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From stocks to luxury watches: assessing the role of alternative economic indicators in macroeconomic forecasting.

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Abstract

In the current study, two monetary models are developed and tested for their forecasting ability using vector autoregression and high-frequency data. The sole difference between the two VAR models is that the first employs key economic indices, while the second replaces the S&P 500 index with an index reflecting Rolex watch prices in the secondary market. According to the analysis, the alternative model outperforms both in static and dynamic forecasting during a period marked by extreme volatility caused by the shock of the pandemic. In contrast, it significantly loses its forecasting ability when estimated under normal conditions prior to the onset of the pandemic. This novel approach shows that alternative indicators, like the price of luxury watches, can offer timely insights into consumer confidence and market circumstances during times of economic turbulence.

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1. Introduction

The Federal Reserve takes crucial economic and financial aspects into account while implementing its monetary policy. Inflation rates, unemployment, GDP growth, and overall financial market stability are all examples of such factors (see, the Monetary Policy Report of the Federal Reserve, June 2023). Based on this approach, the current study will initially develop a monetary model using weekly data and key economic indicators to assess its forecasting ability. In particular, it uses the Lewis-Mertens-Stock Weekly Economic Index (WEI), together with the Federal Funds Effective Rate, US Regular Gas Prices, and the S&P 500 index.

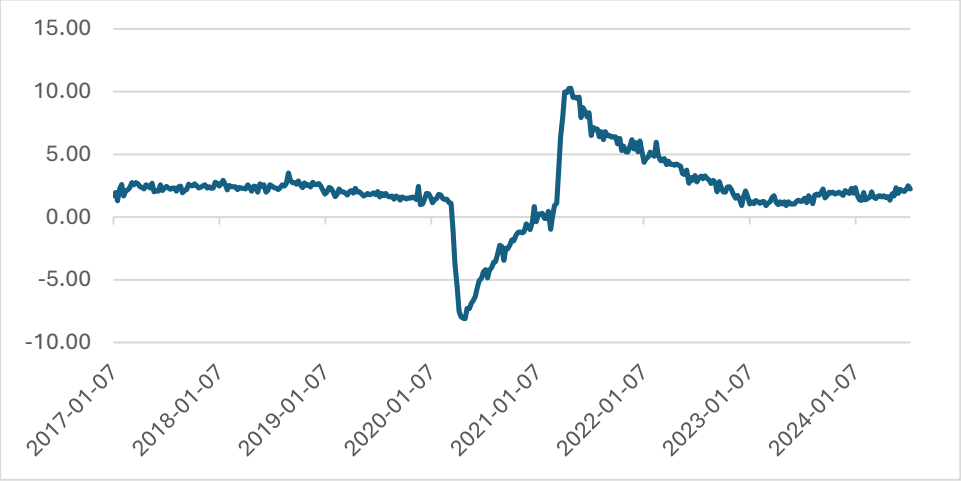
The WEI comprises a variety of indices, covering consumer behavior, the labor market, and production. The Federal Funds Rate stands for monetary policy, while the US Regular Gas Price is employed as a weekly proxy for inflation, and the S&P 500 index illustrates financial market stability and performance. To commence the empirical analysis, a Vector Autoregression (VAR) model will be utilized. One benefit of that VAR model is the use of high-frequency data (weekly), which allows for a prompter analysis. Data were obtained from the Federal Reserve Bank of St. Louis (FRED).[1]

According to Lewis et al. (2022), the Weekly Economic Index (WEI) was a powerful tool for nowcasting current-quarter GDP growth during the first half of 2020. Because of its high-frequency, the WEI is able to provide timely insights well ahead of traditional macroeconomic aggregates, which usually lag behind (Lewis et al., 2020). In the same context, Baker et al. (2020) evaluated the macroeconomic effects of the COVID-19 crisis and measured the spike in economic uncertainty using real-time forward-looking indexes. Similarly, Groen and Nattinger (2020) improved the tracking of business cycle fluctuations in China by using high-frequency data to create an economic activity index.

Figure 1 shows that the WEI fell sharply around the onset of the pandemic but rises significantly during periods of economic recovery.

