Routledge
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Economic Research-Ekonomska Istraživanja

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rero20

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To cite this article: Chi-Wei Su, Xi Yuan, Muhammad Umar & Tsangyao Chang (2023) Is presidential popularity a threat or encouragement for investors?, Economic Research-Ekonomska Istraživanja, 36:2, 2129409, DOI: 10.1080/1331677X.2022.2129409

To link to this article: https://doi.org/10.1080/1331677X.2022.2129409

Published online: 07 Oct 2022.

ECONOMIC RESEARCH-EKONOMSKA ISTRAŽIVANJA
2023, VOL. 36, NO. 2, 2129409
https://doi.org/10.1080/1331677X.2022.2129409

Is presidential popularity a threat or encouragement for investors?

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ABSTRACT

The economic situation of the post-epidemic is facing huge downward risks, and the government actively introduces stimulus measures to improve the current economic situation. In this crisis, the president's role in asset price gradually deepened. Hence, we utilise a wavelet-based quantile-on-quantile approach to uncover the complex and unstable relationships between presidential popularity and the currency performance of asset price. We find the significant negative impact of the government popularity on the stock market and oil prices, especially in the medium quantile. This suggests that political stalemates will not always be suitable for financial markets. Instead, this will hinder the investment because it expresses the uncertainty of the direction. On the contrary, the U.S. dollar presents a highly positive relationship with the government popularity. Investors can avoid the trust risk of the president through the adjustment of the asset portfolio. The result is consistent with the asset pricing model, suggesting that investor sentiments significantly influence the performance of assets. Meanwhile, the duration of impacts caused by short-term shock will eventually be repaired for a long time. The approval ratings will harm the investor sentiment in the short term, but the market will digest this over time.

ARTICLE HISTORY
Received 12 February 2022
Accepted 20 September 2022

KEYWORDS
Political sentiment; financial market; assets prices; presidential approval rating; quantile-on-quantile; wavelet

JEL CODES
D14; D72; G11

1. Introduction

Political events may be the most difficult to predict in many factors that may affect market performance, but they often significantly impact investment decisions (Chen et al., 2010; Awais et al., 2016). Like any other form of market risk, political risk has the potential to influence the performance of individual securities and then quickly spreads to a broad market. Political actions like regulations and laws have an effect on companies, and sudden policy shifts can disrupt a company's ability to execute strategy and deliver products or services (Castells & Trillas, 2013; Misman et al., 2020). This can affect company performance and profitability, and the effects can be

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negative or positive based on the different policies. Due to the direction of the president's appointment's economic policy and interest rate, these actions have also impacted stock markets (Al-Thaqeb & Algharabali, 2019). Political risk could cause a company's share price to decline significantly for equity markets. For fixed-income markets, political trends will also cause shock to the corporate and government bonds. The decline in performance or profitability caused by political risks may make the company unable to pay debt obligations, thereby causing breach of contract. This will lead to the deterioration of investor sentiment, affecting the expectations of the overspeaking market prospects. At the same time, the government's unwelcome or controversial (the changes of presidential approval rating) may cause broader political instability or change. This will cause concerns among investors and lead to a broader market drop. The government's popularity will affect the financial market (Montone, 2022). The stock price reflects the consensus of investors' political sentiments, which is shown as the expectation of the success or failure of government economic policies. Hence, asset prices are generally suspected of political instability. A comprehensive analysis of the relationship between the presidential approval rating and assets will help consider the role in predicting asset return.

Many issues will affect approval ratings, including national security and terrorism, climate change, and many social problems (Niederjohn et al., 2016). Despite this, the president's economic policy is still necessary or even dominant to voters' final decision. Regardless of the president, the current authority may be blamed on the current economic situation. Significantly, the economy is ruled by an elected president, who faces a new election in the last period (Nadeau & Lewis-Beck, 2001). Despite further election victory, the changes in presidential political choices (especially in developing and implementing economic policies) will result in the flow of capital (Goodell & Vähämaa, 2013). The default of the election commitment is a fatal blow to the 'public investment ability', which is critical to stimulating economic growth (Sauer & Mészáros, 2017). In 2020, a sudden coronavirus disease (COVID-19) pandemic unprecedentedly impacted the global economy. The most severe public health disaster in the past 100 years is rapidly evolving into a worldwide economic crisis. The accompanying political and social fragility continues to heat, exacerbating the government's dispute (Hilhorst & Mena, 2021). Double impact of restrictive factors (blockade) and epidemic protection measures, companies and individual consumers have postponed consumption and investment plans. Economic activities that continue to cool down are expected to increase poverty, income gap and social dissatisfaction. This will also harm the government's support rate. During the COVID-19, all countries have adopted loose policies to provide adequate support for financial systems and maximise the probability of retention power. Hence, political sentiment and economic performance appear to be interrelated. Although it has been viewed as a problem in developing nations, the past few years (Brexit, Italy's constitutional referendum) have demonstrated that political risk is crucial for developed economies.

As the world's largest economy, the U.S. accounts for 24.8% of global gross domestic product (GDP), and its financial market is considered the world's most advanced market. Regardless of its political or economic influence, it will spread to countries and affect the global pattern. Its financial sector is also the largest and most

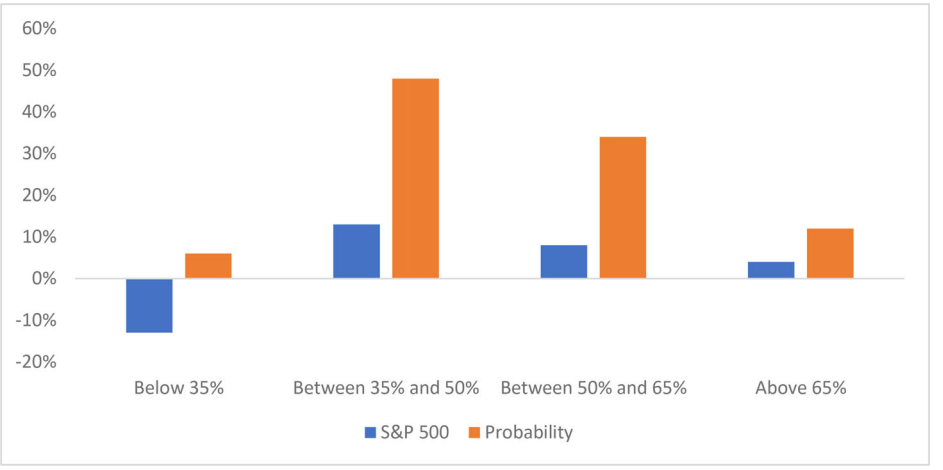

Figure 1. Market returns of president approval.
Note: S&P 500 denotes average S&P 500 market returns. Probability expresses the probability in the survey.
Source: PMFA, Gallup, Morningstar.

international ministerial globally. Therefore, we choose the U.S. to study the influence of political sentiment on asset price. On the one hand, the instability of the approval rating will impact financial markets. In January 2022, the IBD/TIPP Poll[1] result finds Biden's approval rating fell nine-tenths of a point to 49.2 over the past month. The approval rating has slipped for handling the pandemic, and the rising inflation concerns also hurt the presidential approval. Under the persistence of the epidemic, the circumstances of economic uncertainty make the investment environment conservative (Rane et al., 2021; Su et al., 2022b). A rise in the 10-year Treasury yield to levels last seen in January 2020 is pressuring tech stock valuations as the Federal Reserve continues to surprise the stock market. On the other hand, as the stock market falls, investors (those with at least $10,000 in household-owned mutual funds or equities) support cooling down. Investors in the stock market may rethink their support, especially the technical department's support, particularly the tech sector. Now 49% of investors give Biden positive marks, while 46% disapprove of his performance. That's down from 60%-33% in December and even trails November's 49%-43% support in 2021. What is the relationship between presidential approval and the investors? Has that relationship changed over the years? This article tackles these questions by reviewing historical presidential approval poll data to evaluate political sentiment and disagreement among U.S. electors.

