

Oil Income and the Personalization of Autocratic Politics

Matthew D. Fails
fails@oakland.edu

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Abstract: Personalist regimes are more reliant on natural resource rents than other models of autocracy, but the direction of causation is unclear. Resource wealth could finance patronage and allow leaders to skip construction of institutionalized systems of rule, leading to more personalized autocracies. Conversely, personalist leaders may increase resource extraction, since diversifying the economy could increase the power of rivals. I use data on the degree of personalism and level of oil income to disentangle these interpretations. The results show that increases in oil income are associated with subsequent increases in personalism within autocracies. Since personalist regimes are less likely to successfully democratize, the results also provide important evidence as to why oil impedes democracy.

Introduction

Comparative authoritarianism scholars often note that personalist regimes – those where power is concentrated in a single leader – are more dependent on natural resource wealth and international aid than their party-based or military counterparts (Wright 2008; Acemoglu, Robinson, and Verdier 2004; Callaghy 1984). This connection also underpins the prominent argument that personalist regimes are uniquely susceptible to collapse when economic challenges deplete their ability to finance patronage (Bratton and van de Walle 1994; Geddes 1999; Escribà-Folch and Wright 2010).

Systematic cross-national evidence of this connection, however, is relatively limited. Wright (2008, 325) offers the clearest demonstration that personalist autocracies are more dependent on “unearned” income than other autocracies, though this point is a precursor to his larger argument that legislatures in such regimes have less impact on investment and economic growth. Beyond this, the connection between personal rule and external rents is largely a matter of faith (Guliyev 2014).

Even more troubling, competing theories offer very different explanations as to why this connection exists. The studies cited above tend to argue that autocratic leaders use these rents to placate regime insiders through patronage, as opposed to the more challenging task of creating political parties and legislatures. In an early example, Chebabi and Linz (1998) argue that “easily exploitable natural resources whose production is in the hands of one or only a few enterprises with high profits” can provide the resources for personalist – or what they caused “sultanistic” – regimes (27). More recently, Wright, Geddes, and Frantz (2015) suggest that oil wealth facilitates co-optation by the regime, including “distributing more rents to discontented regime insiders, leaders of the opposition, and/or security forces” (289). These perspectives imply that such rents are an underlying cause of personalist

authoritarian rule, and that as these rents increase in size, so does the level of personalism in an autocracy.

By sharp contrast, other scholars argue that personalist rulers are more likely to extract and ultimately depend on these unearned revenues. Menaldo (2016) suggests that resource dependence is not exogenous but rather a purposeful choice when states lack the capacity to generate sufficient operating revenues through conventional taxation. Though his focus is on non-democratic regimes broadly, it seems likely that personalist regimes suffer from capacity deficits vis-à-vis other models of autocracy. Acemoglu and Robinson (2006) and Dunning (2005) suggest more general versions of this relationship, where autocrats resist diversifying resource-dominant economies for fear of empowering societal actors who may mobilize against them. If such arguments are accurate, the above interpretation – that greater rents allow personalist rule to emerge and consolidate – reflects reverse causality.

Resolving the debate between these perspectives is critical. Personalism is expanding globally (Kendall-Taylor, Frantz, and Wright 2017), so understanding its roots is increasingly important. Moreover, this focus may also resolve considerable gaps in the broader political resource curse literature, which typically argues that high levels of resource wealth (most often oil) are an impediment to democratization. Increasingly robust empirical evidence supports this conclusion, but the precise causal mechanism at work remains the subject of much debate.¹ Oil may finance societal benefits which reduce mass demands for democracy (Ross 2012), co-opt regime insiders (Wright, Geddes, and Frantz 2015), or pay for coercive tools to crush protests (Girod, Steward, and Walters 2016) to name only a few plausible linkages. Understanding the connection between oil income and personalism holds some promise to further clarify the political resource curse. For instance, personalist regimes

¹ Important quantitative objections to this finding do exist, particularly Haber and Menaldo (2011), Liou and Musgrave (2014), and Menaldo (2016)

are less likely to successfully transition to democracy than are other models of dictatorships (Frantz and Kendall-Taylor 2016; Chehabi and Linz 1998). If oil income leads to personalism, this can clarify one causal pathway through which oil impedes democracy. The remainder of this note explores this in detail.

