scrap steel. In 2022, China continued to be Vietnam's largest supplier, accounting for 44.1% of total import volume. The country was followed by Japan (15.7%), Korea (11.1%), Taiwan (9.7%), and India (8.6%).

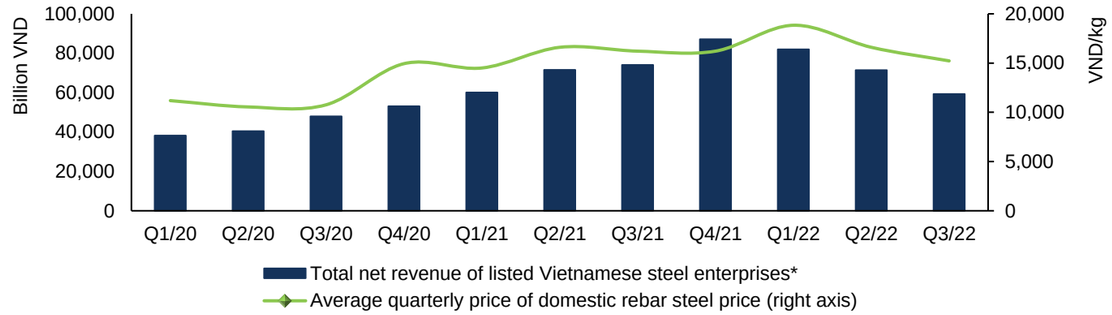
For export, the volume in the first 10 months of 2022 was only 7.0 million tons of steel and fell sharply by 36.9% over the same period. Export value in the same period reached 6.9 billion USD (-28.9% yoy). Global inflation and tightened monetary policy have been negatively affecting the demand for Vietnam's steel, especially in major markets such as ASEAN, EU, the United States and China.

The decline in steel demand led to a drop in average finished steel prices in 2022, negatively hindering revenue growth of steel enterprises

The negative growth in consumption volume and the downward trend of domestic steel selling prices since the end of the first quarter of 2022 caused the quarterly net revenue of listed steel companies to continuously decrease over the same period and compared to the previous quarter. The total net revenue of this group in the second quarter and the third quarter of 2022 was at VND 71.4 and VND 59.2 trillion respectively; decreased by 0.2% and 19.9% respectively over the same period in 2021.

In order to lower inventory volume, domestic steel producers adjusted down their selling prices since the beginning of the second quarter of 2022 until now, which created a negative impact on the overall revenue growth of the industry

Total net revenue of listed Vietnamese steel enterprises



Note: (*) The group of listed Vietnamese steel enterprises includes: DTL, HMC, HPG, HSG, NKG, POM, SMC, VCA, VIS, VGS, KKC, KMT & SSM

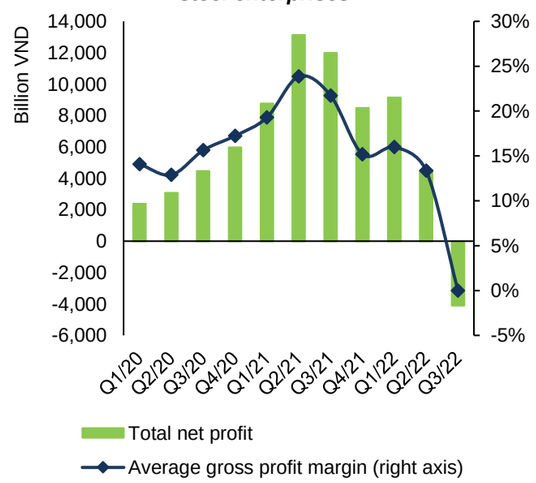
Source: Bloomberg, FPTS Research.

b) Increasing prices of iron ore, coking coal and scrap steel erode away profits of steel enterprises

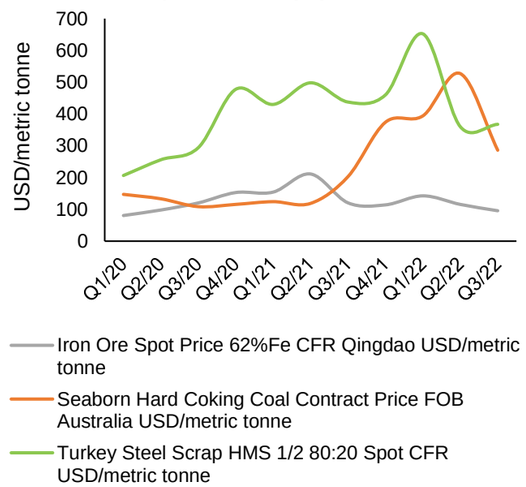
Along with the decline in net revenue, the price of key input materials in steel production such as iron ore, coking coal and scrap steel increased sharply in early 2022 and only cooled down since the second quarter of 2022, continuing to erode profits of steel manufacturing enterprises such as Hoa Phat, Thai Nguyen Iron and Steel, Viet Y, Pomina and Dana - Italy. For galvanized steel enterprises such as Hoa Sen or Nam Kim, the high price of raw materials also caused the price of imported HRC steel to increase sharply and pushed up processing costs after rolling.

The average quarterly gross profit margin of Vietnamese steel enterprises had continuously decreased since the beginning of 2022 in the context of falling selling prices, but the price of coking coal only started to cool down in the third quarter of 2022 after increasing sharply in the first two quarters of the year.

Total net profit of listed Vietnamese steel enterprises



Price trends of input materials for steel production by quarter



Source: Bloomberg, VSA, FPTS Research.

2. Vietnam steel industry outlook for 2023

a) Steel production & consumption in 2023 is expected to decrease by 7.3% & 5.1% yoy due to gloomy expectations of the construction industry

FPTS believe that 2023 will continue to be a difficult year for Vietnam's steel industry. As presented above, the growth of the steel industry comes from the expected growth of the construction industry. This expectation mainly comes from the development of the real estate market and investments in infrastructure construction. However, these factors are forecasted to be pessimistic in 2023

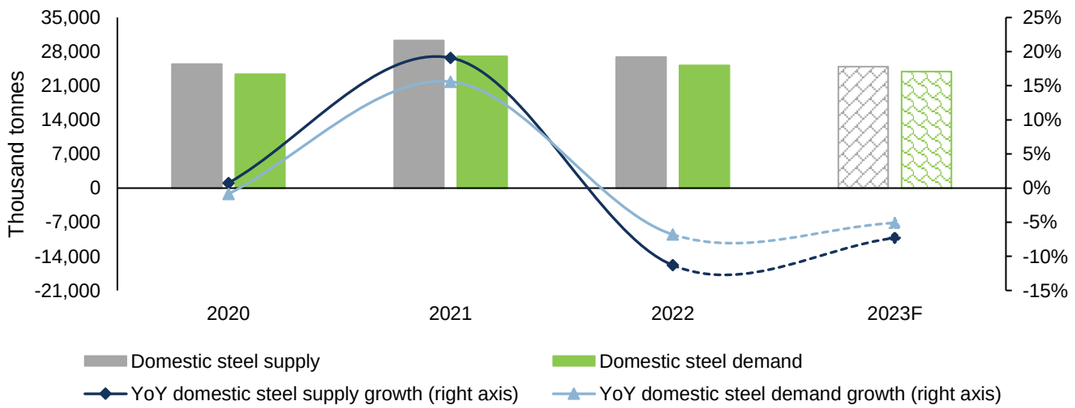
In particular, the real estate market is expected to remain sluggish in the context of both negative legal and credit, in turn due to (1) uncertainty in policy as waiting for the revised Land Law to be promulgated and (2) tightened monetary policy starting from mid-2022 and expected to last until at least Q2/2023 amid escalating global inflation. The number of real estate housing transactions is expected at 27.6 thousand units in 2023, equivalent to a decrease of 20% over the same period.

Investment in infrastructure construction is expected to partially compensate for the decline of the real estate market in 2023. However, delay in disbursement of public investment has always been a problem in recent years and the government is making efforts in removing this bottleneck.

FPTS forecast Vietnam's steel consumption in 2023 to be at 23.9 million tons (-5.1% yoy). That the expected figure is lower than the 6.8% decline in 2022 mainly comes from the expectation that the industry prospect will be less negative in the second half of the year thanks to easing tightened monetary policies and reopened Chinese economy. This helps the price of building materials recover.

For steel production activities, the expected output consumption situation and the temporary closure of furnaces of large-scale manufacturing enterprises such as Hoa Phat and Pomina in the last two quarters of 2022 will make steel production output in 2023 to record negative growth as compared to 2022. **Specifically, Vietnam's steel production output in 2023 is expected to reach 24.9 million tons (-7.3% yoy).**

Forecast supply and consumption of Vietnamese steel industry



Source: VSA, FPTS Research & Forecast.

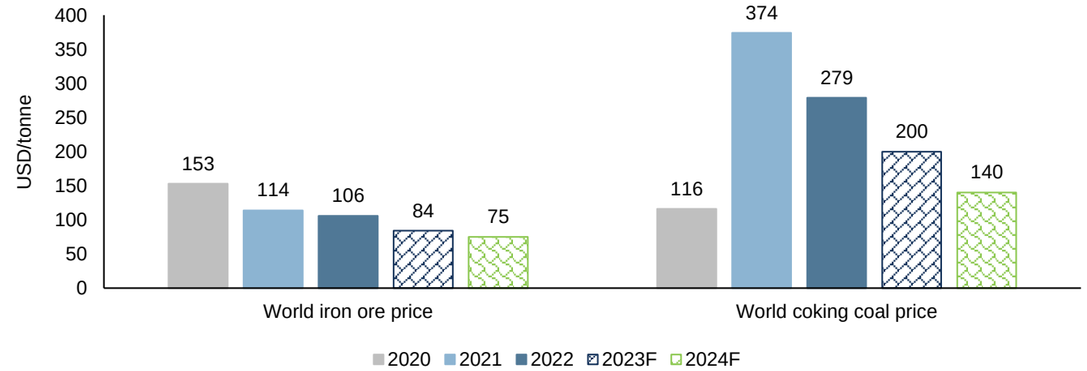
b) Prices of key input materials for steel production is forecasted to slowly decrease in 2023

Contrary to the gloomy outlook of the output of Vietnam's steel industry, the prices of important input materials such as iron ore and coking coal are expected to cool down in 2023. This helps ease pressure on steel enterprises considering the difficult situation of steel selling.

According to Fitch Ratings, iron ore prices are expected at $85/ton and $75/ton respectively for 2023 and 2024 in the context of low global steel demand. However, the iron ore market will not be oversupplied as the decline in iron ore supply from Russia and Ukraine is offset by the decline in iron ore demand in Europe and other regions under the impact of inflation and tightened monetary policies.

As for coking coal, the strong price volatility in 2022 comes from the energy crisis in Europe, causing a sharp increase in coal demand for power generation. However, coking coal prices in 2023 are expected to decrease due to a decline in demand due to the global steel industry's production cuts and the energy crisis in Europe is gradually being stabilized.

Forecast of world iron ore and coking coal prices according to Fitch Ratings



Source: Fitch Ratings, FPTS Research.

In the context that revenues of Vietnamese steel companies are expected to continue to decrease in 2023 from the decline in consumption volume and the selling price of finished steel, we expect profits to recover in 2023. Specifically, the prices of iron ore and coking coal are expected to decrease by 20.8% and 28.3% respectively in 2023, which will help Vietnamese steel producers using BOF technology to reduce production costs and improve gross profit margin as compared to 2022. Similar for enterprises producing by using EAF technology and enterprises using HRC steel as input, the sharp drops in iron ore and coking coal prices also bring decreases in prices of scrap steel and HRC.

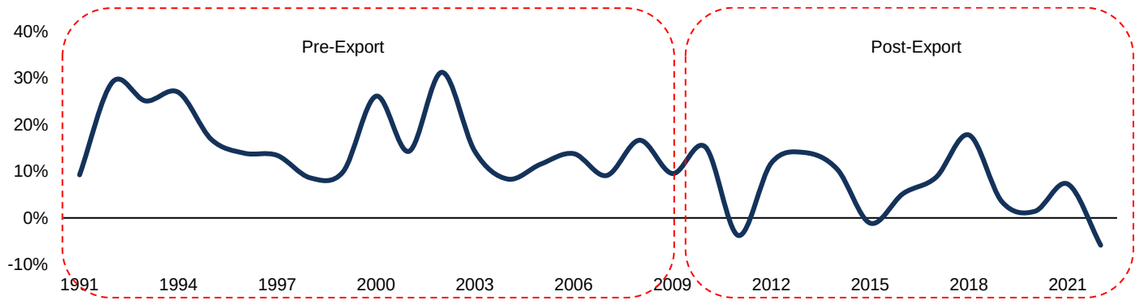
CONCLUSION: The prospect of the steel industry in 2023 remain negative in the context of the construction industry and real estate market's downturn due to the influence of tightened monetary policy. FPTS expect that the revenue of listed companies in Vietnam's steel industry will continue to decrease as compared to the same period in 2022 based on the expectation that the consumption volume and the selling price of finished steel continuously decrease. However, from a profit perspective, FPTS expect 2023 to see a recovery from the profit base in 2022 based on the expectation that input material prices will drop sharply, up to 20.8 percent and 28.3 percent for iron ore and coke respectively.

CEMENT INDUSTRY
SLOW RECOVERY WHEN OVERSUPPLY CONTINUES

I. THE CEMENT INDUSTRY IS HIGHLY CYCLICAL AND CLOSELY LINKED TO CONSTRUCTION GROWTH

The cyclical character of the cement industry is represented through the total product consumption growth that is separated into two main phases: Pre-Export (1991-2009) and Post-Export (2010-9M2022). During Pre-Export (1991-2009), the industry's fundamental factors and manufacturing technology did not have any significant changes, keeping cement consumption reasonably constant. Not until Vietnam officially opened and promoted cement exports in 2010 (Post-Export) did the cyclicality of the cement industry start to appear. Therefore, we will only evaluate the cyclical character of the Vietnamese cement industry from 2010 onwards.

Total product consumption growth during 1991-9M2022



Sources: Vietnam Cement Association (VNCA), FPTS Research

The total product consumption contains two main components, domestic and export. In particular, domestic consumption is mainly affected by construction demand, which is highly sensitive to the economic environment, and export activity is becoming increasingly dependent on China's market (accounting for ~60% of Vietnam export volume in 2021). Furthermore, cement sector activities are dependent on the volatility of input costs, particularly the coal price (which accounts for 40% of production costs).

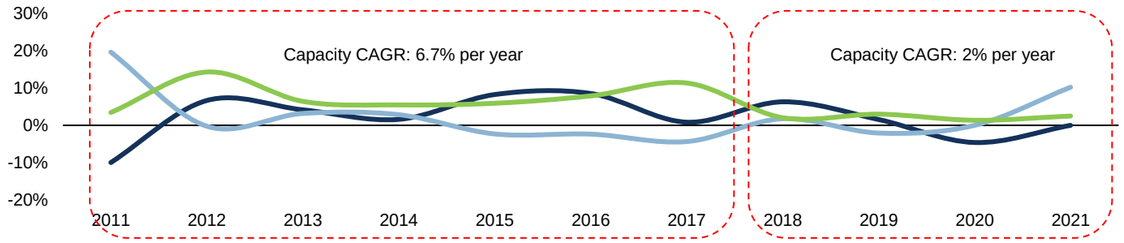
Besides, the cement industry is having difficulties increasing consumption due to a significant oversupply (domestic consumption can only meet ~60% of the designed capacity), which makes the cement demand dependent on and primarily competitive through selling price. As a result, we will focus on analyzing the cyclicality of the cement industry through product consumption and influential price factors within the framework of this report. From there, assess the outlook of the cement industry in 2023.

Factors that have impacts on the cyclical character of the cement industry include Competitive environment, Demand and Input costs, whereas Competitive environment is crucial when this variable affects both price and product consumption of the Vietnam cement industry.

1. Fierce competition throughout the sector

In the period 2010-2017, the cement industry was in a hot growth phase when a series of major projects came into operation with a compounded annual growth rate (CAGR) of production capacity reaching nearly 6.7% per year. At the same time, the cement sector began to face a surplus supply when its designed capacity exceeded domestic consumption. As of 2017, the total capacity had emerged to ~98 million metric tons per year, whereas domestic consumption can only have met about 63% of the designed capacity. An astounding number of new brands joined the market, and continuous capacity expansion created intense competition throughout the sector. Vietnam cement products are also highly homogenous when they have to follow production standards issued by the Ministry of Construction. Therefore, players within the cement industry can only compete by selling prices due to low conversion costs.

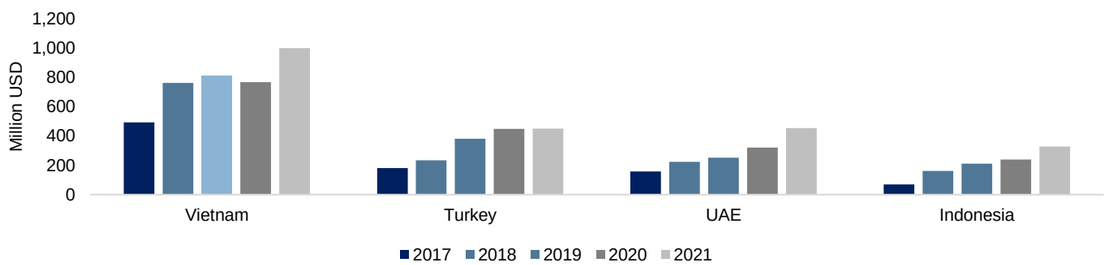
Volatility comparison between domestic cement price growth and production capacity growth during 2011-2021



Sources: Ministry of Construction, VNCA, FPTS Research

Domestic cement prices in this phase had dropped significantly to 1.3 million VND per metric ton in 2017, down 15% from the 2011 peak. Capacity growth in the same period, on the other hand, reached 11%, second only to 2012, when massive cement projects such as Tan Thang, Thanh Thang, Long Son, and others went into operation. Domestic consumption was also impacted by the overheated expansion, with growth slowing to 1% in 2017 compared to 9% in 2016. The government had extended the implementation schedule of new cement projects and stipulated the admissible capacity in each period since 2017 to control the above situation. Capacity growth had slowed down significantly after this phase, with only 2% per year compared to previous periods.

Vietnam's cement export value compare to other main competitors on the market during 2017-2021



Sources: World Integrated Trade Solution, FPTS Research

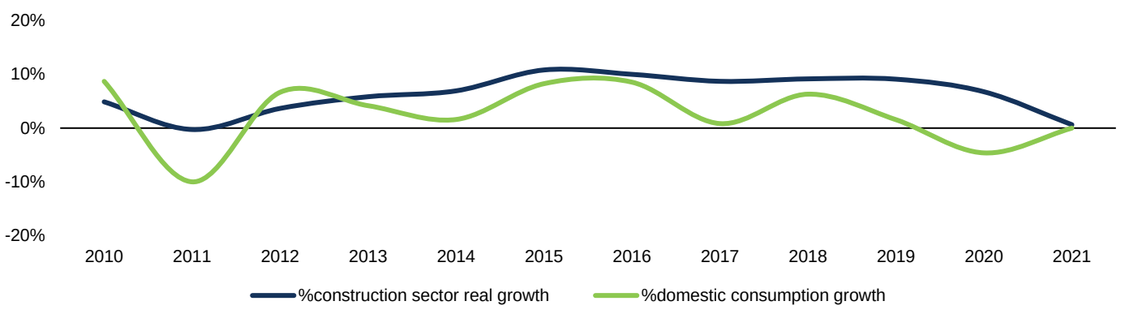
To reduce domestic surplus, since 2010, Vietnam had officially exported clinker and cement products to major import markets like Bangladesh, the Philippines, and China. After 20 years of implementation, until now, Vietnam had become the world's leading country in cement exporting. However, Vietnam's product is facing heated rivalry after other countries like Indonesia, Turkey, and the UAE joined the market. Despite having a higher production costs than Vietnam's cement, most of these countries had to decrease their selling prices to win over export market share to deal with excess domestic production. According to estimates, Indonesia's exported cement price is always 10% lower than Vietnam's products.

2. Stagnation in demand growth

Saturated domestic market

We believe that Vietnam's domestic market has been saturated, and there is not much room for development when construction demand weakens along with surplus supply and intense price competition throughout the sector. The volatility ranges of domestic consumption had also become narrower in the 2016-2021 period at just ~1% compared to 4% in the previous period. Consumption stayed around ~59-62 metric tons per year.

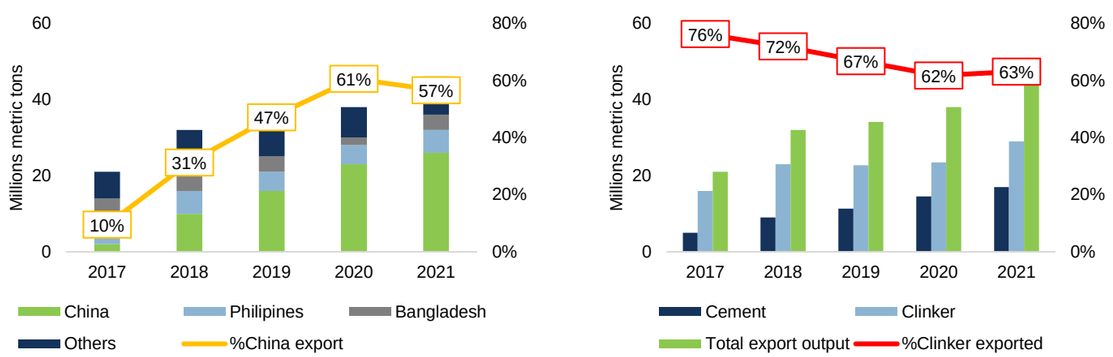
Construction sector real growth and domestic cement consumption growth during 2010-2021



Sources: Ministry of Construction, VNCA, FPTS Research

Export helps reduce surplus supply but has no longevity

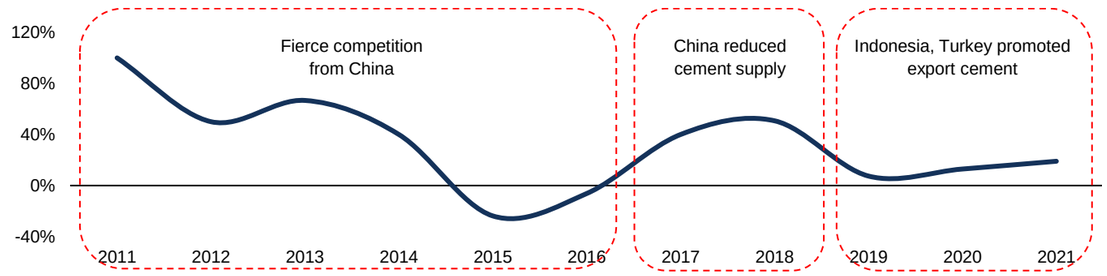
Share proportion of Vietnam's main cement export markets (left) and Vietnam exported clinker proportion (right) during 2017-2021



Sources: VNCA, FPTS Research

From 2015 to 2016, China was Vietnam's main rival in the cement export market, with a total output of up to 2.5 billion metric tons, accounting for 60% of global cement production. The country's export price was also lower than Vietnam's price of 3-4 USD per ton, making it difficult for Vietnamese cement to compete. However, China has become Vietnam's main cement export market since 2017, when the government implemented the mass closure of large cement plants to minimize air pollution and save electricity. This made the country, which was one of the world's leading cement exporters, switch to imports to serve domestic demand.

Vietnam exported clinker and cement growth during 2011-2021



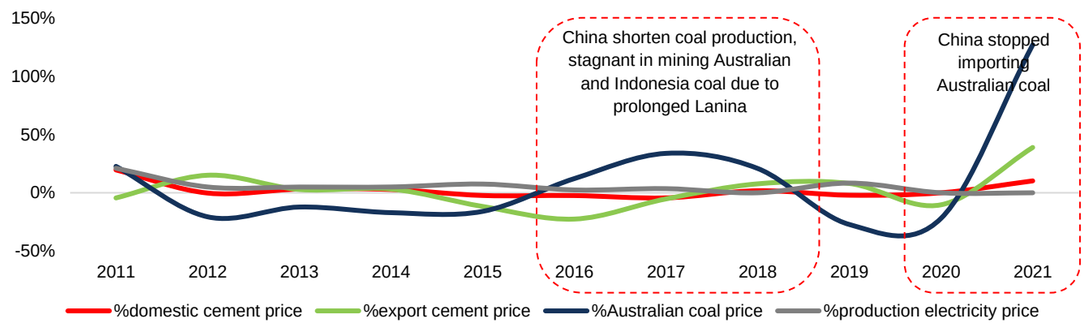
Sources: VNCA, FPTS Research

We believe that the China market is in a trend of rapid saturation when the government introduced many policies to tighten the real estate market in 2012, along with drastically cutting 10-15% of spending on infrastructure construction in the period 2015-2020. In addition, we assess Vietnam's export activity as ineffective and only temporary. Semi-finished clinker products account for the largest proportion of export consumption, which has a much lower profit margin (3-4%) than finished cement (10-12%) and is subjected to both domestic and foreign tariff policies.

3. Rising input costs corrode firm's profit

Coal accounts for the majority of cement production costs, accounting for up to 40% of total costs. Due to a lack of supply and domestic reserves (coal mines have been discovered), the Vietnamese government has strongly promoted the import of coals to meet domestic demand since 2013, with Australia being the largest market (accounting for 51% market share). Cement sector, on top of that, is one of the biggest imported coal users. Therefore, the volatility of the Australian coal price will have an immense impact on the input costs and selling prices of Vietnam's cement manufacturers.

Vietnam cement prices and Australian coal prices during 2011-2021

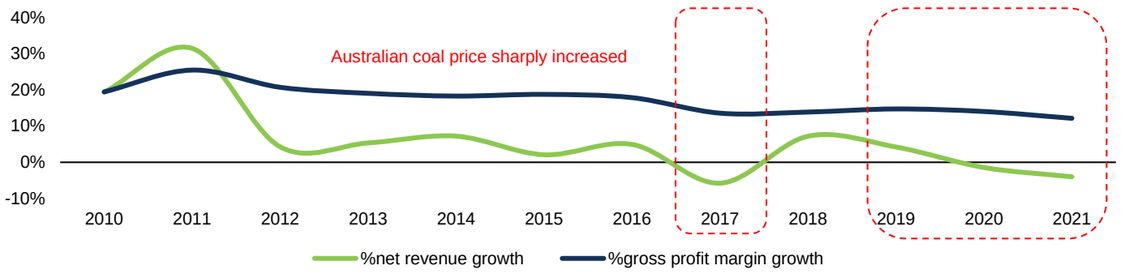


Sources: World Bank, EVN, Provinces Department of Construction, VNCA, FPTS Research

As of 2021, Australian coal prices had experienced strong growth, most notably in the two periods 2016-2018 and 2020-2021, mainly due to China's movement along with extreme weather conditions. By the end of 2021, Australian coal prices had reached ~138 USD per metric ton, up 127% over the same period. Other than that, the increase in coal prices also affected the price of electricity (which accounts for ~20% of cement production costs) when thermal power is still the main electricity supply segment in Vietnam. However, being an essential commodity, the electricity price is under control by the Ministry of Industry and Trade, leading to a relatively stable trend compared to coal prices in the period 2010-2021 with an average increase of ~5% per year.

The sharp increase in input costs also led to a boost in cement sales prices and reduced consumption. The revenue and profit of cement producers had been seriously eroded when the growth of cement prices could not be equal to the increase in input costs. The gross profit margin of cement enterprises decreased to 14% and 12%, respectively in 2017 and 2021, compared to 18-25% in the previous periods. Revenue also trended similarly, achieving -6% and -4% growth over the same periods.

Net revenue and gross profit margin growth of cement producers during 2010-2021

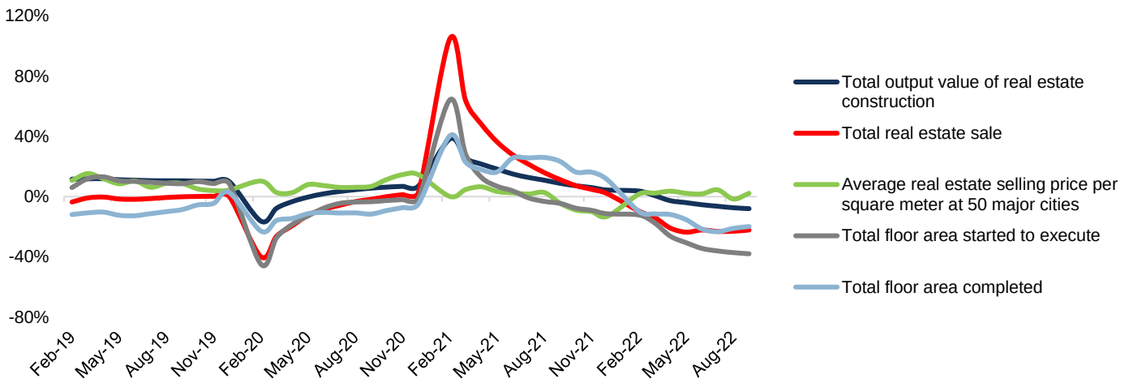


Sources: Companies financial statements, FPTS Research

II. CEMENT INDUSTRY IN 2022 AND OUTLOOK FOR 2023: RECOVER AT A LOW RATE

1. Export turns gloomy when China's demand drops

China's residential construction statistics during 2019-9M2022



Sources: National Bureau of Statistics of China, FPTS Research

In 2022, exports were not the bright spot of cement consumption when the output of 9M2022 only reached 23.97 million metric tons, down 25% over the same period. China's housing market was in a serious crisis after the government tightened credit for real estate developers through the "three red lines" policy. The fact that many real estate businesses could not borrow more capital to operate, along with a series of large companies in the industry using excessive debt and being unable to pay on time, had pushed the country's real estate market into a sharp decline. Besides, the beginning of 2022 was also when the COVID-19 epidemic began to outbreak again in China, stalling domestic construction activities when the government applied the "Zero Covid" policy. From there, decreased construction demand and cement consumption followed.

By 2023, we expect export volumes to partially recover when China reopens along with a 16-point policy package to "rescue" the domestic real estate market. The period of imposing defensive tariffs in the Philippines will also end next year. In addition, from January 1, 2023, Decree 101/2021/ND-CP will officially take effect, according to which the clinker export tax will be increased from 5% to 10% to minimize the export of mineral resources in the country. However, we assess that the impact of this policy on export output is only temporary due to the serious domestic oversupply.

We expect Vietnam's export volume to reach 33.5 million metric tons and 35.9 million metric tons in 2022 and 2023, respectively, down 27% and 21% compared to 2021.

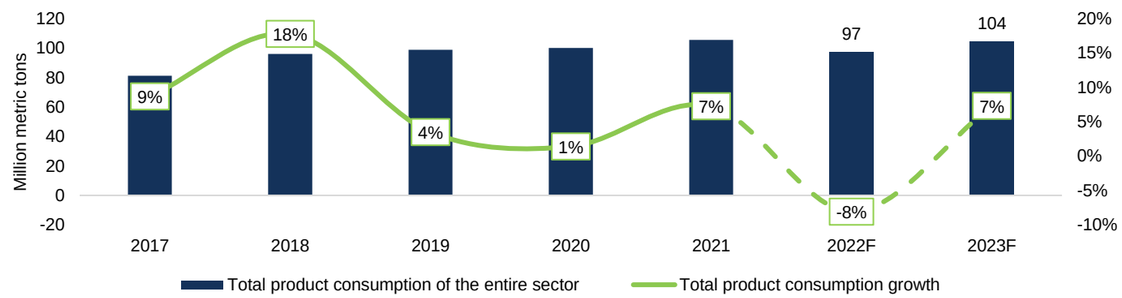
2. Domestic consumption slowly recovers, and surplus supply continued

Domestic cement consumption had a slight recovery in the first 9 months of 2022 at 48.96 million metric tons, up ~7.4% over the same period in 2021. According to estimations, as of 2022, total cement consumption will reach ~63.5 million metric tons, an increase of ~6% over the same period. We believe that domestic cement consumption is entering a recovery period at a slow pace since the construction industry is still facing many difficulties (the economy is less favorable, high material prices along with the slow disbursement of public investment capital).

Moreover, the oversupply condition was continuing in 2022 when many large-capacity cement projects went into operation, including the Xuan Thanh 3 cement project (capacity of 4.5 million metric tons per year), Long Thanh cement (capacity of 2.3 million metric tons per year), and Long Son 4 cement (capacity of 2.3 million metric tons per year).

By 2023, we forecast the growth rate of domestic cement consumption to reach ~7%, following the trend of 2022, especially when the residential construction segment will continue to be difficult in the next year. Other than that, the cement sector will continue to have an excess supply with many new projects licensed to start construction, especially the project cluster of Dai Duong Cement with 4 lines (average capacity of 2.3 million metric tons per year).

Total product consumption forecast for 2022F and 2023F



Sources: FPTS Research

3. Production cost rises sharply when coal price and electricity price increase simultaneously

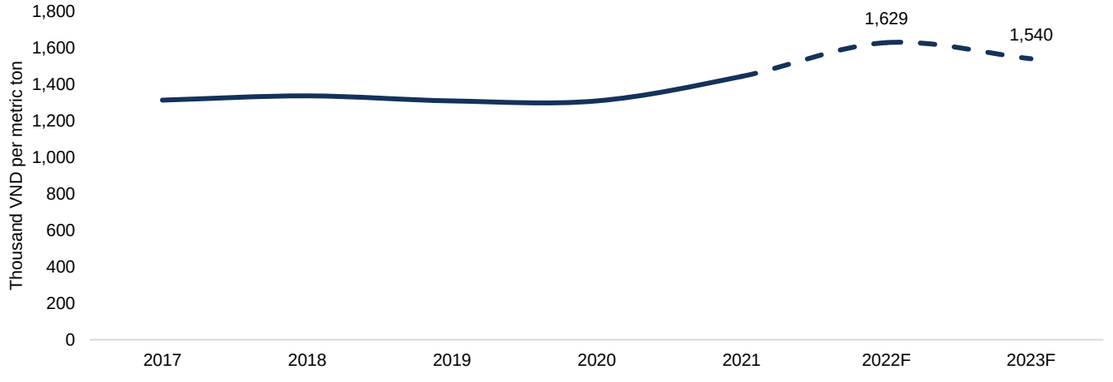
The two main costs of coal and electricity were continuing their upward trend: From February 2022, Russia has conducted a special military campaign in Ukraine. An energy crisis broke out when Russia cut off oil supplies in response to EU and US sanctions. The rising demand for alternative fuel sources for oil and the harsh winter in Europe had pushed Australian coal prices to ~350 USD per metric ton. Domestic coal prices had more stable fluctuations when Vietnam National Coal and Mineral Corporation (Vinacomin or TKV) continued to mix domestic and imported coal for consumption. However, it still maintained at a high level of ~147 USD per metric ton, up 3% over the same period in 2021. The Ministry of Industry and Trade had also adjusted electricity prices to increase by ~3% to improve electricity manufacturer financials due to higher input costs. Therefore, in 2022, cement prices had been adjusted to 1.63 million VND per metric ton (~12% higher over the same period).

Cement sector input costs volatility during 2010-9M2022

Sources: World Bank, Vinacomin (TKV), EVN, FPTS Research

According to the World Bank's estimation, the Australian coal price in 2023 will decrease by ~31% to 240 USD per metric ton and still be higher than the average price in the past 5 years. Electricity prices will remain the same when electricity producers have difficulty negotiating a good contract output in 2023. It is expected that cement prices in 2023 will have the same fluctuation trend as Australian coal prices, with a decrease of about ~5% to ~1.54 million VND per metric ton because input costs are still anchored at a high level and cannot yet return to pre-COVID-19 stages.

Domestic cement price forecast for 2022F and 2023F



Sources: FPTS Research

CONCLUSION

In 2023, the cement consumption volume will continue the trend of **recovery** in 2022, but the growth rate will slow down due to many difficulties in the construction industry.

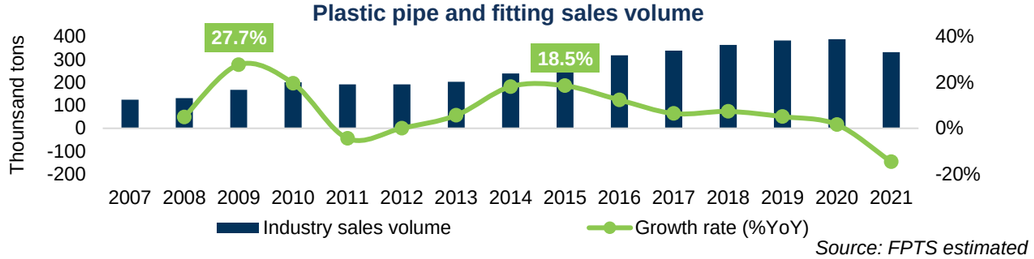
Cement prices in 2023 will have a slight downward adjustment because coal prices are still anchored at high levels and will not be able to reduce to pre-COVID prices

CONSTRUCTION PLASTICS INDUSTRY
PRESSURE TO REDUCE SELLING PRICES LIMITS BENEFITS FROM PLASTICS RESIN PRICES COOLING DOWN

I. CONSTRUCTION PLASTICS INDUSTRY CYCLE IS AFFECTED BY SALES VOLUME AND PLASTIC RESIN PRICES

Construction plastic products are divided into 02 major segments: (1) plastic pipes and fittings, and (2) plastic construction materials (profiles, flooring, etc.). Due to limited information about the latter, our report focuses on analyzing plastic pipes and fittings (accounting for ~25% – 30% of total construction plastic volume) with leading enterprises such as Binh Minh Plastic (HSX: BMP), Tien Phong Plastic (HNX: NTP), Hoa Sen Plastic (HSX: HSG), Stroman, etc. represented by sales volume.

Plastic pipe and fitting sales volume

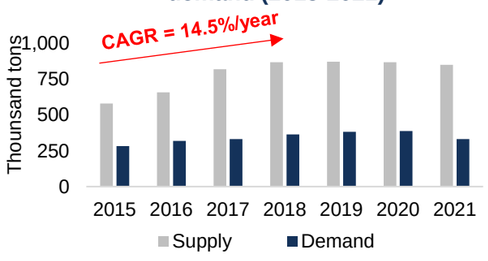


Source: FPTS estimated

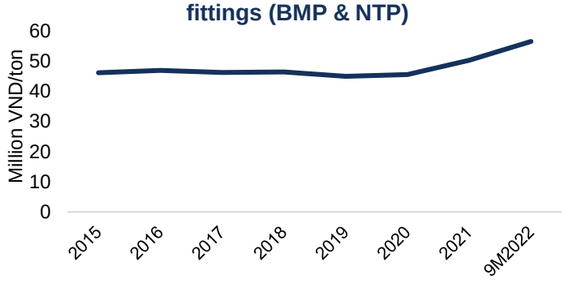
From 2008 to 2021, the sales volume of construction plastic pipes has completed 02 cycles (2008 – 2011 and 2012 – 2021). Compared to the first cycle, the second one has a lower peak, gradual oversupply, and increased competition within the industry. We believe the construction plastics industry is approaching the maturity stage over the long term.

It is also important to note that plastic resin price fluctuations significantly impact the construction plastics industry operation because (1) Vietnam's construction plastics industry has fierce price competition due to oversupply (consumption is only ~40% of total designed capacity), and (2) inputs (the three main types are PVC, HDPE, and PP) accounts for 60% – 70% of the overall construction plastic costs.

Plastic pipe and fitting supply and demand (2015-2021)



Average selling price of plastic pipes and fittings (BMP & NTP)



Source: FPTS estimate

Specifically, the industry's total designed capacity has been flat since 2018, after experiencing a strong growth rate of 14.5%/year from 2016 to 2018. There was oversupply before this period but mostly in large-sized pipes (such as HDPE pipes, which are mainly used for infrastructure construction). These types are usually produced on demand or sold in small quantities to diversify the product portfolio. Meanwhile, normal-sized pipes (less than 200mm in diameter), particularly uPVC pipes, were still produced at a high utilization rate and had room for expansion. Since then, there has been an increase in oversupply in all plastic pipes as construction plastics demand is only approximately 40% of the total designed capacity. As a result, businesses in the industry refrain from increasing selling prices to remain competitive.

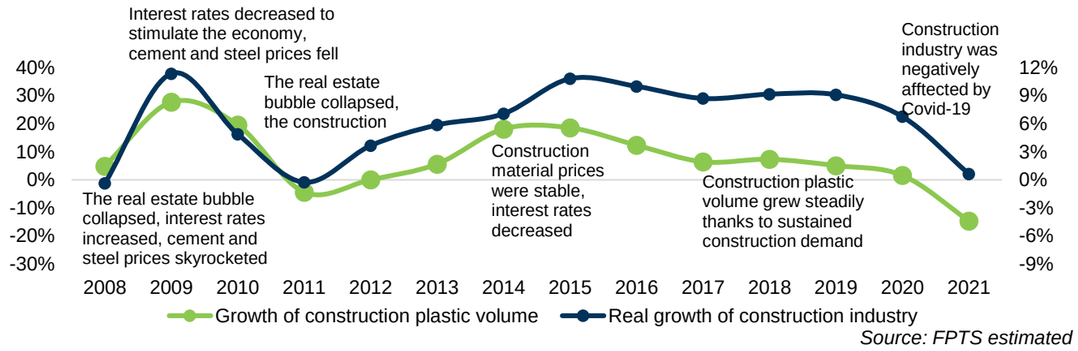
Typically, BMP and NTP (accounting for ~56% market share) did not increase selling prices during 2015-2020 until facing pressure from input costs in 2021.

