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External shocks and labor market reforms in autocracies and democracies: Evidence from oil price windfalls

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EXTERNAL SHOCKS AND LABOR MARKET REFORMS IN AUTOCRACIES AND DEMOCRACIES

EVIDENCE FROM OIL PRICE WINDFALLS

Markus Brueckner, Gabriele Ciminelli, and Norman Loayza

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ABSTRACT

We examine the relationship between oil price windfalls and labor market regulation empirically through panel regressions in a sample of 83 countries spanning 1970–2014. We find that oil price windfall gains lead to a deregulation of the labor market in autocracies but have no effects in democracies. Windfall losses instead cause a sizeable deregulation in democracies but have limited effects in autocracies. We then consider possible transmission channels. Democracies appear to redistribute the rents stemming from a positive windfall by increasing government expenditure. Rent extraction and economic efficiency considerations are instead both plausible deregulation drivers following windfall gains in autocracies, as expenditures are not raised, while gross domestic product and employment gradually increase after positive windfalls. Finally, the deregulation following windfall losses in democracies is consistent with the crisis-induced-reform hypothesis, as windfall losses deteriorate the current account and budget balances and increase the probability of a systemic banking crisis.

Keywords: oil price, windfalls, labor market, deregulation, political institutions

JEL codes: F16, J41, O13, P11, P16, Q02

I. Introduction

The effects of natural resources and external shocks on economic growth and institutions is an important topic in development economics. In this paper, we contribute to the literature by examining specifically the effects of oil price windfalls on labor market institutions. To the best of our knowledge, we are the first to do so.

A major hurdle that prevented progress in the past on answering the question of how natural resources affect labor market institutions is the availability of data on the latter for a large set of countries and years. To this end, we use a novel dataset on employment protection legislation from Ciminelli and Furceri (forthcoming). This dataset measures the extent of the restrictions faced by employers when they want to terminate an indefinite employment contract. Our measure of oil price windfalls is an oil export price index, which we construct following conventional practice as the interaction between a country's average gross domestic product (GDP) share of petroleum exports and the annual growth rate of the international oil price (e.g., Arezki and Brueckner 2012). Excluding from the sample major oil exporters such as the Russian Federation and Saudi Arabia, we are able to estimate plausibly causal effects of oil price windfalls on employment protection regulation.

We start considering reduced form estimates. Our main finding is that the effect of oil price windfalls on employment protection legislation depends on political institutions. Oil price windfall gains lead to a significant deregulation of the labor market in autocracies while they do not have any significant effect in democracies. On the other hand, oil price windfall losses lead to a sizeable deregulation of the labor market in democracies but have only limited effects in autocracies. These empirical results are persistent over the medium term and are robust to a variety of model specifications and estimation techniques that are standard in the literature. Moreover, the difference between the effects of positive and negative oil price windfalls is statistically significant. Quantitatively, the effects of oil price windfalls on labor market institutions are important, particularly in democracies. A 1-standard-deviation positive windfall induces a deregulation reform worth about a sixth of the median reform in autocracies, while a 1-standard-deviation negative windfall induces a deregulation reform roughly equal to the median reform in democracies.

In the second step, we explore potential transmission channels that might drive our results. Oil is a capital-intensive commodity. According to standard international trade theory (i.e., the Stolper-Samuelson effect), when markets are perfectly competitive an increase in the international oil price should increase the rental rate relative to wages, and more so, the larger the GDP share of oil exports. However, when labor markets are not perfectly competitive, e.g., due to labor market regulation, the predictions from this theory are not straightforward. One possible explanation of our results is that, in autocracies, well-connected capitalist insiders lobby the regime following oil price windfalls to liberalize the labor market to reduce workers' bargaining power, thereby keeping wage pressures in check and appropriating a larger share of the rent.

At the same time, one of the main goals of deregulating the labor market is to give employers more flexibility in deciding the optimal allocation of labor, which should increase efficiency and may attract higher investments. Hence, an alternative interpretation is that efficiency gains materialize when there is a deregulation of the labor market. Such an interpretation would be in line with the view that competitive markets achieve efficient allocation. However, deregulating the labor market can cause employment losses in the short term, as employers can take advantage of the new rules to dismiss the most unproductive workers (Cacciatore and Fiori 2016). Oil price windfalls may then offer a good window of opportunity for governments to implement a labor market deregulation, as implementing such reforms during a boom might reduce its short-run costs.

Deregulating the labor market can also lead to a lower bargained wage (Ciminelli, Duval, and Furceri 2022). Hence, some governments, particularly those in countries in which democratic institutions are stronger, may be reluctant to implement a deregulation reform, even after periods of oil price windfalls, to not alienate voters. Deregulation reforms are then delayed until a crisis hits, when they are perceived to be strictly necessary. According to this crisis-induced-reform hypothesis, democratic countries implement reforms that improve efficiency for the society overall but that may have (high) short-term costs during crises, when voters understand that there may be few alternatives to reform (Tommasi and Velasco 1996, Drazen and Grilli 1993). Insofar as oil price windfall losses induce a crisis, they may be conducive to a deregulation reform.

We test these potential transmission channels by expanding the analysis on the effects of oil price windfalls to different dependent variables. These additional estimations suggest that political economy and efficiency considerations might both be important in explaining the result that autocratic regimes deregulate the labor market following positive windfalls. We find that positive windfalls generate important rents, and that the magnitude of the labor market deregulation is larger in more autocratic regimes. Taken together, these results reinforce the hypothesis that well-connected capitalists lobby for deregulation to appropriate a larger share of the rents generated by the windfall (or at least prevent that workers successfully bargain for a higher wage). This political economy interpretation is broadly in line with view that there are synergies between economic and political institutions (e.g., Acemoglu and Robinson 2012); and that there is significant rent extraction by capitalists in autocracies but not in democracies (Brueckner 2017).

At the same time, we also find that tax revenues and the primary balance increase on impact. GDP and the employment rate increase gradually after a positive windfall in autocracies while they do not increase in democracies. This gradual increase of employment and GDP in autocracies might be the result of the labor market deregulation implemented in response to the windfall. Given these dynamics, we cannot rule out that governments in autocratic regimes understand that positive windfalls provide a good opportunity to liberalize the labor market, thus stimulating employment and improving overall economic efficiency in the medium term, while minimizing short-term costs. While governments in democratic governments might also be aware that passing a structural reform in good times can minimize its short-run costs, they might still be unwilling to pass such reform if it is ostracized by a majority of voters.

Indeed, political economy considerations appear to be very important in explaining the response of the labor market regulation index to oil price windfalls in democracies. As in autocracies, in democracies, both oil rents and tax revenues increase on impact following positive windfalls. But, differently from autocracies, government expenditures gradually increase after positive windfalls, suggesting that democratic governments use the higher tax revenues stemming from the windfall to redistribute parts of the oil rents to the wider population. Turning to negative windfalls, we find that these sharply deteriorate the current account and budget balances. The fact that democratic countries implement

labor market deregulation after an oil price windfall loss that significantly deteriorates public finances, as well as the country's external position supports the crisis-induced-reform hypothesis, according to which the political economy of structural reforms in democratic countries is such that reforms are delayed until a crisis hits. We further test the validity of the crisis-induced-reform hypothesis by analyzing whether oil price windfalls affect the probability of experiencing a crisis. We find that negative windfalls substantially increase the probability of a systemic banking crisis in democracies, while there are no effects in other cases.

Our paper mainly contributes to the literature on the macroeconomic effects of natural resources and to that examining the drivers of economic reforms. In the 1990s, the mainstream view was that natural resources, in particular oil wealth, is not beneficial for a country's economic development. Early empirical studies, mostly based on cross-country regressions and case studies, uncovered a negative relationship between natural resource dependence and economic growth (e.g., Sachs and Warner 1995 and 1999). There were also arguments made and empirical evidence provided, mostly in the form of cross-country regressions and case studies, that natural resource dependence is positively correlated with corruption, weak state capacity, and the likelihood that countries are ruled by autocrats (e.g., Gelb 1990, Karl 1997, Ross 2001).

In the 2000s and 2010s the mainstream view that natural resources are a curse changed somewhat. Alexeev and Conrad (2009) showed that when the dependent variable is the level of GDP per capita, as a measure of long-run living standards, as opposed to transitional growth, there is no evidence of a resource curse. Brunnschweiler and Bulte (2008) showed that natural resource abundance, as opposed to natural resource dependence, is not significantly associated with a higher risk of civil conflict and slower economic growth. Brueckner and Ciccone (2010) documented that commodity price windfalls are, on average, associated with faster GDP growth in sub-Saharan Africa. A number of subsequent empirical studies, using vector autoregressions (VARs) and dynamic panel regressions, uncovered that in the short run, commodity price windfalls have positive effects on GDP growth (e.g., Brueckner, Tesei, and Ciccone 2012; Collier and Goderis 2012; Araujo et al. 2014; Fernandez, Schmidt-Grohe, and Uribe 2020)

There exist only a few papers providing evidence that the effects of natural resources significantly depend on institutions. Mehlum, Moene, Torvik (2006) argued theoretically and provided empirical evidence that the cross-country positive effect of natural resources on GDP growth is increasing in institutional quality. Arezki and Brueckner (2012) documented that commodity price windfalls lead to a significant reduction of external debt in democracies, while no significant effect is present in autocracies.

Our paper is also related to the literature studying crises as drivers of reforms in democratic countries. The early literature theorized that economic or financial crises can break the deadlock over reforms that enhance welfare in the medium term but have short-term costs and could not be adopted otherwise (Drazen and Grilli 1993, Tommasi and Velasco 1996, Rodrik 1996). At the same time, the evidence from the empirical literature is mixed. Early studies found broad support for this crisis-induced-reform hypothesis (Nelson 1990, Grindle and Thomas 1991, Haggard and Kaufman 1992, Haggard and Webb 1994, Williamson and Haggard 1994). Later studies confirmed the hypothesis only for certain reforms (Drazen and Easterly 2001, Lora and Olivera 2004, Agnello et al. 2015), while Abiad and Mody (2005) found mixed evidence for financial reforms. For labor market reforms in particular, Duval, Furceri, and Jalles (2021) found that periods of high unemployment and recessions substantially increase the probability of an employment protection deregulation reform.

The remainder of the paper is organized as follows. In Section 2, we describe the data that we used in our empirical analysis. Section 3 sets out the econometric models. Section 4 presents the main results, while Section 5 discusses the transmission channels. Section 6 concludes.

II. Dataset

Our sample includes 83 countries and spans the 1970–2014 period. The panel is unbalanced, with each country's time coverage dictated by the availability of the labor market regulation and oil windfall data. The median sample start year across countries is

1970, while the average is 1975. All countries are covered until the end of the time sample (2014).

Of the countries covered, 10 were always autocracies, 34 were always democracies and 39 switched from autocracy to democracy or vice versa at least once during the sample. To distinguish between autocracies and democracies, we rely on the Regime Authority Characteristics and Transition dataset assembled by the Center for Systemic Peace. In particular, we use the polity2 variable, which scores country-time observations on a -10 to +10 scale, with more positive (negative) numbers denoting more democratic (autocratic) regimes. For the purpose of our analysis, we divide the sample based on whether the polity2 variable is above/below 0. Table A1 in the Appendix lists all countries covered.¹

A. Employment Protection Legislation Data

We source data on employment protection legislation (EPL) from Ciminelli and Furceri (forthcoming), who themselves build on Alesina et al. (2023). The latter put together a database of major reforms in six structural policy areas, including the labor market. Relative to Alesina et al. (2023), Ciminelli and Furceri (forthcoming) expand the country and time coverage. The database quantifies the restrictions faced by employers when terminating an indefinite employment contract and is positive in nature in the sense that it captures impediments to dismissals, without taking a stance on why they are put in place.

The database focuses on five broad areas of EPL: (i) valid grounds, meaning the reasons that are considered as legitimate for termination; (ii) administrative requirements to be complied with before termination; (iii) monetary costs, such as notice periods as well as severance and redundancy payments; (iv) redress measures, meaning reparations to be made to the employee when termination is considered to be illegitimate *ex-post*; and (v) additional requirements in case of collective dismissals. For each of these areas, several variables capturing different aspects of regulation are constructed. Area indicators

¹ The Appendix is available at <http://dx.doi.org/10.22617/WPS240528-2>.

are then assembled as averages across such variables. Finally, an overall EPL index is derived as the average of the area indicators.

The database is constructed based on official laws and country-wide collective agreements. It covers regulation applying to micro, small, medium and large firms separately. This is important because EPL is often size-dependent, in the sense that different provisions apply to firms with different numbers of workers. For our analysis, we rely on the index measuring EPL in medium-sized firms (150 workers).² The time sample considered varies by country, with some countries being covered since the early 1900s. The large cross-country and time coverage of this database is what makes it superior to other existing ones for the purpose of our study.

In what follows, we take a first look at the EPL index used in the analysis. The index ranges between 0 and 100, with higher values denoting more restrictions. In Figure 1, we start by plotting its interquartile range and the median value, separately across autocracies (Panel A) and democracies (Panel B). While EPL increased throughout the period considered, this increase was particularly marked during the 1970s, while it slowed down in the second part of the sample. There are no significant differences between autocracies and democracies, with the median being around 23 (out of a 0–100 scale) in both groups.

In Figure 2, we look at the frequency of reforms and conclude that reforms are fairly rare events—they happen less than once every 10 years, on average. Reforms, particularly those that increase regulation (tightening reforms), are more frequent in democracies than autocracies. Table 1 presents some descriptive statistics on the size of reforms. Reforms, both easing and tightening ones, are typically almost twice as large in autocracies as in democracies. We also note that there is a large dispersion in the size of reforms. The mean reform is worth about 15% (7.5%) of the median value of the index in autocracies (democracies). But some countries also experienced particularly large reforms, worth more than 100% the median value of the index, implying drastic changes in EPL.

