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**Economic Fallout of Decree 770: Assessing the Macroeconomic
Consequences of Totalitarian Reproductive Policies in Ceausescu
Romania**

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Abstract

This paper finds statistically significant evidence that Romania's comprehensive ban on abortion and contraception—Decree 770—caused significant adverse effects on household consumption in the short-term, and government consumption and PPP-adjusted GDP in the long-term. These findings are critical in explaining how reproductive justice and totalitarian policies are critical factors when examining authoritarian countries and their transitions to democracy. The findings in this paper help to explain the desperate conditions Romanian civil society was mired in from the 1960s up until the 1990s, clarifying why Romania's transition to democracy may have been the only violent one in the region. Later, this paper's findings help to contextualize the risks associated with pro-natalist policies performed in authoritarian regimes.

Key words: Abortion; Romania; Ceausescu; Macroeconomic Indicators

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1 Introduction

The regime of Nicolae Ceausescu in Romania garnered significant global attention following its collapse in 1989, particularly due to the ensuing “orphan” crisis which was widely publicized in Western media.¹ While international development organizations focused on rehabilitating Romania through market liberalization—*Shock Therapy* under the International Monetary Fund (IMF)—and international non-government organization (NGO) aid, an understudied element of Romania’s impoverishment was the long shadow of Decree 770 on the country’s macroeconomic health. While the IMF’s shock therapy facilitated rapid recovery, few have investigated the mechanisms behind why Romania’s economy was so vitiated that the country suffered from outbreaks of childhood AIDs, teenage pregnancies, overrun orphanages, persistence budget deficits, and collapsing government infrastructure.² This paper examines Decree 770, a 1967 declaration of pro-natalist reforms that caused an uptick in births as women were forced to undergo unwanted pregnancies, face social and legal constraints to abortion, and were stripped of access to contraception.³ By prioritizing women’s fertility over their autonomy, Romania distinguished itself as an outlier in the Eastern Bloc.

Decree 770 was declared in 1966 and enacted in full force in 1967 with a mandate of banning abortions and contraceptive products. The Decree’s near-term effects led to a spike in the crude birth rate. While there was a gradual decrease in the birth rate within ten years after the Decree’s implementation, the birth rate still remained persistently higher than neighbors. Before 1966, Romania’s crude birth rate had declined to 6 births per 1,000 inhabitants.⁴ At the time, the Romanian government allowed for the import of contraception, allowing for the possibility of “on-demand” abortions.⁵ With Decree 770, all contraceptive devices were removed from the market, women were required to be monitored monthly by a gynecologist, and any detected pregnancies were seen through until birth—all of this was enforced under the observation of

¹ The World from PRX, “Half a Million Kids Survived Romania’s ‘slaughterhouses of Souls,’ Now They Want Justice,” Accessed January 12, 2024. <https://theworld.org/stories/2015-12-28/half-million-kids-survived-romaniyas-slaughterhouses-souls-now-they-want-justice>.

²F Greenwell, “The Impact of Child Welfare Reform on Child Abandonment and Deinstitutionalization, Romania 1990-2000,” *Annales De Démographie Historique* 111, no. 1 (January 1, 2006): 133, <https://doi.org/10.3917/adh.111.0133>.

³ *Ibid.*

⁴M Moskoff, “Pronatalist Policies in Romania,” *Economic Development and Cultural Change* 28, no 3 (1998): 597-614.

⁵*Ibid.*

Romania's secret police, the *Securitate*.⁶ Ceausescu's declaration of pro-natalist policies framed women as not only mothers who needed to birth the next generation of workers, but also as economic actors who needed to support the country's industry in the short-run.⁷ To reverse declining economic figures and a top-heavy, aging population, Ceausescu believed Romania needed to gain at least six million new children, as he saw population growth as the most durable solution to Romania's persistent economic woes.⁸