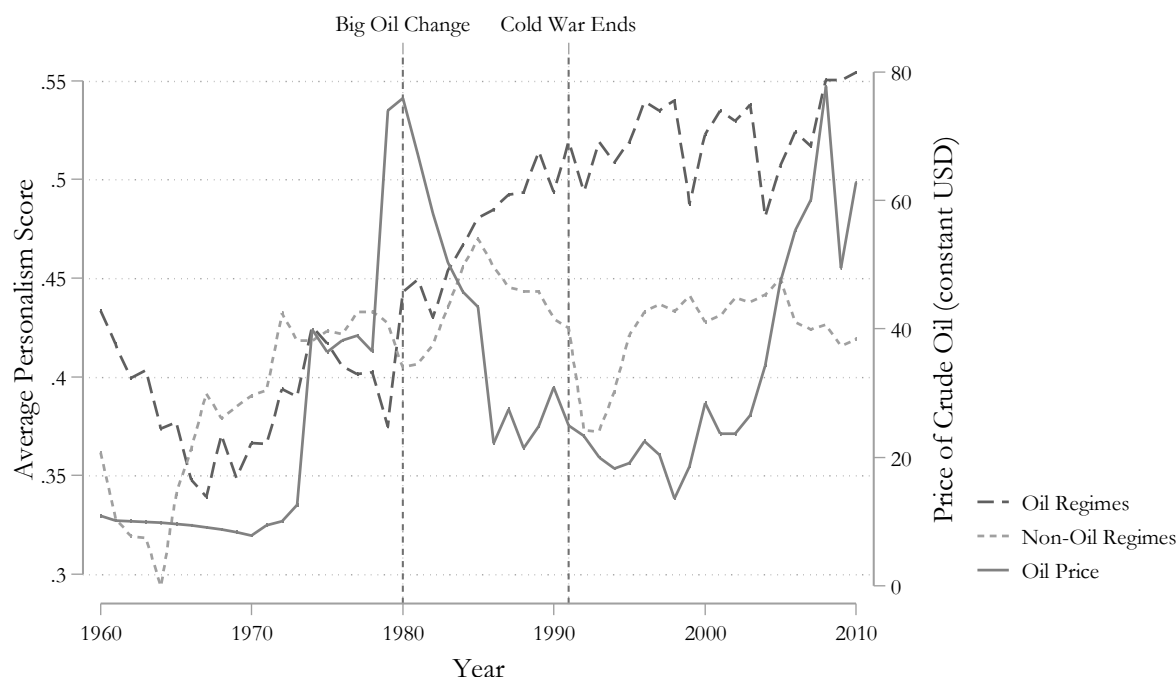
Personalism and Oil: A Look at the Data

Prior scholarship on personalism relies overwhelmingly on the categorical measures of authoritarian regime type created by Geddes (1999) and expanded by Geddes, Wright, and Frantz (2014). Though influential, this approach leaves the core theoretical debate described above unresolved, since it is unable to capture the hypothesized changes in the *level* of personalism, no matter if it is a consequence or cause of increased external rents. This categorical approach is also problematic conceptually, since personalism is a trait that exists in varying levels across all dictatorships (Weeks 2014: 38; Svolik 2012: 30).

Recent work from Geddes, Wright, and Frantz (2018; see also Wright 2017) addresses these shortcomings by developing a finely-grained measure of personalism emphasizing the degree to which political power is concentrated in the hands of individual leaders. As in their prior work, the unit of analysis is the autocratic regime-year from 1960 to 2010. Their specific measure uses eight observable indicators of personalism and an item-response theory approach to construct a latent variable measure for each autocratic regime-year in the data. In general, the indicators capture whether or not institutions exist that can check the leaders power, the degree to which leaders control appointments to political office, and whether leaders take steps to ensure the loyalty of the military and security forces. The IRT process transforms these indicators into a continuous variable, where higher values indicate a greater degree of personalism. I use this latent variable in the remainder of this paper.

Figure 1 presents an initial look at the relationship between personalism and the presence of resource rents, specifically oil. I focus on oil rents because of their unique size and the ease by which governments can appropriate them (Ross 2012), which is a key theoretical underpinning of the arguments described above. The dashed lines display across-time trends in the average level of personalism in autocratic regimes with significant oil wealth (defined as those averaging at least \$100 in Ross and Mahdavi’s (2013) variable *oil income per capita* over the regime’s duration) and autocracies without.²

Figure 1: Personalism and Oil Price in Autocracies, 1960-2010



Note: Oil regimes defined as those averaging more than \$100 in per-capita oil income over the duration of the regime, using data from Ross and Mahdavi (2013).

Though only a preliminary test, Figure 1 suggests that oil income is associated with greater personalism in autocracies, but that this effect is largely limited to the post-Cold

² Figure 1 uses the “standardized” latent measure of personalism, which is re-scaled to range between 0 and 1. Subsequent regression analyses employ the un-standardized version of the variable.

