Abstract:

Amidst the consensus that an economic downturn is soon arriving, this paper puts forth six indicators to predict when the next recession will start, understand when it is occurring as well as confirm when it has ended. By focusing on indicators with a shorter leading interval, an estimate for when a recession properly starts should be forecasted two to three quarters in advance, an understanding of when the recession has started within one quarter, and confirmation of when it has ended within three to four quarters.

Background:

With seemingly every major bank and financial news source suggesting an economic downturn is on the horizon, the question is not if, but when the recession will arrive.[1] The goal of this research is not to repeat these predictions but to suggest a few important indicators that can equip investors with the timely knowledge to confirm when a recession is imminent. In turn, central to this approach are a few crucial operating assumptions concerning the quickly changing actions of the Fed as well as the global turmoil stemming from the war in Ukraine.

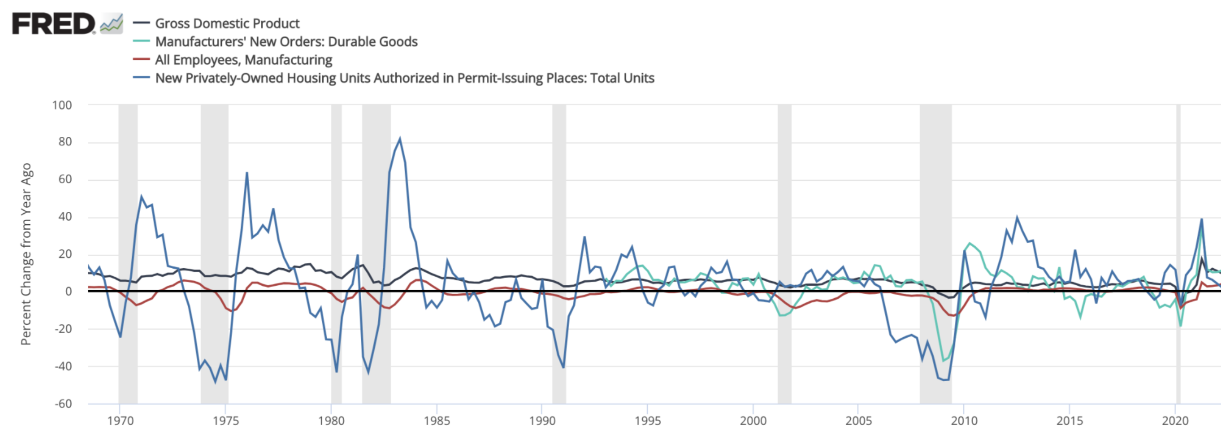
Regarding interest rates, this conversation can be broken up in terms of what the Fed has done, and what the Fed is ostensibly planning to do. Taking them in turn, the US has faced five periods of inflation within which the median hiking cycle has been over 25 months (Scaggs 2022). This should emphasize the unique frequency and magnitude of interest rate hikes for our current period and brings two things to mind. The first is Powell's shift away from the pace of increases and towards prioritizing the final level of rates and the second is Powell's repeated intention to not repeat Volcker's mistake and drop rates too quickly only to hike them even

[1] See for instance the IMF Global Financial Stability Report p14, UNCTAD Trade and Development Report p9, *Why a global recession is inevitable in 2023* by Z. Beddos, Bloomberg, November 18, 2022. *US recession forecast within year hits 100% in blow to Biden before midterms* by J. Wingrove, The Economist, October 17 2022, "Wall Street's speedwar," by C. Steiner, Forbes Magazine, September 27, 2010 (https://bit.ly/2t6QlwG)

higher.[2] Powell was reminded of investors' eagerness when he needed to correct a bullish trend during his press conference back on July 27th with sharp comments to make sure markets understood there would be no stopping until inflation was under control. As a result, this paper took care to account for the heightened relevance of interest rates while incorporating other concurrent factors like geopolitical instability leading to a focus on manufacturing, labor, and housing.