² The authors also consider heterogeneities in EPL applying to blue- and white-collar workers as well as to workers with different lengths of service. We use the index obtained as the average across blue and white collar as well as workers with different tenures.

B. Windfalls Data

Our main focus is on windfalls that arise from variations in international commodity prices. For that purpose, we use an international commodity price index where the international commodity prices are geometrically weighted with countries' average GDP shares of the export values of the commodities, e.g., Arezki and Brueckner (2012). We use the GDP share—and not the export share—because we want to use cross-country variation in the economic importance of the resource as measured relative to the total value added in the economy, not just the economic importance of the resource as measured relative to exports.

We use average GDP shares rather than the time series of the export values of the commodities for identification purposes. This is because politico-economic conditions may vary over time in a country, which can have time-varying effects on the GDP share of commodity exports. Using average rather than time-varying GDP shares ensure that we isolate the effect of price fluctuations from the other dynamic factors that influence exports. This approach strengthens the causal interpretation, helping to identify whether labor market reforms occur primarily in response to changes in international oil prices, rather than being driven by time-varying political or economic shifts in a country. This comes at the cost of reducing the signal—pushing estimates of the effects that price windfalls have on the dependent variables toward zero. Thus, our estimates are likely to be a lower bound of the true causal effect.

For the baseline analysis, we consider oil price windfalls. Oil price windfalls are the change in the log of the international oil price between year t and $t-1$ times a country's average GDP share of petroleum exports during the sample period. Besides crude oil exports, petroleum exports also include exports of refined oil products (e.g., fuels). Hence, our measure captures windfalls in countries with large natural oil endowments but also in those that are involved in oil refinement, transit, and trading. This distinction is particularly important because the size of a country's oil sector can be significant despite low proven oil reserves. This makes a variety of countries in our large sample of autocratic and democratic countries exposed to swings in the international oil price.

For some extensions, we also present results for other price windfalls, including for agricultural commodities. Finally, for a robustness check, we use the oil discoveries

variable constructed by Cotet and Tsui (2013). We clean windfall data censoring extreme outliers, defined as observations above the 99.9th percentile and below the 0.1st percentile of the windfall distributions. For the case of oil price windfalls, this amounts to censoring observations more than 10 standard deviations above and 5 standard deviations below the mean.

Table 2 presents descriptive statistics of the oil price windfall variable, separately for autocracies and democracies. Oil price windfalls were almost three times larger in autocracies than democracies on average in the sample considered, owing to the larger share of oil exports in GDP in autocracies. Data on GDP shares of the export values of the commodities considered come from the National Bureau of Economic Research (NBER) Comtrade dataset.

C. Other Data

To investigate the transmission channels driving the effects of oil price windfalls on employment protection regulation, we collect additional variables. From the International Monetary Fund (IMF) World Economic Outlook, we source data on (i) real GDP per capita in local currency units, (ii) the current account balance as a share of GDP, and (iii) GDP per capita in purchasing power parity (PPP) units. From the IMF Modern Public Finance Database, we source information about (i) tax revenues, (ii) government primary expenditures, and (iii) the primary balance (all as shares of GDP). From the Penn World Tables, we source the employment to population ratio. Data on the GDP share of oil rents (defined as the value of crude oil production minus the cost of production) are from the World Development Indicators. Finally, we source a dummy variable on the occurrence of systemic banking crises from Laeven and Valencia (2018).

III. Econometric Specifications

A. Random and Fixed Effects Models

As a start, we consider a first-difference specification in which we regress the change in the EPL index onto the change in the international oil price index. This allows us to establish a relationship between oil price windfalls and reforms to EPL. We start by

estimating a random effects model through generalized least squares (GLS) regressions. We then also consider a fixed effects model, which we estimate through ordinary least squares (OLS). The specifications that we estimate are as follows:

$$\Delta EPL_{i,t} = \alpha + \sum_{k=0}^1 \beta_k \Delta Oil_{i,t-k} + \tau_t + \varepsilon_{i,t} \quad (1)$$

$$\Delta EPL_{i,t} = \alpha + \sum_{k=0}^1 \beta_k \Delta Oil_{i,t-k} + \tau_t + \gamma_i + \varepsilon_{i,t} \quad (2)$$

where Δ is the first-difference operator, $EPL_{i,t}$ is the EPL index, α is a constant term, $Oil_{i,t}$ is the log of the international oil price in year t times country's i average GDP share of oil exports over the sample, τ_t and γ_i respectively denote country and year fixed effects, and $\varepsilon_{i,t}$ is the error term, assumed to be uncorrelated with the regressor and clustered at the country-level. The β_k s are the coefficients of interest and measure the contemporaneous ($k = 0$) and lagged effect ($k = 1$) of oil price windfalls onto changes in EPL. To ease interpretation of the results, we standardize the oil price windfalls variable by its standard deviation so that the β_k coefficients measure the response to a 1-standard-deviation windfall.

The identifying assumption is that oil price windfalls are exogenous to labor market regulation. Most oil exporting countries are price takers on the international commodity market. The Russian Federation and Saudi Arabia, historically the world's two largest oil exporters, are excluded from our sample. Further, the country-specific oil price index is constructed using time-invariant oil export shares. Conditional on country and time fixed effects, the variation in the oil price index—international oil price times a country's average GDP share of oil exports—is thus plausibly exogenous to labor market regulation.

As noted, oil price windfalls tend to be considerably larger in autocracies than democracies, while reforms tend to be more frequent in democracies than autocracies (Tables 1 and 2). Given this background and the multiple channels that might drive the effects of oil price windfalls on EPL, we perform the estimation separately for the samples of autocracies and democracies.

B. Local Projections

The specifications in Equations (1) and (2) focus on the short-term impact of oil price windfalls on EPL reforms. To shed more light on the dynamics and persistence of the effects, we employ the local projection method. This method was pioneered by Jordà (2005) and has been widely used thereafter (Auerbach and Gorodnichenko 2012, Jordà and Taylor 2016, Ramey and Zubairy 2018, among many others). Plagborg-Møller and Wolf (2021) show that local projections and VARs estimate the same impulse responses. Olea and Plagborg-Møller (2021) show that lag-augmented local projections yield standard errors that are asymptotically valid.

In practice, the local projection method entails estimating the response of the dependent variable at period $t+k$ to the shock at time t directly. We consider a 5-year period, including the year of the shock and the four following ones. Therefore, for each $k = 0, \dots, 4$, we estimate the following specification:

$$\begin{aligned} EPL_{i,t+k} - EPL_{i,t-1} = & \gamma_i + \tau_t + \beta_k^A \Delta Oil_{i,t}^A + \beta_k^D \Delta Oil_{i,t}^D + \sum_{j=1}^k (\delta_{k,j}^A \Delta Oil_{i,t+j}^A + \delta_{k,j}^D \Delta Oil_{i,t+j}^D) \\ & + \sum_{l=1}^2 (\rho_{k,l}^A \Delta Oil_{i,t-l}^A + \rho_{k,l}^D \Delta Oil_{i,t-l}^D) + \vartheta_k Y_{t-1} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

where $\Delta Oil_{i,t}^A$ ($\Delta Oil_{i,t}^D$) denote positive oil price windfalls in autocracies (democracies), constructed as $\Delta Oil_{i,t} * A_{i,t}$ ($\Delta Oil_{i,t} * (1 - A_{i,t})$) with $A_{i,t}$ being a dummy variable taking value equal to 1 when the polity2 score is below 0; Y_t is the log of per capita GDP in PPP, included to control for the stage of development, and the rest of the notation is as in Equation (2).

The variables in the summation term are forward shocks á la Teulings and Zubanov (2014), included to take into account of oil price windfalls that occur within the $t+k$ horizon, but that are not captured by the main explanatory variable ($\Delta Oil_{i,t}$), and whose omission may bias the results. The equation is made dynamically complete by

including two lags of the windfall variables. The model includes country and time fixed effects, and the estimation is carried out through OLS.³

We estimate the model on the full sample of autocracies and democracies, allowing for different effects of oil price windfalls in these two groups of regimes, rather than splitting the sample in two. This is to maximize the number of observations in each country. The results would be very similar if we were to split the sample in two. The coefficients of interest are the β_k^A s and β_k^D s. They capture the effect of oil price windfalls at time t on the cumulative change in EPL during the $t + k$ horizon in, respectively, autocracies and democracies. The results are presented in the form of impulse response functions (IRFs), i.e., we plot the estimated coefficients β_k^A and β_k^D and their respective 90% confidence bands.

In the next step, we leverage on the flexibility of the local projection method to analyze the effects of positive and negative oil price windfalls separately, given that these may have different effects on EPL. We estimate the following regression specification:

$$\begin{aligned} EPL_{i,t+k} - EPL_{i,t-1} = & \gamma_i + \tau_t + \beta_k^{A,P} \Delta Oil_{i,t}^{A,P} + \beta_k^{A,N} \Delta Oil_{i,t}^{A,N} + \beta_k^{D,P} \Delta Oil_{i,t}^{D,P} + \beta_k^{D,N} \Delta Oil_{i,t}^{D,N} \\ & + \sum_{j=1}^k (\delta_{k,j}^{A,P} \Delta Oil_{i,t+j}^{A,P} + \delta_{k,j}^{A,N} \Delta Oil_{i,t+j}^{A,N} + \delta_{k,j}^{D,P} \Delta Oil_{i,t+j}^{D,P} + \delta_{k,j}^{D,N} \Delta Oil_{i,t+j}^{D,N}) \\ & + \sum_{l=1}^2 (\rho_{k,l}^{A,P} \Delta Oil_{i,t-l}^{A,P} + \rho_{k,l}^{A,N} \Delta Oil_{i,t-l}^{A,N} + \rho_{k,l}^{D,P} \Delta Oil_{i,t-l}^{D,P} + \rho_{k,l}^{D,N} \Delta Oil_{i,t-l}^{D,N}) + \vartheta_k Y_{t-1} + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where $\Delta Oil_{i,t}^{A,P}$ and $\Delta Oil_{i,t}^{D,P}$ denote positive windfalls (i.e., gains) in autocracies and democracies, respectively, constructed by interacting the $\Delta Oil_{i,t}^A$ and $\Delta Oil_{i,t}^D$ variables from Equation (3) with a dummy variable taking value equal to 1 for positive changes in the oil price index. $\Delta Oil_{i,t}^{A,N}$ and $\Delta Oil_{i,t}^{D,N}$ denote negative windfalls (i.e., losses) in autocracies and democracies, respectively, constructed by interacting the $\Delta Oil_{i,t}^A$ and $\Delta Oil_{i,t}^D$ variables from Equation (3) with a dummy variable taking value equal to 0 for negative changes in the oil price index. The coefficients $\beta_k^{A,P}$ and $\beta_k^{D,P}$ measure the

³ We also considered a random effects local projection model through GLS. The results using the two approaches are very similar.

cumulative effect of positive oil price windfalls (i.e. gains) at time t on EPL reforms over horizon $t + k$ in autocracies and democracies, respectively. The coefficients $\beta_k^{A,N}$ and $\beta_k^{D,N}$ measure the cumulative effect of negative oil price windfalls (i.e. losses) at time t on EPL reforms over horizon $t + k$ in autocracies and democracies, respectively.

IV. Baseline Results

A. Short-run Effects

Table 3 presents the baseline results, obtained estimating Equations (1) and (2). The results are reported in Panels A and B, respectively for the sample of autocracies and democracies. Columns (1) and (2) show results from a specification including only the contemporaneous value of the oil price windfall variable. The estimates in columns (1) and (2) are obtained by estimating random and fixed effects models, respectively. Columns (3) and (4) report results when we model oil price windfalls to affect EPL with a 1-year lag. Columns (5) and (6) show estimates when including both the contemporaneous and the lagged value of the oil price windfall variable in the model. The reported coefficients are normalized to show the effect of a 1-standard-deviation oil price windfall (calculated on the unrestricted sample of autocracies and democracies, equal to about 1.5). Equations (1) and (2) assume that positive and negative oil price windfalls have symmetric effects. For simplicity, we discuss the results referring to positive windfalls. Further below, we allow for asymmetric effects depending on the sign of the windfall.

We estimate negative coefficients for oil price windfalls in autocracies, while the coefficients estimated for democracies are not statistically significant. The coefficients estimated for the contemporaneous oil price windfall variable and its 1-year lag in autocracies are about -0.2 and -0.1, respectively. Both these coefficients are statistically significant at either the 95% or 99% confidence level and are broadly consistent across the different specifications and regression models considered.

The fact that the two coefficients have the same sign and are both significant suggests that either the cumulative effect of oil price windfalls on labor market regulation increases over time and/or that some of the reform action happens with a lag.

Quantitatively, the estimated coefficient of -0.2 on year t oil price windfalls can be interpreted as follows: a 1-standard-deviation oil price windfall leads to a reduction in the EPL index of around 0.2 units, which is equivalent to around 0.1 standard deviations of the one-period change of the EPL index.

B. Medium-run Effects

In the baseline analysis, we uncovered a negative, short-run, effect of oil price windfalls on the EPL index in autocracies. Next, to analyze the persistence and dynamics of this effect, we use the local projection method. Through the local projection method, we trace out the response of EPL reforms to oil price windfalls over a 5-year horizon (including the year of the shock plus the four following ones). Figure 3 depicts the cumulative impulse response function (IRF) of EPL reforms to a 1-standard-deviation increase in the oil price index. The IRF is derived by estimating Equation (3). Panel A reports results for autocracies (β_k^A coefficients), while Panel B shows results for democracies (β_k^D coefficients). Blue solid lines are point estimates, while dashed red lines denote 90% confidence bands.