[1] Following variables were retrieved from FRED (Federal Reserve Bank of St. Louis):
- Lewis, Daniel J., Mertens, Karel and Stock, James H., Weekly Economic Index (Lewis-Mertens-Stock) [WEI], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/WEI, *July 30, 2024*
- *Board of Governors of the Federal Reserve System (US), Federal Funds Effective Rate [FF], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/FF, July 30, 2024.*
- *U.S. Energy Information Administration, US Regular All Formulations Gas Price [GASREGW], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/GASREGW, July 30, 2024.*
- *S&P Dow Jones Indices LLC, S&P 500 [SP500], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/SP500, July 30, 2024.*

Figure 1 Weekly Economic Index (Lewis-Mertens-Stock)



Source: FRED

In addition, this study uses an alternate model from the initial one by replacing the S&P 500 index with an index derived from the pricing of Rolex watches on the secondary market.[2] This novel approach attempts to determine whether luxury goods might function as alternative assets and offer more insightful data than the conventional stock market metrics as a result of the surplus volatility induced by the pandemic. The Rolex brand was chosen for the current study for two reasons: first, the availability of data for the period under consideration, and second, the brand's strong market influence. Building and sustaining strong brands is crucial for the global luxury industry, according to Zhang and Müller (2022), even though it shows resilience to technological and business model disruptions. They use the Swiss watch industry as an example, where only a small number of brands dominate the market. According to Morgan Stanley and Swiss business LuxeConsult, Rolex's market share in 2023 reached new levels, and the brand's sales topped 10 billion Swiss francs for the first time, underscoring its unmatched dominance in the sector.[3]

Reports from the Federation of the Swiss Watch Industry supply us with a wealth of information about the performance of watchmaking exports. Between 2017 and 2023, the Swiss watch industry's export values fluctuated significantly, affected by global economic conditions and market pressures. Swiss watch exports reached 19.9 billion Swiss francs in 2017, up 2.7% from the previous year; the second half of the year had a higher growth rate (FH, 2018). Due to a solid first half performance, the favorable trend persisted in 2018, with a 6.3% increase to 21.2 billion Swiss francs. Specifically, exports to the US increased by 8.2%, marking a recovery from a three-year downturn (FH, 2019).

The following year, 2019, exports climbed by 2.4% to 21.7 billion Swiss francs. Additionally, exports to the US increased by 8.6% (FH, 2020). But the pandemic shocked exports the next

[2] The Rolex Market Index measures the financial performance of Rolex watches on the secondhand market. It consists of the top 30 Rolex models by transaction value. The index represents the average market price (in USD) of these 30 watches over time.
The index was obtained from https://watchcharts.com/watches/brand_index/rolex

[3] "Rolex Sales Top $10 Billion as Luxury Watchmaker Gains Ground, Morgan Stanley Says," *SWI swissinfo.ch*, March 14, 2024, https://www.swissinfo.ch/eng/rolex-sales-top-%2410-billion-as-luxury-watchmaker-gains-ground%2c-morgan-stanley-says/73142475 (accessed July 29, 2024).

year, causing them to collapse by 21.8% to 17 billion Swiss francs, a level that they had not seen since 2008. In fact, the second quarter was the worst, declining by 61.6% when compared to the corresponding time in 2019. It is noteworthy that the drop had diminished to 4.3% by the fourth quarter. Exports to the United States were slightly less affected, falling by 17.5%, boosted by a greater rebound in the third quarter (FH, 2021).