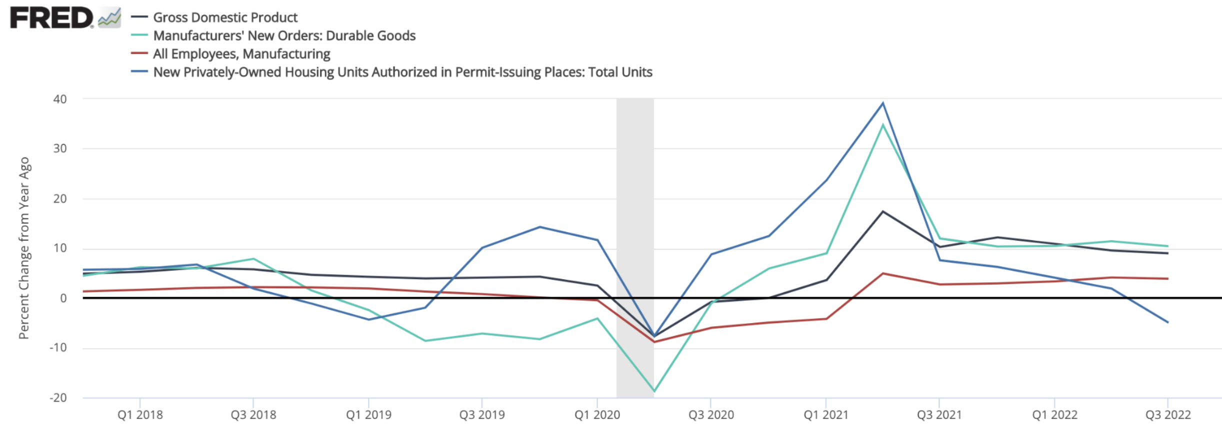
Leading Indicators

Figure 1: Leading Indicators Against GDP. 1970s-Present



[2] Powell (2022) "Given our progress in tightening policy, the timing of that moderation is far less significant than the questions of how much further we will need to raise rates to control inflation, and the length of time it will be necessary to hold policy at a restrictive level. It is likely that restoring price stability will require holding policy at a restrictive level for some time. History cautions strongly against prematurely loosening policy. We will stay the course until the job is done."

Figure 2: Leading Indicators Against GDP. 2018-Present



As seen in Figure 1, all three indicators are fairly consistent with past recessions, shaded in gray. The efficacy for our present situation tracks with the current consensus as the 5-year outlook in New Permits seen in Figure 2 matches with its tendency to fall before the other indicators. The primary reason for including New Orders for Durable Goods relies on the "not if, when" approach so as not to repeat what is already known.

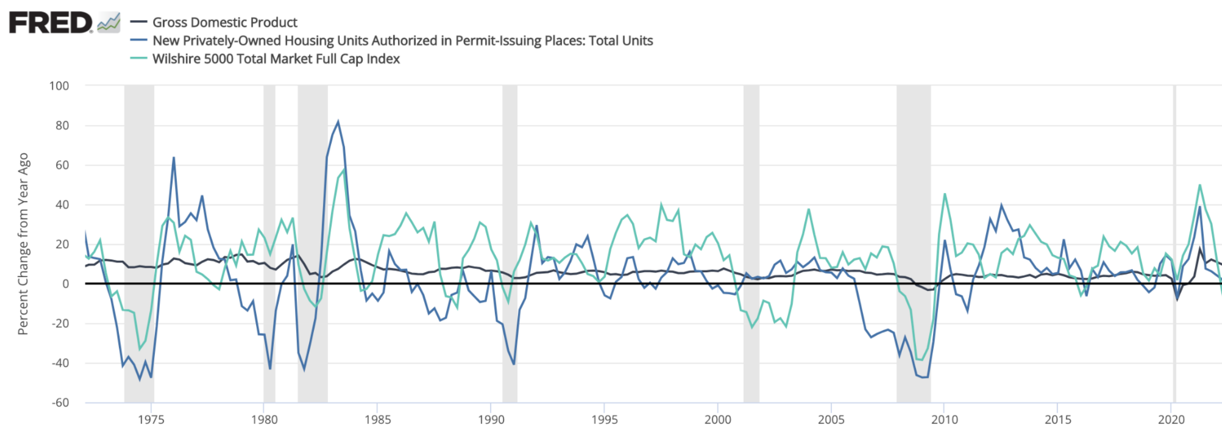
Looking at the specific indicators, New Orders are intuitive enough: when hopes for economic improvement increase, New Orders for Manufactured Durable Goods increase. Even as changes in GDP are less dramatic, Manufacturers' New Orders for Durable Goods tend to fall ahead of a sharp decline in GDP by at least a quarter. The notable exception is in 2015 when a strong dollar and declining world growth resulted in a big hit to manufacturing (Estiot 2015). Despite the similarities to the present day, new orders still have room to fall if they are to match previous periods before recessions given that they are up seventeen of the last eighteen months.