This report will concentrate on factors with great impacts on (1) the plastic pipe sales volume cycle, and (2) the plastic resin price cycle, thereby assessing the industry outlook in 2023.

1. Plastic pipe sales volume is highly cyclical due to its sensitivity to construction demand

The growth of construction plastic pipe volume is associated with the growth of the domestic construction industry since plastic pipes are bulky and difficult to transport, meaning most plastic pipes are consumed domestically and are insulated from import competition. Therefore, the construction plastic volume growth has followed the real growth of the construction industry from 2008 to the present.

Growth of construction plastic volume and real growth of construction industry



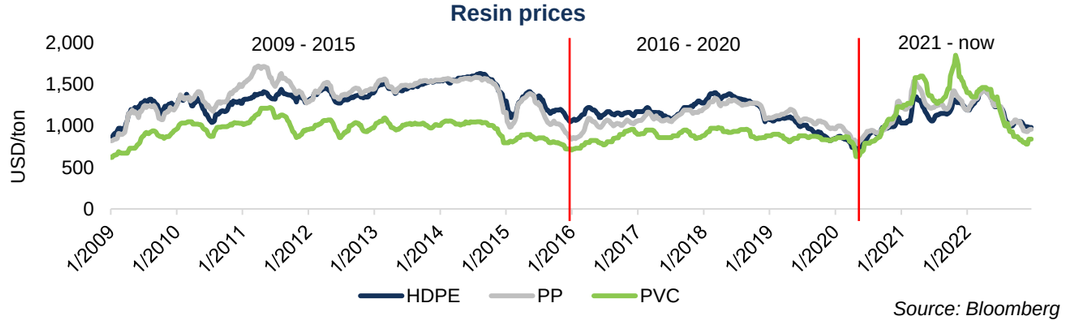
Source: FPTS estimated

2. The plastic resin price cycle is influenced by fossil fuels prices and global demand

Plastic resin prices in Vietnam are similar to those in the region since Vietnam's construction plastics industry is dependent on imported materials, as PVC and PP domestic supply are only ~37% and 44% of production demand, respectively (HDPE alone has not been produced in Vietnam). PVC accounts for the largest proportion (~70%) of plastic resin input for construction plastic products, hence its price fluctuations also have the greatest impact on the industry.

Since 2009, plastic resin prices have completed 02 cycles (2009 – 2015 and 2016 – 2020) and are currently in the decline phase of the third cycle.

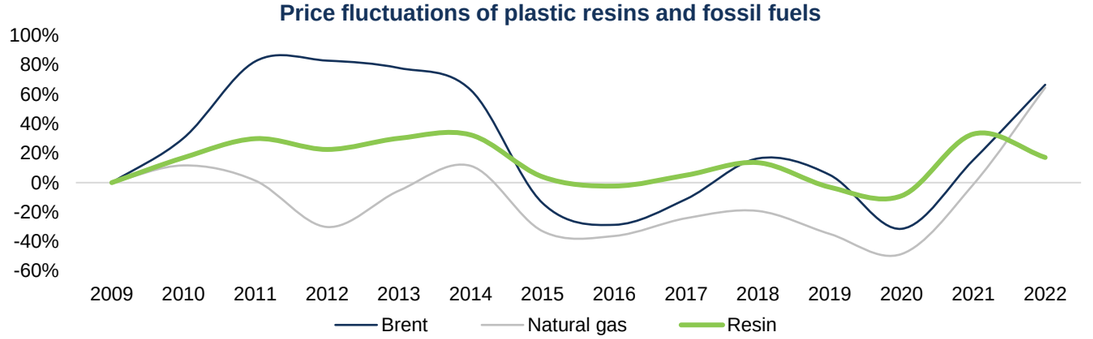
Resin prices



Source: Bloomberg

The two primary influences on global plastic resin prices are (1) price fluctuations of crude oil and natural gas (accounting for ~70% of the cost of plastic resin production) and (2) plastic resins global demand.

Price fluctuations of plastic resins and fossil fuels



Source: Bloomberg, FPTS Research
**Price fluctuations of plastic resins are averaged from prices of PVC, HDPE, PP*

Specifically, the above factors' influence on plastic resin price cycle is as below:

- 2009 – 2015 cycle: The plastic resin prices only increased slightly despite the sharp rise in oil prices, mostly due to the decline in natural gas prices, which increased gas-derived plastic resins output and limited plastic resin price increase.
- 2016 – 2020 cycle: Plastic resin prices remained lower than they were during the previous cycle due to a sharp drop in oil prices and low gas prices.
- 2021 – now cycle: Plastic resin prices increased sharply following fossil fuel price increases from the end of 2020 to 2021. Afterward, plastic resin prices have tapered since the end of 2021 (despite the continuous rise of fossil fuel prices), mainly due to a decrease in demand when the Omicron variant surged. Since May 2022, average plastic resin prices, especially PVC, have consistently declined due to weak demand as (1) China (the world's largest consumer of plastic materials) applied a strict Zero-Covid policy, and (2) the global economy was weakening.

II. 2022 IN REVIEW AND OUTLOOK 2023 – CONTINUING DECLINE PHASE FOR PLASTIC RESIN PRICES AND SLOW GROWTH OF VOLUME

1. Despite recovering from a low base, sales volume growth is limited due to difficulties in the construction industry

Forecast of construction plastic sales volume

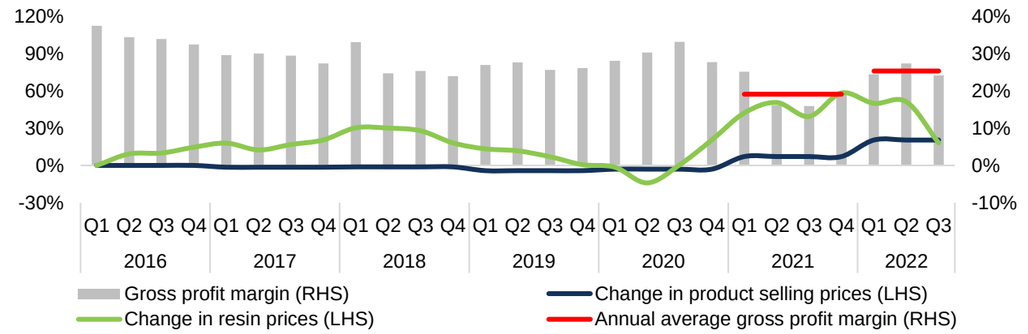
Source: FPTS estimated

The industry's sales volume improved by 9% – 10% YoY in 9M2022. Construction plastic sales volume has entered the recovery phase of a new cycle with an estimated growth rate of 6.4% YoY in 2022. Although this growth rate is higher than the previous cycle's (~5.6%/year), it mainly came from the low base level of 2021 (negatively affected by the Covid-19 pandemic). Generally, construction plastic demand has yet to recover to the pre-pandemic level fully.

In 2023, we expect the sales volume growth rate to decelerate to ~4.5% because the construction industry, particularly the residential construction segment, will continue to face difficulties in 2022 (*See Construction Industry*).

2. Plastic resin prices are expected to remain at a low level in 2023, high competition puts downward pressure on product selling prices

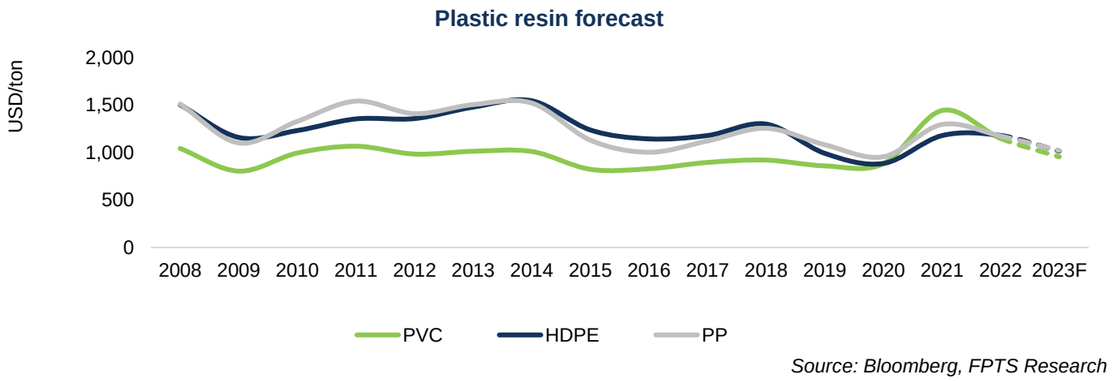
Industry gross profit margin



Source: Bloomberg, Financial reports, FPTS estimated

As of September 2022, plastic resin average prices decrease (down ~21.0% YTD) and high selling prices (after a sharp rise in 2021) have improved the construction plastics industry's profit margin.

We believe that the construction plastics industry's profit will continue to grow in Q4/2022 because plastic resin prices have started to bottom since early December 2022, but the impact on profit is often delayed for 1.5 – 3 months (as per inventory storage time).



Source: Bloomberg, FPTS Research

In 2023, plastic resin prices are expected to rise due to (1) a flat price of fossil fuels and (2) increased demand from China's reopening after the Zero-Covid policy. However, the average prices of PVC, HDPE, and PP are forecasted to remain ~15% lower than that of 2022, respectively at $955/ton, $1,015/ton, and $1,023/ton, according to the following expectations of fossil fuel prices and global demand:

- Flat Brent oil price forecast: Brent oil price has been in a downward trend since 2H2022. In 2023, we believe Brent oil price will remain at the current level of ~90 – 93 USD/barrel due to a balanced supply and demand. Specifically, (1) global economic 2023 outlook is gloomy, (2) the potential for increased demand as a result of China's reopening after the Zero-Covid policy, and (3) supply tightening from OPEC's efforts (*See Petroleum Industry*).
- Expected demand improvement: In 2022, plastic resin prices in Asia tended to be stable or slightly increased as China eased the Zero-Covid policy. However, it is uncertain if this trend will continue since consumption demand has been weak due to global economic recession concerns. We expect plastic resin prices to increase at around Q2/2023 when China fully re-opens and demand returns to stability.

Additionally, we expect oversupply of plastic pipes to continue and competition in the industry to increase, pressuring businesses to cut selling prices in 2023, due to (1) plastic pipes demand slowing down and (2) low average plastic resin prices. Accordingly, the industry's gross profit margin in 2023 will decrease slightly compared with 2022.

Conclusion

In 2023, the sales volume will continue to recover. However, the gloomy construction industry outlook will limit the sales volume growth rate.

Plastic resin prices are forecasted to rise slightly in 2023 compared to the end of 2022 but will remain lower than the average price for the year. Additionally, due to slower growth in demand and lower input prices, enterprises will cut plastic pipes' selling prices under the pressure of increased competition within the industry. In turn, this will result in a slight decrease in industry profit margin compared with 2022.

OIL AND GAS INDUSTRY
WHAT ARE EXPECTED WHEN CRUDE OIL PRICES END THE RISING PHASE?

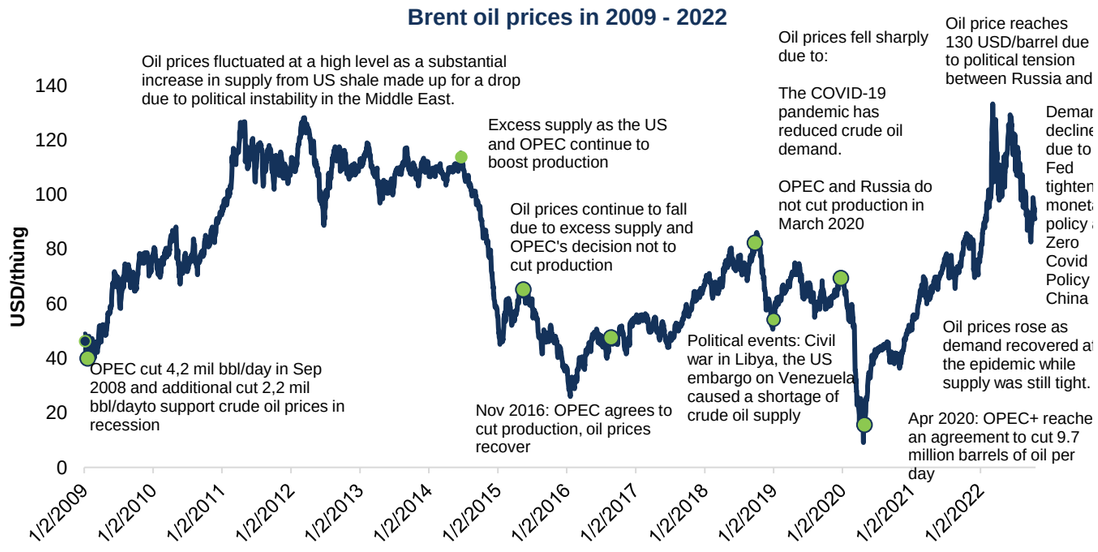
I. E&P SERVICES AND GAS DISTRIBUTORS ARE HIGHLY CYCLICAL ALONG WITH CRUDE OIL PRICES

The oil and gas industry is associated with crude oil production, processing, and consumption of oil products. Therefore, we choose crude oil price movement as a representative factor to determine the cycle of the oil and gas industry.

In this report, we will focus on the impact of crude oil prices on segments that are cyclical as the oil price cycle progresses: **(1) Exploration and production services (E&P services)** and **(2) Gas distributors** instead of analyzing factors that impact on the crude oil price cycle, specifically:

	Business activities	Compare with crude oil price cycle	Enterprise used for analysis
E&P services	Provide auxiliary technical services (drill, engineering, installation, maintenance,...) for upstream exploration and production activities..	Lagging 6 - 12 months behind crude oil prices	PVS, PVD, PXS, PVC, PVB
Gas distributors	Offshore wet gas collection, processing into dry gas, and transportation to consumers.	Positive correlation with the oil price cycle	GAS

Since 2009, crude oil prices have gone through 02 cycles (each cycle lasted ~04 - 06 years) and are at the end of the rising phase of the 3rd cycle:



Sources: EIA, FPTS research

Cycle 1: Period 2009 - 2015: Crude oil prices started to increase in early 2009 when OPEC cut another 2.2 million barrels of oil per day, peaked and maintained at 110 – 120 USD/barrel during 2011-2014, and fell to 35 USD/barrel in Q2.2016 due to excess supply when OPEC and the US boosted production. During this cycle, crude oil prices averaged around $89.1 per barrel and fluctuated steadily at high levels (above $90 per barrel) for about 46 months.

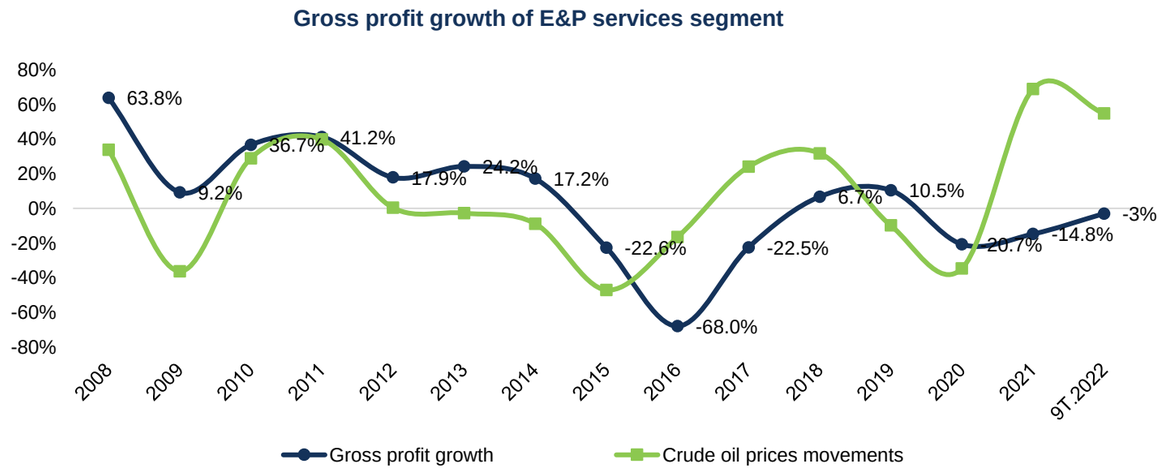
Cycle 2: 2016-2020: Crude oil prices during this period started to recover in November 2016 when OPEC agreed to cut production until oil prices bottomed in March 2020 as demand was affected by Covid -19. During this period, crude oil prices averaged about 55.1 USD/barrel - 38% lower than the average oil price of the previous cycle. Oil price movements in the 2016-2020 cycle were unstable and always faced the risk of a sharp decline since the economy was slowing down and the US always wanted to increase shale oil capacity when oil prices recovered above $80/barrel.

Currently, oil price movements are at the end of a rising phase of a new price cycle that began in April 2022 thanks to OPEC + reaching an agreement to cut 9.7 million barrels per day. Oil prices peaked in March 2022 at $130/barrel during the Russia-Ukraine war. Currently, oil prices are falling to 75 USD/barrel (-34.6% from the peak) due to concerns about demand shortage when the FED tightens monetary policy and the Zero Covid policy in China.

Notably, the movements of crude oil prices are difficult to predict, depending on both economic and political factors (increase/decrease in investment in exploration and production, economic growth prospects, relations between crude oil exporting countries - OPEC and non-OPEC countries, the political situation - natural disasters in crude oil producing countries, speculative factors, etc.).

1. E&P Services segment: Lag in comparison to the oil price cycle

The results of the E&P services segment are usually about 6-12 months behind the oil price due to the indirect impact of the oil price on the demand for oil and gas exploration and exploitation (shown in the total investment capital in E&P activities). Higher oil prices mean greater profits from oil and gas production, which boosts the demand for oil and gas exploration and production, creating jobs and high unit prices E&P service enterprises and vice versa. Besides, the operation of the mining service group is influenced by policies, mainly from the preferential mechanisms in the Petroleum Law.

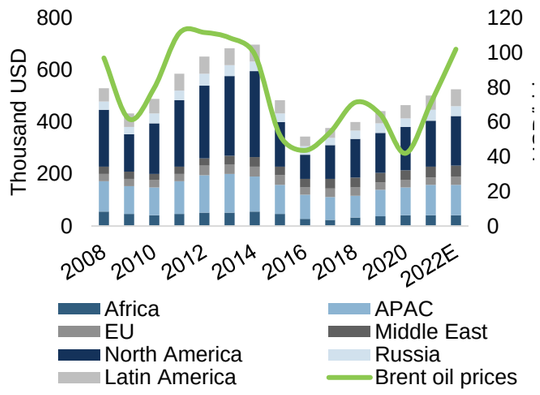


Sources: IHS Markit, EIA, Company's FS, FPTS research

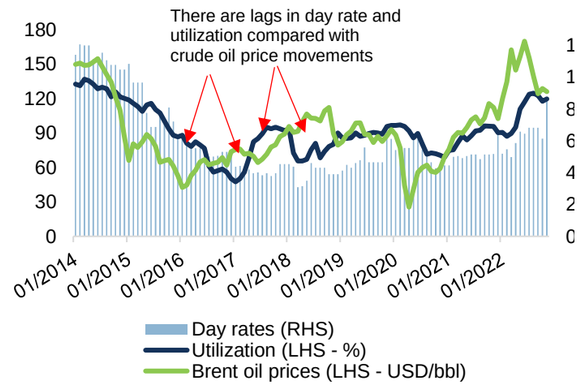
1. 1. Investment in oil and gas exploration and production activities (E&P Activities)

Crude oil prices will affect the capital invested in oil and gas exploration and production activities in all regions. When oil prices increase, oil and gas production profits become attractive, promoting capital investment in oil and gas projects. This investment creates jobs and high unit prices for E&P services providers. As crude oil prices fall, profits from oil and gas become less attractive, especially in areas with high oil and gas costs, causing capital investment in exploration to decrease, affecting the volume of work and unit prices of E&P services providers.

Global EP Capex by region



Day rates and Utilization of Jack up rigs in South East Asia



Sources: IHS Markit, EIA, FPTS research

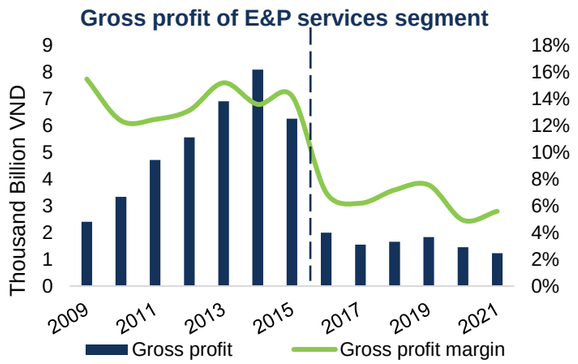
Because crude oil prices indirectly affect the E&P services segment through the capital invested in E&P activities, the results of E&P services companies are lagged compared to the oil price. For example, the day rate and utilization of drilling rigs in Southeast Asia (the main factor affecting the business results of drilling services) in the period 2014 - 2022 have lagged compared to oil prices.

1. 2. Domestic policies affecting the E&P activities demand:

In the 2016-2020 period, the results were lower than in the 2009-2015 period, due to the gloomy domestic upstream exploration and production activities, besides the lack of timely amendment and supplement policies:

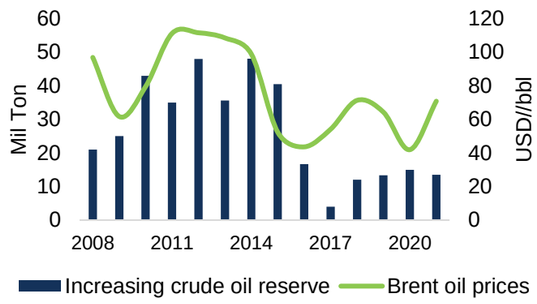
Cycle 2009 - 2015: results remained high thanks to (1) the high and stable oil price movement created conditions to promote exploration and production activities, (2) Vietnam implemented the Petroleum law revision in 2008 facilitated attracting investors for new oil and gas exploitation contracts.

Gross profit of E&P services segment

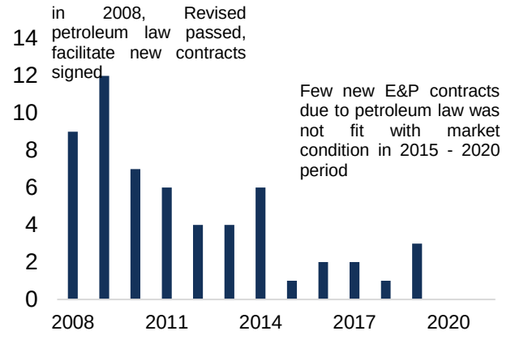


Source: Companies's FS, FPTS research

Increasing crude oil reserves in 2009 - 2021



New E&P contracts 2009 - 2021

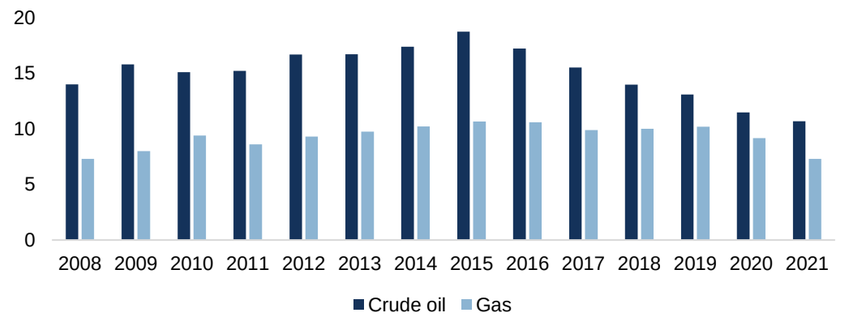


Sources: PVN, FPTSp

Cycle 2016 - 2020: New investment in domestic E&P activities is dismal between 2015 and 2021 with the increase of reserves and the signing of new E&P contracts not recovering despite oil prices increasing 1.7 times from the bottom in 2018. Regarding new contracts, the number of new oil and gas contracts signed in the 2016-2020 period is less than a quarter of the 2009-2015 period (8 contracts compared to 40 contracts in the 2009-2015 period).

E&P activities and signing of new domestic E&P contracts are low because the Petroleum Law is no longer suitable due to the lack of preferential policy in difficult E&P segment situations: (1) Crude oil prices just recovered above the breakeven production level of Vietnam and Southeast Asian countries (US$60-65/barrel) in a short time. (2) The explored fields mainly locate in offshore areas - disputed with China areas or as marginal deposits with high costs. (3) The difficult situation and the lack of preferential policy make the upstream-downstream project chains late due to the deadlock in arranging capital and negotiations (output and output prices for oil and gas products).

Oil and Gas production is decreasing



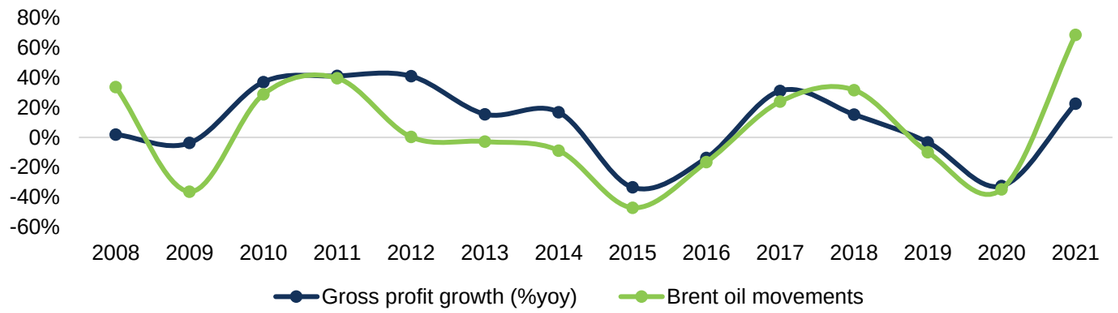
Sources: PVN, FPTS research

The domestic oil and gas E&P situation was gloomy in the 2015-2020 cycle. The decrease in crude oil and gas output came from poor E&P activities and a lack of new projects. Most E&P services companies in the period 2016 - 2020 only operate moderately or look for opportunities in other countries in the region (Malaysia, Thailand, Cambodia,etc), competing with local enterprises with riskier contracts, lower unit prices, and higher operating costs than domestic operations.

2. Gas distributor segment: Benefit from high crude oil prices

Gas distributor result is mainly affected by (1) Gas selling prices fluctuating correspondingly with crude oil prices (the floor price is fixed wellhead price) and (2) Gas-fired power plants demand (accounting for ~80% of gas consumption in Vietnam) is indirectly affected by the weather. Selling gas prices fluctuates correspondingly with crude oil prices helping the gas distributor results be cyclical compared to oil price movements.

Gross profit growth of gas contributor segment versus Brent oil movements

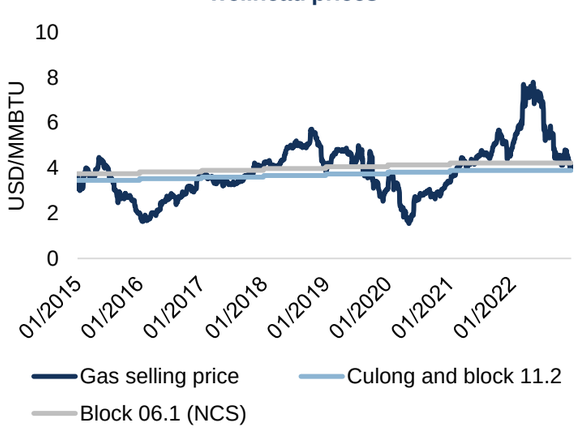


Sources: EIA, GAS, FPTS research

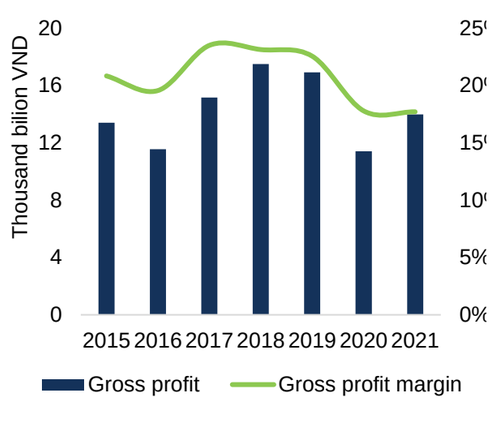
2. 1. Dry gas selling prices anchor to crude oil prices with the floor prices being wellhead prices

The selling price of dry gas is based on FO prices (a product from the oil refining process that fluctuates correspondingly with crude oil prices) with the formula: **Selling price = Max (Wellhead price, 46%*FO) + Tariff**.

Gas selling prices (46%*MFO) versus wellhead prices



Gross profit of gas distributor segment



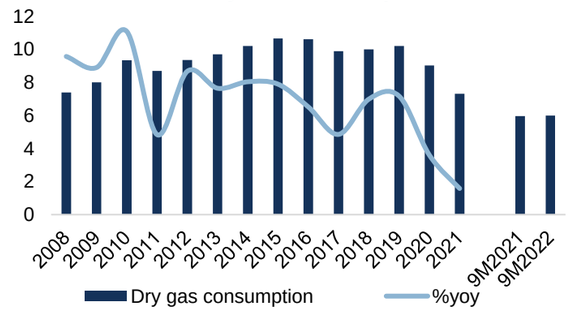
Sources: Bloomberg, GAS, FPTS research

With floor prices are wellhead prices, Gas contributor companies are always profitable thanks to the tariff and will make more profit when the price of 46%*FO is higher than the wellhead prices, reflected in the better profit at times when selling prices is higher than wellhead prices (years: 2018, 2019, 2021).

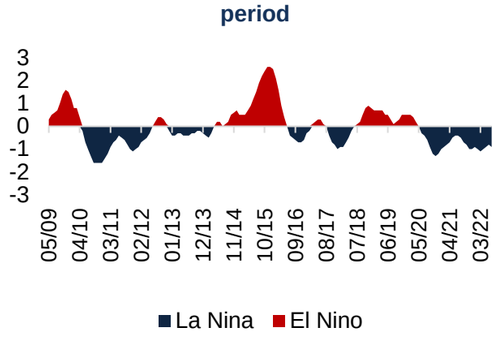
2. 2. Gas consumption is indirectly affected by weather

Gas consumption is influenced by gas-fired power plants (accounting for ~80% of domestic dry gas production). The demand for these plants is indirectly influenced by the weather. Specifically, gas-fired power plants will be mobilized more when hydroelectric output is limited, often during El Nino phases. On the contrary, the demand for mobilizing electrification will be limited in the Lanina phase when the weather is rainy.

Dry Gas consumption



El Nino/La Nina index in 2009 - 2022 period



Sources: ONI, GAS, FPTS research

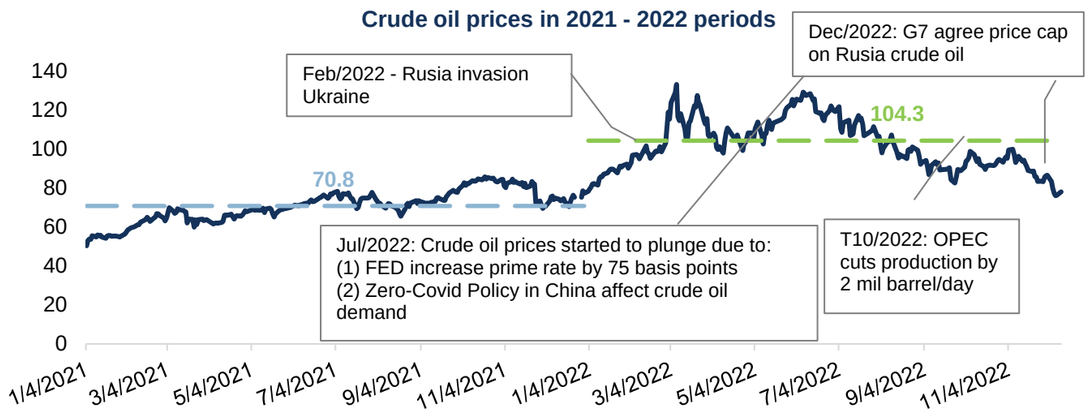
The periods of gas production growth thank to El Nino phenomenon: period 2009 - 2010, period 2014 - 2015, period 2018 - 2019.

The periods of gas output reduction due to La Nina phenomenon: Period 2011 - 2013, period 2017 - 2018 and period 2020 - present.

II. 2022 REVIEW AND 2023 OUTLOOK: CRUDE OIL PRICES END THE RISING PHASE

Crude oil prices have ended up the rising phase of the cycle 2020 – now as oil prices start to decline in H2/2022 due to demand concerns

Crude oil prices in 2021 - 2022 periods

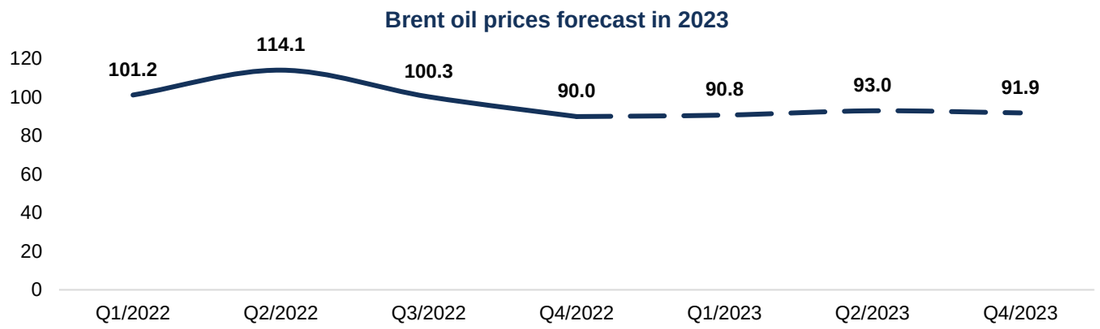


Sources: EIA, FPTS research

Crude oil prices in 2022 were generally higher than in 2021. Brent oil price in 2022 reached 101.3 USD/barrel (+43.2%yoy). Although the oil prices in 2022 were higher than the average level in 2021, the oil price movement in 2022 only increased sharply in Q1/2022, fluctuated at a high level in Q2/2023, and began to decline in H2/2022 due to concerns about falling demand as China maintains its zero Covid policy and the Fed raises interest rates to 75 basis points.

Crude oil prices plunge slightly due to stable supply and demand in 2023:

We see crude oil prices in 2023 are supposed to be lower than in 2022 due to slow growth in demand as the gloomy world economic growth outlook in 2023. However, we still expect crude oil prices to remain high when crude oil supply and demand remain stable due to: (1) Increased demand from China's reopening after the Zero-Covid policy and (2) Tight supply from efforts to remain crude oil prices at high levels by OPEC to encourage upstream investment.



Sources: EIA, FPTS forecasts

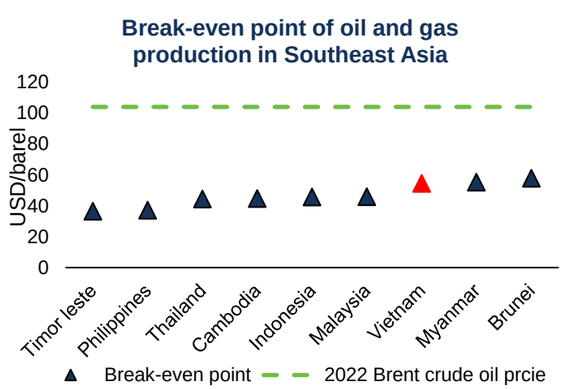
We forecast crude oil prices in 2023 will reach USD 92/barrel, down 9.8% compared to the average in 2022 and 1.7% lower than the average oil price forecast during October-December 2022. We see a slower-than-expected recovery in demand from China due to a sharp increase in infections and overcrowded facilities as easing Zero-Covid policy.

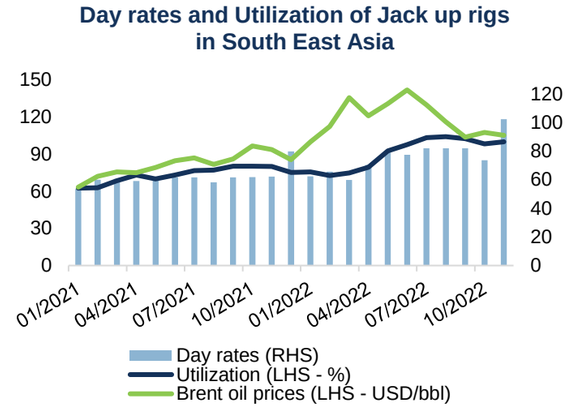
Summary of crude oil prices forecasts in 2023:

	Q1.2023	Q2.2023	Q3.2023	Q4.2023	2023
EIA	89.03	93.4	94	93	92.36
Wood Mackenzie	90	89.3	92.3	94.3	91.5
ING	100	100	105	110	104
JP Morgan					90
Goldman Sachs					110
Fitch Rating					85
Bloomberg Intelligence					96
Dustche Bank					80
Average					**93.6**
FPTS Research	**90.8**	**93.0**	**92.4**	**91.9**	**92**

1. E&P services segment: Growth expectations in 2023 thanks to crude oil prices remaining high boosting E&P demand

1. 1. High crude oil prices facilitate exploration and production activities in 2022





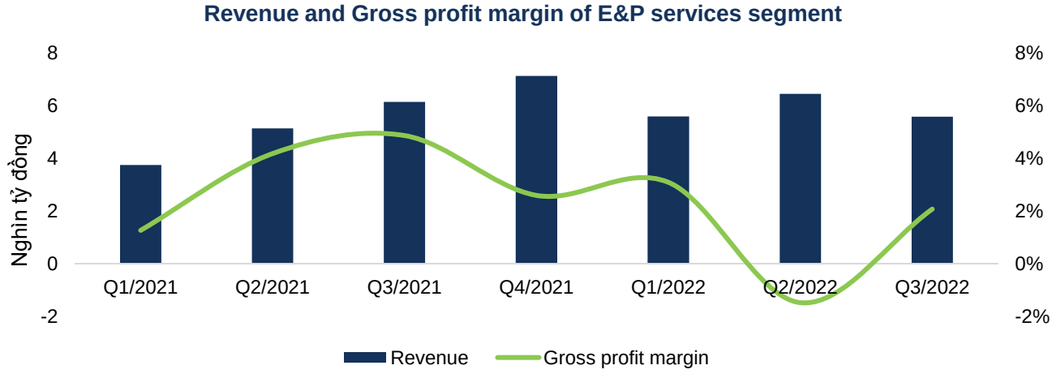
Sources: IHS markit, EIA, FPTS research

Crude oil prices surged sharply in 2022 and remained at a high level (above 85 USD/barrel), much higher than the breakeven level of exploitation in Southeast Asia. High oil prices facilitate exploration and production activities in southeast Asia vibrant again in 2022, boosting demand for oil and gas services.

Regarding rig supply services, the increase in crude oil price from 2021 has helped day rates in 2022 increase by 23.1% YoY, reaching an average of 87.7 thousand USD/day. The utilization in the region improved and remained at 78.7% from 63.4% in 2021.

The results of the E&P services segment haven't recovered in Vietnam because of the gloomy domestic upstream condition.

Although E&P services activities in Southeast Asia have been vibrant in 2022, the results of E&P services in Vietnam did not recovere due to: (1) The gloomy upstream condition in the country: Capex in exploration and production in 2022 was the lowest in 10 years and large projects are behind schedule – causing E&P services companies to still have no job or move to abroad with higher operating costs, (2) Effects of other factors such as provisioning for past customers, exchange rate losses, etc.