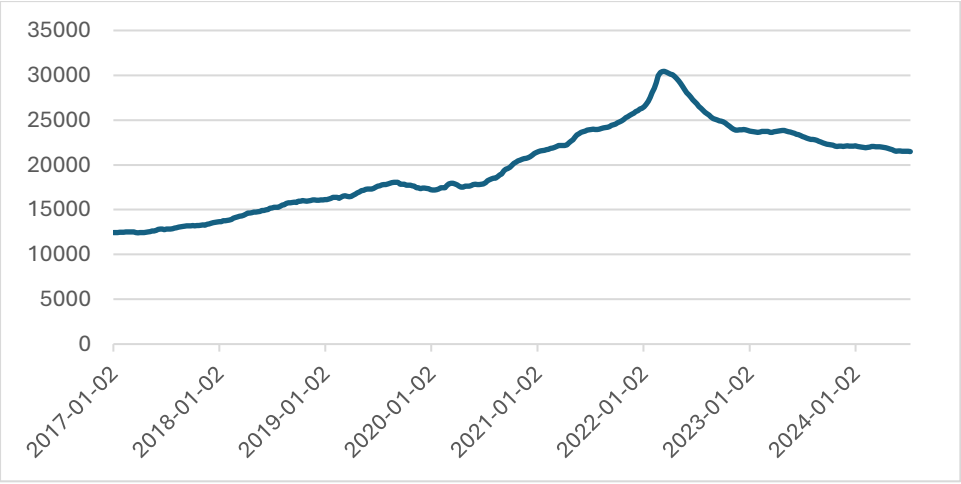
With exports reaching 22.3 billion Swiss francs in 2021—a 2.7% rise from 2019 and a 31.2% increase from 2020—it was a rebound year. Export growth continued in 2022, but at a slower rate of 6.3% (FH, 2023). In 2023, Swiss watch exports rose 7.6% to 26.7 billion Swiss francs, with the United States remaining the top market (FH, 2024).

Deloitte (2020), notes that the pandemic's major impact on the Swiss watch market was mostly caused by store closures, the absence of key customers because of suspended international travel, and the drop in consumers' confidence. Indeed, as previously shown, the pandemic had a significant impact on Swiss watch exports, apparently including Rolex, which was forced to temporarily suspend production. According to Deloitte's (2020) study, trustworthy online platforms have added value to the secondhand market, whereas sustaining monetary, brand, and emotional value are the key decision criteria. The study also mentions that the market is dominated by a few 'blue-chip' companies, notably Rolex.

Further evidence of Rolex's dominance in the secondary market is the remarkable increase in prices. It is noteworthy that during the pandemic, the costs of its watches in the secondhand market went up (see Figure 2). The total price rise of Rolex watches from 2017 to 2024 was 72.7%. In particular, if we examine the variations by decade, we find that prices rose by 9.4% consistently in 2017. After that, the growth in prices reached 18.2% in 2018, but in 2019 they climbed at a more reasonable rate of about 6.7%.

The major price increase occurred in 2020, accounting for 24.3%, followed by a similar increase of 22.4% in 2021, reflecting heightened demand for Rolex watches during the pandemic. However, after rising 14.2% through March 2022, prices dropped 20.8% through December of that year. In 2023, prices fell by 7.1%, then by 2.8% in early 2024, when they continued to drop until July.

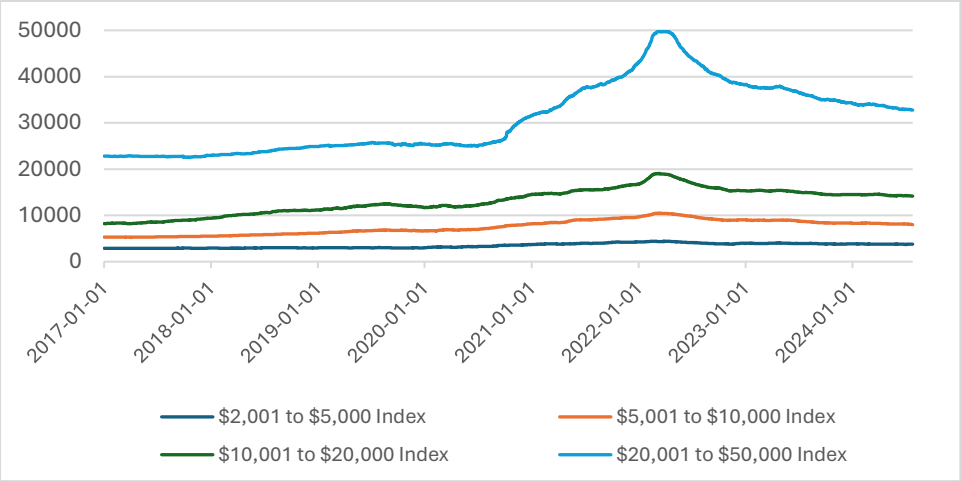
Figure 2 WatchCharts Rolex Market Index (USD)