The IRFs in Figure 3 indicate that the effects of oil price windfalls on EPL reforms are persistent, and even increase, over time. In autocracies, the effects are concentrated at impact and 1 year following the shock. The cumulated effect 1 year after the shock is about -0.3 (significantly different from zero at the 99% confidence level). The effect slightly decreases for the rest of the horizon and becomes statistically insignificant in the medium term. Turning to democracies, we confirm that oil price windfalls do not have any effects on EPL in the short run, but we instead estimate a positive coefficient in the long run. The coefficient that we estimate for the 5-year horizon is equal to about 0.4 and statistically significant at the 90% confidence level.

We draw two conclusions from this analysis. First, the effects of oil price windfalls on labor market regulation take time to fully materialize. Second, the cumulative effects over 5 years have the opposite sign in autocracies and democracies, suggesting that different channels might be at play.

C. Effects of Positive and Negative Windfalls

The analysis carried out so far assumes that positive and negative oil price changes (windfall gains and losses) have symmetric effects on the EPL index. In what follows, we estimate Equation (4) to explore whether positive and negative changes in the oil price index have differential effects. Figure 4 shows the new IRFs. Panels A1 and A2 respectively report the effects of positive and negative windfalls in autocracies ($\beta_k^{A,P}$ and $\beta_k^{A,N}$ coefficients), while Panels B1 and B2 refer to democracies ($\beta_k^{D,P}$ and $\beta_k^{D,N}$ coefficients). To ease interpretation, the IRFs reported in Panels A2 and B2 are constructed using the negative value of the $\beta_k^{A,N}$ and $\beta_k^{D,N}$ coefficients.

The new results indicate that the effects of oil price windfalls estimated from the restricted model in Equation (3) are entirely driven by positive changes in the oil price index in autocracies. That is, oil price windfall gains cause autocratic regimes to implement employment protection deregulation reforms (Panel A1). This effect of positive windfalls is large, statistically significant, and increases throughout the horizon considered. A 1-standard-deviation positive shock induces a reduction of the EPL index worth about 0.6 over a five-year horizon (statistically significant at the 99% confidence level). To put this in context, among autocracies, the median easing reform over a 5-year period is equal to 3.6. A reduction in oil revenues due to a negative price growth also has negative effects on the EPL index—that is, it induces a deregulation—but this effect is not statistically significant (Panel A2).

The picture is different for democracies. Positive windfalls do not have any effects, while negative ones lead to an easing of labor market regulation. This reforming action materializes only gradually. A 1-standard-deviation negative windfall is estimated to induce a reduction of the EPL index of about 0.2 on impact. This effect gradually increases over all the horizons considered, to reach about 1.3 4 years after the shock (statistically significant at the 95% confidence level). This amounts to an important reform in the context of democratic countries, just below the median easing reform implemented over a 5-year period.

This analysis suggests that positive and negative windfalls have different effects on EPL and that these differential effects differ among autocracies and democracies. We

corroborate this asymmetry result by plotting in Figure 5 the difference between the effect of a positive windfall and that of a negative windfall over each year of the horizon considered, using the coefficients estimated from Equation (4). We find that, except at impact, the coefficients estimated for positive and negative windfalls are statistically different from each other at least at the 90% confidence level for both autocracies and democracies.

In the next section, we explore potential channels that could explain the differential effects that we estimate. Before that, however, we perform some additional estimations to verify the robustness of our results.

Robustness Checks and Alternative Specifications

We assess the sensitivity of our results to several different specifications. First, we check that our results are not driven by individual countries and estimate the medium-run effect obtained from the local projection specification allowing for asymmetric effects between positive and negative windfalls (Equation [4], with $k=4$) dropping one country at a time. Figure 6 shows a scatterplot depicting the new estimates, with the y- and x-axis respectively reporting point estimates and p-values. These are close to the full sample baseline and confirm that our results are not driven by individual countries. Most Organization of the Petroleum Exporting Countries (OPEC) members are excluded from the analysis because they are not covered by the EPL database (Angola, Republic of the Congo, Equatorial Guinea, Iran, Iraq, Libya, Qatar, Saudi Arabia, United Arab Emirates). We further verify that the results are robust to excluding all remaining OPEC members in Figure 7.

As another exercise, we check how the estimates are affected under different lag specifications. Specifically, we estimate a model including two lags ($t-1$ and $t-2$) of the first difference of the EPL index as well as a model including the first lag ($t-1$) of the level of the EPL index. The first model accounts for potential serial correlation in the data—if the dependent variable is correlated over time, omitting its lags can lead to serially correlated regression errors and biased and inefficient estimates. The second model introduces an autoregressive component to labor market regulation to capture the possibility that changes in labor market regulation might depend on the past level of regulation.

Estimates from these additional specifications are presented in Figure 8. Those obtained controlling for past changes in EPL are virtually identical to the baseline estimates, while those obtained controlling for the initial level of regulation are qualitatively similar but display some quantitative differences. The medium-term effect of positive windfalls in autocracies and of negative windfalls in democracies are slightly attenuated, but the newly estimated coefficients are still significantly different from zero at the 10% interval. The effect of negative windfalls in autocracies becomes larger and not statistically different from zero, a sign that negative windfalls may be an important driver of labor market regulation also in autocracies. We also check that our results are robust to (i) using a random effects rather than a fixed effects model, and (ii) estimating the effects for autocracies and democracies by splitting the sample into two groups, autocracies and democracies. The results from these alternative specifications are very close to our baseline (available upon request).

Next, we test whether we obtain similar results if we used a variable measuring the extent of oil discoveries, developed by Cotet and Tsui (2013), rather than the oil price windfall variable as an explanatory variable. The results for oil discoveries are fairly similar to those that we obtain for positive oil price windfalls (Figure 9). Oil discoveries induce a large deregulation of EPL in autocracies whereas they do not have any effects in democracies. Somewhat differently from positive oil price windfalls, the effect of oil discoveries in autocracies is immediate and tends to fade out over time.

We also test whether dividing the sample between (i) advanced countries and (ii) emerging markets and developing countries, rather than between autocracies and democracies, give similar results to our baseline, given that the group of democracies contains almost all advanced countries and therefore there is some overlap between the two. We estimate a negative effect of both positive and negative windfalls in emerging and developing countries (Figure 10). However, these effects are rather small and not statistically significant in the case of negative windfalls. For the sample of advanced countries, the response to negative windfalls is similar to the case of democracies, but it is less precisely estimated and weaker. These results suggest that political institutions matter more than economic development in determining the effect of oil price windfalls on labor market regulation.

We next explore whether the effects of oil price windfalls change discretely across autocracies and democracies or whether there is a more linear relationship between the degree of autocracy/democracy and windfalls. We are able to do so by leveraging on the polity2 variable. The polity2 variable varies between -10 and 10 . More negative (positive) polity2 scores denote stronger autocratic (democratic) institutions.

Figure 11 reports medium-run estimates of the asymmetric effects of oil price windfalls in the sample of autocratic and democratic countries as a function of the polity2 variable. These estimates are obtained by estimating an alternative specification of Equation (4), for $k=4$, which includes on the right-hand side of the estimating equation: (i) the positive and negative oil price windfall variables, (ii) the lagged polity2 score, and (iii) the interaction between the oil price windfall variables and the lagged polity2 score. Forward and lagged values of oil price windfalls are also interacted with the polity2 score. The main result is that the negative effect of positive oil price windfalls in autocracies are larger the more the polity2 variable takes negative values, while the negative response to negative windfalls in democracies is larger the more the polity2 variable takes positive values.

In so-called hereditary monarchies (polity2=10), positive windfalls lead to a significant easing of EPL, worth about -1 of the EPL index. The effect for a polity2 score close to 0 is less than half as large and not statistically significant. In regimes that are democratic just on the surface (polity2 score close to 0) the response to negative windfalls is not statistically significant, while in the strongest democratic regimes (polity2=10) the response to a 1-standard-deviation negative windfall is about -1.4 index points 4 years after the windfall and highly statistically significant. We also find that, among autocratic regimes, the less the regime is autocratic the more it responds to a negative windfall by deregulating the labor market (similar to the response of democratic countries). However, the estimated responses to negative windfalls for autocratic countries are not statistically significant for any polity2 score.

These results suggest that political economy considerations may be important in driving the responses to oil price windfalls, in both autocracies and democracies. The more a regime is autocratic, the more the capitalist elite is likely to be closely associated with the government and lobby to liberalize the labor market following positive oil price

windfalls to appropriate the oil rents. At the same time, the more a government is democratic, the more it will find it politically unappealing to deregulate the labor markets in normal times, thus postponing deregulation in times of crisis. We explore political economy considerations as potential drivers of our results more thoroughly in Section 5.

We close this analysis by considering the response of employment protection legislation to other types of windfalls. In particular, we focus on agricultural commodities, which typically generate less rents. Using the dataset assembled by Bazzi and Blattman (2014), who collect price data for 65 commodities and export data for major countries in Africa, the Middle East, Asia, and Latin America, we construct two variables, measuring windfalls for the production of annual and perennial agricultural commodities.⁴ Next, we estimate alternative specifications of Equation (4), in which we replace our baseline oil price windfall variables with these alternative variables. Figure 10 presents new estimates for the effect of annual agricultural commodity windfalls on employment protection legislation. The effects are null. Effects of perennial agricultural windfalls are also null (available upon request).

V. Channels

The analysis conducted so far has shown that autocratic regimes reduce the level of labor market regulation following oil price windfall gains, while democratic governments reduce labor regulation following oil price windfall losses. We find negative but not significant effects from windfall losses in autocracies and no effects from windfall gains in democracies. In this section, we explore some potential transmission channels driving these results. We first discuss the potential transmission channels, then explore how windfalls affect other macroeconomic variables and the probability of experiencing a systemic banking crisis, and conclude with a brief case study analysis.

⁴ These variables exclude price makers.

A. Conceptual Framework

We focus on two sets of non-mutually exclusive explanations, related to political economy and efficiency considerations. One of the main goals of deregulating the labor market is to give employers more flexibility in deciding the optimal allocation of labor. In this sense, deregulation improves labor market efficiency and may attract higher investments, including from foreign investors. However, there are some caveats. First, deregulating the labor market can cause employment losses in the short term, as employers can take advantage of the new rules to dismiss the most unproductive workers (Cacciatore and Fiori 2016). Second, by reducing workers' bargaining power, labor market deregulation reduces wages (Ciminelli, Duval, and Furceri 2022).⁵ Third, and possibly in part due to the effects just described, deregulating the labor market is unpopular (Alesina et al. 2023). Because of these reasons, some governments, particularly those in countries in which democratic institutions are stronger, may be reluctant to implement deregulation reforms and delay them until when they are perceived to be strictly necessary.

Analyzing the effect of oil price windfalls on labor market reforms adds another layer of complexity. If oil price windfall gains induce an expansion of economic activity, they may offer a good window of opportunity to implement a labor market reform, as such reforms tend to have less short-run costs if done during good economic times.⁶ On top of this, political economy considerations may also be relevant. Workers in the oil and related

⁵ There exist several mechanisms through which a reduction in EPL decreases the surplus of the workers. The earlier macroeconomics literature assumes EPL to have a direct effect on bargaining power (Blanchard et al. 1997, Blanchard and Giavazzi 2003). Hence, easing EPL lowers workers' bargaining power and results in workers capturing a lower share of the match surplus. Alternatively, EPL can be thought as a wasteful firing cost in a standard Diamond-Mortensen-Pissarides setting (Mortensen and Pissarides 1994). When wages are re(negotiated), the firm gives workers a wage premium for saving on firing costs today but penalizes them for having to pay firing costs in the future (instance.g., Cacciatore and Fiori 2016). That penalty is the discounted value of future firing costs, which is less than the current value due to time preferences. Hence, EPL increases the worker's share of the match surplus and, in turn, a reform easing EPL decreases it. EPL is also well-known to reduce job turnover (Bentolila and Bertola 1990, Pissarides 2000), which in turn weakens the ability of workers to extract the surplus from a match (Cahuc, Postel-Vinay, and Robin 2006). Ciminelli et al. (2022) analyze the effect of EPL reforms on the wage level and the labor share and find that EPL deregulation unambiguously lowers the wage and lowers the labor share when labor and capital are relative complement.

⁶ A labor market deregulation reform implemented during good economic times may lead employers to expand the labor input knowing that they will have more flexibility to reduce it in the future shall business needs change (Duval et al. 2020).

sectors may try to extract a share of the higher surplus after a windfall gain by demanding higher wages. In response, well-connected capitalists may lobby the government to decrease labor market regulation in order to reduce workers' bargaining power and keep wage pressures in check.

The successful action of capitalist insiders and efficiency considerations (deregulation reforms may carry less short-time costs if implemented during good economic times) may thus be two plausible drivers of the negative effect of oil price windfall gains on labor market regulation in autocracies. In democratic countries, however, political economy considerations are likely to work in the other direction, as governments are focused on being reelected and prefer avoiding passing a reform that would put downward pressure on wages. This would explain why we do not observe a deregulation following a positive windfall gain.