War era. There is no meaningful difference between autocracies with and without oil wealth in terms of the level of personalism until the last few years of the 1980. More importantly, the gap increases once the Cold War ends. This pattern is consistent with an argument that oil-wealthy autocracies were able to withstand post-Cold War pressures for political liberalization without diminishing their personalized character.

I test this argument statistically in the analysis that follows, though there are several reasons to believe that oil has this limited temporal impact. Andersen and Ross (2014) demonstrate that oil’s political impacts only began appearing after 1980, when a wave of nationalizations in the oil industry ushered in the “Big Oil Change.” Figure 1 is consistent with this argument; there is a lag between the start of the Big Oil era and the first observed differences in the level of personalism across autocracies.

This is also consistent with Hendrix’s (2018) recent analysis emphasizing the end of the Cold War as the critical temporal break in the relationship between oil and political regimes. Specifically, Hendrix argues that support from the United States, the Soviet Union, and their allies during the Cold War constituted a source of external rents that enabled regimes to resist pressures to democratize. When these rents diminished after 1990, however, only oil-wealthy regimes had the resources to ignore increasing demands for political liberalization. His reanalysis of a several prominent studies provides quantitative evidence that oil wealth only impedes democratization in the post-Cold War period (10).

Volatility in global oil prices, displayed on the right-side axis in Figure 1, also suggests that the impact on personalism is limited to the post-Cold War era. Oil prices reached their high mark in 1980 at a value of nearly \$80 USD per barrel (in constant 2000 dollars), but followed this with a decade-long slide. Even if increases in oil income facilitated the personalization of autocracies, the long decline in prices through the 1980s suggests there were few autocracies that would experience these changes. By contrast, the post-Cold

War era began with a decade of relatively stable oil prices before starting a long ascent in the 2000s.

Empirical Approach

I employ two-way fixed effect regressions to more formally evaluate the impact of oil rents on the level of personalism in autocracies during the post-Cold War era. This strategy includes individual fixed effects for years and for each autocratic regime. This limits the analysis to the within-regime relationship between a change in the level of oil rents and the subsequent change in the level of personalism. All standard errors are clustered on individual regimes.

The key independent variable measuring oil rents is Ross and Mahdavi's (2013) *oil income per capita*, logged to address the highly skewed distribution in the untransformed version. The regressions also includes measures of (logged) *income per capita* and *population in millions*. Following Geddes, Wright, and Frantz (2018), I also control for whether or not the current leader was the first leader of the regime, as they are more likely to consolidate power personally, and the (logged) length of the current leader's time in office (*regime leader duration*). As the dependent variable reports the level of personalism as of January 1 for a given year, the oil income variable and all economic measures are lagged by two periods. Other controls are lagged by one period. As noted above, the sample includes all autocratic regimes from years 1991-2010.³

There are several ways in which statistical endogeneity might impact this analysis. First, some unobserved factor may jointly determine the levels of oil income and

³ Table 1A in the online appendix re-estimates the key models using sample years 1980-2010, though consistent with the arguments above, the effect is limited to the post-Cold War period. Appendix Table 4A reports descriptive statistics for both sample periods.

personalism, though year and regime fixed effects help mitigate against this. Second, there may be some previously identified factor that impacts the relationship between oil income and personalism. No existing work makes this specific claim, though Menaldo (2016) argues that low levels of state capacity encourage the extraction of more oil while simultaneously influencing the level of democracy, the extent of non-resource taxation, and institutional quality. To the extent that low state capacity may be linked to greater levels of personalization in autocracies, one should control for this factor. I follow Menaldo’s (2016) approach and use a measure of tax revenue as a share of GDP, though I rely on data from the IMF’s World Revenue Longitudinal Dataset (2016).

Third, it remains possible that personalist leaders could increase oil production themselves, which would be the clearest example of reverse causality. The measure of oil income, along with the appropriate temporal lag, offers a partial guard against this issue (see Ross 2012: 15-19) but is unable to fully dismiss this possibility.

Several prior studies employ instrumental variables measuring oil endowments or new discoveries to deal with similar issues (Tsui 2011; Menaldo 2016). These approaches, however, are unable to solve the problem. At issue is the fact that, as Smith (2017: 601) recently notes, virtually all measures of oil income are endogenous to politics. Discovery of new fields, accurate reporting of reserves, and production levels all depend on the main actors – in particular the foreign multinationals that dominate oil production – judging the political environment as stable enough to generate a return on their investment. In methodological terms, such instruments do not meet the exclusion restriction.