The following aspects mainly reflect the novelty and contributions of this paper. Firstly, the financial channel of political risks according to which any change in the presidential popularity will impact the political sentiment of investors, further increase the market volatility and affect the assets prices (Addoum & Kumar, 2016; Gupta et al., 2021). However, this effect may change in the scales. From Figure 1, it can be seen that when the presidential approval rating is between 35% and 50%, the stock performance is best, followed by 50% to 65% in the U.S. Surprisingly, the average S&P 500 market returns have been lower when presidential approval ratings have been moderately above 65% than when they are below 50%. This usually corresponds

to the risk of tragedy or promotion (Maqbool et al., 2018). For example, when the presidential approval rating is too high, investors may be tense because they can afford to pursue ideologically oriented policies (Frey & Schneider, 1978). This will increase the possibility of significant changes in U.S. economic policies. While during extreme opposition (35% or less), the stock market will be hit hard. This is often comparable to the economic recession or war - both represent a crucial uncertain source of investors. These periods are often relatively short, only 6% of the survey period.

Therefore, as a response to this change, this research comprehensively investigates the impacts of presidential approval ratings on different asset price levels. The results are supported by the asset pricing model, which indicates sentiment is an essential factor in the investment assets. Secondly, few studies focus on the government popularity in different markets. We try to investigate how differently the assets react to the political events further re-examine the role of expectations about the president for investment behaviour. By revealing the impact of explaining variables on dependent variables at conditional quantiles, the quantile-on-quantile (QQ) approach can effectively avoid restrictive hypothesis of parameters, compensating for the defects of the traditional quantile regression, which ignores the status of the explanatory variable. Against this backdrop, the wavelet-based QQ method is chosen to dynamically evaluate the response of the asset price to presidential popularity in different terms; this method can compare the stock market, U.S. dollars and oil market to fill the gap. Assessing political power at asset prices will guide inventors to disperse risks through investment portfolios. Meanwhile, the results of different periods can provide diversity for different types of investors. Sentiments play an essential role in investment and even decide the short-term market trend, but it will not change the law of value decision price and will not change the long-term operation of the market. Thereby, short-term investors can turn to more stable assets (such as U.S. dollars), while long-term investors can seize short-term freshers for investment deployment to obtain long-term profits.

The remainder of the paper is organised as follows. Section 2 provides an overview of the previous empirical literature. The theoretical model of this analysis is then presented in Section 3. Section 4 proposes the empirical methodology, while Section 5 includes the data sources. Section 6 then discusses the practical aspects of the study. Finally, Section 7 derives the main conclusions.

2. Literature review

Many studies have been devoted to examining the relationship between the political party from a comparative perspective (Brunell, 2005; Pastor & Veronesi, 2020). Existing literature provides evidence that different industries may have differential exposures to presidential policies and government spending (Li & Born, 2006; Belo et al., 2013), resulting in predictable variations in industry portfolio returns across political cycles. Chuang and Wang (2009) examine the effects of political alternating in the developed stock market and find the political alternating with an inverse stock return relationship. The difference in political parties will lead to uncertain economic

policies (Sparrow & Turner, 2001), so investors will tend to hold conservative assets (Su et al., 2022b), such as the U.S. dollar rather than stocks. Baker et al. (2014) emphasise the impact of the polarisation of politics on the process of policy formulation and choices. Li and Born (2006) examine the presidential election uncertainty and stock returns in the U.S. market and claim that there is substantial evidence of the impact of political results on the business cycle and stock markets. Also, Abidin et al. (2010) conclude a political cycle effect in the New Zealand stock market, and the stock returns are higher under the National party than the Labour party. Wisniewski and Lambe (2015) examine that shocks to the policy uncertainty notably increase the prices of credit protection. Wisniewski (2016) examines whether there is an association between the orientation of the political executive or the phase of the electoral cycle with movements of the stock market index. Montone (2022) finds that the difference in asset returns between democratic and republican administrations is driven by political disagreement.

Meanwhile, the president popularity as a political standard is also an essential determinant to the reaction of the market (especially the reflection in investor sentiments) to the government. Jensen and Schmith (2005) argues that stock market responses to political events and find political events that are expected to have a negative impact on the economy and specific firms lead to decreases in stock market returns. Kim et al. (2012) suggest that local stock performance is more remarkable when a state's leading politicians are more closely affiliated with the ruling (presidential) party. Meanwhile, the expectation of economic and market volatility exhibits different patterns regarding direction and timing to presidential job approval ratings (Chong et al., 2011). Prechter et al. (2012) analyse the U.S. presidential election bids and find a positive and significant relationship between the incumbent's vote rates and the changes of stocks. Fauvelle-Aymar and Stegmaier (2013) demonstrate that a rapid fall in the stock market reduces president approval, while a sharp acceleration in the index growth boosts U.S. presidential approval. While Green and Schuler (2015) evidence that the stock market tend to react more negatively as presidential popularity increases. Addoum and Kumar (2016) focus on the political sentiment to investigate that the changes in the political climate generate systematic will shift in the portfolio composition of investors. Wisniewski (2016) demonstrates that investors' gains and expectations about the future are closely related to the government popularity and likelihood of re-election. Ostrom et al. (2018) advocate the economy, terrorism and the war in Iraq powerfully influence Bush's approval rating. Gupta et al. (2021) highlight that presidential approval ratings help predict stock return and volatility. Small and Eisinger (2020) posit that the relationship between presidential approval and a strong economy has changed over the years. Using data on job approval ratings of governors, U.S. senators, and the president, Joo et al. (2020) find investors' political sentiment is essential in determining stock returns. Bonaparte (2021) shows that the stock market pricing the presidential margin of victory in a nonlinear concave fashion, so the president's confidence will affect the stock market and is a crucial exogenous determinant to consider. Chen et al. (2021) construct a monthly Presidential Economic Approval Rating (PEAR) index by averaging ratings on the president's handling of the economy across various national polls. And they

find stocks with positive PEAR betas experience higher returns when the presidential approval rating improves. Liu and Shaliastovich (2022) measure the correlation between U.S. government approval ratings and the dollar. They find that policy approval tends to increase at times of high policy-related growth and low policy-related uncertainty, which are the times of a strong dollar and low dollar risk premium. Montone (2022) finds that considerable net disapproval over the U.S. president's job is followed by low stock returns, especially in times of high political uncertainty and low market-wide sentiment.

The current research mainly focuses on discussing the feasibility of the president support to predict the stock market (Gupta et al., 2021; Joo et al., 2020). Given different attitudes among investors to polite parties, the changes in investor sentiments will show a differentiation trend in asset prices. The spread of the epidemic and the soaring inflation exacerbate negative emotions. In the context of the Federal Reserve System (Fed) tightening the policy-fighting inflation, the S&P 500 index fell nearly 9% since January 2022. And the stock continued to fall further hit Biden's approval, which was sluggish. However, the opposite is the continuous high oil price and the U.S. dollar index. Considering the complexity of investment, there is a need to quantify the difference in assets from the presidential approval. This helps investors make better investment decisions depending on the government's popularity and disperse risk through different portfolios. Last, in terms of methodology, past methods often ignore the impact of presidential prevalence on assets at different levels, so the results are static and biased. This study adds a new dimension by the wavelet-based QQ method to shed light on the dynamic relationship. This approach is first applied to connect the government popularity and assets to the best of our knowledge. The impact of the approval in different quantiles can be more precise and more intuitive for investors. This will motivate investors to develop more dynamic investment strategies according to changes.

