UNIVERSITÀ CATTOLICA DEL SACRO CUORE
Dipartimento di Economia e Finanza

Working Paper Series

Managing the chaos: policy challenges in a hyperinflationary environment

Andrea Boitani, Catalin Dragomirescu-Gaina, Andrea Monticini

Working Paper n. 142

June 2025

UNIVERSITÀ
CATTOLICA
del Sacro Cuore

Managing the chaos: policy challenges in a hyperinflationary environment

Andrea Boitani
Università Cattolica del Sacro Cuore

Catalin Dragomirescu-Gaina
Università Cattolica del Sacro Cuore

Andrea Monticini
Università Cattolica del Sacro Cuore

Managing the chaos: policy challenges in a hyperinflationary environment

Andrea Boitani, Catalin Dragomirescu-Gaina, Andrea Monticini

Università Cattolica del Sacro Cuore, Dipartimento di Economia e Finanza,

Largo Gemelli 1, 20123 Milan, Italy

Abstract

We delve into Venezuela's 2018-2019 hyperinflation episode to examine the policy constraints autocratic governments face during extreme economic distress. We develop a simple model that reflects dynamics in a segmented foreign exchange (FX) market and allows us to understand how media coverage may influence discretionary policy controls. Leveraging a special dataset of daily consumer prices collected by volunteers, we show that official FX manipulation allowed the government to mitigate hyperinflationary pressures by maintaining overvalued levels relative to the black-market that in turn helped anchor expectations. Crucially, our empirical results indicate that media coverage significantly constrained the government's ability to manipulate official FX rates, despite ample reserves and a *de facto* control over hard currency supply. The findings offer new evidence that, even in low-accountability regimes, policy discretion is limited by media-driven scrutiny.

1. INTRODUCTION

In May 2019, the central bank of Venezuela released official GDP and inflation figures for the first time since 2015.[1] It was a rare acknowledgement of the magnitude of hyperinflation devasting the country, with average month-on-month inflation above 50%, adding to an annualised rate of 130060% in 2018 (see the report by ECLAC, 2022). Apart from scarce official statistics,[2] there is limited evidence to illustrate the country's broad economic and social collapse, and even less to understand policy options available during a hyperinflation episode of such magnitude. Yet, in a global geopolitical context marked by raising uncertainty stemming from multiple sources and crises, we believe that policymaking in volatile economic environments is likely to attract increased interest. While much of the literature emphasizes institutional constraints to autocratic policymaking, this article highlights how informational pressures—specifically, online media coverage—shape executive discretion in the management of foreign exchange (FX) policy during severe economic crises.

To provide context, some details are in order. Venezuela has been strained by high emigration, social unrest, and extreme poverty in large segments of the population. To stabilize the economy and maintain social order in a country that has long been reliant on a sort of socialist-oriented system, the government resorted to manipulating the few remaining nominal anchors, amid a lack of transparency (or selective disclosure at best) in public data. Persistent supply shortages led to strict price controls for essential goods (e.g. pharmaceuticals and hygiene products) and official exchange (FX) rates set well below black-market levels. Gasoline and fuels were provided essentially for free, distributed through the government-owned oil

---

[1] News reported by Financial Times, https://www.ft.com/content/5cb83c1c-821b-11e9-b592-5fe435b57a3b.
[2] The few data compiled in the annual reports of the Economic Commission for Latin America and the Caribbean (ECLAC) illustrates the size of the economic collapse. ECLAC reports are an invaluable information source and are available at https://www.cepal.org/en/publications/type/economic-survey-latin-america-and-caribbean. See also available from Alvarez et al (2022).

producer and exporter *Petróleos de Venezuela S.A.* (henceforth PDVSA). By holding a *de facto* monopoly over the hard currency supply, the central (monetary and fiscal) authorities were able to sustain artificially low FX rates that created a substantial FX gap relative to black-market levels. In a desperate move, in February 2018, the government decided to remove the heavily subsidised fixed exchange rate of 10 bolivars per dollar and replace it by an auction-based rate of 25000 bolivar per dollar, which effectively amounted to a 99% devaluation in one day.[3]

With a limited economic policy toolkit, the government increased its use of force, relying on military enforcement and judicial control to suppress political dissent. At the same time, it sought to manage expectations through propaganda and selective data releases. TV stations in Venezuela are typically subject to strict licensing and heavy state oversight (Lutscher and Donnay, 2025; Knight and Tribin, 2022), but online media platforms are relatively inexpensive to set up and easier to bypass censorship. NGOs and international organisations provide evidence that the Maduro government tried extending its grip on digital information through Internet (DNS) blocking, server restrictions, and content filtering, especially during politically sensitive events. Despite such challenges, independent media continued to operate online, driven by a robust demand for free information, potentially offering an alternative to government-controlled narratives and propaganda.[4]

---

[3] From 2014, Venezuela had a dual exchange rate system with a preferential rate (for priority sectors) and a higher auction-based FX rate, which led to persistent disparities between official and black-market rates. A new auction-based fixing was introduced in February 2018, but FX rates were still heavily distorted by central bank interventions and capital controls. This Reuters news, available at https://www.reuters.com/article/us-venezuela-economy-idUSKBN1FP2WK, provides more details. See section A in the online Appendix for a full discussion on FX rates in Venezuela.

[4] Detailed information and corroborative evidence to support media independence are included in section B of the online Appendix where we discuss the media landscape in Venezuela. One of the best proxies available for media independence is users' interest in accessing restricted content on the internet. Most commonly, a VPN (Virtual Private Network) secures internet traffic and hides IP addresses, allowing users to bypass potential censorship. To gauge interest in online privacy and free content, we look at Google Trends data and find a robust increase in "VPN" searches after February 2018 (which also marks the start of our sample). We relegate additional evidence, indicators and measures to the online Appendix section B.

This paper investigates the role of media in limiting the use of discretionary policies during severe economic distress, a typical strategy for autocratic regimes (and for many transition economies). Inspired by the early work of Dornbusch (1986) and Frenkel (1990), we develop a simple model of discretionary FX policy that incorporates media into inflation expectations but without modelling political outcomes and media interactions (for a detailed review, see Gehlbach et al., 2016). We show that the optimizing behaviour of the central planner implies a trade-off between inflation and the FX gap; this incentivises a manipulative FX control, which in the case of Venezuela was sustained by large oil-funded central bank reserves. Segmented FX markets are typical in economies experiencing prolonged periods of distress and turmoil. We verify and confirm that, despite consistent overvaluations relative to its black-market levels, the official FX acted as the ultimate nominal anchor in overcoming the 2018-2019 hyperinflation episode. We show that FX changes are fully passed through into domestic prices within three months, which buys time and allows the government to instrument the official depreciation pace for its own policy objectives. Crucially, we find limits to this discretionary policy conduct: due to its influence on inflation expectations, media can force even an autocratic policymaker to curtail its manipulative control over the official FX rate.

Despite severe data availability challenges, we provide solid empirical evidence in support of these mechanisms. To do so, we rely on a unique dataset called *Inflationverdadera* (or *TrueInflation* in English), including daily prices collected by volunteers who shop in local stores for staples; the project uses a mobile phone app allowing anyone to take photos of price tags, which are then validated, filtered, and organised in a database.[5] Our paper is the first to use

---

[5] Data collection was supported by the Billion Prices Project @ MIT Sloan and Harvard Business School. The project was an academic initiative founded by Alberto Cavallo and Roberto Rigobon in 2008; it is no longer active but continues today through other similar initiatives. See more at http://www.inflacionverdadera.com and https://thebillionpricesproject.com.

this dataset to delve into Venezuela hyperinflationary episode. Access to daily inflation data is essential for understanding the dynamics of nominal variables during crises; rapid price increases create significant uncertainty and information frictions, complicating expectation formation and policy responses.[6] Coibion and Gorodnichenko (2015) show that information rigidity in expectations is associated with policy and institutional characteristics. With manipulated nominal anchors, like overvalued official FX rates (relative to black-market levels), expectations formation becomes even more complex. The FX typically influences consumer prices via imports, at least for essential goods. According to the World Bank, the GDP share of imports was 31.4% in 2014 – which is the last available observation;[7] however, due to the general collapse of the Venezuelan economy, by 2018-2019 the import share was probably even higher. Despite potential pitfalls related to the segmented, multi-tier FX market system, we use the official FX rate against the USD as it is widely available and regularly reported, whereas black-market FX data are scarce and unreliable (see section A in the Appendix).

A substantial political economy literature focuses on mechanisms explaining media's influence in developed economies (see Besley and Prat, 2006; DellaVigna and Gentzkow, 2010; DellaVigna and La Ferrara 2015). We contribute instead to the literature strand discussing media's impact in autocratic regimes, where it is common for propaganda and state-controlled narratives to shape public opinion, maintain regime stability, and suppress dissent (see Shadmehr and Bernhardt, 2015; Guriev and Treisman, 2019; Zhuravskaya et al., 2020). One of our contributions is to incorporate media coverage as a driver of inflation expectations in a model designed to expose policy trade-offs that arise during severe economic distress. In our

---

[6] Information frictions are typical in hyperinflationary contexts. What complicates the problem in the case of Venezuela is the complete lack of official statistics for basic indicators (inflation, GDP), which increases the cost of processing information; see the discussion in Gaglianone et al., (2022).

[7] This 31.4% represents nevertheless a significant increase from an average of just 21.5% during the early 2000s. See https://data.worldbank.org/indicator/NE.IMP.GNFS.ZS?locations=VE.

setup, agents form expectations by incorporating FX information alongside past inflation; media coverage amplifies or reduces the impact of FX changes on these expectations, which may not necessarily lead to lower information frictions (e.g. when propaganda dilutes content). Media news can influence expectations through its content, frequency, and the range of topics being addressed (DellaVigna and Gentzkow, 2010; D'Acunto et al., 2023). To gain insights, we look at media coverage across different domains (e.g., economics, politics, sports) when identifying limits to the government's ability to manipulate FX.

The rest of the paper proceeds as follows. Section 2 presents a simple theoretical model used to guide our empirical strategy. Section 3 describes our data and methods, while section 4 presents the empirical results. Finally, section 5 concludes. More details about our data and model specifications are relegated to the online Appendix.

2. BASIC MODEL

We do not pretend to capture the actual behaviour of Venezuelan policymakers through an optimizing model. However, the simple framework developed here generates predictions that are of interest for our empirical analysis. We use a loss function that reflects constraints arising from the discretionary use of FX policy controls in a segmented (or two-tier) exchange market context:

$$L_t = \frac{1}{2}\pi_t^2 + \frac{1}{2}\lambda\left(e_t - e_t^b\right)^2 \tag{1}$$

where e_t and e_t^b are the official and black-market FX rates respectively, while λ is the weight placed by the central planner on the FX gap, denoted by $(e_t - e_t^b)$; to some extent, this weight can be seen as a proxy for the adequacy of official reserves that should guarantee currency stability and influence public trust (potentially adding reputational constraints in the process).

With an economy dominated by supply shortages and large imports for essential goods, our Phillips curve is simply:

$$\pi_t = \beta E_t \pi_{t+1} + \alpha(e_t - e_{t-1}) + \gamma(e_t^b - e_{t-1}^b) + \varepsilon_t \tag{2}$$

where β is a discount factor, t is a time index, α measures the passthrough from official FX and γ is the passthrough from black-market FX, while ε_t is a supply shock.

With hyperinflation, rapid price changes make nominal anchors crucial for shaping expectations. Media coverage may influence this process, potentially altering the optimal weight economic agents assign to different information signals (e.g. Pfäuti, 2024). Inflation expectations are specified here as backward looking – a reasonable assumption when the focus is on high frequency (daily price) dynamics. However, we add a component that depends on the FX gap and whose impact on expectations is intermediated by the media, denoted by m. An overvalued official FX relative to its black-market levels, i.e. $e_t^b - e_t > 0$, make people doubt the ability of the central planner to control its currency and hence inflation, which then induces expectations of future FX depreciation, leading to higher expected inflation.[8] To keep all these interactions tractable, we specify expectations as:

$$E_t \pi_{t+1} = \pi_{t-1} + m(e_t^b - e_t) \tag{3}$$

The central (monetary and/or fiscal) authority minimizes its loss function under discretion, by choosing the instrument e_t subject to constraints given in (2) and (3). The F.O.C. leads to the following expression for the optimal official FX rate:

$$e_t = e_t^b - \frac{\alpha - \beta m}{\lambda} \pi_t \tag{4}$$

---

[8] To rule out explosive dynamics, we assume $\beta m < \alpha$; then even in the extreme case that the FX gap is corrected in one single period, and $e_{t+1} = e_t^b$, inflation expectations in (3) would converge to inflation in (2).