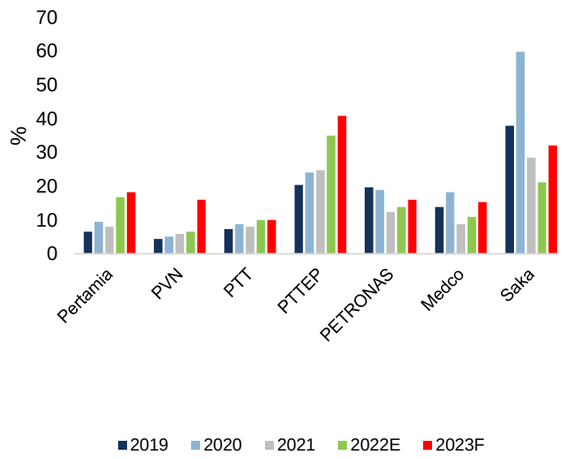


Sources: Companies FS, FPTS research

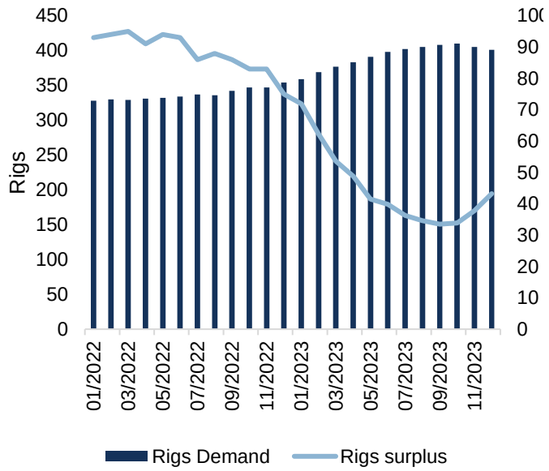
1. 2. Outlook for 2023: Growth expectations driven by crude oil prices remain high and the Petroleum law revision promotes investment

E&P demand continues to be supported as high-level oil prices in 2023

Upstream Capex/Revenue of Oil and GAS Nocs in Southeast Asia



World Rig demand forecast to 2023



Sources: Fitch solution, IHS markit, FPTS research

With the cure oil price scenario at 92 USD/barrel with stable fluctuation in 2023, we expect upstream E&P activities in Southeast Asia to continue to be active as crude oil prices are generally $30-40 higher than the average breakeven point.

According to Fitch solution, 2023 will be the year for investment in new oil and gas projects in Southeast Asia, thanks to high crude oil prices. Rigs demand will continue to increase in 2023, mainly from the Middle East.

Currently, several rigs in Southeast Asia are hired to participate in drilling campaigns in the Middle East, making the supply of rigs in this region decrease, combined with high demand, which helps increase day rates in 2023. With favorable regional E&P conditions, Vietnamese rigs also have jobs in 2023, mainly in Southeast Asia, showing positive results for the E&P services segment in 2023.

Drilling schedule of PVD rigs:

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PVD I	Vietsopetro (Vietnam)			JVPC (Vietna)		Valeura (Thailand)						
PVD II	Pertamia (Indonesia)											
PVD III	Hibiscus (Malyaysia) - PM3											
PVD VI	POVO (Vietnam)			PVEP POC (Vietnam)								
PVD V	Shell (Brunei)											
Landrig 11	GBRS (Algeria)											

: Inactive :Active :Optional to extend

Revise in Petroleum law are expected to restore domestic E&P activities and accelerate the progress of large E&P projects.

In November 2022, the National Assembly passed the revised Petroleum Law, which will take effect on July 1, 2023. We expect the revised petroleum law will attract investment into oil and gas projects, thereby promoting domestic exploration and production activities to prosper again:

Policy	New/change	Affect
Oil and gas contract	Increase the contract term from 25 to 30 years (and 35 years for those eligible investment incentives). Priority is given to new signings after the signed oil and gas contract expires. Expansion of area regulations for oil and gas contracts, including many oil and gas blocks.	Helps increase flexibility for oil and gas contracts, creating conditions to encourage oil and gas contractors to exist longer.
Investment Incentives	Adding criteria to classify projects receiving incentives (by location, exploitation conditions) For investment incentive projects: 30% reduction of corporate income tax and a 50% reduction of crude oil export tax compared to the applicable rate. For specific case: Reduce corporate income tax maximum of 70% and reduce crude oil export tax maximum of 100% compared to investment incentive projects.	Clearer regulations on preferential tax rates for specific projects. Facilitating incentive conditions for small, marginal fields and fields in sensitive and remote deep water areas.
Project implementation steps in oil and gas activities	More detailed regulations on the scope of implementation in contracts with PVN and its subsidiaries	Help remove legal bottlenecks and overlap in project implementation regulations, thereby helping PVN focus on developing new exploration and production projects.
Regulations for state-owned enterprises	Supplementing and clarifying regulations with state-owned enterprises (PVN and PVEP) on accounting and auditing work for oil and gas contracts, oil and gas projects, and cost settlement.	
Regulations allowing 3rd party access to existing infrastructure	Additional regulations sharing existing oil and gas infrastructure.	

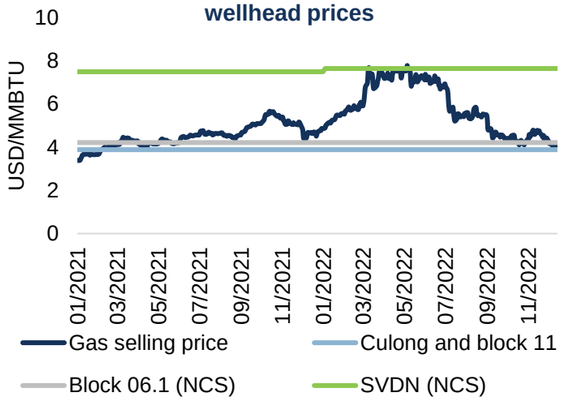
We also expect that the revised petroleum law and drastic actions of the Government will promote projects to be implemented in 2023 - 2024, including the Phase 2B White Tiger project (with an investment of approx. 2 billion USD), Nam Du – U Minh and Block B – O Mon (with an investment of about 6.7 billion USD) helping E&P services sector benefit due to increased workload and domestic unit prices.

2. Gas distributor segment: Expected output growth to offset the drop in gas prices in 2023

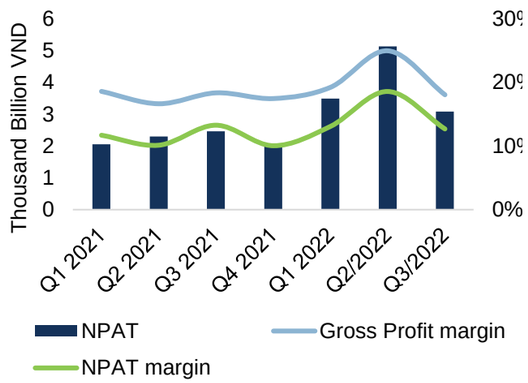
2. 1. In 2022: Results peaked thanks to the increase in gas prices in line with crude oil prices:

In 9M.2022, gas distribtor segment recorded revenue and net profit growth of 33.8% yoy and 71.9% yoy respectively, mainly thanks to the strong increase in dry gas price in line with crude oil prices:

Gas selling prices (46%*MFO) versus wellhead prices



Profit and profit margin of Gas distributor segment



Sources: Bloomberg, GAS, FPTS Research

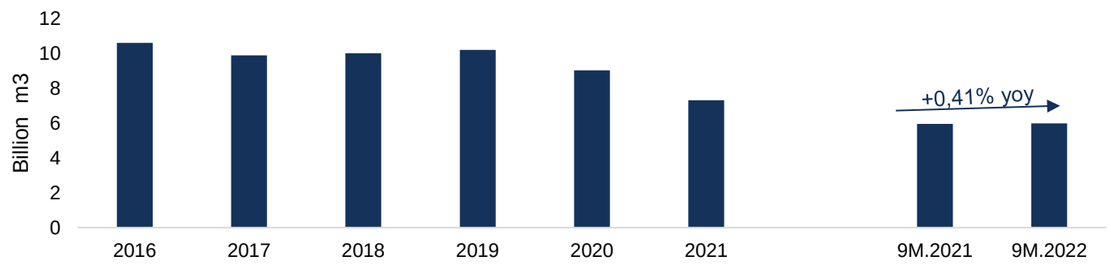
Gas prices surged sharply in line with crude oil prices, helping to increase business results:

In 2022, FO prices increased corresponding with crude oil prices, helping dry gas prices (46%*FO) in Vietnam surge to average USD 5.8/MMBTU, up 28.3% compared to USD 4.5/MMBTU in 2021 and higher than the wellhead price at the two main gas fields (average 4 USD/MMBTU). The increase in gas prices above the wellhead price helped gas distributors enjoy more profits from the gas price spread in 2022.

Gas output did not meet expectations due to the low competitiveness of gas-fired power compared to other power sources.

In 9M.2022, dry gas consumption reached 5,987 million m3, slightly increased by 0.41% compared to the low level of 2021 - the year affected by social distancing. Gas consumption did not meet expectations because gas-fired power customers do not have much ability to compete with other power sources due to: (1) Gas prices in 2022 surged sharply due to the increase in oil prices and (2) Heavy rainfall due to the Lanina phase lasting from 2020 – now facilitate hydropower.

Dry gas consumption

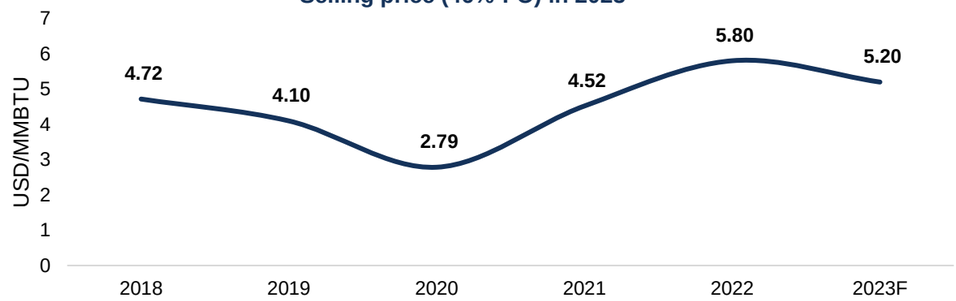


Sources: GAS, FPTS Research

2. 2. Outlook for 2023: Expected output growth to offset the drop in gas prices

Gas prices in 2023 decreased slightly following crude oil prices. With the oil price scenario of 2022 reaching 92 USD/barrel, we forecast that selling gas prices (46%*FO) will average 5.51 USD/MMBTU, down slightly by 5.3% compared to the average in 2022.

Selling price (46%*FO) in 2023

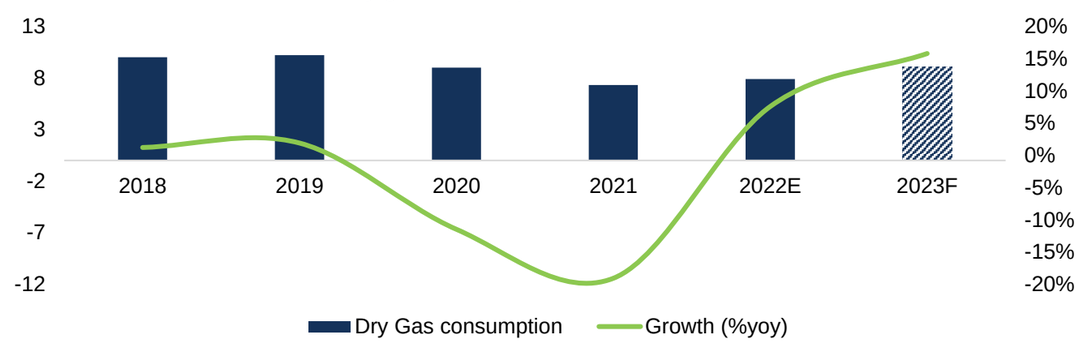


Source: FPTS forecasts

In addition, we see that the earnings from the gas price spread in the future are no longer high due to: (1) The decrease in output of fields enjoying the gas price spread (Cuu Long and Nam Con Son 1) and (2) the wellhead price of new fields will be high, in which Sao Vang - Dai Nguyet field has a wellhead price about 8 USD/MMBTU, so the gas distributor can benefit from the transportation tariff only.

Gas output increases as gas-fired power becomes more competitive

Dry gas consumption in 2023 forecast



Sources: GAS, FPTS forecast

We forecast dry gas consumption will reach 9,083 million m3 in 2023, up 15.5% yoy due to the gas-fired power being more competitive when: (1) The weather situation changes into the El-Nino phase in 2023 and (2) Selling gas prices decrease slightly.

However, dry gas outputs do not have too much room to recover to 2018 - 2019 levels due to: (1) Gas output declining at old fields and (2) Renewable energy sources increasing sharply during the 2020 - 2021 period making the electricity market more competitive in the Southeast region.

GARMENT & TEXTILES INDUSTRY
FACING A DECLINE IN DEMAND

I. GROWTH OF TEXTILE & GARMENT INDUSTRY DEPENDS ON THE ECONOMIC CYCLES OF CONSUMPTION MARKETS

In this report, we focus on analyzing the garment industry (accounting for 80% of Vietnam's Textile & Garment industry revenue) with the representative indicator being export value.

In general, the growth of Vietnam's textile and garment (T&G) industry depends mainly on the economic cycles of consumption markets.

Since 2005, the growth of Vietnam's T&G industry has experienced 04 acceleration-deceleration cycles (each cycle is 03 - 04 years long), which were similar to the economic cycles in consumer markets. In which, the cycles ended at the bottom of the decline corresponding to events that caused a recession or world economic crisis, including the financial crisis in 2009, the public debt crisis in 2012, the decline and increase economic growth in 2016 and COVID in 2020.

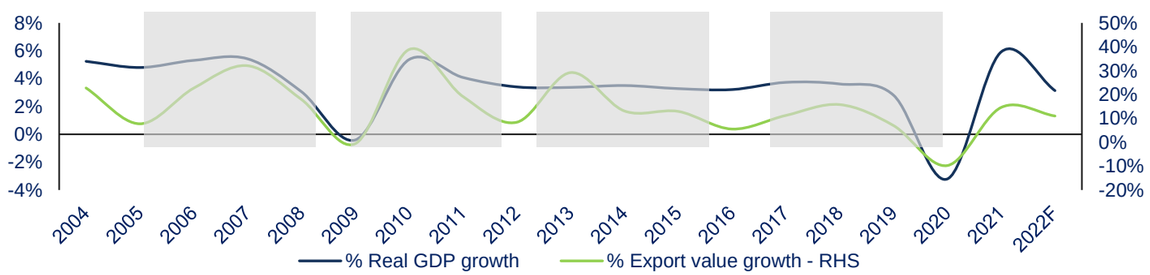
In addition, the growth of the industry is also impacted by changes in internal factors in the industry.

Export value and growth of Vietnam's T&G industry

Source: General Statistics Office of Vietnam

1. The economic cycles are the main driver of the industry growth cycles

Annual growth of OECD real GDP and Vietnam's T&G exports value

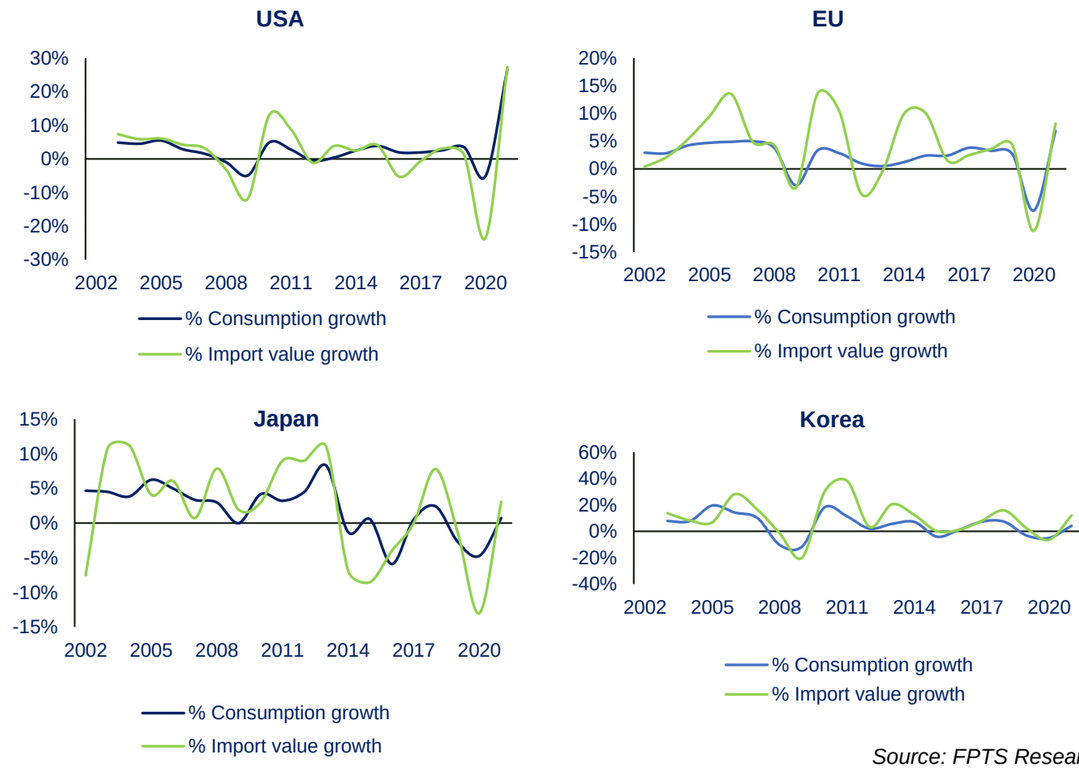


Source: OECD

Because of focusing on apparel export, the output of Vietnam's T&G industry depends mainly on the economic cycle of the consumption countries (group of OECD countries - the US, EU, Japan, Korea).

The import demand for garments relies on the economic cycle, because clothing is a durable consumption good which is sensitive to purchasing power. That was shown by the high correlation between the annual growth rate of consumption and apparel import value in historical data. From 2002 to 2021, spending growth boosted import demand, whereas crisis periods caused the contraction.

The historical correlation between %change in consumption and garment's import value in major markets



Source: FPTS Research

2. Changing within the industry impacts the growth of the industry

During most of the development period, the garment industry of Vietnam has focused mainly on increasing the number of orders. In contrast, the added value of each order has not improved much yet, because the methodology in garment manufacturing and the type of product has not come along.

Expanding the consumption market has boosted the ability to attract more orders. While rapidly increasing labor costs have been putting pressure.

Expanding consumption market supported growth of T&A export

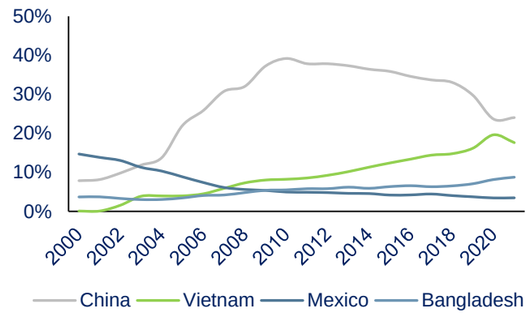
In general, the Trade Agreements help Vietnam's T&G products expand their markets and increase their competitiveness through agreements in trade relationships and preferential tariffs.

In 2002, expanding the US market with Vietnam - US Trade Agreement helped Vietnam's T&G export value to increase by 38% YoY (the highest annual increase in the last 20 years), of which export value to the US increased 17 times. This agreement has made the US become the largest partner of Vietnam's T&G industry (the share of the US market increased sharply by 34 pp from 2.4% in 2001 to 37% in 2002. In 2022, it accounted for ~47% of export value of T&G industry).

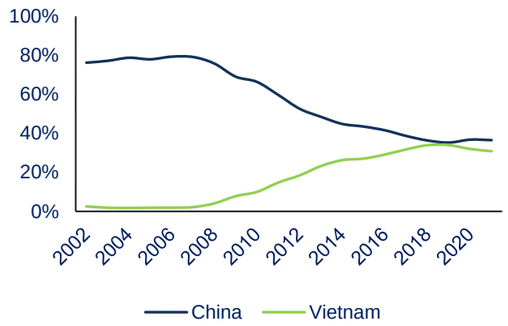
Thanks to this agreement, Vietnam's market share increased from ~0.1% the US dramatically in 2001 to 1.6% in 2002. After that, the market share maintained its growth. In 2022, it recorded about 17.6% (the second biggest garment exporter to the US).

Vietnam - US Trade Agreement came into effect in December 2001, officially opening trade for goods between the two countries (in the previous period, Vietnam and the US did not have any official commercial relationships).

Market share in the US garment import market



Market share in the Korea garment import market



Source: FPTS Research

In 2007, expanding the Korean market with the ASEAN - Korea Free Trade Agreement (AKFTA) contributed to Vietnam's T&G industry growth. Exporting of the garment to Korea grew strongly in 2008 (+98% YoY) and 2009 (+67% YoY), while the growth of the whole industry slowed down (~0% YoY in 2009). To 2022, Korea still has maintained its important role in the garment export markets of Vietnam, accounting for ~09% of export value.

In Korea, AKFTA helped Vietnam's garments to increase competitiveness. It could be shown by the rapid growth of the market share of Vietnam's garments in Korea, which increased 02 times (from 04% in 2008 to 08% in 2009) after the agreement took effect.

The AKFTA Agreement officially took effect in June 2007, thereby eliminating all import taxes on textiles and garments from ASEAN countries into Korea (before that the average tax rate was ~12%).

High labor costs put pressure on order growth

The rapid increase in workers' wages makes Vietnam's garment products less competitive. In 2021, the average salary of a garment worker in Vietnam was about 328 USD/month, higher than some major competitors such as Bangladesh and Indonesia. Labor costs increased due to pressure from the rapidly rising minimum wage policy (+11%/year in 2010 - 2022) and hiring competition in other industries in Vietnam.

Labor costs gradually becoming less competitive is the common trend in the development path of the textile and garment industry (proven by the historical development of the T&G industry in developed countries such as Japan, Germany, Korea, and China), and it will make the restriction on the long-term growth of Vietnam's T&G industry.

Garment worker salary in 2021 and growth rate of minimum wage in 2010 - 2019

Source: ILO, FPTS Research

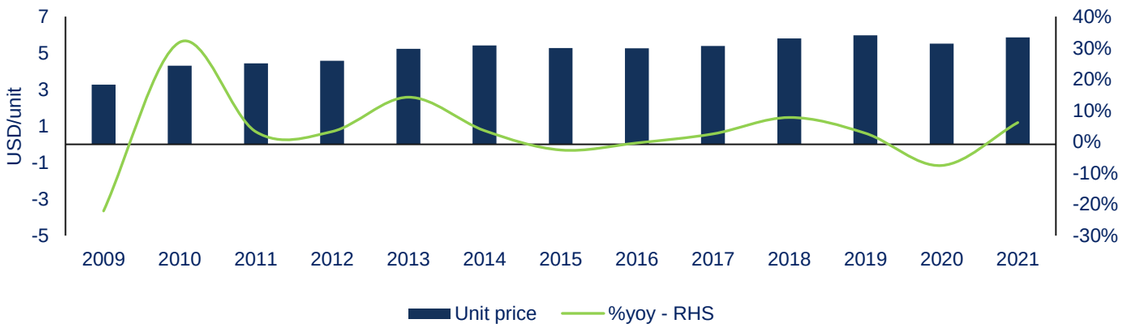
The added value of each order has remained at low level

The added value of each order has not improved much because the garment manufacturing and the finished product have not come along.

By 2021, Vietnam's T&G industry was still in the first stage of the development path of the sector (clothing processing -> weaving/dyeing -> machinery manufacturing). As a result, 90% of companies in the industry are manufacturing apparel by low value-added process: CMT (~60%) and FOB (~30%). This feature is common in countries in the first stage of the path, such as Bangladesh, Indonesia, etc.

Besides, the added value of products has not innovated much over the year, with the popular products being casual clothes having low difficulty, such as T-shirts, pants, sports-wears, etc. Since 2009, the number of products has grown at a high rate (7.5%/year), but the unit price of each product (export value/products output) has increased slowly (~2.8% per year – just above global inflation).

Average unit price of garment export



Source: FPTS Research

II. 2022 AND 2023 OUTLOOK: FROM GROWTH PHASE TO DECELERATION PHASE

Based on analyzing the economic cycle and Vietnam's T&G industry, we expect that **the growth of export value in the period 2021 - 2024 still depends mainly on the economic cycle in consumer markets.**

Besides, the internal factors of the industry have not improved significantly, with (1) The ability to expand the EU market has been unclear due to the barriers of rules of origin; (2) Labor costs continue to increase; (3) The added value of the product has not increased yet.

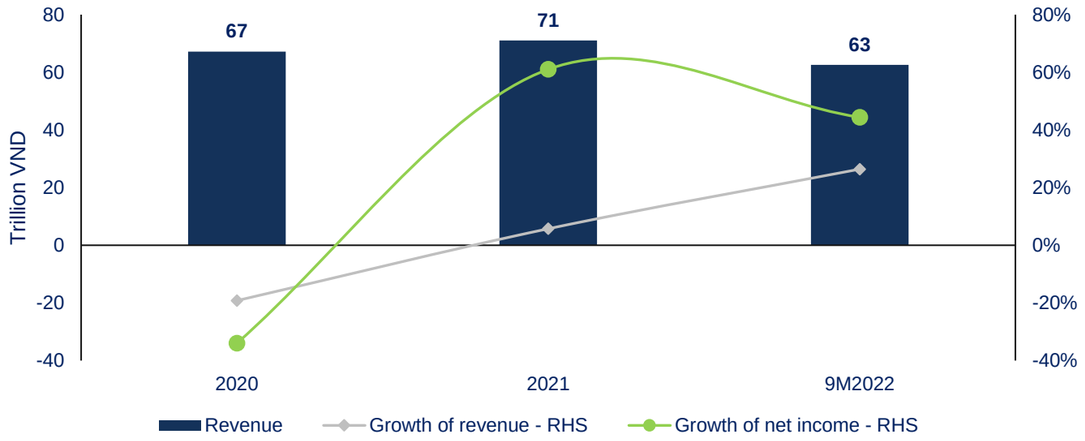
The current economic cycle in the consumer markets tends to move from the growth phase to the deceleration phase.

In general, the economic cycle in consumer markets is transferring from the growth phase (2021 – 2022) to the deceleration phase (2023 – 2024) in the economic cycle 2021 - 2024, therefore, having an impact on the growth of Vietnam's T&G industry as follows:

Vietnam's T&G industry has experienced recovery and growth in 2021 - 2022 because of the recovery of consumption (after a decline due to the COVID epidemic in 2020). Export value grew by 16.4% YoY and 9.7% YoY respectively, reached about USD 41 billion and USD 44.5 billion respectively.

Therefore, the financial results of companies increased dramatically in the same period. In 2021 and 9M 2022, the revenue of listed companies grew by 06% YoY, and 26% YoY, respectively (value reached 71 trillion VND and 63 trillion VND), and profit after tax grew by 61% YoY and 44% YoY, respectively.

The financial result of listed companies in 2020 – 2022

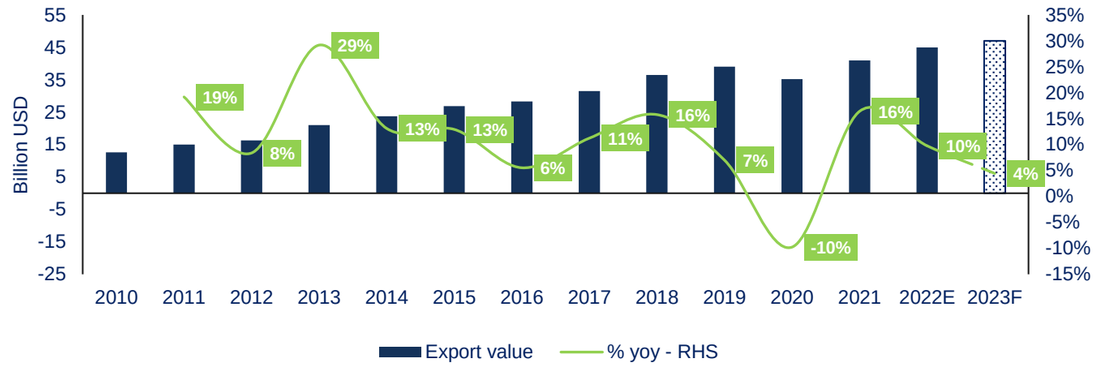


Source: FPTS Research

In 2023, we expect the growth of Vietnam's T&G industry will be slowdown due to the contraction of demand (higher inflation restrains spending in export markets). According to the Vietnam Textile and Apparel Association (VITAS) forecast, the export value growth in 2023 will be only about 3.5% - 04% YoY (05 pp lower than 09% YoY in 2022), reaching ~47 billion USD.

In addition, the labor shortage will challenge Vietnam's garment companies in 2023. According to VITAS, the labor force in the T&G industry in 2023 will continue to decrease because of inadequate orders and hiring competition with other industries. From the beginning of 2022, the labor force of the whole industry has decreased by 05% - 07%.

Forecast of the Vietnam's Textile and Garment export value in 2023

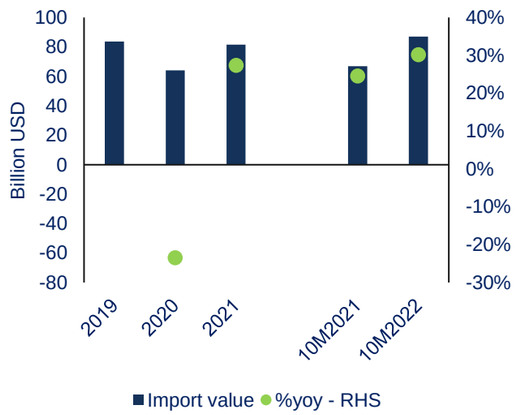


Source: VITAS, FPTS Research

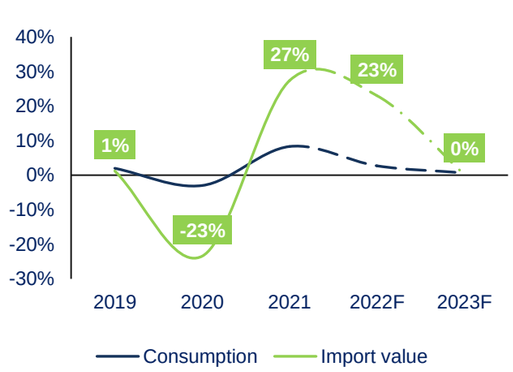
The current economic cycle makes an impact on the consumption of Vietnam's major garment markets as follows:

US market (accounting for ~ 47% of exports in 2022): **In the 2021 – 2022 period, the growth of garment imports was driven by the strong recovery of the US economy.** Import value in 2021 increased by 27.4% YoY thanks to the growth of consumer spending (+8.3% YoY). In 2022, the cumulative import value of 10M2022 grew at +30.2% YoY (~$87 billion), which was supported by the growth momentum of households spending +02% YoY (because of income growth and accumulated savings).

Import value of garments in 10M2022 in US



Growth of consumption and garment import value forecast in 2023 in US



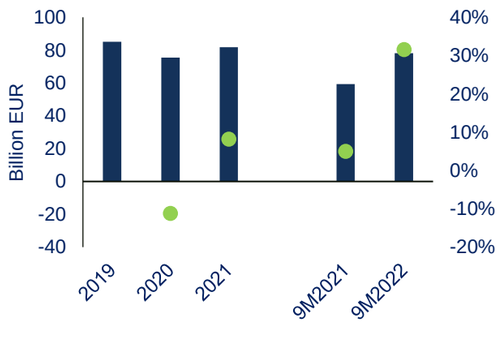
Source: OTEXA, FPTS Research

In 2023, the growth of US apparel imports is expected to decelerate because of higher inflation pressure. We expect the growth of garment import value will be only ~0.2% YoY (equivalent to USD 101.3 billion), as the US real consumption in 2023F is forecasted to increase only about 0.7% YoY (1.7 pp lower than 2.7% in 2022E).

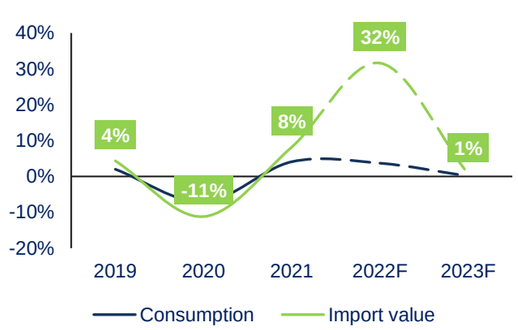
EU market (accounting for ~47% of exports in 2022): **Garment consumption in 2021 – 2022 was driven by the recovery of the EU economy.** In 2021, the EU's garments import value increased by 8.1% YoY to accumulate to EUR 81.7 billion. It reached 96% in 2019 - before the epidemic, because the EU economy was not fully recovered at this time (with spending slightly increased only by ~04% YoY). To 9M2022, import value increased sharply (+30.2%) due to a strong recovery in consumer spending (+06% YoY). The import value of garments was about 78.1 billion EUR, accumulated to 9M2022.

In 2023, garment import demand is expected to be tight along with the economy, due to the impact of the energy crisis and inflationary pressures (according to *Goldman Sachs*). We expect that the value of EU's apparel imports in 2023 will grow by ~0.7% YoY (equivalent to EUR 108.3 billion), as consumption is expected to grow only 0.1% (less than 3.6 pp compared to 3.7% in 2022F).

Import value of garment in 9M2022 in EU



Growth of consumption and garment import value forecast in 2023 in EU

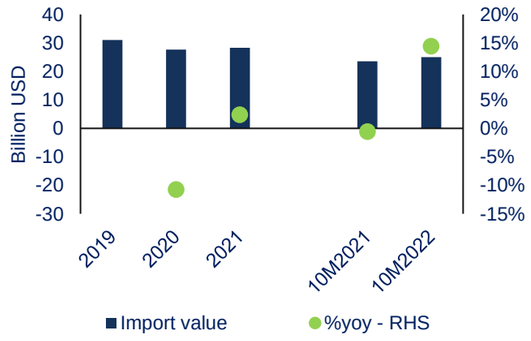


Source: Eurostat, FPTS Research

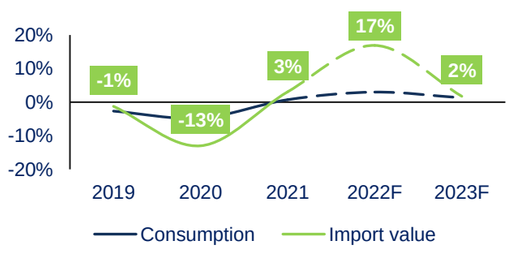
Japan market (accounting for ~ 10.4% of exports in 2022): **Increasing garment import was driven by the re-opening economy of Japan in early 2022.** Accumulated 10M 2022, Japan's apparel import value reached ~USD 24.9 billion (+14.4% YoY), thanks to consumer spending increasing about 2.5% YoY. Japan's economy has recovered clearly since the re-opening (March 2022), real GDP maintained its growth momentum throughout 9M 2022, and by Q3 2022, it returned to pre-epidemic levels (~547 trillion yen).

In 2023, apparel import demand is expected to be slow down. Although internal factors will still support the Japanese economy, it will be under tremendous pressure with higher inflation and a global economic slowdown. Accordingly, we expect that Japan's garment import turnover in 2023 will grow only by ~1.75% YoY (reach USD 31 billion), as the forecast consumption in 2023 will be 1.3% YoY (1.8 pp lower than 3% in 2022F).

Import value of garment in 10M2022 in Japan



Growth of consumption and garment import value forecast in 2023 in Japan

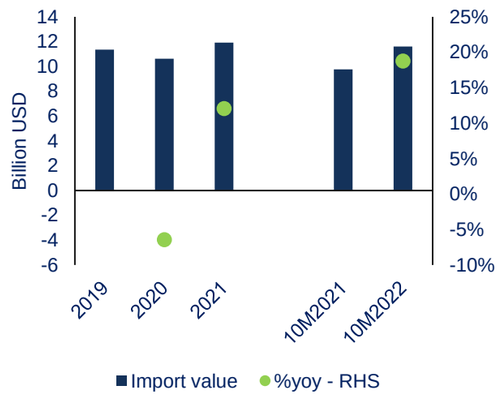


Source: FPTS Research

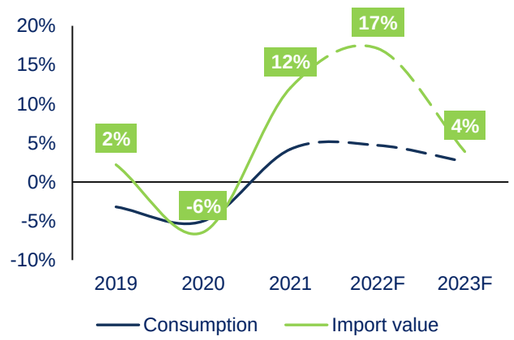
Korean market (accounting for ~09% of exports in 2022) **Growing of garment import in 2021 - 2022 was driven by rapid recovery and growth momentum of the economy.** South Korea's economy recovered as early as 2021 and maintained growth in 2022 because of the country's early reopening. It was set to support household consumption (spending in 2021 and 2022 grew by 4.2% YoY and 4.7% YoY, respectively) and import demand of apparel. In 2021 and 10M2022 import value of garments grew by 12.1% YoY and 18.7% YoY respectively.

In 2023, we expect that the import demand for apparel will continue to contract as due to the negative impact of higher inflation. Import value is forecasted to reach USD ~14.4 billion (+3.9% YoY), as consumption is forecasted to increase only 2.6% YoY (0.4 pp lower than 03% in 2022).

Import value of garment in 10M2022 in Korea



Growth of consumption and garment import value forecast in 2023 in Korea



Source: FPTS Research

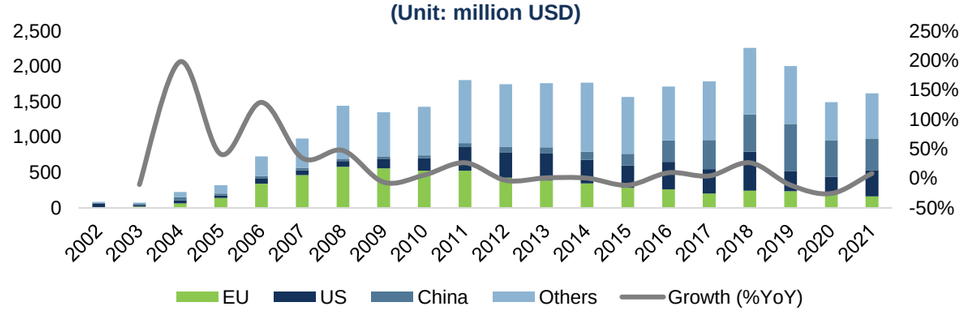
PANGASIUS SUB-INDUSTRY
CONSUMPTION DEMAND FORECAST TO DECREASE DUE TO GLOOMY GLOBAL ECONOMY

I. PANGASIUS SECTOR PRESENTS A LIMITED CYCLICAL PATTERN

Pangasius products are essential consumer goods. Unlike products such as sugar and pork in this report with domestic demand, pangasius products are mainly exported with demand from foreign markets. In this report, we choose export turnover as an indicator to present the sector's performance.

In our view, the pangasius sector begins to show a clear cyclical pattern in the period of 2020 – 2021 when the outbreak of the Covid-19 pandemic led to a global economic recession and caused the demand for pangasius in foreign markets to decline. Previously, the pangasius sector did not show a clear cyclical pattern because its internal factors changed, including (1) changes in the structure of export markets over the years and (2) the unstable supply of pangasius each year, causing the sector to often fall into an imbalance of supply and demand. Specifically, the statistics of export turnover from 2002 to 2019 show that the export turnover increased rapidly in the period of 2002-2008 when the sector began to participate in the global seafood value chain. However, the export turnover started to slow down in the period of 2009-2019 due to internal changes within the sector.

Pangasius export turnover by markets in the period 2002-2021
(Unit: million USD)



Source: VASEP, FPTS

Since the pangasius sector exhibits limited cyclicality, we focus on analyzing the internal factors affecting the sector's annual export turnover, including (1) changes in the structure of main export markets and (2) the unstable supply of pangasius each year.

1. Changes in the structure of export markets

Exported pangasius products have faced numerous barriers in terms of quality regulations and tariffs from foreign markets, which has caused changes in the structure of export markets over the years. We summarize the main changes as follows:

Period 2002 – 2010: The sector began participating in the global seafood value chain. The export turnover increased sharply during the period with the EU market being the main driver.

Period 2011 – 2015: The structure of export markets experienced changes, in which the share of the EU in total export turnover decreased while that of the US increased. The decrease in export turnover to the EU was because pangasius faced negative claims by the EU media since 2010 about farming methods that did not meet food hygiene and safety standards. As a result, the main pangasius consumption channels in the EU, such as supermarket chains and restaurants, reduced importing pangasius products from Vietnam. However, to offset the decline from the EU market, Vietnamese exporters flexibly switched to other markets, notably the US market.

Period 2016 – 2021: The sector successfully expanded to the Chinese market in the context of increasingly difficult exports to the US and EU markets. In the US, many pangasius exporters were subject to anti–dumping tax because of unfair competition. In the EU, exporters had difficulty meeting strict quality requirements such as achieving global farming certifications ASC or GlobalGAP. Therefore, many exporters turned to the Chinese market. As of 2021, China and the US were the two largest export markets that played a dominant role in the sector with export turnover accounting for more than 50% of the total export turnover in the same year.