3. Intertemporal capital asset pricing model

This paper builds on the intertemporal capital asset pricing model (ICAPM), created by Merton (1973), to explore the interaction between investor sentiment changes against political events and asset prices. We assume that three investors in the financial market constitute a trading behaviour: rational investors, feedback traders, and sentiment-driven investors (Chau et al., 2016). Firstly, the demand of assets required (Q_t) by the rational investors is shown as:

$$Q_t = \frac{E_{t-1}(A_t) - \omega}{\theta \sigma^2} \tag{1}$$

where $E_{t-1}(A_t)$ is a conditional expectation of the assets (A) given the information at period t-1, ω is the risk-free asset, θ stands for the risk-aversion coefficient, and σ^2 denotes the variance. The rational investor is risk-averse; it means a positive value of θ.

Next, feedback traders will be integrated into the model. The amount of assets held by them (F_t), which depends on the previous period's return (A_{t-1}), is as follow:

$$F_t = \gamma A_{t-1} \tag{2}$$

where $\gamma > 0$ for the case of positive feedback, it means the trend of low-cost buy.

We consider another kind of investor: sentiment-driven investors. The percentage of assets held by this group is represented as S_t, shown as:

$$S_t = \rho(\Delta PS_{t-1}) \tag{3}$$

where ΔPS_{t-1} means an indicator of changes in political sentiment. ρ is the sensitivity of their demand to sentiment changes.

Consider all hold shares of groups in equilibrium, it means $Q_t + F_t + S_t = 1$, we can get:

$$E_{t-1}(A_t) = \omega + \theta\sigma_t^2 - \gamma(\theta\sigma_t^2)A_{t-1} - \rho(\theta\sigma_t^2)\Delta PS_{t-1} \tag{4}$$

Equation (4) can further be re-parameterised and expressed in a simplified form as follows:

$$A_t = \omega + \theta\sigma_t^2 + (\alpha_0 + \alpha_1\sigma_t^2)A_{t-1} + \beta\sigma_t^2\Delta PS_{t-1} + \varepsilon_t \tag{5}$$

In Equation (5), $A_t = E_{t-1}(A_t) + \varepsilon_t$, $\alpha_1 = -\gamma\theta$, $\beta = -\rho\theta$. According to Equations (1) and (2), it means α_1 is negative. α_0 accounts for the autocorrelation caused by non-synchronous trading or market inefficiencies. In the model, the impact of political sentiment transfer through investors behaviour to asset prices. The coefficient of ΔPS_{t-1} is $\beta\sigma_t^2$, which depends on β. If $\rho < 0$, it means this group of investors considers sentiment as a contrarian market timing tool. Investors may lower their demand for assets following the uncertainty of the increase in political fluctuations. Political sentiment leads to a decline in asset prices. However, investors' political sentiments are improved if the policy promulgation is conducive to the financial market ($\rho > 0$), and the expected share of assets will also increase. Accordingly, the theoretical model suggests that political sentiment exert an indispensable influence on the asset price. However, this direction of transmission is uncertain.

4. Methodology

4.1. Wavelet analysis

We apply the wavelet transform to evaluate the impact of president popularity (PAR) on asset prices (AP) in different terms. Wavelet analysis combines both the time and frequency domains (Khan et al., 2022). We aim to employ the wavelet method to decompose the raw information into different investor horizons. The discrete wavelet transform (DWT) of the function $f(t)$ follows as:

$$\begin{aligned} f(t) = \textstyle\sum_q s_{p,\ q}\delta_{p,q}(t) + \sum_q d_{p,\ q}\varphi_{p,q}(t) + \sum_q d_{p-1,\ q}\varphi_{p-1,q}(t) \\ \ldots + \textstyle\sum_q d_{1,\ q}\varphi_{1,q}(t) \end{aligned} \tag{6}$$

where p is the decomposition level, and q is the translation parameter. $\delta_{p,\ q}$ and

$\varphi_{p,\ q}$ denote the father and mother wavelets constitute the basic function that define the sequence of coefficients. $s_{p,\ q}$ represents the coefficient written into $s_{p,q} = \int f(t)\delta_{p,q}(t)dt$, while $d_{p,q}$ stands for $d_{p,q} = \int f(t)\varphi_{p,q}(t)dt$.

Then, we apply the maximal overlap discrete wavelet transform (MODWT) suggested by Percival and Mofjeld (1997) to reduce the raw information into different timescales. On simplifying Equation (6), we get

$$f(t) = D_1(t) + \ldots + D_p(t) + S_p(t) \tag{7}$$

The obtained father wavelet $S_p = \sum_q s_{p,q}\delta_{p,q}(t)$ offers a smooth form of $f(t)$, which observes secular changes of low frequency information, whereas the mother wavelet $D_p = \sum_q d_{p,q}\varphi_{p,q}(t)$ examines high frequency signals that vary dramatically.

4.2. Quantile-on-quantile method

The quantile-on-quantile method is a new non-parameter quantile method proposed by Sim and Zhou (2015), which is used to verify the the influence of the argument for the conditional distribution of variables. The locally weighted linear regression proposed by Stone (1977) and Cleveland (1979) can estimate local effects of the explaining variable in given quantiles on the dependent variable, which can effectively solves the curse of dimensionality in the pure non-parameter model. The combination of these two methods is helpful to to provide solutions for the formation of the correlative relationship between variables. Compared to the results obtained by the estimation methods such as ordinary least squares (OLS) or standard quantile regression (QR), the key advantage of the quantile-on-quantile regression (QQR) is that it can simulate the relationship between economic variables in different levels. For example, there is a big difference in financial effect from presidential popularity, due to structural breaks (Gupta et al., 2021). OLS can only estimate the conditional mean impact of president popularity on asset prices. The estimate of QR further decomposes the impact of the mean impact into the conditional quantile, while QQR has effectively expanded the results by clarifying the impact of president popularity in different quantiles on the assets. Specifically, the *PAR* is moulded as an explaining variable because it provides information about the presidential popularity, then *AP* is the dependent variable, including the financial market information. Therefore, even though it is based on the QR paradigm, the QQ model provides a complete information on the impact of the presidential popularity on assets in their respective distributions. In addition, for the non-normal characteristics of economic variables, which is difficult to satisfy the basic hypothesis of the mean reversion model, QQ method is a valid tool to deal with the non-normal data. The equation is constructed as follows:

$$AP_t = \beta^{\theta}(PAR_t) + \mu_t{}^{\theta} \tag{8}$$

where AP_t stands for the asset price at period t. θ is θth quantile and μ_t represents residual term with a zero θ-quantile. When the τ quantile of the *PAR* is defined as PAR^{τ}, we can extend the unknown parameter $\beta^{\theta}(\cdot)$ by taking the first-order Taylor expansion, leading to

$$\beta^{\theta}(PAR_t) \approx \beta^{\theta}(PAR^{\tau}) + \beta^{\theta'}(PAR^{\tau})(PAR_t - PAR^{\tau}) \tag{9}$$

where $\beta^{\theta}(PAR_t)$ and $\beta^{\theta'}(PAR_t)$ are a function of θ and PAR^{τ}, which is expressed by τ. Hence, $\beta^{\theta}(PAR_t)$ and $\beta^{\theta}(PAR_t)$ are also the function of θ and τ. We regard $PAR_t - PAR^{\tau}$ as uncertainty. Therefore, $\beta^{\theta}(PAR^{\tau})$ and $\beta^{\theta}(PAR^{\tau})$ can be rewritten as $\beta_0(\theta,\tau)$ and $\beta_1(\theta,\tau)$. Thus, we can obtain:

$$\beta^{\theta}(PAR_t) \approx \beta_0(\theta,\tau) + \beta_1(\theta,\tau)(PAR_t - PAR^{\tau}) \tag{10}$$