The short-run impact of Decree 770 is well documented—most infamously, the spike in crude birth rates from below 2.00 to 3.70 in a matter of two years—but the long-term impact is less explored, as data on household consumption strain has remained unincorporated into the existing literature. In the short run, it is evident Decree 770 precipitated a spike in the crude birth rate, but over time, the policy's enforcement declined, and women began to discover means of circumventing the law. The evasion of Decree 770 took two different forms based on women's socioeconomic status. Elite women managed to emigrate, travel abroad for abortions, or find doctors to perform clandestine abortions.⁹ On the other hand, Romania's working class attempted auto-abortions, used informal networks of informal abortion practitioners, or attempted to become sterile.¹⁰

While the short-term effects on birth rate stabilized in the decade after Decree 770, the negative macroeconomic impacts on Romania endured far longer. Case in point, Romania's households consumed 2,771 lei per month worth of resources (~230 USD), but in 1985 this figure had dropped to 2,280 lei per household worth of resources (~190 USD).¹¹ At the same time, Romania's government consumption declined due to severe austerity measures imposed in response to Decree 770's fiscal drain on the economy. Meanwhile, household consumption continued to rise as families needed to spend more to take care of their children.¹² With a decline in government aid, an increase in consumption needs, and issues obtaining the same quality of

⁶“Decretul 770/1966 | Legislatie Gratuita,” n.d., <http://www.lexex.ro/Decretul-770-1966-363.aspx>.

⁷G Kligman, Review of “The Impact of Child Welfare Reform on Child Abandonment and Deinstitutionalization, Romania 1990-2000,” *Population and Development Review* 25, no. 2 (1999): 380–82.

⁸ “Ceausescu's Longest-Lasting Legacy -- the Cohort of '67 - the Donella Meadows Project,” The Academy for Systems Change, November 11, 2011, <https://donellameadows.org/archives/ceausescus-longest-lasting-legacy-the-cohort-of-67/>.

⁹ M Lattianu, “*The 1966 Law Concerning Prohibition of Abortion in Romania and its Consequences*,” *Polish Academy of Sciences* (2001): 1-13.

¹⁰*Ibid.*

¹¹Moskoff, “Pronatalist Policies in Romania.”

¹²D Demekas and M Khan, “The Romanian Economic Reform Program,” *IMF eLibrary*, August 1, 1991, <https://doi.org/10.5089/9781451850246.001.A001>.

resources as pre-decree Romania, Romanian society saw its children deprived of resources and its women forced to bear the brunt of child-rearing under dire circumstances. Such deprivation created desperate economic conditions across the country, immiserating civil society.

Despite the historical data suggesting pro-natalist policies are detrimental to positive development outcomes, a growing number of countries—particularly the United States—are considering pro-natalist policies. President Emmanuel Macron of France even announced a desire to raise France’s birth rate in the same press conference as he announced a need to “relearn shared values and “a common culture of civility.”¹³ As with Ceausescu, leaders often intimately tie birth rate with morality, power, and growth. Romania’s experience with Decree 770 will hopefully become an even more salient warning in policy debate because it illustrates the adverse short and long-term consequences societies face when they enact comprehensive abortion and contraception bans under the guise of macroeconomic and social development. The effects on Romania’s macroeconomy and women are critical to study in this era to ensure that current policy discussions in Europe around birth rates are measured and rational, balancing out the increasingly urgent demands for pro-natalist interventions.

Considering the stakes of the argument and the impact Decree 770 has had on academia and Romania, this paper seeks to explore the longer-term impacts from an economic perspective. The short-term impacts on Romanian society are well-documented, but the longer-term strains on the country’s macroeconomy are under-discussed. This paper uses data on price level of household consumption, price level of government consumption, and a Purchasing Power Parity (PPP) -adjusted Gross Domestic Product per capita measure as variables to analyze spending among households and the government to explore (1) how households adjusted their spending to accommodate larger families, and (2) how the government’s consumption adjusted in the wake of Decree 770. This paper seeks to trace the rationale for the Decree, discuss the ideological and economic lens in which the Decree was formulated, and examine its ultimate impact on Romania’s social and economic fabric. Ultimately, the paper generates data visualizations, association heat maps, and runs robust linear regressions to isolate the effects Decree 770 had specifically on households and government consumption to elucidate the effects pro-natalist, anti-abortion policies have on a country and its inhabitants. Through this paper, it will