Now looking at Manufacturing Employment, it is important to contextualize the interpretation of this data within the overarching decline from its peak 40 years ago. With that in mind, total manufacturing employees have consistently been negative leading up to recessions which is why it is still frequently turned to as an important leading indicator. Specifically, before

the 1990, 2001, and 2008 recessions, total manufacturing employment growth has been declining year-over-year for three quarters and turned negative in all cases. The uniqueness of 2020 is due to the abrupt disruption in global supply chains and manufacturing with the onset of the pandemic. For our purposes, Manufacturing Employment has yet to establish a consistent downtrend or break into negative territory as seen in Figure 2. If history is to repeat itself, a sharp decline into negative territory is an important signal to watch, keeping in mind that the Fed will be looking at New Orders and Jobs when quantifying the efficacy of their hikes.

As for building permits, this indicator is particularly good at gauging the realized effects of rate changes. While this data is released monthly, the Census Bureau says it may take three months before a trend can be established making the quarterly measure especially useful.

Figure 3: New Housing Permits 1970s-Present Against GDP and Wilshire 5000. 1970s-Present



Since 1970, a negative year-over-year quarterly percent change of -20% or more in New Housing Permits has always been followed by a recession during periods of inflation. While such a drastic move is yet to come, a trend in this direction can be anticipated once the housing market fully internalizes the drastic pace of rate hikes. Permits have already partially demonstrated these effects with declining growth in the last five quarters all the way back to Q2 2021 with Quarter three in 2022 turning negative. This consecutive decline is essentially unprecedented but a

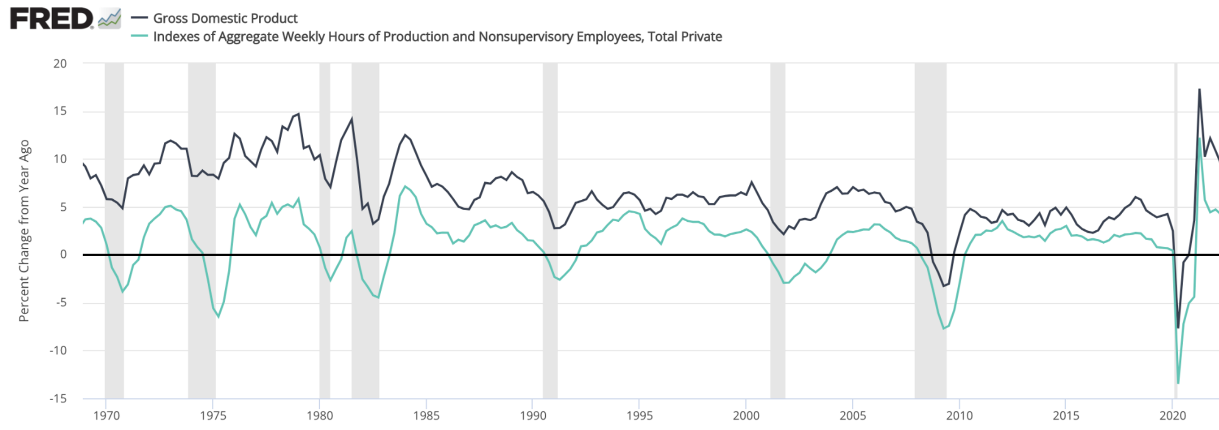
product of the unique combined frequency and magnitude of recent rate hikes. This is why a larger sharp decrease will be the main red flag since as recently as 2016 and 2011, permits have turned negative but were only the consequence of less drastic hikes rather than the larger recessionary forces that all signs point to currently. Additionally, New Housing Permits doubles as a lagging indicator as positive year-over-year growth after a recession consistently indicates that the worst had already passed.

