On the implausibility of the benign sanctions hypothesis

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Abstract

Santos, Morales-Arilla, and Partipilo Cornielles (2026a) claim that in the absence of sanctions Venezuela's rate of contraction would have accelerated by approximately 6 percentage points a year. Their projections imply an implausible 98% decline in GDP in a non-sanctions scenario. This would have caused Venezuela's per capita GDP in the absence of sanctions to fall to $107, or 40% that of the poorest country on earth, a level that has never been documented for any economy in world history. Such a contraction would have been by far the largest economic collapse ever documented, similar in magnitude to that which would result from dropping 100 nuclear warheads on the country. The fact that such extreme counterfactuals are needed to support claims of welfare-enhancing sanctions serves to demonstrate their implausibility.

Santos, Morales-Arilla, and Partipilo Cornielles (2026b) (henceforth SMP I) claim that sanctions on Venezuela increased welfare by constraining the actions of the country's authoritarian government. In Rodríguez (2026), I pointed to several problems in this argument, including its inconsistency with the observed acceleration of the economy's rate of contraction that followed the imposition of sanctions and its disregard of the effect of oil prices on Venezuelan economic growth. Santos, Morales-Arilla, and Partipilo Cornielles (2026a) (henceforth SMP II) have subsequently provided a defense and justification of their key methodological choices. This note discusses their new arguments.

What would GDP have been in the absence of sanctions?

SMP I incorrectly claimed that there had been no acceleration in the rate of collapse of the economy following the imposition of sanctions (p. 2). As I pointed out in Rodríguez (2026), this was contradicted by the plain data, as the annual rate of contraction rose from 6.7 % in the four years prior to sanctions to 23.5 % in the first four years under sanctions. In their response, SMP II argue that Venezuela's economic growth under sanctions outperformed a linear extrapolation of the pre-sanctions time trend of growth rates to the rest of the sample.

In support of their argument, SMP II present a figure showing that the observed growth rates for Venezuela during the 2017-2023 period exceed those that would be predicted from a linear regression of GDP growth on time on the 2013-16 observations. We reproduce their regression in Figure 1 below. Here is the interpretation provided by the authors:

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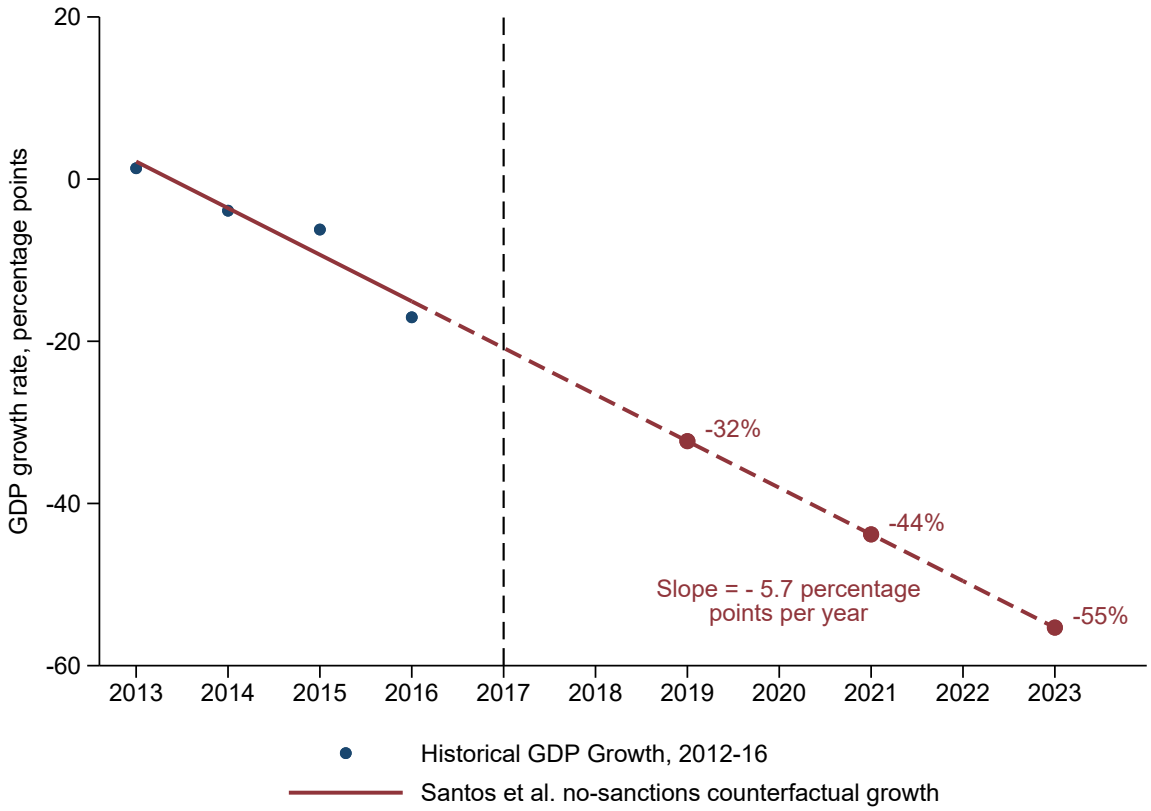
> "a linear projection of the pre-sanctions trend would have predicted outcomes worse than those actually observed under sanctions....These are conservative exercises: the pre-sanctions collapse accelerated in 2016, and allowing for nonlinear pre-sanctions trends would make the projected counterfactual even worse relative to observed post-sanctions outcomes."