Combining Equations (8) and (10), we obtain

$$AP_t = \underset{*}{\beta_0(\theta,\tau) + \beta_1(\theta,\tau)(PAR_t - PAR^{\tau})} + \varepsilon_t^{\theta} \tag{11}$$

Part (*) represents the θ-quantile of PAR. We can get the association between AP_t and PAR_t in different positions based on β_0 and β_1, the coefficients of them rely on θ and τ. Equation (11) claims to replace PAR_t and PAR^{τ} with their counterparts $\widehat{PAR}_t$ and $\widehat{PAR}^{\tau}$. To estimate b_0 and b_1, we solve for:

$$\min_{b_0,b_1} \sum_{i=1}^{N} \rho\theta\left[AP_t - b_0 - b_1\left(\widehat{PAR}_t - \widehat{PAR}^{\tau}\right)\right] \times K\left(\frac{F_n\left(\widehat{PAR}_t\right) - \tau}{h}\right) \tag{12}$$

the $\rho\theta(\mu)$ is to give the quantile loss function, $\rho\theta(\mu) = \mu(\theta - I(\mu < 0))$, and I represents the usual indicator function. $K(\cdot)$ is employed to weight the observations of $\widehat{PAR}^{\tau}$ based on a Gaussian kernel, whose bandwidth parameter is h. These weights are inversely correlated with the distribution between $\widehat{PAR}_t$ and $\widehat{PAR}^{\tau}$, so:

$$F_n(PAR_{t-1}) = \frac{1}{n}\sum_{k=1}^{n} I(PAR_k < PAR_{t-1}) \tag{13}$$

The constructed model allows us to conduct a complex non-linear analysis of how selected τ-quantiles of PAR impact θ-quantiles of AP based on their corresponding distributions. Significantly, the bandwidth selection focuses on non-parameter estimation methods, which can balance deviation and variance. Therefore, we apply the bandwidth of $\varepsilon = 0.05$ in the study (Liu et al., 2021; Wang et al., 2022b).

5. Data

To address the role of president popularity on the assets price (AP), this article selects the data, which consists of the presidential approval ratings (PAR), S&P 500 stock price index (S&P 500), U.S. Dollar Index (USDX) and Oil Price (OP) during 1973:M1-2022:M1. The president's popularity is measured by Gallup's U.S. monthly approval rating polls (Chen et al., 2021; Montone, 2022). PAR[2] is given to a politician based on responses to a survey, which is approximately 1,500 adults are asked whether they

Table 1. Summary statistics.

	Mean	Maximum	Minimum	Std. Dev	Skewness	Kurtosis	Jarque-Bera
PAR	50.129	89.000	24.000	11.372	0.405	3.319	18.606***
S&P 500	1399.337	4766.180	360.280	951.738	1.032	3.774	119.251***
USDX	96.271	160.410	71.800	14.402	1.387	5.714	369.659***
OP	64.771	175.560	18.770	29.892	0.774	2.833	59.482***

Note: *** denote significance level at 1%.
Source: PMFA, Gallup, Morningstar.

approve or disapprove for the president during their term. In this regard, the question that is asked is: Do you approve or disapprove of the way [enter President name] is handling his job as president? The answer can be positive, negative, or neutral. Therefore, PAR is generally accepted by statisticians as a statistically valid indicator of the comparative changes in the popular U.S. mood regarding a president. PAR should be relatively stable in the short term to follow a cyclical pattern over the presidential term (Berlemann & Enkelmann, 2014). Instead, sentiment is usually volatilised in nature (Baker & Wurgler, 2007). Therefore, the monthly changes of PAR can highlight the reaction of market (fluctuations in asset prices) to the president performance. The data of S&P 500 and OP are derived from Wind Database and USDX is taken from Yahoo Finance. As the world's largest economy, the uncertainty of the election and the president support rating become an important force affecting the U.S. economy (Ostrom et al., 2018). The popularity of the president will affect the expectation of economic agents to the future economy, which in turn interfere the choice of assets. In order to measure the presidential effect of assets, we choose the representative U.S. dollars, oil and stock markets. Meanwhile, the selection of the period depends on the data availability. The time span is not only in the period of several presidential successions, but also involves multiple conflicts (such as financial crisis and trade disputes), and the impact of coronavirus disease from COVID-19.

Table 1 reports the basic descriptive statistics. With regard to the maximum and minimum, we can see a large range of stock market. Because stocks are affected by economic, policies, investor sentiments and so on. Any changes to market expectations will affect stock prices. Therefore, stocks belong to risky assets and often exhibit more dramatic fluctuations. During the economic turmoil periods, many foreign investors tend to flee towards what is called safe haven assets, such as the dollar (Liao et al., 2018). Despite the high inflation and the weakening of the epidemic, the dollar still plays an important role in current global trade and financial flow. The international reserve status of U.S. dollar assets is relatively stable; the range of it is small. The skewness values are all positive, it means that the series are right-skewed. Since the kurtosis parameter values of PAR, S&P 500 and USDX are greater than 3, they satisfy leptokurtic distribution[3] while OP follows the leptokurtic distribution. It is worth noting that the kurtosis value of USDX is significantly greater than other sequences, indicating that the fluctuations of the dollar market are more intense than other assets. Simultaneously, the Jarque-Bera test results of the series all strongly reject the normality hypothesis at a 1% level.

The coefficient results of PAR and AP illustrate that the presidential popularity is significantly related to all assets at a 1% level, as shown in Table 2. Among them, the population of the president has a negative impact on the stock and oil market. The negative coefficient of OP is stronger than S&P 500. Only randomly and unpredictable

Table 2. Correlation results of PAR and AP.

PAR	Correlation	*t*-Value	*p*-Value
S&P 500	−0.120	−2.918***	0.004
USDX	0.323	8.262***	0.000
OP	−0.398	−10.517***	0.000

Note: *** denote significance level at 1%.
Source: PMFA, Gallup, Morningstar.