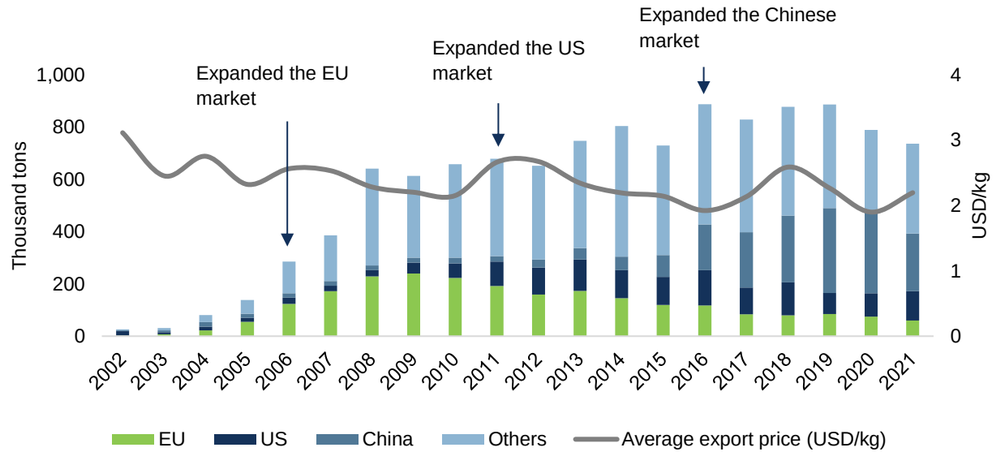
2. The unstable supply of pangasius each year

The supply of pangasius in Vietnam fluctuates significantly each year because it is heavily affected by the unsustainable farming activities of small farming households. Specifically, small-scale households often increase the farming area when the price of pangasius increases and reduce the farming area when the price decreases, leading to significant fluctuations of pangasius supply between years and affecting the export price of the sector.

The pangasius sector experienced three oversupply crises, including the periods 2008-2010, 2013-2016 and 2019-2020. The common point of the three crises is that the pangasius sector successfully developed new markets, leading to a temporary shortage of pangasius supply and a sharp increase in the export price. After that, the farming households rapidly increased the farming area, resulting in an oversupply of pangasius and a sharp decline in the export price.

From 2011 until now, although the export volume has tended to increase over the years, unfavourable movements in the export price (due to the impact of oversupply crises) have made the sector's export turnover almost level off during the whole period, except for the period of decline due to the Covid-19 pandemic 2020-2021. Details of three crises are as follows:

Pangasius export volume and price by markets in the period 2002-2021



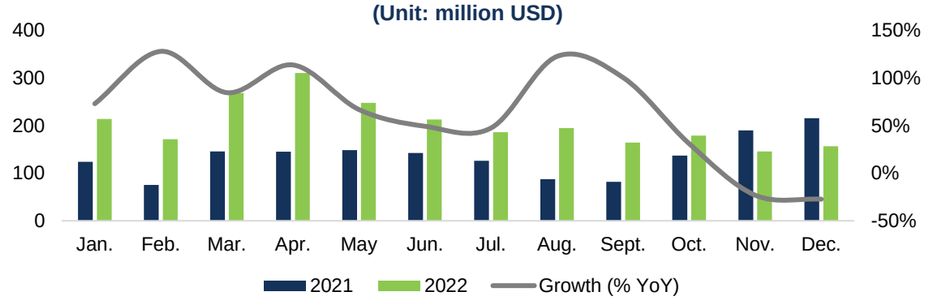
Source: Agromonitor, FPTS

Events	Increasing period	Decreasing period
Successfully expanded the EU market in 2006	**2006-2007:** The strong growth of exports to the EU led to a shortage of pangasius supply and an increase in the export price.	**2008-2010:** The pangasius supply increased rapidly and became redundant, creating pressure to reduce the export price. Farming households had to reduce the farming area during this period.
Successfully expanded the US market in 2011	**2011–2012:** The strong growth of exports to the US led to a shortage of pangasius supply and an increase in the export price.	**2013-2016:** The pangasius supply increased rapidly while exports to main markets slowed down. In the US, many exporters were subject to anti-dumping tax because of unfair competition. In the EU, exporters faced negative claims by the EU media. As a result, the pangasius supply became redundant, forcing exporters to shift to lower-value markets (such as Latin America, ASEAN and the Middle East) and resulting in a sharp decline in the export price.
Successfully expanded the China market in 2016	**2017-2018:** The strong growth of exports to China from 2016 led to a shortage of pangasius supply. The supply shortage got worst in 2018 when the demand for pangasius in the US also increased due to the influence of the US-China trade war.	**2019-2020:** The pangasius supply increased rapidly while overall exports slowed down, especially in the US market. As a result, the pangasius supply became redundant in 2019 and got worst in 2020 when the Covid-19 pandemic broke out, causing a decline in demand in all markets. Many farming households had to reduce the farming area during this period because of severe losses.

II. 2022 IN REVIEW AND OUTLOOK 2023: PANGASIUS SECTOR IS EXPECTED TO ENTER THE DECLINE PHASE

1. The pangasius sector entered the growth phase in 2022 thanks to the economic recovery in foreign market

Pangasius export turnover by months for the period 2021-2022
(Unit: million USD)

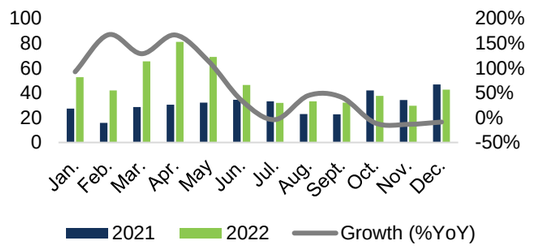


Source: VASEP, FPTS Research

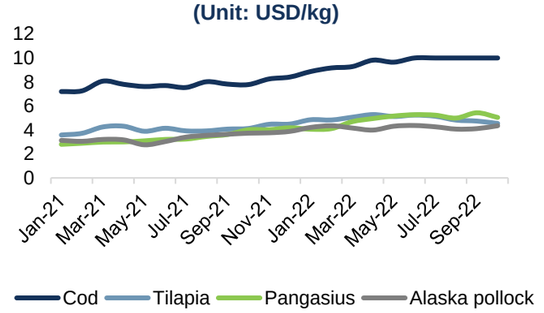
1.1. Demand recovered strongly, especially from two key export markets, the US and China

In the US market, the export turnover in 2022 was estimated at 562 million USD (+52% YoY), accounting for about 23% of the sector turnover. Accordingly, the export volume reached 124,000 tons (+11% YoY) and the average export price reached 4.5 USD/kg (+36% YoY). The export turnover to the US surged thanks to the re-operation of the HORECA (Hotel, Restaurant and Café) consumption channel, helping to stimulate demand for pangasius products. Pangasius exports remained high in H1 2022 with the turnover peaking in April at 81 million USD. However, the export turnover showed signs of slowing down in H2 2022 due to the significant increase in the pangasius price, which made this product less competitive in a high inflation environment.

Pangasius export turnover to the US by months for the period 2021-2022
(Unit: million USD)



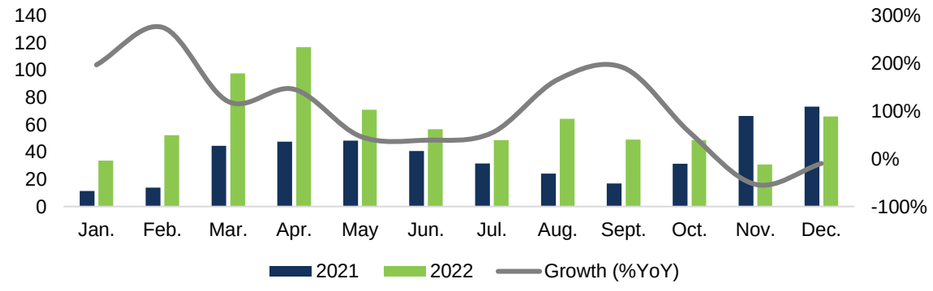
Prices of white fish in the US by months from Jan-2021 to Oct-2022
(Unit: USD/kg)



Source: VASEP, ITC, FPTS

In the Chinese market, the export turnover in 2022 was estimated at 735 million USD (+50% YoY), accounting for 30% of the sector turnover. Accordingly, the export volume reached 294,000 tons (+33% YoY), and the average export price reached 2.5 USD/kg (+22% YoY). Although China still maintains the Zero-Covid policy, the context of the country's seafood supply shortage (due to the disruption of the domestic seafood industry as a result of the Zero-Covid policy) has made China increase seafood imports a lot. Exports to China surged in H1 2022 with the turnover peaking in April at 117 million USD. However, the export turnover showed signs of slowing down in H2 2022 due to the Covid-19 outbreak from March 2022, causing cities in China to lock down regularly.

Pangasius export turnover to China by months for the period 2021-2022
(Unit: million USD)

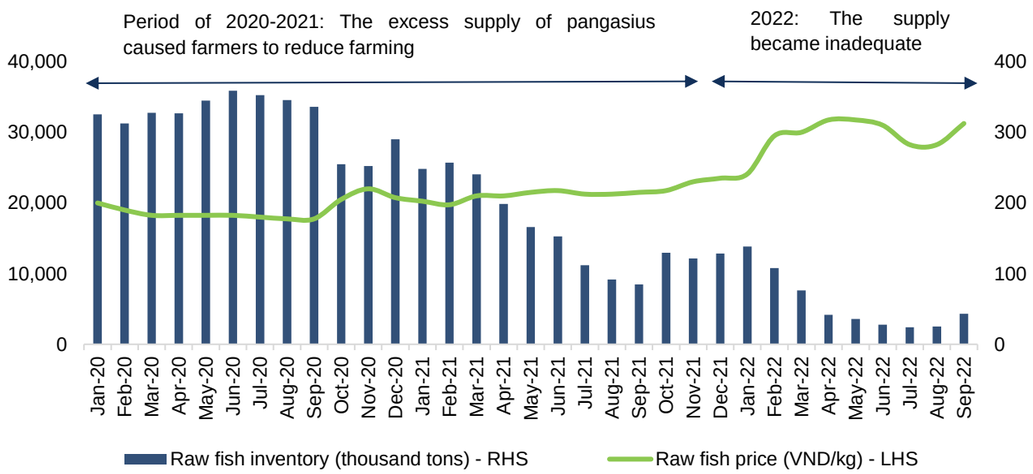


Source: VASEP, FPTS, Research

1.2. Tight pangasius supply supported the export price to remain high in 2022

The difficult export situation in the period of 2020-2021 led to an increase in domestic pangasius raw material inventories, which in turn led to a prolonged low price of raw pangasius and forced farming households to reduce the farming area due to severe losses. In 2022, with the demand for pangasius surging thanks to the reopening of foreign markets, the supply gradually became inadequate, putting pressure on the export price.

Raw fish price and inventories by months in the period 2020-2021



Source: Agromonitor, VASEP, FPTS

2. Outlook 2023 – Pangasius sector is expected to enter the decline phase as the global economy is forecasted to enter a recession

In 2023, with the global economy forecast to enter a recession, we expect that the overall demand for pangasius will be negatively affected in this context. Specifically, exports of the sector in 2023 will be less favorable because (1) the overall pangasius demand is expected to decrease due to the impact of the economic recession, and (2) the export price is forecasted to decrease due to the recovery of the pangasius supply. Details are as follows:

2.1. Pangasius demand in most markets is forecasted to be less positive

In the US market, we anticipate that the demand in 2023 will be less positive than in 2022 because (1) pangasius inventories in the US as of Q4 2022 remained high, according to the Pangasius Sector Review Conference 2022 and (2) the HORECA consumption channel is forecasted to be less positive in 2023 due to the influence of inflation. According to the American Restaurant Association, the revenue of restaurant chains is forecasted to decrease by 3-5% in 2023 as consumers limit eating out to save money.

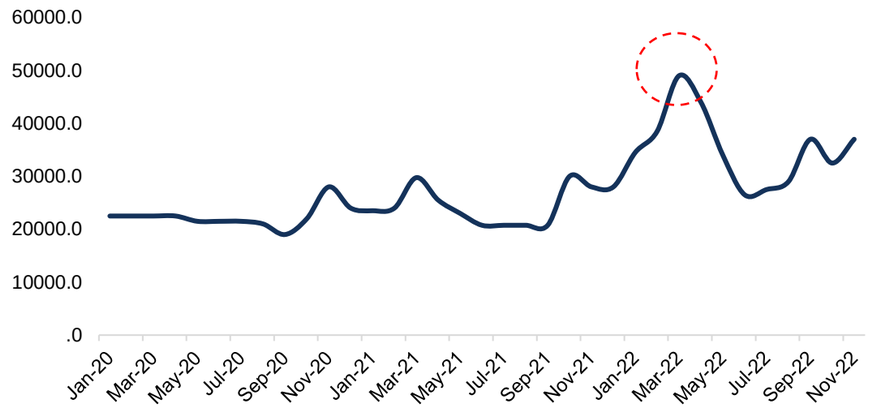
In other markets that reopened in 2022 (EU, Latin America, ASEAN, etc.), we maintain a less positive view of the demand in these markets because the less optimistic economic outlook in 2023 could cause the revenue of the HORECA channel to decline.

Contrary to the decreasing demand in most countries, **the demand in China** is expected to be positive thanks to the prospect of reopening in 2023. However, we note that the extent of the recovery of the Chinese market will depend on the opening progress of the Chinese Government.

2.2. Pangasius supply is expected to recover

According to the forecast of VASEP, the pangasius supply is expected to be plentiful from 2023, thanks to the positive recovery of raw pangasius prices in 2022, which has stimulated farmers to expand farming. Accordingly, the pangasius farming area reached about 5,800 hectares in 2022, an increase of 14% compared to 2021 after the period 2020-2021 when farming activities were affected by the Covid-19 pandemic. We believe this forecast is reasonable because historical data on the pangasius fingerling price shows that the fingerling price increased sharply around April 2022, reflecting the growing demand for pangasius farming. And based on the pangasius farming cycle lasting about eight months, the new school of fish will reach a suitable size for processing from the beginning of 2023.

Fingerling price by months from Jan-2020 to Nov-2022
(Unit: VND/kg)

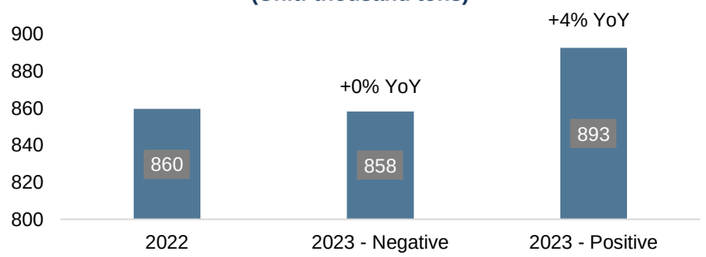


Source: VASEP, FPTS

2.3. Forecast summary – The sector's export turnover is forecasted to decrease by 15% YoY in 2023

Criteria	Explanations
Quantity	**The US and other countries**: We assume two scenarios for countries that reopened their economies in 2023 as follows: Scenario 1 – Positive: Export volume will be flat in 2023 thanks to (1) the decreasing inventories of pangasius in foreign markets, and (2) the decreasing export price will help pangasius to compete better with other white fish in the context of the economic downturn. Scenario 2 – Negative: Export volume will decrease by 10% in 2023 as pangasius inventories in foreign markets remain high and pangasius is less competitive with other white fish species in the context of the economic downturn. **China**: Based on the history of the Chinese market's export volume growth rate before the Covid-19 pandemic. We assume two scenarios as follows: Scenario 1 – Positive: Export volume will increase by 20% in 2023 thanks to the rapid reopening of the market from the beginning of 2023. Scenario 2 – Negative: Export volume will decrease by 10% in 2023 as the market reopens more slowly than expected. We summarize our forecast for the sector's export volume as follows:
Export price	Based on historical changes in the export price after periods of significant increases. We assume two scenarios as follows: Scenario 1 – Positive: The export price will decrease by 10% thanks to the reasonable supply expansion and favourable market demand. Scenario 2 – Negative: The export price will decrease by 20% due to excessively expanding supply and unfavourable market demand.
Export turnover	Based on our expectations on the export volume and price, we forecast the sector's export turnover in 2023 will reach about 2.1 – 2.2 billion USD, a decrease of 15% YoY.

Forecast of the sector export volume (Unit: thousand tons)



Unit: Thousand tons

Growth in export volume to the US and other markets	Growth in export volume to the Chinese market: 10%	13%	15%	17%	20%
0%	889	898	904	910	918
-3%	872	**881**	**887**	**893**	901
-5%	861	**870**	**875**	**881**	890
-7%	849	**858**	**864**	**870**	879
-10%	832	841	847	853	862

Unit: Million USD

Sector's export volume	Change in export price: -10%	-13%	-15%	-17%	-20%
858	2,201	2,127	2,079	2,030	1,956
870	2,232	**2,157**	**2,108**	**2,058**	1,984
881	2,260	**2,184**	**2,134**	**2,084**	2,009
893	2,291	2,214	2,163	2,112	2,036

SUGAR INDUSTRY
SUGAR PRICE FORECAST TO COOL DOWN BUT STILL REMAIN HIGH

I. SUGAR INDUSTRY IS NON-CYCLICAL AND THE INDUSTRY VALUE IS DRIVEN BY SUGAR PRICE

1. Sugar industry value is mainly driven by sugar price due to steadily annual growing demand

Some characteristics of Vietnam's sugar industry:

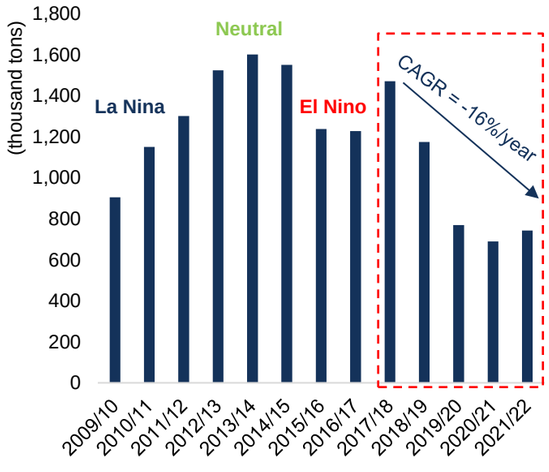
- Sugar is a consumer staple with a consumption demand growth rate of about 5% per year. Cane sugar produced in Vietnam is mainly consumed domestically and rarely exported due to the high production cost which make it difficult to compete with foreign sugar.
- Current situation of sugar supply and demand in Vietnam: Domestic supply only meets approximately 30% of total consumption, while the rest depends on imports.

Domestic supply of sugar is influenced by: (1) Weather conditions affecting sugarcane crops, (2) Pressure from cheap imported sugar from Thailand (the country ranked 4th in terms of sugar production and ranked 3rd in sugar export in the world), and (3) Competition for profit between sugarcane and other crops. Specifically:

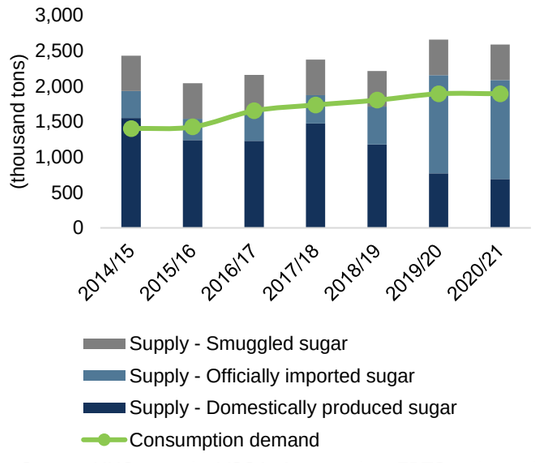
- Cane farming was favorable thanks to the neutral weather condition that helped sugar production reach a high level in 2013 – 2015 period and in 2017/18 crop year. In contrast, during the 2010 - 2012 and 2016 – 2017 period, sugar output declined due to strong El Nino and La Nina phenomenon.
- In 2018 – 2022 period, sugar production decreased rapidly at the rate of 16%/year due to the resonance of adverse factors: (1) The extreme La Nina phenomenon lasting since early 2020 causing poor crops across the country, (2) Stronger pressure from Thai sugar after ATIGA's effectiveness for Vietnam's sugar industry (2020) causing sugarcane production to decline and (3) Sugarcane's incompetence in term of economic benefits due to fluctuations in sugar price driving farmers away from sugarcane to switch to other crops.

As a consequence of the decreased output in recent crop years, domestic sugar production only meets about 30% of demand, the rest depends on imported sugar from Thailand, including officially imported and smuggled sugar entering Vietnam through its borders with Laos and Cambodia.

Vietnam's sugar output



Sugar supply and demand in Vietnam from 2014/15 - 2020/21

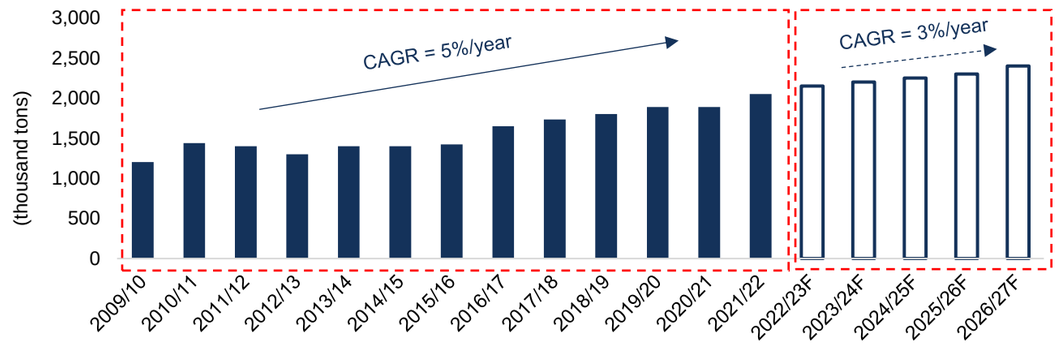


Source: UNComtrade, VSSA, Agromonitor, FPTS estimated

The crop year of sugar industry is from July 1st of the previous year to June 30th of the following year

Sugar consumption in Vietnam is currently stable at 2 million tons/year with a growth rate of 5%/year in 2010 - 2022 period and is determined by: population growth rate, growth in sugar consumption per capita and growth of the F&B industry (confectionery, beverage, etc.) that uses sugar for production. We believe that growth in demand for sugar will decelerate in 2023 - 2027 period with CAGR = 3%/year based on the following reasons: (1) Population growth rate in the forecast period will reach 0.9%/year, a decrease of 0.24 pts compared to 2009-2021 period (according to the General Statistics Office) and (2) The growth of sugar consumption per capita in Vietnam will be 5%/year (according to PwC). Total sugar consumption in the country is estimated at about 2.4 million tons/year by 2027.

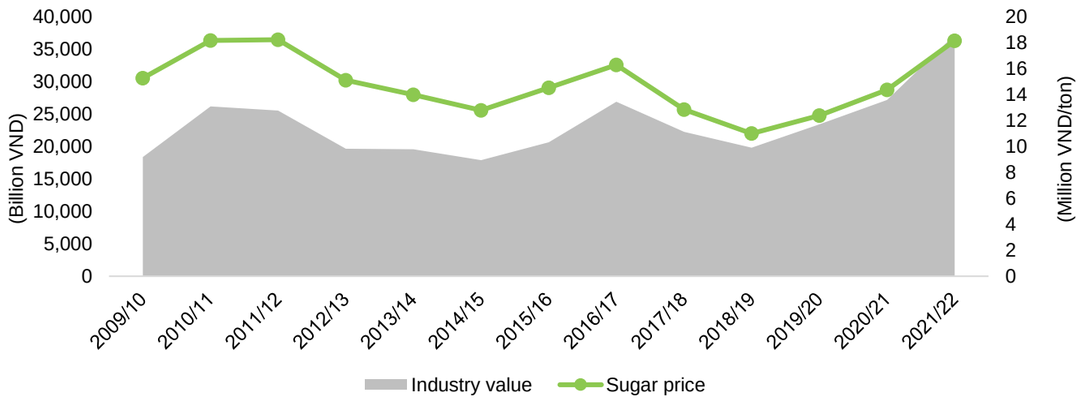
Sugar consumption in Vietnam



Source: VSSA, FPTS estimated

Because the demand for sugar in Vietnam is not so volatile, the value of sugar industry is mainly driven by the fluctuations in sugar price (sugar industry value is the product of the average selling price and annual consumption volume). Specifically, in 2014/15 and 2018/19 crop years, the industry value troughed when sugar price fell by 9% and 14%yoy, respectively. Similarly, in 2010 – 2012 period and 2016/17 crop year, the high price of sugar helped the industry value form a peak. From 2020 until now, sugar industry value has been recovering thanks to sharp increases in sugar price.

Sugar industry value and sugar price

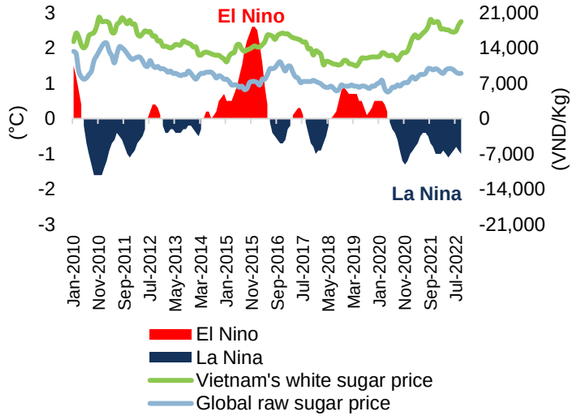


Source: VSSA, FPTS estimated

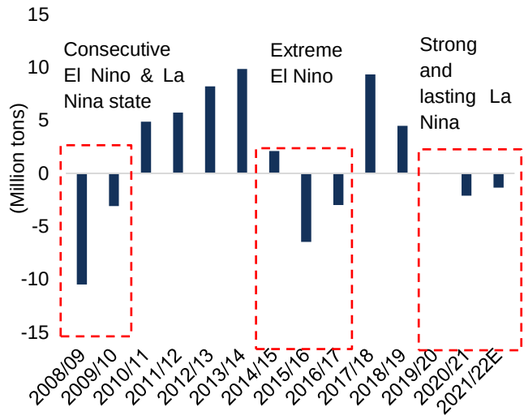
2. Weather conditions affect sugar output and price

Given the characteristics of agricultural sector, sugar price in Vietnam and in the world are both affected by weather conditions. Specifically, strong El Nino and La Nina (ENSO) phenomena cause global extreme weather conditions and adversely affect sugarcane farming, for example: heavy rain and storms cause flooding, drought causes sugarcane to wither. The yield and quality of sugarcane decreased, leading to a decrease in sugar output. The decline in global sugar production causes sugar deficit and makes sugar price rise sharply. On the contrary, the weather in neutral state is favorable for the sugarcane crop, which increases sugar output globally and sugar price will fall.

El Nino/La Nina index & global and domestic sugar price



Global sugar surplus/deficit



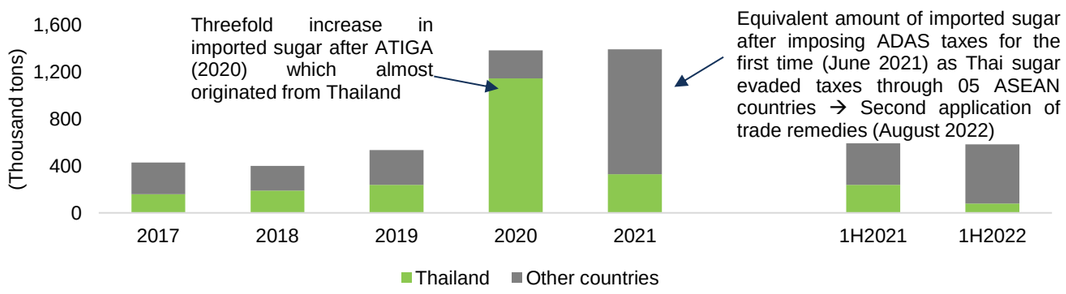
Source: ISO, CPC, Indexmundi, VSSA, FPTS Research
Assuming the USD/VND exchange rate is 23,000 VND

3. Trade remedies help protect domestic sugar industry

Trade remedies applied to support sugar industry help domestic sugar price increase more significantly than the world sugar price. After Vietnam implements the ASEAN Trade in Goods Agreement (ATIGA) in 2020, the sugar import quota is eliminated and the import tax is 5%. Imported sugar from Thailand rose threefold in 2019 with cheaper price than domestic sugar, causing large inventories and severe damage to domestic sugar factories. In that situation, the Ministry of Industry and Trade imposed anti-dumping and anti-subsidy (ADAS) taxes for the first time (June 2021) on imported sugar originating from Thailand and the second time (August 2022) on Thai sugar to evade taxes through 05 ASEAN countries: Cambodia, Indonesia, Laos, Myanmar, Malaysia.

Thanks to the impact of trade remedies, domestic sugar price increased by about 60% in 2019 - 2022 period, faster than the growth of international sugar price in the same period (about 33%). We will illustrate in more detail the fluctuations in sugar price after 02 times of applying trade remedies in the section "Sugar industry in 2022".

Officially imported sugar into Vietnam from 2017 to 1H2022



Source: UNComtrade, Agromonitor, VSSA, FPTS estimated

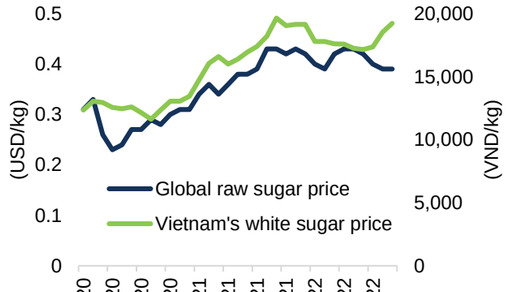
II. SUGAR INDUSTRY IN 2022 AND OUTLOOK 2023: SUGAR PRICE IS FORECAST TO COOL DOWN BUT STILL REMAIN HIGH

1. Sugar industry in 2022: Slight recovery in domestic production and consumption and sharply rising sugar price due to adverse weather and impact from trade remedies

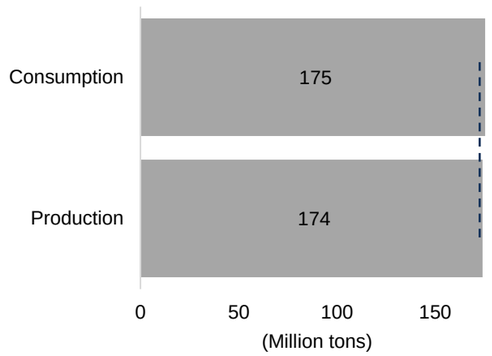
In 2022, Vietnam's sugar consumption demand increased by about 8%yoy due to quick recovery after the Covid-19 pandemic of F&B industry that uses sugar for production. Meanwhile, in 2021/22 crop year, domestic production also achieved an increase of 8%yoy compared to the low base level of 2020/21 crop year thanks to more favorable weather conditions across the country.

1.1. Sugar price in 2022 is in a growth phase lasting from the second half of 2020 until now due to global output deficit caused by La Nina state

Global and domestic sugar price from 2020 to the present



Global sugar consumption demand and production output in 2021/22



Source: ISO, Indexmundi, VSSA, FPTS Research

Specifically, extreme weather in the world's largest sugar-producing countries (such as severe drought and frost in Brazil, unseasonal rain in India, unusually heavy rain in Australia, etc.) resulted in a 0.12% decline in worldwide sugar production in 2020/21 crop year, global output reached 168.9 million tons, falling short of the demand of 170.5 million tons. The International Sugar Organization (ISO) estimates that the sugar output deficit would persist in 2021/22 crop year as consumption exceeds production as a result of a strong recovery in global sugar demand after the Covid-19 pandemic. Therefore, the world sugar price remains at the highest level in the past 5 years.

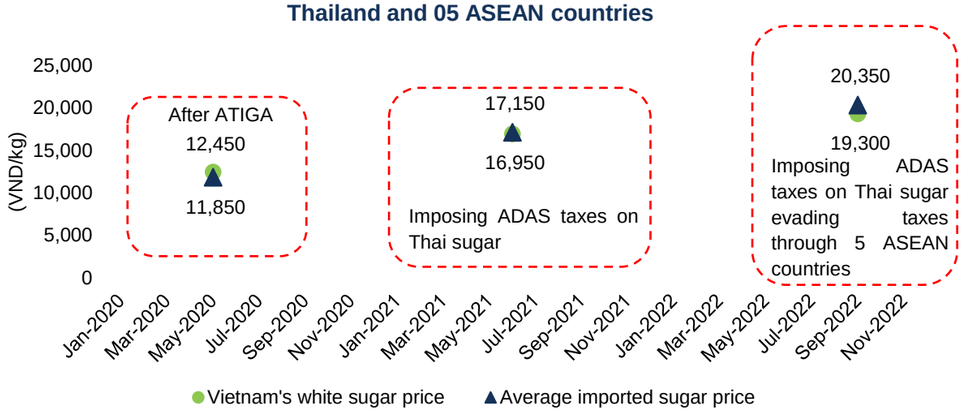
Along with the increasing trend of world sugar price, domestic sugar price increased sharply because Vietnam and Thailand's sugar output (the country that exports the most sugar to Vietnam) both saw declines in sugar production as a result of bad weather conditions during 2019 – 2022. For sugar production in Vietnam, storms and floods caused by La Nina severely harmed sugarcane plantations. Vietnam's production output in 2020/21 was just 689 thousand tons (–10%yoy), which is a 20–year low. La Nina also negatively affected Thailand's sugarcane harvests. Thailand's sugar output dropped to 7.13 million tons (-13%yoy) in 2020/21, the lowest amount in ten years. The price of officially imported and smuggled sugar originating from Thailand has climbed by nearly 60% compared to the price at the end of 2019 since Thailand's sugar output has decreased.

Thanks to more favorable weather in 2021/22 crop year, sugar production in Vietnam and Thailand both rebounded. In particular, compared to the low base level of 2020/21, sugar output of Vietnam and Thailand climbed by 8% (according to VSSA) and 42%yoy (according to OCSB), respectively. However, domestic sugar price is still high due to the recovery of sugar consumption demand after the Covid-19 pandemic and the impact of trade remedies.

1.2. The second application of trade remedies (August 2022) caused domestic sugar price to increase sharply in the second half of 2022

After ADAS taxes were imposed for the second time on Thai sugar evading taxes, the price of officially imported sugar has grown more than domestically produced sugar. Due to the shortage of domestic sugar supply, which only meets 30% of the demand, domestic sugar price has increased by 10-15% to 19,000 - 20,000 VND/kg, following the increase of officially imported sugar price after being imposed ADAS taxes.

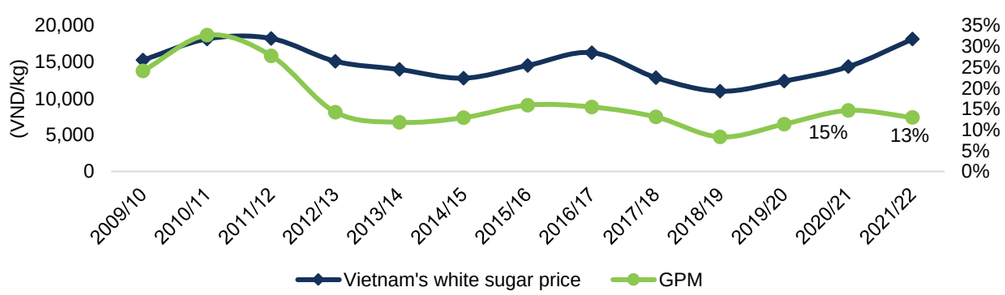
Vietnam's white sugar price and average imported sugar price from Thailand and 05 ASEAN countries



Source: Agromonitor, VSSA, FPTS estimated

1.3. Industry's gross profit margin declines despite a sharp increase in sugar price in 2021/22 crop year

Vietnam's white sugar price and sugar industry's gross profit margin



Source: VSSA, Financial statement of sugar companies, FPTS Research

The calculated industry's gross profit margin does not include QNS as the soymilk segment accounts for more than 50% of the company's revenue and gross profit

In general, sugar industry's GPM changes according to the fluctuations in sugar price. At the end of each increasing period of price, the cost of raw materials often rises at a faster rate than the selling price, which lowers the industry's GPM.

In 2021/22, the cost of 02 input materials for sugar production: sugarcane and raw sugar (accounting for 75-80% of the production cost of finished sugar) both increased, driving down the industry's GPM by 2 pts, to 13%. The price of sugarcane climbed due to rising farming costs (fertilizers, pesticides, machinery, etc.), moreover, the factory raised the purchasing price of sugarcane to encourage farmers to return to sugarcane cultivation. Meanwhile, the price of raw sugar soared due to Thai raw sugar being imposed ADAS taxes.

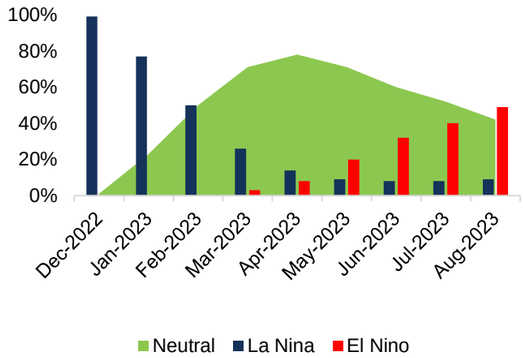
2. Outlook 2023: Sugar price is forecast to cool down and peak in early 2023 thanks to positive global weather prospect

We expect international and domestic sugar prices to remain at a high level and start to fall slightly from Q1/2023.

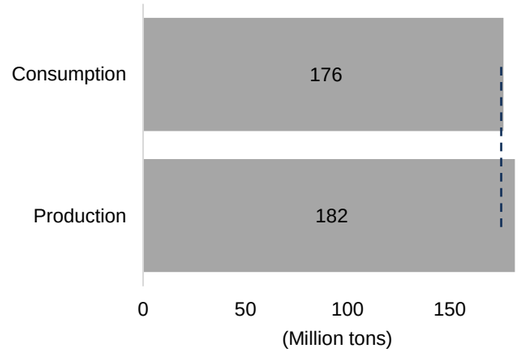
International raw sugar price is forecast to remain high until the end of Q1/2023 thanks to (1) La Nina continuing to exist, (2) The recovery of sugar demand after the Covid-19 pandemic, and (3) China (the 3rd largest sugar consumer, accounting for ~9% of global consumption) reopening after zero Covid-19.

From Q2/2023, according to the forecast of OECD-FAO, international raw sugar price will decrease from the current ~$0.4/kg to $0.35/kg with the prospect of increasing sugar output thanks to a better crop when the weather is more favorable. Specifically, the current La Nina state is forecast to last until the end of February 2023, then return to neutral conditions (according to CPC). Therefore, from the second half of 2022/23 crop year to the end of 2023, the weather will be more favorable for sugarcane cultivation and harvesting globally. The world sugar supply and demand situation may shift from the current deficit to a surplus of 5.6 million tons (according to ISO's forecast), which would result in a drop in sugar prices.

Probabilistic forecast of ENSO phenomenon in 2023



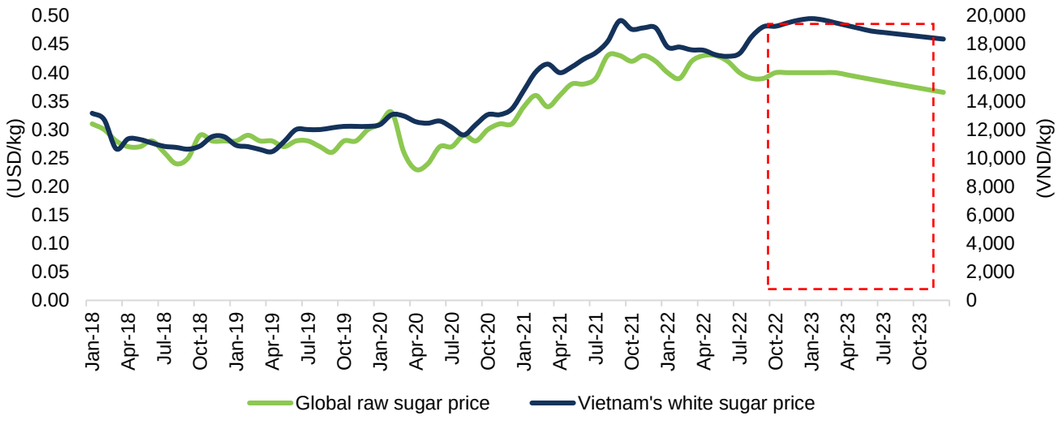
Global sugar consumption demand and production output in 2022/23F



Source: CPC, ISO, FPTS Research

From the analysis of the world sugar price and the relationship between the world and the Vietnamese sugar price, we believe that domestic sugar price will decrease slightly by 5% - 10% from the current level to 18,000 VND/kg in 2023 due to favorable weather for sugarcane crops in Thailand and Vietnam.

Global raw sugar price and Vietnam's white sugar price in 2018 - 2023F period



Source: Indexmundi, VSSA, OECD-FAO's forecast, FPTS estimated

According to ISO's forecast, Thailand's sugar output in 2022/23 crop year will reach 12 million tons (+19% yoy). We expect Thailand's sugar export price to decrease by about 5%yoy as a result of the country's rising sugar production.