¹³NEWS WIRES, “‘Natalist Injunctions’: Macron Sparks Uproar With Call to Revive France’s Birth Rate,” *France 24*, January 17, 2024, <https://www.france24.com/en/france/20240117-natalist-macron-sparks-uproar-revive-france-birth-rate>.

incorporate themes from reproductive rights, transitional justice, and macroeconomic development policy to explain how Decree 770—and other pro-natalist policies—frequently have totalitarian legislation which ultimately increases the birth rate at the expense of economic well being.

2 Literature Review

The academic discourse surrounding Decree 770 primarily revolves around three axes: (1) whether Decree 770's impact was strictly short-term or if it had both long and short-term impacts; (2) the underlying motivations behind the regime's implementation of the Decree; and (3) the source of these motivations, namely whether they originated from internal norms or external pressures. Fundamentally, a significant challenge in analyzing Decree 770 from a macroeconomic perspective lies in the inconsistent, deceptive macroeconomic evidence regarding the policy's effects. Scholars referencing Decree 770 often cite the IMF, World Bank, and other institutions which strictly capture macroeconomic performance. Overall, the economy continued to grow, creating a puzzle in the literature regarding how so much macroeconomic degradation occurred despite indicators showing stable growth. Still, other macroeconomic data has been integrated by recent scholars which focuses on household-based data, creating a vibrant debate in the literature over the impacts of Decree 770. Further, as scholarship has more perspective on the policy's impacts, data has shown many of the fluctuations in response to the decree have endured past the short-term, with the short-term being defined as less than or equal to ten years post-Decree implementation. As such, the literature has a healthy debate surrounding Decree 770's rule in Ceausescu's Romania.

First, the academic perspectives on Decree 770 exhibit a notable distinction based on the period during which the scholars wrote their work. Scholars who wrote from 1970 to 2000 generally assess Decree 770 as having an acute, short-term impact on Romania; however, they argue the Decree's enforceability and effectiveness were eroded shortly after institution. This camp of scholars frequently notes the short-term, drastic shifts in childhood mortality rates and orphaned children, but that these numbers stabilized shortly after the society adjusted. In contrast, scholars writing from 2000 onward recognize the longer-term impact Decree 770 had on the country. While these more recent scholars acknowledge many of the effects were strongest

within the first decade of the declaration, they stress that these consequences had a lasting effect on the country. Such a shift in scholarly perspective highlights how literature on Decree 770 is constantly evolving.

The second relevant axis—whether Decree 770 was fundamentally ideological or economic in nature—divides authors across mostly based on whether they were writing before the 2000s or after the 2000s. From an ideological standpoint, Ceausescu's admiration for the populous nations of France and the Soviet Union is frequently cited as a key influence on his natalist policies.¹⁴ This perspective theorizes that Ceausescu envisioned a larger Romanian population as a means to enhance the country's international standing, aligning with Ceausescu's broader totalitarian agenda that sought to aggrandize the state. This viewpoint underscores the regime's desire to project Romania as a formidable international state using population growth as a means to do so.

Conversely, the economic argument contends that Ceausescu sought to bolster Romania's domestic economy, in particular, the industrial sector. Proponents of this perspective theorize that Ceausescu perceived demographic expansion as a direct, practical solution to Romania's stagnating economy, as Ceausescu sought to stimulate industrial production, grow economic output, and reverse the country's declining working population. This perspective is more pragmatic and limits the ideological and totalitarian motivations, favoring a more economic reason for Decree 770's emergence. Still, both arguments share an understanding that Ceausescu believed a large population was a vehicle to attain power (both in an economic and political sense).