Implications for Equities

While equities themselves are frequently used as a leading indicator of economic growth, the indicators above also carry weight when it comes to the holistic trajectory of equities. The first way is simply that every real recession corresponds with negative real earnings growth. That said, in our present situation, equities have already fallen substantially as they are down 15% year to date. In this case, good news might very well be bad news which is particularly relevant for New Orders and Manufacturing Employees, both of which have substantially more noise, and could signal false flags in the short term. As for New Permits, a trend upwards for one to two quarters after a sharp decline of -20% or more is a reliable sign that equities will not fall much more after this point as seen in Figure 3. Additionally, given that the Fed will almost certainly start cutting rates if this level is reached, New Housing Permits, couched within Manufacturing Employment and New Orders, can be used as an indicator not just when equities fall, but even more effectively to gauge when equities will rise after a fall. This result might even turn out to be more useful since it's not unreasonable to think that for our current moment, the widespread recession predictions could result in investors pricing in a recession for a longer period of time before the recession.

Concurrent Indicator

Figure 4: Total Private Indexes of Aggregate Weekly Payrolls of Production and Nonsupervisory Employees Against GDP. 1970s-Present



Given the Fed's operative goal of weakening the labor market to fight inflation, finding the right concurrent indicator that accounts for this is essential. Historically, Total Private Indexes of Aggregate Weekly Payrolls of Production and Nonsupervisory Employees has been declining and turned negative year-over-year only and always during each recession on a quarterly basis. While Total Nonfarm Employees has a similar strength as a concurrent indicator (both are derived from the establishment survey), Weekly Payrolls of Production and Nonsupervisory Employees tend to reach negative territory one to two quarters before Nonfarm Employees making it our preferred choice. At our present moment, the month-to-month has been decreasing gradually since April 22, 2022, resulting in two-quarters of decline. While the use for our purposes is as a concurrent indicator, one can also see that its historic consistency could be used to crudely estimate how soon a recession will arrive in conjunction with the leading indicators above.

Lagging Indicators

Figure 5: Manufacturers Inventories to Sales Ratio and Bank Prime Loan Rate Against GDP. 1994-Present