According to VSSA's forecast, Vietnam's sugarcane output in 2022/23 crop year will be over 8.76 million tons and sugar production output will reach about 871 thousand tons (+17%yoy) thanks to (1) Higher yield and quality of sugarcane due to favorable weather in neutral condition, (2) Recovery of sugarcane cultivating area after the application of trade remedies on Thai sugar, and (3) Increase in sugarcane purchasing price by 10 – 15% since 2020/21 crop year (100,000 - 150,000 VND/ton higher than previous years) encouraging farmers to invest in sugarcane cultivation instead of switching to other crops.

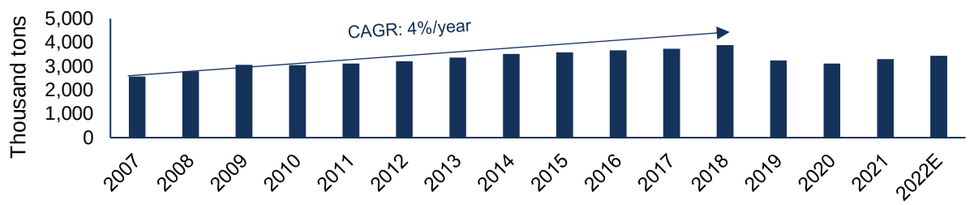
Regarding the impact of trade remedies, we believe that no additional tax policy will be applied to the sugar industry in 2023. Meanwhile, trade remedies that went into effect in 2021 and 2022 only cause sugar price to increase in short term. Smuggled Thai sugar along with additional sugar import quotas at the end of 2022 and 2023 will reduce the impact of trade remedies. Therefore, we believe that sugar price will mainly be affected by weather factors with the expectations analyzed above.

LIVESTOCK SUB-INDUSTRY CONTINUED RECOVERY

I. VIETNAM LIVESTOCK INDUSTRY IS NON-CLYCLICAL AND THE INFLUENCE FACTOR IS THE EXTENT OF LIVESTOCK REPOPULATION

Due to limited time for research, within the scope of this Outlook report, we FPTS only mention specifically about the swine industry and pig farming. Vietnam swine industry is non-cyclical and less sensitive to economic cycle as pork is a necessity good that consumers will buy regardless of changes in their income.

Pork consumption in Vietnam



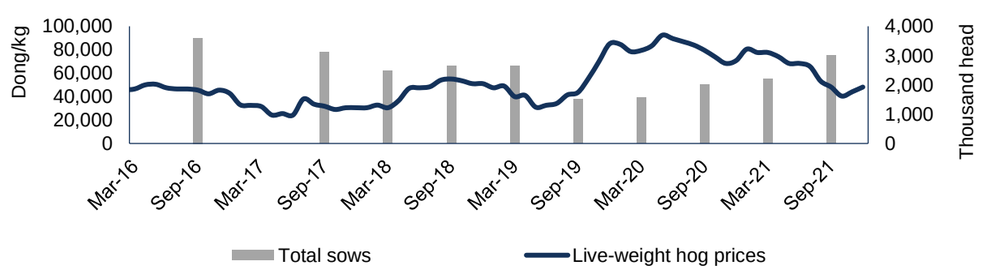
Sources: OECD, FPTS Research

Pork consumption in Vietnam grew steadily with a compound annual growth rate (CAGR) of 4 percent in the period of 2007 – 2018. Pork consumption is significantly influenced by population growth and growth rate of pork consumption per capita. After the African Swine Fever (ASF) epidemic in 2019, pork consumption in Vietnam dropped sharply and has been recovering from 2020 up to now.

With regard to Vietnam swine industry, the influence factor is pig repopulation whose extent is demonstrated by changes in the number of breeding sows. In Vietnam, the pig herd is repopulated twice a year in March and September. A litter of pigs typically needs six months from birth to slaughter. **The extent of pig repopulation strongly influences the prices of live hogs**. When the breeding conditions are favorable, livestock households will actively repopulate their pig herds. The pork supply surge that causes live hog prices to increase. On the other hand, when the breeding conditions are challenging, households restrict their herds, which results in a fall in pork supply, and a rapid spike in the price of live hogs.

Due to (1) swine diseases and (2) fluctuations in the price of animal feed ingredients, the extent of pig repopulation in Vietnam was unsettled in the period 2016 - 2021, making live-weight hog prices fluctuate wildly.

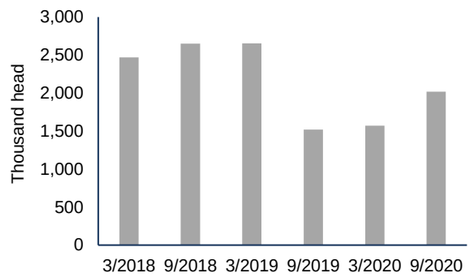
Vietnam's sow herd and live hog prices



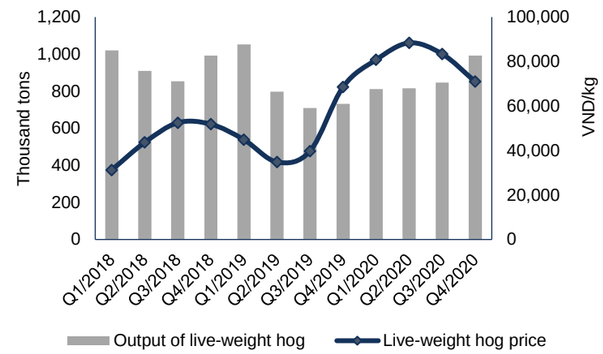
Sources: Agromonitor, Price Management Department, FPTS Research

1. Swine diseases are unpredictable factor that directly impact on the extent of repopulation

Vietnam's sow herd (2018-2020)



Pork production and live-weight hog prices



Sources: Agromonitor, General Statistics Office, FPTS Research

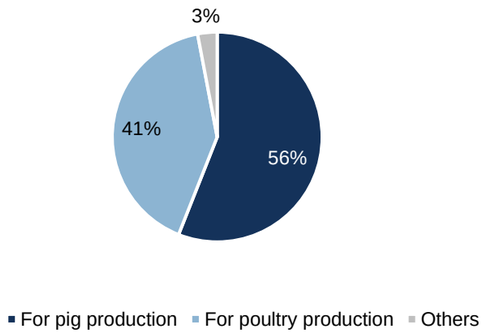
African Swine Fever was first detected in Vietnam in February 2019 and began to spread rapidly in May 2019. According to estimation of General Statistics Office, ASF led to the death and culling of approximately 3 million pigs in the first 5 months of the year. In September 2019, Vietnam's sow herd had more than 1.5 million head, a decrease of 43% over the same period. Pork supply declined significantly in late 2019 and early 2020 period (the main consumption time of the year). Live hog production was 731 thousand tons in 2019Q4, decreasing 26% over the same period. Live hog prices jumped to a high of 70,000 VND/kg in 2019Q4, corresponding to an increase of 32% over the same period.

The ASF epidemic was finally under control in 2020. However, after a protracted period of damage, livestock households had not enough resources to repopulate their pig herds which led to a significant decrease in pork supply. In March 2020, Vietnam's sow herd had about 1.6 million head, decreasing 41% over the same period. In September 2020, the sow herd had recovered to more than 2 million head, however it was still less than the baseline level before the ASF epidemic. Approximately 3.5 million tons of live hog were produced in 2020, an increase of 4.4% over the same period but it was still less than the 3.8 million tons produced in 2018. Live-weight hog prices remained high at the average of 81,000 VND/kg in 2020, +70% YoY.

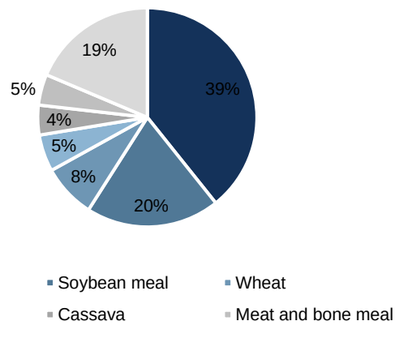
2. Fluctuations in the price of animal feed ingredients

The cost of animal feed accounts for about 65 - 70% of the production cost for pig farming in Vietnam (as said by the Department of Livestock Production). According to statistics of the Department of Livestock Production, Vietnam's yearly demand for raw feed materials is expected to be 35 million tons, of which only about 13.1 million tons (37% of the total) can be met domestically, the remaining must be imported from nations including Argentina, the United States, China, Brazil and so on. The primary components of imported animal feed ingredients into Vietnam are maize, wheat and soybean meal. In which, raw materials for pig production account for 56%.

Vietnam's allocation of imported feed ingredients in 2021



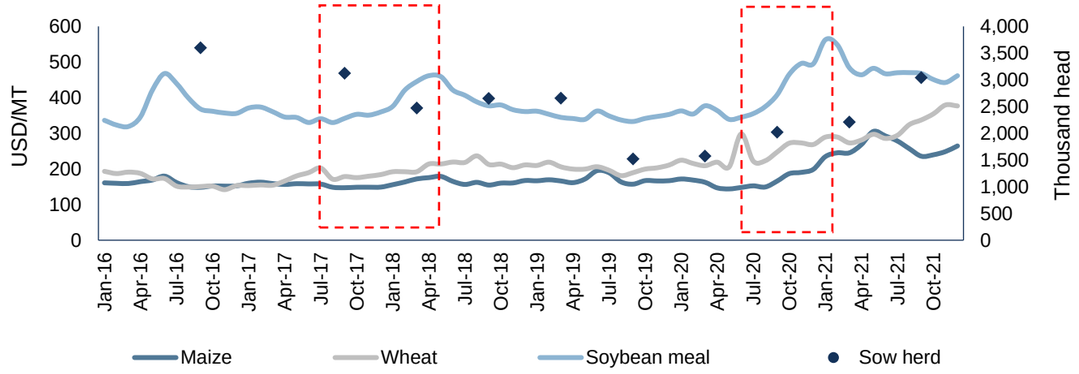
Animal feed imports by type of ingredients in Vietnam 2021



Sources: Agromonitor, FPTS Research

Due to the dependence on imported animal feed materials, the increase in the price of them has a detrimental effect on profitability of households, which in turn directly influences the extent of pig repopulation.

Imported feed materials prices and Vietnam's sow herd



Sources: Agromonitor, IndexMundi, FPTS Research

In the first half of 2018, the sharp increase in imported feed material prices (maize, soybean meal and wheat prices rose by 6%, 22%, 23% respectively) put pressure on households which reduced the extent of pig repopulation. In March 2018, Vietnam's sow herd reached approximately 2.5 million head, a decrease of 21% compared to September 2017. Likewise, in the second half of 2020 and the beginning of 2021, the prices of imported feed ingredients rose dramatically due to the outbreak of Covid-19. Maize, soybean meal and wheat prices increased by 10%, 26% and 28% respectively over the same period that also put pressure on livestock households. The extent of repopulation was gradually recovered with the sow herd reaching more than 2 million head in September 2020, an increase of 33% over the same period, however it was still less than the same time in 2018.

II. 2022 IN REVIEW AND 2023 OUTLOOK: LIVE HOG PRICES RISE SLIGHTLY, PRESSURE FROM THE COST OF ANIMAL FEED

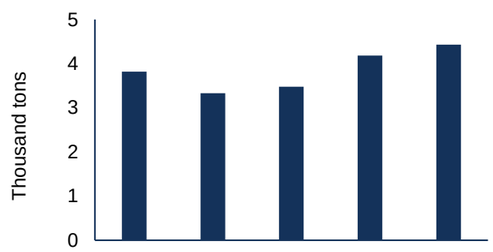
1. The extent of pig repopulation is beginning to slow down due to pressure from high prices of animal feed ingredients in 2022

Swine diseases were prevented and under well control in 2022.

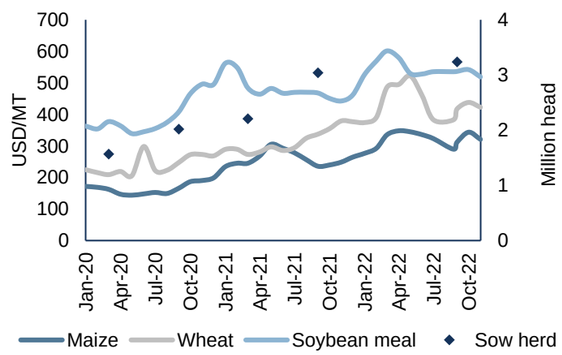
By the end of November 2022, Vietnam had 1 outbreak of Blue Ear Pig disease, the number of culled pigs was 30 heads. For ASF, at the same time, Vietnam had 1,185 outbreaks in 52 provinces and cities. The total number of culled pigs is nearly 54,533 head which is only 23% of the 233,740 culled pigs in 2021. Therefore, we believe that swine diseases do not significantly impact on the extent of pig repopulation in 2022.

The extent of pig repopulation is beginning to slow down due to animal feed ingredients prices remains high.

Output of live-weight hog



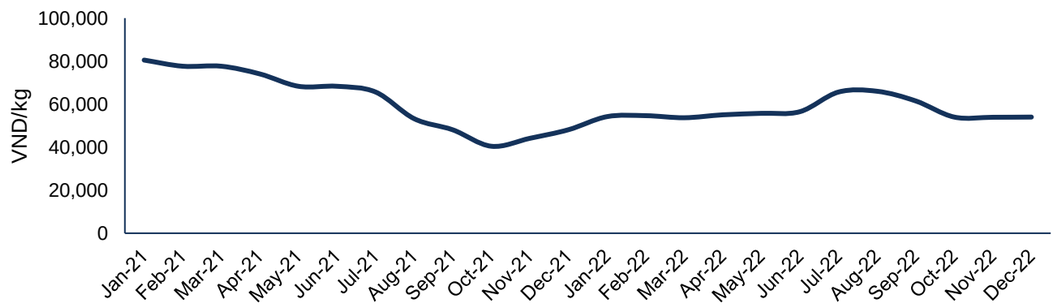
Imported animal feed materials prices and Vietnam's sow herd



Sources: IndexMundi, GSO, FPTS Research

In the first 5 months of 2022, animal feed materials prices increased significantly. The prices of maize, soybean meal, wheat rose by 23%, 10% and 59% respectively over the same period due to (1) the impact of Covid-19 disrupting the supply chain, (2) rough weather in South American countries (the main growing region in the world) affecting grain supply and (3) the political conflict between Russia and Ukraine disrupting grain supply. Since 2022Q3, the prices of the above materials have cooled down but they were still high compared to 2021. According to the World Bank, maize prices dropped nearly 10% in 2022Q3, but they are still 20% higher than a year ago. Likewise, wheat prices dropped nearly 20% in 2022Q3, but they are still one-quarter higher than a year ago. Soybean meal prices fell slightly by 2%.

Live-weight hog prices in Vietnam



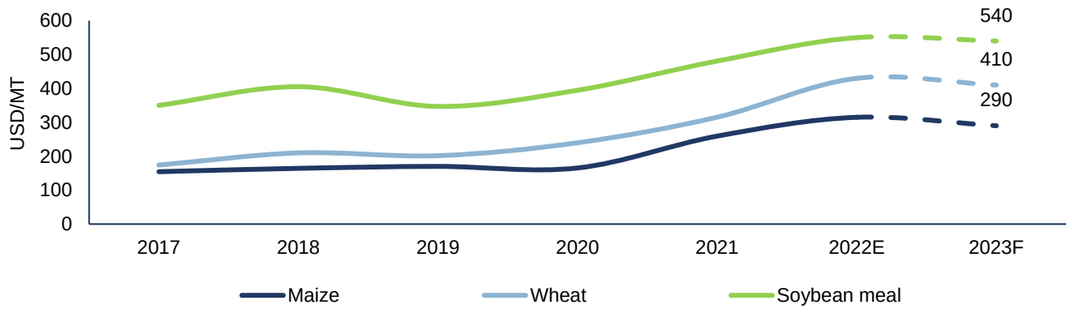
Sources: Price Management Department, FPTS Research

In September 2022, Vietnam's sow herd reached more than 3.2 million head which represents a growth rate of 7% over the same period and it is lower than the growth rate of 50% at the same point in 2021. According to estimation of General Statistics Office, the output of live hogs will reach approximately 4.43 million tons in 2022 (+6% YoY). Consumption demand is stable in 2022 with an estimated consumption volume of 3.45 million tons of pork meat (equivalent to nearly 4.36 million tons of live hog), +4.4% YoY. **Therefore, live hog prices have gradually recovered after a sharp decline at the end of 2021 and fluctuated around 53.000 - 66.000 VND/kg.**

2. 2023 Outlook: The extent of pig repopulation is expected to be low due to the pressure from high prices of animal feed ingredients and assuming no epidemics arise

Because swine diseases are unpredictable, we assume that there will not be a new outbreak in pigs in 2023. Blue Ear Pig epidemic and African Swine Fever are still well under control. Therefore, the extent of pig repopulation in 2023 is mainly influenced by the prices of animal feed raw materials.

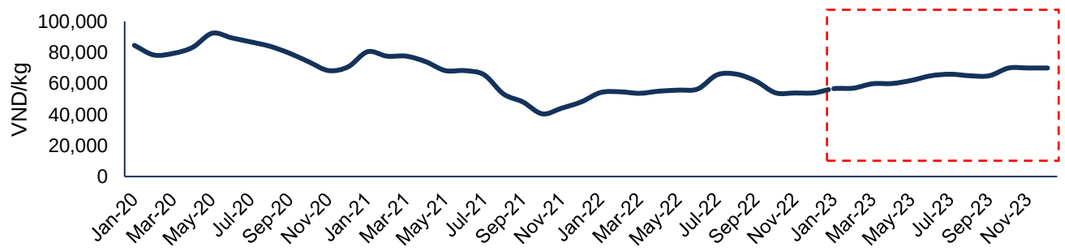
Animal feed ingredients prices forecast in 2023



Sources: World Bank, FPTS Research

According to World Bank forecasts, the grain price index is expected to drop 6% in 2023. The average maize price is expected to reach 290 USD/MT in 2023 (-8% YoY). Likewise, the average wheat price is projected to be 410 USD/MT (-5% YoY). The average soybean meal price is anticipated to drop 2% to 540 USD/MT. Even if the prices of these cereals are forecasted to decline in 2023, they are still significantly higher than the baseline level during the years of 2017 to 2020. In addition, the reduction in animal feed prices to livestock households is expected to delay of about 2 to 3 months due to high pricing inventories at dealers at all levels. **Therefore, we believe that the extent of repopulation will remain low, and the sow herd in September 2023 would increase slightly ~9% over the same period. In the context of stable demand in 2023, live-weight hog prices are expected to grow by about 5% and fluctuate around 60,000 - 70,000 VND/kg.**

Live-weight hog prices in Vietnam



Sources: Price Management Department, FPTS Research

Conclusion: In 2022, the pressure from the high cost of animal feed has caused the extent of pig repopulation to slow down. After a significant decline in 2021, live hog prices in 2022 began to stabilize ranging between 53,000 and 66,000 VND/kg. In 2023, the animal feed ingredients are forecasted to decrease but they are still higher than the baseline level during the years of 2017 to 2020. Therefore, we believe that the extent of pig repopulation will remain low in 2023. Live hog prices are expected to rise by about 5% YoY and fluctuate around 60,000 - 70,000 VND/kg.

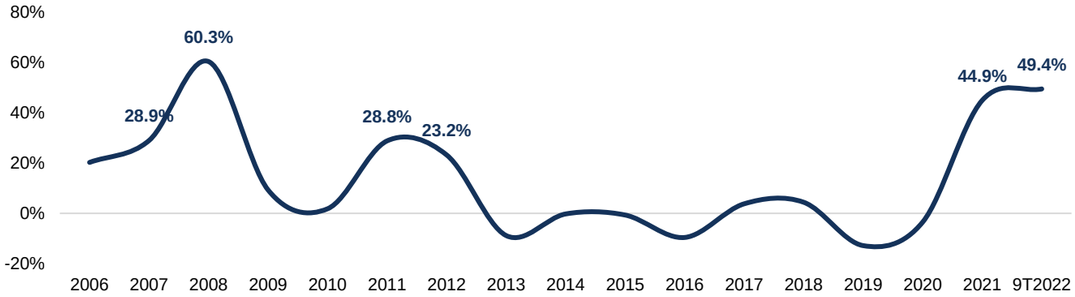
FERTILIZER INDUSTRY
FERTILIZER PRICES TO REMAIN ELEVATED

I. FERTILIZER IS LESS AFFECTED BY ECONOMIC CYCLE

Vietnam's fertilizer industry is relatively open because the Government has not imposed any trade restriction policy or domestic fertilizer price regulation. Therefore, changes in global fertilizer prices have significantly affected domestic fertilizer prices. In this report, we use global fertilizer prices as a proxy to determine the cyclicality of fertilizer prices in Vietnam. On the other hand, Vietnam's fertilizer demand is more dependent on internal factors of the domestic fertilizer industry, including cultivated area and domestic fertilizer application density.

Since 2005, the fertilizer industry has undergone three price cycles, namely 2007 – 2008, 2011 – 2012, and 2021 – present. Overall, the fertilizer industry's revenue increased remarkably by over 28% in all three periods. Regarding fertilizer consumption demand, the fertilizer industry entered the saturation phase in 2015, as indicated by the slightly negative growth rate of fertilizer revenue during 2015 – 2020 (estimated at CAGR = -3.3%/year).

The growth rate of fertilizer industry revenue (2006-2022)



**Revenue growth rate is calculated using financial statements of publicly listed companies*
Source: Financial Statements, FPTS Research

Fertilizer prices are strongly correlated with energy and food (mostly agricultural) prices, which, respectively, are inputs and outputs of the fertilizer industry. The price cycles for the fertilizer industry are associated with the global food and energy crises. For ease of visualization, we summarized the fertilizer industry cycle in the table below:

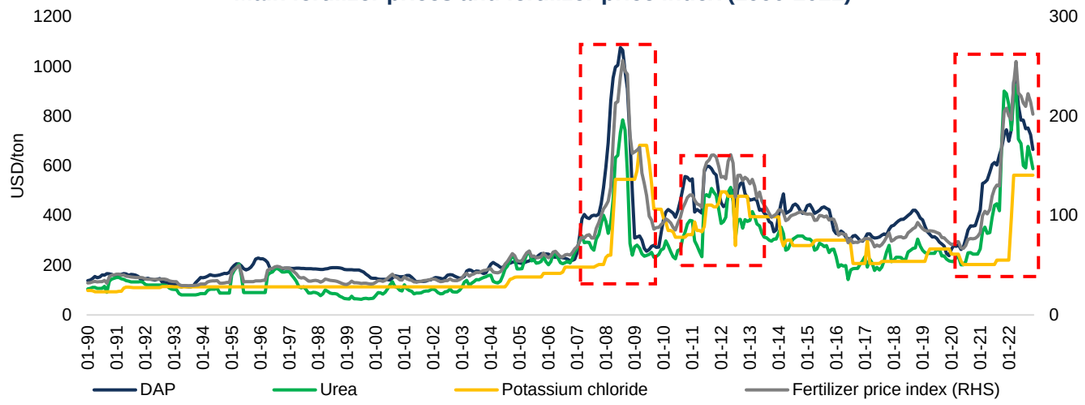
Cycle classification	Primary factor	Growth phase	Contraction phase
First price cycle	Food crisis	**2007 – 2008**	**2009 – 2010**
Second price cycle	Food crisis	**2011 – 2012**	**2013 – 2020**
Third price cycle	Energy crisis	**2021 – Present**	
Demand cycle		**Before 2015**	**2016 – Present**

In this report, we classified the factors affecting the Vietnam fertilizer industry cycle as follows: (1) external factors (affecting fertilizer prices) and (2) internal factors (affecting fertilizer demand).

1. External factors

Global fertilizer prices heavily influence Vietnam's fertilizer prices. Therefore, the primary factors affecting fertilizer prices in Vietnam are mainly external, including (1) restrictive trade policies, (2) energy costs, and (3) agricultural prices. We will consider these factors throughout three price cycles: 2007 – 2008, 2011 – 2012, and 2021 – present.

Main fertilizer prices and fertilizer price index (1990-2022)



**Agricultural price index (2010 = 100)*
Source: World Bank, FPTS Research

1.1. Restrictive trade policies – Reduced supply pushes up prices in the short term

Fertilizer export restrictions are often implemented to ensure domestic supply and stabilize the domestic prices of some fertilizer exporters. However, this depresses the global fertilizer supply and puts upward pressure on fertilizer prices, specifically as follows:

2007 – 2008: China increased the export tax rate from 25% to 35% and added a 100% special export tax on fertilizers, effective April 20, 2008, thereby raising the total export tax rate for Urea, DAP, and MAP fertilizers from 25% to 135%. Subsequently, the export tax rate for Urea was adjusted from 135% to 185%, effective September 1, 2008, while the export tax rate for the remaining fertilizers of 135% remained unchanged until December 31, 2008. China was the world's largest exporter of Urea (17% of global exports) and the second-largest exporter of phosphate fertilizers (18% of global exports) in 2007.

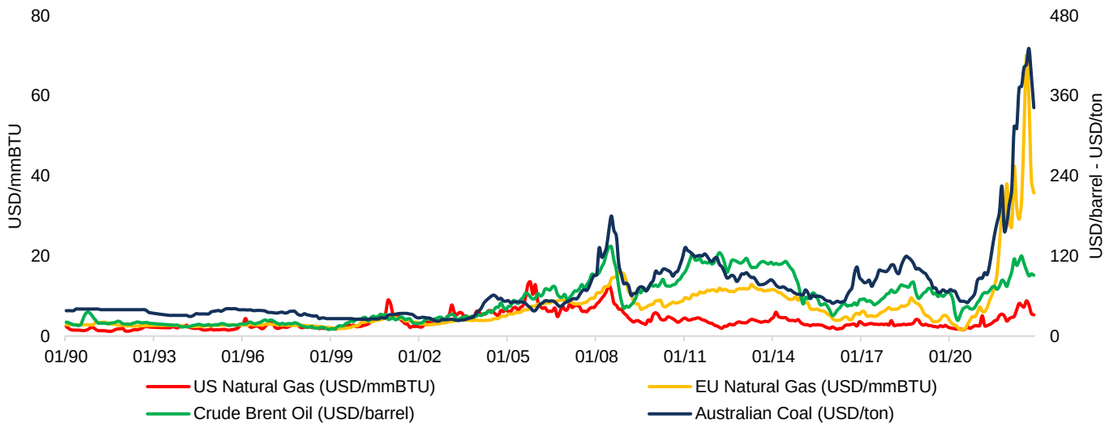
2011 – 2012: China imposed export duties of 110% (including 35% temporary export tax and 75% special export tax) during peak seasons in the period between December 2010 and December 2012 on Urea (November– June next year), DAP and MAP (October – May next year). Conversely, during the off-peak seasons, the export tax is charged at 7% if the export price is lower than X, and the exporter will pay an additional 100% export tax on the difference between the export price and X when the export price is higher than X.

2021 – Present: Egypt, China, and Russia (three of the world's four largest urea exporters, accounting for more than 40% of 2020 exports) imposed fertilizer export restrictions in 2021. Russia implemented an export quota of urea fertilizer of 5.9 million tons between 01/12/2021 and 31/05/2022. In Egypt, export supply from Urea producers was also tightened in 1H2022 when the government asked domestic producers to supply 65% of production for the domestic market (an increase of 10 pp from the previous request) as of December 2021. Meanwhile, China restricted fertilizer export of 29 fertilizers (including Urea, DAP, MAP, NPK, etc.) between October 2021 and June 2022. After the export restriction policy expired, China extended the restrictive policy for Urea and imposed an export quota on phosphate fertilizer (mainly DAP and MAP) in 2H2022.

1.2. Energy prices – Account for more than 60% of fertilizer production costs

Energy costs, consisting of natural gas and coal, account for more than 60% and 70% of the production cost of Urea, which accounts for more than 50% of total fertilizer output. Overall, more than 70% of the energy used in fertilizer production comes from natural gas. Crude oil is the primary production material and the main energy source for input materials and transportation of fertilizer products. Energy prices generally move in tandem with each other because they are interchangeable in many applications.

Energy costs associated with fertilizer production (1990-2022)



Source: World Bank, FPTS Research

2007 – 2008: Oil prices surged because of reduced crude oil supply and increased demand from developing countries, especially China. Meanwhile, natural gas prices rose due to high oil prices, limited LNG imports, and low inventories. Coal prices jumped considerably due to increased industrial demand in Asia and supply shortages in several key exporting countries. Afterward, energy prices cooled down following a sharp drop in demand due to the global economic recession.

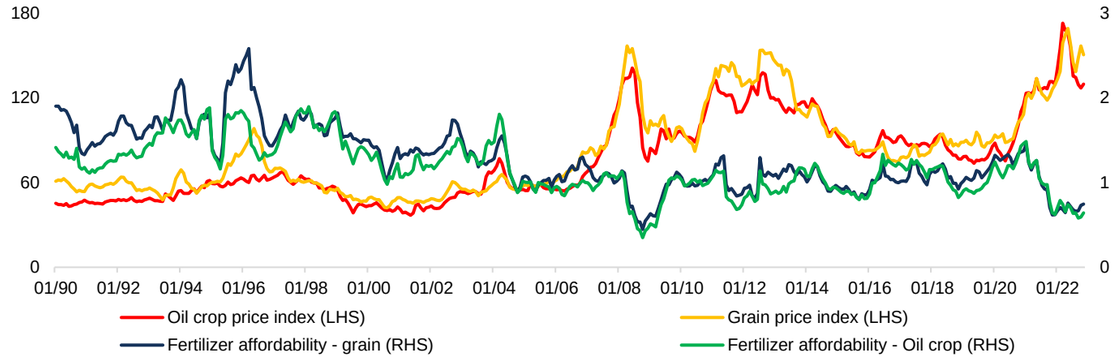
2011 – 2012: Crude oil prices had risen in early 2009 (as OPEC further cut 2.2 million barrels/day) and peaked at 125 USD/barrel in March 2012. However, oil prices eventually cooled down since OPEC and US both boosted crude oil production. Coal prices also increased due to adverse weather conditions, such as droughts and heavy rains in some areas, which are detrimental to the mining output. Meanwhile, natural gas prices climbed slower than crude oil prices. Even US natural gas prices remained lower during 2011 – 2012 compared to 2010 due to increased LNG and shale gas production capacity, thanks to new mining techniques.

2021 – Present: Natural gas and coal prices rose faster than crude oil prices. In 2021, the increase in natural gas prices was due to the increased demand for gas-fired power plants, facilitated by (1) increased electricity demand after the Covid-19 pandemic, especially in China, and (2) reduced hydropower output in some countries (Brazil, China, USA, Turkey) caused by droughts and (3) low wind power production in Europe due to low wind speed. Meanwhile, supply was diminished by interrupted production in the US and LNG import logistics disruptions in Japan. In 2022, the Russia-Ukraine war interrupted Russia's coal and natural gas exports, especially to the European region, pushing up gas prices and shifting consumption toward LNG imports to compensate for reduced gas output from Russia. Similarly, coal price escalation was attributable to the above factors plus the replacement of coal instead of natural gas in electricity generation in many countries.

1.3. Agricultural prices – Fertilizer costs account for 20% of the farming costs

Since fertilizer accounts for roughly 20% of the farming costs, its prices are highly correlated to agricultural prices, especially grains and oil crops.

Fertilizer affordability index - grain and oil crop (1990-2022)



**Grain price index and Oil crop price index (2010 = 100)*
** Fertilizer affordability - grain (oil crop) is calculated by grain (oil crop) price index/fertilizer price index*
Source: World Bank, FPTS Research

2007 – 2008: Agricultural prices increased due to (1) droughts in grain-producing countries, (2) high fertilizer and transportation costs in the context of high oil prices, (3) increasing use of biofuels in developed countries, and (4) declining global food stocks.

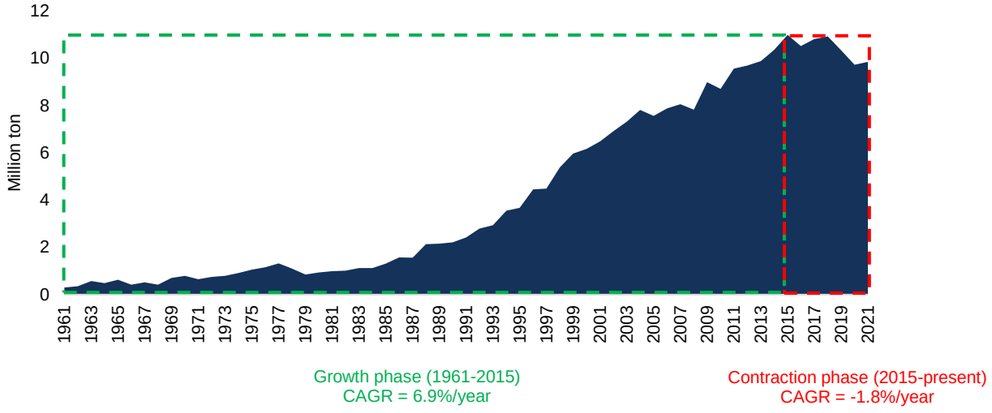
2011 – 2012: After the 2007–2008 global food price crisis and a brief lull in 2009, the agricultural price index rose in mid-2010 before peaking in mid-2012. The primary reasons were (1) summer droughts in the US and the European region, lifting corn and soybean prices, and (2) increased demand for biofuel demand and production, mainly ethanol fuel production made from corn, led by rising crude oil prices.

2021 – Present: Agricultural prices had increased at the beginning of 2021 before stabilizing for the rest of the year due to (1) supply shortages caused by unfavorable weather, affecting soybeans in South America and palm oil in East Asia, and (2) higher demand for animal feed in China. In 2022, agricultural prices increased in 1H2022 due to supply chain disruptions (originating from the Russia-Ukraine war) and the spiraling cost of farming materials. Ukraine accounts for 30% of global sunflower production, 10% of global maize production, and 15% of global wheat exports.

2. Internal factors

Fertilizer demand in Vietnam depends on the internal factors of the domestic fertilizer industry, namely the cultivated area and the domestic fertilizer application rate. Before 2015, Vietnam's fertilizer demand grew remarkably at a CAGR of 6.9%/year during the 1961 – 2015 period due to (1) the gradual expansion of cultivated area and (2) a sharp rise in fertilizer application rate. In contrast, since 2015, the cultivated area of Vietnam has tapered, and the application rate has been at high levels compared to the world average and neighboring countries. Consequently, the fertilizer industry demand has entered its saturation phase since 2015, with CAGR = -1.8%/year during the 2015 – 2021 period.

Vietnam's fertilizer demand (1961-2021)

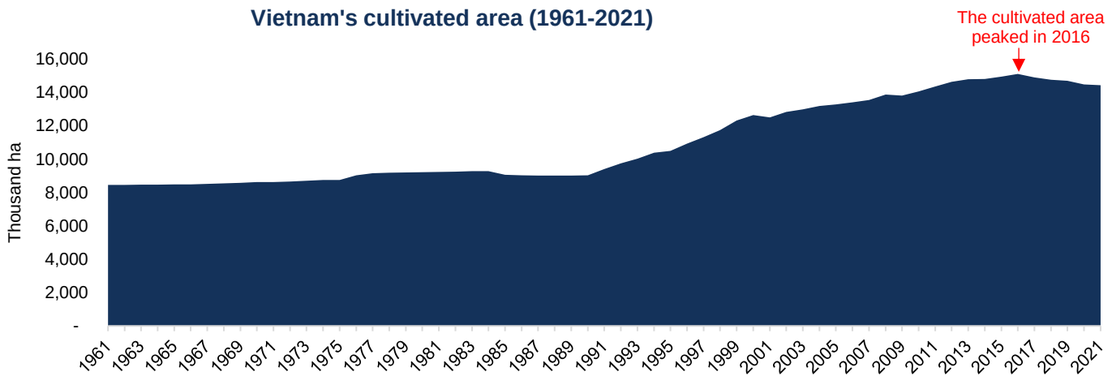


Source: Agromonitor, World Bank, General Statistics Office of Vietnam, FPTS Research estimates

2.1. Cultivated area – Dependent on the plans of the Ministry of Agriculture and Rural Development

Vietnam's cultivated area peaked at 15,112.1 thousand hectares in 2016, equivalent to a CAGR of 1.1%/year during the 1961 – 2016 period. Since 2016, the cultivated area has gradually narrowed as the Ministry of Agriculture and Rural Development has restructured the agricultural industry towards improving the value chain through technology and machinery investments to improve productivity instead of agricultural expansion. Accordingly, the cultivated area gradually decreased at a CAGR = -0.9%/year during the 2016 – 2021 period.

Vietnam's cultivated area (1961-2021)

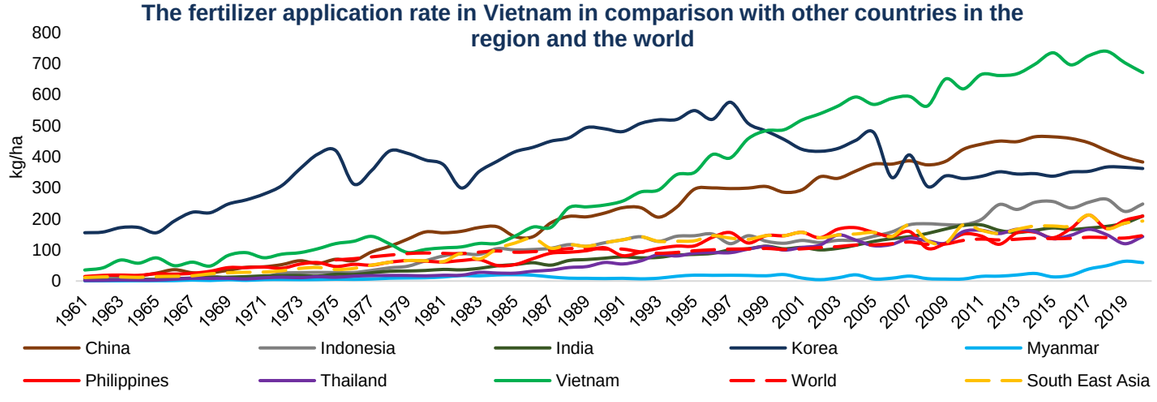


Source: World Bank, General Statistics Office of Vietnam, FPTS Research

2.2. Fertilizer application rate – Anchored at a high level compared to the region and global average

Vietnam's fertilizer application rate climbed rapidly at a CAGR of 5.8 %/year during the 1961 – 2015 period, ending at over 700 kg/ha in 2015. Since 2015, the fertilizer application rate has fluctuated around ~650 – 750 kg/ha. This rate is much higher than that of other countries in Southeast Asia and the global average, evidenced by domestic farmers' overuse of fertilizers (exceeding the recommended dosage from agricultural officers and experts). According to *the World Bank*, most farmers in Vietnam utilize about 20 – 30% more fertilizer than recommended in rice cultivation (accounting for ~65% of fertilizer demand in Vietnam). Similarly, coffee farmers in the Central Highlands apply fertilizers at rates much higher than recommended, specifically 50%, 210%, and 30% for nitrogen, phosphorus, and potassium fertilizers.

The fertilizer application rate in Vietnam in comparison with other countries in the region and the world



Source: World Bank, FPTS Research estimates Vietnam's fertilizer application rate figures.

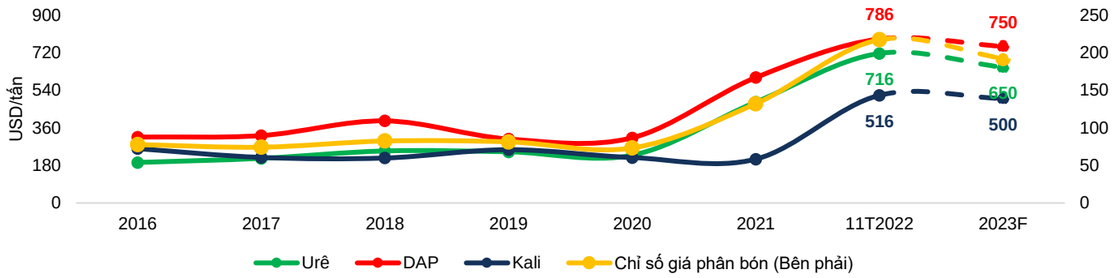
Domestic fertilizer overuse has resulted from (1) the traditional fertilization regime, which rests on farmers' habits and experiences rather than the nutritional needs of the arable land, and (2) the low quality of some fertilizers in the domestic market. As for the fertilization regime, the fertilizer application rate in developed countries is based on regular soil quality analyses to prevent excessive usage's detrimental effects. In contrast, Vietnamese farmers usually do not carry out these analyses and instead rely on the mistaken belief that more fertilizers always lead to higher crop yields and increased profits. Regarding fertilizer quality, a 2013 report showed that about 54% of NPK fertilizers on the market did not meet quality standards (fertilizer efficacy was relatively low, specifically 60% for nitrogen, 40% for potassium, and 50% for potassium fertilizers).