Instead, this paper follows Smith’s (2017: 601) recommendation that scholars are “better off thinking about *how* our measures are endogenous, and accounting for it, rather than trying to find others that are not.” I do this by testing the relationship while excluding large oil producers, since they are better able to manipulate oil production for political gain,

and further supplementing the baseline specification with a measure of openness to international capital, since more open regimes might have an advantage in endogenously raising oil production. I measure this openness as FDI inflows as a share of GDP, using data from the World Development Indicators (World Bank 2016).

Results and Discussion

Table 1 reports the results of the two-way fixed effects regressions. I report the results of two model specifications (a baseline model and one with the additional control variables) with and without large oil producers, defined as the top ten percent of observations in terms of *oil income per capita* in the prior specification.⁴

⁴ Unsurprisingly, large producers are concentrated in the Middle East and North Africa. In Model 4, nearly three-quarters of the excluded observations are from Kuwait, Saudi Arabia, Oman, Libya, and UAE.

Table 1: Two-Way Fixed Effect Regression Results, 1991-2010

	(1) Baseline	(2) Exclude Large Producers	(3) Additional Controls	(4) Exclude Large Producers
Oil income per capita (log)	0.038* (0.022)	0.037* (0.021)	0.069** (0.027)	0.071** (0.028)
Income per capita (log)	-0.184 (0.241)	-0.067 (0.216)	-0.313 (0.357)	-0.253 (0.396)
Population (in millions)	-0.002 (0.002)	-0.002 (0.002)	-0.001 (0.003)	-0.002 (0.003)
First regime leader	0.282 (0.202)	0.278 (0.188)	0.366* (0.219)	0.423* (0.220)
Regime leader duration (log)	0.109*** (0.038)	0.132*** (0.040)	0.092** (0.038)	0.116*** (0.042)
FDI inflows (% GDP)	-	-	-0.000 (0.003)	-0.001 (0.003)
Tax revenue (% GDP)	-	-	0.005 (0.007)	0.004 (0.008)
Year dummies?	Yes	Yes	Yes	Yes
Regime dummies?	Yes	Yes	Yes	Yes
Regimes / Observations	91 / 1031	89 / 928	83 / 844	81 / 760

Notes: Columns report two-way fixed effect regression coefficients with standard errors clustered on regimes reported in parentheses. Dependent variable is Geddes, Wright, and Frantz's (2018) latent measure of personalism. Regressions include a constant, which is not reported to save space. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Across all four models, the reported coefficient for *oil income per capita* is positive and statistically significant; an increase in oil wealth is associated with more personalized autocratic regimes. As I demonstrate below, the impact is relatively large in substantive terms. This result holds even when controlling for factors that may encourage leaders to extract more oil income (state capacity, measured as the tax revenue share of GDP) or enable them to do so (financial openness, measured as FDI inflows as a share of GDP), both in the full sample and while excluding large producers. Longer serving leaders and new

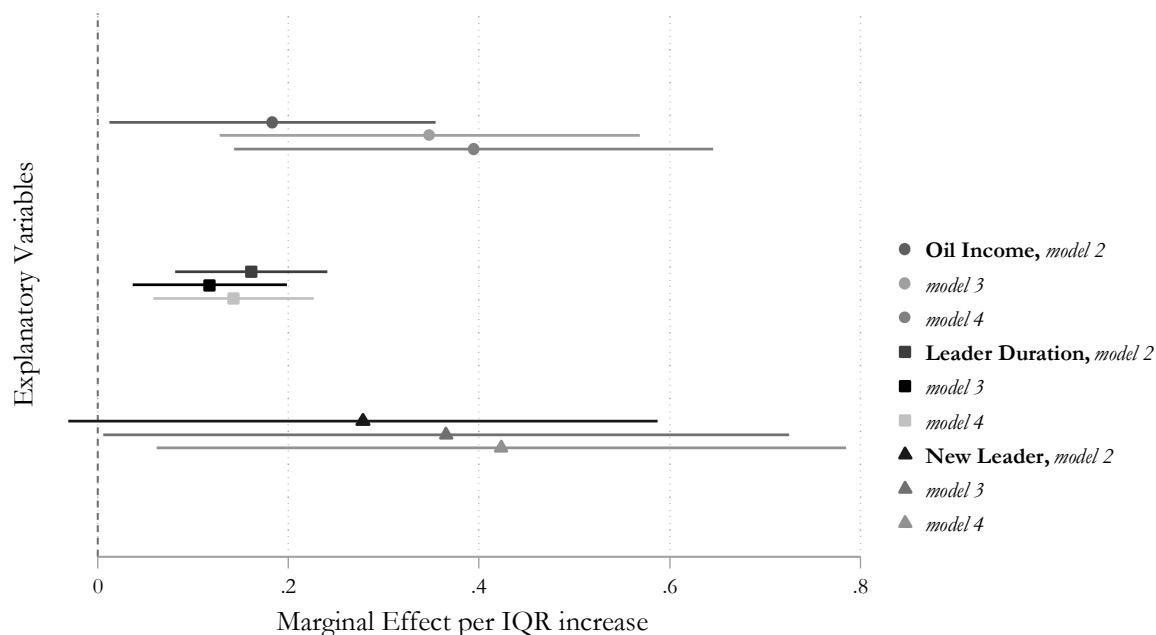
leaders are associated with increases in personalism as well, though the impact of the later is only statistically significant in the models including additional control variables. These results are also robust to modeling the uncertainty in the latent dependent variable following Schnakenberg and Fariss’ approach (2014; see also Crabtree and Fariss 2015) and to clustering on countries or individual leaders.⁵