Let us consider SMP's "projected counterfactual" more closely. Because Venezuela's growth rate went from 1.3 % to -17.0 % in the 2013-2016 period, extrapolation of the trend of growth rates implies projecting that the economy would contract **at an accelerating rate** every year in the rest of the sample. More concretely, their counterfactual predicts that in the absence of sanctions the Venezuelan economy would have shrunk at annual rates of 32% in 2019, 44% in 2021, and 55% in 2023 (Figure 1).

Figure 1: How SMP built their counterfactual no-sanctions growth projection



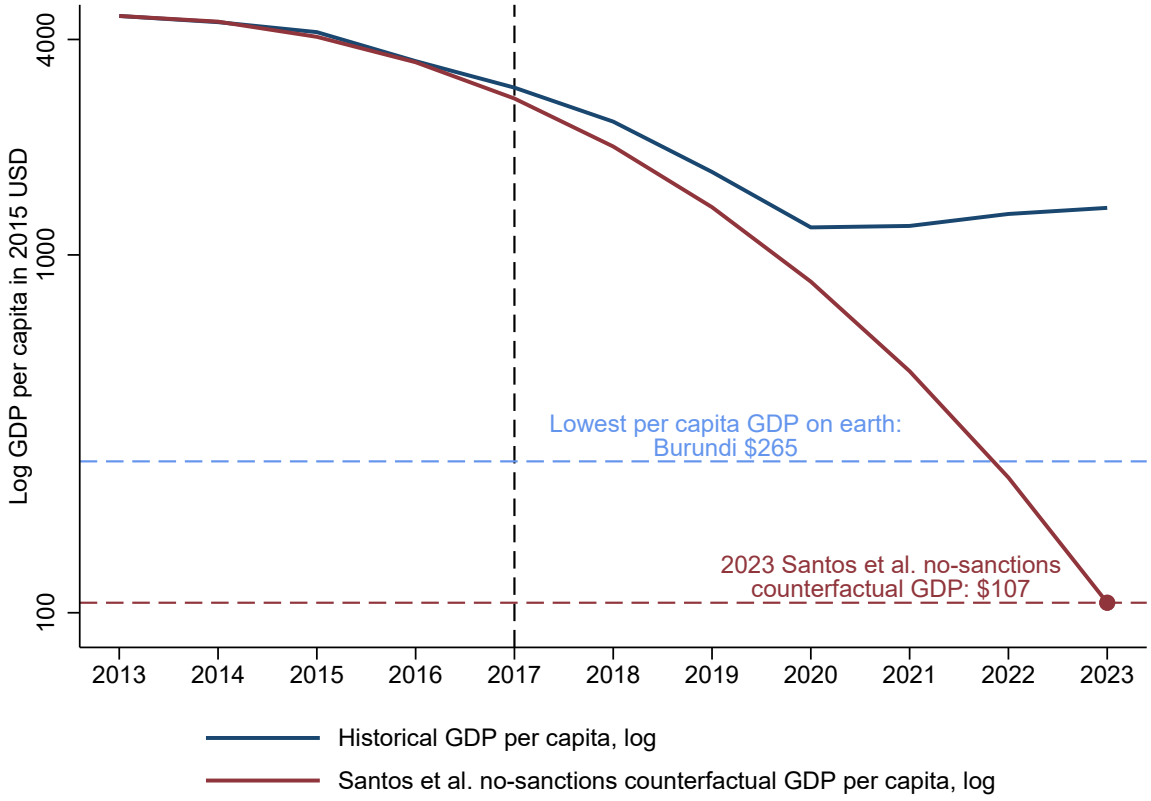
Source: Own construction based on Santos, Morales-Arilla, and Partipilo Cornielles (2026a).