II. 2023 OUTLOOK – FERTILIZER PRICES EXPECTED TO REMAIN IN GROWTH PHASE

1. External factors

The growth stage of the fertilizer price cycle is expected to persist throughout 2022 – 2023. According to *the World Bank*, albeit fertilizer prices in 2023 are expected to cool down compared to their 11M2022 averages, those forecasted levels are much higher than the average fertilizer prices during 2016 – 2020. Specifically, Urea, DAP, and Potassium chloride prices are projected to reach, respectively, 650 USD/ton (+187.1% compared to its 2016 – 2020 average), 750 USD/ton (+127.1% compared to its 2016 – 2020 average), and 500 USD/ton (+114.2% compared to its 2016 – 2020 average).

Forecast prices of main fertilizers and fertilizer price index (2016-2023F)



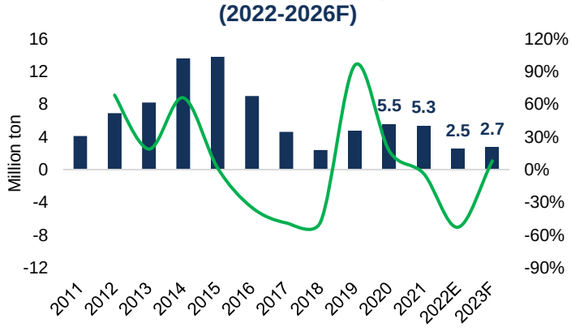
**Fertilizer price index (2010 = 100)*
Source: World Bank, FPTS Research

1.1. Restrictive trade policies to be extended to May 2023

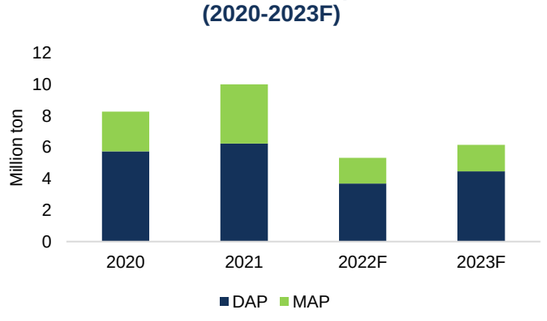
The global supply of Urea and Phosphate fertilizers will likely be in temporary shortage due to China's export quota/restriction policy, which is expected to last until at least May 2023. The peak season for fertilizer demand in China is between October and May next year.

As for Urea, China will extend the export restriction order until at least May 2023, with Urea's export volume in 2023 estimated *by OCI* at 2.7 million tons (+8.0% YoY). Despite improving over the same period, this level is only approximately half the 2020 – 2021 average. Regarding DAP, the imposition of quotas on China's phosphate fertilizers is likely to be extended to May 2023, possibly leading to low export volume in 4M2023. If that occurs, *Mosaic* estimates that China will export 4.48 million tons of DAP (+21.4% YoY) and 1.68 million tons of MAP (+2.1% YoY), totaling ~90% of China's phosphate fertilizer exports in 2023. Nevertheless, this forecasted figure is still ~32.3% lower than the 2020 – 2021 average.

Forecasts of China's Urea export volume (2022-2026F)



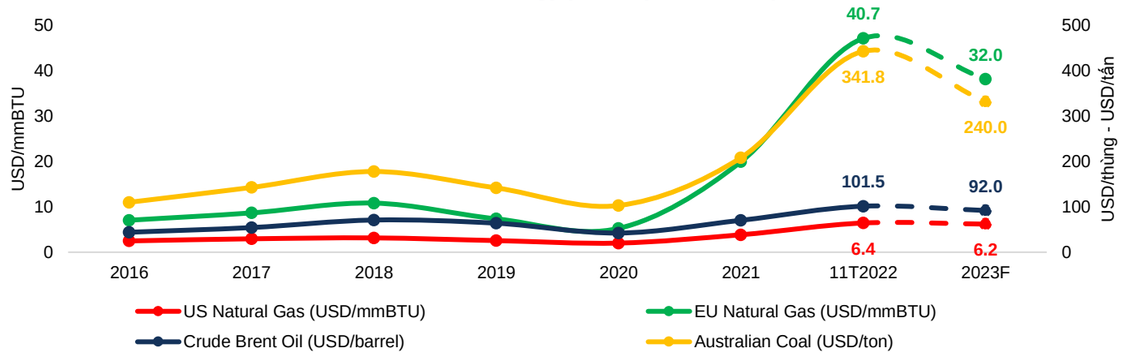
China's MAP and DAP export volume (2020-2023F)



Source: China Customs, Mosaic, OCI, FPTS Research estimates

1.2. Energy prices to remain elevated in 2023

Forecasts of energy prices (2016-2023F)

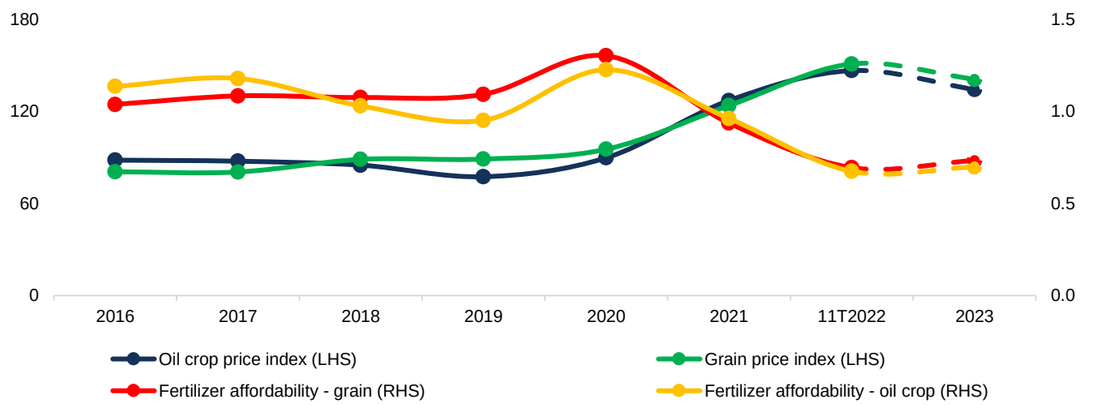


Source: World Bank, FPTS Research

According to *the World Bank*, energy prices are expected to cool down in 2023, albeit still much higher than the average in 2016 – 2020. Europe's natural gas prices are expected to decrease to 32 USD/mmBTU, 21.4% lower than the 11M2022 average, due to lower natural gas demand as households, and industries will switch to alternative energy sources such as imported coal, LNG, or renewable energy. However, the progress of new coal and renewable energy power plants in Europe is unlikely to be limited in the short term due to high inflation and interest rates. Under the forecasted gas price, this region's average Urea production cost is estimated to be 710 USD/ton, 9.3% higher than the World Bank's forecast of 650 USD/ton in 2023. Therefore, we believe Europe will be in a Urea supply shortage (accounting for 5% of total global urea production capacity) as Urea plants in this region are likely to operate at a low capacity in 2023.

1.3. Agricultural prices – Prices remain high and fertilizer affordability improves

Forecasts of grain and oil crop price index and its fertilizer affordability (2016-2023F)



**Fertilizer price index (2010 = 100)*
Source: World Bank, FPTS Research

According to *the World Bank*, agricultural prices in 2023, including grains and oil crops, are forecasted to be ~06 – 09% lower than their averages in 11M2022. However, those figures would be ~45 – 52% higher than the average in 2016 – 2020. Grain prices are expected to decrease slightly in 2023, thanks to the resumption of grain exports from Ukraine (accounting for 10% of global wheat and 15% of global corn exports) in July 2022. Oil crop prices are forecasted to decline because of improved supply, led by (1) better crop prospects, (2) the lifting of Indonesia's palm oil export ban, and (3) the resumption of exports from ports around the Black Sea, of which Ukraine accounts for ~30% of global sunflower production.

Although agricultural prices are forecasted to cool down in 2023, the reduction extent is somewhat lower than fertilizer prices, improving farmers' ability to purchase fertilizer in 2023 and further supporting fertilizer prices.

2. Internal factors

Even though fertilizer consumption has saturated since 2015, fertilizer demand in the short term, especially in the 2022 – 2023 period, will be influenced by fertilizer application rate as fertilizer affordability improves. Meanwhile, the cultivated area in the 2022 – 2023 period is estimated to level off. Thus, we estimate the demand for fertilizer in 2022 and 2023 will reach 8,630 thousand tons (-12.4% YoY) and 9,100 thousand tons (+5.4% YoY), respectively.

2.1. Cultivated area – Remain constant due to no changes in planning

We acknowledge that Vietnam's cultivated area in the 2022 – 2023 period will remain unchanged compared to 2021, based on the *"Plan for restructuring the agricultural sector during the 2021-2025 period"* of the Ministry of Agriculture and Rural Development (approved by the Prime Minister). Correspondingly, the total cultivated area of Vietnamese key crops by 2025 will remain mostly stable, increasing only by 0.2% compared to the 2021 level.

Unit: Thousand tons	2019A	2020A	2021A	2025T	% 25T/21A	25T-21A
Rice	7,469.9	7,278.9	7,238.9	7,250	100.2%	11.1
Coffee	688.7	695.6	710.6	670	94.3%	-40.6
Rubber	941.3	932.4	930.5	900	96.7%	-30.5
Cashew	295.0	302.4	314.4	300	95.4%	-14.4
Pepper	140.2	131.8	129.2	110	85.1%	-19.2
Tea	123.3	123.6	122.6	122.5	99.9%	-0.1
Fruit trees	1,067.1	1,135.2	1,171.5	1,200	102.4%	28.5
Vegetables	986.0	975.8	983.2	1,100	111.9%	116.8
Cassava	519.0	524.7	524.5	500	95.3%	-24.5
Total	**12,230.5**	**12,100.4**	**12,125.4**	**12,152.5**	**100.2%**	**27.1**
% Cultivated Area	**83.2%**	**83.5%**	**84.0%**			

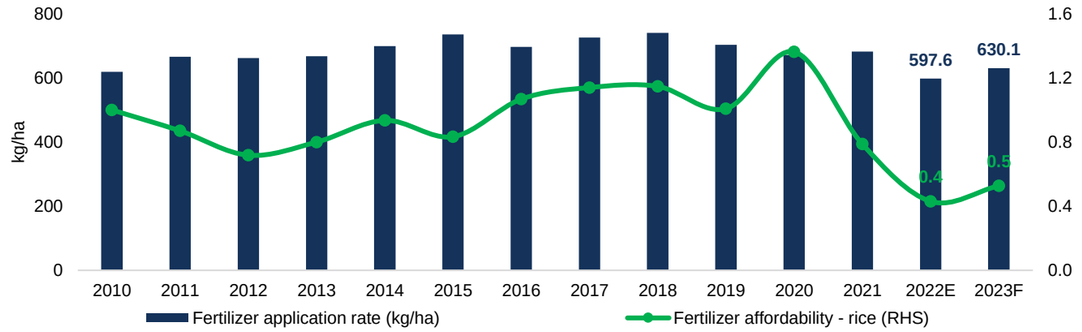
**A: Actual, T: Target*

Source: General Statistics Office of Vietnam, Decision No. 255/QD-TTg, FPTS Research

2.2. Fertilizer application rate – Improvement through better fertilizer affordability for rice

Vietnam's fertilizer application rate has reached a plateau. Therefore, short-term movements in domestic application rate are mainly based on farmers' ability to purchase fertilizer, in other words, the relative change in rice prices to fertilizer prices. Thus, we project that the fertilizer application rate will increase to 630.1 kg/ha (+5.4% YoY) in 2023, owing to improved fertilizer affordability for rice farmers compared to 2022. However, this level will be lower than the 2016 – 2021 average as fertilizer affordability for rice farmers is reduced. Fertilizer affordability for rice in 2023 is estimated based on *the World Bank's forecast* for (1) fertilizer prices (expected to decrease by 12.4% YoY) and (2) rice prices (expected to increase by 7.4% YoY) in 2023.

Forecasts of fertilizer application rate and fertilizer affordability -rice (2016-2023F)



Source: World Bank, FPTS Research

3. Conclusion – The growth stage of the price cycle is anticipated to persist in 2023

The growth stage of the fertilizer price cycle is likely to continue in 2023. Although fertilizer prices in 2023 are expected to cool down from the 11M2022 average, those levels are much higher than the 2016 – 2020 averages. Urea, DAP, and Potassium chloride prices in 2023 are forecasted to reach 650 USD/ton (+187.1% compared to the 2016-2020 average), 750 USD/ton (+127.1% compared to the 2016-2020 average), and 500 USD/ton (+114.2% compared to the 2016-2020 average), respectively.

We estimate that fertilizer demand in 2023 will reach 9,100 thousand tons (+5.4% YoY), thanks to improved fertilizer affordability for rice farmers. However, this figure is still lower than the 2016 – 2021 average because of lesser fertilizer affordability for rice farmers.

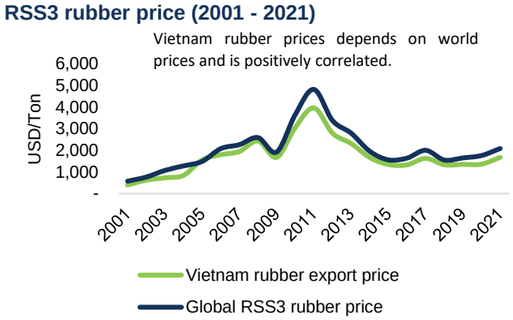
RUBBER – TIRE INDUSTRY
ESCAPING FROM OVERSUPPLY

I. THE CYCLICAL NATURE OF THE RUBBER – TIRE INDUSTRY IN VIET NAM IS AFFECTED BY GLOBAL NATURAL RUBBER PRICE

The rubber and tire industries are two cyclical industries, both are affected by natural rubber prices, especially global natural rubber prices. The two main reasons are (1) Vietnamese natural rubber price depends on global natural rubber prices; (2) The demand for the rubber industry and the tire industry in Viet Nam is not cyclical and grows steadily. Therefore, the price of natural rubber will have a direct impact on the business results of the rubber and tire industry.

Regarding Vietnamese natural rubber prices, the price depends on the global natural rubber price. The main reasons are (1) Vietnam's rubber industry only contributes about 6% of the total global rubber output, lower than that of Thailand, which always contributes more than 30%; (2) Vietnam's rubber industry exports more than 70% of total rubber output to China, but only accounts for 8% of China's total rubber imports, lower than Thailand always accounts for nearly 50%. Therefore, the ability to negotiate is low, which makes natural rubber prices in Vietnam have to depend on global natural rubber prices.

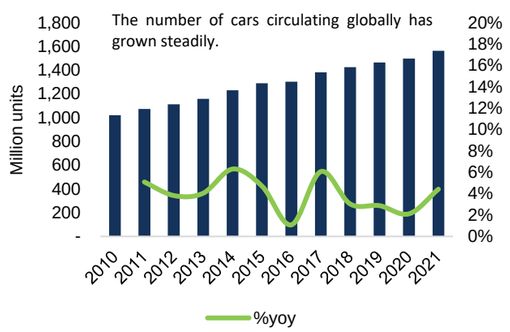
Vietnam rubber export price and global RSS3 rubber price (2001 - 2021)



Vietnam's rubber export market structure by volume (2017 - 2021)

Sources: General Department of Vietnam Customs, IMF, FPTS

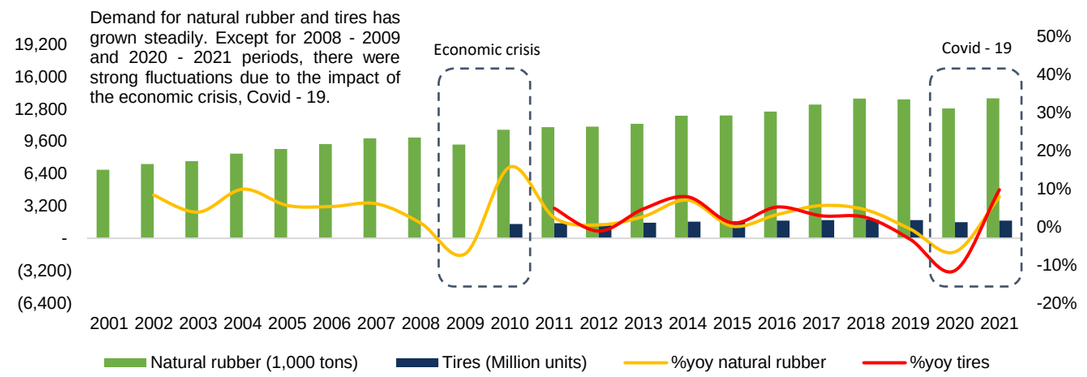
Total number of cars in circulation worldwide (2010 - 2021)



Regarding the demand of rubber industry and tire industry, both industries have stable and non–cyclical demand. In the rubber industry, its demand depends on the tire and car industry, which accounts for more than 70% of the total natural rubber consumption. In the tire industry, more than 70% of the total tire output is consumed in the replacement segment, so the demand for tires will depend on the total number of vehicles in circulation growing steadily.

We believe that the demand for the rubber industry and tire industry in Vietnam is similar to that of the world (*Details in "Internal factors of the rubber – tire industry"*).

Natural rubber demand and tire demand globally (2001 - 2021)



Sources: ANRPC, Michelin, OICA, FPTS

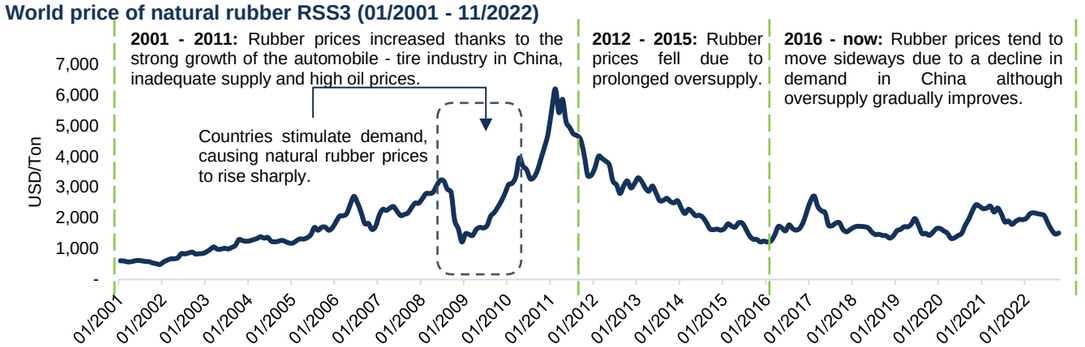
For those reasons, the cyclicality of Vietnam's rubber and tire industries is based on the world's natural rubber price. Therefore, we will analyze the factors affecting the world's natural rubber prices within OUTLOOK 2023.

1. Rubber – tire industry in China, rubber plantation area and crude oil price are the 3 most important factors affecting the world natural rubber price cycle

The world natural rubber price is directly affected by 3 main factors (1) the rubber – tire industry in China, which consumes more than 40% of the total rubber output globally; (2) rubber plantation area, which directly affects the supply of natural rubber in the long term; (3) crude oil prices have an indirect impact on natural rubber prices through synthetic rubber prices2.

We've found that all 3 factors listed above have a significant impact on the price cycle of natural rubber from 2001 – 2022. In that period, natural rubber prices have been through a complete cycle: the rising phase in 2004 – 2011, the decreasing phase in 2012 – 2015 and the sideways phase in 2016 – now.

World price of natural rubber RSS3 (01/2001 - 11/2022)



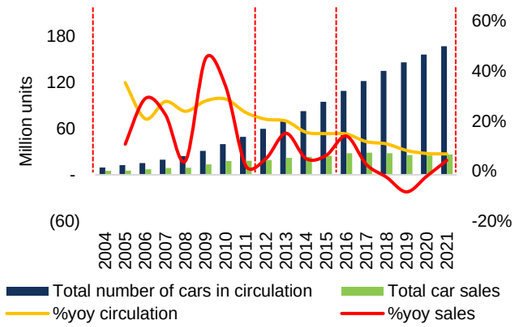
Sources: IMF, FPTS

[2] Natural rubber can be replaced with synthetic rubber – a crude oil-based product. Therefore, synthetic rubber prices will increase when crude oil prices increase, causing the demand for natural rubber to increase accordingly.

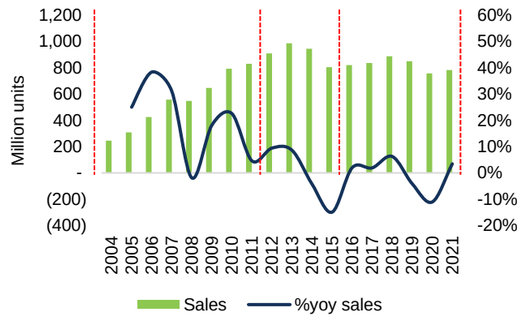
Stage	Factors	Natural rubber price
2001 – 2011	- China's rubber – tire industry increased sharply. - Rubber harvested area grew slowly, making the supply unable to meet the sharp increase in rubber demand. - The increasing trend of crude oil prices has supported the price of natural rubber.	**Increase**
2012 – 2015	- China's rubber – tire industry decelerated. - Rubber harvested area increased sharply, causing prolonged oversupply. - Crude oil prices tend to decrease, putting pressure on natural rubber prices.	**Decline**
2016 – now	- China's rubber – tire industry weakened. - Rubber harvested area grows slowly, and oversupply has been reduced.	**Sideways**

In 2001 – 2011: Natural rubber prices tended to increase and peak at an average of 4,800 USD/Ton in 2011, corresponding to an increase of +737% compared to 2001. The result came from 3 main factors (1) the strong growth of the Chinese auto industry at CAGR = +20%/year has led to the number of cars in circulation increasing sharply, which the Chinese tire industry benefits from and grows at CAGR = +18%/year; (2) rubber harvested area grows slowly, causing the global supply of natural rubber to grow only at CAGR = +5.3%/year and unable to meet the demand in China; (3) The average crude oil price was about 111 USD/barrel in 2011, corresponding to an increase of +362% compared to 2001 which supported the increasing price of natural rubber. Because of the increase in natural rubber prices, major rubber-growing countries began to increase the planting area uncontrollably, leading to an oversupply of natural rubber from 2012 – 2015, Vietnam 's rubber planting area had a similar situation.

Total number of cars circulating and consumed in China (2004 - 2021)



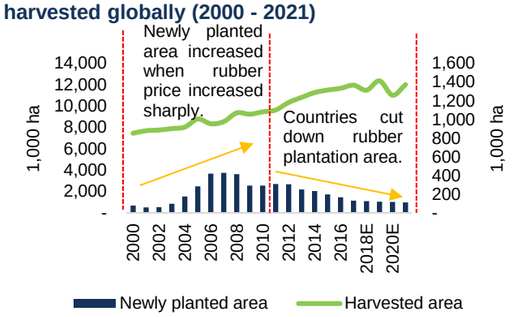
Car tire consumption in China (2004 - 2021)



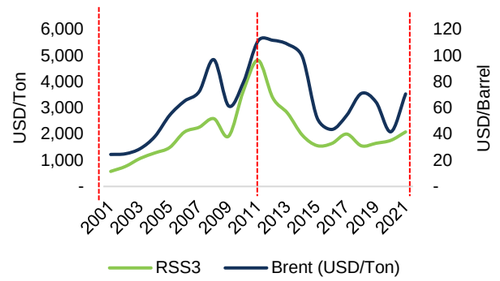
Sources: CAAM, Wind, FPTS estimated

In 2012 – 2015: Natural rubber prices started a downtrend and bottomed out at an average of 1,600 USD/Ton in 2015, a decrease of -53% compared to 2012. The reasons came from 3 factors (1) China's auto industry cooled down and only grew at CAGR = +8.6%/year, which led to the decline of China's tire industry which declined at CAGR = -9.7%/year in 2013 – 2015 period; (2) rubber harvested area increased strongly when the planted area in 2005 – 2009 started to get harvested, causing a prolonged oversupply of natural rubber; (3) Crude oil prices started a downtrend putting more pressure on natural rubber prices.

Area of natural rubber newly planted and harvested globally (2000 - 2021)



RSS3 natural rubber price and Brent crude oil price (2001 - 2021)



Sources: ANRPC, EIA, IRSG, FAOSTAT, FPTS

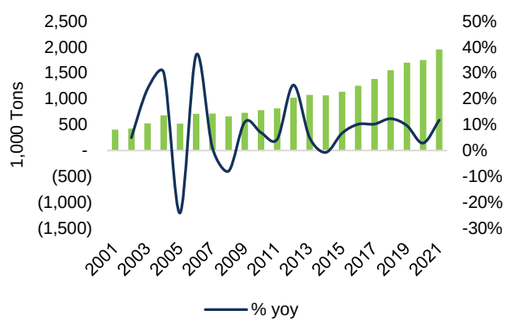
From 2016 to now: Natural rubber price has been going sideways, remaining at an average of 1,780 USD/Ton. The reason is that the degree of impact between the two factors of supply and demand is still unclear, namely (1) China's auto industry and tire industry have gradually saturated, and the demand for China's rubber imports remains weakened due to negative effect from the "Zero – Covid" policy since 2020; (2) Oversupply of natural rubber has gradually improved when major rubber growing countries continue cutting natural rubber output and limiting rubber plantation area.

2. The internal factors of Vietnam's rubber industry and tire industry have not changed, so business activities still depend on the world's natural rubber price

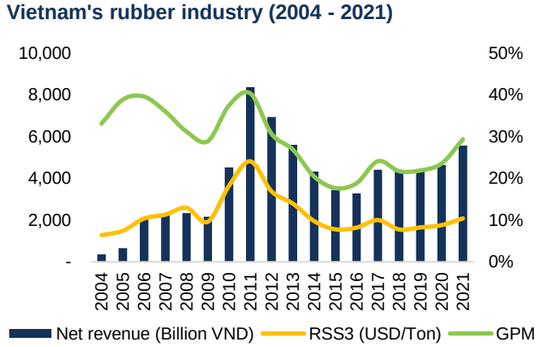
2. 1. Vietnam rubber industry – Stable demand, the costs remain hard to reduce, rubber prices still depend on that of the world

We believe that the business model of the rubber industry in Vietnam hasn't changed much, so the business results of Vietnam's rubber industry still depend on world natural rubber prices. Specifically, the industry has 3 major characteristics: (1) the size of the industry is still modest, leading to the fact that the price of Vietnamese rubber has to depend on the world rubber prices; (2) the cost of labour and raw materials is difficult to reduce; (3) the industry has stable demand, business results are highly dependent on world natural rubber prices. From 2001 – 2021, the industry's export grew steadily at CAGR = +8.2%/year and was not cyclical, causing the industry's revenue and gross profit margin to positively correlate with the global natural rubber prices.

Vietnam's rubber exports (2001 - 2021) (*)



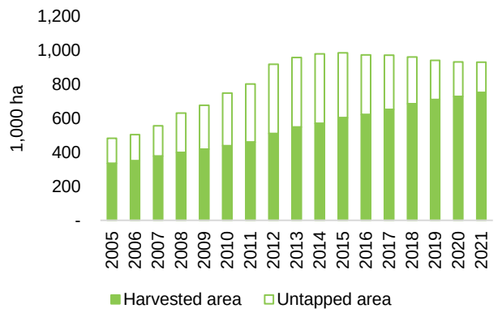
Net revenue and gross profit margin of Vietnam's rubber industry (2004 - 2021)



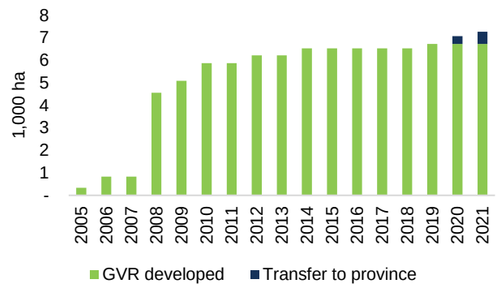
Sources: Financial statements of rubber companies, General Department of Vietnam Customs, ANRPC, FPTS

As Vietnam's rubber industry depends on global rubber prices and natural rubber prices have remained low since 2011, Vietnam's rubber industry has limited the planting area and some areas have been converted to industrial parks. **However, we think this shift hasn't significantly impacted the rubber industry's business because the scale of conversion is still low compared to the total rubber plantation area.**

Natural rubber area in Vietnam (2005 - 2021)



Accumulated rubber area of GVR converted to industrial park (2005 - 2021) (*)



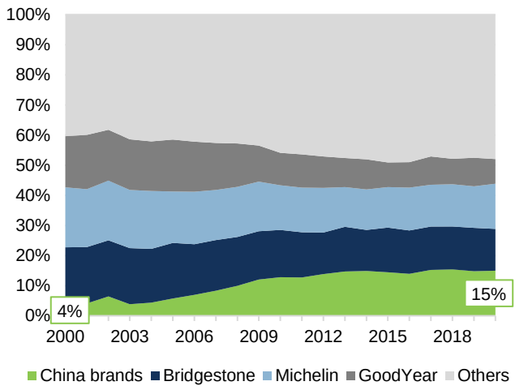
Sources: GSO, FPTS

(*): We use the area converted from rubber land to industrial park land of GVR to estimated, since GVR accounts for more than 30% of the total rubber area of the country.

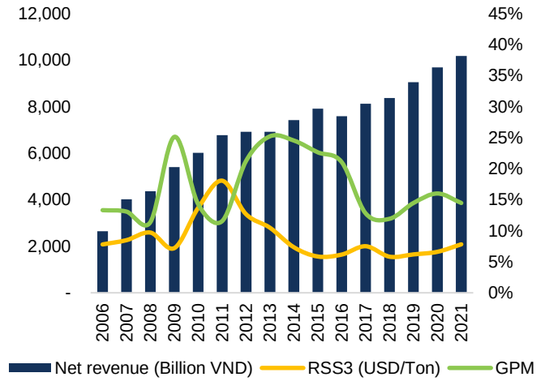
2. 2. Vietnam tire industry – Stable demand, natural rubber is the main cost, tire selling price depends on Chinese tire companies

We believe that the business model of the rubber industry in Vietnam hasn't changed much, so the business results of Vietnam's tire industry still depend on world natural rubber prices. Specifically, the industry has 3 main characteristics: (1) Vietnam's tire industry is less competitive compared to China (accounting for about 15% of the total market share of the whole industry), making the price of Vietnamese tires have to depend on that of China; (2) natural rubber still accounts for nearly 40% of the industry's total material cost; (3) the industry has stable demand because of 70% of demand coming from tire replacement segment. From 2006 – 2021, the industry's revenue grew at CAGR = +9.4%/year thanks to stable demand. However, the gross profit margin negatively correlated with the global natural rubber prices.

Market share of tire industry by revenue (2000 - 2021)



Net revenue and gross profit margin of Vietnam's tire industry (2004 - 2021)



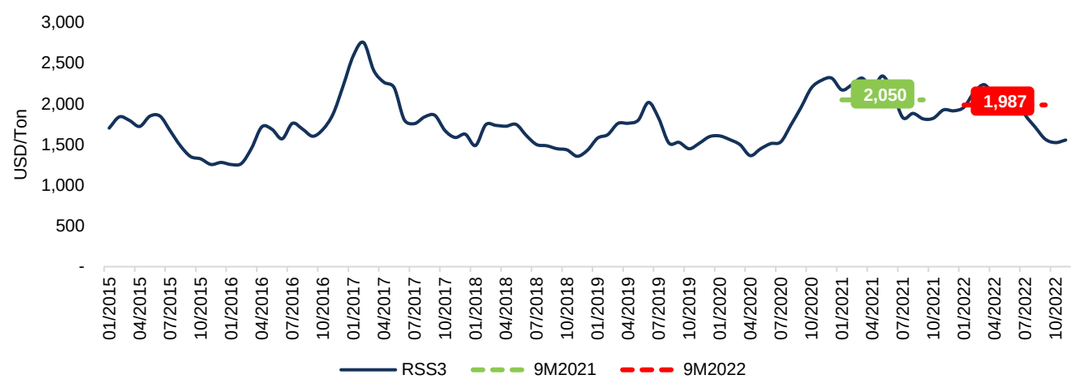
Sources: TireBusiness, Financial statement of tire companies, ANRPC, FPTS

II. 2022 REVIEW AND 2023 OUTLOOK – THE RUBBER INDUSTRY IS EXPECTED TO BENEFIT FROM THE RECOVERY OF NATURAL RUBBER PRICES, IN CONTRAST TO THE TIRE INDUSTRY

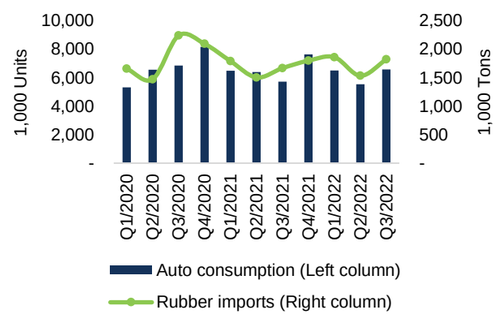
1. The rubber – tire industry in 9M2022 is negatively affected by the fall in natural rubber prices

Regarding the world rubber price, the world price of natural rubber RSS3 in 9M2022 has cooled down and only reached about 1,987 USD/Ton (-3.07% YoY). The main reason is that the prolonged "Zero-Covid" policy has negatively affected the auto industry and tire industry in China, causing the demand for natural rubber to weaken. Therefore, the price of natural rubber in 9M2022 continues to decline, although crude oil prices remain high, and the natural rubber supply is short due to the La Nina phenomenon.

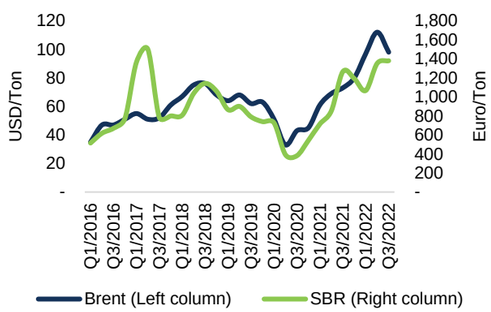
World price of natural rubber RSS3 (01/2015 - 11/2022)



China's automobile consumption and rubber imports (Q1/2020 - Q3/2022)



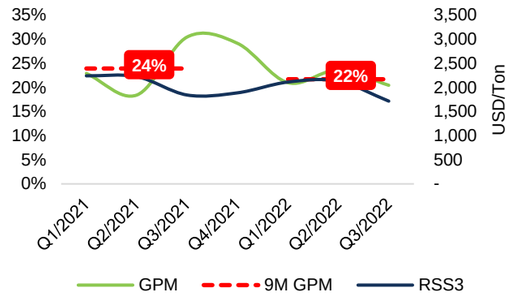
Crude oil and synthetic rubber prices (Q1/2016 - Q3/2022)



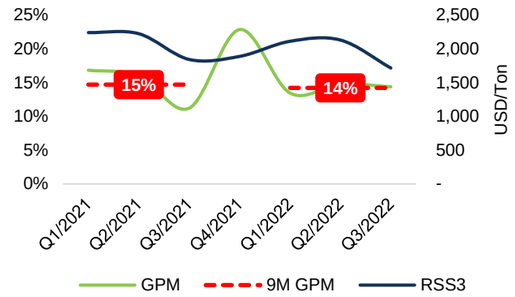
Sources: ANRPC, EIA, GACC, FPTS

Regarding business results, the decline of natural rubber prices affected the rubber industry negatively and helped relieve pressure from the high cost of raw materials for the tire industry. In 9M2022, for the rubber industry, the industry's average gross profit margin is only about 22%, down -2 pts yoy. For the tire industry, the industry's average gross profit margin was about 14%, down slightly by -1 pts yoy thanks to the cooling of natural rubber prices, while the industry was still under pressure from the prices of crude oil-based materials anchored at a high level according to oil prices.

Gross profit margin of rubber industry and natural rubber price RSS3 (Q1/2021 - Q3/2022)



Gross profit margin of tire industry and natural rubber price RSS3 (Q1/2021 - Q3/2022)

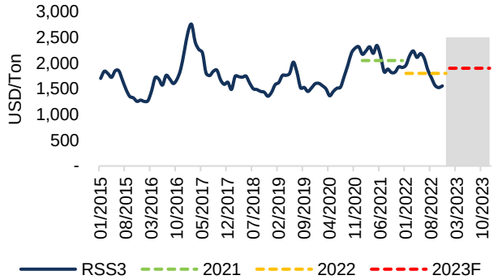


Sources: ANRPC, Financial statement of rubber and tire companies, FPTS

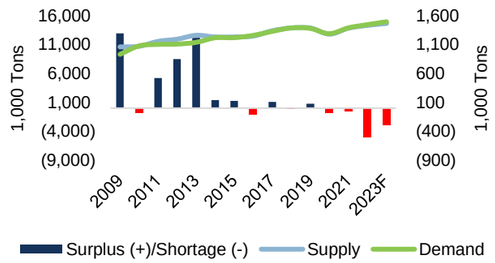
2. 2023 outlook - The rubber industry is expected to benefit from the recovery of natural rubber prices, in contrast to the tire industry

In 2023, WorldBank forecasts that the price of natural rubber will reach an average of 1,900 UDS/Ton, an increase of +5.5% yoy mainly thanks to (1) the demand for rubber in China is expected to grow about +3.09% yoy, because of the recovery of the auto industry and tire industry when China eases the "Zero – Covid" policy; (2) the supply of natural rubber will be slowing down because countries limit the rubber area, which will cause a shortage of about 290 thousand tons of natural rubber; (3) Crude oil price cooled down but remained at a high level, which will support the price increases of natural rubber. **We believe these 3 factors will have a positive impact on the natural rubber price in 2023F, these factors are forecasted as follows:**

Natural rubber price forecast in 2023F



Forecast of natural rubber surplus/shortage in 2023F

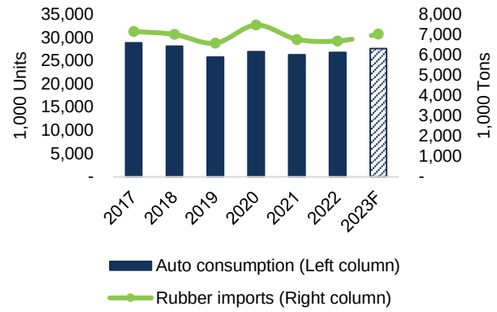


Sources: WorldBank, ANRPC, Agromonitor, FPTS

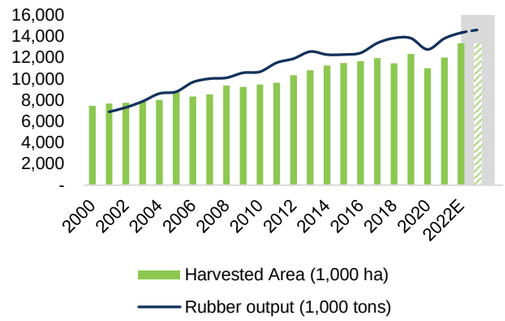
Regarding the rubber – tire industry in China, we expect that China's easing of the "Zero – Covid" policy will help the tire and auto industry recover. According to Reuters, automobile consumption in China will grow by +3.09% yoy and the volume of rubber imported will also grow by +4.9% yoy.

Regarding the area of natural rubber, we believe that countries such as Thailand, Malaysia, etc will continue to limit the rubber plantation area, in order to keep the price high. We estimated that the rubber plantation area will decrease slightly by -0.2% yoy, natural rubber output will only increase slightly by +1.9% yoy and not enough to meet the recovering demand in China. In addition, based on the "Agricultural restructuring plan for the period 2021-2025" of the Ministry of Agriculture and Rural Development, the natural rubber plantation area in Vietnam will maintain about 900 thousand hectares and continue to reduce the area in unsuitable provinces.