Source: Watchcharts.com

The WatchCharts Price Range indices are indicators of watches from different brands across various price ranges in the secondary market. These indices represent the average market price (in EUR) of the top 30 models within each price range. Figure 3 highlights the significant fluctuations in watch prices in the secondary market and probably investor confidence in each segment. As the price ranges the volatility also increases. Interestingly, the higher the price range, the greater the price gain during the pandemic period, emphasizing the potential role of luxury watches as alternative investments for higher returns or diversification in a period of extreme volatility.

Figure 3 Mid and Higher Price Ranges (EUR)



Source: Watchcharts.com

The rest of the paper is organized as follows: the empirical analysis is presented in the next section, and the study's concluding remarks are included in the third section.

2. Empirical Analysis

Since monetary policy rates are influenced by inflation, the financial environment, and economic activity, and in turn, policy rates impact each of these factors, the system's endogeneity is evident. Vector autoregressive (VAR) models are commonly employed to represent the joint dynamics of endogenous time series and to make macroeconomic forecasts.

The current empirical analysis starts with the following variables: the Lewis-Mertens-Stock Weekly Economic Index (WEI), the Federal Funds Effective Rate (FF), the US Regular All Formulations Gas Price (used as a weekly proxy for inflation, INFL), and the S&P 500, all on a weekly basis. These data were retrieved from FRED for the period 01/02/2017 to 07/08/2024. The Federal Funds Rate, the S&P 500 Index, and the inflation proxy were all transformed logarithmically. Additionally, the Hodrick-Prescott (HP) filter was used to calculate the Weekly Economic Index Gap (WEI_GAP).

The initial VAR model is the following:

$$\boldsymbol{Y_t = G_0 + G_1 Y_{t-i} + e_t} \quad (1)$$

where $\mathbf{Y_t=(Y_{1t},Y_{2t},Y_{3t},Y_{4t})}$

$\mathbf{Y_{1t}=log(FF), Y_{2t}= WEI\_GAP, Y_{3t}= log(INFL), Y_{4t}= log(S\&P500)}$

The VAR model's estimating period runs from 1/02/2017 to 7/08/2022. Based on the Final Prediction Error (FPE), Likelihood Ratio (LR), and Akaike Information Criterion (AIC) criteria, four lags were chosen as the appropriate number of lag length. The model's stability was assessed using the inverse roots of the characteristic AR polynomial. Since all roots lie within the unit circle, the estimated VAR model is stationary. Moreover, the residual serial correlation LM test showed that there is no residual autocorrelation in the VAR model. In order to perform an out-of-sample forecast, the solution sample period was set from 7/14/2022 7/08/2024.

Next, an alternative VAR model is employed, following the same procedure. The distinction is that the Rolex Market index by WatchCharts is used instead of the S&P 500 index. Again, four lags were chosen based on the Final Prediction Error (FPE), Likelihood Ratio (LR), and Akaike Information Criterion (AIC). The stability of this alternative VAR model was also confirmed, with all roots lying within the unit circle and no autocorrelation in the residuals. The solution sample period remained the same, spanning from 7/14/2022 to 7/08/2024.

The new VAR model is the following:

$$\boldsymbol{Y_t = G_0 + G_1 Y_{t-i} + e_t} \quad (2)$$

where $\mathbf{Y_t=(Y_{1t},Y_{2t},Y_{3t},Y_{4t})}$

$\mathbf{Y_{1t}=log(FF), Y_{2t}= WEI\_GAP, Y_{3t}= log(INFL), Y_{4t}= log(ROLEX)}$

The forecasting ability of the two models is next tested. The VAR model's forecast evaluation findings are summarized in Tables 1 & 2 for both dynamic and static forecasts.