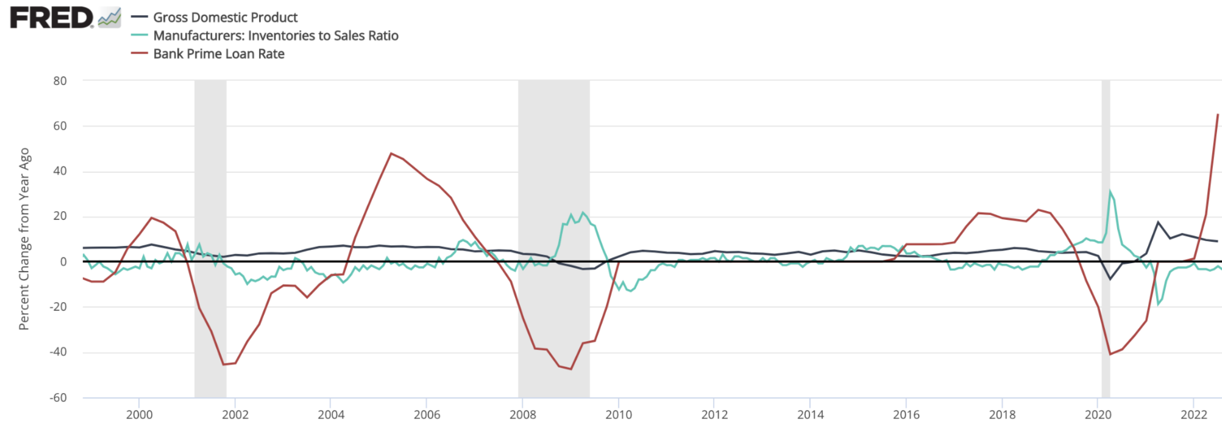
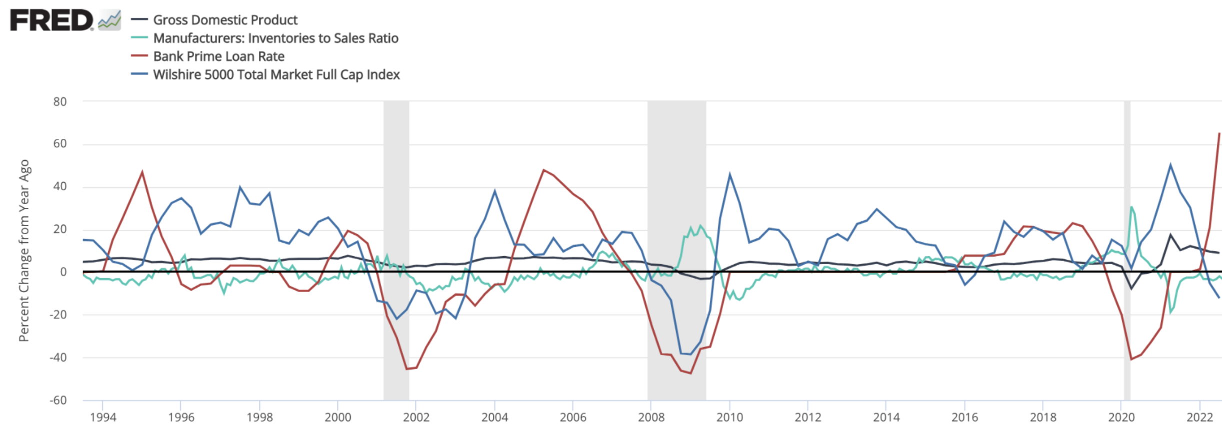


Figure 6: Lagging Indicators Against GDP and Wilshire 5000. 1994-Present



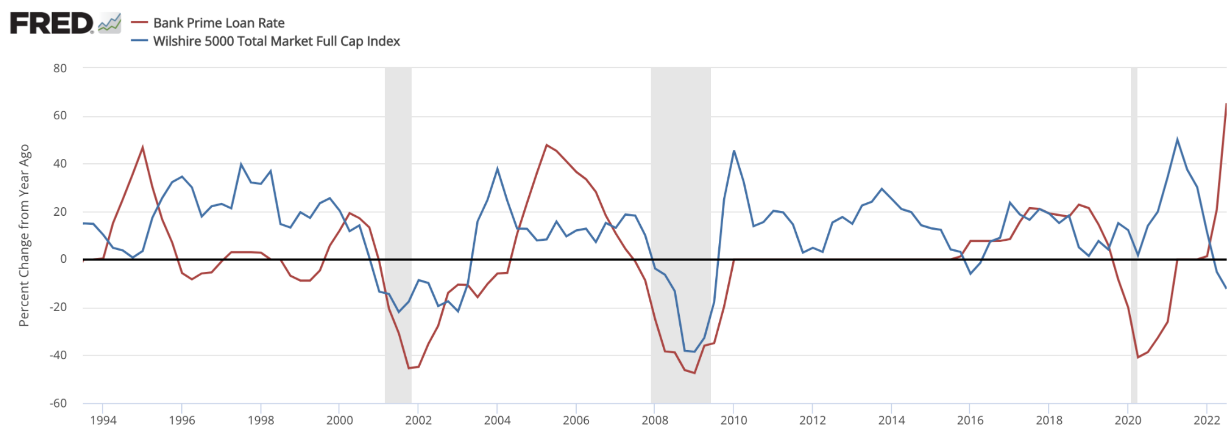
As the economy enters into a recession, the Inventory To Sales ratio sharply increases and then sharply decreases as firms adjust to changing demand. It generally takes a year for the ratio to break the -.5 threshold signaling an end to the recession. 2020 is somewhat of an exception since, while it broke the -.5 threshold in Q3 2021, it was on pace to turn positive which

was common after previous recessions. The uniqueness can be explained by the economic turmoil this year, particularly the Russian invasion of Ukraine in Q1, 2022.