Forecast of rubber imports and auto consumption in China in 2023

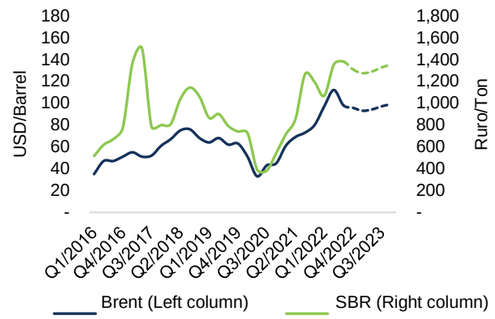


Forecast of planting area and natural rubber output in 2023F



Sources: Agromonitor, Reuter, IRSG, FPTS

Forecast of crude oil and synthetic rubber prices SBR in 2023F



Sources: CEIC, EIA, FPTS estimated

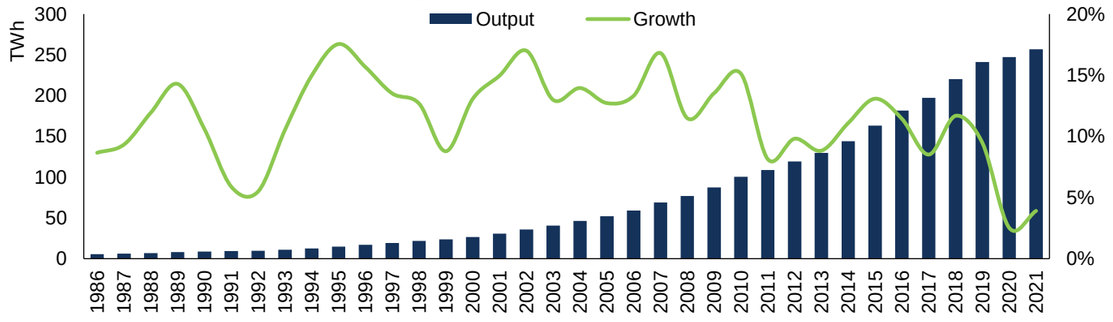
Regarding crude oil price, crude oil price is forecasted to cool down but still remain at a high level, we believe that the high price of synthetic rubber will increase the demand for natural rubber as a substitute. Specifically, crude oil price is forecasted to average around 96 USD/Barrel (-5% yoy), leading to an estimated price of SBR synthetic rubber at around 1,311 EUR/Ton (+3% yoy).

POWER INDUSTRY
A YEAR OF CHALLENGES

I. ELECTRICITY INDUSTRY – MUTED CYCLICALITY DUE TO DIVERGENCE AMONG SEGMENTS

We assess the cyclicality of Vietnam's entire electricity industry based on the whole electricity system's generation output criterion. Vietnam's annual electricity output has continuously grown for more than three decades, but the industry's growth rate still has cyclical fluctuations.

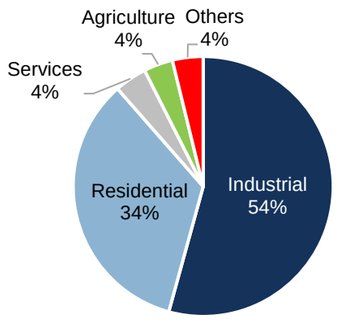
Electricity generation output of the whole system



Sources: EVN, MOIT

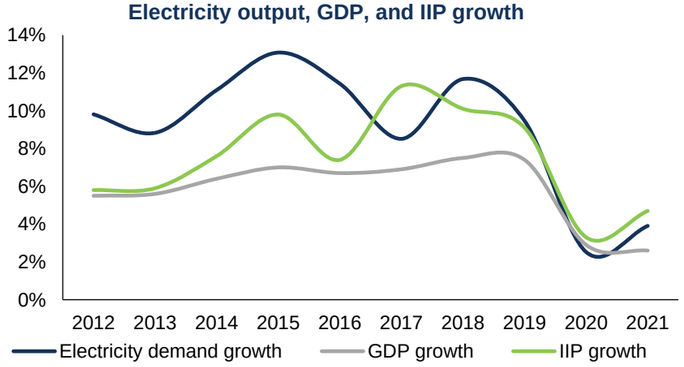
Electricity output's growth cycle is highly correlated with that of the economy in general and with the industrial sector in particular because the electricity industry serves almost every economic sector, of which the industrial sector is the largest (accounting for 54% of the annual electricity demand).

Share of electricity demand 2021



Sources: EVN

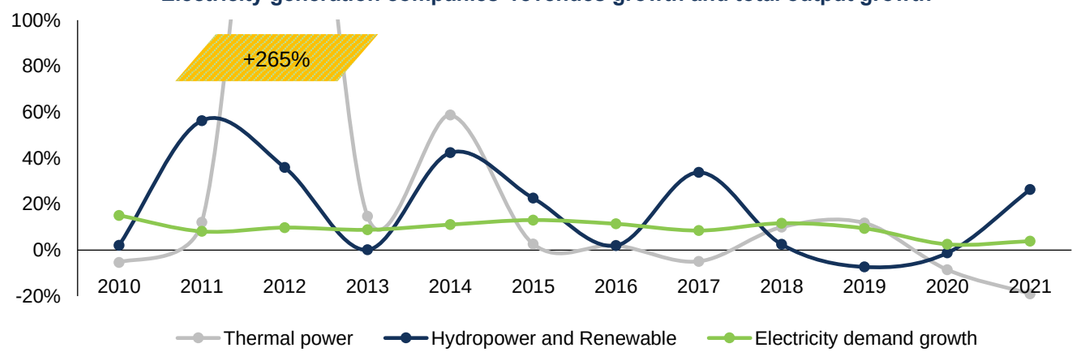
Electricity output, GDP, and IIP growth



Sources: EVN, GSO

Nonetheless, from the perspective of electricity generation companies, fluctuations in the growth of the system's electricity output do not have much impact. Business operation and financial performance of electricity generation companies may not fluctuate in the same direction and magnitude as fluctuations of total output due to other factors with greater impacts. In addition, there is often a clear divergence among different generation technologies, often leading to opposite business cycles.

Electricity generation companies' revenues growth and total output growth



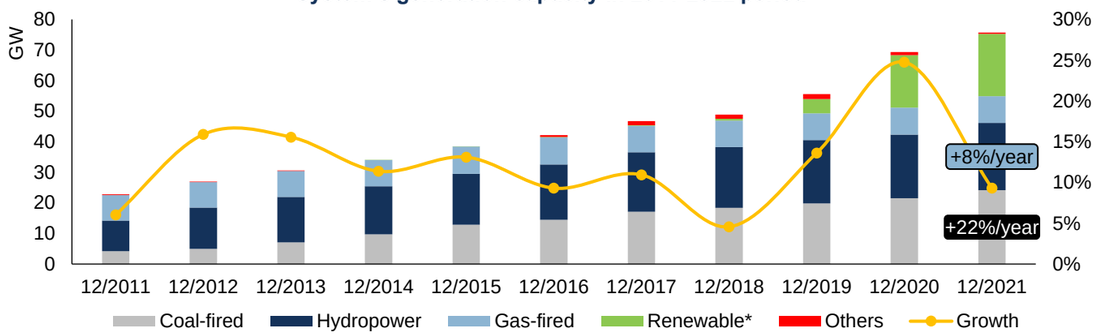
Nguồn: FPTS tổng hợp

Therefore, within the scope of this report, we will focus on factors that have significant impacts on the business performance of companies instead of analyzing the details of the entire industry's cycle.

1. Power Development Plan and other development policies

The electricity industry plays an important role in ensuring energy security but investing in power sources is risky due to the high initial cost and long construction time. Therefore, the investment and development of the electricity industry are always strictly managed and required to follow the Power Development Plan (PDP).

System's generation capacity in 2011-2021 period



**Non-hydro Renewable*

Sources: EVN, NLDC, FPTS Reseach

The development direction of the Power Development Plan, other related policies, and their implementation have great impacts on:

- Potential for additional capacity of segments and companies. Revenues and earnings of generation companies can grow sharply due to capacity addition and generation technologies that are prioritized in the PDP often receive favorable policies.

In the period of 2011 – 2021, coal-fired thermal power capacity increased strongly (~22% per year) thanks to the PDP VII. Meanwhile, solar and wind power capacity experienced explosive growth thanks to preferential policies and attractive FiT pricing mechanisms. Due to capacity addition, companies using these technologies have experienced a period of substantial growth.

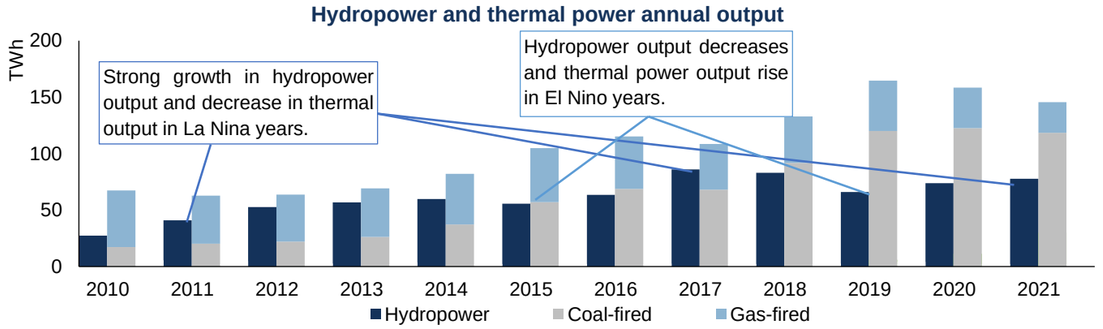
- Supply-demand balance in the whole industry or in regions. PDP has a long-term vision, so there are often deviations in its implementation due to errors in demand forecasts or delays in the construction progress of power projects. This may lead to imbalances in supply and demand and affects generation companies' operation. Delayed projects have caused serious supply shortages in 2019. During 2020 – 2021, unusually weak electricity demand (due to Covid) combined with the massive growth of renewable power sources has caused many difficulties for the electricity industry.

2. Weather conditions

The weather greatly affects renewable power plants' output (including hydropower). These power sources currently account for a large proportion of the electricity system and they are prioritized for dispatch due to low cost and/or support mechanisms. Therefore, fluctuations in renewable power sources' output have a great impact on thermal power plants' output.

Hydrological cycle: The most noticeable and significant weather factor affecting the electricity industry was the hydrological cycle caused by the El Nino/La Nina phenomenon. These phenomena have opposite effects on hydropower plants, thereby creating an opposite business cycle between two important types of power sources, which are hydropower and thermal power. Specifically, in La Nina years, hydropower output often grows sharply, leading to a strong decrease in thermal power output and vice versa in El Nino years.

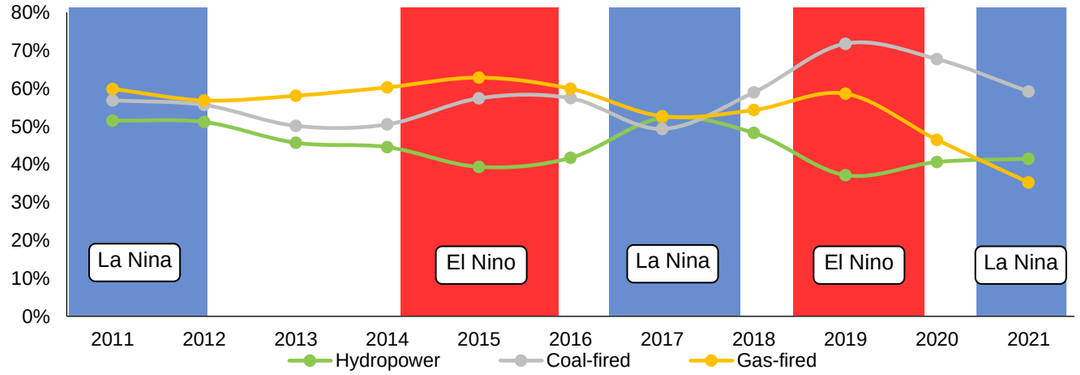
Hydropower and thermal power annual output



Sources: EVN, NLDC, FPTS Reseach

The hydrological cycle's effect can be seen more clearly when excluding the capacity addition, which is shown by the capacity factor, representing power plants' performance during the year. The average capacity factor of hydropower plants fluctuates strongly according to the hydrological cycle, peaking at ~52 – 53% in La Nina years and gradually bottoming at ~37 – 38% in El Nino years. Meanwhile, coal-fired and gas-fired power plants' capacity factors almost always fluctuate in the opposite direction to that of hydropower.

Average Capacity Factor[3] of hydropower, coal-fired and gas-fired power plants



Sources: FPTS Research

In addition to the hydrological cycle, weather factors related to solar and wind power sources such as radiation volume, wind speed, monsoon, etc. are gradually affecting the electricity industry due to the strong development of these power sources in the past few years.

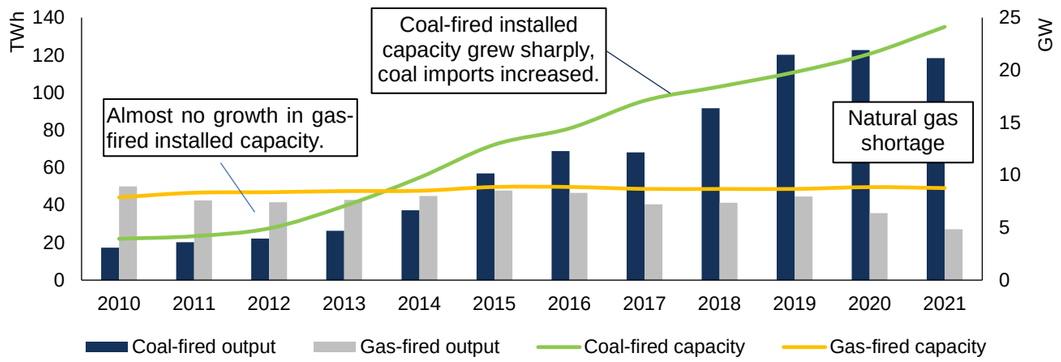
3. Fuel supply and fuel price

- Fuel supplies: The electricity industry has very high fuel demand, especially coal and natural gas. Vietnam's electricity industry consumes about 80% of coal and natural gas domestic production and a large amount of imported coal. Fuel supply affects thermal power companies in two ways:

+ Capacity addition potential: Fuel supply, especially domestic supply, is vital for the capacity expansion of thermal power sources. During 2011 – 2021, gas thermal power capacity has no growth due lack of development in both domestic natural gas supply and gas import infrastructure (LNG). Meanwhile, coal-fired power capacity increased sharply because the domestic coal supply has not been fully exploited and it is easier to import coal than natural gas.

+ Operational stability and production output: Fuel supply for thermal power plants needs to be stable to ensure production because plants have to operate continuously. There are several periods of fuel supply shortages such as the natural gas shortage period in 2020 or the coal shortage in 2022 that have greatly affected these power sources.

Installed capacity and generation output of thermal power sources



Sources: EVN, NLDC, FPTS Reseach

- Fuel price: Fuel price fluctuations have little direct impact on thermal power companies' profitability because most of their output's price is adjusted according to input fuel prices. However, fuel prices affect power plants' competitiveness, thereby affecting these companies' output and business performance. The effect of fuel prices is often most evident when there is a price difference between fuels, especially for coal and natural gas prices.

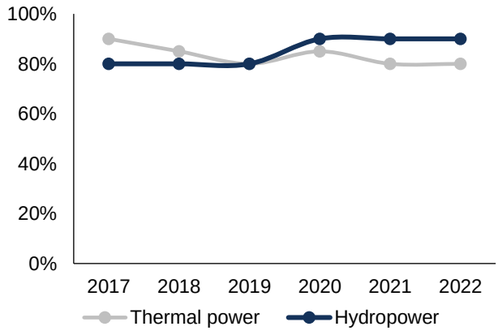
4. Electricity price and mechanisms related to electricity price

+ Contract quantity and contract price of traditional power plants:

Since the competitive electricity market officially came into operation in 2012, electricity selling price for thermal and hydroelectric power plants has gradually been improved and then stabilized. Currently, power plants directly participating in the electricity market are selling electricity at two types of prices: (1) contract price (about 80% – 90% of output) and (2) market price.

Contract price and contract quantity are especially important for thermal power companies. The contract price is often higher than the market price, protects companies from input price variation, and helps companies maintain a stable level of production output.

Share of contract quantity in total planned output



Sources: ERAV

In the contract price structure, the fixed price component has the greatest influence on the financial results of thermal power enterprises. This component, called ***the electricity pricing profile,*** is negotiated in PPA. When the profile period ends, the fixed price often drops sharply and greatly affects the financial results of thermal power companies. In 2021, many thermal power companies such as HND, QTP, and NT2 had to reduce the contract price's fixed component, causing a significant decrease in revenue, profit, and cash flow of these companies.

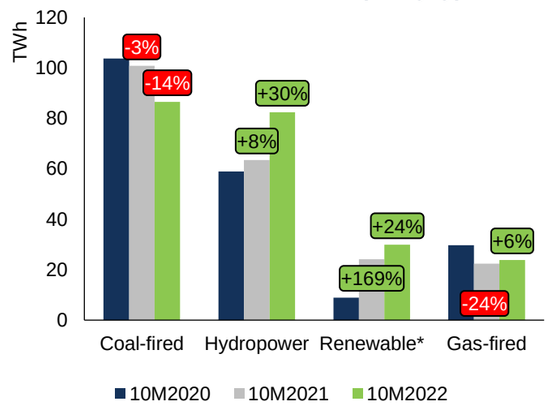
+ FiT price for renewable power plants: Renewable power plants that have been put into operation are enjoying preferential FiT rates for 20 years. This price is high and anchored to USD, which is very profitable for eligible companies. The attractive price mechanism is the reason for the explosive growth of the renewable electricity segment in the period of 2019 – 2021.

II. 2022 AND OUTLOOK 2023: DIFFICULTIES COME AFTER A FAVORABLE YEAR

1. 2022 is a favorable year for electric generation companies

Electric generation companies achieved high earning growth in 9M2022. Hydropower and renewable energy had good performance in 9M2022 thanks to strong growth in output. Thermal power companies faced some difficulties, but their financial results still grew strongly compared to the low base in 2021.

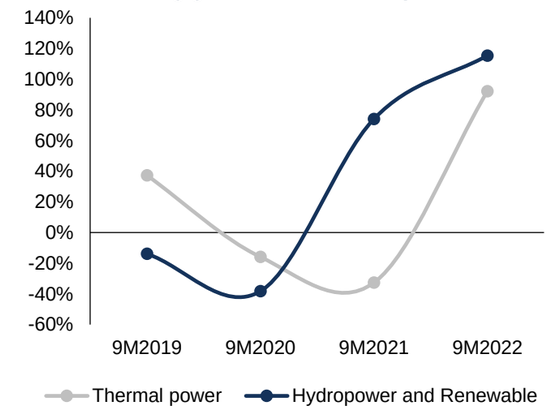
10-month accumulated output by types



**Non-hydro Renewable*

Sources: EVN

Earning growth of listed companies

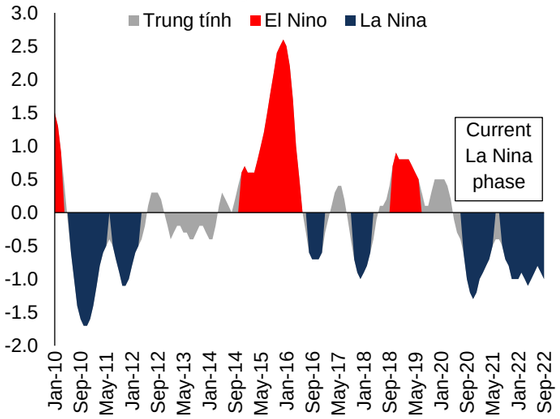


Sources: FPTS Research

1.1. Favorable weather conditions for hydropower

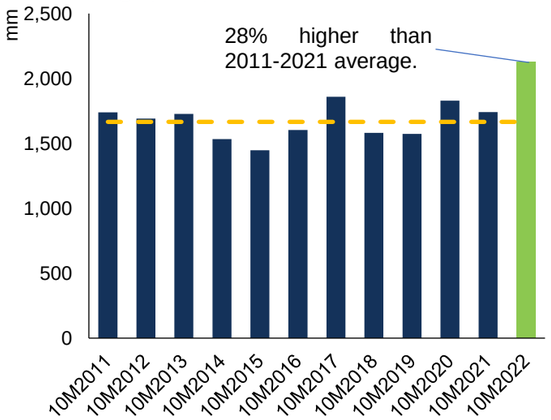
2022 is the peak year of the current La Nina cycle, which started in mid-2020. The average precipitation of the country in 10M2022 increased sharply due to the strong La Nina influence. This is the highest 10-month precipitation ever recorded and it was 28% higher than the average precipitation of the 2011 – 2021 period.

El Nino/La Nina cycle in 2010–2022 period



Sources: NOAA

Average precipitation in the first 10 months



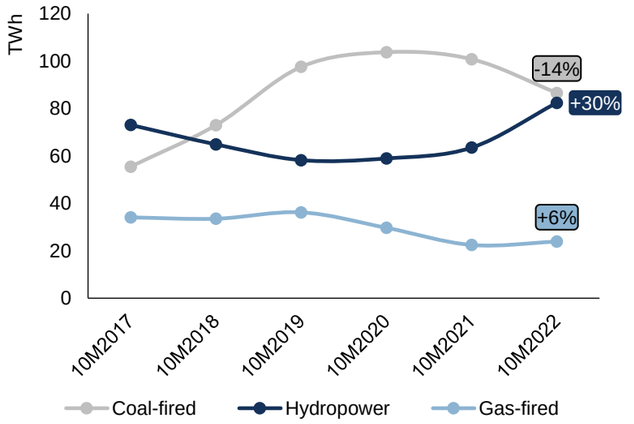
Sources: Directorate of Water Resources, FPTS Research

[3] Capacity Factor: the unitless ratio of actual electrical energy output over a given period of time to the theoretical maximum electrical energy output over that period.

Hydropower output grew strongly in 2022 due to favorable hydrological conditions. Total hydropower output in 10M2022 reached 82 TWh, up 30% YoY, which is also the highest ever recorded.

Thermal power output was still low in 2022. Coal-fired power output in 10M2022 declined by 14% YoY, though this decrease was mainly from plants using imported coal. Gas-fired output in the first 10 months grew by 6% compared to the same period in 2021, but this was still a low level compared to the previous periods.

Hydropower and thermal power 10-month output

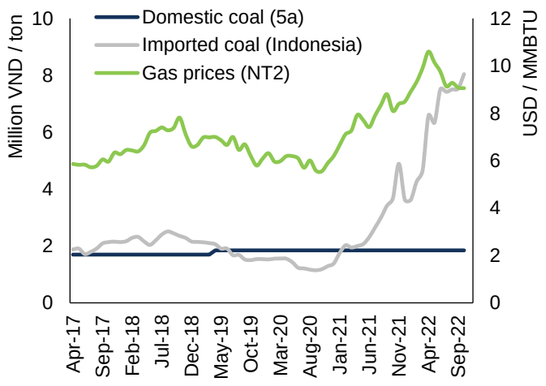


Sources: EVN, NLDC, FPTS Research

1.2. Input fuel prices surge, coal supply shortage

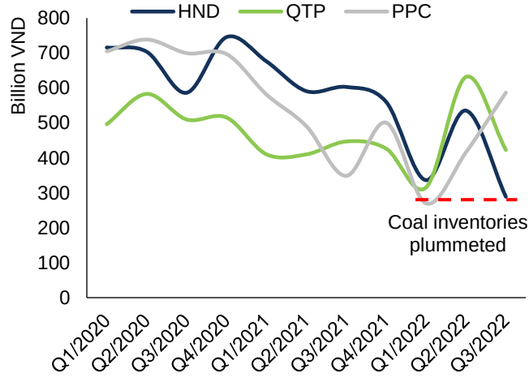
Both gas and coal prices increased sharply in 2022. The average imported coal price increased more than two times compared to the average level in 2021 and nearly 5 times the average level in 2020. Domestic coal remains stable, but from Q2/2022 EVN and TKV have agreed on a mixed coal price mechanism, causing the price of mixed coal to increase by 50 – 60%. The proportion of mixed coal use at coal-fired thermal power plants also increased, leading to higher production cost.

Fuel prices



Sources: NT2, EVN Genco 3

Inventories of coal-fired generation companies



Sources: FPTS Research

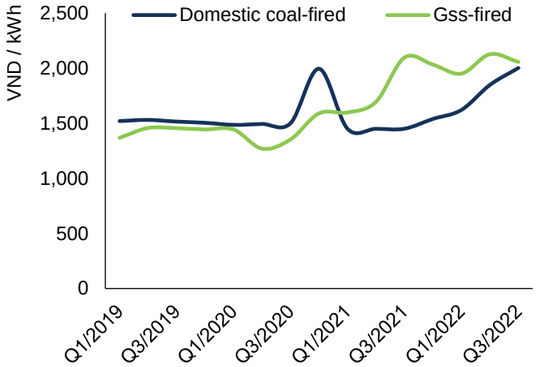
Coal supply shortage due to (1) increases in imported coal prices; (2) turbulent global coal market (3) delay in mixed coal price agreement between EVN and TKV. The coal shortage peaked in Q1 and early Q2/2022. At that time coal inventories fell to a very low level, causing many coal-fired power plants to reduce production, or even stop generation units.

1.3. Electricity prices also rise in 2022

- Contract price and contract quantity: Share of contract quantity in total planned output (α rate) in 2022 remains the same as in 2021. The contract quantity (Qc) of most thermal power companies increased by about 5%. However, since the middle of the year, EVN has renegotiated Qc with many companies due to the abnormal increase in fuel prices, which has caused many difficulties for EVN.

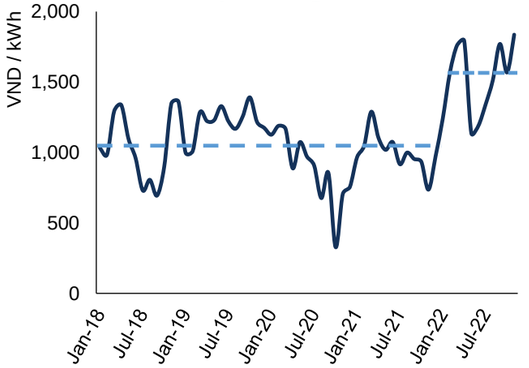
The contract price of thermal power companies is adjusted according to the input fuel price. Hence, the average selling price of both coal-fired and gas-fired thermal power plants has risen sharply in 2022. The average selling price of most plants in Q3/2022 was about 2,000 VND/kWh, up 33% compared to the pre-Covid price at ~1,500 VND/kWh. In 2022, no listed companies had to adjust the fixed price component according to the PPA profile as in 2020 and 2021.

Average selling price of thermal power companies



Sources: FPTS Research

Prices in the competitive generation market



Sources: EVN Genco3

- Electricity prices in the competitive generation market (CGM) also increased sharply in 2022. Since the selling price of coal-fired and gas-fired power plants both increased, the price of electricity in the competitive generation market (CGM price) was anchored at a high level. Despite high hydropower output, CGM price was still high even in the rainy season (historically, CGM price was usually very low in this period). The average CGM price in the first 10 months of 2022 was nearly 1,500 VND/kWh, about 50% higher than the average price for the period 2018-2021.

Impact of rising electricity price. The increase in selling price is generally a beneficial factor for generation companies. In particular, hydropower plants that directly participate in the competitive generation market benefit the most. For thermal power companies, rising selling prices protected their profits from rising input prices.

However, the increased selling price has negatively affected EVN as the sole buyer, who was not allowed to raise the retail electricity price in 2022 and, in turn, took a loss of about VND 33 trillion in 2022. EVN's difficulties may put a lot of pressure on generation companies. Due to financial difficulties, EVN has delayed payment to generation companies, causing account receivables of most companies to strongly increase since Q3/2022. EVN has also lowered the Qc of some thermal power plants as a part of their cost-saving solutions.

1.4. Renewable power output continued to grow thanks to wind power

The FiT pricing mechanism for solar and wind power plants ended on 31/12/2020 and 30/11/2021, respectively. Therefore, there was almost no renewable power capacity added in 2022. However, renewable electricity output still grew strongly in 2022. Renewable power output in 10M2022 grew by 24% YoY, most of which came from new wind power plants that started operating at the end of 2021. These plants do not contribute much in 2021, though they can operate at full capacity and produce a lot more output in 2022.

On the other hand, the solar power output of 10M2022 did not change much compared to the same period in 2021 as there has been no capacity growth in 2021 and 2022.

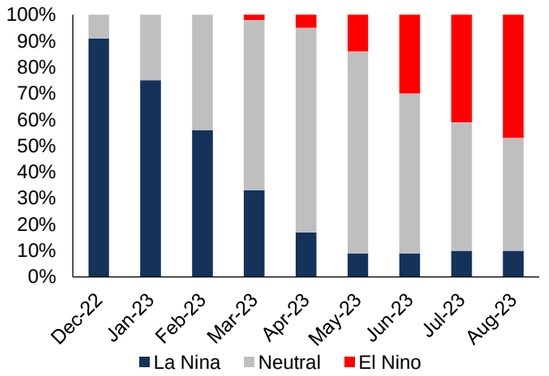
2. Less bright outlook for 2023 with many difficulties coming

2.1. Hydrological cycle will begin to reverse in 2023

La Nina has lasted for quite a long time and, according to *CPC/IRI forecast*, is expected to end in the first half of 2023. Afterward, there is a high probability that El Nino will return by the end of 2023.

Hydropower output in 2023 is expected to decline from its peak in 2022. While the weather will not be too bad for hydropower plants, they can hardly maintain their high output levels in 2022. We believe that the hydropower output of the whole system may decline by 10% compared to 2022. There is a high probability that El Nino will return by the end of 2023, so the outlook for the hydropower plants may become less positive from 2024 onwards.

Probabilistic ENSO forecast

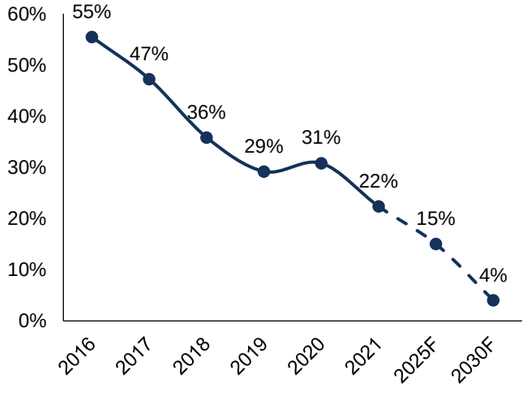


Sources: CPC/IRI

2.2. Thermal power output is expected to recover, especially from Northern thermal power plants

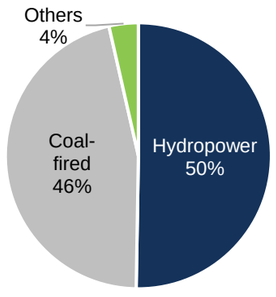
The above hydrological condition will help thermal power plants to recover output in 2023. We believe that thermal power plants in the North have the best prospects because the region is at high risk of power shortage. The North's electricity consumption is growing the fastest, while supply is growing the lowest, stressing its standby power sources. The North is also heavily dependent on hydropower (accounting for about 50% of installed capacity), so the weakening of La Nina will be a favorable factor for thermal power plants in this area.

Reserve margin[4] in Northern electricity system



Sources: PDP VIII Draft

Share of installed capacity in the North (2020)



Sources: PDP VIII Draft

2.3. Fuel prices are expected to remain high and coal supply has yet to improve

The thermal power group's outlook will still be hampered by unresolved fuel issues. Gas prices in 2023 are expected to decrease but are likely to remain at a high level. Meanwhile, global coal prices have not shown any sign of cooling down. A forecast of coal and gas prices in 2023 is included in the Commodity price Appendix.

Coal supply has not shown any sign of improving to meet increasing demand. Increasing thermal power output may cause an even more serious coal shortage in 2023. In addition, according to the joint announcement from EVN and TKV, TKV will supply EVN's power plants with completely mixed coal, which will present great challenges for coal-fired power companies in the coming year due to its high current price.

2.4. Electricity price is expected to remain high in 2023, but companies will no longer benefit as much

We believe that, with EVN's current difficulties, it is quite difficult for power producers to negotiate a good contract quantity in 2023. Moreover, participating in the competitive electricity market will not bring much benefit due to the high input costs (coal and gas).

2.5. Pricing mechanism for renewables remains unclear

We believe that the outlook for renewables in 2023 is still not particularly positive. PDP VIII has not been issued yet and the pricing mechanism for new renewable power projects is still unclear, so the potential for capacity development of renewable power companies is still uncertain. In addition, we believe that the price mechanisms for renewable power plants will not be as attractive to avoid overheating (as happened in the period of 2019-2021).

On October 3rd, 2022, the MoIT issued Circular 15/2022/TT-BCT stipulating the method of building a price frame for transitional solar and wind power projects. In late November, EVN proposed a price framework according to Circular No.15 above. However, we believe that the above information is still not too positive for renewable power companies because: (1) the price frame is only applied to transitional projects; (2) EVN's proposed price frame is not attractive, and (3) it may take companies a long time to complete the electricity price negotiation due to many complicated processes.

[4] *Reserve Margin (%) = 100 * (Total installed Capacity - Peak Load) / Peak Load*

FPT Securities

2023

WHEN WILL THE BEAR MARKET END?

I. CYCLE FEATURES OF VN-INDEX

1. Market Cycles Overview

The specific movements of the VN-Index will represent sentiment's changes during each stage of the market. Since 2005, the movement of money has formed specific definite cycle characteristics with a consistent rule, according to our research.

Source: FPTS Research

Since 2005, the VN-Index has continued to maintain a long-term trend of increase. There have been four cycles: the first began in Q2/2005 and ended in Q1/2009, the second began in Q2/2009 and ended in Q4/2012, the third began in Q1/2013 and ended in Q2/2016, and the fourth began in Q3/2016 and ended in Q1/2020. The cycles' highs usually appear before fundamental shocks and major economic events such as the financial crisis of 2007-2008, the 2012 debt crisis, the Brexit event in 2016, the US-China trade war, and the global economic slowdown caused by the COVID-19 pandemic., We do not see a correlation between the cycles in terms of amplitude. Specifically, the amplitude of the past cycles recorded was 403.34%, 168.07%, 94.30%, and 132.17%, respectively.

However, after removing random factors and applying a linear regression channel on weekly VN-Index data, we observed two major features:

(1) The index continues to remain on a long-term upward trend. The volatility is restricted to 22 degrees by the linear regression channel. The cycle's bottoms are maintained within the parameters of 1.2.

(2) In terms of a period of cycle formation, psychological cycles record uniformity. Each cycle is formed for184 weeks..

The VN-Index has been in the 05th cycle since the first quarter of 2020. The amplitude measured from the bottom in Q1 2020 to the top in Q4 2021 is 136.99%. In terms of period, the current cycle has gone up and down for 154 weeks. The typical fluctuation cycle is separated into four phases: Early Bull, Late Bull, Early Bear, and Late Bear. The cycle's position was determined to be in the Late Bear Market after the VN-Index crossed the inflection point (Middle Bear) in early September 2022. By calculating the corresponding period based on the previous fluctuation phases, the index may lengthen the Late Bear Market by 30 weeks. A Choppy Market is a peculiar formation that usually occurs in the final stages of a typical cycle, except for the particular fluctuation in the Late Bear phase of the 04th cycle when the market fell sharply due to the COVID-19 event. As a result, the support line of the linear regression channel suggests that the range from 830 to 850 points is expected to be the support area for the current cycle's low.

Overall, the VN-Index fluctuation is determined to have a long-term trend cycle. In 2023, the index trend is expected to transition from the 05th cycle to a new trend.

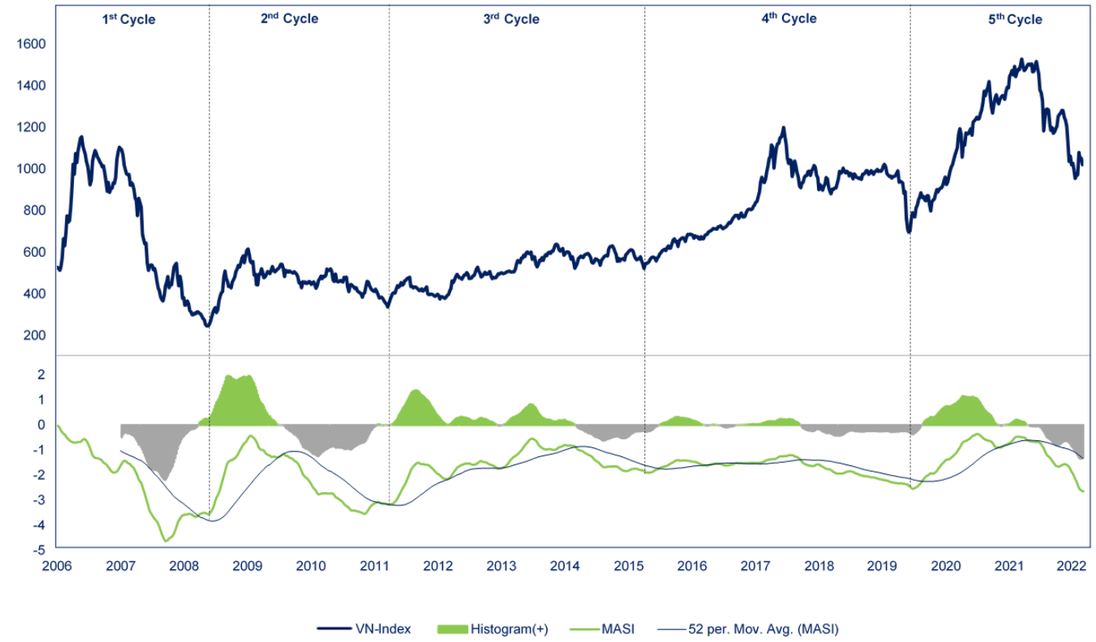
Identifying the VN-Index trend cycle empowers us to shape the dominant trend and psychological environment over time. As a result, market indicators will need to be emphasized to evaluate and identify shorter and more sharp fluctuations in this trend.

2. Market Indicators

2. 1. McClellan Adjusted Summation Index Indicator (MASI)

McClellan Adjusted Summation Index (MASI) is a market breadth indicator, based on the number of stock advances and stock declines on HSX. Accordingly, the reversal signal is determined by the correlation of MASI volatility with the VN-Index movement. That the VN-Index decreases and the MASI increases imply the low price of the market is attractive to new cash flow. The timing of reversal will be dictated based on the crossover between MASI and the SMA52 period of MASI.

Comparison of VN-Index movement and MASI indicator



Sources: Bloomberg, FPTS Research

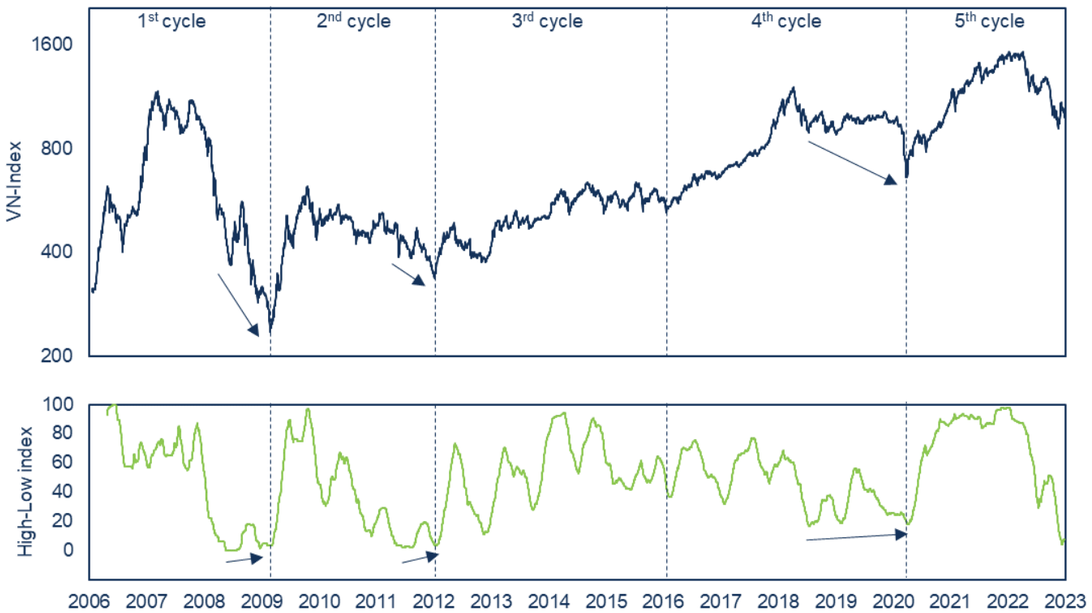
When assessing the volatility of the 01st and 02nd cycle, the warning crossovers of possible reversal were recorded in the weeks of 16/01/2009 and 04/11/2011, while the index's lows appeared later in the week of 27/02/2009 and 06/01/2012, respectively. In the subsequent two cycles, the signals appear later than the timing of the market trough. The signal of the 3rd cycle appeared on the week of 22/04/2016 and the index troughed on the week of 22/01/2016. The signal of the 04th cycle appeared in the week of 12/06/2020 and the indicator appeared in the week of 27/03/2020. The signals in the last 2 cycles are later than the market trough. However, in terms of the timing rule between cycles, MASI still confirms the end of the Bear Market scenario and alerts the opportunity to start a new cycle.

Currently, the MASI has a gap of -1.29 with the SMA of MASI 52 period, and there is no clear sign of narrowing this range. As a result, based on signals from MASI, the market is expected to remain volatile in the Late Bear market. Warning signs of the next bull cycle are monitored in the fluctuations in 2023.

2. 2. High-Low Index Indicator

The High-Low Index, a market breadth indicator, measures the ratio between the number of stocks that have surpassed 52-week highs and lows. An increase in the number of stocks surpassing the 52-week top or a decrease in the number of stocks that surpass the 52-week bottom on HSX will lift the indicator level and vice versa.