Figure 2 depicts the marginal effects of three key explanatory variables (*oil income*, *leader duration*, and *new leader*), expressed as the predicted change in the measure of personalism per an inter-quartile range increase in the independent variable, following the specifications in Models 2-4. For each simulation, all other variables are held to their mean values.⁶ Inter-quartile range increases are based on the distribution of values in each estimation sample. For Model 2, *oil income per capita (logged)* is measured as an increase from 0 to 6.1, or from \$0 to approximately \$490 per capita, about the value of oil income in Angola in the late 1990s. For *leader tenure*, this is an increase from 5 to 18 years in power. For the variable *new leader*, the IQR increase is from 0 to 1, or simply the marginal effect of a regime’s first leader. Models 3 and 4 employ very similar IQR ranges.

⁵ Tables 2A and 3A in the online appendix report these results.

⁶ This figure draws on Gross’ (2015) recommendation for interpreting substantive effects. Marginal effects calculated and reported following Jann (2014) and Bischof (2017).

Figure 2: Estimates of Parameters of Interest from Models 2-4



Note: Estimates are expressed as 90% confidence intervals of the change in the expected value of the dependent variable per interquartile range increase in the explanatory variables. Predicted values calculated while holding all other explanatory variables at mean values.

In most specifications, the impact of oil is on par with that of regime's first leaders, and between two and three times larger than the marginal effect of increases in a leader's time in office. Given the range of the dependent variable, a marginal effect of 0.4 for *oil income* would represent an increase of nearly thirteen percent.

Conclusion

Important theories of autocratic politics rest upon the premise that resource rents help authoritarian leaders centralize their political power by funding patronage and enabling them to resist pressures to create power-sharing institutions with regime insiders. This note employs newly published data on personalism to demonstrate the cross-national

quantitative basis of such claims. Over the last two decades, increases in oil income are associated with greater levels of personalism in authoritarian regimes.

Still, this result should be explored further. These findings connect increases in rents to greater personalization, but do not identify the specific ways in which leaders use these resources to consolidate their personal hold on power. For instance, are these revenues used to subsidize consumer goods that reduce the demands for more institutionalized means of influence for mass publics and elites? Fails (*forthcoming*) suggests that more generous fuel subsidies prevent democratization. Might similar spending choices enable personalist leaders to resist creating meaningful powersharing institutions? These are important avenues for future research.

These findings also contribute to the broad literature on the political resource curse. Specifically, the results suggest that one important channel connecting oil revenues to lower likelihoods of democratization runs through the consolidation of personalist regimes. Increases in oil income over the past two decades have facilitated the emergence of a uniquely problematic model of authoritarian politics, at least in terms of the prospects of successful democratization. These results are particularly important given that recent work strongly suggests that oil's main political effect has been to insulate producers from otherwise global trends toward more political liberalization since the early 1990s (Hendrix 2018; Ross 2012, 75-7). By pointing toward one particular channel, these findings provide important evidence as to exactly why oil impedes democracy.

