Populism and income redistribution*

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Abstract

Populist governments might attempt to favor workers in the short-run by encouraging nominal wage increases. But if the real wage can only be affected by productivity in the long-run, these redistributive attempts would lead to inflation and no real improvement. Based on this widely accepted economic argument, this paper proposes a simple method to disentangle between productivity and, what is here called, populist shocks. In particular, a Bivariate Structural Vector Autoregressive analysis with nominal and real wages, and where long-run restrictions are imposed, can be used to identify these two structural innovations. The methodology is applied to Argentina, as well as other Latin American countries, to identify populist regimes.

Keywords: Macroeconomics of populism; Income redistribution; Structural VARs; Long-run restrictions; Latin America; Argentina.

JEL Classification: C32; E64; H11; N36.

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"How can we explain Latin America's proclivity toward macroeconomic mismanagement? Is it deeply rooted ignorance on the mechanics of deficit financing, or is it the deliberate consequence of Machiavellian politics or, is it, perhaps, the unavoidable outcome of distributional struggles?" Dornbusch and Edwards (1991).

1 Introduction

The economic crises around the world gave place to opportunistic political candidates who exploit the voters' frustration with "populist campaigns". Even though pundits and policy makers, as well as academics, frown upon the recent advancements of populism in the world, there is no consensus of what populism is.

We propose a methodology that allows us to identify and quantify "populist shocks" refraining from exploring the electoral rhetoric or voters' sentiment. Thus, rather than studying the current affairs of the populist experience, we take an historical approach to the classification of populism, its costs and benefits. Following this procedure, we shed light over some ambiguous classifications of populism and we quantify the "degree" of populist policy making.

Focusing exclusively on the economic characteristics of populism, we make an agnostic simplification of policy makers and we pose that populist ones concentrate their redistributive efforts on wages. On the contrary, non-populist policy makers focus on productivity to affect wages. With this assumption, we employ a Bivariate Structural Vector Autoregressive analysis with nominal and real wages and use long-run restrictions to identify two structural innovations: productivity and populist shocks (*à la* Blanchard and Quah (1989) and Benati (2012), among others). In our identification, the former disturbance can have a permanent impact on the real wage, whereas the latter can only have transitory real effects. The main advantage of this identification scheme is that it relies on a widely accepted economic argument: i.e, that only productivity shocks can have a long-run impact on real wages. We depart from the more standard classifications of populist regimes (based mostly on non-economic issues), and we show that very few regimes can be thought of as economic populism.

This approach is related to Guiso et al. (2019), who highlight the keys to electoral

success of populist candidates: anti-elite rhetoric, immediate protection and hiding the future costs. Even though our definition is consistent with Acemoglu et al. (2013)'s definition of populism and Rodrik (2018)'s left wing populism, in our analysis we refrain from studying the candidates' rhetoric but we quantify the short-lived "benefits" of populism for the case of Argentina. Latin American history has plenty of experiences where income redistribution in favor of workers was allowed, if not encouraged, by populist governments. These attempts to improve worker's standards of living led systematically to inflationary episodes that more than compensated the initial rise in nominal wages (Dornbusch and Edwards, 1991; Sachs, 1989).

In particular, we use Argentina as our case study due to the available historical data (wages and inflation since 1865) and its numerous supposed populist experiments. We disentangle between rises in wages that came from productivity improvements from those set under ex-ante populist regimes and that were, hence, doomed to failure and frustration. We show that populist shocks barely increase the real wage and, according to the variance decomposition analysis, less than 15 percent of the nominal wages increases are caused by productivity shocks. The historical decomposition of these results allows to identify potential populist regimes, which we analyze in detail. These results are decomposed historically to identify periods of potentially economic populism in Argentina.

Our methodology allows us to shed light on some regimes for which the historiography has no clear answer. For instance, we show that the presidencies of Yrigoyen 1916-1920 and Perón 1952-55 were not populist even though they are usually thought of as populist periods.[1] Moreover, we find evidence that the populist threat is more severe after the end of WW2, when Argentina became a relatively closed economy. In that regard, openness could be interpreted as a protecting mechanism from populist experiences (in line with Brambilla et al. (2018) and Guiso et al. (2019)).

Finally, we perform a cross-country analysis repeating our variance decomposition in five Latin American countries with monthly data from the XXIst century. In particular, we study the cases of Argentina, Bolivia, Brazil, Peru and Uruguay; i.e, countries ruled

[1] Johnson (2018) discusses the literature on Yrigoyen during the 1916-1922 period in Argentina and shows that historians are divided in terms of the classification of his presidency.

by governments that have been characterized as left-wing populists during the 2000's.[2] In spite of the political view that had classified these countries and, specially, their presidents (i.e. Nestor Kirchner, Evo Morales, Lula da Silva, Ollanta Humala and Jose Mujica, respectively) as populist, our results provide a more informed and systematic analysis. As with the historical decomposition, we show Argentina went through a populist experience even at the turn of the century. Nevertheless, the rest of the countries did not.[3]

Regarding the last point, the Argentine case has caught the attention of international scholars. Being one of the richest countries in the world at the end of the XIXth century, Argentina entered the XXIst century struggling with an economic and political crises, unemployment and – later on– inflation (Glaeser et al. (2018); Taylor (1992); Campante and Glaeser (2018)). We add one additional explanation to this trajectory from poster child to basket case, which has seen many culprits (Díaz-Alejandro (1970); Della Paolera and Taylor (2003); Prados de la Escosura and Sanz-Villarroya (2009); Taylor (2018)).

