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Sanctions on Venezuela Are Not Driving Migration to the US Southwest Border: An Empirical Assessment

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Introduction

After the decision of the Venezuelan regime to disregard the results of the presidential election of July 28, 2024, and subsequently swear in Maduro for a new term on January 10, 2025, the international community faces a new reality. The Venezuelan people, essentially, have tried every single tool in the kit to try to transition to democracy without success.

As the administration will define a new strategy on Venezuela, one of the tools at its disposal is reenacting and deepening economic sanctions on the regime. While the effectiveness of sanctions as the optimal tool to restore democracy in Venezuela is hard to assess empirically, part of the policy discussion is centered on one of its consequences: whether this strategy could result in more migration and irregular crossings at the US Southwestern border. Our main findings suggest that higher oil income or prices results in more, not less, crossings of Venezuelans migrants.

This note explores the empirical evidence about the relationship between sanctions and migration in the context of Venezuela. In particular, we study the relationship between oil production, prices and income (for which their variation could proxy for the imposition of sanctions) and outmigration of Venezuelans to the United States, measured through Venezuelans crossing the US border.

In theory, the relationship is not obvious. On the one hand, greater sanctions, and hence, lower oil revenues, could make matters worse for Venezuelan citizens, prompting them to leave. On the other hand, migration is a costly investment, and lower income might make it less affordable.[1] In addition, greater income to the regime might imply that it makes it more capable of stabilizing its support coalition, making a political transition less likely (de Mezquita and Smith, 2011). For those outside of

1 Clemens and Mendola (2024) make this argument regarding the positive impact of development and higher incomes on higher outmigration and shows evidence to this effect.

the ruling coalition and their supporters, this may constitute a greater incentive to leave. Combining this incentive with a short-term improvement in economic conditions may make outmigration not only more desirable but also more affordable. This would justify a positive relationship between oil income and outmigration.

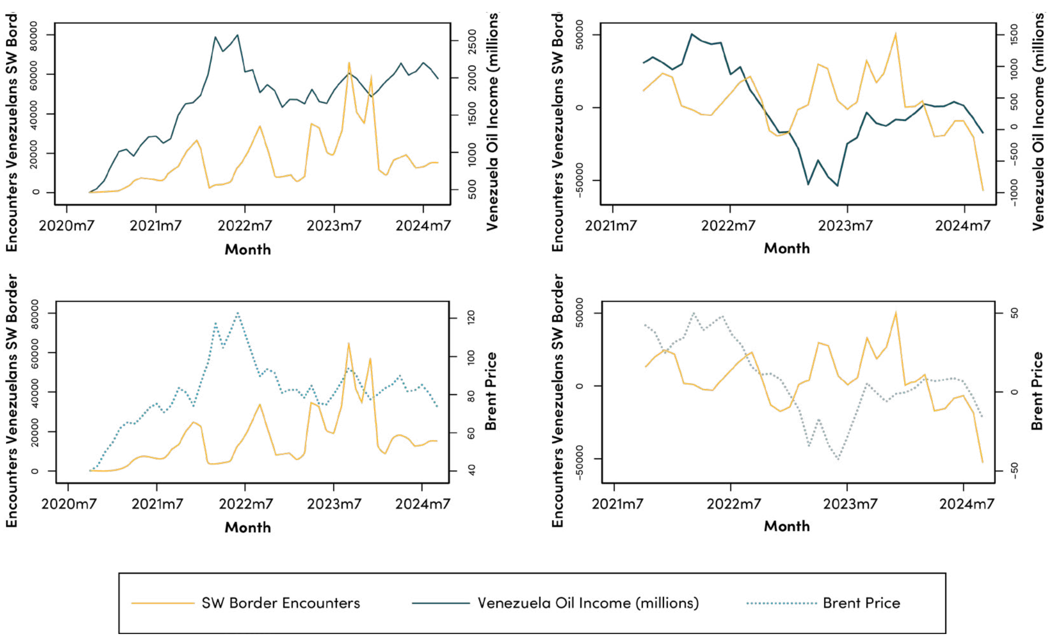
This means that, a priori, it is not obvious what is the sign of the relationship between oil income and outmigration in Venezuela. Different theories predict different outcomes, meaning that the question should be settled empirically. This note explores this empirical question.

Data and methods

We use data from Venezuela oil production (estimated by OPEC from secondary sources reported in OPEC's Monthly Oil Market Reports), the price of oil (proxied by the Brent price), and encounters of Venezuelans crossing the Southwest border as reported by US CBP from January 2020 to September 2024 monthly. Based on oil production and price we compute oil income from Venezuela for each month during the period under consideration.