References

- Acemoglu, Daron, and James A. Robinson. 2006. "Economic Backwardness in Political Perspective." *American Political Science Review*, 100(1):115-131.
- Acemoglu, Daron, James A. Robinson, and Thierry Verdier. 2004. "Kleptocracy and Divide-and-Rule: A Model of Personal Rule." *Journal of the European Economic Association* 2(2-3): 162-192.
- Andersen, Jørgen J., and Michael L. Ross. 2014. "The Big Oil Change: A Closer Look at the Haber-Menaldo Analysis." *Comparative Political Studies* 47(7): 993-1021.
- Bischof, Daniel. 2017. "New Graphic Schemes for Stata: plotplain and plotting." *The Stata Journal* 17(3): 748-759.
- Bratton, Michael, and Nicolas van de walle. 1994. "Neopatrimonial Regimes and Political Transitions in Africa." *World Politics* 46(4): 453-489.
- Callaghy, Thomas M. 1984 *The State-Society Struggle: Zaire in Comparative Perspective*. New York: Columbia University Press.
- Chebabi, Houchang E., and Juan J. Linz. 1998. "A Theory of Sultanism 2: Genesis and Demise of Sultanistic Regimes." In *Sultanistic Regimes*, HE Chehabi and JJ Linz, eds., 26-28. Baltimore, MD: The Johns Hopkins University Press.
- Cheon, Andrew, Maureen Lackner, and Johannes Urpelainen. 2015. "Instruments of Political Control National Oil Companies, Oil Prices, and Petroleum Subsidies." *Comparative Political Studies* 48(3): 370-402.
- Crabtree, Charles D., and Christopher J. Fariss. 2015. "Uncovering Patterns Among Latent Variables: Human Rights and De Facto Judicial Independence." *Research & Politics* 2(3): 1-9.
- Dunning, Thad. 2005. "Resource Dependence, Economic Performance, and Political Stability." *Journal of Conflict Resolution* 49(4): 451-482.
- Escribà -Folch, Abel, and Joseph Wright. 2010. "Dealing with Tyranny: International Sanctions and the Survival of Authoritarian Rulers." *International Studies Quarterly* 54: 335-359.
- Fails, Matthew D. Forthcoming. "Fuel Subsidies Limit Democratization: Evidence from a Global Sample, 1990-2014." *International Studies Quarterly*.

- Frantz, Erica, and Andrea Kendall-Taylor. 2016. "Pathways to Democratization in Personalist Dictatorships." *Democratization* 24(1): 20-40.
- Geddes, Barbara, Joseph Wright, and Erica Frantz. 2014. "New Data Set: Autocratic Breakdown and Regime Transitions." *Perspectives on Politics* 12(2): 313-331.
- Geddes, Barbara, Joseph Wright, and Erica Frantz. 2018. *How Dictatorships Work: Power, Personalization, and Collapse*. Cambridge: Cambridge University Press.
- Geddes, Barbara. 1999. "What Do We Know About Democratization after Twenty Years?" *Annual Review of Political Science* 2: 114-144.
- Girod, Desha M., Megan A. Stewart, and Meir R. Walters. 2016. "Mass Protests and the Resource Curse: The Politics of Demobilization in Rentier Autocracies." *Conflict Management and Peace Science*. DOI: 0738894216651826.
- Gross, Justin H. 2015. "Testing What Matters (If You Must Test at All): A Context-Driven Approach to Substantive and Statistical Significance." *American Journal of Political Science* 59(3): 775-88.
- Guliyev, Farid. 2014. "Unpacking the Political Resource Curse: How Oil Fuels Personalism and Undermines Democratization." PhD Dissertation. Jacobs University.
- Haber, Stephen and Victor Menaldo. 2011. "Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse." *American Political Science Review* 105(1): 1-26.
- Hendrix, Cullen S. 2018. "Cold War Geopolitics and the Making of the Oil Curse." *Journal of Global Security Studies* 3(1): 2-22.
- International Monetary Fund. 2016. "World Revenue Longitudinal Dataset." Accessed from <https://data.world/imf/world-revenue-longitudinal-dat>
- Jann, Ben. 2014. "Plotting Regression Coefficients and Other Estimates in Stata." *The Stata Journal* 14(4): 708-737.
- Kendall-Taylor, Andrea, Erica Frantz, and Joseph Wright. 2017. "The Global Rise of Personalized Politics: It's Not Just Dictators Anymore." *The Washington Quarterly* 40(1): 7-19.