information can change future markets, and the president's popularity reflected in the APR is foreseeable. All the predictable information about the future is already reflected in the current stock market (Jakpar et al., 2018; Su et al., 2022c). The demand for oil and petroleum products has continued to climb with industrialisation (Su et al., 2022a). Its oil supply is mainly dependent on imports, so the fluctuations in the OP are primarily influenced by edge political risks. Although the U.S. has long proposed energy independence, as the Shale Oil Revolution has achieved great success, it will help reduce the dependence on imported oil (Su et al., 2022e). Hence, the president's energy policy will have a long-term influence on OP (Akhound et al., 2022; Wang et al., 2022a). In addition, the positive coefficient can be evidenced in USDX because the U.S. dollar can be regarded as a hedging asset against uncertainty (Su et al., 2022d). For example, the 2020 election will be significantly affected by the COVID-19. In June 2020, Trump adhered to the election rally to maximise continuing power. Although the home order has gradually relaxed, such a large-scale gathering faces a considerable risk of infection. The Trump Campaign team diagnoses the isolation, and the epidemic is also covered with a layer of shadows, and PAR has fallen sharply. However, the stock market has risen against the trend. The reason is that more states in the U.S. are beginning to reopen, the Fed commits to providing more support for economic recovery. Various business activities began to recover so that U.S. stock markets skyrocketed. The most significant uncertainty facing future economic trends comes from the U.S. will evolve the second round of epidemic eruptions and domestic demonstrations. Due to the low PAR, the prediction of the election results is considered explicit, and the process of vaccines is also promising. The rise in oil prices is also pronounced due to the increase in oil demand from work resumption. However, the U.S. economic situation has improved but is still expected to be very slow. Drops of inflation and economic activities are related to the decrease in endurance to reduce the difficulties of external supply chain links, leading to the weakening of economic activities. In the face of weak economic recovery and pressure, the U.S. government brews new fiscal stimulation. Trump's nearest polls continued to backwards Biden; in order to reverse the situation, he plans to announce an infrastructure proposal (the program proposes to invest $1 trillion in infrastructure construction in the next ten years). However, the bill's future is unknown because it requires the support of the House Democrats. The future uncertainty and weak economy make risk sentiments, and the U.S. dollar will continue to sell sharply.

6. Empirical findings

The QQ approach used in this study provides a comprehensive picture of the dependence structure and knows how the impacts of the president's popularity and

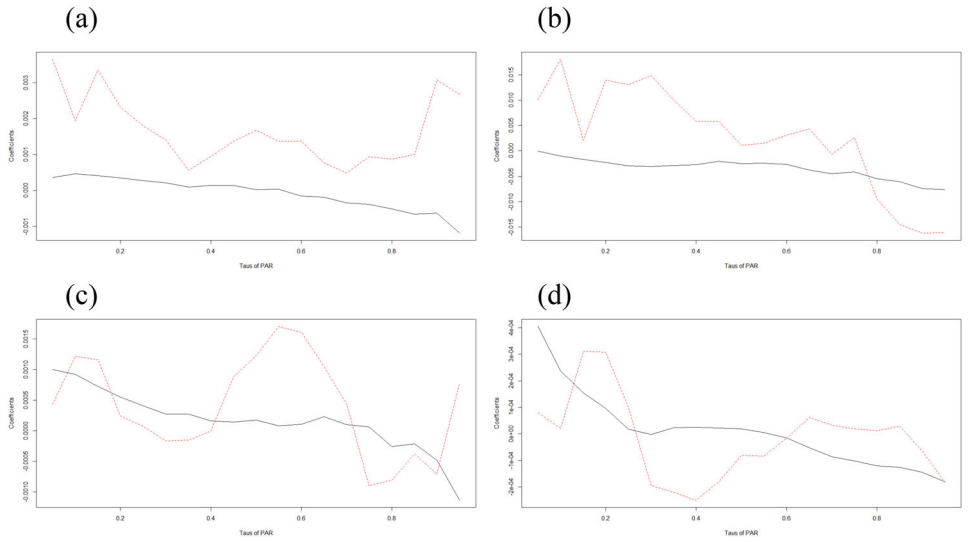

Figure 2. Quantile regression of S&P 500.
Note: quantile regression is denoted by the black line and QQ estimates are represented by the red line.
Source: PMFA, Gallup, Morningstar.

asset price are related to different quantiles. Firstly, we explore the result of the quantile regression about the interaction between PAR and the stock market, which is plotted in Figure 2. This reveals that the response of the S&P 500 to PAR is consistently positive. However, the negative effect can be observed focussing on the upper quantile. It demonstrates the decline in the stock index accompanied by the rise of the president's support. While PAR is too high, investors will be tense because this increases the possibility of significant changes in economic policies (McAvoy, 2006). The investors will gradually digest the impact to reduce the coefficient over time. Economic stagnation and the first oil crisis have caused the economic crisis in 1973; Ford's high support rate in September 1974. However, Ford takes the opposite steps with Nixon's (last president) new economic policy, such as tax cuts tax subsidies to stimulate investment and production. However, it causes the market's panic; there are no stock market stops. Subsequently, Cater, the successor of Ford, tries to take a more significant tax reduction to solve the inflation crisis. Although Carter succeeds in ultra-high support (the support rate has been more than 60% for seven months since January 1977), more radical measures have no actual excitement. The fall in the stock market is still inevitable. The failure of economic policies causes the U.S. to fall into the deadlock of economic stagnation.

As evidenced in Figure 3, the scale of the coloured bar indicates the coefficients between PAR and the stock market based on QQ estimates. Dark blue and dark red indicate the lowest and highest values of the coefficients, respectively. As the result of raw data shown in Figure 3(A), the negative response of S&P 500 to PAR can appear in the medium quantile of PAR (0.35-0.55), with a lower quantile of S&P 500 (0.05-0.25). The lowest coefficient of −0.02 observed in the medium quantile implies that the stock market is often not good when the president's support is in an intermediate state. In a political stalemate, the unstable ruling party often causes uncertainty in

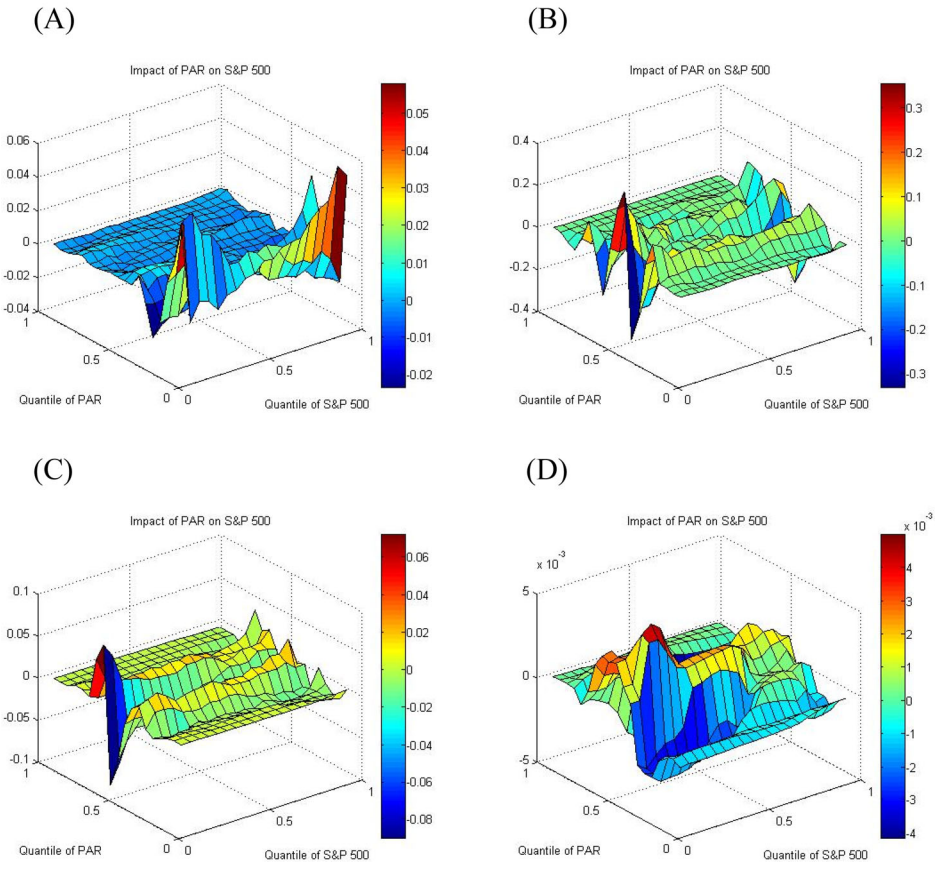

Figure 3. The QQ estimate of PAR and S&P 500.
Source: PMFA, Gallup, Morningstar.