Three main implications arise: (i) high inflation incentives the central authority to keep the official FX rate relatively overvalued, hence $e_t < e_t^b$; (ii) higher media attention, m, would alter expectations and force a depreciation of the official FX rate to bring it closer to its black-market level, which would then limit FX manipulation incentives; and (iii) a higher λ, which may be interpreted as consistent with low official reserve adequacy, would reduce the FX gap in equilibrium and depreciates the official FX rate.[9]

As we lack reliable estimates for black-market FX levels in Venezuela (as for example employed in Caporale and Cerrato (2008) for a small set of Asian countries), we take a less direct approach in validating these theoretical predictions in the empirical analysis. Firstly, we confirm the role of official FX as a nominal anchor, showing that prices react to FX changes but with an incomplete passthrough in the very short-term, lasting up to three months. An official FX depreciation would preserve the official reserves and narrow the FX gap but in the same time fuel inflation due to the high passthrough; the estimated three-month interval allows the central planner to derive some short-term, indirect benefits via seigniorage and monetary creation (see also Bodea and Higashijima, 2017). Secondly, we demonstrate that online media coverage can play a significant role in explaining fluctuations in the official FX rate.[10] This last finding allows us to conclude that media coverage acts as an implicit check on the discretionary use of FX policy controls.

---

[9] Developing a general equilibrium models of segmented FX markets to capture many potential trade-offs and constraints, like in the early work of Dornbusch (1986), Frenkel (1990), or more recently in Fanelli and Straub (2021), is beyond the scope of this paper which analyses media's influence on discretionary FX policies.

[10] As censorship pertains mainly to TV and radio stations, we do not explicitly model media censorship (as in Shadmehr and Bernhardt, 2015) but treat it as exogenous; however, it may still be a relevant factor which we deal with separately in the robustness checks section. Gehlbach et al., (2016) provide a relevant review of formal models dealing with media control in non-democratic regimes.

3. DATA AND METHODS

Our first major source is the *Inflationverdadera* data collection project, which supplies us with daily consumer prices for Venezuela. Prices were collected for many consumption items available for sale in supermarkets and then aggregated using a set of relevant consumption basket weights into an index that is our main variable of interest. The obvious limitation is that this basket might not accurately represent Venezuelan consumers' spending patterns, given the widespread availability of subsidized goods and the impact of price controls on large segments of the population. In section C of the online Appendix, we provide more details; a comparison with the official consumer price inflation (that was released by Venezuelan authorities with a substantial delay) shows that *Inflationverdadera* prices provide a reasonable approximation of the inflation dynamics we want to investigate.

Bloomberg is our second major source, which is used for financial data. We employ daily official FX rates for the local currency, the Bolivar, against the USD as well as daily WTI oil prices expressed in USD. Our sample covers a very challenging period for Venezuela – a period characterised by hyperinflation, absence of official data statistics, political turmoil and generalised economic decline; the sample starts the day after the introduction of the new auction-based FX fixing in February 2018 and runs on a daily frequency until the end of February 2020.[11]

For media news, we draw our data from GDELT (i.e. *Global Database of Events, Language, and Tone*), which is a large project set up to monitor broadcast, print and online media news from all over the world. The project was set up with support from Google, which provides the critical infrastructure and technological support enabling GDELT to function as a database; an

---

[11] We wanted to avoid the large, lockdown-induced, drop in WTI oil prices from spring 2020. Moreover, hyperinflation has substantially cooled in 2020, dropping to 2360% by year end according to IMF estimates. See https://www.imf.org/external/datamapper/PCPIPCH@WEO/WEOWORLD/VEN.

early description of it is provided by Leetaru and Schrodt (2013). We extract various proxies for media coverage, using for each specific domain or topic a short list of synonyms; more details are in section D of our Appendix. As discussed in Gentzkow et al. (2019), a major challenge in using media news, and text data more broadly, is the inherent high dimensionality, which often requires complex dimension reduction techniques to extract meaningful insights. To deal with high data dimensionality, our media proxies are expressed as the relative share of a specific topic within total media coverage in Venezuela. The sheer volume of news can significantly shape expectations, as demonstrated by Fronzetti Colladon et al. (2023) who show that the frequency of economic-related keywords may robustly predict consumer confidence. Obviously, relying on topic shares constructed based on news volumes (i.e. quantities) would overlook qualitative aspects such as sentiment or tone that are also critical for understanding media influence; we also explore the qualitative dimension of our GDELT media proxies but do not find significant results for which reason we relegate this discussion in section E of the Appendix. Complementary proxies could measure the diversity of media narratives or network analyses that track information dissemination across media channels, which are all rather difficult undertakings in the confined media landscape of Venezuela.

In term of analytical methods, we estimate simple *vector autoregressive* (or VAR) model specifications that allow us to efficiently capture the high-frequency dynamics of all endogenous variables discussed in section 2. To draw our main insights, we rely on standard impulse response functions (IRFs) and variance decompositions (VDs) methods.

4. EMPIRICAL ANALYSIS

4.1. Nominal anchors

From 2003 the Venezuelan government introduced strict currency controls, fixing the exchange rate and establishing a national commission to regulate foreign currency transactions. This system aimed to prevent capital flight and stabilize the Bolívar but led to the emergence of a parallel black market due to limited access to official rates. Further adjustments occurred in 2014 when the government announced a dual exchange rate system: a preferential rate for priority sectors and a higher rate determined by the Central Bank's currency auctions for other sectors. These measures struggled to unify the exchange rates, resulting in persistent disparities between official and black-market rates (see our discussion in section A from the Appendix).

During 2018-2019, the official FX rate was heavily managed by the central bank;[12] limited amounts of USD were sold during regular auctions to the local banks, whose bids were averaged to determine the daily FX fixing. With large official reserves bolstered by substantial oil exports, the monetary authority, aka the central planner, did not have to bother with reputation concerns. The central bank could exert an effective control over the supply of dollars in the interbank market, effectively employing FX depreciation as a policy lever. Stable FX rates would anchor inflation expectations, but an FX depreciation would bolster public revenues, denominated in local currency; FX depreciation could then be used to expand subsidies (e.g. like free fuels), enabling the government to alleviate living costs and slow (hyper)inflationary pressures. This mechanism is consistent with existing anecdotal evidence about the impact of government subsidies for the fuel sold by PDVSA – the large state-owned

---

[12] See news reported by Reuters, https://www.reuters.com/article/us-venezuela-economy-idUSKBN1FP2WK.

company responsible for the exploration, production, refining and distribution of petroleum products. Hence, international oil prices served as the only hard constrain on the size of central bank reserves, which served to backstop the overvalued official FX rate relative to its black-market levels.
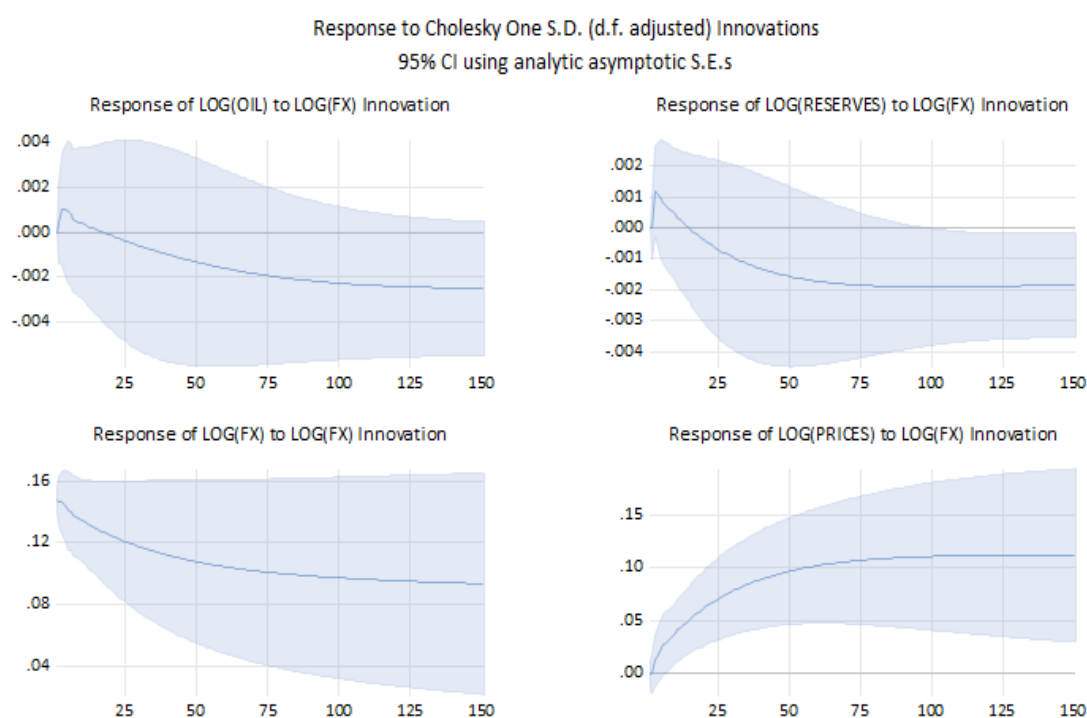
In the first step of our empirical analysis, we quantify the FX passthrough into domestic consumer prices from a simple four-variable VAR. The four endogenous variables are the following: $[OIL, RESERVES, FX, PRICES]$, where OIL denotes WTI prices in USD, $RESERVES$ denote central bank reserves in USD, FX is the official exchange rate, and finally $PRICES$ denote the consumer price index based on *Inflacionverdadera* data. This VAR captures the mechanisms described above, with reserves being the most exogenous domestic variable (see Lane and Burke 2001). A simple Choleski decomposition is applied, with $PRICES$ ordered last, FX ordered second last, then central bank reserves and, finally, international WTI oil prices; all variables are in log terms and in levels. To control for all sources of potential non-stationarity, we also include a linear trend.

With daily data, we use 5 lags to remove the autocorrelation in residuals. The IRFs to an FX shock displayed in Figure 1 indicate a full passthrough from FX changes into consumer prices after approximately three months (or 75 days). However, in the very short term, passthrough remains incomplete; note that after one month (or about 25 days), passthrough is less than 60%, as log(CPI) hovers around 0.07 and log(FX) stands around 0.12. Actually, the three-month time lag provides the government with sufficient flexibility in manipulating the overvalued FX rate, as any depreciation will immediately boost revenues, which can then be used to expand subsidies, but show up in prices only after a full quarter.[13]

---

[13] Advancing the Christmas season by two months in 2024 is just the latest indication of the government's increasingly desperate efforts to retain popular support through expedited subsidy delivery. See CNN news at: https://edition.cnn.com/2024/09/03/americas/christmas-venezuela-october-maduro-intl-latam/index.html

Figure 1: Responses to an official FX (depreciation) shock

Response to Cholesky One S.D. (d.f. adjusted) Innovations
95% CI using analytic asymptotic S.E.s

Note: Impulse responses above are obtained from a four-variable VAR model with all variables in log levels. We use 5 lags, along with four day-of-the-week dummies. A Choleski decomposition is employed, with OIL ordered as the most exogenous, followed by RESERVES, FX, and PRICES.

4.2. Media influence

Our previous VAR model specification includes four variables, which capture the main drivers and constraints characterising the use of FX as a policy lever. However, inflation is not simply a monetary phenomenon, and there is extant literature showing that expectations and information frictions can play a key role (see Pfäuti, 2024). Such information frictions may arise from sources and through mechanisms that are not explicit in our previous VAR specification (see also Pfajfar and Santoro, 2013).

The media landscape in Venezuela is a rather complex environment, as we explain in section B from our Appendix. *FreedomHouse* (a nonprofit organization that conducts research and advocacy on democracy, political freedom, and human right) reports significant barriers to access, ranking Venezuela at the bottom of its global ranking. Meanwhile, propaganda and various forms of censorship are rampant. The role of state-controlled media in shaping public perceptions of economic conditions is well-documented in the literature (see Chomsky, 2011). Despite these challenges, online opposition media remained strong, able to organise social gatherings, national strikes and other civil events to which the government has been forced to respond. The evidence we report in Section B of the Appendix, using GDELT data, shows that the media landscape is not fully dominated by propaganda.

Including a media proxy in our model specification is a rather simple task, but it requires extra care when analysing the properties of the extended model. Since our media proxy is a stationary variable, the four initial variables are transformed in their first differences to allow stable variance decompositions. As discussed in section 2, we treat media coverage as an exogenous variable and order it just after OIL, keeping the Choleski decomposition for this extended model specification.

Although top stories everywhere are most likely about politics, international relations and economics, Boczkowski and Mitchelstein (2013) show that people generally like to consume news about sports, entertainment, crime and weather. Media coverage topics in Venezuela can vary widely, and the Maduro government can exert a large influence and control. Our preliminary analysis suggests that newsworthy content is first about *politics* and second about *economic* aspects (see section D in the online Appendix). We look at each topic separately.

We are mainly interested in identifying media interactions with the other nominal variables (particularly with the FX rate), rather than its causal impact.[14] Most newsworthy events are unexpected in democracies but still create large prediction errors (Nimark 2014). In autocracies, exogenous media shocks are harder to identify due to government-driven propaganda and media coverage. In a robustness check discussed at the end of this section, we report similar results when adding internet blackouts as an exogenous policy lever.