Keeping in mind both the outside lag of interest rates and Powell's stated desire not to repeat Volcker's premature lowering of rates, the Prime Rate is a good indicator to see when markets have started to shift after a Fed pivot. Historically and for our present situation, the recurring indicator to look for is that after a sharp dive in Prime Rates (which is expected when the recession does arrive) the Prime Rate will start to rise. A consecutive increase in the Prime Rate for three quarters after a sharp dive has always signaled an end to the recession since 1990.

In terms of tracking equities, the Prime Rate is the most applicable to look at in our current situation as it functions much more as a concurrent indicator whose relationship is inversely related to equity growth (whereas the Inventories To Sales ratio has a longer lag).

Figure 7: Bank Prime Loan Rate Against Wilshire 5000. 1994-Present



Historically, a Fed pivot along with the corresponding effect on the Prime Rate, is met with positive growth in equities. However, leading up to past recessions, inflation was not as big of a concern as it is now. A glance at Figure 12 will immediately show similarities with the 1975

recession and there is good reason to believe investors are eager to ride the wave up given the market responses after both the last FOMC press release and the October CPI - neither, of course, showing any demonstrated commitment to a pivot or fundamental shift in inflation - yet momentous nonetheless.

Conclusion:

As 2022 comes to a close, we are looking ahead toward what has become the most widely predicted recession in history. The longer-horizon indicators have already tripped, we now need more proximate indicators to be able to make cognizant investment decisions. Specifically, we will look for a decline in New Housing Permits of -20% or more, foregrounded by a decline in New Orders and Manufacturing Jobs which should assist investors when to leave the market before a recession takes place and when to ride the wave back up during the recovery. The latter decision can also be made more confidently when referencing the concurrent and lagging indicators which can provide a clearer picture of when the effects of the leading indicators have been fully internalized. In short, with the focus on more proximate indicators and minimizing noise with the utilization of quarters on a year-over-year basis, this paper sought to strike a balance between volatile indicators and overly abstract indicators which pervade current discussions of recession predictions.

References

Beddoes, Z. (2022) *Why a global recession is inevitable in 2023*, *The Economist*. The Economist Newspaper. Available at: https://www.economist.com/the-world-ahead/2022/11/18/why-a-global-recession-is-inevitable-in-2023 (Accessed: December 5, 2022).

Estiot, A. (2015) *Sometime this year... hopefully*, *BNP Paribas*. Available at: https://economic-research.bnpparibas.com/html/en-US/Sometime-year-hopefully-7/17/2015,25832 (Accessed: December 2, 2022).

International Monetary Fund (2022). *Global Financial Stability Report—Navigating the High-Inflation Environment.* IMF. Available at: https://www.imf.org/en/Publications/GFSR/Issues/2022/10/11/global-financial-stability-report-october-2022 (Accessed: December 12, 2022).

Powell, J. (2022) *Speech by chair Powell on inflation and the labor market*, *Board of Governors of the Federal Reserve System*. Available at: https://www.federalreserve.gov/newsevents/speech/powell20221130a.htm (Accessed: December 2, 2022).

Scaggs, A. (2022) *A short history of rate hikes*, *Financial Times*. Available at: https://www.ft.com/content/e0ff2f64-2112-442c-a41e-c8b21d6645f4 (Accessed: December 2, 2022).

United Nations Conference on Trade and Development (2022) *Trade and Development Report 2022*, *UNCTAD*. Available at: https://unctad.org/tdr2022 (Accessed: December 12, 2022).

Wingrove, J. (2022) *US recession forecast within year hits 100% in blow to Biden before midterms*, *Bloomberg*. Available at:

https://www.bloomberg.com/news/articles/2022-10-17/forecast-for-us-recession-within-year-hits-100-in-blow-to-biden (Accessed: December 5, 2022).