- Liou, Yu-Ming, and Paul Musgrave. 2014. "Refining the Oil Curse Country-Level Evidence From Exogenous Variations in Resource Income." *Comparative Political Studies* 47(11): 1584-610.
- Menaldo, Victor. 2016. *The Institutions Curse: Natural Resources, Politics, and Development*. Cambridge: Cambridge University Press.
- Ross, Michael, and Paasha Mahdavi. 2013. Oil and gas data, 1932-2011. *Harvard Dataverse Network*.
- Ross, Michael. 2012. *The Oil Curse: How Petroleum Wealth Shapes the Development of Nations*. Princeton: Princeton University Press.
- Schnakenberg, Keith E., and Christopher J. Fariss. 2014. "Dynamic Patterns of Human Rights Practices." *Political Science Research and Methods* 2(1): 1-31
- Smith, Benjamin. 2017. "Resource Wealth as Rent Leverage: Rethinking the Oil-Stability Nexus." *Conflict Management and Peace Science* 34(6): 597-617.
- Svolik, Milan. (2012) *The Politics of Authoritarian Rule*. Cambridge: Cambridge University Press.
- Tsui, Kevin. 2011. "More oil, less democracy: evidence from worldwide crude oil discoveries." *The Economic Journal*, 121(551): 89-115.
- Weeks, Jessica L.P. 2014. *Dictators at War and Peace*. Ithaca, NY: Cornell University Press.
- World Bank. 2016. "World Development Indicators." Accessed from <https://data.worldbank.org/products/wdi>
- Wright, Joseph, Erica Frantz, and Barbara Geddes. 2015. "Oil and Autocratic Regime Survival." *British Journal of Political Science* 45(2): 287-306.
- Wright, Joseph. 2008. "Do authoritarian institutions constrain? How legislatures affect economic growth and investment." *American Journal of Political Science*, 52(2): 322-343.
- Wright, Joseph. 2017. "The Latent Characteristics that Structure Autocratic Rule." Working Paper." APSA 2014 Annual Meeting Paper. Available at SSRN: <https://ssrn.com/abstract=2451510>.

Online Appendix for “Oil Income and the Personalization of Autocratic Politics”

Matthew D. Fails
fails@oakland.edu

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Table 2A: Robustness of Main Results to Clustering on Countries and Autocratic Leaders

Table 3A: Robustness to Incorporating Uncertainty in Latent Dependent Variable

Table 4A: Descriptive Statistics for Both Time Samples

Table 1A: Main results, re-estimated in sample covering 1980-2010

	(1) Baseline	(2) Exclude Large Producers
Oil income per capita (log)	-0.001 (0.025)	-0.002 (0.027)
Income per capita (log)	0.037 (0.127)	0.143 (0.122)
Population (in millions)	-0.001 (0.001)	-0.001 (0.001)
First regime leader	0.041 (0.159)	0.016 (0.155)
Regime leader duration (log)	0.134*** (0.034)	0.150*** (0.035)
Year dummies?	Yes	Yes
Regime dummies?	Yes	Yes
Regimes / Observations	130 / 1729	124 / 1548

Notes: Columns report two-way fixed effect regression coefficients with standard errors clustered on regimes reported in parentheses. Time sample is 1980-2010. Dependent variable is Geddes, Wright, and Frantz's (2017) latent measure of personalism. Regressions include a constant, which is not reported to save space. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2A: Main results, post-Cold War sample, clustered on countries (Models 1-2) and clustered on leaders (Models 3-4)

	(3)	(4)	(5)	(6)
	Cluster on Country	Cluster on Country, Exclude Large Producers	Cluster on Leader	Cluster on Leader, Exclude Large Producers
Oil income per capita (log)	0.062*** (0.018)	0.057*** (0.019)	0.024* (0.014)	0.027* (0.014)
Income per capita (log)	-0.258*** (0.090)	-0.101 (0.105)	0.033 (0.074)	-0.008 (0.086)
Population (in millions)	0.287*** (0.056)	0.305*** (0.061)	0.048 (0.033)	0.024 (0.038)
First regime leader	0.108*** (0.016)	0.126*** (0.018)	-	-
Leader duration (log)	-0.002 (0.001)	-0.003* (0.002)	-0.001 (0.003)	-0.002 (0.003)
FDI inflows (% GDP)	-0.003 (0.003)	-0.005* (0.003)	-0.003* (0.002)	-0.003* (0.002)
Tax revenue (% GDP)	0.006 (0.004)	0.004 (0.004)	0.002 (0.002)	0.001 (0.003)
Year dummies?	Yes	Yes	Yes	Yes
Country dummies?	Yes	Yes	-	-
Leader dummies?	-	-	Yes	Yes
Countries / Observations	73 / 867	71 / 763	-	-
Leaders / Observations	-	-	108 / 773	103 / 680

Notes: Columns report two-way fixed effect regression coefficients with standard errors clustered on countries (Models 3-4) and clustered on leaders (Models 5-6) reported in parentheses. Time sample for all models is 1991-2010. Dependent variable is Geddes, Wright, and Frantz's (2018) latent measure of personalism. Regressions include a constant, which is not reported to save space. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Incorporating Uncertainty in the Latent Dependent Variable

All regressions in the main manuscript employ the mean of the empirical Bayes estimate of Geddes, Wright, and Frantz' (2018; Wright 2017) latent measure of personalism as the dependent variable. As these are means, however, we can measure the uncertainty surrounding each individual regime-year estimate. Recent work in the area of human rights by Schnakenberg and Fariss (2014) and Crabtree and Fariss (2015) argues that scholars should incorporate this uncertainty in the model estimates. Applying their approach here entails generating 1,000 draws from each regime-year observation of personalism, where the draws are random from a normal distribution described by the observation specific mean and standard deviation of the latent variable. Then, one uses these draws as the dependent variable in the regression model, repeating this process separately for each of the 1,000 draws. The reported regression coefficients are the simple mean values of all 1,000 point estimates, while the standard errors are compiled following Rubin's (1987) rules.