The third relevant topic in the literature is the debate surrounding whether Ceausescu endogenously created Decree 770 from an internal motivation, or if Decree 770 was designed as a response to exogenous stimuli. In general, authors from the 1990s onwards believe Ceausescu had exogenous motivations, while authors before 1990 believed Ceausescu imposed Decree 770 due to endogenous motivations. If Decree 770 is endogenously motivated, then it suggests Ceausescu supported this policy as it benefited Romanian society domestically or served to extend his personalist dictatorship. If Decree 770 is exogenously motivated, then it means Ceausescu likely viewed his regime as deficient relative to countries with larger populations and

¹⁴“Rumania: Balkan Admirers,” TIME.com, May 24, 1968, <https://content.time.com/time/subscriber/article/0,33009,844451,00.html>.

booming markets (such as France and the Soviet Union). If exogenous motivations turn out to be the true motives for the Decree, it suggests that governments might tacitly equate growing populations with strong economies, which could explain one of the central motives to authoritarian, pro-natalist policies like Decree 770. Each of these axes are critical to disentangling the complex field debating Decree 770's legacy. To facilitate a stronger understanding of the literature, Table I offers a visual reference guide to the different camps within the literature. The table is divided along the three major topics just discussed.

	Regime Motivation			
	Exogenously Motivated		Endogenously Motivated	
	Long-Term Impact	Short-Term Impact	Long-Term Impact	Short-Term Impact
Economic Lens	1. Adrian Cioroianu (2012) 2. Ion Pavelescu (1977)	1. Mary Fischer (1985) 2. William Moskoff (1980)	1. Vladimir Trebici (1971) 2. Cristian Pop-Eleches (2006)	1. Institute for Women's Policy Research (2019)
Ideological Lens	1. Florin Soare (2013) 2. Fern Greenwell (2006) 3. Sandor Sipos (1991)	1. Gail Kligman (1998) 2. Brooke Johnson (1996)	1. Bernard Berelson (1979)	1. K.H. Mehlan (1986) 2. Malcolm Potts (1967) 3. Henry David (1971)

Table I| A Visual Schematic of the State of Literature.

The first substantial group of scholars used historical insights and case studies to posit that Decree 770's origins were exogenously motivated, pursued an economic rationale, and had a sustained, detrimental effect on Romania's macroeconomic landscape. This viewpoint is championed by Adrian Cioroianu and Ioan Pavelescu, who both linked the Ceausescu regime's pro-natalist policies with his admiration for other pro-natalist international leaders like Charles de Gaulle.¹⁵ Cioroianu and Pavelescu theorize that, by augmenting the Romanian labor force through increased birth rates, Ceausescu aimed to catalyze economic growth, eventually creating

¹⁵I Pavelescu. "25 de milioane: populația, sursă a dinamismului economico-social," *Editura Politică*, 1977.

a robust working class.¹⁶ This strategy was predicated on the belief that a larger population would bolster economic development, and elevate Romania's international status.¹⁷ Both authors believed the impacts of Decree 770 were long-term, and that the economy suffered as a middle class never emerged as Ceausescu had hoped.

Along a similar vein, Mary Fischer and William Moskoff, both writing between 1980 and 1985, argued that Decree 770's spike in the crude birth rate was ephemeral, citing the rapid descent of Romania's birth rate back to a rate typical among the Eastern Bloc.¹⁸ In particular, Moskoff argues Decree 770 in of itself is not the most impactful of Ceacuescu's policies to impact the economy, believing that it was simply one of many ill-conceived economic policies Ceausescu introduced.¹⁹ Moskoff references several different events in Romanian history, and demonstrated that Decree 770 followed a consistent pattern in Ceausescu's more personalist dictatorship.²⁰ Overall, Fischer, Moskoff, Ciorianu, and Pavelescu all produced the most influential research in the literature, and relied on case studies and available historical data to generate their insights.