We also contribute to the emerging literature on the study of populism among economists (Tirole, 2018; Guiso et al., 2019, 2018) which has sprung a large number of alternative definitions and treatments of the matter. For instance, related to Stigler (2005)'s Director's Law of income redistribution, populism has been studied under the light of electoral politics (Alesina and Rodrik, 1994; Binswanger and Prüfer, Binswanger and Prüfer; Prato and Wolton, Prato and Wolton). Additionally, we are also related to the literature that studies the economic effects of populism. For instance, Masciandaro (2019) proposes a mechanism that is different to Dornbusch and Edwards (1991) and Canitrot (1975), in which the populist incumbents use established institutions – central banks– politically for short term gains, at the expense of the long term.

2 The empirical approach

Data. The main advantage of our strategy is that we only need data on wages and inflation. Thus, we exploit the availability of historic data in Argentina since mid-XIX

[2]Economist (2006).

[3]Grigera (2017) discusses the case of Kirchner 2003-2015 in Argentina and Lula da Silva 2003-2010 in Brazil.

century. In particular, we take data from Ferreres (2005) in annual frequency for the period 1865-2004.

Additionally, we complement this historical approach with data from selected Latin American countries, for the period 2000-2018, available in monthly frequency in the national statistics institutes of the respective countries (Argentina, Bolivia, Brazil, Peru and Uruguay). The selection of these countries, and not others, is based on the allegedly populist governments they had during some of those years: the Kirchners in Argentina (2003-15), Morales in Bolivia (2006-20), Lula and Rousseff in Brazil (2003-16), García and Humala in Peru (2006-16) and Vázquez and Mujica in Uruguay (2005-20).

A particular distrust for the measures of inflation in Argentina during the XXI century, leads researchers to use the estimates from Cavallo (2012) for the period 2007-2015. For the rest of the countries, CPI inflation and nominal wages are taken from their respective National Statistics Institutes. Additional information is provided in the Appendix.

Estimation. The estimation is based on one assumption: productivity is the only driver of real wages in the long-run. Then, a simple way to identify populist shocks is using a bivariate VAR with nominal and real wages, and where productivity innovations have permanent effects on real wages while populist shocks have only transitory effects on them. Real and nominal wages at time t are denoted by w_t and W_t, respectively, and two structural shocks are identified: the productivity shock (ε_t^y) and the populist shock (ε_t^p).

Let

$$Y_t = \begin{bmatrix} \Delta w_t \\ \Delta W_t \end{bmatrix} \quad and \quad e_t = \begin{bmatrix} \varepsilon_t^y \\ \varepsilon_t^p \end{bmatrix}$$

Also, let $B(L)$ be the coefficients matrix corresponding to the structural VAR representation. Then, let us consider the following structural moving average (MA) representation:

$$B(L)Y_t = e_t \quad with \quad e_t \sim N(0, I_K) \tag{1}$$

The identification strategy is performed considering the long-run effects of the structural innovations Blanchard and Quah (1989). The calculus of this effect (in the Appendix)

leads to the following long-run matrix

$$\underbrace{\begin{bmatrix} \Delta w_t \\ \Delta W_t \end{bmatrix}}_{Y_t} = \underbrace{\begin{bmatrix} \xi_{11} & \xi_{12} \\ \xi_{21} & \xi_{22} \end{bmatrix}}_{\Xi_\infty} \underbrace{\begin{bmatrix} e_t^y \\ e_t^p \end{bmatrix}}_{e_t} \tag{2}$$

Following (Dornbusch and Edwards, 1991; Sachs, 1989), the long-run multiplier ξ_{12} is set to 0 to impose that there is no effect of populist shocks over real wages in the long-run, and only productivity shocks can have lasting effects over them.

Since it could be argued that some populist shocks might be confounded with positive demand disturbances, a conciliatory interpretation of our results would imply that our analysis identifies "non-populist regimes" and potential "populist regimes". In addition, even if populist shocks were capturing positive demand disturbances, they can be interpreted as populist because the government did not act accordingly to curtail them. Furthermore, Keating (2013) shows that numerous models consider that demand innovations can have permanent real effects. We perform below a robustness check where populist shocks can be disentangled from demand disturbances assuming that the latter can have permanent real effects, while the former cannot. The results do not change significantly.

After the OLS estimation of coefficients matrices and the reduced-form variance-covariance matrix, we obtain the impact matrix to calculate the (accumulated) impulse response functions, its variance decomposition and its historical decomposition. The uncertainty around the estimates is calculated using 2,000 bootstrapped iterations from estimated residuals.

3 The evidence

Thus, in the first subsection section we analyze only the 110 years of Argentina that span from 1865 to 1974. In the following subsection, we compare Argentina to Bolivia, Brazil, Peru and Uruguay, in the period 2000-2018, where monthly data is available for all countries.

3.1 Argentina 1865-1974

Brief Historical Background. Argentina's head of the executive branch is the President. Since the "Saenz Peña Law" in 1912, the vote is mandatory and secret. Yrigoyen (1916-1922) is the first elected President by "popular vote" as before that, there were restrictions in voting and the vote was not secret (see Lupu and Stokes (2009)). Yrigoyen is allegedly the first populist leader in Argentina.