Table 3A reports the results of this procedure. The underlying model remains a two-way fixed effects regression with year and regime dummies, just as presented in the main manuscript (specifically, Table 1 models 3-4). The substantive results of this exercise are identical to those described in the main manuscript. Specifically, the coefficient on *oil income per capita* in both models is positive and virtually identical in size. As expected, the incorporation of this uncertainty inflates the standard errors for the point estimates, but each coefficient is still significantly different from zero at the 0.10 level. The point estimates for the remaining control variables are also similar to those presented in the main manuscript.

Table 3A: Robustness to Incorporating Uncertainty in Latent Dependent Variable

	(7) Additional Controls	(8) Exclude Large Producers
Oil income per capita (log)	0.074* (0.043)	0.068* (0.041)
Income per capita (log)	-0.370 (0.247)	-0.289 (0.276)
Population (in millions)	-0.001 (0.004)	-0.001 (0.004)
First regime leader	0.395** (0.177)	0.461** (0.192)
Regime leader duration (log)	0.094** (0.043)	0.122*** (0.046)
FDI inflows (% GDP)	0.001 (0.007)	-0.000 (0.007)
Tax revenue (% GDP)	0.009 (0.010)	0.008 (0.010)
Year dummies?	Yes	Yes
Regime dummies?	Yes	Yes
Regimes / Observations	83 / 844	81 / 778

Notes: Columns report two-way fixed effect regression coefficients with standard errors clustered on regimes reported in parentheses. Time sample for all models is 1991-2010. Dependent variable is Geddes, Wright, and Frantz's (2018) latent measure of personalism. Models follow Schnakenberg and Fariss (2014) and Crabtree and Fariss (2015) and incorporate the uncertainty in the latent dependent variable (see text for details). Regressions include a constant, which is not reported to save space. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4A: Descriptive Statistics, by Sample

Post-Cold War Sample
(Main Results)

Variable	Observations	Mean	Std. Deviation	Min	Max
Latent Measure of Personalism	1,031	0.13	0.80	-1.3	1.83
Oil income per capita (log)	1,031	3.07	3.26	0	10.57
Income per capita (log)	1,031	8.3	1.24	5.9	11.65
Population (in millions)	1,031	43.6	168.51	0.9	1331.40
First regime leader	1,031	0.47	0.50	0	1
Leader duration (log)	1,031	2.18	0.94	0	3.85
FDI inflows (% GDP)	1,024	3.69	6.06	-14	50.83
Tax revenue (% GDP)	870	14	8.27	0.6	49.98

1980-2010 Sample
(Appendix Table A1)

Variable	Observations	Mean	Std. Deviation	Min	Max
Latent Measure of Personalism	1,720	0.11	0.84	-1.3	1.83
Oil income per capita (log)	1,720	2.79	3.21	0	11.23
Income per capita (log)	1,720	7.37	1.28	4.9	11.65
Population (in millions)	1,720	40.5	154.24	0.6	1331.40
First regime leader	1,720	0.51	0.50	0	1
Leader duration (log)	1,720	2.12	0.94	0	3.85

References

- Crabtree, Charles D., and Christopher J. Fariss. 2015. "Uncovering Patterns Among Latent Variables: Human Rights and De Facto Judicial Independence." *Research & Politics* 2(3): 1-9.
- Geddes, Barbara, Joseph Wright, and Erica Frantz. 2018. *How Dictatorships Work: Power, Personalization, and Collapse*. Cambridge: Cambridge University Press.
- Rubin, Donald. 1987. *Multiple Imputation for Nonresponse in Surveys*. New York, NY: John Wiley and Sons.
- Schnakeberg, Keith E., and Christopher J. Fariss. 2014. "Dynamic Patterns of Human Rights Practices." *Political Science Research and Methods* 2(1): 1-31
- Wright, Joseph. 2017. "The Latent Characteristics that Structure Autocratic Rule." Working Paper." APSA 2014 Annual Meeting Paper. Available at SSRN: <https://ssrn.com/abstract=2451510>.