We rely on the GDELT data engine to extract local daily news' volumes, differentiated by topic to have a broad representation of media coverage in Venezuela. We organise our topics into six large categories or topics covering *economics, politics,* and *entertainment* (e.g. sport and culture). Each main topic is identified here by a single keyword (to facilitate exposition), but we rely on various alternative synonyms to maximize coverage; for example, [topic: "inflation"] was extracted using closely related keywords like: "inflation", "price" and "prices"; for [topic: "income"] we used as keywords: "income", "wage", "wages", "salary", "salaries". More details about our media variable are provided in section D of the online Appendix.

---

[14] In the challenging media landscape of Venezuela, despite strict government censorship (including banning and internet restrictions), independent media outlets are still able to reach out to their readers. See our detailed discussion in section B of the online Appendix.

Figure 2: FX variance explained by our media proxy, when coverage is differentiated by topic
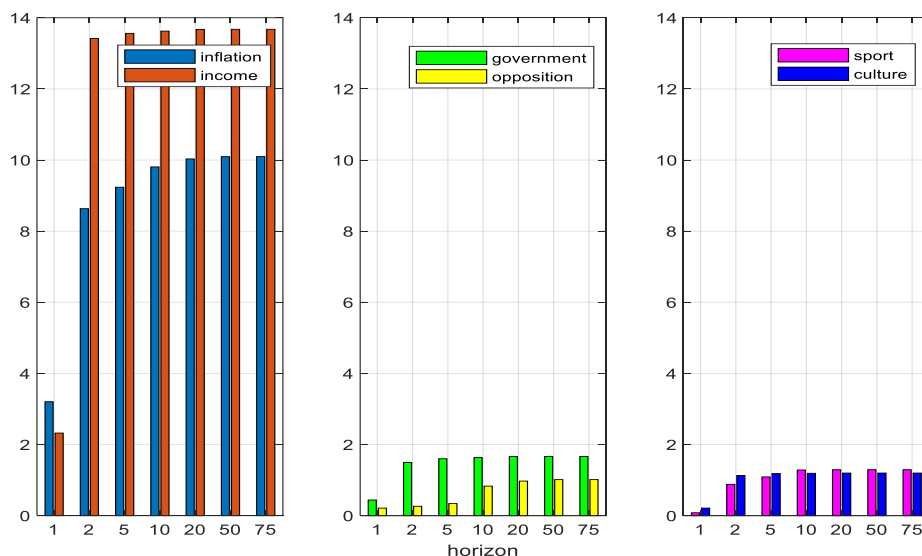
Note: Share of FX variance explained by media shocks in a VAR estimated with five variables with a Choleski decomposition where media is ordered second, after OIL; the rest of the variables are ordered as in Figure 1. Topics are identified in the legend of the graphs. Media proxies are taken as topic shares in total news volumes and are extracted from GDELT. The x-axis depicts the horizon (in days) where variance decomposition is performed; the y-axis depicts the % share of FX variance explained by media shocks in a 100 total.

As predicted by our theoretical model in section 2, media coverage is a key element influencing policy discretion. As illustrated in Figure 2, media explains a sizable share of the FX variance decompositions. A relatively high share of FX variance (around 10-14% at horizons ranging from one week to one month) can be explained by *economic* news (discussing either "inflation" or "income"-related topics). Topics covering *politics* instead explain a small percentage of the FX variance (below 2%), and *entertainment* topics (including "sport" and "culture") have similar explanatory power (around 1%). This result stands in sharp contrast to the observed distribution of topics in local media coverage; as shown in section E of the online Appendix, the relative share of local coverage allocated to *economics* is rather marginal, below 10%, compared to *politics*, for which more than one out of two news includes "government"-

16

or "opposition"-related keywords. Please note that our topic shares extracted from GDELT are not mutually exclusive, since one news article may include more than one topic.

This result demonstrates the influence of online media and is perhaps surprising if we think that the government exerts substantial control over the local audiovisual media (e.g. TV and radio stations). King et al., (2017) show that, in democracies, even small media outlets can have nation-wide influences on public agendas and opinions. In autocratic regimes, propaganda works mostly by diluting media coverage with unrelated and/or irrelevant news (see Zhuravskaya et al., 2020; Stukal et al., 2022; Boitani and Dragomirescu-Gaina 2023); such a strategy helps maintain political support for the incumbent by diverting media attention away from sensitive topics (e.g. opposition organised marches, civil unrest). Indeed, internet (DNS) blackouts, detention of journalists, and harassment of dissenting voices, are not unusual in Venezuela; many civil society groups complain about censorship, restricted access to independent news sources. Therefore, it is reasonable to expect that the government retains some significant influence over the general online media coverage too, although we need to rule out complete/absolute control.

The explanation is rather straightforward and aligns with our theoretical predictions. As media economic coverage increases, people become aware of the consequences of the current policymaking, which makes it harder for the government to keep FX fixing at artificially overvalued levels; FX rates were typically set below black-market levels to stabilize expectations, but this strategy can backfire because a large FX gap would create depreciation expectations, which would then increase inflation expectations. Higher media coverage (of *economic*-related topics) forces the central planner to depreciate an overvalued official FX rate, therefore reducing the FX gap relative to black-market levels. The FX responses to a

media shock compiled from our five-variable VAR (and illustrated in section E of the Appendix) confirm this interpretation, especially for media topics related to *economics* and *politics*.

To further support this claim, Table 1 below presents the correlation coefficients between FX changes and the various media proxies, which are lagged by one week to avoid reverse causality concerns; to smooth out some large variations, we used 5-day averages for all variables. We only find positive and statistically significant correlations in the case of *economic* news, implying that a higher *economic* media coverage today (with topics related to "inflation" and "income") is associated with higher FX depreciation next week.

Table 1: Correlation between official FX changes and lagged media proxies

	Economics		Politics		Entertainment	
	Topic: "inflation"	Topic: "Income"	Topic: "Government"	Topic: "Opposition"	Topic: "Sport"	Topic: "Culture"
Correlation	0.12	0.08	0.03	-0.20	-0.06	-0.02
t-stat	2.88	1.74	0.72	-4.72	-1.29	-0.53
prob.	0.00	0.08	0.47	0.00	0.20	0.60

Note: Sample includes daily data from Feb. 2018 – Feb. 2020. Media proxies are extracted from GDELT.

Our analysis has thus far considered online media coverage as exogenous by not explicitly addressing censorship. As a robustness check, we want to include a different type of data in our analysis and estimate an extended VAR specification. Maduro's government has regularly employed internet blackouts as a means of censorship, disrupting access to information and communication. To account for this, we add a dummy variable reflecting internet shutdowns that occurred between Feb. 2018 and Feb. 2020, totalling 17 days. The data was manually collected from NetBlocks.org, an independent and non-partisan global internet monitoring organization specializing in digital rights and internet governance; see section E in the Appendix. This censorship dummy works as an extreme but obviously discretionary tool for

the government, and hence it is ordered before all the other domestic variables (though second after OIL in the VAR). Anecdotal evidence suggests that these shutdowns are more potent instruments of control than the manipulation of FX rates via official fixing; the latter functions much like a quasi-auction system, where inherent market dynamics could introduce uncertainty and allow for limited precision in managing currency fluctuations on a daily basis. In stark contrast, by completely severing digital communication channels, the government can enforce an immediate and comprehensive suppression of dissent and information. We repeat the VDs exercise from Figure 2 by estimating a six-variable VAR but find no substantial difference; if anything, we see a higher share of FX variance explained by some of our six topics (particularly in the case of "inflation"). This robustness check emphasizes our main result about media scrutiny acting as a binding constraint, actively shaping the government's discretionary use of FX policy controls.

5. CONCLUSIONS

We delve into Venezuela's 2018-2019 hyperinflation episode to examine the complex interactions between key policy levers, domestic price dynamics, and online media. With scarce official statistics, we leverage data from the *Inflationverdadera* project to understand the high-frequency dynamics of consumer prices and government's responses to persistent economic distress. To navigate the hyperinflation chaos, the authorities relied on a range of discretionary policy controls, consistent food and fuel subsidies, increased military and political repression, and tightened their grip on media outlets and other information sources. Our analysis is guided by a theoretical model that incorporates FX policy discretion and inflation expectations influenced by media attention to nominal anchors, which become salient during periods of uncertainty, especially in hyperinflation episodes. We find that official

FX changes are fully passed through into domestic prices within three months, confirming the role of the exchange rate as the ultimate nominal anchor. Large oil-funded central bank reserves enabled the government to maintain an overvalued official FX rate relative to black-market levels, which in turn helped anchor expectations and mitigate hyperinflationary pressures.

A key prediction of our model is that media scrutiny forces a depreciation in the official exchange rate that narrows the FX gap, thus constraining manipulation incentives. Official FX depreciation also increases public revenues due to seigniorage, allowing the government to extend more subsidies and reduce social tensions. Crucially, we find that economic media coverage, in contrast to non-economic media reporting, exerted a significant constraining effect on the government's discretionary use of FX controls. This effect persists, and even strengthens, when accounting for internet blackouts as a proxy for media censorship in the empirical model. Across various media topics, we find that economic news carries the strongest impact through media's influence on expectations and information frictions. While we can only speculate on longer-term effects, this media scrutiny and informational pressure likely helped restore some lost credibility, contributing to the gradual disinflation process in subsequent years.

More broadly, our findings speak to the capacity of media-driven informational pressures to shape executive decision-making in autocratic regimes. Even in highly repressive contexts, governments must navigate not only institutional constraints but also the immediate political costs of online media scrutiny. By documenting this dynamic in a high-stakes economic crisis marked by severe data limitations, our study contributes new empirical evidence to debates on policy discretion, media, and the politics of information control in authoritarian regimes.

REFERENCES

Alvarez, Jorge, Mr Marco Arena, Alain Brousseau, Mr Hamid Faruqee, Emilio William Fernandez Corugedo, Mr Jaime Guajardo, Gerardo Peraza, and Juan Yepez. "Regional spillovers from the Venezuelan crisis: Migration flows and their impact on Latin America and the Caribbean." *International Monetary Fund*, 2022.

Besley, Timothy, and Andrea Prat. "Handcuffs for the grabbing hand? Media capture and government accountability." *American economic review* 96, no. 3 (2006): 720-736.

Bodea, Cristina, and Masaaki Higashijima. "Central bank independence and fiscal policy: Can the central bank restrain deficit spending?" *British Journal of Political Science* 47, no. 1 (2017): 47-70.

Boitani, Andrea, and Catalin Dragomirescu-Gaina. "News and narratives: A cointegration analysis of Russian economic policy uncertainty." *Economics Letters* 226 (2023): 111094.

Boczkowski, Pablo J., and Eugenia Mitchelstein. "The news gap: When the information preferences of the media and the public diverge." *MIT press*, 2013.

Caporale, Guglielmo Maria, and Mario Cerrato. "Black Market and Official Exchange Rates: Long-run Equilibrium and Short-run Dynamics." *Review of International Economics* 16, no. 3 (2008): 401-412.

Chomsky, Noam. "Media control: The spectacular achievements of propaganda." *Seven Stories Press*, 2011.

Coibion, Olivier, and Yuriy Gorodnichenko. "Information rigidity and the expectations formation process: A simple framework and new facts." *American Economic Review* 105, no. 8 (2015): 2644-2678.

D'Acunto, Francesco, Ulrike Malmendier, and Michael Weber. "What do the data tell us about inflation expectations?." In *Handbook of economic expectations*, pp. 133-161. Academic Press, 2023.

DellaVigna, Stefano, and Matthew Gentzkow. "Persuasion: empirical evidence." *Annual Review of Economics* 2, no. 1 (2010): 643-669.

DellaVigna, Stefano, and Eliana La Ferrara. "Economic and social impacts of the media." In *Handbook of media economics*, vol. 1, pp. 723-768. North-Holland, 2015.

Dornbusch, Rudiger. "Special exchange rates for capital account transactions." *The World Bank Economic Review* 1, no. 1 (1986): 3-33.

Fanelli, Sebastián, and Ludwig Straub. "A theory of foreign exchange interventions." *The Review of Economic Studies* 88, no. 6 (2021): 2857-2885.

Frenkel, Michael. "Exchange rate dynamics in black markets." *Journal of Economics* (1990): 159-176.

Fronzetti Colladon, Andrea, Francesca Grippa, Barbara Guardabascio, Gabriele Costante, and Francesco Ravazzolo. "Forecasting consumer confidence through semantic network analysis of online news." *Scientific Reports* 13, no. 1 (2023): 11785.

Gaglianone, Wagner Piazza, Raffaella Giacomini, João Victor Issler, and Vasiliki Skreta. "Incentive-driven inattention." *Journal of Econometrics* 231, no. 1 (2022): 188-212.