Since the end of his second mandate (1928-1930), military regimes (fostered by coup d'etats) and democratic presidents alternated until 1983. The allegedly second populist leader was Domingo Perón, who was the "Secretary of Labor" during a military regime but was later elected president for three mandates (1946-1952, 1952-1956, 1973-1976). Since WWII, only Perón completed a full mandate. The other democratic elected presidents during those years were Frondizi (1958-62) and Illia (1963-66).

The shaded area in Figure 1 shows the 1974-1991 period, when inflation averaged almost 150% per year. This structural break highlights that the calculus of real wages in Argentina in that period is contaminated by the hyperinflation. Including these inflationary years in the fixed-coefficient estimation of the VAR model would deliver biased results due to the presence of outliers. Hence, the following results refer to the period from 1865 until 1974[4].

[4] Alternatively, a time-varying coefficients estimation can be performed to deal with possible structural changes. However, it is not clear how to perform historical decompositions with time-varying coefficients estimations, as mentioned by Kilian and Lutkepohl (2017). And, as the historical decomposition analysis is crucial in the present study, it is convenient to rely on the fixed coefficient estimation and to discard the periods with potential structural breaks.

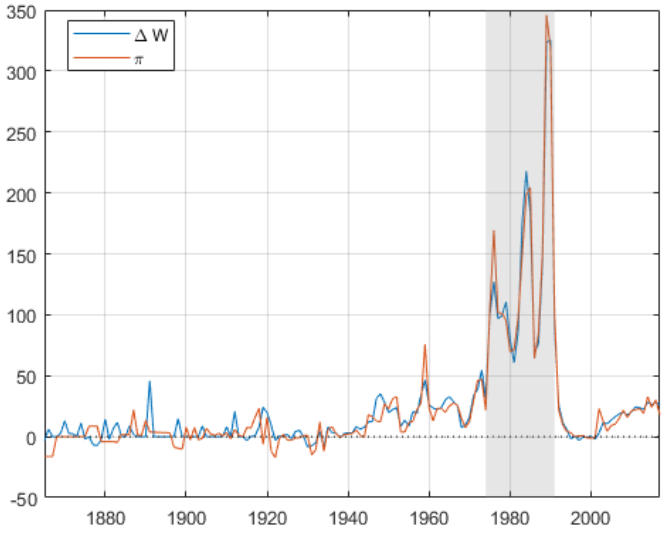

Fig. 1: Nominal wages and inflation, Argentina 1865-2017

Note: yearly variations in the nominal wage and CPI prices (both in logs). The gray area indicates the hyperinflationary period from 1974 to 1991.

Impulse responses. The estimation of the accumulated responses show that the econometric strategy is a sensible one: Figure 2 indicates that productivity shocks have permanent effects on the real wage whereas populist shocks have only transitory effects. In particular, the median estimates indicate that productivity shocks increase the nominal wage by 4% percent on impact and have a permanent effect above 10% over the real wage. As for the populist shock, although the median estimates show that they increase the nominal wage by 10% on impact, such change has no statistically significant effect on real wages at any time horizon. This negligible small effect of populist shocks even in the short-run, may be consistent with the policy maker relying on workers' monetary illusion, as proposed in the pioneer works of Friedman (1968) and Lucas (1972).

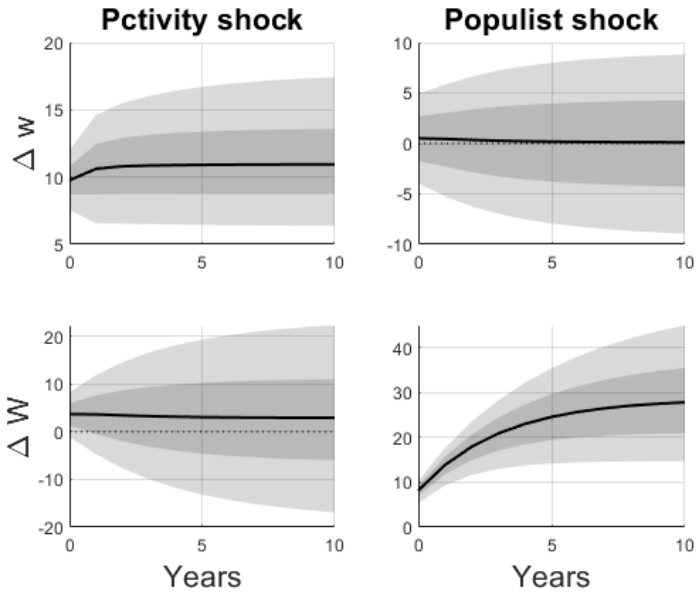

Fig. 2: Accumulated responses, Argentina 1865-1974

Note: The solid line depicts the median, while the shaded areas show the 68% and 95% confidence interval. The coefficients of interest, i.e. productivity shock on real wages and populist shock on nominal wages are significant at the 95% confidence level. Based on 2,000 bootstrap replications of the estimated VAR model (2).