Turning to oil price windfall losses, we find that these cause a sizeable deregulation in democracies while their effects in autocracies, albeit qualitatively similar, are not statistically significant. As discussed above, because of the short-run employment costs and the detrimental effects on wages, democratic governments may be reluctant to liberalize the labor market unless this is perceived to be strictly necessary. Tommasi and Velasco (1996) and Drazen and Grilli (1993) theorize that crises offer a window of opportunity for governments in democratic countries to implement reforms that improve efficiency for the society overall but that may have (high) short-term costs. Duval, Furceri, and Jalles (2021) find strong empirical support for this crisis-induced-reform hypothesis as a driver of employment protection deregulation reforms in a panel of democratic countries. Insofar as oil price windfall losses induce a reduction in economic activity, they may offer a good window of opportunity to implement deregulation reform.

Before moving on to the empirical results of our channels analysis, it is worth noting that many of the countries in our sample have large informal sectors where EPL rules do not bind. This raises the question: why would governments bother reforming EPL in such cases? While informality data is patchy, preventing further sample division based on informality levels, we do have ILO informality data for a few countries. This data shows that informality tends to be much higher in autocracies than in democracies, which helps reinforce our arguments.

First, in democracies, where informality is lower, our main result suggests that negative windfalls lead to labor market reforms. We hypothesize that this is because such windfalls often trigger economic crises, breaking the reform deadlock. If informality were so high that EPL had no impact, it would be harder to believe this hypothesis. However, since informality is lower in democracies, it is more plausible that EPL reforms are triggered by crisis-driven pressures. Second, the fact that informality is higher in autocracies strengthens the argument that rent extraction might drive deregulation in response to positive windfalls. The oil sector, being highly capital-intensive, employs relatively few workers overall but tends to be part of the formal economy. In countries with high informality, the oil sector's share of formal employment becomes more significant. Thus, deregulation in autocracies may be driven by the desire to extract rents from one of the few sectors affected by EPL regulations, reinforcing the plausibility of this hypothesis.

B. The Responses of Macroeconomic Conditions

We test the channels just discussed by expanding our analysis on the effects of oil price windfalls to GDP, the current account balance, the employment rate and oil rents, as well as tax revenues, government expenditures and the budget balance. We estimate the responses of these additional outcome variables by replacing the variable $EPL_{i,t}$ in Equation (4) with, in turn, 100 times the log of real per capita GDP, oil rents (defined as the value of crude oil production minus cost production costs) as a share of GDP, the employment-to-population ratio, the current account balance, tax revenues, primary government expenditures and the primary budget balance (these last four are all measured as a share of GDP).

By examining the response of GDP, employment, the primary balance, and the current account we can shed some light on the importance of efficiency considerations to explain deregulation reforms in autocracies following windfall gains as well as on the validity of the crisis-induced-reform hypothesis to explain deregulation reforms in democracies following windfall losses. By considering the response of oil rents, tax revenues, and government expenditures, we can instead elaborate on the importance of political economy considerations. In another exercise, discussed in the next subsection,

we also investigate whether oil price windfalls affect the probability of a crisis, thus shedding more light on politico-economic channels.

Table 4 summarizes the new results by showing the effect of oil price windfalls on the additional dependent variables at impact, 2 and 4 years after the windfalls. Appendix Figures A1-A7 show full-horizon impulse responses. We discuss the results in detail further below. In short, these suggest that political economy and efficiency considerations might both be important in explaining the result that autocratic regimes deregulate the labor market following positive windfalls. On the other hand, political economy considerations appear to be the main driver of the response to labor market regulation following oil price windfalls in democracies.

Starting with autocratic regimes, we find that positive windfalls do boost oil rents, which might lead well-connected capitalists to lobby for deregulation to keep wage pressures in check and appropriate a larger share of the rents. However, GDP and the employment rate, which exhibit muted responses on impact, gradually increase over the rest of the horizon considered, suggesting that deregulating the labor market after positive windfalls effectively stimulates employment and improves overall economic efficiency in the medium-term, while minimizing short-term costs. Tax revenues increase sharply on impact and keep increasing up to 2 years after the windfall, leading to an important short-term improvement of the budget balance.

These results suggest that economic efficiency considerations might have some bearing on the decision of autocratic regimes to liberalize the labor market following positive windfalls. Another possibility is that the prime goal of deregulating is to keep wage pressures in check and that this deregulation then has the secondary effect of increasing employment and GDP. Unfortunately, we are unable to shed further light on which is the dominant channel.

Turning to democratic countries, our results suggest that political economy considerations may be important in driving the (lack of a) response of the labor market regulation index to oil price windfalls. First, we find that government expenditures increase after positive windfalls, but with a lag, suggesting that democratic governments use the higher tax revenues stemming from the windfall (which instead materialize on impact) to redistribute parts of the oil rents more widely to the population. Hence, not only do

democratic governments give up the efficiency benefits that instead materialize in autocracies following the liberalization of the labor market after positive windfalls, they also redistribute the higher oil rents by increasing expenditures. Second, although we do not find that negative windfalls lead to an economic recession, they sharply deteriorate the current account and budget balances. This supports the crisis-induced-reform hypothesis, according to which the political economy of structural reforms in democratic countries is such that reforms are delayed until a crisis hits. The Appendix discusses the full set of the new estimates in detail.

C. Probability of a Systemic Banking Crisis

We next test whether oil price windfalls affect the probability of a systemic banking crisis, using the data compiled by Laeven and Valencia (2018). We do so to corroborate the crisis-induced-reform hypothesis to explain a deregulation effort following negative windfalls in democracies. Systemic banking crises are defined as episodes in which the following two criteria are met: (i) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations) and (ii) significant banking policy intervention measures in response to significant losses in the banking system.

We estimate probit, logit, and conditional logit models where the dependent variable takes value 1 if a crisis occurs in either year t or $t+1$, the explanatory variables are oil price windfalls at year t as well as leads (oil price windfalls at year $t+1$) and lags (oil price windfalls at year $t-1$ and $t-2$) and lagged log GDP per capita, consistent with the local projection specification.⁷ Given that including time and country fixed effects results in some observations being lost (if they are entirely predicted by the regressors), we estimate multiple variations of the same model with different fixed effect structures.

We find that a negative windfall in democracies increases the probability of experiencing a banking crisis within the same year or the year after (Table 5). This result

⁷ Results from probit and logit models with unit fixed effects can be biased due to the incidental parameter problem (Lancaster 2000). To address this concern, we estimate conditional logit models, which yield consistent estimates in the presence of fixed effects (Wooldridge 2010). The downside of conditional logit models is that they cannot be used to derive marginal effects.

is robust across the nine different models considered, with very stable estimates obtained by the logit and conditional logit models. To get an idea of the economic importance of the estimated coefficients, we calculate marginal effects at the means of the explanatory variables (Table 6). These suggest that a 1-standard-deviation negative windfall may increase the probability of a banking crisis by three to four percentage points. Positive windfalls in democracies do not have a significant impact, nor do windfalls in autocracies (whether positive or negative).

Overall, this exercise suggests that negative oil price windfalls in democracies may precipitate a banking crisis. What could be the transmission channels? In an economy where the oil sector is large, financial institutions are heavily exposed to the oil sector through lending to oil companies, projects, or infrastructure. A sustained fall in oil prices can cause widespread loan defaults within the oil sector, with direct knock-on effects on banks. The Texas banking crisis of the 1980s is a reminder of the interconnectedness between oil companies and banks and how distress in the oil sector can spill over to the banking sector. The oil price boom of the late 1970s and early 1980s fueled rapid expansion in the Texas economy, with banks heavily lending to the energy sector and commercial real estate. However, the sharp decline in oil prices after 1982, combined with an overbuilt commercial real estate sector, led to widespread financial instability among banks. Between 1983 and 1989, 349 commercial banks in Texas failed, and an additional 76 required assistance from the Federal Deposit Insurance Corporation (FDIC).⁸

D. Case Studies

This section conducts a brief case study analysis to explore how oil windfalls have led to changes in labor regulation in practice. We consider two cases—the large deregulation reform of December 1999 in Kazakhstan—an autocratic country—and the smaller, although still significant, deregulation of December 2002 in Colombia—a democratic country. Kazakhstan is a case study that is in line with our empirical finding that positive oil price windfalls lead to labor market deregulation in autocracies. Colombia is a case

⁸ FDIC (1997) has a detailed account.

study that is in line with our empirical finding that negative oil price windfalls lead to deregulation in democracies.

The Influence of Oil Majors in the Sweeping 1999 Labor Market Deregulation in Kazakhstan

Kazakhstan implemented a sweeping deregulation of the labor market in December 1999. The reform must be interpreted in the context of the broader reform effort undertaken by Kazakhstan's authorities in the 1990s, as the country gained independence from the Soviet Union and opened up to the global economy. This brief review focuses on the role of oil price windfalls and oil majors in influencing the scope of the labor market deregulation reform.

Although the first oil discovery in Kazakhstan dates back to 1899 (Karashungul field), it was with Kazakhstan's independence from the Soviet Union that it started developing its oil production capacity. By the late 1990s, Kazakhstan was seeing significant oil windfalls as production ramped up, from about 300,000 barrels per day in 1994 to 800,000 barrels per day by 2001. The discovery of Kashagan in 2000, one of the largest oil fields in the world, further boosted the country's oil reserves. Oil production reached 1,200,000 barrels per day by 2004 (Esanov 2006). On the political front, Kazakhstan was ruled by Nursultan Nazarbayev, who was elected the country's first president in 1991. Nazarbayev's rule was characterized by autocratic governance. His government controlled the media, restricted opposition parties, and maintained tight control over the political system. Elections held during his tenure were often noted by international observers as lacking competitiveness and transparency.

The 1990s were particularly pivotal for Kazakhstan, as its economic structure was entirely reformed, and the country opened up to foreign investment. Of particular significance was the Tengizchevroil joint venture in 1993, which brought in Chevron and other international oil companies. According to some accounts, oil majors had an important role in pushing the government to liberalize the labor market (Sorbello 2023). At independence, Kazakhstan inherited a Soviet labor relations system, characterized by centralized wage-setting, rigid employment guarantees, and trade unions closely tied to the state.

The 1999 labor code reform allowed for more flexible employment contracts, easier dismissal procedures, and short-term labor arrangements. Pressure from domestic elites and foreign oil companies played a significant role in shaping the reforms. Oil majors demanded labor flexibility to manage their operations efficiently, particularly in capital-intensive projects like the Tengiz oil field. Their influence led to a labor market model that prioritized cost efficiency, flexibility in hiring and firing, and the widespread use of manpower agencies (Sorbello 2023). The centralization of political power meant that the government could implement labor deregulation with minimal opposition from workers or unions, which were often weakened by top-down control. The EPL indicator of Ciminelli and Furceri (forthcoming) captures the 1999 reform as a decrease of 27 index points (out of a 0–100 scale). This is a large reform, which falls within the upper decile of all deregulation reforms in our sample.

The Crisis-Induced 2002 Deregulation Reform in Colombia

The case of the labor market deregulation reform decided by the Government of Colombia in December 2002 is very different from that of Kazakhstan just reviewed, as it was implemented in by a democratic government in response to a major economic crisis that greatly increased the unemployment rate. In the years leading up to the reform, the oil price crashed by over 60% over 1997–1998. It later slowly recovered throughout 1999–2002, reaching its end-1996 level in December 2002, the month of the reform. Given the delay with which reforms are undertaken in democracies in response to negative windfalls (we estimate the peak effect to be 4 years after the windfall), we see the 1997–1998 oil price crash to be the driver of the liberalizing reform.

Colombia has been producing oil since the early 20th century and at the end of the 1990s was one of the leading oil producers in Latin America, reaching production of around 700,000 barrels per day of oil in 1999 (Perry and Olivera 2009). A significant portion of Colombia’s oil production was exported, making oil one of the country’s main export commodities and contributing to a substantial part of Colombia’s foreign exchange earnings. As a result of the Asian financial crisis of 1997 and of the Russian debt default of 1998, global demand for oil and other commodities decreased. From its end-1996 peak to its end-1998 trough, the oil price crashed by over 60%. In 1999, Colombia experienced

one of its worst-ever economic crises, with the GDP contracting by over 4% and the unemployment rate rising to over 20%, from just over 12% in 1997. The crisis also led to troubles in the financial sector, with local banks facing significant instability and solvency problems.

The economic crisis precipitated a sense of urgency to implement economic reforms. By 2002, the unemployment rate was still around 16%, twice as much the level in the mid-1990s. The 2002 labor market reform in Colombia, embodied in Law 789, was motivated by the need to address the country's high unemployment and labor market informality. Given the narrow focus of the indicator of Ciminelli and Furceri (forthcoming) on employment protection legislation and the fact that only severance payments were reformed in this area, the reform is worth just a 2-index point decrease index. But the reform is considerably more significant if other areas of labor market regulation are considered, as it introduced greater labor market flexibility in hiring and firing by making it easier for employers to lay off workers in temporary contracts, reduced labor costs by modifying overtime pay rules, and incentivized hiring through apprenticeship programs. The success of the reform is debated (Gaviria 2005), but Colombia did see a gradual labor market recovery over the subsequent years, with the unemployment rate slowing to 11% by 2007.

VI. Conclusion

The role of natural resources in shaping institutions is an important topic in development economics. In this paper, we focused on oil and took a first stab at analyzing the effects of oil price windfalls on labor market regulation. Basic international trade theory suggests that for an oil-exporting country with perfectly competitive factor markets, an increase in the international oil price leads to an increase in the rental rate relative to wages. However, if markets are not competitive, in particular, if there is significant employment protection legislation, workers have the bargaining power to bid up their wages.