Table 1 Dynamic Forecasts 7/14/2022 - 7/08/2024

	Var Model 1 (S&P 500 Rolex instead of Rolex Market Index)				**Var Model 2 (Rolex Market Index instead of S&P 500)**			
	FF	**INFL**	**S_P500**	**WEI_GAP**	**FF**	**INFL**	**ROLEX**	**WEI_GAP**
RMSE	67.02132	0.932923	2348.687	1.146945	18.27868	0.700926	4475.383	1.030749
MAE	55.00622	0.825432	2067.238	1.008122	15.63523	0.610012	3720.487	0.916330
MAPE	83.58791	28.65495	106.4620	250.3259	68.72274	18.08860	22.24070	271.9294
Theil	0.881987	0.130997	0.339844	0.927611	0.667035	0.097172	0.104028	0.827529

Table 2 Static Forecasts 7/14/2022 - 7/08/2024

	Var Model 1 (S&P 500 Rolex instead of Rolex Market Index)				**Var Model 2 (Rolex Market Index instead of S&P 500)**			
	FF	**INFL**	**S_P500**	**WEI_GAP**	**FF**	**INFL**	**ROLEX**	**WEI_GAP**
RMSE	0.319600	0.061027	121.1522	0.412677	0.290325	0.054118	41.33486	0.345002
MAE	0.248258	0.050385	107.6021	0.336088	0.225535	0.044717	32.95368	0.273590
MAPE	6.045260	1.398963	2.457246	334.1806	5.444258	1.261866	0.141948	203.0421
Theil	0.033897	0.008530	0.013744	0.389377	0.030628	0.007589	0.000892	0.322109

The results show that both VAR models exhibit different levels of forecasting accuracy. The alternative VAR model, which replaces the S&P 500 Index with the Rolex Market Index, achieves better forecasting performance in both dynamic and static forecasts, as indicated by the RMSE, MAE, MAPE, and Theil values. This suggests that the Rolex Market Index could serve as a valuable alternative economic indicator for macroeconomic forecasting, providing valuable insights.

Subsequently, the same methodology is applied; however, the VAR models now encompass the period from 1/02/2017 to 2/25/2019. To perform an out-of-sample forecast, the solution sample period is set from 3/04/2019 to 3/02/2020, before the significant onset of the pandemic. In both dynamic and static forecasts, the alternative VAR model, which substitutes the S&P 500 Index with the Rolex Market Index, demonstrates better predicting performance for the variable WEI GAP while exhibiting lower performance for the variables FF and INFL.

Table 3 Dynamic Forecasts 3/04/2019 - 3/02/2020

	Var Model 1 (S&P 500 Rolex instead of Rolex Market Index)				**Var Model 2 (Rolex Market Index instead of S&P 500)**			
	FF	**INFL**	**S_P500**	**WEI_GAP**	**FF**	**INFL**	**ROLEX**	**WEI_GAP**
RMSE	0.701002	0.155457	224.9480	1.381294	1.108156	0.386795	490.9201	1.267367
MAE	0.538122	0.132289	176.3733	1.174036	0.908639	0.373553	406.3819	1.052133
MAPE	20.55299	4.941251	6.183752	1753.407	29.33169	16.53310	2.374125	520.0273
Theil	0.152208	0.029295	0.038405	0.918975	0.222186	0.078990	0.014206	0.777459

Table 4 Static Forecasts 3/04/2019 - 3/02/2020

	Var Model 1 (S&P 500 Rolex instead of Rolex Market Index)				**Var Model 2 (Rolex Market Index instead of S&P 500)**			
	FF	**INFL**	**S_P500**	**WEI_GAP**	**FF**	**INFL**	**ROLEX**	**WEI_GAP**
RMSE	0.124649	0.037893	73.27625	0.762502	0.146595	0.071879	111.3939	0.670591
MAE	0.090285	0.031120	59.39790	0.639179	0.122098	0.063926	86.35181	0.531885
MAPE	4.689187	1.184852	1.962626	163.3268	6.051167	2.525939	0.498856	73.64359
Theil	0.029839	0.007170	0.012234	0.355614	0.034779	0.013793	0.003205	0.298672

3. Conclusions

As was to be expected, Swiss watch exports suffered greatly during the COVID-19 pandemic. This was not the case in the secondary market, where Rolex watch prices rapidly surged despite already being in an upward trend. In spite of the corrections after March 2022, prices overall rose by 72.7% from 2017 to July 2024. The difficulty in accessing physical stores during the pandemic was reportedly the reason behind the increased demand in the secondary market, which was further fueled by the emergence of trustworthy internet platforms.