Variance decomposition. On the same lines, the variance decomposition confirms the previous results: Figure 3 shows that real wages were mainly driven by productivity shocks, while nominal wages volatility is mostly explained by populist shocks. In fact, the point estimates indicate that innovations in productivity explain around 97% of the variations in the real wage at all time horizons (upper left plot), while they explain around 12% of nominal wages variations from the first year on (lower left plot). As for the populist shock, they can account only for a 3% of the variations in real wages at all time horizons (upper right plot), but around an 87% of the variations in nominal wages from the second year on (lower right plot).

Fig. 3: Variance decomposition, Argentina 1865-1974

Note: The solid line depicts the median, while the shaded areas show the 68% and 95% confidence intervals. The upper panels show the change in real wages, while the lower ones show the change in nominal wages. Based on 2,000 bootstrap replications of the estimated VAR model (2).

Historical Decomposition. The previous results, shown for the whole period, allow us to look into a historical decomposition confidently. Hence, we decompose the analysis for each year of the period studied and we match those years to the presidential terms. We only analyze the episodes were there were increases in the nominal wage that surpassed 20%.

Although the variance decomposition indicates that nominal wages were mainly driven bu populist shock, a historical decomposition allows to identify if increases in the nominal wages were due to productivity or populist shocks in particular periods. Figure 4 reveals that productivity shocks were relevant in driving nominal wages until the end of the 1940's, as the upper plot shows. Not that populist shocks were unimportant until then, but they clearly gain predominance since the mid 1940's, as the middle plot presents. The lower plot shows that increases in the real wage became infrequent after WWII.

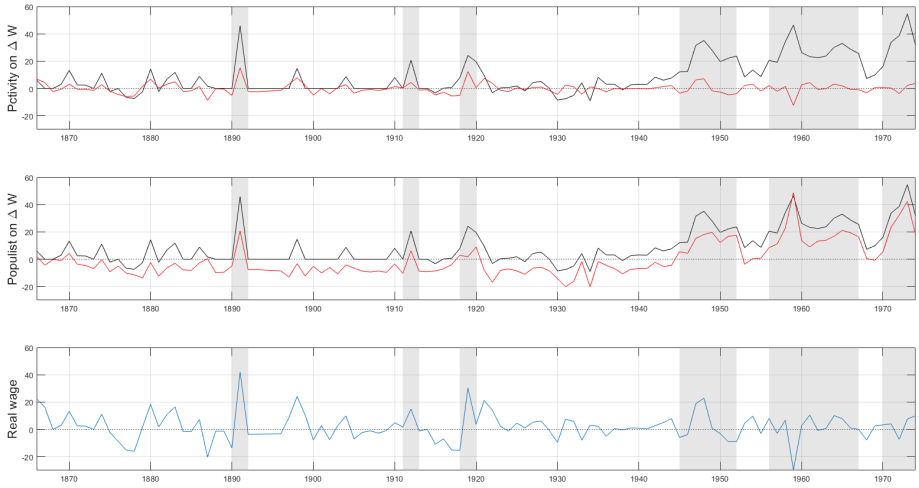

Fig. 4: Historical decomposition, Argentina 1865-1974

Note: The black line is the variation in nominal wages and the red line is the cumulative contribution to it of productivity (upper plot) and populist (middle plot) shocks. The shaded areas indicate periods when there were increases in nominal wages higher than 20%. The lower plot shows the variation in real wages.

Notably, five out of six episodes took place after the introduction of secret voting (1912) and the three longest periods with sustained changes in nominal wages are after World War II. Up until the War, Argentina was a relatively open country but after it, tariffs and other regulations led it to be a relatively closed economy. These observations are in line with Guiso et al. (2019), which discuss the electoral incentives of populist candidates and openness as a remedy for populism.

Before analyzing each period in detail, we show which percentage of the total change in nominal wages can be explained with productivity and populist shocks. We do so for nine presidential terms in Figure 5. This chart reveals that some administrations which were defined *a priori* as populist, were not.

The first bar corresponds to Carlos Pellegrini's presidency in 1890, while the second one refers to the period in which the electoral law was changed by R. Sáenz Pena. Both episodes have large increases in productivity. More interestingly, the third bar corresponds to the first elected president with the new law of universal and secret voting, Yrigoyen

(1916-22). Although there is no consensus, he is mostly thought as the first populist in Argentina (Horowitz, 2008). Our analysis shows that in economic terms, most of the increase in nominal wages during his term was caused by productivity shocks.

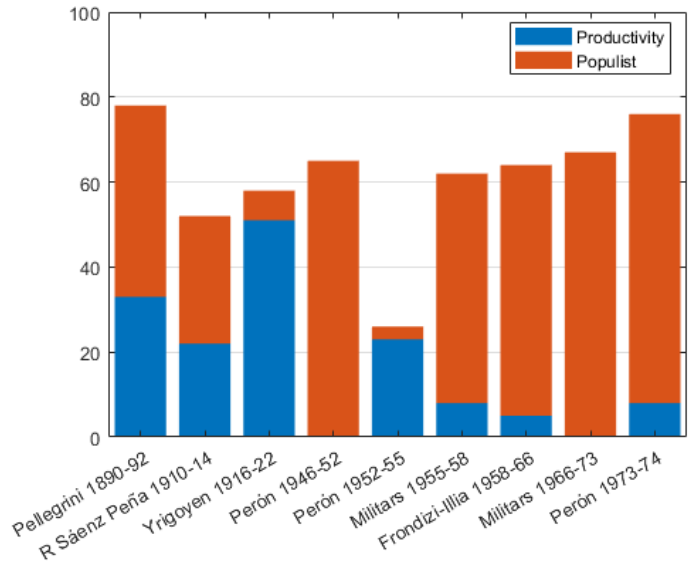

Fig. 5: Historical decomposition

Note: Each bar shows the median cumulative contribution of each shock, as the percentage of the variation in the nominal wage. See the Appendix for details.