Combining a novel database of employment protection legislation with information on plausibly exogenous oil price windfalls, we found that the effects of oil price windfalls on labor market institutions are different between autocracies and democracies. Among

the former, oil price windfall gains lead to a weakening of employment protection. This effect is persistent over the medium term. On the other hand, oil price windfall gains have no effect on labor market regulation in democratic countries. At the same time, oil price windfall losses lead to substantial job protection deregulation in democracies, while they have limited effects in autocracies.

We considered two sets of explanations, one based on political economy and the other on efficiency considerations, as potential drivers of our results. One explanation is that governments in autocratic regimes recognize that there are efficiency gains that materialize when there is a deregulation of the labor market. Such an interpretation would be in line with the view that competitive markets achieve efficient allocation. Given that deregulating the labor market can cause employment losses in the short term, oil price windfalls may offer a good window of opportunity for governments to implement labor market deregulation, as implementing such reforms during good economic times might reduce its short-run costs.

The other set of explanations is based on political economy considerations. On the one hand, after an oil windfall, capital owners may lobby the government to loosen up labor market regulation to weaken the bargaining power of workers and appropriate a larger share of the rents stemming from the higher oil price. Given that in autocracies elections either do not take place or do not carry a real threat to the ruling elite, such lobbying activities may be successful. In democratic countries, instead, governing parties face reelection and therefore need to consider how much a weakening of labor market institutions would dampen their reelection prospects. Reforms are then delayed until they are perceived as a last-resort option, which is when a crisis hits.

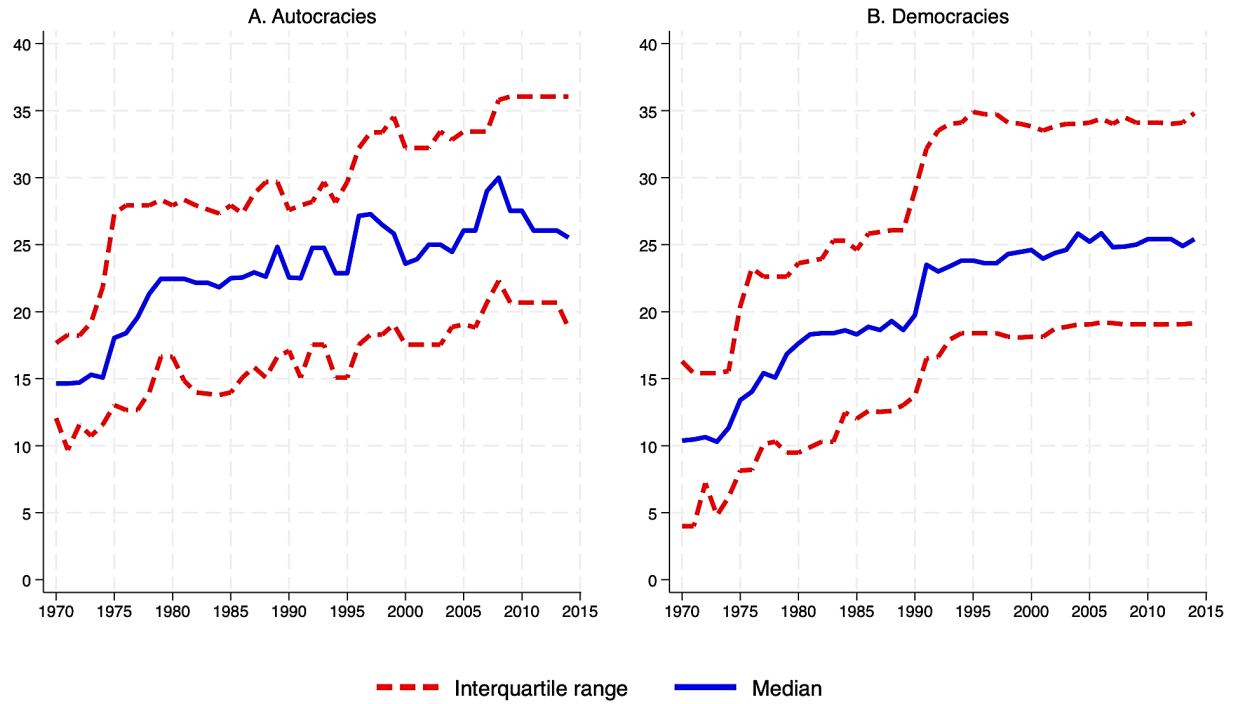
To shed light on these potential transmission channels, we went beyond employment protection and explored the effect of oil price windfalls on a range of other outcome variables. Positive oil price windfalls generate important rents. In democracies, tax revenues go up after the windfall and governments increase expenditures, possibly to redistribute parts of these rents to the wider population. In autocracies, instead, there is no rent redistribution through higher expenditures, but we find that GDP and the employment rate both increase in the medium term after a positive windfall, which is not the case in democracies. These results suggest that, while the response of democracies

to a positive windfall seems to be rent redistribution, efficiency, and rent extraction can both explain the deregulation of the labor market following positive windfalls in autocracies. On the other hand, the crisis-induced-reform hypothesis appears to be a valid explanation for the deregulation of the labor market following windfall losses in democracies, as we find negative oil price windfalls to sharply deteriorate the current account and the budget balance and substantially increase the probability of a systemic banking crisis in these countries.

Employment protection legislation is just one aspect of labor market institutions. We focused on it for the sake of identification purposes, but the point is more general. Future research should go beyond employment protection and assess the role of natural resources on other institutions affecting the distribution of income between labor and capital.

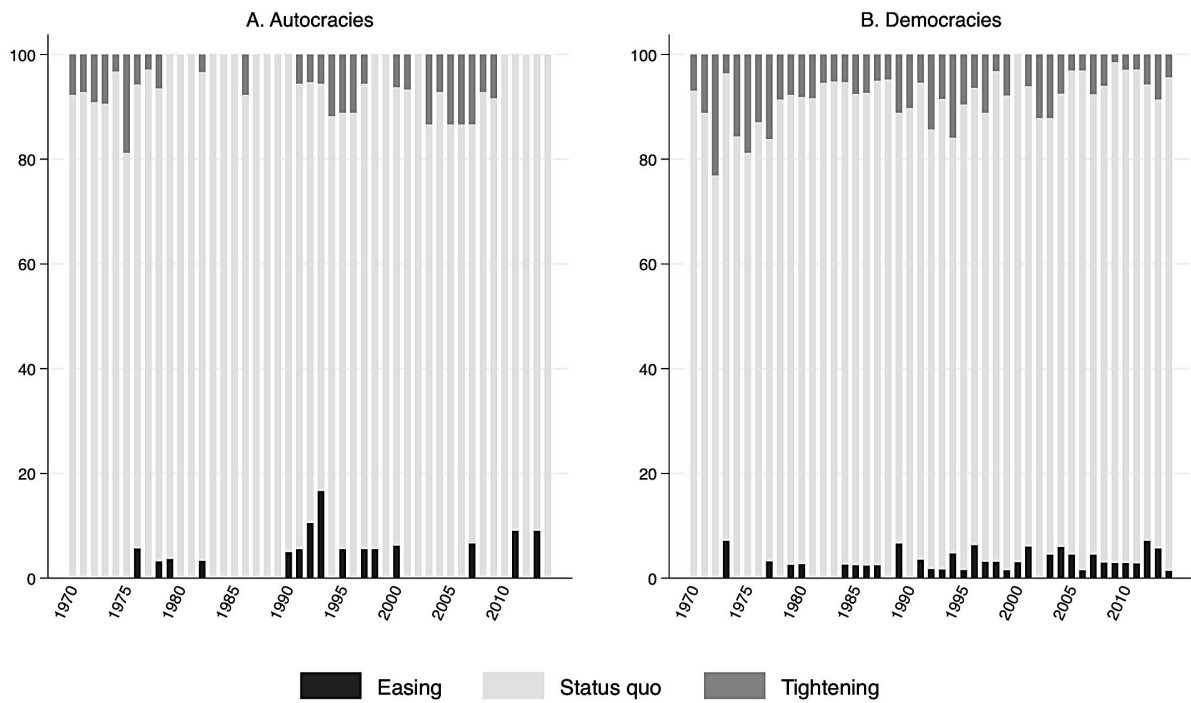
FIGURES AND TABLES

Figure 1: Evolution of Employment Protection Legislation over Time



Notes: Median and interquartile range of the employment protection legislation index of Ciminelli and Furceri (forthcoming) for the samples of autocratic and democratic countries over the time sample considered in this paper. The index ranges from 0 to 1, with higher values indicating higher employment protection.
Source: Authors' calculations based on data from Ciminelli and Furceri (forthcoming).

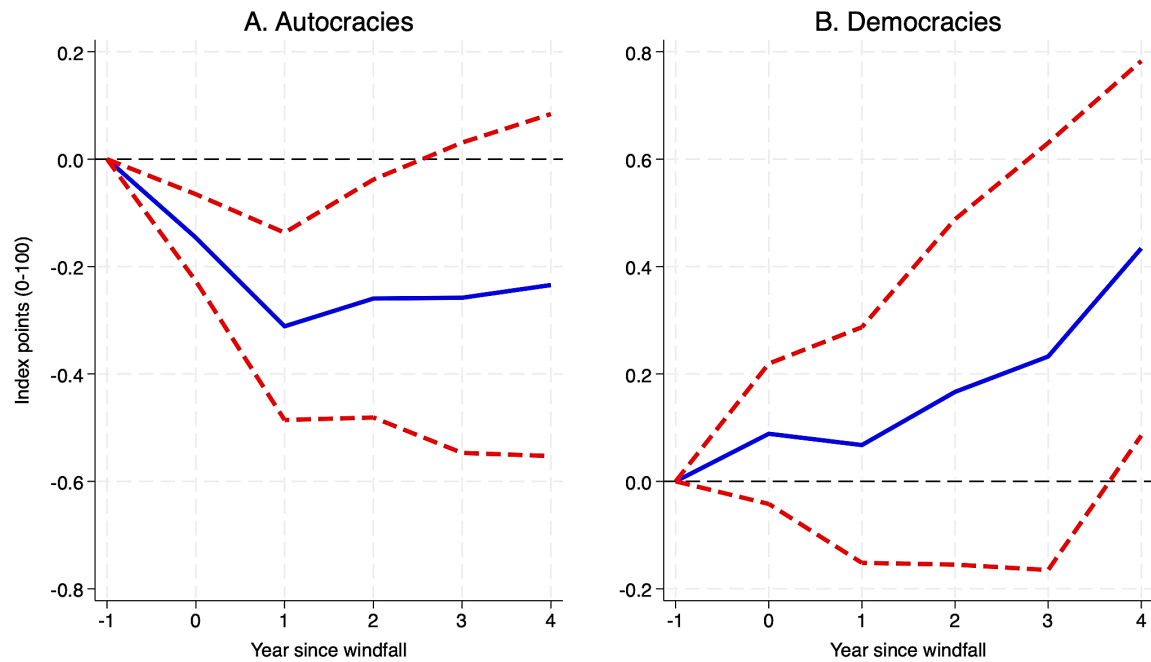
Figure 2: Frequency of Reforms over Time
(as % of total observations)



Notes: Frequency (in %) of negative changes (easing), no changes (status quo) and positive changes (tightening) of the employment protection legislation index of Ciminelli and Furceri (forthcoming) for the sample of autocratic and democratic countries and for each year of the analysis. Higher values of the index indicate higher employment protection.

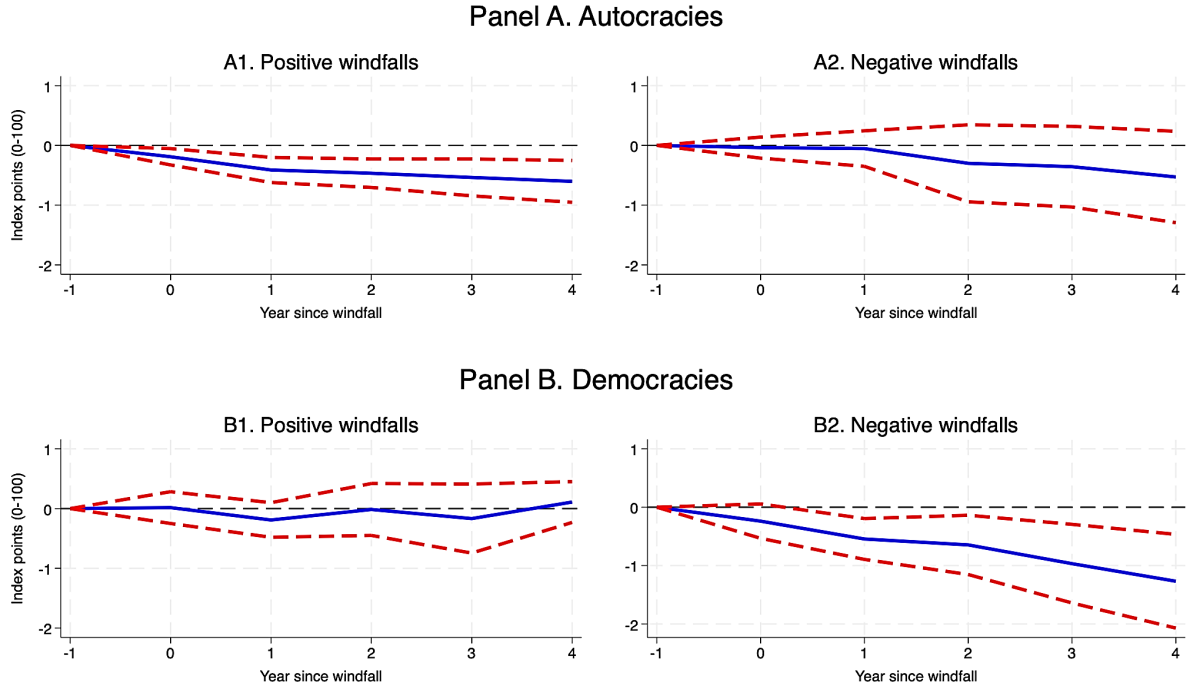
Source: Authors' calculations based on data from Ciminelli and Furceri (forthcoming).