Notably, the duration and intensity are also attributable to rising demand, which cannot be met by current production. Luxury watches might be regarded alternative assets that investors have turned to, either to protect their investment during volatile periods or to profit from severe price gains. Therefore, watch prices could be considered as a high-frequency alternative indicator during volatile periods, to provide information on investor movement and market confidence. Empirically testing the above premise, it turned out that including such an indicator in a VAR model resulted in higher model specification and forecasting ability when encompassing the period of the pandemic shock, while also raising concerns about the applicability of the findings to normal conditions. When the analysis was repeated to evaluate the model's forecasting

performance before the pandemic outbreak, the findings indicated that, compared to the S&P500 index, the Rolex index enhances the model's forecasting ability only in the Weekly Economic Index Gap. Given that the S&P500 index comprises 500 assets and offers a more comprehensive and consistent view of the market, one could anticipate it to outperform overall.

However, the single Rolex index asset's higher volatility appeared to perform better in all cases during the pandemic, implying that alternative economic indicators may outperform during turbulent periods. It is challenging to predict in advance whether a period will be characterized by high or low volatility, but when it does, it can endure for prolonged periods. Consequently, the use of alternative metrics appears to be significant, as they may include supplementary factors that conventional metrics are unable to capture.

In conclusion, this study focuses on a unique trait that warrants further exploration to find out if it is caused by a single asset responding faster to volatility than indexes do, or by the unique features of luxury watches acting as safe havens during times of extreme volatility.

References

Baker, S. R., Bloom, N., Davis, S. J., & Terry, S. J. (2020). "COVID-Induced Economic Uncertainty." *NBER Working Paper No. 26983*

Deloitte. (2020). *Swiss Watch Industry Study 2020: An Accelerated Transformation*. Deloitte Switzerland. Retrieved from https://www2.deloitte.com/ch/en/pages/consumer-business/articles/swiss-watch-industry-study.html

Federal Reserve. (June 2023). *Monetary Policy Report*. Retrieved from https://www.federalreserve.gov/monetarypolicy/mpr_20230623.htm

FH. (2018). *Annual Report 2017*. Federation of the Swiss Watch Industry FH.

FH. (2019). *The Swiss and World Watchmaking Industries in 2018*. Federation of the Swiss Watch Industry FH

FH. (2020). *The Swiss and World Watchmaking Industries in 2019*. Federation of the Swiss Watch Industry FH.

FH. (2021). *The Swiss and World Watchmaking Industries in 2020*. Federation of the Swiss Watch Industry FH.

FH. (2022). *The Swiss and World Watchmaking Industries in 2021*. Federation of the Swiss Watch Industry FH.

FH. (2023). *The Swiss and World Watchmaking Industry in 2022*. Federation of the Swiss Watch Industry FH.

FH (2024). *World Watchmaking Industry in 2023*. Federation of the Swiss Watch Industry FH.

Groen, J. J., & Nattinger, M. (2020). "Alternative indicators for Chinese economic activity using sparse PLS regression." *Economic Policy Review*, *26*(4), 38-68.

Lewis, D., Mertens, K., & Stock, J. H. (2020). “US economic activity during the early weeks of the SARS-Cov-2 outbreak” No. w26954. National Bureau of Economic Research.

Lewis, D. J., Mertens, K., Stock, J. H., & Trivedi, M. (2022). “Measuring real activity using a weekly economic index.” *Journal of Applied Econometrics*, *37*(4), 667-687.

Zhang, J. Z., & Müller, O. R. (2022). “Building and sustaining luxury brands–reflections on the Swiss watch industry.” *Rutgers Business Review*, *7*(3), 250-266.