Was Perón a populist? Our estimates shed light on his administrations: while his first government (1946-1952), depicted in the fourth bar, was dominated by populist shocks, his second one (1952-55) was not. This result is consistent with the analysis made by Gerchunoff and Llach (2018), who highlights deep differences between Perón's first and second mandate. Particularly, the wage policy, which favored labor in his first government, became much more cautious in his second administration.

As for Peron's last government (1973-74), nominal wages were mainly affected by populist shocks, in line with Sturzenegger (1991), although some productivity innovations had some impact as well. These results stands out the use of our methodology. Yrigoyen and Peron's second term are clearly non populist. During Peron's first term, the populist shocks explain solely the increase in nominal wages, which is consistent with a populist

regime.

Interestingly, populist shocks may not be an exclusive characteristic of democratic governments, at least for the case of Argentina. As a matter of fact, Figure 5 shows that from 1955 until 1973, populist shocks were the main drivers of nominal wages. And this long period includes not only the democratic administrations of Frondizi (1958-62) and Illia (1963-66), but also two Military rules: the *Revolución Libertadora* from 1955 to 1958 and the *Revolución Argentina* from 1966 to 1973.

Finally, economic historians would probably disagree with our results which indicate that Frondizi and Illia were populists. In fact, their characters do not fit into the typical populists leaders. However, our estimation suggests that nominal wages' increases occurred during their presidencies were affected mostly by populist shocks.

3.2 Latin America 2000-2018

The availability of monthly data at the turn of the XXIst century allows use to make a comparative analysis with five Latin American economies who were ruled by so-called populist regimes: Argentina, Bolivia, Brazil, Peru and Uruguay (Venezuela is not analyzed because of lack in data). Following exactly the same procedure as before, in Figure 6 we show for these countries the variance decomposition of nominal wages explained by productivity and populist shocks.

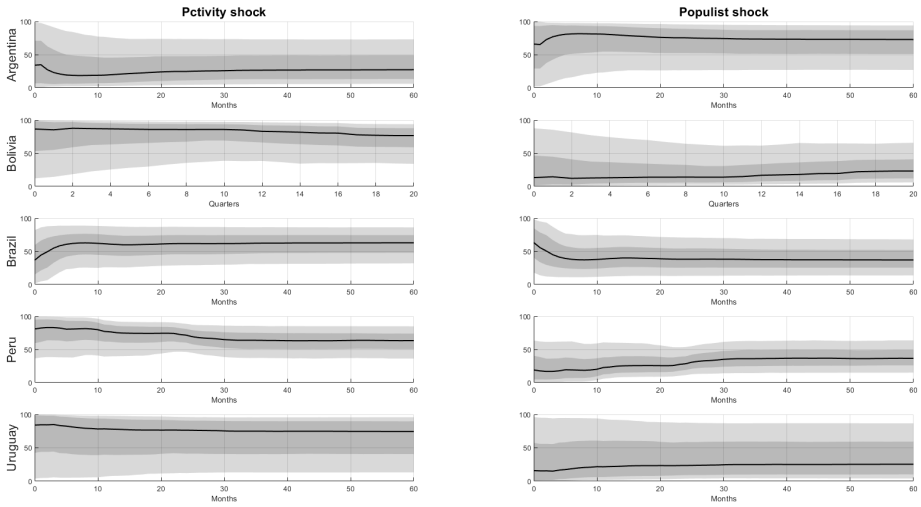

Fig. 6: Variance decomposition of nominal wages: selected LATAM countries 2000-18

Note: The solid line depicts the median, while the shaded areas show the 68% and 95% confidence interval. Based on 2,000 bootstrap replications of the estimated VARs models (2).

As this graph displays, nominal wages are still mainly driven by populist shocks in Argentina, but not so much in the rest of the region. Notably, Bolivia –where the socialist Evo Morales rules since 2006–, Brazil – governed mostly by Lula da Silva and Dilma Rousseff from the "Partido dos Trabalhadores"–, Peru – governed by the allegedly left-wing populists Alan García and Ollanta Humala from 2006 to 2016– and Uruguay –ruled by Tabaré Vázquez and José Mujica, a former guerrilla– do not show any strong evidence of populism. In fact, for these countries, productivity explained around 70% of nominal wages' volatilities, while populist shocks accounted only for 30% of them. For Argentina –ruled by the Kirchners from 2003 to 2015– point estimates indicate that populism can explain around 70% of wage volatility, while productivity can only account for 30% of it.

These results emphasize striking differences between the old Latin American left of the 1970's and 19880's, as described by Dornbusch and Edwards (1990), and the new Latin American left of the XXIst century. While the former was characterized by macroeconomic misalignment, the latter is (generally) not. It seems that, with a few exceptions, left wing populism in Latin America became to be a story of the past.