Figure 3: Dynamic Effects of Oil Price Windfalls on the Employment Protection Legislation Index



Notes: Effect of a 1-standard-deviation oil price windfall on the employment protection legislation index over a 5-year horizon in autocracies (Panel A) and democracies (Panel B). X-axes denote the horizon of the effect, with 0 indicating the year of the windfall, while Y-axes denote the magnitude of the effect. Blue solid lines report the point estimates, while red dashed lines are 90% confidence bands. Estimates are obtained plotting the β_k^A (Panel A) and β_k^D (Panel B) coefficients and their standard errors estimated from Equation (3). Source: Authors' calculations.

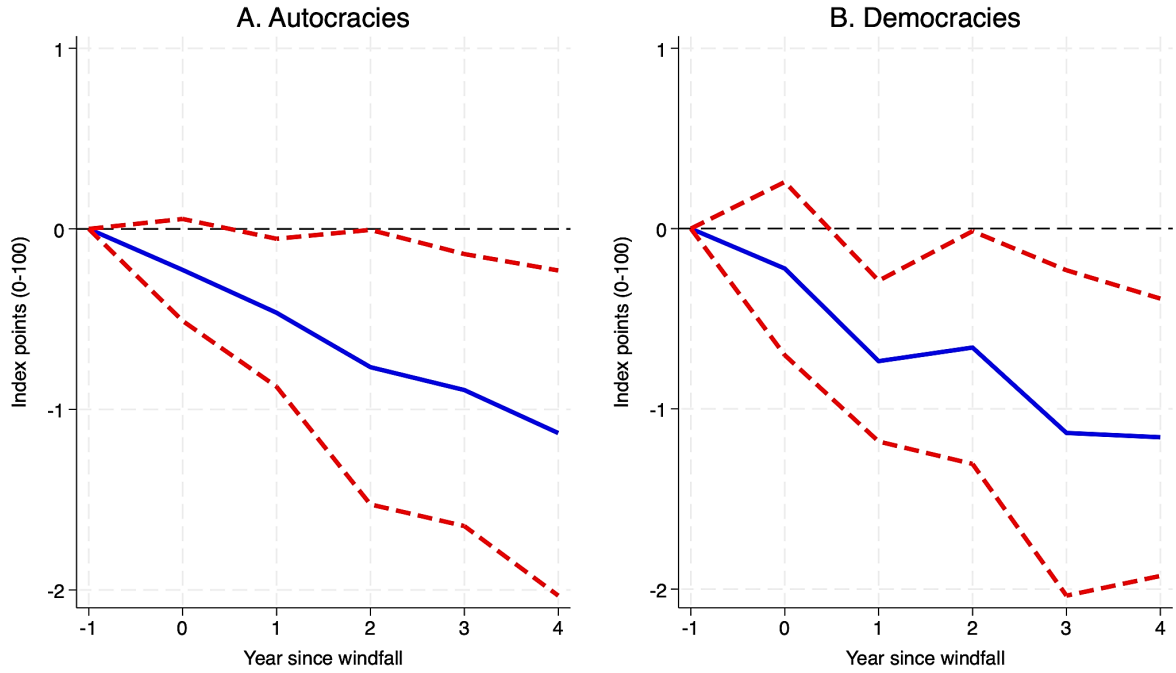
Figure 4: Asymmetric Effects of Oil Price Windfalls on the Employment Protection Legislation Index



Notes: Effect of a 1-standard-deviation negative and positive oil price windfalls on the employment protection legislation index over a 5-year horizon in autocracies and democracies. Estimates are obtained plotting the $\beta_k^{A,P}$ and $\beta_k^{A,N}$ (Panel A) and $\beta_k^{D,P}$ and $\beta_k^{D,N}$ (Panel B) coefficients and their standard errors estimated from Equation (4). See notes in Figure 3.

Source: Authors' calculations.

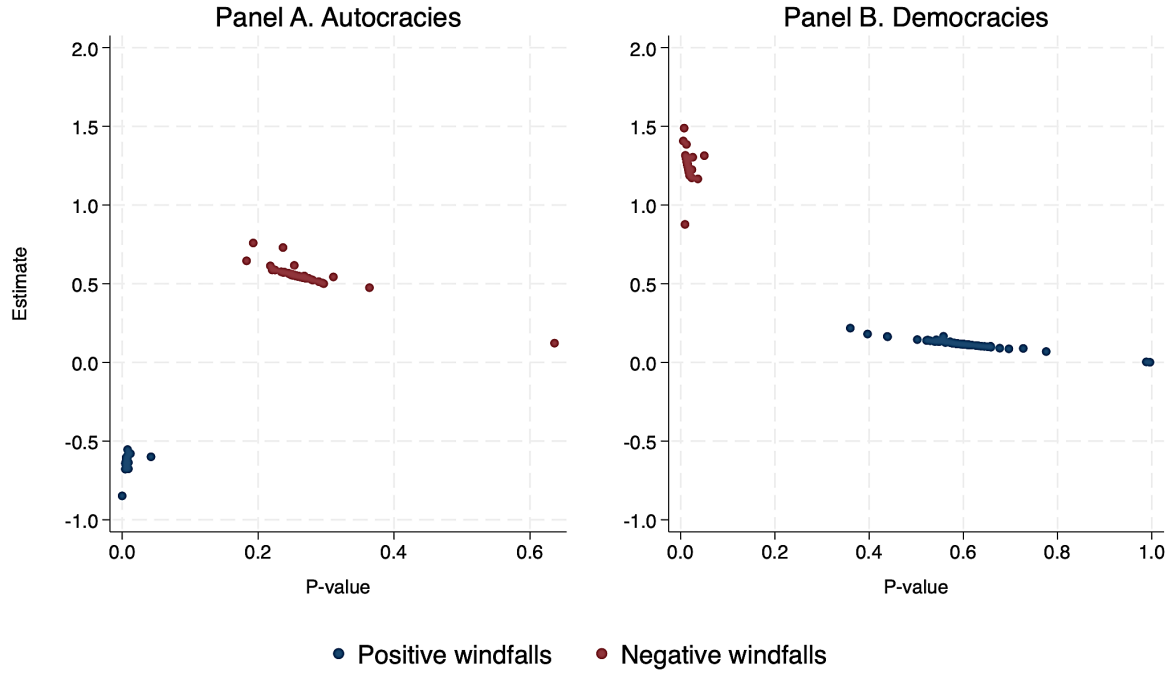
Figure 5: Differential Effects of Positive and Negative Oil Price Windfalls



Notes: Difference between the coefficients estimated for the effect of positive and negative windfalls on the employment protection legislation index over a 5-year horizon in autocracies and democracies. Estimates are obtained by plotting the $\beta_k^{A,P} - \beta_k^{A,N}$ (Panel A) and $\beta_k^{D,P} - \beta_k^{D,N}$ (Panel B) combinations of the coefficients estimated from Equation (4). See notes in Figure 3.

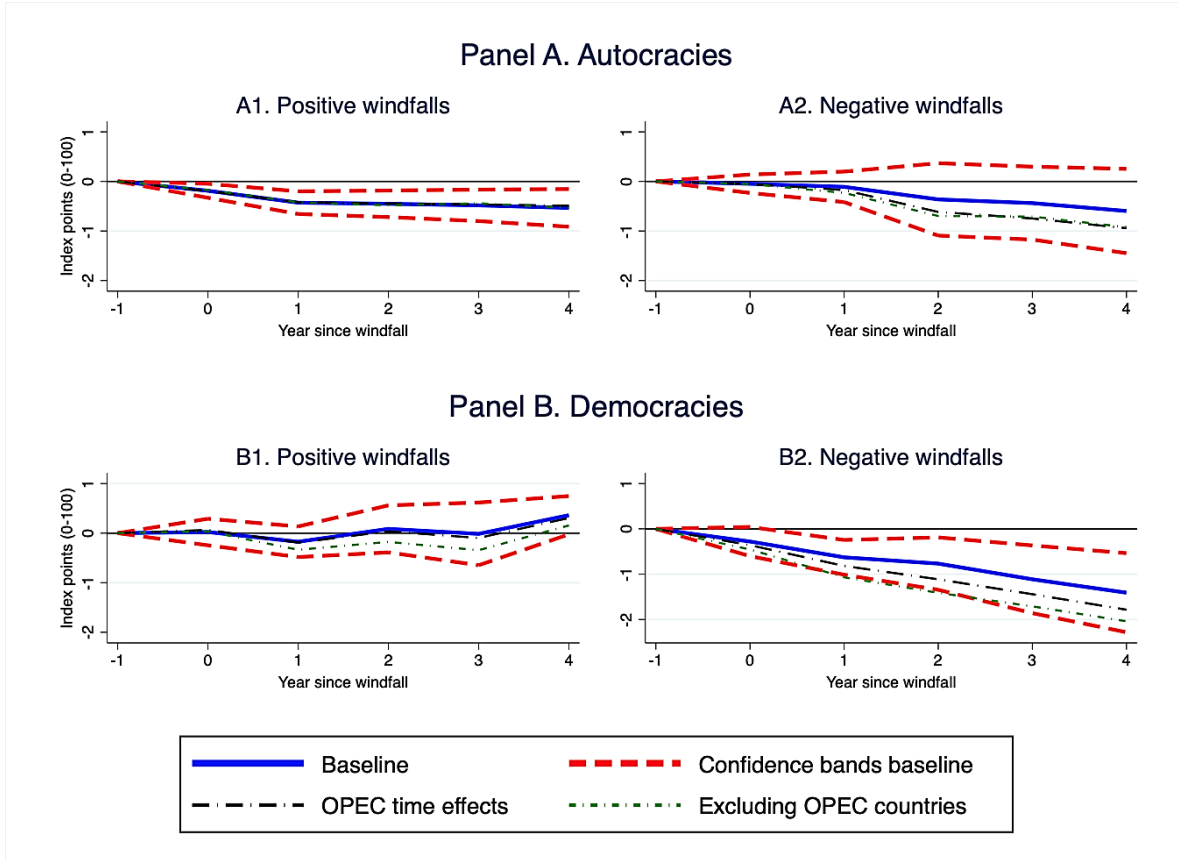
Source: Authors' calculations.

Figure 6: Robustness Check on Country Sample



Notes: Point estimates (y-axes) and p-values (x-axes) of the medium-term effect of positive and negative oil price windfalls on the employment protection legislation index obtained from a robustness check exercise in which each country is excluded from the sample one at a time. The estimating equation is Equation (4) with $k=4$. Blue (red) dots report estimates of the $\beta_k^{A,P}$ ($\beta_k^{A,N}$) (Panel A) and $\beta_k^{D,P}$ ($\beta_k^{D,N}$) (Panel B) coefficients.
Source: Authors' calculations.

Figure 7: Robustness Check on OPEC Countries

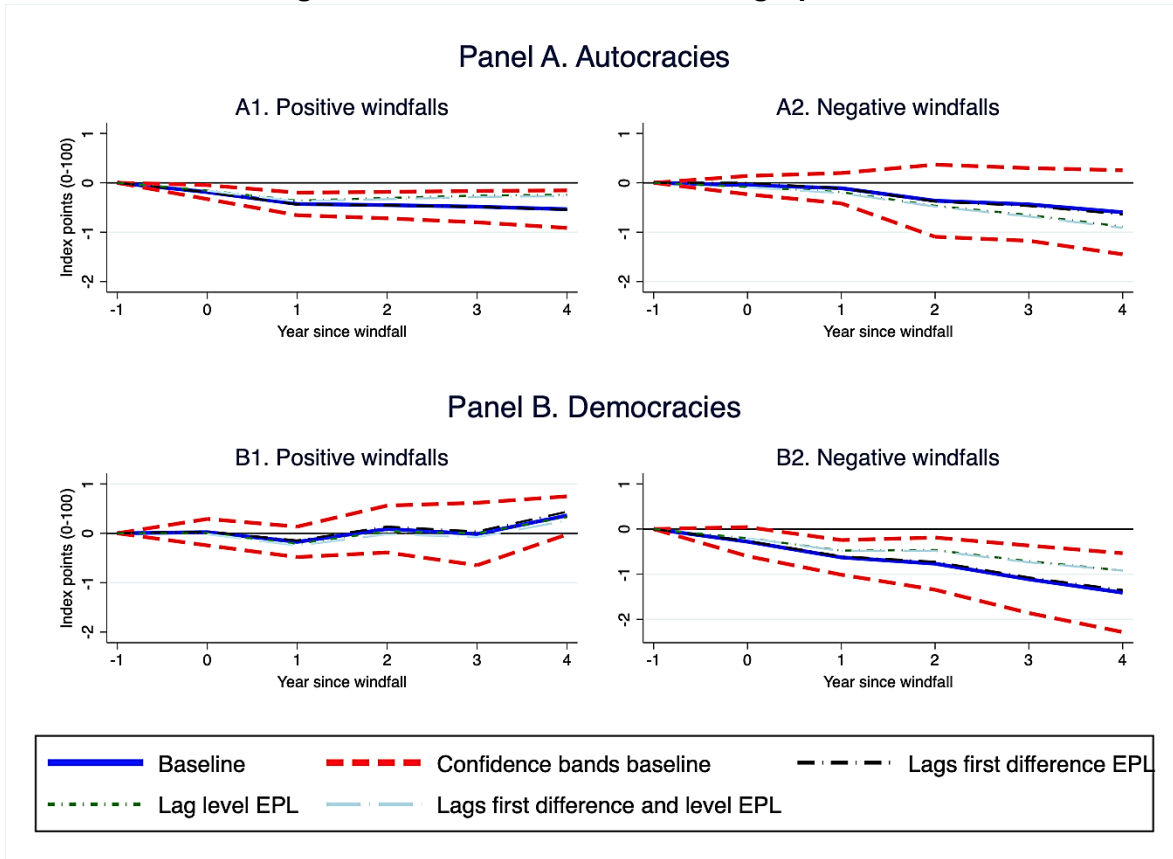


OPEC = Organization of Petroleum Exporting Countries.