Gehlbach, Scott, Konstantin Sonin, and Milan W. Svolik. "Formal models of nondemocratic politics." *Annual Review of Political Science* 19, no. 1 (2016): 565-584.

Gentzkow, Matthew, Bryan Kelly, and Matt Taddy. "Text as data." *Journal of Economic Literature* 57, no. 3 (2019): 535-574.

Guriev, Sergei, and Daniel Treisman. "Informational autocrats." *Journal of economic perspectives* 33, no. 4 (2019): 100-127.

King, Gary, Benjamin Schneer, and Ariel White. "How the news media activate public expression and influence national agendas." *Science* 358, no. 6364 (2017): 776-780.

Lane, Philip R., and Dominic Burke. "The empirics of foreign reserves." *Open Economies Review* 12 (2001): 423-434.

Larsen, Vegard H., Leif Anders Thorsrud, and Julia Zhulanova. "News-driven inflation expectations and information rigidities." *Journal of Monetary Economics* 117 (2021): 507-520.

Leetaru, Kalev, and Philip A. Schrodt. "Gdelt: Global data on events, location, and tone, 1979–2012." In *ISA annual convention*, vol. 2, no. 4, pp. 1-49. Citeseer, 2013.

Lutscher, Philipp M., and Karsten Donnay. "A difficult test for hard propaganda: Evidence from a choice experiment in Venezuela." *Journal of Peace Research* 62, no. 2 (2025): 462-478.

Knight, Brian, and Ana Tribin. "Opposition media, state censorship, and political accountability: Evidence from Chavez's Venezuela." *The World Bank Economic Review* 36, no. 2 (2022): 455-487.

Nimark, Kristoffer P. "Man-bites-dog business cycles." *American Economic Review* 104, no. 8 (2014): 2320-2367.

Pfajfar, Damjan, and Emiliano Santoro. "News on inflation and the epidemiology of inflation expectations." *Journal of Money, Credit and Banking* 45, no. 6 (2013): 1045-1067.

Pfäuti, Oliver. "Inflation—who cares? Monetary policy in times of low attention." *Journal of Money, Credit and Banking* (2024).

Shadmehr, Mehdi, and Dan Bernhardt. "State censorship." *American Economic Journal: Microeconomics* 7, no. 2 (2015): 280-307.

Stukal, Denis, Sergey Sanovich, Richard Bonneau, and Joshua A. Tucker. "Why botter: how pro-government bots fight opposition in Russia." *American Political Science Review* 116, no. 3 (2022): 843-857.

Zhuravskaya, Ekaterina, Maria Petrova, and Ruben Enikolopov. "Political effects of the internet and social media." *Annual Review of Economics* 12, no. 1 (2020): 415-438.

ONLINE APPENDIX

Section A: The Multi-Tiered Exchange Rate System in Venezuela

During 2018-2020 Venezuela was experiencing a complex and challenging economic situation characterized by, among many others, a multi-tiered foreign exchange system. The system included various official exchange rate levels for different purposes and sectors/individuals. Due to generalised corruption, it was mostly influent businesses and politically connected people who had access to preferred FX rates, generally reserved for essential imports (e.g. pharmaceutical products).

Due to the significant differences between the official rates and the real market conditions, a black market for foreign exchange flourished where individuals and businesses could access foreign currency at more realistic rates and in more adequate quantities. According to Wikipedia, the gap between the official and black-market FX levels was the largest before the Feb-2018 devaluation, which is the starting point of our sample. The gap subsided afterwards, but it still imposed a significant cost to business and people.
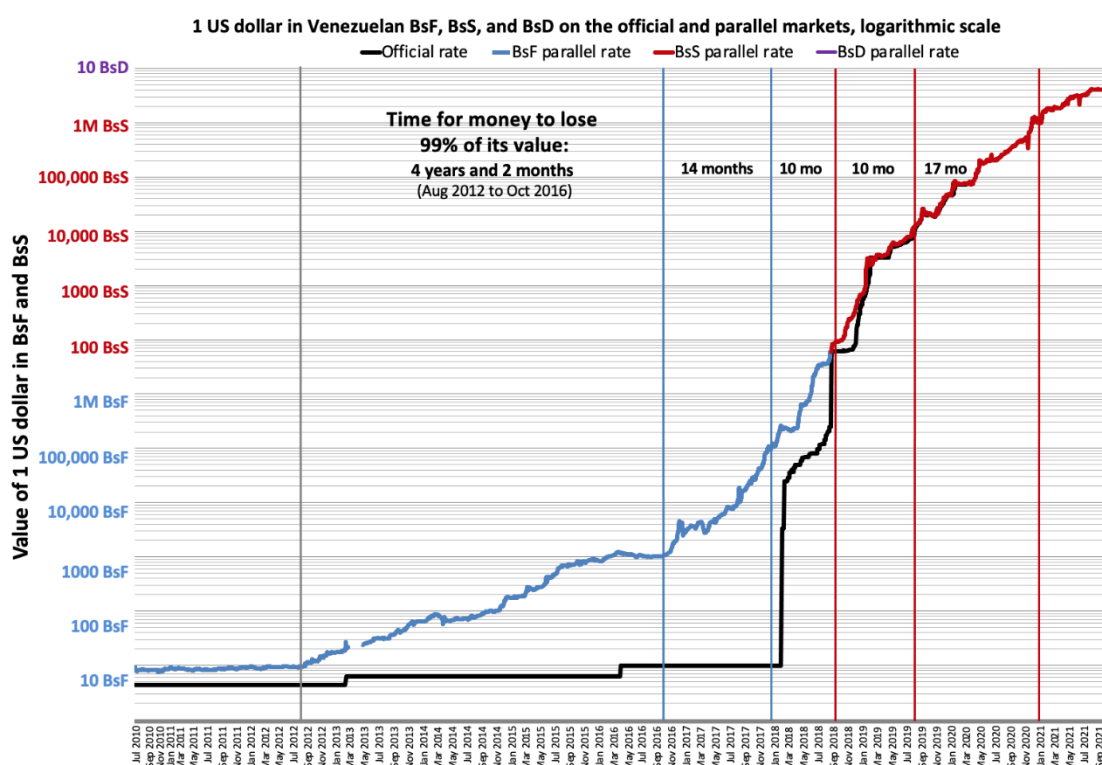

Note: Graph taken from https://en.wikipedia.org/wiki/Venezuelan_bol%C3%ADvar. Black market exchange rates (in blue, red and purple) were collected from https://dolartoday.com/indicadores. Official exchange rates (in black) are from http://www.bcv.org.ve/estadisticas/tipo-de-cambio. Notice the logarithmic scale for the three currency denominations (BsF, BsS, and BsD) used in Venezuela over the 2010 – 2021 period. Our empirical analysis uses Feb 2018 – Feb 2020 official FX data only.

Section B: Media Landscape in Venezuela

Many independent voices, think-tanks, NGOs and even international bodies/organisations (e.g. United Nations Human Rights Committee) have consistently raised concerns about Maduro's government restricting and blocking internet access to independent media, as well as targeting and prosecuting journalists. Against this background, there is limited data available to reflect the media landscape in Venezuela. This section collects data and indicators from several sources in order to provide more details on the media landscape in Venezuela.

Strong government censorship typically extends to TV stations and channels in Venezuela (see Lutscher and Donnay, 2025). Online newspapers and media outlets are less costly to operate, hence they may escape censorship more easily. Our media proxy builds on GDELT data, which is intended to cover all traditional, online media outlets (i.e. hence social media platforms or WhatsApp groups are excluded). In the figure below we compare the GDELT news volumes for the incumbent president Maduro and the challenger Guaidó, who only raised to prominence in early 2019, after the results from the 2018 presidential election were contested; if anything, this figure shows that pro-government media does not completely dominate the domestic market for online news, as per the GDELT dataset.[15]

**Figure B1**: GDELT news volumes: "Maduro" versus "Guaidó" (or "Guaido")
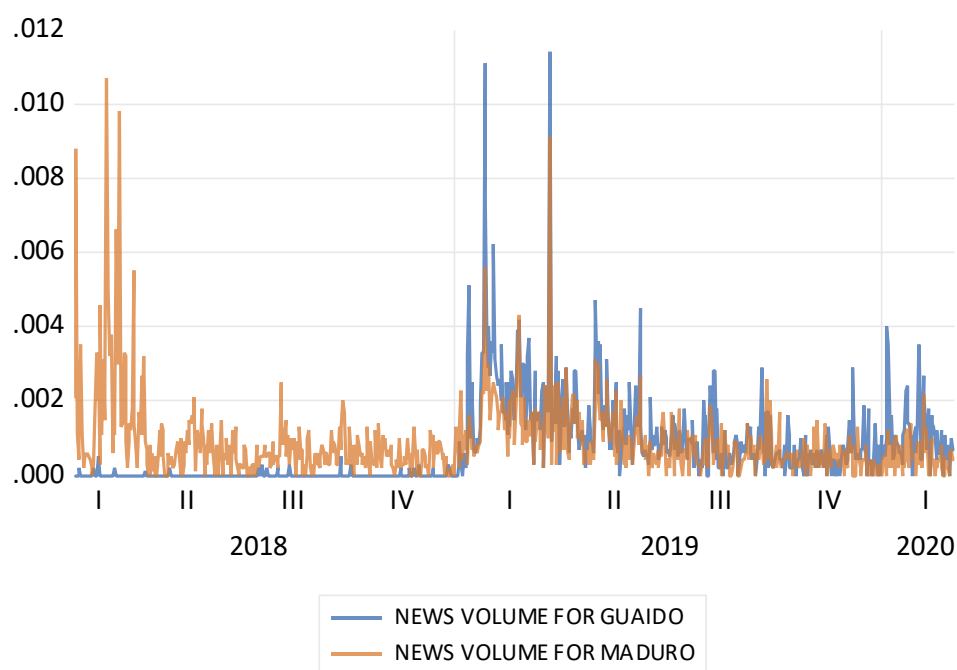
Note: We used "Maduro" and "Guaido" as the only keywords, while restricting our search to Venezuela only. The figure plots the GDELT-extracted news volumes for the two keywords, as a % in total monitored articles.

---

[15] Knight and Tribin (2022) show that during Chavez presidency, Venezuelans responded to government censorship by switching to opposition TV channels. While the media landscape during the Maduro's presidency has definitely changed (compared to the Chavez period), their result demonstrates that people are willing to search for alternative information sources in response to censorship.

We next rely on Google Trends to understand the demand for *free* access to information in Venezuela. Since "virtual private networks" or VPN are simple tools available in different countries, including in Venezuela, we use this as a keyword to construct the following figure. Notice the sharp increase that starts in early 2018; the highlighted area in Figure B2 below corresponds to our sample.
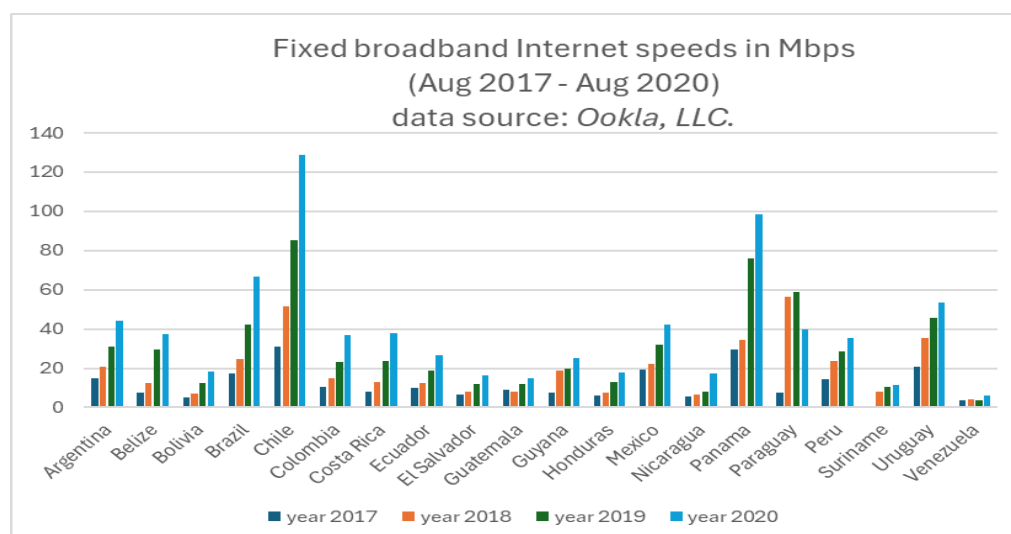
Figure B2: Google Trends search interest for "VPN" and synonyms
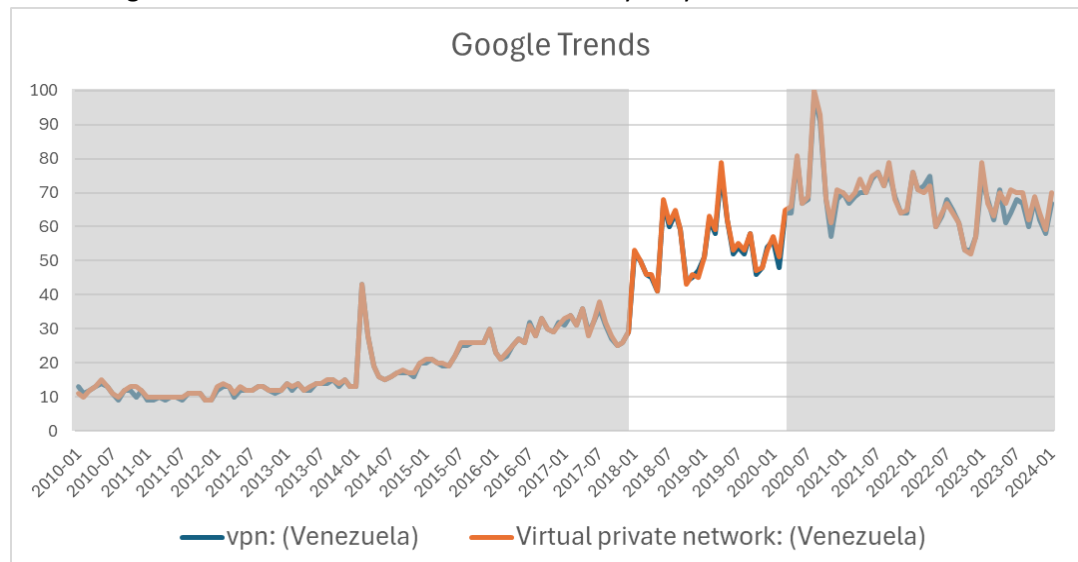
Source: Google Trends data