An economy that contracts at increasing rates will converge asymptotically to an income level of zero. SMP's no-sanctions counterfactual comes close – it implies a 98% decline in GDP between 2013 and 2023.[1] Such a decline would have put Venezuela's per capita income in 2023 at $107. That level is 40% of the GDP per capita of Burundi, the poorest country on earth that

1. Recall that SMP claimed that their counterfactual projection was conservative because "a non-linear projection would make the projected counterfactual even worse relative to observed outcomes." We interpret this statement as implying that the authors would have found it reasonable to project that, in the absence of sanctions, the economy would have disappeared.

year, according to the World Bank.[2] No economy in world history has ever been documented to reach such a level of income, according to long-run estimates of PPP-adjusted per capita GDP published in the Maddison Project Database (Bolt and Zanden 2025).

Figure 2: How SMP's no-sanctions counterfactual compares against historical GDP



Source: Own construction based on Santos, Morales-Arilla, and Partipilo Cornielles (2026b).

Note: Blue line represents observed GDP according to IMF data. Red line represents SMP's counterfactual scenario of GDP in the absence of sanctions derived from their constant curvature extrapolation.

In terms of relative change, SMP's counterfactual contraction would have been roughly double the magnitude of the largest GDP contraction ever recorded, that of the Liberian civil war (Figure 3).[3] It would have also been on the order of magnitude of the economic devastation that would be wreaked by dropping 100 nuclear warheads on a country the size of Venezuela.[4]

SMP's extreme counterfactual predictions stem directly from their choice of an unconventional extrapolation method. In contrast to the standard practice of comparing pre- and post-treatment growth rates, SMP compare their rates of acceleration. The assumption of growth declining at a constant linear rate implies constancy of the second derivative of the logarithm of GDP with respect to time – that is, an assumption of constant curvature.[5] To the best of our

2. Calculations at constant 2015 prices. We abstract from population changes in this illustrative calculation, as they have no first-order effect on the relative magnitudes in question.