Notes: Effect of a 1-standard-deviation oil price windfall on the employment protection legislation index over a 5-year horizon on the sample of autocracies (Panel A) and democracies (Panel B). Baseline estimates are obtained plotting the $\beta_k^{A,P}$ and $\beta_k^{A,N}$ (Panel A) and $\beta_k^{D,P}$ and $\beta_k^{D,N}$ (Panel B) coefficients and their standard errors estimated from Equation (4). OPEC time effects estimates are obtained estimating an alternative specification of Equation (4) where specific time effects for OPEC countries are included. See notes in Figure 3.

Source: Authors' calculations.

Figure 8: Robustness Check on Lag Specification



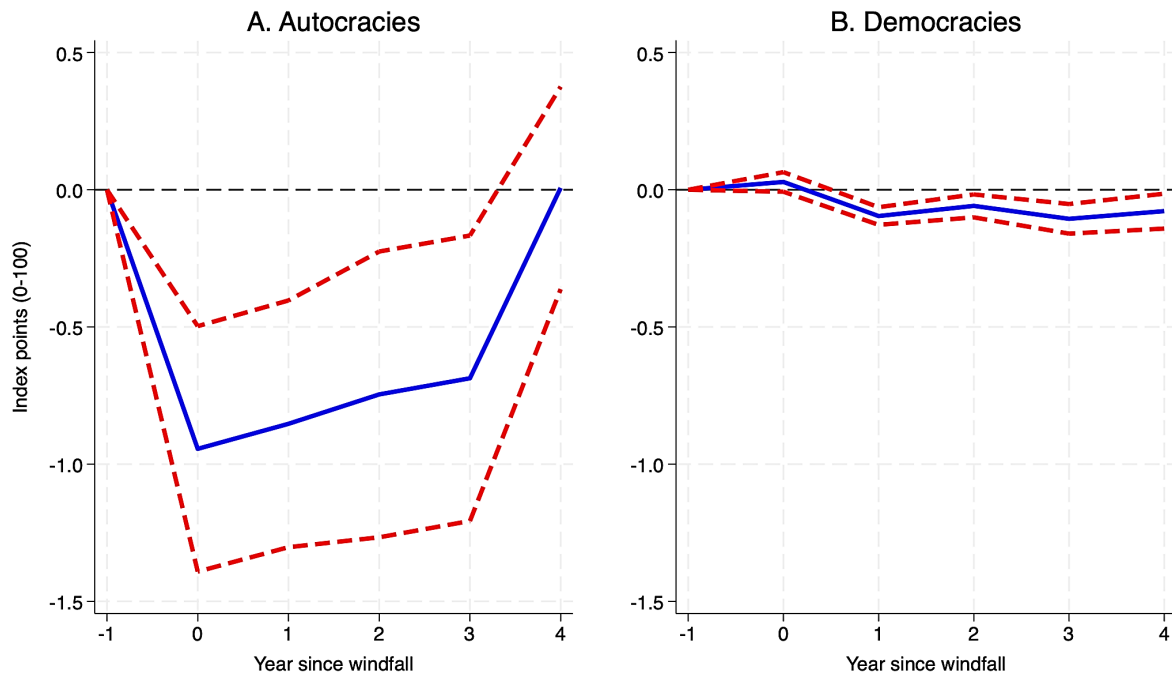
EPL = employment protection legislation.

Notes: Effect of a 1-standard-deviation oil price windfall on the employment protection legislation index over a 5-year horizon on the sample of autocracies (Panel A) and democracies (Panel B). Baseline estimates are obtained plotting the $\beta_k^{A,P}$ and $\beta_k^{A,N}$ (Panel A) and $\beta_k^{D,P}$ and $\beta_k^{D,N}$ (Panel B) coefficients and their standard errors estimated from Equation (4). Lags first difference EPL estimates are obtained including two lags of the 1-period change in of the EPL indicator as additional regressors. Lag level EPL estimates are obtained including the lag of the EPL indicator as additional regressor.

See notes in Figure 3.

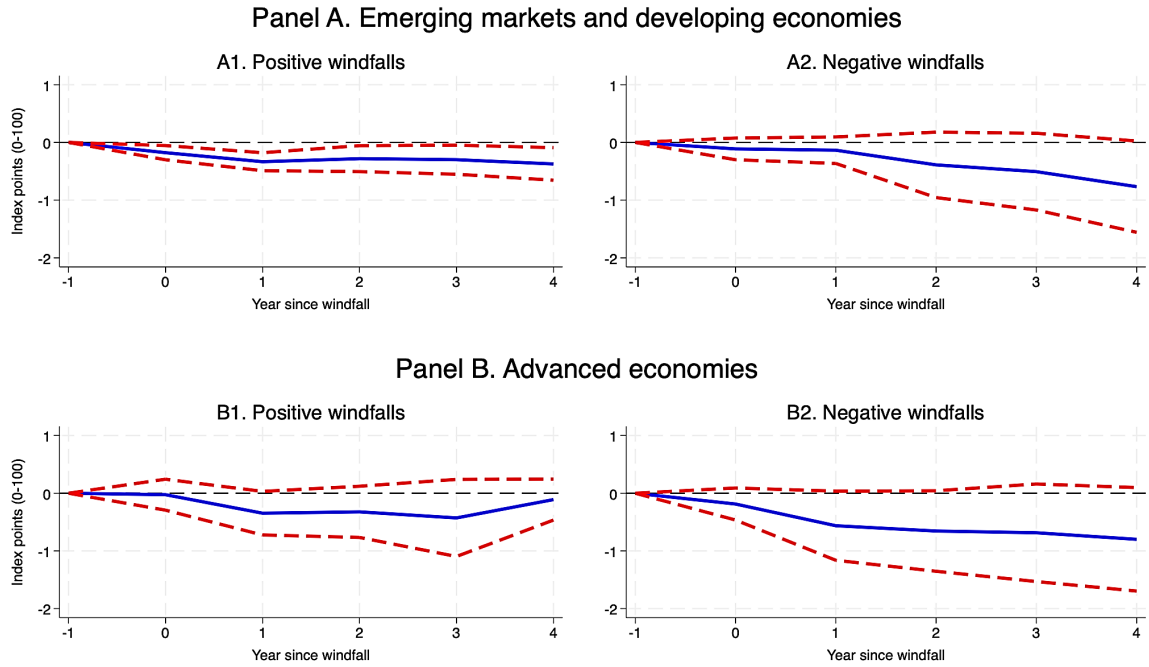
Source: Authors' calculations.

Figure 9: Effects of New Oil Discoveries on Employment Protection Legislation



Notes: Effect of a 1-standard deviation new oil discovery on the employment protection legislation index over a 5-year horizon in autocracies and democracies. Estimates are obtained β_k^A (Panel A) and β_k^D (Panel B) coefficients and their standard errors estimated from an alternative specification of Equation (3) in which the oil price windfall variable is replaced by the oil discovery variable of Cotet and Tsui (2013). See notes in Figure 3.
Source: Authors' calculations.

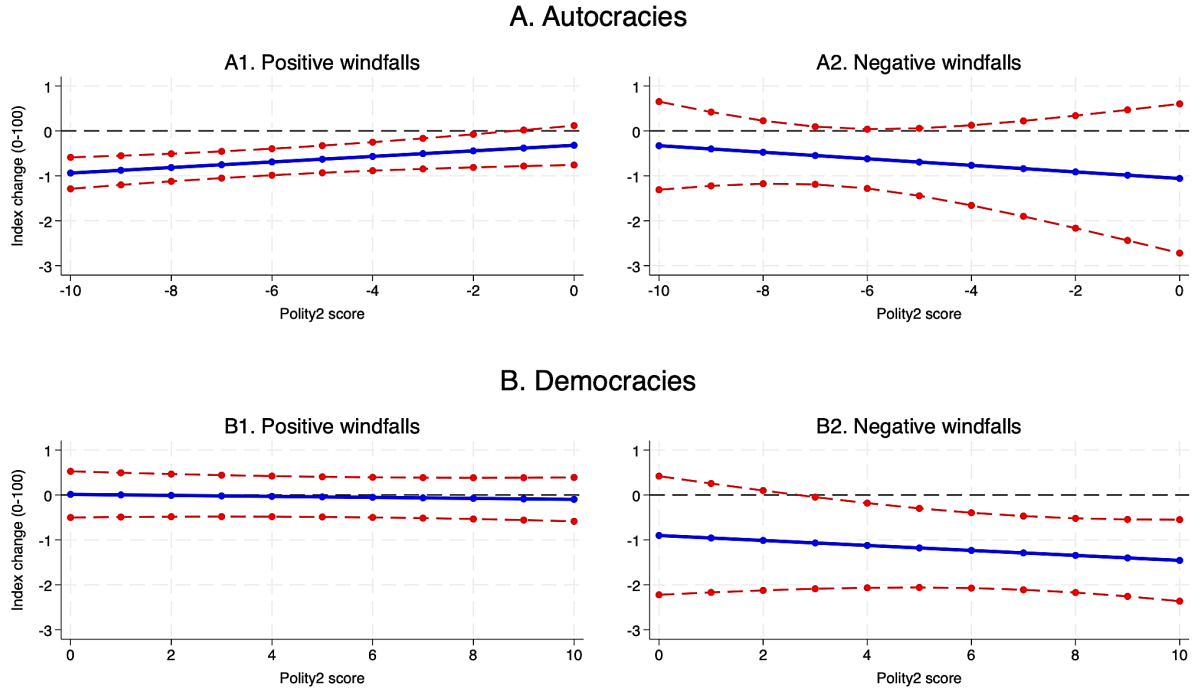
Figure 10: Effects of Oil Price Windfalls on Employment Protection Legislation—By Income Level



Notes: Effect of a 1-standard-deviation oil price windfall on the employment protection legislation index over a 5-year horizon on the sample of emerging markets and developing countries (EMDEs, Panel A) and advanced countries (AEs, Panel B). Estimates are obtained plotting the $\beta_k^{A,P}$ and $\beta_k^{A,N}$ (Panel A) and $\beta_k^{D,P}$ and $\beta_k^{D,N}$ (Panel B) coefficients and their standard errors estimated from an alternative specification of Equation (4) in which the superscripts A and D denote EMDEs and AEs respectively. See notes in Figure 3.

Source: Authors' calculations.

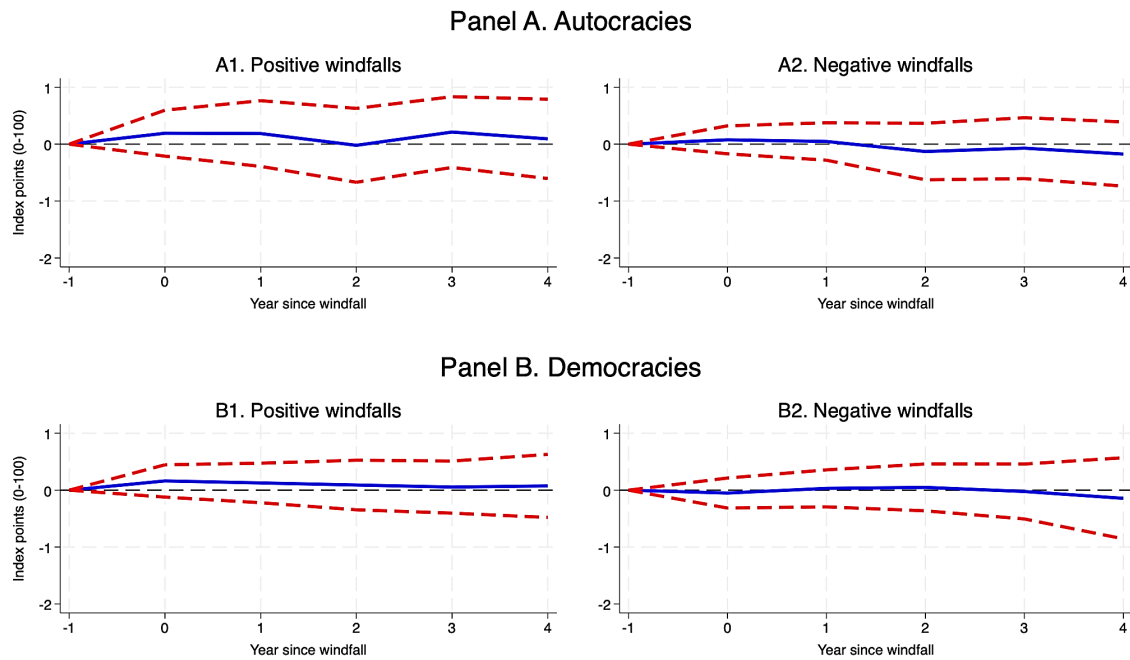
Figure 11: Medium-Term Effects of Oil Price Windfalls on Employment Protection Legislation Depending on the Level of Autocracy/Democracy (Interaction Model)



Notes: 5-year effects of a 1-standard-deviation positive and negative oil price windfalls on the employment protection legislation index depending on the score of the Polity2 variable in autocracies and democracies. Y-axes report the magnitude of the effects. X-axes report the Polity2 score. Estimates are obtained from taking a linear combination of coefficients estimated from an extended specification of Equation (4) including the oil price windfall variables $\Delta oil_{i,t}^{A,P}$, $\Delta oil_{i,t}^{D,P}$, $\Delta oil_{i,t}^{A,N}$ and $\Delta oil_{i,t}^{D,N}$, the lagged Polity2 variable and their interactions. Blue dots are point estimates. Red dots are 90% confidence bands obtained through Huber robust standard errors clustered at the country level.