Despite remaining largely outside government control, online media in Venezuela faces increasing internet censorship, DNS blocking, and server restrictions as Maduro's government actively works to suppress information dissemination and limit access to critical content. To illustrate this idea, we rely on data from OOKLA L.L.C., which is a global leader in network intelligence and connectivity data. According to the figure B3 below, Venezuela had by far the lowest internet speed across South and Central Americas during 2017-2020, which largely overlaps with our sample.

Figure B3: Internet speed across South and Central America over 2017 - 2020

Note: This data is property of Ookla, LLC. and was downloaded in March 2025 from
https://datahub.io/@cheredia19/ookla-speedtest-global-index-fixed-broadband-2017-2024

27

According to *FreedomHouse*, Venezuela experienced a marked decline in internet freedom between 2018 and 2020. Already categorized as "Not Free" in 2018, the country's "Freedom on the Net" score deteriorated over this period, as illustrated in Table B1 below, reflecting an intensification of state-imposed restrictions. The administration of Nicolás Maduro expanded its control over digital information flows through DNS blocking, server restrictions, and content filtering, with independent media and social networking platforms facing heightened censorship, particularly during politically sensitive events. The state-owned telecommunications provider, CANTV, played a central role in executing these measures, including temporary blocks on platforms such as Wikipedia and major social media sites. Furthermore, structural deficiencies, including recurrent power outages, exacerbated barriers to internet access. Journalists and online users encountered increased surveillance, arbitrary detentions, and cyberattacks, contributing to a pervasive environment of self-censorship. These trends underscore the erosion of digital rights and the broader contraction of Venezuela's informational and communicative space between 2018 and 2020. Some stabilization or even improvements can be observed after 2020, although it is early to draw definitive conclusions.

The *FreedomHouse* annual reports used in our characterisation above refer to 2018-2020 and can be freely downloaded at:

https://freedomhouse.org/country/venezuela/freedom-net/2018
https://freedomhouse.org/country/venezuela/freedom-net/2019
https://freedomhouse.org/country/venezuela/freedom-net/2020

Table B1: "Internet Freedom" scores provided by *FreedomHouse* for Venezuela, 2016 - 2024

	2016	2017	2018	2019	2020	2021	2022	2023	2024
A. Obstacles to access (max value 25)	7	6	5	4	5	6	7	7	8
B. Limits to content (max value 35)	18	17	16	14	13	12	12	11	11
C. Violations of user rights (max value 40)	15	14	13	12	10	10	11	11	11
Total (max value 100)	40	37	34	30	28	28	30	29	30
Characterisation	Partly free	Not free	Not free	Not free	Not free	Not free	Not free	Not free	Not free

Note: *FreedomHouse* scores are available and can be downloaded from the following link: https://freedomhouse.org/countries/freedom-world/scores. The methodology to compile the scores is available at: https://freedomhouse.org/reports/freedom-net/freedom-net-research-methodology.

The following table offers more information on the affiliation and editorial stance of the top 10 media outlets in Venezuela, ranked according to ScimagoMedia in 2022; more recent rankings do not show significant changes in this list of top media outlets. Judging by their editorial stance and affiliation, the majority is critical of the government, and only a minority is pro-government.

Top 10 *media web reputation ranking* (by Scimagomedia.com) and editorial stance

Outlet	Website	Ownership / Affiliation	Editorial Stance
El Universal	eluniversal.com	Acquired by Epalisticia (2014), identities undisclosed	Shifted towards pro-government post-acquisition
Aporrea	aporrea.org	Independent, grassroots collective	Initially pro-Chávez; now critical of Maduro
El Nacional	elnacional.com	Founded by Otero family; assets seized by government in 2021	Consistently critical of the government
La Patilla	lapatilla.com	Founded by Alberto Ravell, opposition figure	Strongly critical of the government; faced legal challenges
Tal Cual Digital	talcualdigital.com	Independent; founded by Teodoro Petkoff	Critical of the government; faced censorship
El Carabobeño	el-carabobeno.com	Independent; based in Valencia	Critical of the government; print edition ceased due to newsprint shortages
Últimas Noticias	ultimasnoticias.com.ve	Owned by Grupo Últimas Noticias	Pro-government; editorial line aligns with official narratives
La Verdad	laverdad.com	Independent; based in Maracaibo	Critical of the government; faced censorship and attacks
El Impulso	elimpulso.com	Family-owned (Carmona family); based in Barquisimeto	Critical of the government; print edition ceased due to newsprint shortages
El Pitazo	elpitazo.net	Independent; part of Alianza Rebelde Investiga (ARI)	Strongly critical of the government; faced censorship and cyberattacks

Source: The top 10 outlets are selected according to media reputation rankings by Scimagomedia.com, https://www.scimagomedia.com/rankings.php?country=Venezuela&edition=2022_09. The ranking is based on the summer 2022 edition, which is the earliest date available in Scimagomedia; the 2025 spring edition features minimal changes in the ranking. Information regarding the ownership/affiliation and editorial stance were provided by ChatGPT-4o drawing on various internet sources (e.g. Committee to Protect Journalists https://cpj.org/, Latam Journalism Review https://latamjournalismreview.org/, BBC News).

Section C: *Inflationverdadera* Data Collection project

The figures below illustrate the dynamics of the annual inflation in Venezuela over a very challenging period, spanning from Feb. 2018 (after the introduction of the action-based system in setting FX rates) to Feb. 2020. Data are taken from *Inflationverdadera*.[16]

The central bank of Venezuela halted regular reporting in December 2015. It resumed releasing data in May 2019, also providing official CPI inflation figures for previous years (e.g., 2016, 2017, and 2018).

Figure C1: Annual inflation proxy over the Feb. 2018 – Feb. 2020 period

Annual inflation proxy (daily data)   Annual inflation proxy (daily data)

Linear scale   Logarithmic scale
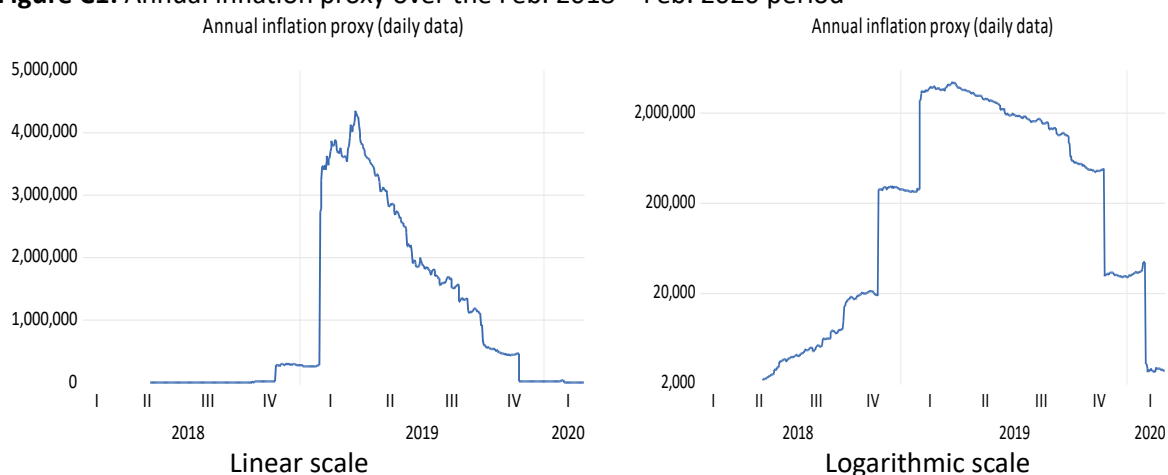
Note: Annual inflation rate is computed as 100*(IPC/IPC(-365) − 1), using the IPC data from *Inflationverdadera*. The left graph uses a linear scale, while the right graph uses a logarithmic scale.

**Figure C2**: Annual inflation - official data (logarithmic scale)

——— annual inflation (inflacionverdadera)
——— Official annual CPI inflation
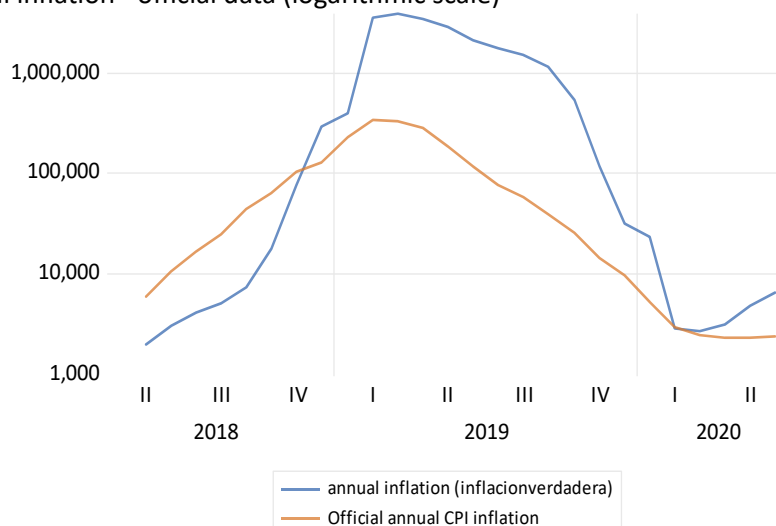
Note: Data source for official annual CPI inflation is the central bank of Venezuela.

---

[16] See more at http://www.inflacionverdadera.com and https://thebillionpricesproject.com.

Some 34455 prices were collected by volunteers shopping in Venezuela, across its major cities: Caracas, Maracaibo, Valencia, La Cruz Barcelona, San Cristobal, Merida, and Otras Ciudades.