economic policies. Unclear business environments have triggered investor sentiment and S&P 500 falls. For example, the political stalemate in the middle-term election of 2010 has not brought advantage to the stock market. Since the U.S. is currently experiencing a difficult recovery phase after the financial crisis, political stalemates may lead to the implementation of policies to be more complex and even stop (Caluwaerts & Reuchamps, 2015). This is undoubtedly not conducive to the stock market and economic recovery. Therefore, from January to August 2010, with the stalemate of the Obama government approval rating, the stock market is sluggish. Meanwhile, positive impact can also show in lower quantile of PAR (0.05-0.15), while upper quantile of S&P 500 (0.85-0.95). The president's support rate is closely related to the economic situation, and the government often adopts effective policies to improve economic conditions. As the economic fundamentals improve, the stock market will also be good. In January 2021, Biden was committed to promoting a large-scale economic stimulus plan financial support for families, enterprises and governments. The market considers that this is expected to stimulate consumption and investment. The stock market has also made a positive response; S&P 500 (closed at 3851.85 points) has risen to a new high and refreshed the record of January 8. Figure 3(B–D)

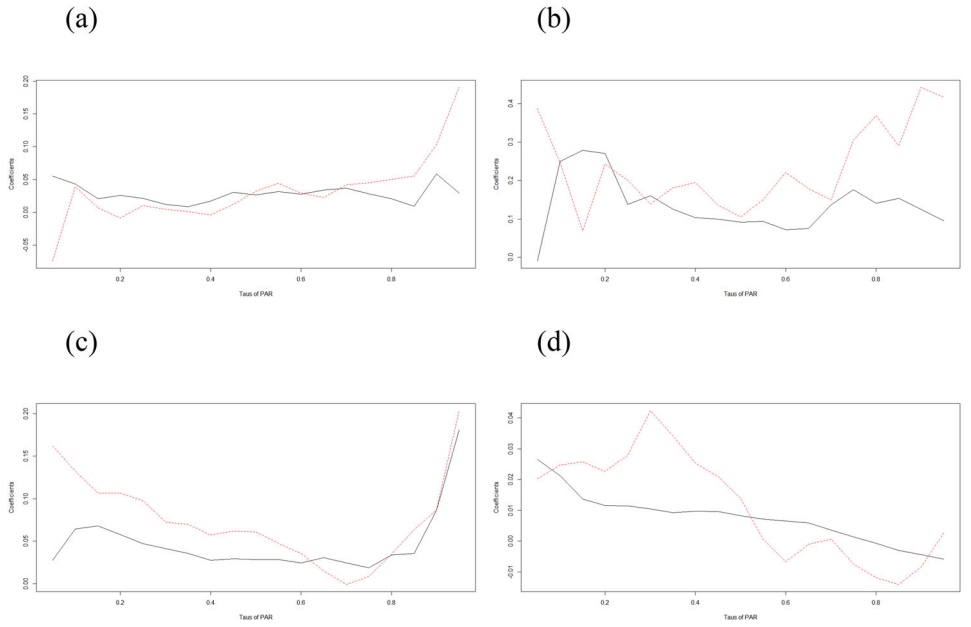

Figure 4. Quantile regression of USDX.
Source: PMFA, Gallup, Morningstar.

highlights the decomposed data outcomes. The negative impact of political stalemates has been verified again in the short term in the medium quantile of PAR (0.35-0.45; 0.55-0.65). The panic sentiment of political events is often difficult to digest in the short term, so that the market reaction will become more intense. Risky assets will tend to be more vulnerable to sentiment changes, such as stocks (Baker & Wurgler, 2007). Hence, political sentiments have the most severe short-term response to the stock market, and the coefficient is −0.4. Henceforth, PAR also has affected S&P 500 in the medium quantile (0.55-0.65) in the middle term. First, it is evident that the range of influence is reduced (embodied in the range of quantile). Second, the influence is reduced (the maximum coefficient is −0.08). Although there are fluctuations in the repeatedly oscillated market, there are no pessimistic expectations in the medium and long term. The negative impact of PAR will be gradually released. The maximum coefficient is 4×10^{-3} in the long term, demonstrating the negative sentiment almost completely disappears over time. In 2020, the spread of COVID-19 and the freezing point in Sino-U.S. relations made the U.S. stock market unprecedented experience four times fuse. However, the U.S. is still the largest economy globally, and its fundamentals of the economy have not been destroyed. The enormous financial system and leading technology innovation strength make people optimistic about future expectations (Pirtea et al., 2019; Su et al., 2022f). Policy effects will appear long-term and gradually guide the market's stability. Investors' sentiment will resume calm to the presidential regime.

Figure 4 expresses the impact of PAR on USDX of quantile regression. It demonstrates that the relationship is consistently positive across all the quantiles. It is worth noting that influencing coefficients gradually decrease over time. This can be

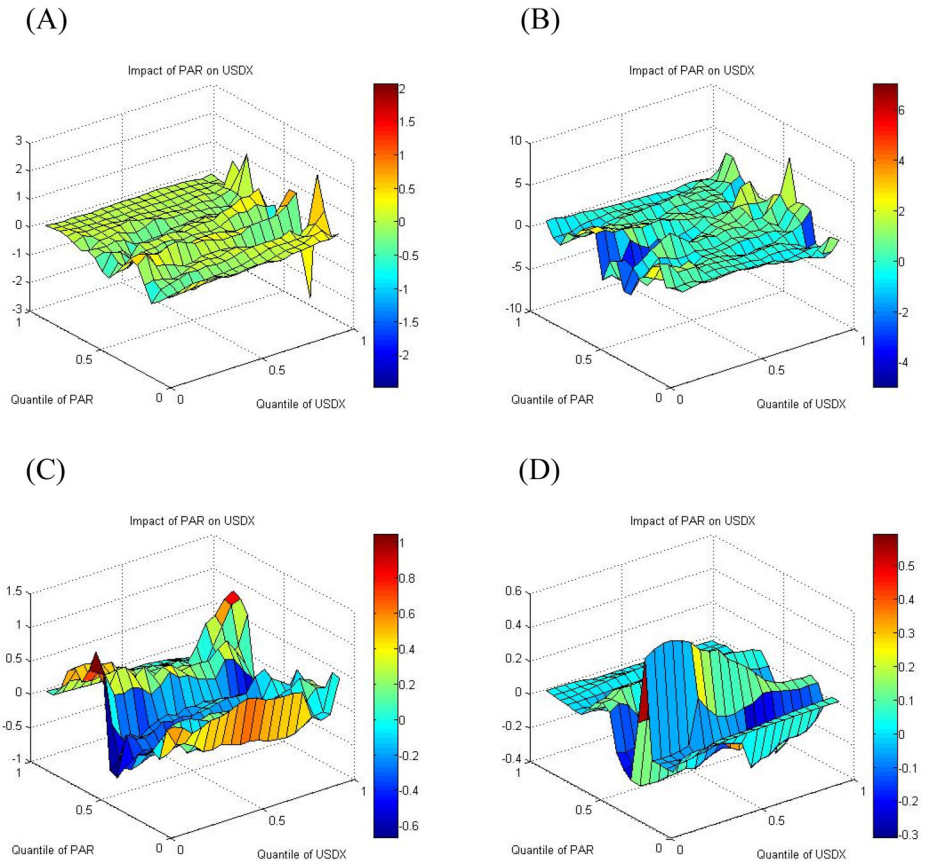

Figure 5. The QQ estimate of PAR and USDX.
Source: PMFA, Gallup, Morningstar.

interpreted as economic policy uncertainty and the deepening of political conflicts, and the dollar is gradually weakened. During the Trump period, the rising interest rate expectations and the intensification of trade conflicts appeared simultaneously, resulting in the dangerous resonance of monetary policy and trade policies between countries, so the dollar trend is weak. The short-term uplink will encounter resistance unless the U.S. continues to announce economic data than expected. Hence, the president's foreign policy affects the dollar trend. Protectionist policies have been proven to weaken the dollar in the long term (Sukar & Ahmed, 2019).