4 Robustness check with demand shocks.

One potential problem with our identification scheme is that populist shocks might be capturing demand innovations identified as in Blanchard and Quah (1989). However, as mentioned above, it is far from clear that demand shocks have no long-run effects. In fact, Keating (2013) argues that there are numerous models were demand innovations can have permanent real effects.

Sticking to this argument, we perform a robustness check where populist shocks can be disentangled from demand disturbances assuming that the latter can have permanent real effects, while the former cannot. This is done estimating a Bayesian VAR where sign restrictions are imposed on impact to identify productivity and demand innovations, and an exclusion restriction is imposed in the long run to identify a populist shock. The estimation uses the algorithm designed by Arias et al. (2014), which allows to combine both sign and exclusion restrictions at different time horizons.

The alternative model is:

$$\begin{bmatrix} \Delta y_t \\ \Delta w_t \\ \Delta W_t \end{bmatrix} = \underbrace{\begin{bmatrix} \cdot & + & + \\ \cdot & + & - \\ + & \cdot & \cdot \end{bmatrix}}_{B_0^{-1}} \begin{bmatrix} e_t^p \\ e_t^y \\ e_t^d \end{bmatrix} \tag{3}$$

$$\vdots \qquad = \underbrace{\begin{bmatrix} \cdot & \cdot & \cdot \\ 0 & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{bmatrix}}_{\Xi_\infty} \vdots$$

where Δy_t is real output growth, e_t^d is a demand shock, B_0^{-1} is the impact matrix and the rest of the elements are described above. The signs come from a simple aggregate demand-supply framework, where productivity innovations rise output and increase (decrease) real wages (prices), while demand shocks rise output but decrease (increase) real wages (prices). Populist shocks increase the nominal wage on impact and have no long-run effects on real wages. As shown below, our baseline results are not too sensitive to this alternative specification.

Figure 7 displays the accumulated responses obtained with the alternative model (3). Populist shock's dynamics in the first column are not too different from the ones of the baseline model plotted in Figure 2: a strong increase in nominal wages, but no significant rise in real wages. Notoriously, populist innovations do not have a significant effect on real output. Not even in the short-run.

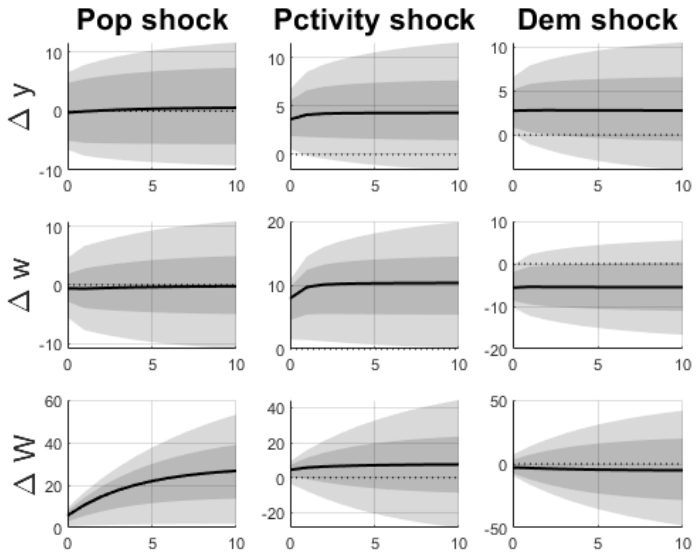

Fig. 7: Accumulated responses, Argentina 1865-1974

Note: The solid line depicts the median, while the shaded areas show the 68% and 95% confidence interval. Based on 10,000 bootstrap replications of the estimated VAR model (3).

Productivity shocks accumulated responses, displayed in the second column of Figure 7, resemble as well the ones of the baseline model shown in Figure 2: a strong increase in real wages and a rise in nominal ones, though not very significant. The impact on aggregate activity is quite strong for innovations in productivity. As for demand shocks, they increase output and reduce the real wage significantly, at least for the 68% level of confidence. Nominal wages decrease, though not significantly.

Regarding the variance decomposition obtained with the alternative model (3), Figure 8 shows slight differences when compared to the baseline model (2) displayed in Figure 3. In particular, populist disturbances explain less of the nominal wages' observed volatility

in the alternative than in the baseline model and productivity innovations does not account for so much variation in real wages. However, this is the natural result of adding another shock in the VAR estimation. In any case, it still holds that populist shocks are the main drivers of nominal wages volatility and productivity disturbances are the most important source of variation to real wages. As for output volatility, populist and productivity shocks explain, in median around 30%.

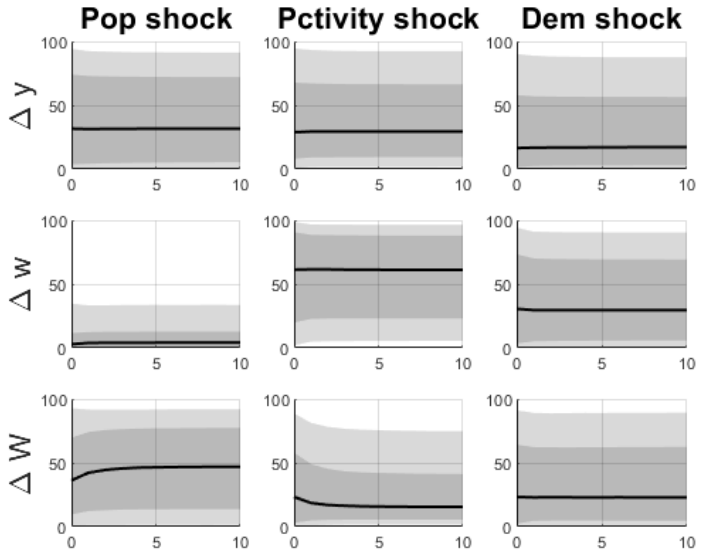

Fig. 8: Variance decomposition, Argentina 1865-1974

Note: The solid line depicts the median, while the shaded areas show the 68% and 95% confidence intervals. Based on 10,000 bootstrap replications of the estimated VAR model (3).