Figure C3: Distribution of collected prices, by broad category, during Feb 2018 – Mar 2020
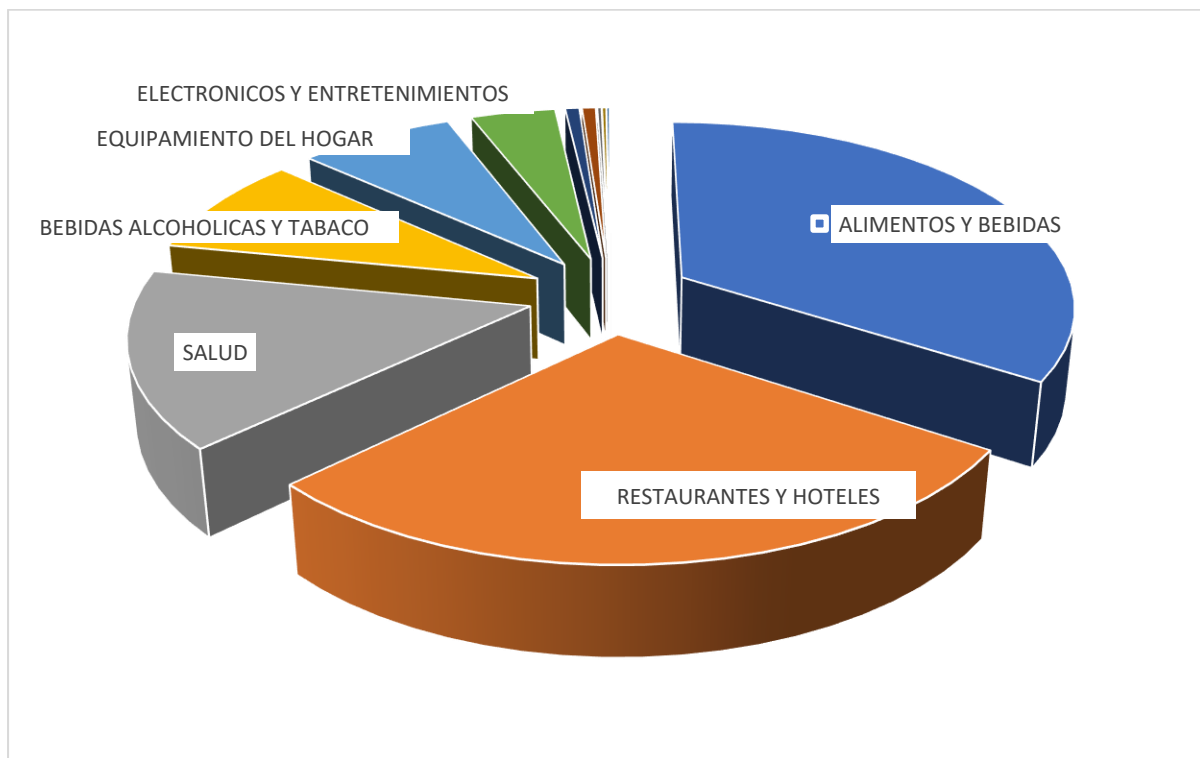
Note: Basket weights used to compile the consumer price index from *Inflationverdadera* project. Some 34455 prices were collected for various items, divided in broad categories as illustrated above. Not listed, are the following minor categories: vestido y calzado, bienes y servicios diversos, servicios de la vivienda excepto teléfono, transporte, comunicaciones (teléfonos y servicios asociados), servicios de educación, alquiler de vivienda.

Section D: Media Coverage Proxies and Topics

The following table summarises the main keywords (and synonyms) used to extract each media proxy from the GDELT data engine. All queries are restricted to report news volumes from Venezuela; for our empirical analysis, Sunday and Saturday news volumes are averaged with Monday volumes to match the data availability of exchange rates and WTI oil prices.

Media topic	Keywords (OR is a logical element connecting all keywords in a query)
Topic: "inflation"	"inflation" OR "price" OR "prices"
Topic: "income"	"income" OR "wage" OR "wages" OR "salary" OR "salaries"
Topic: "government"	"Maduro" OR "president" OR "government"
Topic: "opposition"	"Guaido" OR "Guaidó" OR "opposition" OR "America" OR "American" OR "Washington" OR "imperialists" OR "Western"
Topic: "sport"	"football" OR "game" OR "sport"
Topic: "culture"	"culture" OR "art" OR "artist" OR "music" OR "cultural" OR "movie" OR "actor" OR "song" OR "singer" OR "theatre"
$TOTAL\_news$	"and"

All our media proxies are indicators of *relative* media coverage, constructed by dividing the corresponding GDELT news volume with the total volume of local news (i.e. TOTAL_news extracted using "and" as a keyword, reported on the last row of the table above). The exact formula is:

$$Media\_proxy\_topic = log\left(1 + \frac{Media\_topic}{TOTAL\_news}\right)$$

The following graph displays the time-series of all these media proxies, organised by topic. Note that news about *politics* dominate media coverage in Venezuela ("government" has a 40% share, followed by "opposition" with 25% share), while *economic* topics have small relative shares (below 10%).

32
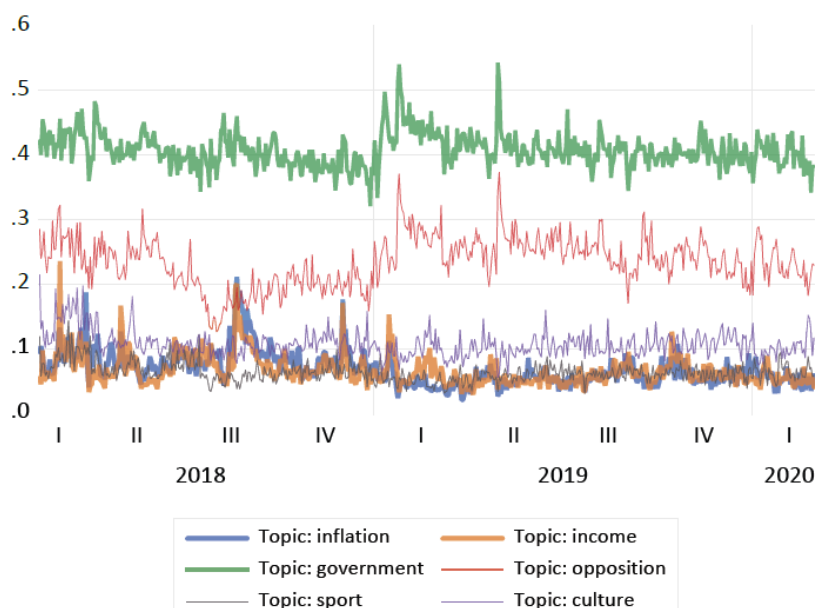
Section E: Additional Results, Robustness Checks and Alternative Proxies

Due to their country's OPEC membership status, Venezuelans benefit from heavily subsidised prices for fuels, provided by the local monopoly conglomerate PDVSA. International oil prices capture precisely this seigniorage effect, where lower oil prices result in reduced public revenues and increased inflation due to the necessary monetary creation to finance fuel subsidies. With exports dominated by petroleum products, seigniorage decrease with lower international oil prices, thus constraining the government's ability to subsidise the prices of essential goods; in a heavily state-controlled economy, this translates into higher costs and prices because consumers need to find elsewhere what government cannot provide. Figure E1 below depicts a temporary drop in consumer prices after an oil shock - a drop lasting slightly more than two months that validates the mechanism exposed above.

Figure E1: Responses to a positive oil shock from a VAR estimated in levels
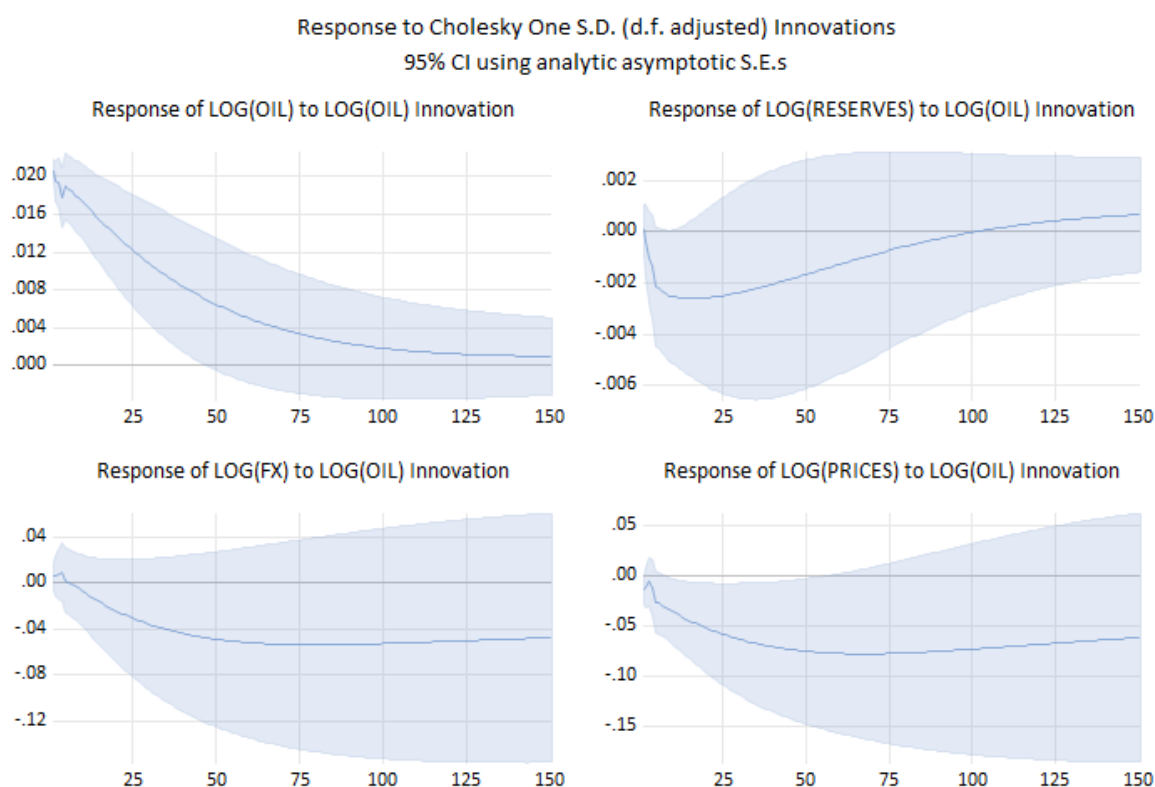
Note: These IRFs are generated from a 4-variable VAR estimated in levels, using a Choleski decomposition as described in section 4.1. in the main text.

The following figure presents selected IRFs to a positive media shock, differentiated by topic. In line with our theoretical predictions from section 2, the official FX rate depreciates in reaction to a positive media shock (i.e. an increase in news volume) in *economic* news (topics: "inflation" or "income") but much less so for *politics* news (topics: "government" or "opposition"); topics pertaining to "sport" and "culture" bring a very short-lived, negative FX response instead.

Figure E2: Median FX responses to a positive media shock, where media is differentiated by topic
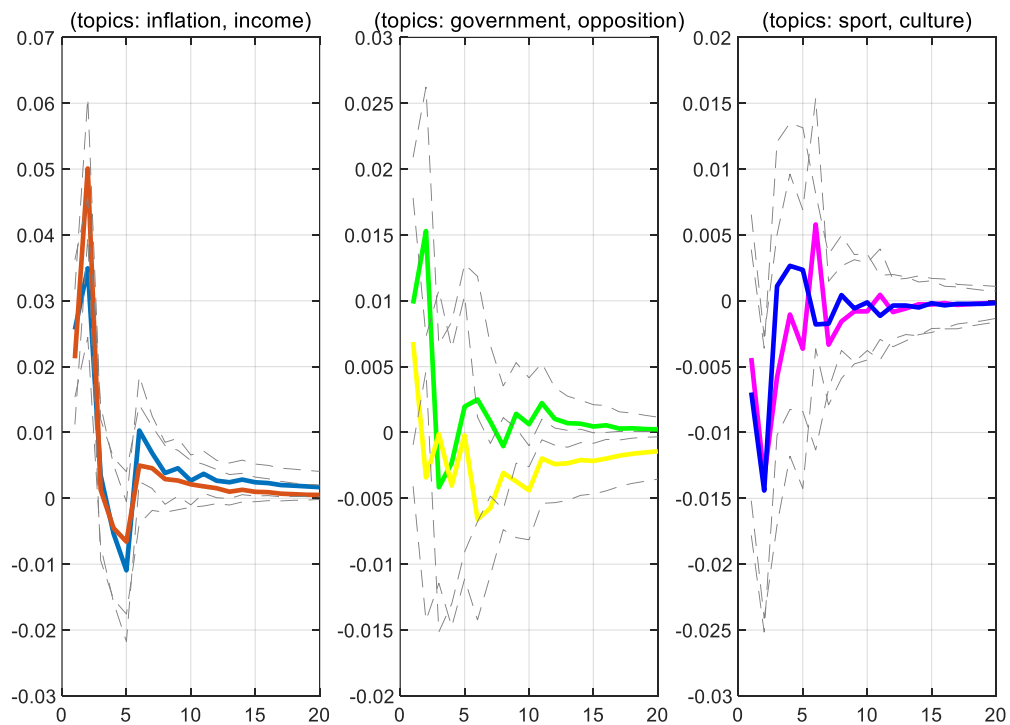
Note: The grey dotted lines depict the 90% confidence interval for the median responses estimated from a 5-variable VAR estimated in first differences, as in Figure 2 from the main text. We use the same colour map and the same template to organise the plots as in Figure 2.

In our main robustness check we include an additional dummy variable that reflects internet blackouts occurring during Feb 2018 - Feb 2020 for a total of 17 days. Data was hand-collected from netblocks.org, which is a global internet monitor, independent and non-partisan, working at the intersection of digital rights, cybersecurity and internet governance. Because this dummy functions as government censorship instrument, it is ordered second, just after the OIL variable which is exogenous by default. Hence, the 6-variable VAR would feature media as its 3rd variable, because we are keeping the Choleski order. Variance decompositions for the FX variable are depicted below. If any, these VDs show slightly higher values for *economic* news (above 10% after a month), while the values for other topics remain confined below 2%, same as in Figure 2 from the main text.