Our goal is to explore the relationship between migration and the oil income of the Venezuelan regime. Figure 1 visualizes this relationship using the raw data. In particular, the figure plots oil income (top) / prices (bottom) Vs. border crossings, both in levels (left) and year-over-year variation (right), using monthly data from January 2020 until September 2024.

Figure 1. Monthly variation of Venezuela oil income / prices and border crossings of Venezuelans



Note: This figure plots several time series used in the empirical analysis. The upper graphs plot border encounters of Venezuelans and Venezuelan oil income, whereas the lower graphs plot the border encounters and the price of Brent crude oil. The two graphs on the left plot the levels, whereas the graphs on the right plot the year-on-year differences.

Visually it can be appreciated that both variables tend to co-move in the same direction, implying that there is more outmigration from Venezuela to the US when there are increases in oil income or in prices. Consistently, when the Engle-Granger cointegration test was applied in these two monthly series (using first differences), the test produced a test statistic of -7.903, above the critical value of -4.145 at the 1 percent significance level. This result suggests the presence of cointegration between the series, indicating that they share a long-term equilibrium relationship.

A more analytical way of looking at these numbers follows Bahar (2024) and relies on the estimation of two alternative models. The first one (titled "levels") estimates the elasticity of the number of crossings to oil income or prices, using logs of the levels of both variables, including month and year fixed effects, as reflected in the following specification:

$$\log(crossings_{my}) = \beta_{levels} \log(oil_{my}) + \eta_m + \gamma_y + \varepsilon_{my}$$

where the subscript *my* indexes a month-year period, log ($crossings_{my}$) is the total crossings of Venezuelans during that month-year (in logs), and (oil_{my}) is, depending on the specification, either the international price of Brent crude oil or, alternatively, income from oil (based on production of oil from secondary sources multiplied by international price of Brent crude oil). The log transformation allows us to deal with outliers in the distribution and, at the same time, allows us to interpret the coefficient of interest as an elasticity. ε_{my} represents the error term. In this specification β_{levels} represents the elasticity to be estimated. The estimation also includes month fixed effects and year fixed effects to account for monthly seasonality and common year-long shocks to both variables. It also deals with fact that the leadership and policies of the US changed over the years.

The second one (titled "yoy"), is an Autoregressive Distributed Lag (ARDL) model that estimates the elasticity of both variables using a year-over-year difference and including several standard control variables. This model follows the following specification using the same subscripts as above:

$$\Delta \log(crossings_{my}) = \beta_{yoy} \Delta \log(oil_{my}) + \Delta \log(\text{crossings}_{my-1}) + \Delta \log(\text{oil}_{my-1}) + \text{ECT}_{my-1} + \varepsilon_{my}$$

where Δ represents year-over-year differences; and ECT_{my-1} represents the error correction term, which is nothing more than the residual regression of log ($crossings_{my}$) on log (oil_{my}) lagged by one month. This term represents the long-term equilibrium relationship between the two variables, which is added as a control. This term represents the long-term equilibrium relationship between the two variables. The inclusion of this and the other controls (such as the lagged variables) allows us to interpret the estimated value of β_{voy} as a short-term elasticity.

Results

The results from estimating both equations in the above section are presented in Table 1. Columns 1 and 2 present results from the "levels" and "YoY" equations using oil income as the main dependent variable, and Columns 3 and 4 uses the price of oil established in international markets. We also include in Columns 5 and 6 the Venezuelan production of oil as the variable of interest, which is the variable that would be most directly affected by sanctions (i.e., changes in oil income due to sanctions would be reflected through the production channel).

Across all different estimations, the elasticities are positive. In the case Columns 1 and 3 they are also statistically significant at conventional levels. In the case of year-over-year differences (Columns 2 and 4) and when using the production of oil (Columns 5 and 6) the coefficients are not precisely estimated. Yet, the precision of the estimations are affected by the small number of observations we rely on. Since our interest is assessing the validity of the sign of our point estimates, we report in the table the one-tailed p-values to assess the probability that the true coefficient is positive under a standard normal approximation (see row titled "see row titled "Prob(β>0) in the table).[2] Across the board we find that these probabilities are always above half, and in most cases above 0.8. The consistency of the positive point estimates across the board implies the existence of a positive relationship between oil income, prices, and production with respect to crossings of Venezuelans through the US southwest border between 2020 until September 2024. Note that our results are stronger when exploiting variation of oil production, which, as argued above, is more likely to be directly affected by sanctions, as opposed to price, which is set globally and not specific to Venezuela. All this together implies that higher oil production and income in Venezuela results in more, not less, migration, according to our analysis.