Figures 5(A) reports the relationship between the president's popularity and the dollar. The PAR positively affects USDX in the lower quantile (0.15-0.25). The most significant impact (the coefficient is 2) can be observed in the lower quantile, indicating the greater increase of USDX due to the support rate. Market confidence in the U.S. government's ability to deal with economies and diplomacy will have an impact on the dollar. If the measures taken by the government are positive, the president's support rate will rise. The debt size of 2021 has reached 21.019 trillion U.S. dollars, equivalent to 102.3% of GDP. Public and external debt has an important impact on the dominance of the U.S. dollar (Wiriadinata, 2018). Therefore, the ruling

confidence has caused the political parties to stabilise. This will contribute to the trend of the dollar. PAR and USDX are mapped to the U.S. economy and political confidence, so both have positively related characteristics (Liu & Shaliastovich, 2022). During President Clinton, he conducted tightening fiscal policy to reduce the deficit and strictly implemented stable and neutral monetary policies to raise more revenue. The effect of its economic policy has brought the prosperity of the U.S. economy. Trade policies that actively develop foreign markets help expand trade exports to promote USDX rising. On the other hand, the alternation of political parties will cause market panic (Hopkin, 2020). Hedging sentiment makes the emerging and developing countries' monetary depreciation because investment is turned into more assets that are considered safer. This can prompt the appreciation of the dollar. Unlike the last president Clinton, Bush hopes to stimulate the economy through government intervention and increase consumer spending and corporate investment through tax cuts. The Bush administration's economic policy will also support trade protectionism in terms of foreign trade. The U.S. dollar index has dropped to below 90 for trade protectionism concerns since December 2013. Figure 5(B–D) presents the wavelet analysis, and the results show that PAR can cause USDX positively in the medium (0.40-0.50) in the short term. The highest coefficient, which is 6, implies a great incentive of PAR to USDX. The U.S. dollar index will be affected by short-term factors, such as the president strategy. The president tends to suppress the dollar more actively in the speech when the support rating is lowered (such as Trump worries about the dollar to weaken the competitiveness of the U.S. export product). When the economic recovery is confident, it does not require a weak dollar as an additional stimulus for exports (Su et al., 2021a). This will temporarily cause direct pressure on the U.S. dollar. The impact of the middle term can be observed in the quantile of (0.55-0.65); however, the impact of PAR is below the short term (the maximum coefficient is 1). From a medium perspective, the impact of the president's approval rating on the U.S. dollar index is mainly of market emotional feedback in this stage. The stable ruling highlights the public's confidence in the government's current work. The most powerful economies in the U.S. have a solid economic strength, and it is also the world's first industrial output value. The robust economic pillar maintains the stability of the U.S. dollar. During the Obama administration, the export promotion strategy is implemented to promote the recovery of manufacturing industries to solve the financial crisis. This keeps U.S. products leading the global market. This brings a stable government environment and enables the recovery of the U.S. dollar. While, in the long run, the impact of political factors on USDX will be further weakened, and its influence coefficient is the lowest (0.5). The capital return rate determines the direction of international capital, and the global capital transnational flow process will affect the supply and demand of the corresponding currency. In other words, USDX's long-term pricing factors are relative capital returns. Investors tend to choose the actual interest rate/actual price to define the capital return rate better. The actual spread depends on the relative monetary policy, inflation sites and even economic growth between economies. These policies are generally relatively stable, and they mainly rely on party differences, so the long-term impact of PAR on the market is not significant.

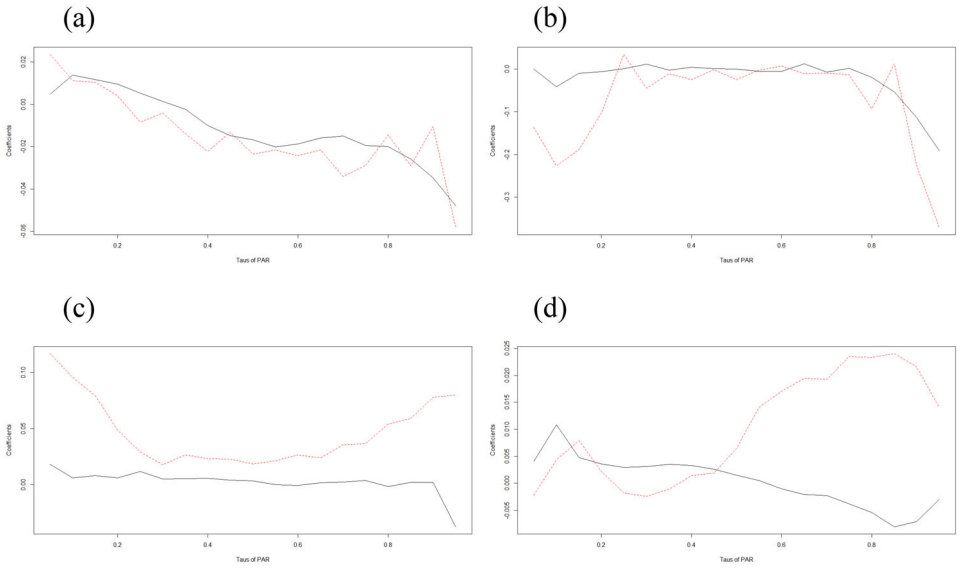

Figure 6. Quantile regression of OP.
Source: PMFA, Gallup, Morningstar.

The validity of the regression results is examined in Figure 6(a and b). It demonstrates that oil price has received suppression as the approval ratings rise. Correspondingly, the positive impacts of PAR on OP are exhibited in the medium and long term. The size of the influence can be strong in short term, which proves that exaggerated political beliefs may impact the oil price. A reasonable explanation is that a high support rate is usually related to unrealistic expectations (Jenkins-Smith et al., 2005), which results in the rapid decline in OP. The influence coefficient is minimal, especially in the long term. With the market's calmness, OP will follow recovery in the long run.

The quantile regression of PAR and OP is presented in Figure 7(A). Most coefficients are positive, which means that the presidential approving ratings under different levels positively influence oil prices. The steady economic situation often encourages presidential jobs, while oil demand is closely related to economic activities (Wang et al., 2021). Therefore, PAR and OP are usually coordinated. In particular, the coefficients become negative and significant when PAR and OP range in the quantiles of [0.45, 0.55] and [0.9, 1.0], respectively. Deadlocked presidential support rating forms a stalemate, which makes energy policies confusing. Uncertainty makes the possibility of falling in the OP high (Su et al., 2021b). For example, Trump encourages fossil energy development to have a massive change in global energy patterns. He has publicly promised to open the federal government land for oil and gas mining. Accompanied by the construction of oil and gas pipeline projects, U.S. shale oil will be fully relaunched. These will effectively reduce the transportation and consumption cost of fossil energy, and provide further support for domestic energy production and consumption (Tao et al., 2022). Therefore, reducing oil prices will promote industrial production activities (Brown & Yücel, 2002; Hu et al., 2022), and improve the government's ruling confidence, which leads to an increase in PAR.