Figure E3: FX variance explained by media, differentiated by topic, in a 6-variable VAR
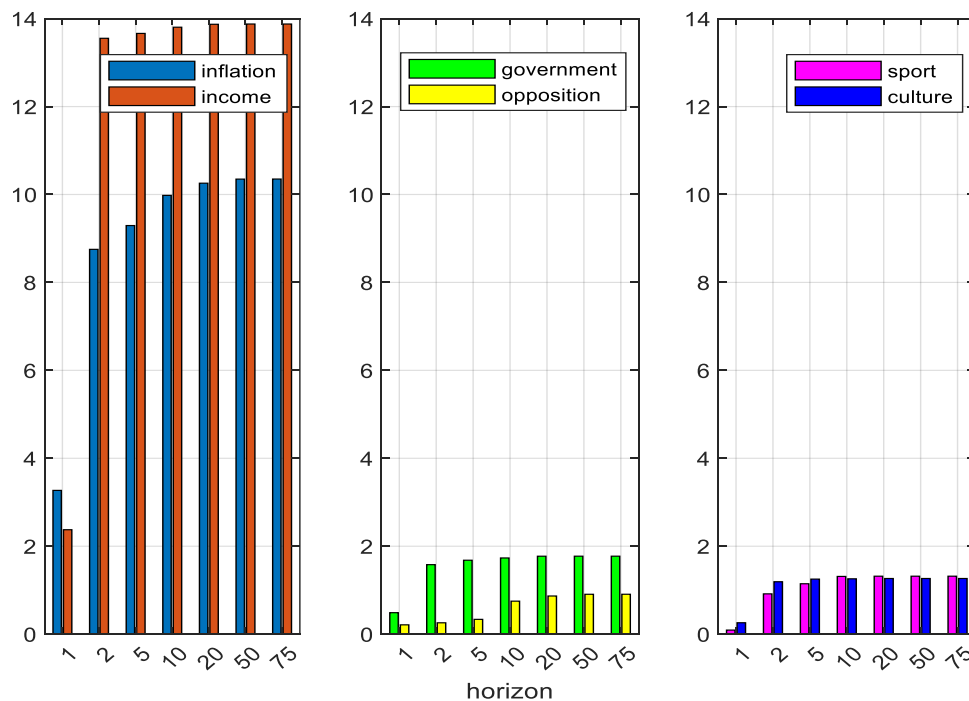
Note: Share of FX variance explained by media shocks in a VAR estimated with 6 variables with a Choleski decomposition where media is ordered 3rd after OIL and the dummy for internet blackouts. Media proxies are given as topic shares in total news volumes and are extracted from GDELT. The x-axis depicts the horizon where variance decomposition is performed; the y-axis depicts the % share of FX variance explained by media shocks in a 100 total.

The following figure instead summarises the VDs obtained after replacing the topic share of media volumes (our quantitative media proxy) with their corresponding media tones (a new qualitative proxy). The tone is automatically computed and provided by GDELT as an average for all news articles extracted after a user query. We keep the same queries (or keywords) as for the main analysis, differentiating our proxies by topic and download media tone data, averaging the values for Saturdays and Sundays with those for Mondays. We re-estimate the same five-variable VARs (as in Figure 2) and report the variance decomposition below. Notice that no news tone proxy, for any topic, explains more than 3% of the total variation in the official FX rate.
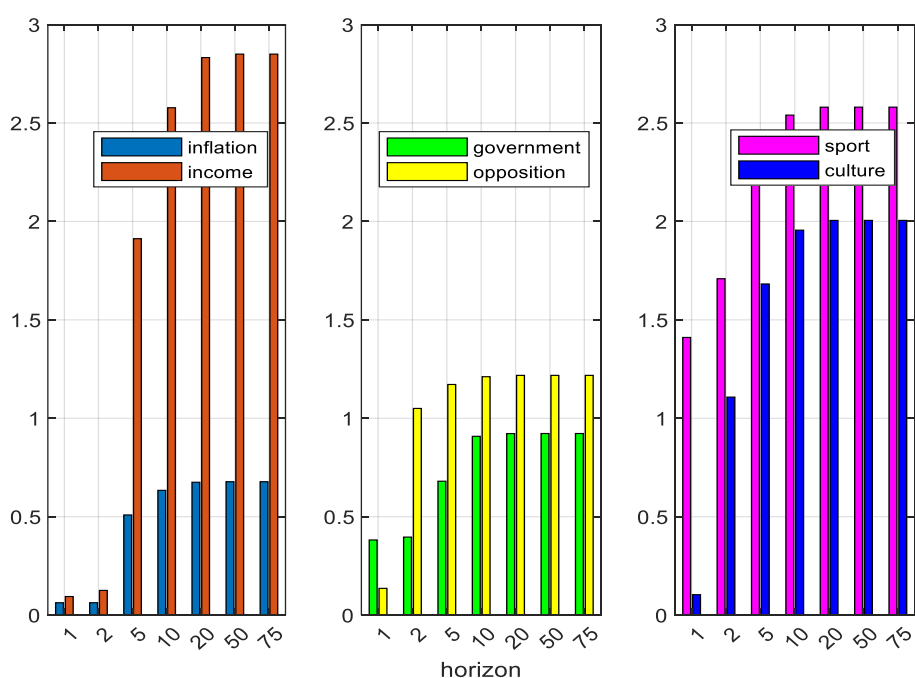
Figure E4: FX variance explained by media *tone* proxies, differentiated by topic

Note: Share of FX variance explained by media shocks in a VAR estimated with 5 variables with a Choleski decomposition where media is ordered second after OIL. Media proxies are given as news tones, differentiated by topic, and are extracted from GDELT. The x-axis depicts the horizon where variance decomposition is performed; the y-axis depicts the % share of FX variance explained by media shocks in a 100 total.

Working Paper del Dipartimento di Economia e Finanza

1. L. Colombo, H. Dawid, *Strategic Location Choice under Dynamic Oligopolistic Competition and Spillovers*, novembre 2013.
2. M. Bordignon, M. Gamalerio, G. Turati, *Decentralization, Vertical Fiscal Imbalance, and Political Selection*, novembre 2013.
3. M. Guerini, *Is the Friedman Rule Stabilizing? Some Unpleasant Results in a Heterogeneous Expectations Framework*, novembre 2013.
4. E. Brenna, C. Di Novi, *Is caring for elderly parents detrimental to women's mental health? The influence of the European North-South gradient*, novembre 2013.
5. F. Sobbrio, *Citizen-Editors' Endogenous Information Acquisition and News Accuracy*, novembre 2013.
6. P. Bingley, L. Cappellari, *Correlation of Brothers Earnings and Intergenerational Transmission*, novembre 2013.
7. T. Assenza, W. A. Brock, C. H. Hommes, *Animal Spirits, Heterogeneous Expectations and the Emergence of Booms and Busts,* dicembre 2013.
8. D. Parisi, *Is There Room for 'Fear' as a Human Passion in the Work by Adam Smith?*, gennaio 2014.
9. E. Brenna, F. Spandonaro, *Does federalism induce patients' mobility across regions? Evidence from the Italian experience*, febbraio 2014.
10. A. Monticini, F. Ravazzolo, *Forecasting the intraday market price of money*, febbraio 2014.
11. Tiziana Assenza, Jakob Grazzini, Cars Hommes, Domenico Massaro, *PQ Strategies in Monopolistic Competition: Some Insights from the Lab*, marzo 2014.
12. R. Davidson, A. Monticini, *Heteroskedasticity-and-Autocorrelation-Consistent Bootstrapping,* marzo 2014.
13. C. Lucifora, S. Moriconi, *Policy Myopia and Labour Market Institutions*, giugno 2014.
14. N. Pecora, A. Spelta, *Shareholding Network in the Euro Area Banking Market,* giugno 2014.
15. G. Mazzolini, *The economic consequences of accidents at work*, giugno 2014.
16. M. Ambrosanio, P. Balduzzi, M. Bordignon, *Economic crisis and fiscal federalism in Italy*, settembre 2014.
17. P. Bingley, L. Cappellari, K. Tatsiramos, *Family, Community and Long-Term Earnings Inequality*, ottobre 2014.
18. S. Frazzoni, M. L. Mancusi, Z. Rotondi, M. Sobrero, A. Vezzulli, *Innovation and export in SMEs: the role of relationship banking,* novembre 2014.
19. H. Gnutzmann, *Price Discrimination in Asymmetric Industries: Implications for Competition and Welfare,* novembre 2014.
20. A. Baglioni, A. Boitani, M. Bordignon, *Labor mobility and fiscal policy in a currency union*, novembre 2014.
21. C. Nielsen, *Rational Overconfidence and Social Security*, dicembre 2014.
22. M. Kurz, M. Motolese, G. Piccillo, H. Wu, *Monetary Policy with Diverse Private Expectations*, febbraio 2015.
23. S. Piccolo, P. Tedeschi, G. Ursino, *How Limiting Deceptive Practices Harms Consumers*, maggio 2015.
24. A.K.S. Chand, S. Currarini, G. Ursino, *Cheap Talk with Correlated Signals*, maggio 2015.
25. S. Piccolo, P. Tedeschi, G. Ursino, *Deceptive Advertising with Rational Buyers*, giugno 2015.

26. S. Piccolo, E. Tarantino, G. Ursino, *The Value of Transparency in Multidivisional Firms*, giugno 2015.
27. G. Ursino, *Supply Chain Control: a Theory of Vertical Integration*, giugno 2015.
28. I. Aldasoro, D. Delli Gatti, E. Faia, *Bank Networks: Contagion, Systemic Risk and Prudential Policy*, luglio 2015.
29. S. Moriconi, G. Peri, *Country-Specific Preferences and Employment Rates in Europe*, settembre 2015.
30. R. Crinò, L. Ogliari, *Financial Frictions, Product Quality, and International Trade*, settembre 2015.
31. J. Grazzini, A. Spelta, *An empirical analysis of the global input-output network and its evolution,* ottobre 2015.
32. L. Cappellari, A. Di Paolo, *Bilingual Schooling and Earnings: Evidence from a Language-in-Education Reform*, novembre 2015.
33. A. Litina, S. Moriconi, S. Zanaj, *The Cultural Transmission of Environmental Preferences: Evidence from International Migration*, novembre 2015.
34. S. Moriconi, P. M. Picard, S. Zanaj, *Commodity Taxation and Regulatory Competition*, novembre 2015.
35. M. Bordignon, V. Grembi, S. Piazza, *Who do you blame in local finance? An analysis of municipal financing in Italy,* dicembre 2015.
36. A. Spelta, *A unified view of systemic risk: detecting SIFIs and forecasting the financial cycle via EWSs*, gennaio 2016.
37. N. Pecora, A. Spelta, *Discovering SIFIs in interbank communities*, febbraio 2016.
38. M. Botta, L. Colombo, *Macroeconomic and Institutional Determinants of Capital Structure Decisions,* aprile 2016.
39. A. Gamba, G. Immordino, S. Piccolo, *Organized Crime and the Bright Side of Subversion of Law*, maggio 2016.
40. L. Corno, N. Hildebrandt, A. Voena, *Weather Shocks, Age of Marriage and the Direction of Marriage Payments,* maggio 2016.
41. A. Spelta, *Stock prices prediction via tensor decomposition and links forecast,* maggio 2016.
42. T. Assenza, D. Delli Gatti, J. Grazzini, G. Ricchiuti, *Heterogeneous Firms and International Trade: The role of productivity and financial fragility*, giugno 2016.
43. S. Moriconi, *Taxation, industry integration and production efficiency*, giugno 2016.
44. L. Fiorito, C. Orsi, *Survival Value and a Robust, Practical, Joyless Individualism: Thomas Nixon Carver, Social Justice, and Eugenics*, luglio 2016.
45. E. Cottini, P. Ghinetti, *Employment insecurity and employees' health in Denmark*, settembre 2016.
46. G. Cecere, N. Corrocher, M. L. Mancusi, *Financial constraints and public funding for eco-innovation: Empirical evidence on European SMEs,* settembre 2016.
47. E. Brenna, L. Gitto, *Financing elderly care in Italy and Europe. Is there a common vision?*, settembre 2016.
48. D. G. C. Britto, *Unemployment Insurance and the Duration of Employment: Theory and Evidence from a Regression Kink Design*, settembre 2016.
49. E. Caroli, C.Lucifora, D. Vigani, *Is there a Retirement-Health Care utilization puzzle? Evidence from SHARE data in Europe*, ottobre 2016.
50. G. Femminis, *From simple growth to numerical simulations: A primer in dynamic programming*, ottobre 2016.
51. C. Lucifora, M. Tonello, *Monitoring and sanctioning cheating at school: What works? Evidence from a national evaluation program*, ottobre 2016.