Regarding demand shocks displayed in the last column of Figure 8, they explain in median around 15%, 30% and 25% of output, real wages and nominal wages, respectively, at all time horizons.

Let us now analyze the results of the historical decomposition depicted in Figure 9 and compare the to the baseline results of Figure 5. The presidencies of Pellegrini and Sáenz Peña look quite similar under both model's specifications: productivity innovations are the main source of nominal wages' volatility during their mandates. Interestingly, during Yrigoyen presidency rises in nominal wages are still explained mainly by productivity but,

when demand shocks are taken into account, populist shocks have no presence at all. So, it seems that small populist influence captured by the baseline model consisted actually on demand innovations.

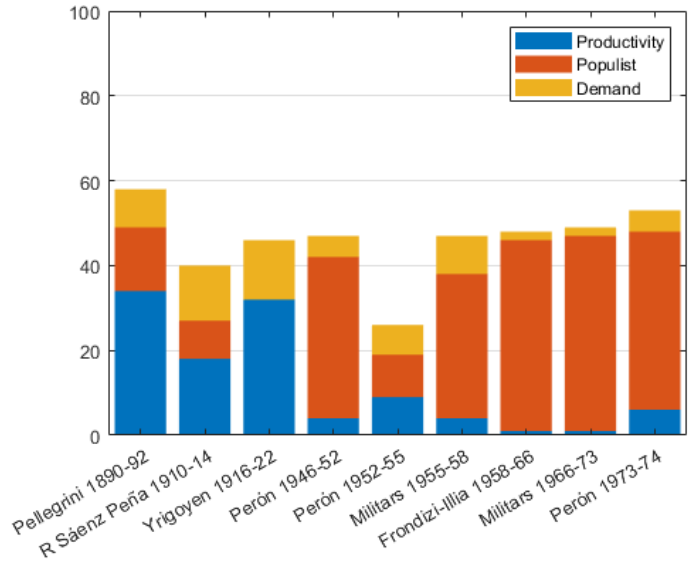

Fig. 9: Historical decomposition

Note: Each bar shows the median cumulative contribution of each shock, as the percentage of the variation in the nominal wage.

As for Perón, his first government is still mainly populist and his second one mostly affected by productivity. Although demand shocks seemed to have played a non-negligible role in driving nominal wages, at the expense of productivity. During the last Perón's government, populism still has the strongest impact but productivity also had an effect. So, this result resembles the one of the baseline model.

Regarding both militars' regimes and the administrations of Frondizi and Illia, the alternative results are quite similar to the ones of the baseline specification. Considering this test, we conclude that model (2) is robust to the alternative approach described in (3).

5 Conclusions

"The important question that arises is whether the setback that followed the populist redistribution experiences is due to the deliberate action of certain groups that react against their loss of economic prerogatives and power... or to the very characteristics of those experiences that engender the objective elements that must put an end to them..." Canitrot (1975).

In this paper, we refrained from analyzing the institutional causes and consequences of populism in spite of their importance. Instead, we use a methodology to separate populist from productive shocks that can be applied universally to level the discussion of populism. Defining the object of study is the necessary step to embark on the institutional conversation[5]. Since it could be argued that demand innovations can be interpreted as populist shocks under our baseline identification, we provided a robustness check with an alternative scheme were both disturbances can be decomposed.

The two most salient results are that: first, our methodology can agnostically identify and quantify populist shocks without a demanding strategy (neither in terms of data nor computationally). The second contribution is related to the application to Argentina: while most economic historians would agree with that Perón was a populist, many claim that Yrigoyen (1916-1922) was one also. Our analysis rejects the latter, and provides a nuanced qualification for the former. Additionally, as other Latin American countries (for instance, Vargas in Brazil and PRI in Mexico) Argentina took a populist turn after WWII. The difference is that Argentina entered a loop and became the only Latin American country with populist economic policies in the XXIst century.

[5] Suter (1994) argues that "The diversity of populist phenomena together with the lack of comprehensive and systematic comparative research has contributed to the fragmentation and vagueness of the theoretical discussion." (page 183).

A Appendix

A.1 Data

The VAR model for Argentina uses data in annual frequency from Ferreres (2005). For the LATAM variance decomposition estimates presented in Figure 6, the data is in monthly frequency (except for Bolivia) from their respective national statistics institutes. Data sources and samples' dates are: Argentina (INDEC and Cavallo (2012); 2003:M4-2018:M2)[6], Bolivia (INE; 1997:Q1-2017:Q4) Brazil (IBGE; 2003:M4-2018:M2), Peru (Central Bank; 2002:M11-2018:M2) and Uruguay (2003:M1-2018:M2).