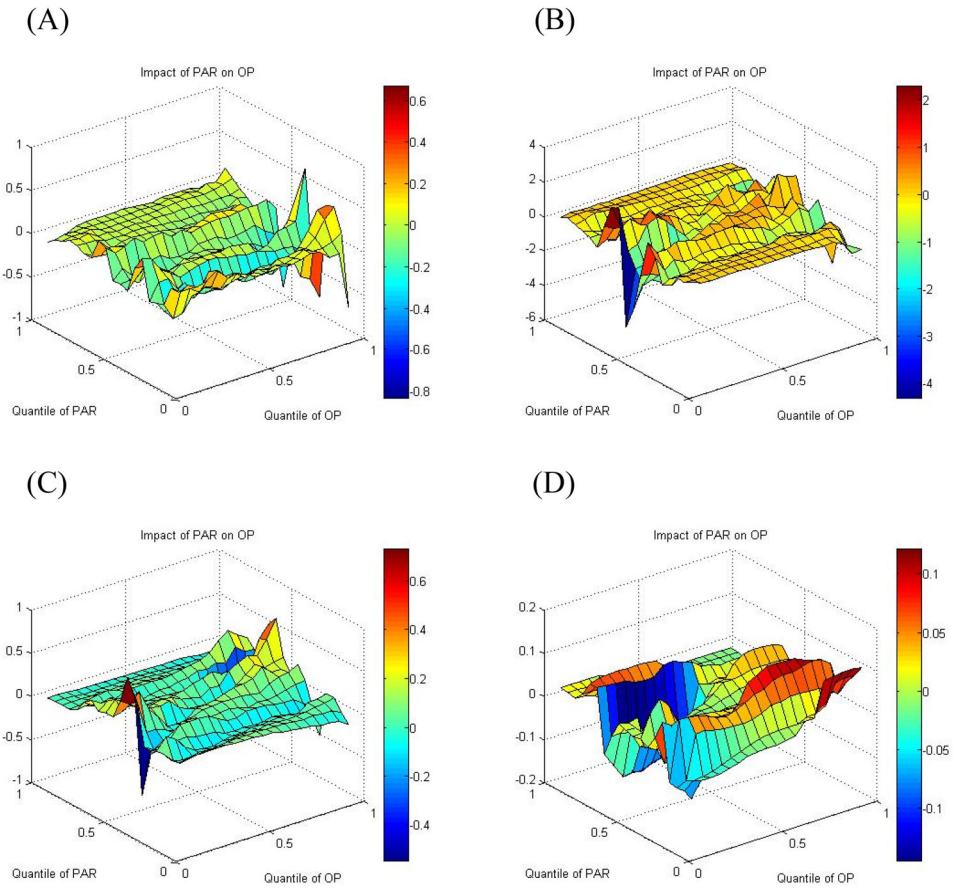

Figure 7. The QQ estimate of PAR and OP.
Source: PMFA, Gallup, Morningstar.

Figure 7(B–D) displays the wavelet transform of OP, and the results suggest that PAR has a negative impact on the OP in the short run in the medium quantile (0.45-0.55). The coefficient is −4, which means the impact is dramatic and sudden. With political multi-polarisation, economic globalisation, the development of internationalisation, competing for oil resources and control of oil markets have become essential causes of oil market turmoil (Wang et al., 2022c). The rise in OP brought about by political sentiments is short because the conflict is not sustainable. However, any policies immediately affecting the central oil supply countries may quickly influence OP. Obama intends to expand the development of offshore oil and gas fields; the U.S. has twisted the situation of oil-dependent. In 2011, the crude oil price difference reached a new high. Although the oil market suffers from hits in the short term, PAR has decreased, low oil prices are undoubtedly beneficial to U.S. economic recovery. Therefore, the impact of political sentiment on OP is short-term and dramatic. For the medium and long term, the critical factors of OP are still in the supply and demand relationship. The influence of PAR will inevitably weaken (the coefficient in the medium term is −0.4, while the long term is −0.1). The U.S. energy consumption accounts for 24% of the world's total. Economic growth will increase the rise in PAR

and drive crude oil demand, stimulating crude oil prices.On the other hand, the U.S. economic expectation will also pull up the dollar. The crude oil base pricing unit is the U.S. dollar/barrel. The dollar's strength will directly cause up and down fluctuations in crude oil prices, but it will increase PAR. The impact of PAR on the OP will offset, so the role of government popularity will decrease over time.

7. Conclusion

We employ the QQ method to estimate the overall relationship between PAR and the asset price on different quantiles. The result shows that the approval of presidential performance has a significant and negative impact on stock and oil markets, especially in the medium quantile of PAR. However, the influence of PAR is greater on USDX than S&P 500 and OP. The reason is that whether the president's support is or the value of the dollar, its decisive influencing factors depend on the current economic situation. A good situation will promote the satisfaction of presidential work and bring a safe investment environment to consolidate the status of the dollar. Therefore, PAR and USDX demonstrate a highly relevant correlation. These results are in line with the ICAPM to explain political sentiment changes of the investor will shock asset prices. Meanwhile, the degree of influence will cut down when the relationship changes from short to long run.

The empirical findings may have policy implications. First, political disagreement tends to affect asset prices significantly. The public opinion investigation has a significant impact on the market atmosphere. Throughout the sample period, the impact of uncertainty of presidential popularity on market returns has heterogeneity. Specifically, the government's popularity has a negative impact on the stock market and oil prices in most quantiles, and this impact can be more obvious in the state of political stalemates (in the medium quantile). The uncertainty of this political state will hinder investment and bring more unclear factors to asset prices. While the U.S. dollar index is more affected by PAR; most impacts are positive. When making investment decisions, investors need to fully consider the impact of political uncertainty, and pay attention to fluctuations of presidential popularity, especially when the political stalemates occur. Also, the results provide a successful investment strategy to circumvent the government trust risk for rational investors. In short, investors turn funds to more fluid security assets (such as the dollar) to avoid potential political uncertainty. Second, the government needs to maintain the stability of the investment environment to get rid of the turmoil of the asset price brought by the government's credibility. The uncertainty will also affect investor sentiment, resulting in the volatility of stock markets and oil prices. In turn, this will also damage the prevalence of the president. Therefore, the government should pay attention to basic issues related to investors and investors in macro models, it can formulate policies through the reaction of the asset market. In addition, government departments should maintain the coherence and stability of the policy environment as much as possible, and reduce the frequency of policy adjustment, which can facilitate investors and enterprises to establish reasonable expectations and prevent countermeasures on changes in economic policy.

Notes

1. The IBD/TIPP Poll is a collaboration between Investor's Business Daily and TechnoMetrica to produce a presidential leadership index.
2. The data of PAR is from http://www.presidency.ucsb.edu/data/popularity.php
3. The leptokurtic distribution can be described as having a wider or flatter shape with fatter tails resulting in a greater chance of extreme positive or negative events. The opposite is a platykurtic distribution.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This study was supported by the National Office for Philosophy and Social Sciences (20BJY021).

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