52. A. Baglioni, M. Esposito, *Modigliani-Miller Doesn't Hold in a "Bailinable" World: A New Capital Structure to Reduce the Banks' Funding Cost*, novembre 2016.
53. L. Cappellari, P. Castelnovo, D. Checchi, M. Leonardi, *Skilled or educated? Educational reforms, human capital and earnings,* novembre 2016.
54. D. Britto, S. Fiorin, *Corruption and Legislature Size: Evidence from Brazil*, dicembre 2016.
55. F. Andreoli, E. Peluso, *So close yet so unequal: Reconsidering spatial inequality in U.S. cities*, febbraio 2017.
56. E. Cottini, P. Ghinetti, *Is it the way you live or the job you have? Health effects of lifestyles and working conditions,* marzo 2017.
57. A. Albanese, L. Cappellari, M. Leonardi, *The Effects of Youth Labor Market Reforms: Evidence from Italian Apprenticeships*; maggio 2017.
58. S. Perdichizzi, *Estimating Fiscal multipliers in the Eurozone. A Nonlinear Panel Data Approach*, maggio 2017.
59. S. Perdichizzi, *The impact of ECBs conventional and unconventional monetary policies on European banking indexes returns*, maggio 2017.
60. E. Brenna, *Healthcare tax credits: financial help to taxpayers or support to higher income and better educated patients? Evidence from Italy*, giugno 2017.
61. G. Gokmen, T. Nannicini, M. G. Onorato, C. Papageorgiou, *Policies in Hard Times: Assessing the Impact of Financial Crises on Structural Reforms*, settembre 2017.
62. M. Tettamanzi, *E Many Pluribus Unum: A Behavioural Macro-Economic Agent Based Model,* novembre 2017.
63. A. Boitani, C. Punzo, *Banks' leverage behaviour in a two-agent New Keynesian model*, gennaio 2018.
64. M. Bertoni, G. Brunello, L. Cappellari, *Parents, Siblings and Schoolmates. The Effects of Family-School Interactions on Educational Achievement and Long-term Labor Market Outcomes,* gennaio 2018.
65. G. P. Barbetta, G. Sorrenti, G. Turati, *Multigrading and Child Achievement,* gennaio 2018.
66. S. Gagliarducci, M. G. Onorato, F. Sobbrio, G. Tabellini, *War of the Waves: Radio and Resistance During World War II,* febbraio 2018.
67. P. Bingley, L. Cappellari, *Workers, Firms and Life-Cycle Wage Dynamics*, marzo 2018.
68. A. Boitani, S. Perdichizzi, *Public Expenditure Multipliers in recessions. Evidence from the Eurozone*, marzo 2018.
69. M. Le Moglie, G. Turati, *Electoral Cycle Bias in the Media Coverage of Corruption News*, aprile 2018.
70. R. Davidson, A. Monticini, *Improvements in Bootstrap Inference*, aprile 2018.
71. R. Crinò, G. Immordino, S. Piccolo, *Fighting Mobile Crime*, giugno 2018.
72. R. Caminal, L. Cappellari, A. Di Paolo, *Linguistic skills and the intergenerational transmission of language,* agosto 2018.
73. E. Brenna, L. Gitto, *Adult education, the use of Information and Communication Technologies and the impact on quality of life: a case study,* settembre 2018.
74. M. Bordignon, Y. Deng, J. Huang, J. Yang, *Plunging into the Sea: Ideological Change, Institutional Environments and Private Entrepreneurship in China,* settembre 2018.
75. M. Bordignon, D. Xiang, L. Zhan, *Predicting the Effects of a Sugar Sweetened Beverage Tax in a Household Production Model,* settembre 2018.
76. C. Punzo, L. Rossi, *The Redistributive Effects of a Money-Financed Fiscal Stimulus*, gennaio 2019.
77. A. Baglioni, L. Colombo, P. Rossi, *Debt restructuring with multiple bank relationships*, gennaio 2019.

78. E. Cottini, P. Ghinetti, S. Moriconi, *Higher Education Supply, Neighbourhood effects and Economic Welfare,* febbraio 2019.
79. S. Della Lena, F. Panebianco, *Cultural Transmission with Incomplete Information: Parental Perceived Efficacy and Group Misrepresentation,* marzo 2019.
80. T. Colussi, Ingo E. Isphording, Nico Pestel, *Minority Salience and Political Extremism*, marzo 2019.
81. G. P. Barbetta, P. Canino, S. Cima, *Let's tweet again? The impact of social networks on literature achievement in high school students: Evidence from a randomized controlled trial*, maggio 2019.
82. Y. Brilli, C. Lucifora, A. Russo, M. Tonello, *Vaccination take-up and health: evidence from a flu vaccination program for the elderly*, giugno 2019.
83. C. Di Novi, M. Piacenza, S. Robone, G. Turati, *Does fiscal decentralization affect regional disparities in health? Quasi-experimental evidence from Italy,* luglio 2019.
84. L. Abrardi, L. Colombo, P. Tedeschi, *The Gains of Ignoring Risk: Insurance with Better Informed Principals,* luglio 2019.
85. A. Garnero, C. Lucifora, *Turning a Blind Eye? Compliance to Minimum Wages and Employment,* gennaio 2020.
86. M. Bordignon, M. Gamalerio, E. Slerca, G. Turati, *Stop invasion! The electoral tipping point in anti-immigrant voting,* marzo 2020.
87. D. Vigani, C. Lucifora, *Losing control? Unions' Representativeness, "Pirate" Collective Agreements and Wages,* marzo 2020.
88. S. L. Comi, E. Cottini, C. Lucifora, *The effect of retirement on social relationships: new evidence from SHARE*, maggio 2020.
89. A. Boitani, S. Perdichizzi, C. Punzo, *Nonlinearities and expenditure multipliers in the Eurozone*, giugno 2020.
90. R. A. Ramos, F. Bassi, D. Lang, *Bet against the trend and cash in profits*, ottobre 2020.
91. F. Bassi, *Chronic Excess Capacity and Unemployment Hysteresis in EU Countries. A Structural Approach*, ottobre 2020.
92. M. Bordignon, T. Colussi, *Dancing with the Populist. New Parties, Electoral Rules and Italian Municipal Elections,* ottobre 2020.
93. E. Cottini, C. Lucifora, G. Turati, D. Vigani, *Children Use of Emergency Care: Differences Between Natives and Migrants in Italy,* ottobre 2020.
94. B. Fanfani, *Tastes for Discrimination in Monopsonistic Labour Markets*, ottobre 2020.
95. B. Fanfani, *The Employment Effects of Collective Bargaining*, ottobre 2020.
96. O. Giuntella, J. Lonsky, F. Mazzonna, L. Stella, *Immigration Policy and Immigrants' Sleep. Evidence from DACA,* dicembre 2020.
97. E. Cottini, P. Ghinetti, E. Iossa, P. Sacco, *Stress and Incentives at Work*, gennaio 2021.
98. L. Pieroni, M. R. Roig, L. Salmasi, *Italy: immigration and the evolution of populism,* gennaio 2021.
99. L. Corno, E. La Ferrara, A. Voena, *Female Genital Cutting and the Slave Trade*, febbraio 2021.
100. O. Giuntella, L. Rotunno, L. Stella, *Trade Shocks, Fertility, and Marital Behavior* , marzo 2021.
101. P. Bingley, L. Cappellari, K. Tatsiramos, *Parental Assortative Mating and the Intergenerational Transmission of Human Capital*, aprile 2021.
102. F. Devicienti, B. Fanfani, *Firms' Margins of Adjustment to Wage Growth. The Case of Italian Collective Bargaining*; aprile 2021.
103. C. Lucifora, A. Russo, D. Vigani, *Does prescribing appropriateness reduce health expenditures? Main e_ects and unintended outcomes*, maggio 2021.

104. T. Colussi, *The Political Effects of Threats to the Nation: Evidence from the Cuban Missile Crisis*, giugno 2021.

105. M. Bordignon, N. Gatti, M. G. Onorato, *Getting closer or falling apart? Euro countries after the Euro crisis*, giugno 2021.

106. E. Battistin, M. Ovidi, *Rising Stars*, giugno 2021.

107. D. Checchi, A. Fenizia, C. Lucifora, PUBLIC SECTOR JOBS: *Working in the public sector in Europe and the US,* giugno 2021.

108. K. Aktas, G. Argentin, G. P. Barbetta, G. Barbieri, L. V. A. Colombo, *High School Choices by Immigrant Students in Italy: Evidence from Administrative Data,* luglio 2021.

109. B. Fanfani, C. Lucifora, D. Vigani, *Employer Association in Italy. Trends and Economic Outcomes,* luglio 2021.

110. F. Bassi, A. Boitani, *Monetary and macroprudential policy: The multiplier effects of cooperation,* settembre 2021.

111. S. Basiglio, A. Foresta, G. Turati, *Impatience and crime. Evidence from the NLSY97,* settembre 2021.

112. A. Baglioni, A. Monticini, D. Peel, *The Impact of the ECB Banking Supervision Announcements on the EU Stock Market*, novembre 2021.

113. E. Facchetti, L. Neri, M. Ovidi, *Should you Meet The Parents? The impact of information on non-test score attributes on school choice*, dicembre 2021.

114. M. Bratti, E. Cottini, P. Ghinetti, *Education, health and health-related behaviors: Evidence from higher education expansion,* febbraio 2022.

115. A. Boitani, C. Dragomirescu-Gaina, *News and narratives: A cointegration analysis of Russian economic policy uncertainty*, aprile 2022.

116. D. Delli Gatti, J. Grazzini, D. Massaro, F. Panebianco, *The Impact of Growth on the Transmission of Patience,* luglio 2022.

117. I. Torrini, C. Lucifora, A. Russo, *The Long-Term Effects of Hospitalization on Health Care Expenditures: An Empirical Analysis for the Young-Old Population*, luglio 2022.

118. T. Colussi, M. Romagnoli, E. Villar, *The Intended and Unintended Consequences of Taxing Waste*, settembre 2022.

119. D. Delli Gatti, G. Iannotta, *Behavioural credit cycles,* settembre 2022.

120. C. Punzo, G. Rivolta, *Money versus debt financed regime: Evidence from an estimated DSGE model*, novembre 2022.

121. M. Ovidi, *Parents Know Better: Sorting on Match Effects in Primary School*, novembre 2022.

122. L. Cappellari, D. Checchi, M. Ovidi, *The effects of schooling on cognitive skills: evidence from education expansions,* dicembre 2022.

123. M. Bertoni, G. Brunello, L. Cappellari, M. De Paola, *The long-run earnings effects of winning a mayoral election*, gennaio 2023.

124. M. Bordignon, F. Franzoni, M. Gamalerio, *Is Populism reversible? Evidence from Italian local elections during the pandemic*, gennaio 2023.

125. L. Colombo, G. Femminis, A. Pavan, *Subsidies to Technology Adoption when Firms' Information is Endogenous*, gennaio 2023.

126. L. Pieroni, M. Rosselló Roig, L. Salmasi, G. Turati, *Legal status and voluntary abortions by immigrants*, gennaio 2023.

127. F. Di Pace, G. Mangiante, R. Masolo, *Do firm expectations respond to Monetary Policy announcements?*, febbraio 2023.

128. R. Masolo, *Heterogeneity and the Equitable Rate of Interest*, febbraio 2023.

129. D. Delli Gatti, R.Terranova, E. M. Turco, *Mind the knowledge gap! The origins of declining business dynamism in a macro agent-based model*, ottobre 2023.

130. R. Davidson, A. Monticini, *Bootstrap Performance with Heteroskedasticity*, novembre 2023.

131. V. Colombo, A. Paccagnini, *Uncertainty and the Federal Reserve's Balance Sheet Monetary Policy*, febbraio 2024.

132. M. Bordignon, T. Colussi, F. Porcelli, *Populists at work. Italian municipal finance under M5s governments*, febbraio 2024.

133. A. Boitani, L. Di Domenico, S. Ricchiuti, *Monetary policy and inequality: an heterogenous agents' approach*, settembre 2024.

134. M. Di Giacomo, M. Piacenza, L. Salmasi, G. Turati, *Understanding productivity in maternity wards*, ottobre 2024.

135. D. Bonciani, R. Masolo, S. Sarpietro, *How Food Prices Shape Inflation Expectations and the Monetary Policy Response*, ottobre 2024.

136. G. Battiston, L. Corno, E. La Ferrara, *Informing Risky Migration: Evidence from a field experiment in Guinea*, dicembre 2024.

137. F. Di Pace, G. Mangiante, R. Masolo, *Monetary Policy Rules: the Market's View*, dicembre 2024.

138. L. Corno, E. La Ferrara, A. Voena, *Female Genital Cutting and the Slave Trade*, maggio 2025.

139. M. Carlana, L. Corno, *Peer influence in Educational Choices: Social Image Concerns and Same-Gender Interactions*, maggio 2025.

140. R. Disney, J. Gathergood, S. Machin, M. Sandi, *Human Capital from Childhood Exposure to Homeownership:Evidence from Right-to-Buy*, giugno 2025.

141. S. Machin, M. Sandi, *Youth Crime and Delinquency In And Out Of School*, giugno 2025.

142. A. Boitani, C. Dragomirescu-Gaina, A. Monticini, *Managing the chaos: policy challenges in a hyperinflationary environment*, giugno 2025.