After the more case-study based scholars came researchers who followed a more sociological, qualitative vision for assessing Decree 770. Many of them theorize the impacts of Decree 770 were short-term in scope. Scholars in this group include Gail Kligman and Brooke Johnson, both non-Romanian scholars writing a few years after the regime collapsed (in 1998 and 1996 respectively).²¹ Johnson argued Decree 770 was a product of a nationalist, totalitarian ideology Ceausescu created to make Romania a dominant superpower.²² To Johnson, Decree 770 was designed to create a large, deferential population that only knew life *after* Ceausescu took power.²³ Taking Johnson's argument to its natural conclusion, the effects of Decree 770 are short-term in the sense that Romania's violent revolution ultimately demonstrated Ceausescu failed to create a deferential population. Following a similar logic, Kligman believes the ultimate

¹⁶*Ibid.*

¹⁷I Pavelescu. "25 de milioane: populația, sursă a dinamismului economico-social."

¹⁸ M Fischer, "Women in Romanian politics: Elena Ceaușescu, pronatalism and promotion of women," *Duke University Press* (1985).

¹⁹Moskoff, "Pronatalist Policies in Romania."

²⁰*Ibid.*

²¹Kligman, Review of "The Impact of Child Welfare Reform on Child Abandonment and Deinstitutionalization, Romania 1990-2000."

²²B Johnson, M Horga, and L Andronache, "Women's Perspectives on Abortion in Romania," *Social Science & Medicine* 42, no. 4 (February 1, 1996): 521–30, [https://doi.org/10.1016/0277-9536\(95\)00175-1](https://doi.org/10.1016/0277-9536(95)00175-1).

²³*Ibid.*

outcome of Decree 770 was short-term because the regime failed to impose its will, citing the return to regional-level averages for birth rate within a decade after the Decree's implementation.²⁴

Continuing with the more sociologically-focused vision laid out above, more recent scholars like Florin Soare and Sandor Sipos stressed the long-term consequences of Decree 770 on Romanian society through a communal lens. Scholars in this camp exclusively wrote after the fall of the Ceausescu regime and believe that Decree 770 was a totalitarian, ideological tool designed to make families dependent on state institutions to care for their burgeoning families. Effectively, Decree 770 functioned to introduce the state into the private sphere, which would extend Ceausescu's ideological reach as the state would be justified to step in and take care of kids in growing households. Florin Soare goes so far as to believe Decree 770 possessed a moral component, citing that the Romanian government implemented Decree 770 over concerns that "loose morals" had infiltrated Romanian society—necessitating a disciplinary force to organize the family and maintain the country's growth trajectory.²⁵ Scholars like Soare and Sandor Sipos believed these ideological consequences lasted throughout the Ceausescu regime and even extended into Romania's democratic period.²⁶ The psychological impact of Romania's state being mobilized to monitor women, alongside the fact that female workers were pressured into transitioning to the domestic sphere, exaggerated social inequalities.

While the literature has focused on case studies and qualitative research as the primary means of assessing Decree 770, some scholars have attempted to perform quantitative analyses of Decree 770. As mentioned earlier, the challenge in the literature has always been the difficulty of accessing reliable quantitative data, given Ceausescu Romania's reticence to report honest statistical records. Scholars like Vladimir Trebici and Cristian Pop-Eleches agree with their predecessors' broad conclusions about Decree 770's negative impact on Romania, but they contend that Ceausescu's motivation likely stemmed from him noticing the decline in Romania's national income, consumer spending, and industrial output. Trebici noted that Romania's consumer spending was a concern for Ceausescu, as he believed the country's macroeconomy

²⁴Kligman, Review of "The Impact of Child Welfare Reform on Child Abandonment and Deinstitutionalization, Romania 1990-2000."

²⁵F Soare, "Ceausescu's Population Policy: A Moral or an Economic Choice Between Compulsory and Voluntary Incentivised Motherhood?," *European Journal of Government and Economics* 2, no. 1 (June 29, 2013): 59–78, <https://doi.org/10.17979/ejge.2013.2.1.4287>.