A.2 The VAR model

From the structural MA to the reduced form VAR representation. The structural MA representation (1) has the following structural VAR form:

$$\begin{aligned} Y_t &= B_0^{-1}B_1Y_{t-1} + B_0^{-1}B_2Y_{t-2} + \ldots + B_0^{-1}B_pY_{t-p} + B_0^{-1}e_t \\ Y_t &= A_1Y_{t-1} + A_2Y_{t-2} + \ldots + A_pY_{t-p} + A_0e_t \end{aligned} \tag{4}$$

where $A_i = B_0^{-1}B_i$ for $i = 1, 2, \ldots, p$ and $A_0 = B_0^{-1}$ is the impact matrix.

The estimation. Once stationarity of the variables is checked, the reduced form VAR:

$$Y_t = A_1Y_{t-1} + A_2Y_{t-2} + ... + A_pY_{t-p} + u_t \qquad u_t \sim \mathcal{N}(0, \Sigma_u) \tag{5}$$

where $u_t = A_0e_t$, is estimated by OLS. Next, the model (5) is expressed as a VAR(1):

$$Y_t = \mathbf{A}Y_{t-1} + u_t \tag{6}$$

where $\mathbf{A}$ is the companion form.

The identification. If (6) is stationary, then we proceed with the structural identification on the long-run matrix by setting (4) to:

$$(I_K - A_1L - A_2L^2 - \ldots - A_pL^p)Y_t = A_0e_t$$

[6] As Argentinean official CPI is known to have been underestimated for the period 2007-15, we take the estimates from Cavallo (2012).

where K is the VAR dimension. Then, the long-run impact matrix is obtained:

$$Y_t = (I_K - A_1 L - A_2 L^2 - \ldots - A_p L^p)^{-1} A_0 e_t$$
$$Y_t = \Xi_\infty e_t \tag{7}$$

where (7) is the same model as in (2), where the exclusion restriction is described.

Finally, the impact matrix A_0 is obtained as in Lutkepohl (2005):

$$A_0 = [I_K - \hat{A}(1)] * chol \left\{ [I_K - \hat{A}(1)]^{-1} \Sigma_u [I_K - \hat{A}'(1)]^{-1} \right\}$$

where *chol* is the 'lower' Cholesky operator. This whole process is repeated 2,000 times by bootstrapping from estimated residuals u_t to characterize the uncertainty around the estimates.

The results. Once the impact matrix is obtained, impulse response functions (IRFs) can be calculated with:

$$\Theta_i = (J \mathbf{A}^i J') B_0^{-1}$$

where J is an operational matrix and $i = 0, 1, 2, \ldots, H$ is the desired horizon. As the focus of this work is on the long run, only accumulated responses are displayed:

$$\Psi_n = \sum_{i=0}^{n} \Theta_i \tag{8}$$

These can be interpreted as the response in variables' *level*. In addition, the mean squared prediction error at the h-step ahead horizon:

$$MSPE(h) = \sum_{i=0}^{h-1} \Theta_i \Theta_i'$$

can be used to obtain the contribution of shock j to variable k at horizon h:

$$MSPE_j^k(h) = \Theta_{kj,0}^2 + \ldots + \Theta_{kj,h-1}^2$$

and the sum of the contribution of the j shocks to each variable k at horizon h:

$$MSPE^k(h) = \sum_{j=1}^{K} MSPE_j^k(h) = \sum_{j=1}^{K} \left(\Theta_{kj,0}^2 + \ldots + \Theta_{kj,h-1}^2 \right)$$

from which the variance decomposition can be calculated by doing:

$$VarDec_j^k(h) = MSPE_j^k(h)/MSPE^k(h) \tag{9}$$

This is, the contribution of the j^{th} shock to the overall variance of variable k at horizon h.

The historical decomposition of shock j to variable k for a given point of time i is calculated as:

$$\hat{y}_{kt}^j = \sum_{i=0}^{t-1} \Theta_{kj,i} w_{j,t-i}$$

where, as opposed to the Θ_i used in (8) and in (9) that come from the bootstrapped distribution, $\Theta_{kj,i}$ comes from the original estimate of (5). These matrices are used to obtain the contribution of each shock to the variations in nominal wages ($k = W$) as:

$$\delta_{Wt}^j = \frac{\hat{y}_{Wt}^j}{\Delta W_t} * 100$$

and the residual:

$$\varepsilon_{Wt}^j = \frac{\Delta W_t - \sum_{j=1}^J \hat{y}_{Wt}^j}{\Delta W_t} * 100$$

As the focus is on the historical contributions only during the devaluation episodes that occurred at years $t = \tau$ (when the increase in the nominal wage exceeded 20%), the variables' historical decompositions and its residuals are rescaled taking their medians:

$$\frac{\delta_{W\tau}^j}{\sum_{j=1}^J |\delta_{W\tau}^j| + \varepsilon_{W\tau}^j} \quad ; \quad \frac{\varepsilon_{W\tau}^j}{\sum_{j=1}^J |\delta_{W\tau}^j| + \varepsilon_{W\tau}^j}$$

This makes it possible to see which structural shock was more important during the years of interest. In Figure 5, the residual estimates are not plotted. Only the median contributions of the identified shocks are.

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