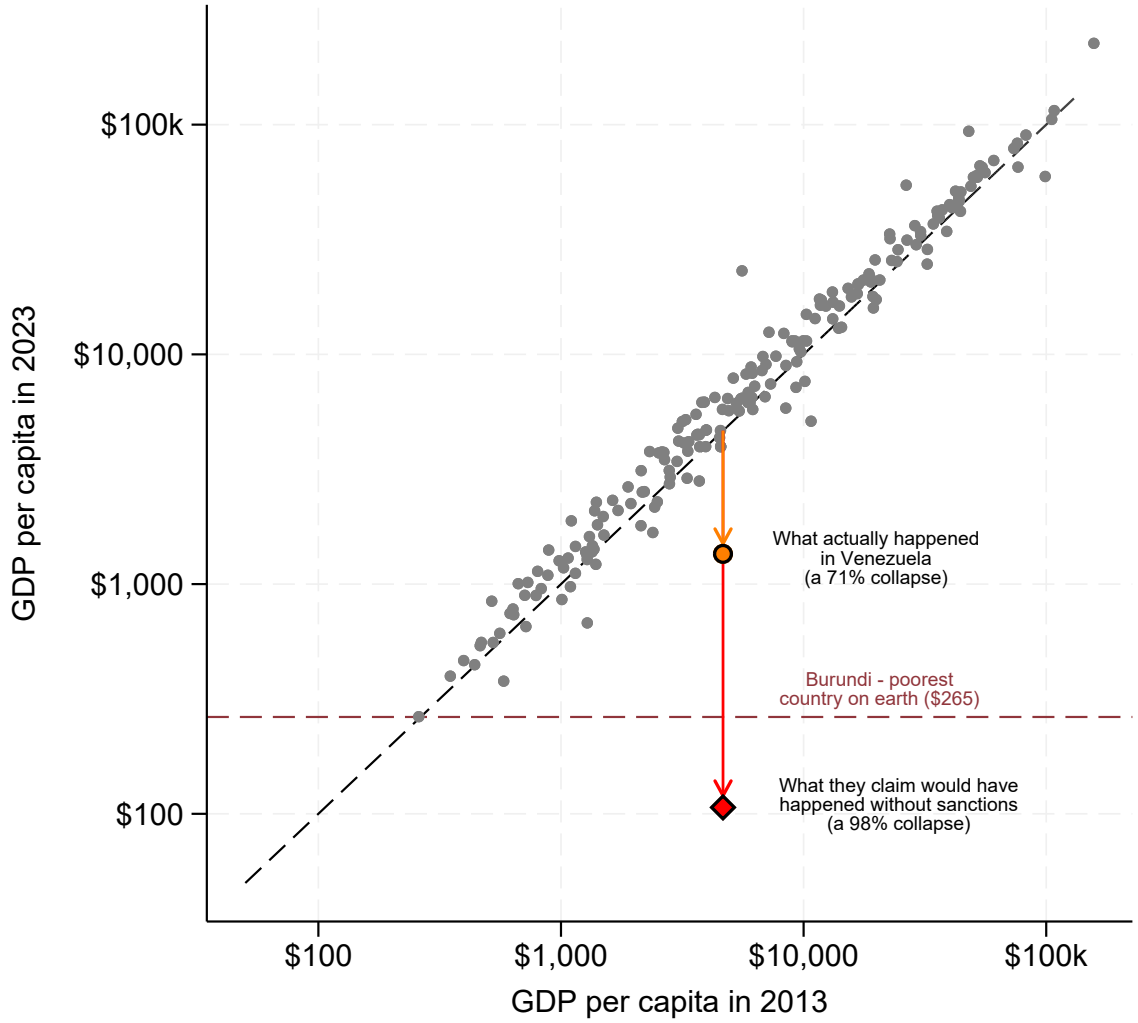
3. Liberia's GDP contracted by 87% during the 1979-95 period, so it would take two consecutive civil wars with similar economic effects to drive GDP to 2% of its initial level.

4. Calculations based on the Potential Vulnerability Affecting National Survival study as cited in Cochrane and Mileti (1986).

5. Formally, if the growth rate is a linear function of time then $\frac{d^2 \ln y_t}{dt^2} = \frac{d}{dt}\frac{dy_t/dt}{y_t}$ is constant.

knowledge, the constant curvature assumption has no meaningful economic interpretation. We are unaware of any prior work using it as a basis for out-of-sample forecasts of macroeconomic time series.

Figure 3: The collapse SMP claim sanctions saved Venezuela from



Source: Own construction based on Santos, Morales-Arilla, and Partipilo Cornielles (2026b).

The accelerating contraction rates implied by the constant curvature assumption are not a feature of standard models of economic growth. Models with diminishing returns to capital in the style of Ramsey (1928) and Solow (1956) predict that an economy responding to an adverse shock will adjust toward a lower steady-state level of income at decelerating growth rates. Models of poverty traps in the style of Murphy, Shleifer, and Vishny (1989) can generate accelerating growth rates over some intervals, yet growth ultimately decelerates as the economy approaches a new steady state. The only model that we are aware of that produces continuously increasing rates of contraction is the "end of the world" model often used for didactic purposes (Barro and Sala-i-Martin 2004, 140).