²⁶Moskoff, "Pronatalist Policies in Romania."

needed heightened consumer spending to keep the economy growing.²⁷ Pop-Eleches's panel data validate Trebici's findings, arguing that Ceausescu wanted well-educated, financially successful Romanian women to become mothers so they could transmit their successful habits onto Romania's next generation.²⁸ Pop-Eleches and Trebici believe Decree 770 created a long-term labor market and public financial strain that culminated in wage-price spirals, rising consumer spending, and strains on public finance that led to regime collapse.

As shown with the nuances between case-study based, qualitative, and quantitative scholars, the literature has clear divides on the exogenous vs. endogenous motivation of the decree, if it was an ideological or economic tool, and if the Decree had longer or shorter-term impacts on Romania's society. This paper will attempt to add more to the limited quantitative research on Decree 770 while harmonizing these different perspectives and applying a transitional justice lens on the scholarly debate.

3 Research Methodology

This paper's methodology leveraged quantitative data spanning from 1960 to 1989. This period encompassed six years prior to the enactment of Decree 770, extending through to the collapse of the regime in 1989. This time frame provides a comprehensive period to analyze the decree's impact on Romania's macroeconomy. The methodological approach is centered around the construction of robust linear regressions and a single regression discontinuity design (RDD). The RDD is tailored to the measurement of household consumption. These statistical tools are aimed to dissect the effect of Decree 770 on key economic indicators, the three selected as dependent variables are: the price level of household consumption, PPP-adjusted GDP per capita, and the price level of government consumption. These indicators were chosen as they focus on household and government spending patterns, breaking from the literature's historic use of national-level macroeconomic data—in doing so, this paper offers a novel lens through which to assess Decree 770's economic ramifications.²⁹ This paper captured the effect of Decree 770 using the variables: adolescent fertility rate (births per 1,000 women ages 15-19), female-under-five

²⁷Trebici, "Populația României și creșterea economică: studii de demografie economică."

²⁸Grigore Pop-Eleches, "Romania's Politics of Dejection," *Journal of Democracy* 12, no. 3 (July 1, 2001): 156–69, <https://doi.org/10.1353/jod.2001.0055>.

²⁹Demekas and Khan, "The Romanian Economic Reform Program."

mortality rate (per 1,000 inhabitants), and net migration data as independent variables. These indicators all served as proxies to measure the implementation and impact of Decree 770. This paper suspects a causal relationship between each variable and the decree. In terms of control variables, “year” is included to help isolate the Decree’s specific effects, special attention is also paid with sensitivity analyses designed to test the models’ integrity. Additionally, this paper includes a rudimentary comparative analysis of birth rates between Romania and its Eastern bloc peers to assess if the birth rate was statistically significantly different.

The independent variables were all selected as they closely mirror how Decree 770 would have manifested itself in Romania; this paper based these variables off of the prevailing topics of discussion academia focuses on when analyzing Decree 770. As the literature review notes, mortality rates, fertility rates, and migrations were all topics touched upon in the scholarship. This alignment ensures that the analysis directly engages with the core issues identified by previous scholarship, and it offers a targeted method of analysis to see Decree 770’s effects on Romanian society. Still, the challenge of accessing reliable data from the Ceausescu era poses significant obstacles to comprehensive analyses. Reliable data from this era is difficult to obtain as the Ceausescu regime either did not report the data, or slanted the data to include considerable biases and omissions designed to enhance the regime’s image. As such, scholars in the field have a limited toolkit with which to assess Decree 770’s measured effects.

To examine the independent variables and explain their inclusion in the regression, this paper consulted leading scholarship on Decree 770 and macroeconomic development. Such a process involved marshaling data from scholars on Romania, as well as famous economists focusing on the economics of gender inequality, like Amartya Sen. First, the adolescent fertility rate among young women was selected as an independent variable since a comprehensive ban on abortion and contraceptives would likely impact fertility rates among young women—especially in the short term. Further, fertility rates are an important consideration since women who have children often face pressure to leave the workforce, something Johnson noted in her research on Romania.³⁰ Second, the female-under-five mortality rate is useful to the regression because it captures if there was a statistically significant increase in the deaths of young children because of the Decree’s enactment. This variable was also selected since Development economist Amartya

³⁰B Johnson, “Politics of Duplicity: Controlling Reproduction in Ceausescu’s Romania,” *Population and Development Review* 25, no. 2 (1999): 380–82.