At the very least, even for the specifications where the estimators lack enough statistical significance at the conventional levels, we can conservatively conclude that there is no evidence of a negative relationship, which in turn suggests no evidence that sanctions on the oil sector would result in more migration through the US southern border.

The models also exhibit high explanatory power, with R^2 values ranging from 0.75 to 0.86, indicating that a substantial portion of the variation in border crossings can be explained by the variation in oil income or prices or production (note that the fit is high even when excluding fixed effects).

2 The probability that a coefficient β is positive is computed using the standard Normal Cumulative Distribution Function assuming that the sampling distribution of the estimator is approximately normal, as follows:

$$P(\beta > 0) = \phi\left(\frac{\hat{\beta}}{SE(\hat{\beta})}\right)$$

Table 1. Estimations of elasticity of oil price / income on border crossings of Venezuelans

	LEVELS b/se	YoY b/se	LEVELS b/se	YoY b/se	LEVELS b/se	YoY b/se
Oil Income (logs)	1.686 (0.828)*	0.497 (0.638)				
Brent Price (logs)			2.345 (1.210)*	0.149 (1.015)		
Oil Production (logs)					2.884 (2.044)	1.280 (1.180)
N	48	35	48	35	48	35
R^2	0.86	0.75	0.86	0.81	0.85	0.75
Prob (β>0)	0.97	0.66	0.97	0.56	0.92	0.86
Month FE	Y	N	Y	N	Y	N
Year FE	Y	N	Y	N	Y	N

Note: Columns 1, 3 and 5 report estimations of the "levels" model, which uses levels and includes month and year fixed effects. Columns 2, 4 and 6 report estimations of the "YoY" or ALDR model using year-over-year values. These columns include non-reported controls shown in the equation. Robust standard errors are presented in parentheses for the levels models, while Newey–West heteroskedasticity- and autocorrelation-consistent standard errors (with 12 lags) are reported for the YoY models..
*p < 0.10, **p < 0.05, ***p < 0.01.

Concluding remarks

The empirical evidence presented in this paper suggests that higher oil income in Venezuela is associated with higher—not lower—crossings at the US southwest border. This finding has important implications for the ongoing policy debate about sanctions on the Venezuelan regime. Our results contradict the notion that economic sanctions would increase migration flows to the United States. In fact, the data shows the opposite relationship: when Venezuela's oil income decreases (as would be expected under stricter sanctions), migration flows also tend to decrease.

This pattern can be explained by two complementary mechanisms. First, migration is a costly investment that requires financial resources. When economic conditions deteriorate significantly, many Venezuelans may lack the necessary resources to finance their journey to the United States, even if they desire to leave. This aligns with the migration hump theory described by Clemens (2014), where development and higher incomes enable more people to migrate rather than keeping them at home.

Second, and perhaps more importantly, our findings support the hypothesis that what drives Venezuelans to leave their country is not merely economic hardship but the political hopelessness that comes with seeing an entrenched authoritarian regime become more stable. When oil prices and revenues increase, the Maduro regime gains additional resources to fund its repression system and to compensate those who remain loyal to maintaining the dictatorship against the will of the Venezuelan people. This strengthens the ruling coalition as described by de Mesquita and Smith (2011), making democratic transition less likely and fueling the desire to emigrate among those outside this coalition.

Our findings contrast with Rodriguez (2024), who argues that migration from Venezuela is a result of economic contractions which in turn can be largely explained by sanctions rather than policy failures. Rodriguez uses a two-step methodology—examining the effect of sanctions on GDP and then GDP's effect on migration.[3] This approach fails to account for confounding variables that could influence both economic performance and migration simultaneously, such as political repression and institutional deterioration. Our direct analysis provides a more straightforward assessment of how sanctions might affect migration patterns, avoiding these methodological limitations. In our approach, even in the most conservative interpretation of our results, we find no evidence of migration being explained by sanctions through fluctuations in oil income or production in Venezuela.

For policymakers concerned with both promoting democratic change in Venezuela and managing migration flows, these results suggest that properly designed sanctions targeted at pressuring the regime could be compatible with both objectives. By limiting the regime's resources, sanctions could affect the likelihood of regime change and therefore reduce the intention to migrate.

3 This approach also ignores the fact that much of Venezuela's economic decline proceeded the 2017 sanctions (Bahar et al. 2021).

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Replication package available for download here.

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This note was updated after fixing a minor error in the code that we had previously inadvertently overlooked, resulting in some, but not all, results being different. Our overall conclusions remain the same.

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