Synthetic controls and the role of oil prices

In Rodríguez (2026), I pointed out that SMP had failed to consider that recovering oil prices after 2016 should have ceteris paribus improved economic conditions in any reasonable counterfactual. In their response, SMP II point to the inclusion of one oil exporting country (Angola) with a large weight in their synthetic control analysis.

SMP's synthetic control exercise aims to compare the evolution of Venezuelan imports of essential goods with that of a synthetic counterfactual. SMP obtain the synthetic control weights from training the algorithm on annual data from 2012-2016. Their counterfactual imports diverge sharply from those of Venezuela in 2016 and 2017, years which form part of their pre-treatment period: 94 percent of the difference between the synthetic counterfactual and Venezuela occurs prior to treatment (SMP I, 49).

Abadie, Diamond, and Hainmueller (2015, 500) explain the basic conditions for applying the synthetic control method:

> "The applicability of the method requires a sizable number of preintervention periods. The reason is that the credibility of a synthetic control depends upon how well it tracks the treated unit's characteristics and outcomes over an extended period of time prior to the treatment. We do not recommend using this method when the pretreatment fit is poor or the number of pretreatment periods is small."

An application of the synthetic control method to five pre-treatment observations in which 94 percent of the differences between the synthetic counterfactual and treated observation occur prior to treatment is a textbook illustration of when not to apply the method.

Additional issues

In Rodríguez (2026), I noted that SMP's calculation of 52% of GDP losses occurring before sanctions incorrectly included 2017, the year sanctions were imposed, in the pre-sanctions period. In response, SMP II defend their calculation as an expression of the choice to treat 2017 as a pre-treatment period. This sidesteps the issue of their use of the complement of 52% as an upper bound to the effect of the collapse.

It is nevertheless worth noting that while SMP justify their exclusion of 2017 from the treatment period on the argument that effects of sanctions would be expected to operate with significant lags, there are also arguments that would justify treating 2017 fully as a sanctions year due to overcompliance and anticipatory effects. Between February and August 2017, the Trump administration sanctioned 31 high-ranking Venezuela government officials, including the president, vice-president, high-ranking PDVSA executives and Supreme court justices. These decisions could have led economic actors to avoid engaging in transactions with the Venezuelan government and state-owned firms ahead of the August 2017 executive order. In fact, by midsummer, the international press was openly reporting on Trump administration plans to impose economic sanctions on Venezuela, lending plausibility to the idea that economic actors may have anticipated the August decision.[6]

6. See Rodríguez (2025, 226–227) for a detailed discussion of these issues.

SMP II did not amend or justify several incorrect claims in their original text. These include the claim that there was no acceleration in the rate of collapse following the imposition of financial sanctions, their claim that the economic collapse came to a halt right after the enactment of oil sanctions, and their contention that the infant mortality rate published by the Economist Intelligence Unit stabilized in 2017 and 2018. It is important to highlight the relevance of correcting statements which have been shown to be false in order to maintain the integrity of the scholarly record.

Final remarks

Counterfactual analysis plays a key role in the estimation of causal effects of policies such as sanctions in non-experimental settings. Implausible counterfactuals can easily lead us to incorrectly attribute causal effects that differ significantly from the true ones. In evaluating the plausibility of counterfactuals, researchers should assess whether non-standard assumptions (e.g., constant curvature) have been used to generate them.

SMP's claim to have found evidence of welfare-enhancing sanctions is novel and provocative. Yet it also runs counter to the results of all prior peer-reviewed studies on the effects of sanctions on living conditions in targeted countries.[7] Given its methodological shortcomings, SMP's contribution does not provide a persuasive basis for overturning the existing literature.

7. Of 53 peer-reviewed studies providing quantitative estimates of the effects of sanctions on living conditions prior to SMP, 52 found adverse effects, 1 found ambiguous effects and none had found positive effects. See Rodríguez (2023) and Rodríguez and Bravo (2026) for the list of studies and search criteria.

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