Source: Authors' calculations.

Figure 12: Effects of Agricultural Commodities Price Windfalls on Employment Protection Legislation



Notes: Effects of a 1-standard-deviation positive and negative agricultural commodities price windfalls on the employment protection legislation index over a 5-year horizon on the sample of autocracies and democracies. Estimates are obtained plotting the $\beta_k^{A,P}$ and $\beta_k^{A,N}$ (Panel A) and $\beta_k^{D,P}$ and $\beta_k^{D,N}$ (Panel B) coefficients and their standard errors estimated from an alternative specification of Equation (4) in which the oil price windfall variables are replaced variables denoting annual agricultural commodity price windfalls, assembled in Bazzi and Blattman (2014). See notes in Figure 3.
Source: Authors' calculations.

Table 1: Descriptive Statistics of Employment Protection Legislation Index

	A. AUTOCRACIES					B. DEMOCRACIES				
	Obs.	Media n	S.d.	Min	Max	Obs.	Media n	S.d.	Min	Max
Index	974	21.82	10.70	2.17	58.17	2327	23.25	11.48	2.00	58.15
Tightening	46	3.97	7.80	0.01	30.61	171	2.04	6.19	0.01	39.13
Easing	19	-3.70	6.73	-22.31	-0.20	65	-1.48	3.84	-23.33	-0.02

Notes: The table reports descriptive statistics of the employment protection legislation index of Ciminelli and Furceri (forthcoming) for the two samples of autocracies (polity2 score below 0, Panel A) and democracies (polity2 score above 0, Panel B). The row denoted by Index shows statistics for the level of the index. Rows denoted by easing and tightening report statistics for, respectively, negative and positive changes of the index. The index ranges on a scale from 0 to 100, with higher values indicating more employment protection.

Source: Authors' calculations based on data from Ciminelli and Furceri (forthcoming).

Table 2: Descriptive Statistics of Oil Price Windfalls

	A. AUTOCRACIES					B. DEMOCRACIES				
	Obs.	Median	S.d.	Min	Max	Obs.	Median	S.d.	Min	Max
Positive	594	0.12	1.41	0.00	13.74	1378	0.10	0.83	0.00	12.77
Negative	410	-0.06	1.00	-6.99	0.00	952	0.04	0.55	-7.62	0.00

Notes: The table reports descriptive statistics of oil price windfalls for the two samples of autocracies (polity2 score below 0, Panel A) and democracies (polity2 score above 0, Panel B).

Source: Authors' calculations.

Table 3: Effect of Oil Price Windfalls on Changes in Employment Protection Legislation

A. AUTOCRACIES						
	(1)	(2)	(3)	(4)	(5)	(6)
Oil windfall	-0.20*** (0.08)	-0.23** (0.09)			-0.17** (0.07)	-0.20*** (0.07)
Oil windfall, lag 1			-0.10** (0.04)	-0.10*** (0.04)	-0.10*** (0.04)	-0.11*** (0.04)
Observations	915	915	884	884	878	878
R-squared	0.08	0.08	0.06	0.06	0.07	0.08
Model	RE	FE	RE	FE	RE	FE
B. DEMOCRACIES						
	(1)	(2)	(3)	(4)	(5)	(6)
Oil windfall	0.08 (0.06)	0.05 (0.06)			0.08 (0.06)	0.04 (0.07)
Oil windfall, lag 1			-0.01 (0.04)	-0.04 (0.04)	-0.01 (0.04)	-0.04 (0.04)
Observations	2,278	2,278	2,243	2,243	2,243	2,243
R-squared	0.05	0.05	0.05	0.05	0.05	0.05
Model	RE	FE	RE	FE	RE	FE

Notes: Estimates of the contemporaneous and lagged effects of oil price windfalls on changes of the employment protection legislation index, obtained estimating a random effects (Equation 1) and a fixed effects model (Equation 2) for the sample of autocratic countries (polity2 score below 0, Panel A) and democratic countries (polity2 score above 0, Panel B). All specifications include time fixed effects. *, **, *** denote statistical significance at the, respectively, 90%, 95%, and 99% confidence level. Standard errors (shown in parentheses) are Huber robust and clustered at the country level.

Source: Authors' calculations.

Table 4: Effects of Oil Price Windfalls on Various Dependent Variables

	(1) EPL	(2) Rent	(3) CA	(4) GDP	(5) Employment	(6) Revenues	(7) Expenditure	(8) Budget
Impact Responses								
Aut +	-0.19** (0.09)	0.79** (0.31)	0.62** (0.30)	0.01 (0.23)	0.09 (0.09)	0.37*** (0.12)	-0.16 (0.20)	0.55** (0.22)
Aut -	-0.04 (0.11)	-0.42** (0.17)	-0.49** (0.22)	-0.42* (0.22)	0.05 (0.07)	-0.52*** (0.13)	0.43*** (0.11)	-0.94*** (0.18)
Dem +	0.02 (0.17)	0.74*** (0.26)	0.46*** (0.16)	-0.05 (0.13)	0.00 (0.11)	0.34** (0.14)	0.16 (0.12)	0.21* (0.11)
Dem -	-0.24 (0.18)	-0.87*** (0.14)	-1.51*** (0.51)	-0.09 (0.38)	0.07 (0.12)	-0.58** (0.26)	0.43** (0.21)	-1.01*** (0.25)
Obs	2,886	2,724	2,912	2,989	1,755	2,361	2,319	2,319
Adj. R ²	0.025	0.366	0.086	0.136	0.052	0.066	0.071	0.149
3-year responses								
Aut +	-0.47*** (0.15)	0.34** (0.13)	0.32 (0.35)	0.63 (0.53)	0.33*** (0.12)	0.45** (0.21)	0.19 (0.26)	0.32** (0.13)
Aut -	-0.30 (0.40)	0.03 (0.28)	-0.08 (0.21)	-0.27 (0.34)	0.18 (0.17)	0.97 (0.70)	1.24** (0.60)	-0.26 (0.33)
Dem +	-0.01 (0.27)	0.42*** (0.14)	0.08 (0.19)	0.36 (0.33)	0.09 (0.11)	0.41*** (0.14)	0.48** (0.22)	-0.06 (0.14)
Dem -	-0.65** (0.32)	-0.63*** (0.17)	-1.22*** (0.33)	0.02 (0.53)	0.14 (0.20)	-0.34 (0.33)	0.58 (0.37)	-0.93*** (0.25)
Obs.	2,804	2,645	2,829	2,906	1,674	2,285	2,240	2,240
Adj. R ²	0.044	0.350	0.089	0.173	0.055	0.045	0.106	0.207
5-year responses								
Aut +	-0.60*** (0.22)	0.36** (0.16)	-0.05 (0.39)	1.38** (0.66)	0.54*** (0.14)	0.03 (0.33)	-0.12 (0.29)	0.16 (0.40)
Aut -	-0.53 (0.48)	0.43 (0.29)	-0.77** (0.35)	-0.21 (0.76)	-0.51* (0.28)	0.85 (0.60)	0.95** (0.45)	-0.12 (0.43)
Dem +	0.11 (0.21)	0.45*** (0.12)	-0.34 (0.38)	0.72 (0.67)	0.23 (0.25)	0.36* (0.19)	0.56*** (0.21)	-0.18 (0.23)
Dem -	-1.27** (0.50)	-0.03 (0.16)	-1.44** (0.58)	0.41 (0.65)	-0.08 (0.33)	-0.24 (0.38)	0.61 (0.73)	-0.89 (0.62)
Obs.	2,640	2,487	2,665	2,740	1,512	2,135	2,092	2,092
Adj. R ²	0.056	0.378	0.082	0.218	0.058	0.032	0.099	0.201

CA = current account balance, EPL = employment protection legislation, GDP = gross domestic product.

Notes: Effects of positive (+) and negative (-) oil price windfalls on a range of dependent variables in autocracies (Aut) and democracies (Dem), at impact as well as two and four years after the windfalls. Estimates are obtained estimating Equation (4) for $k=0,2,4$, replacing $EPL_{i,t}$ with (i) oil rents as a share of GDP (Column 2), (ii) the current account balance as a share of GDP (Column 3), (iii) 100 times the log of real per capita GDP in local currency (Column 4), (iv) the employment-to-population ratio (Column 5), (v) tax revenues as a share of GDP (Column 6), (vi) government expenditures as a share of GDP (Column 7), and (vii) the primary balance as a share of GDP (Column 8). *, **, *** denote statistical significance at the, respectively, 90%, 95%, and 99% confidence level. Standard errors (shown in parentheses) are Huber robust and clustered at the country level.

Source: Authors' calculations.

Table 5: Effects of Positive and Negative Oil Price Windfalls on a Systemic Banking Crisis Probability

	(1) Prob	(2) Prob	(3) Prob	(4) Log	(5) Log	(6) Log	(7) Con log	(8) Con log	(9) Con log
Aut +	-0.00 (0.04)	-0.02 (0.07)	-0.00 (0.09)	0.02 (0.07)	-0.02 (0.14)	-0.02 (0.20)	0.02 (0.17)	-0.02 (0.18)	-0.02 (0.23)
Aut -	0.04 (0.13)	-0.02 (0.14)	-0.06 (0.19)	0.09 (0.29)	0.02 (0.30)	-0.08 (0.37)	0.09 (0.27)	0.02 (0.29)	-0.07 (0.35)
Dem +	-0.19 (0.14)	-0.21 (0.14)	-0.37 (0.28)	-0.34 (0.26)	-0.40 (0.28)	-0.87 (0.60)	-0.34 (0.30)	-0.39 (0.32)	-0.84* (0.50)
Dem -	0.33*** (0.12)	0.31** (0.14)	0.38** (0.16)	0.65*** (0.23)	0.66** (0.26)	0.71** (0.30)	0.65** (0.27)	0.64** (0.29)	0.67** (0.32)
Obs.	2,882	2,620	2,108	2,882	2,620	2,108	2,882	2,620	2,620
Pseudo R ²	0.03	0.06	0.17	0.03	0.06	0.17			
Time FE	NO	NO	YES	NO	NO	YES	NO	NO	YES
Country FE	NO	YES	YES	NO	YES	YES	NO	YES	YES

GDP = gross domestic product, USD = United States dollar.

Notes: Effects of positive (+) and negative (-) oil price windfalls on the probability of a systemic banking crisis occurring in autocracies (Aut) and democracies (Dem). Estimates are obtained by estimating probit (Prob), logit (Log), and conditional logit (Con log) models. The dependent variable takes value 1 if a systemic banking crisis occurs either at year t or $t+1$. Explanatory variables include windfalls at year t , as well as forward windfall variables (year $t+1$), lagged windfall variables (year $t-1$ and $t-2$), and lagged GDP per capita in USD (year $t-1$). Time and country fixed effects are included depending on the specification. Coefficients report the effect of windfall variables at year t . *, **, *** denote statistical significance at the, respectively, 90%, 95%, and 99% confidence level. Standard errors (shown in parentheses) are clustered at the country level.

Source: Authors' calculations.

Table 6: Marginal Effects of Positive and Negative Oil Price Windfalls on a Systemic Banking Crisis Probability

	(1) Prob	(2) Prob	(3) Prob	(4) Log	(5) Log	(6) Log
Aut +	-0.00 (0.00)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.00)	-0.00 (0.01)	-0.00 (0.01)
Aut -	0.00 (0.01)	-0.00 (0.02)	-0.01 (0.02)	0.00 (0.02)	0.00 (0.02)	-0.00 (0.02)
Dem +	-0.02 (0.02)	-0.02 (0.02)	-0.04 (0.03)	-0.02 (0.01)	-0.02 (0.01)	-0.04 (0.03)
Dem -	0.04*** (0.01)	0.04** (0.02)	0.04** (0.02)	0.04*** (0.01)	0.04*** (0.01)	0.03** (0.01)
Obs.	2,882	2,620	2,108	2,882	2,620	2,108
Pseudo R ²	0.03	0.06	0.17	0.03	0.06	0.17
Time FE	NO	NO	YES	NO	NO	YES
Country FE	NO	YES	YES	NO	YES	YES

Notes: Marginal effects of positive (+) and negative (-) oil price windfalls on the probability of a systemic banking crisis occurring in autocracies (Aut) and democracies (Dem). Marginal effects are calculated at the means of the dependent variables. See notes in Table 5.

Source: Authors' calculations.

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External Shocks and Labor Market Reforms in Autocracies and Democracies

Evidence from Oil Price Windfalls

This paper explores how oil price windfalls impact labor market regulation across 83 countries from 1970 to 2014. Findings reveal that windfall gains lead to deregulation in autocracies but not democracies, while windfall losses trigger deregulation in democracies. The paper examines how democracies use windfall gains to boost spending, whereas autocracies may focus on rent extraction and increasing economic efficiency. Deregulation in democracies during losses aligns with the crisis-induced reform hypothesis, linked to twin deficits and heightened banking crisis risks.

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