VN-Index and High-Low Index



Source: Bloomberg, FPTS Research

During the Late Bear from March 2007 to February 2009, VN-Index made its first bottom in June 2008 before making a lower bottom at 240 points at the end of the downtrend, while the High-Low Index formed corresponding higher lows. This signal indicated that although Bear Market has not ended yet, a group of stocks reacted to new highs and prevailed over "bottom-finding" stocks. This group of top stocks acted as a psychological fulcrum for some investors looking for opportunities at low prices. This was a favorable condition for the market to bottom out and start the next uptrend, lasting from February 2009 to October 2009. This divergence signal also appeared when the market ended the 2nd and 4th cycles.

Concerning the present value of this indicator, the High-Low index receded deeply into the low area of 0 - 20 points and did not record similar divergence signals. Therefore, from the perspective of the High-Low index, the market does not have enough conditions to form a long-term bottom to start a new bullish phase.

Although 02 market indicators have not been able to confirm the end of the Bear Market, they will be observed in the future for identifying the bottom of the VN-Index in the Late Bear market.

II. SECTOR AND MARKET CYCLE

1. Correlation between sector and market index

Due to data limitations, in this report, we focus on analyzing the annualized returns of 11 sectors classified by Global Industry Classification Standard (GICS) on Ho Chi Minh Stock Exchange (HSX) from 2008 to present.

Correlation matrix of the different HSX stock sectors

	VN-INDEX	*Real estate*	*IT*	*Industrials*	*Utilities*	*Communication services*	*Consumer discretionary*	*Consumer staples*	*Energy*	*Materials*	*Financials*	*Health care*
VN-INDEX	1.00	0.93	0.83	0.90	0.70	0.60	0.85	0.54	0.58	0.73	0.86	0.80
Real estate	0.93	1.00	0.79	0.88	0.51	0.50	0.80	0.49	0.48	0.53	0.80	0.68
IT	0.83	0.79	1.00	0.73	0.64	0.78	0.71	0.18	0.41	0.66	0.79	0.62
Industrials	0.90	0.88	0.73	1.00	0.57	0.43	0.81	0.57	0.60	0.54	0.63	0.83
Utilities	0.70	0.51	0.64	0.57	1.00	0.65	0.64	(0.01)	0.70	0.80	0.51	0.69
Communication services	0.60	0.50	0.78	0.43	0.65	1.00	0.52	(0.12)	0.35	0.74	0.56	0.49
Consumer discretionary	0.85	0.80	0.71	0.81	0.64	0.52	1.00	0.46	0.37	0.79	0.71	0.64
Consumer staples	0.54	0.49	0.18	0.57	(0.01)	(0.12)	0.46	1.00	(0.00)	0.16	0.49	0.27
Energy	0.58	0.48	0.41	0.60	0.70	0.35	0.37	(0.00)	1.00	0.42	0.21	0.88
Materials	0.73	0.53	0.66	0.54	0.80	0.74	0.79	0.16	0.42	1.00	0.70	0.58
Financials	0.86	0.80	0.79	0.63	0.51	0.56	0.71	0.49	0.21	0.70	1.00	0.47
Health care	0.80	0.68	0.62	0.83	0.69	0.49	0.64	0.27	0.88	0.58	0.47	1.00

Sources: FPTS Research

Based on the correlation matrix table, most sectors positively correlate with the market index,which is composed based on the price movements of all stocks in different sectors. Therefore, market price cyclicality can represent the cyclicality of price movements of most sectors over the long term.

However, the correlation matrix table also shows that the difference exists in a relationship between VN-Index and each sector index, namely:

- **Real estate, IT, Industrials, Consumer Discretionary, Financials and Health care** were highly correlated with market price movement (correlation coefficient > 0.8). Sectors with a correlation coefficient >0.9 show a strong positive relationship with the market.

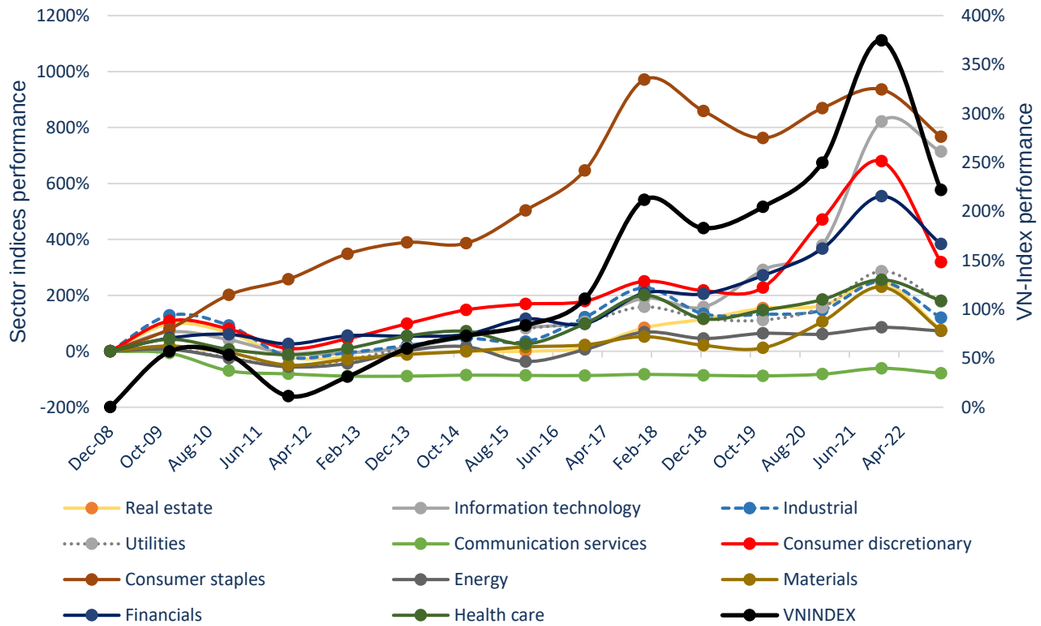
- The remaining sectors that had a low correlation with the market index are: **Utilities, Communication Services, Consumer staples, and Energy**, whose correlation coefficients were between 0.5 and 0.8.

The high correlation coefficient reflects a solid positive relationship between market and industry price movements. Therefore, the sectors with high correlation coefficients have similar cyclical characteristics to the market. On the other hand, sectors with low correlation coefficients are less affected by the cycle of the VN-Index.

2. Trend divergence among sectors is a signal to predict phases on the market cycle

In the long term, it is difficult for a single stock or sector to be a market contrarian. However, in each market cycle, price movements and correlation differences will create trend divergence between sectors. A large enough trend divergence or divergence created by cyclical and highly influential sectors can have a negative impact on the market trend and subsequently affect all remaining sectors.

VN-Index and sector indices performance from 2008 - present



Sources: FPTS Research

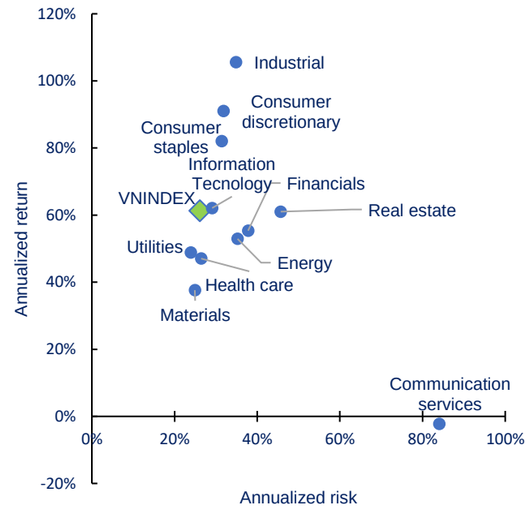
Studying the price movements of sector indexes from 2008 to now, the most basic feature of market cycles is that an uptrend occurs simultaneously in most sectors during the first half of the VN-Index's bullish phase. Similarly, a simultaneous downtrend usually occurs in most sectors during the first half of the index's bearish phase. On the other hand, the divergence in a movement direction of sectors often occurs around the peak or trough of the market cycle. This sign is often accompanied by technical signals preparing for the start of a new cycle.

At the moment, VN-Index is in the bearish phase of the 5th cycle. Signs of a downtrend are still being confirmed in 11/11 sectors on the HSX and this shows that the downtrend of the market may not end soon. **In 2023, the divergence in price trends among those sectors will be a feature that needs to be monitored. This may be necessary for VN-Index to create a bottom and enter a new cycle.**

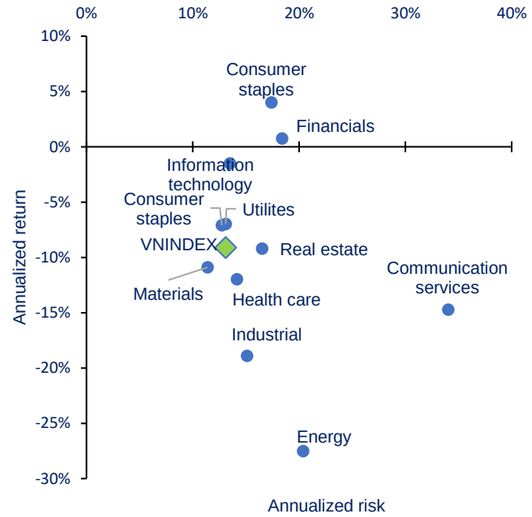
3. Annualized returns and volatility of sectors in market cycles

Trend divergence result from the fact that markets and Sector indexes do not always behave similarly at the same time. There will always be groups of stocks with different intensities or directions of price movement. To evaluate the performance of these sectors, the annualized returns are used to measure the expected return of investments would make in a year if the returns were compounded. We also use standard deviations to measure the risk in price movements of sector indexes.

Performance and risk by sector during a bull phase



Performance and volatility risks by sector during a bear phase



Source: FPTS Research

Source: FPTS Research

The calculation was completed for each bull/bear phase of a cycle and estimated the average value in the last 03 cycles of VN-Index to evaluate the performance of sector indexes according to the market cycles:

- **During the bull market**, cyclical sectors offered higher returns than others, but it required investors to face a higher level of risk. **Industrials and Consumer Discretionary offer the best return with medium risk.** Securities with less correlation to the market not only have lower performance but also have a lower risk.

- **During the bear market, Consumer staples, Information Technology and Financials offer the best performance with medium risk**. Sectors highly correlated to the market such as real estate and industrial, offer poor returns but require higher levels of risk facing. Energy has the lowest performance and high risk.

Performance and risk by sector 2022

Sectors	Annualized Return	Annualized risk
VNINDEX	-33.82%	18.71%
Real estate	-49.59%	21.92%
Information technology	-11.76%	22.38%
Industrial	-37.08%	27.56%
Utilities	-28.14%	13.94%
Communication services	-45.62%	43.26%
Consumer discretionary	-46.26%	30.53%
Consumer staples	-16.25%	17.18%
Energy	-6.77%	24.08%
Materials	-47.20%	35.43%
Financials	-26.11%	24.05%
Health care	-21.15%	16.46%

Source: FPTS Research

Although the above characteristics are identified based on historical data, it can be seen that this information remains valid when analyzing the price movements of sector indexes in 2022. Information Technology, Consumer staples and Utilities are the sectors that offer a fair amount of return for the risk they require. Real estate, Industrial, and Consumer Discretionary are the sectors that offer a lower return for the risk required.

III. CONCLUSION

Since 2005 until now, the VN-Index has formed 04 cycles and is currently moving in the 5th cycle. Based on the price cycle analysis results, VN-Index is in the Late bear market.

Expectations for VN-Index in 2023 are a signal to create a long-term bottom. This will be the transition period between 05th cycle to 06th cycle. Based on the volatility decomposition method, the new cycle is expected to appear after about 30 weeks from the present time. The price limit for this scenario is determined at 830 – 850 points. The factor to watch to determine the time to create a long-term bottom in 2023 is the pair of market indicators: McClellan Adjusted Summation Index (MASI) and High-Low Index.

We expect that the Consumer staples and Utilities will continue to show good resistance to the downtrend because these are the defensive sectors that have been confirmed throughout the last 3 cycles of the market.

Financial and Information Technology can also be considered for portfolio diversification due to positive price strength throughout the last 2 market cycles.

In case the bottoming signals on the market's long-term trend are activated soon, **the Industrial, Information Technology and Consumer discretionary will be expected to be the sectors that offer a fair amount of return for the risk they require.**

D. APPENDIX: CHANGE AND OUTLOOK OF COMMODITY PRICES

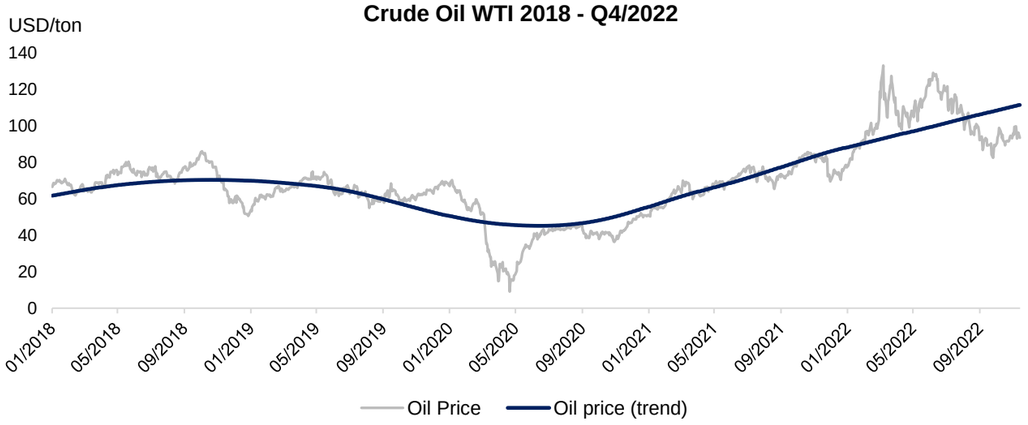
I. TREND OF CHANGING COMMODITY PRICES

1. World oil price has continued its upward trend in 2022

On February 28, 2022, the Russo-Ukrainian War broke out, significnatly affecting the world economy and commodity markets. On March 8, 2022, Russia's oil export embargo took effect, causing oil prices to increase by 70% compared to the beginning of January, reaching a peak of 133.18 USD/barrel, and maintaining high prices.

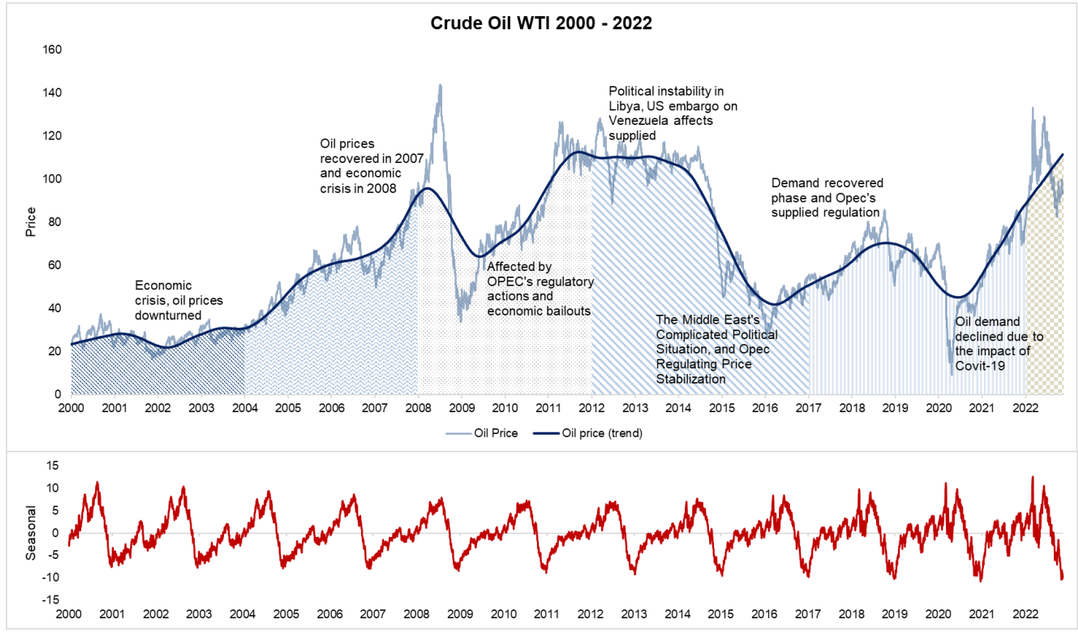
In Q2-2022, oil prices fluctuated complicatedly, with an average price of 113.83 USD/barrel, 65% higher than the same period last year. Oil prices have been raised too high for a long time, causing high inflation, which is most severe in European countries that have been directly affected by the cut in oil supply from Russia.

From Q3-2022 to Q4-2022, oil prices gradually stabilized, maintaining the average price from 90 to 95 USD/barrel thanks to the policy to increase production, open storage warehouses of developed countries, and the weakening of economies when facing high inflation. However, oil prices were still 14% - 38% higher than in the same period in 2021.



Source: FPTS Research

Observing historical data from 2000 to the present, we see that world oil prices moved in a cycle consisting of 3 phases: price increase, decrease, and recovery. Each cycle lasts from 4 to 5 years: 2000 - 2003, 2004 - 2007, 2008 - 2011, 2012 - 2016, and 2017 - 2021. Oil price increases often coincide with crisis and recessionary events: the financial crisis of 2007 - 2008, the European debt crisis of 2011 - 2012, and the economic downturn due to the Covid epidemic. Oil prices in 2022 were in the bullish phase of a new price cycle, corresponding to a recession due to the epidemic.



Source: FPTS Research

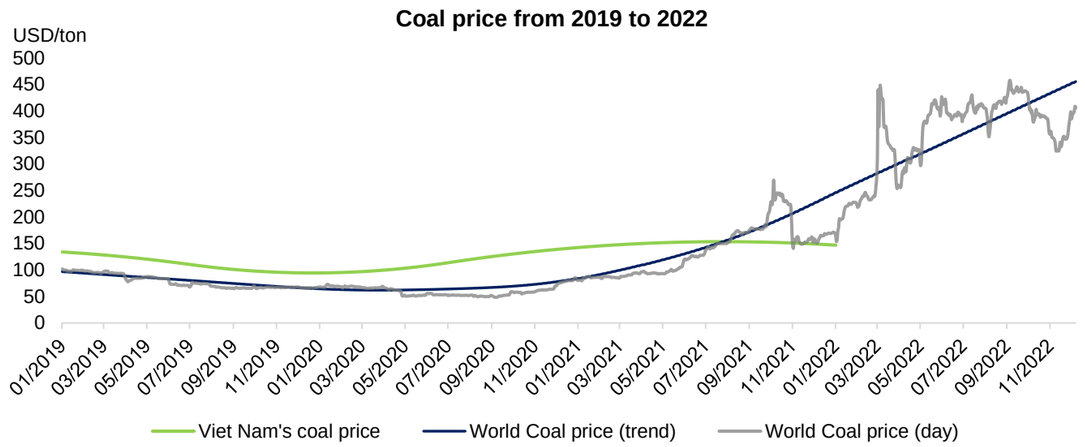
2. World coal price increased strongly

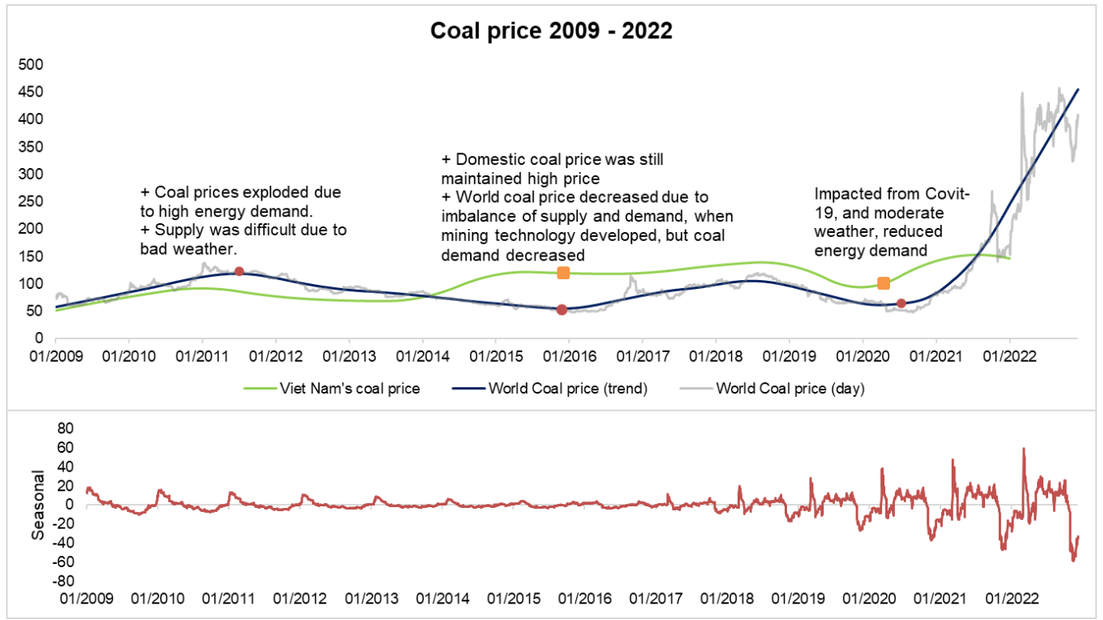
By the end of the trading session on December 7, 2022, the world coal price reached 458 USD/ton, up 139% compared to the end of 2021. The increase came from the recovery of energy demand in countries in 2021 and the Russo-Ukrainian War in 2022.

Demand for cheap energy from coal increased sharply in Europe when the Russo-Ukrainian War occurred in February 2022, making gas and coal supplies rare after the import from Russia, which increased costs and pushed up coal prices. In China, the demand for coal also increased in Q3 2022 to compensate for the lack of electricity in the country.

Coal supply in 2022 faced many difficulties when coal mines in Australia and South Africa fell into a difficult situation due to unfavorable weather conditions; supply mainly came from Indonesia when the country's export embargo endeds after January 1, 2022. Output from India and China increased by 21% and 11%, respectively, over the same period in 2021 but aimed to serve the domestic market (according to the October report of the World Bank).

The domestic coal price in 2022 remained stable, while the world coal prices got high. The domestic coal price had been maintained by TKV at 146.76 USD/ton throughout the two years 2021-2022.





Source: FPTS Research

The historical world coal price from 2009 to now has been showing the moving trend of coal price taking place in a long time 2 price cycle stages:

- Before 2018: coal price shows a clear trend. Each increase/decrease cycle of coal price takes place in 3 - 4 years.
- The period after 2018: The duration of each cycle is shortened, lasting from 2 to 3 years.

3. Domestic steel price benefited from China's production cuts and rising raw, material prices

The policy of banning steel imported from the world's second-largest steel producer - Russia and the Covid-19 prevention and control policy from the world's largest steel producer - China, was the two main driving forces that caused steel prices to increase and maintain high prices in Q1/2022, long-term high steel prices also drove a series of markets to cut output. On March 16 2022, steel price reached 928.5 USD/ton, up 54.1% compared to the beginning of January.

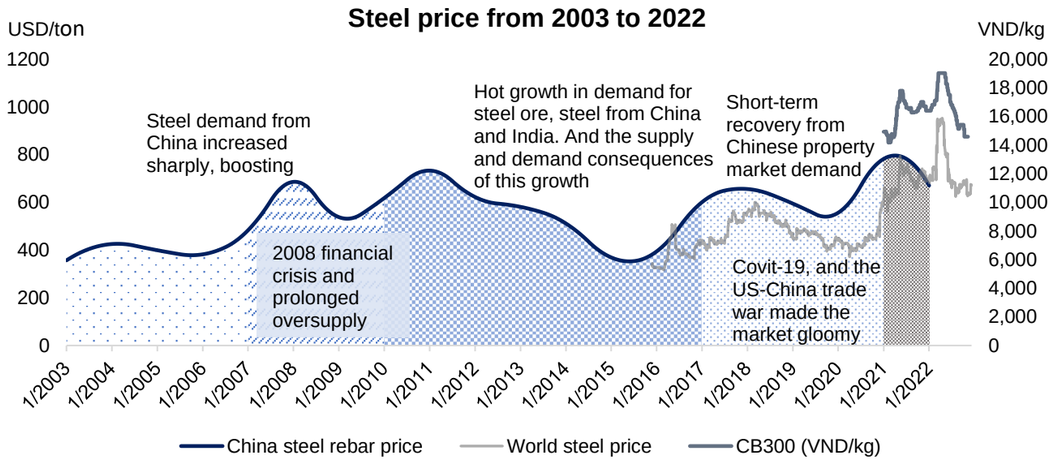
The price of raw materials increased after India had increased the export tax, the world's extensive iron ore mines faced adverse weather, most of the global iron ore was stuck in the Chinese market, coal price hiked affects steel price and supply.

From Q2/2022 to Q4/2022, steel prices cooled down, steel demand and supply were affected due to concerns about economic recession, The Russo-Ukrainian War protracted, and the Chinese market continued to close. According to World Steel's October 2022 report, China's steel demand may decrease by up to 4% and the EU by 3.5% in 2022.

For the domestic steel market, Q1/2022 to Q2/2022 is the period when steel prices benefited from the ban on steel from Russia, and the Chinese market closed. Hoa Phat's D10 CB300 steel price increased from 16,410 VND/kg on January 15 2022 to 19,404 VND/kg on March 15 2022 and maintained 2 months later. This is a favorable period for domestic enterprises to increase steel exports to the EU market when inventories of large domestic steel enterprises were at a high accumulation from the end of 2021. In the period from Q3/2022 to Q4/2022, domestic steel prices decreased and stabilized similarly to the world steel price.

Source: FPTS Research

In historical data from 2003 to the present, the price cycle of the steel industry lasts from 3 to 6 years, the decrease phase usually lasts from 1 to 2 years longer than other phases. With the current cycle starting from 2021 to 2022, steel prices are in a decrease phase and bearish signs still show up in the latest trading sessions.

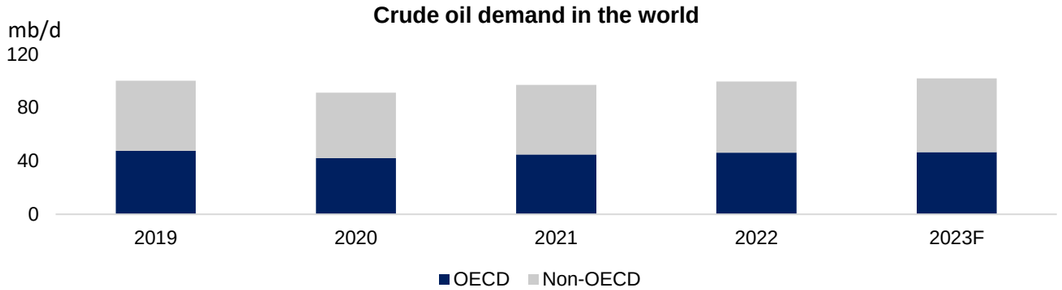


Source: FPTS Research

II. FORECAST OF COMMODITY PRICES

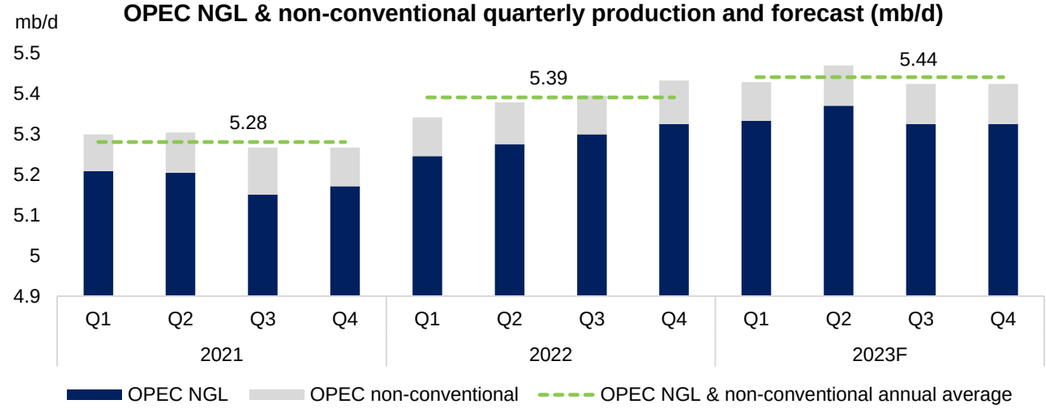
1. Crude oil prices are forecast to fall in 2023

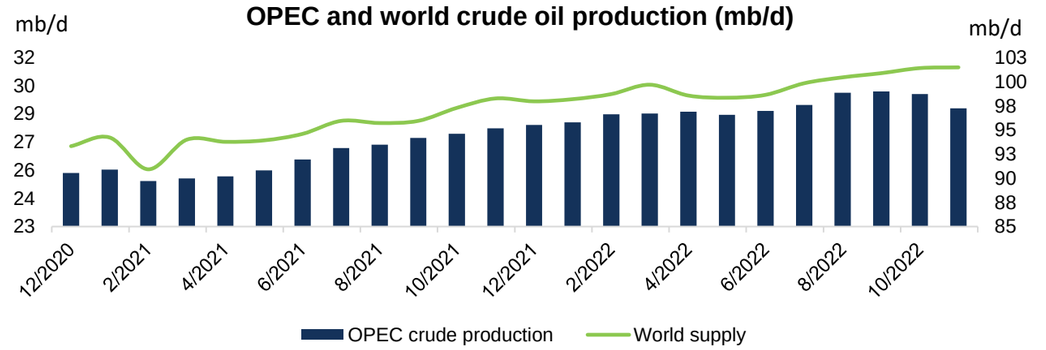
World oil demand in 2023 expects to grow by 2.2 mb/d to 101.8 mb/d based on Opec's December 2022 report which the countries in Opec increased by 0.3 mb/d to 46.5 mb/d, Non-Opec increased by 1.88 mb/d, reaching consumption of 55.4 mb/d.



Sources: OPEC Monthly Report (12/2022), FPTS Research

Liquid supply from outside OPEC grew by 1.5 mb/d to 67.1 mb/d, of which the US, Norway, Brazil, Canada, and Kazakhstan have the highest growth rates. The crude oil supply from OPEC is expected to continue cutting, although OPEC hasn't given a forecast for 2023. Observing historical data in the December report, OPEC crude oil's share in total global supply has decreased from September 2022 to now. In November 2022, the share of OPEC crude oil fell to 28.8% compared to 29.1% in October 2022. OPEC forecasts the supply of natural gas and non-conventional oil products to increase to 5.4 mb/d from 5.39 mb/d in 2022, and the World Bank forecasts natural gas price in 2023 to reach 32 USD/mmBTU[5]





Sources: OPEC Monthly Report (12/2022), FPTS Research

Following JP Morgan and EIA's December report, crude oil prices in 2023 are forecast to trade from $90/barrel to $92.35/barrel. The World Bank's October 2022 reporting period also made a similar forecast when crude oil price in 2023 will trade at $92/barrel. According to the World Bank and OPEC, political instability in Eastern Europe, sanctions against Russia, US shale production, and OPEC's policy of cutting oil supply will affect oil prices in 2023.

Oil prices have shown signs of forming a top when oil prices have shown signs of cooling down in Q4/2022.

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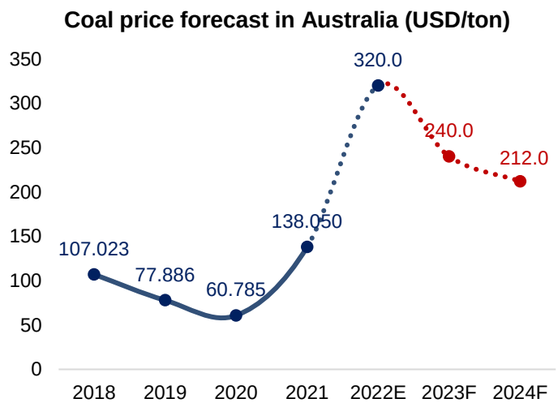
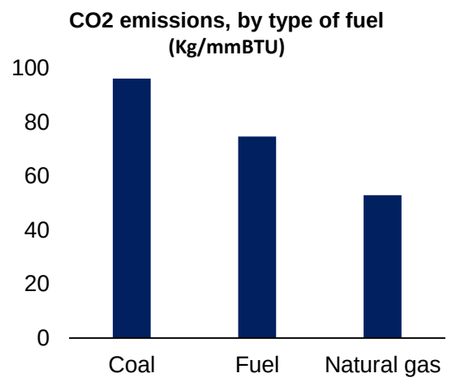
[5] mmBTU (million British Thermal Units): The British thermal unit is defined as the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

2. Coal prices are forecast to decrease in 2023

The World Bank forecasts the average coal price in 2023 to fall to 240 USD/ton and then drop to 212 USD/ton in 2024. World Bank analysis shows coal-fired energy growth in 2023 will slow down due to policies to cut CO2, reduce the energy consumption of developed countries, increase long-term fixed price contracts, and supply recovery from the Chinese markets, India. The IEA also forecasts the same from 2023 to 2030 when the demand for coal use in some industries will gradually decrease over the years. Investment capital for the coal industry for construction and exploration of new coal mines will shrink gradually because coal energy is still an unclean fuel source that affects the environment, and going to replace. However, the replacement will take time as developing countries, and China still needs cheap energy sources.





Source: World Bank Outlook (10/2022)

3. Steel prices are forcecast to decrease, the market is difficult prosper

Steel price in 2023 has been few positive signs when steel demand is almost unchanged, and supply is still tricky. Following Fitch Solution, the average steel price in 2023 will reach 825 USD/ton.

According to World Steel's October report, world steel demand will grow by 1% in 2023 after falling by 2.3% in 2022, steel demand mainly comes from non-EU, South America, and Africa. Asia's demand is forecast to no change compared to 2022 while China is very cautious when opening its market.

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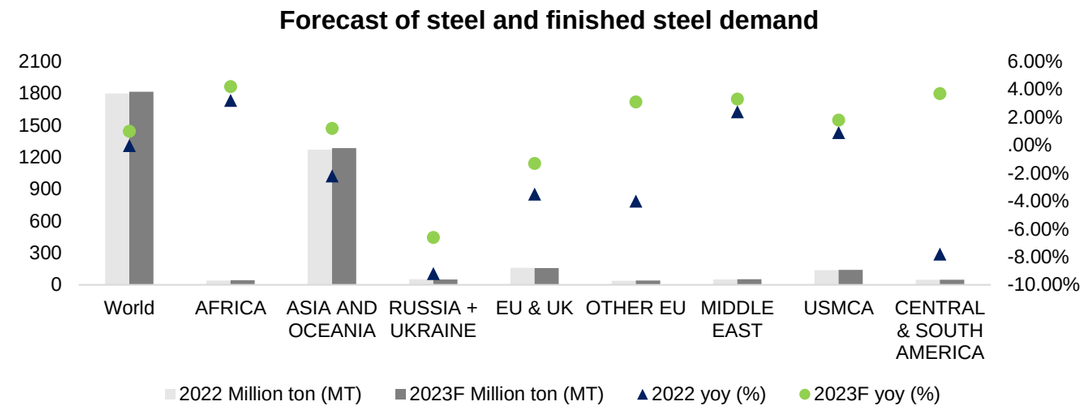
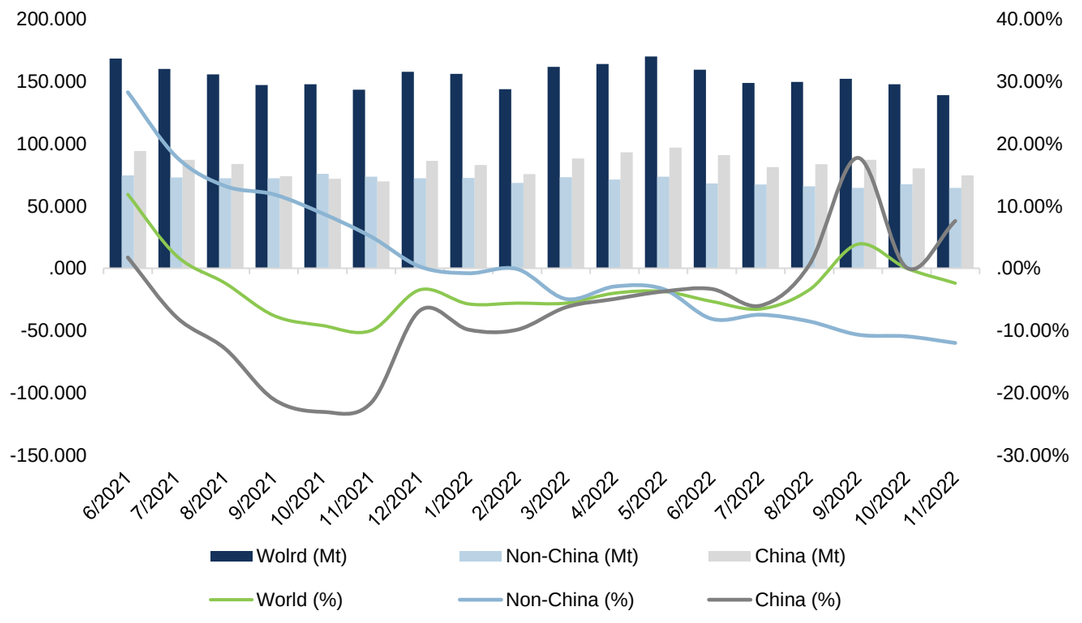


Sources: World Steel (10/2022), FPTS Research

Steel output has not shown any signs of recovery. From Q1/2022 to Q2/2022, steel prices reached the highest value, steel output did not increase significantly, China increased production mainly to serve the domestic market, and non-China markets had no increase in production growth.



Sources: World Steel (10/2022), FPTS Research

STL DECOMPOSITION METHODOLOGY

STL Decomposition (Seasonal and Trend decomposition using Loess) is a method of adjusting the seasonality of time series data. The data is decomposed into three components: trend (Trend), seasonality (Seasonal), and the remainder (Remainder) through the use of a filtering algorithm based on the LOESS (Locally Estimated Scatterplot Smoothing) regression method. The three components are assumed to be related to each other by the following additive relationship:

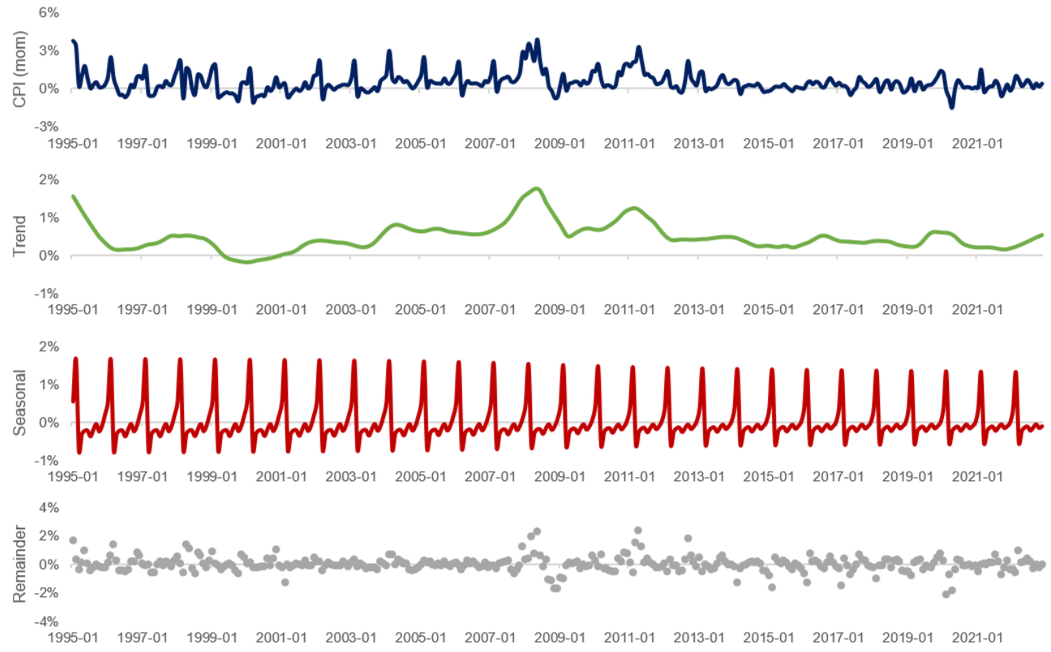
$$Y_t = T_t + S_t + R_t$$

Where: Y_t : Data; T_t : Trend component; S_t : Seasonal component; R_t : The remainder component.

The steps to identify the three components include:

- Determination of Trend component (T_t): The trend factor is calculated through moving averages method or regression method.
- Compute the detrened data: $Y_t - T_t$
- Determination of Seasonal component (S_t): The simplest method to determine this factor is using average of the data values after removing the trend factor for each specific period. For example, the seasonal effect for April is calculated as an average of all April detrended data.
- The Remainder (R_t): $R_t = Y_t - T_t - S_t$

For example: Use the STL method to analyze the monthly average CPI data of Vietnam.



Source: FPTS Research

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