Sen noted that times of macroeconomic strain are associated with upticks in female mortality—this argument is the crux of his *Missing Women* phenomenon—so this paper believes it is a fruitful measure to incorporate.³¹ Finally, the regression includes net migration data since it can be a stand-in to reflect capital flight, brain drain, and mass exodus from the country. The methodological underpinnings of this study aim to incorporate the multifaceted legacy of Decree 770 into the regressions, such an approach enriches the understanding of Decree 770's impacts.

As for the dependent variables, the first dependent variable this paper analyzes is the price level of household consumption, found from the Saint Louis Federal Reserve and compiled since 1960.³² In macroeconomic literature, an increase in the price level of household consumption is an open-ended variable. According to the Bureau of Labor Statistics (BLS), the price level of household consumption is an effective barometer of how much earned income households are spending on current consumption for various goods and services.³³ If there is an increase in the price level of household consumption, it suggests a country is dealing with an increase in nominal prices, which could indicate either inflation, macroeconomic strains, or a devaluation of the currency.³⁴ Furthermore, additional needs for consumption can cause consumption to outpace production capacity, which leads to an increase in the price level of government consumption as demand outstrips supply. Increases in the price level of household consumption have important implications on wealth distribution since increasing price levels adversely impact citizens with fixed or low incomes. Given Romania's socialist economy fixed wages, increases in the price level of consumption particularly strain Romanian workers as they would be unable to rapidly adjust their wages to compensate for such price increases.³⁵ In total, this dependent variable is a helpful proxy to measure Romania's macroeconomic health since it captures how households coped with a sudden need to feed more mouths as family sizes grew.

Given the unique opportunities for household consumption, this paper adjusts its econometric measures to use a regression discontinuity (RDD) design to supplement the robust

³¹Elisabeth Croll, "Amartya Sen's 100 Million Missing Women," *Oxford Development Studies* 29, no. 3 (October 1, 2001): 225–44, <https://doi.org/10.1080/13600810120088840>.

³²University of Groningen and University of California, Davis, "Price Level of Household Consumption for Romania," FRED, Federal Reserve Bank of St. Louis. FRED, Federal Reserve Bank of St. Louis, January 1, 1960. <https://fred.stlouisfed.org/series/PLCCPPROA670NRUG>.

³³"Consumer Spending | U.S. Bureau of Economic Analysis (BEA)," n.d., <https://www.bea.gov/data/consumer-spending/main>.

³⁴*Ibid.*

³⁵"Video of Ceausescu's Last Speech, December 1989 | World History Commons," n.d., <https://worldhistorycommons.org/video-ceausescus-last-speech-december-1989>.

linear regression. This RDD is added to ensure that household consumption does not capture generic increases to inflation which occurred across the world from 1960 to the present. While these effects should not be an issue in theory, the RDD helps provide further evidence to assess if the impact in the short-term was compelling, given Romania's population and monetary policy did not drastically shift in the short-run between 1946 and 1968. Economist Pablo A. Peña contends that an RDD design is designed to catch any discontinuities pre and post implementation of a policy.³⁶ For the RDD, the dependent variable is household consumption, which was selected since this variable would likely shift quickly as consumers update their expectations, and the independent variables remain unchanged.³⁷ The running variable would be time for this RDD. Overall, this RDD will provide deeper insights into the short-term impacts of Decree 770.

The second dependent variable in the regression was PPP-Adjusted GDP per capita, with data collected from the Federal Reserve Bank of Saint Louis.³⁸ This dependent variable is unlike the others since the literature has engaged with it previously; nevertheless, a PPP-adjusted GDP per capita offers unique insights since it is a real macroeconomic variable, as opposed to a nominal one. As real variables help measure macroeconomic wellbeing in a way that is resilient to time-based fluctuations in the data, PPP-adjusted GDP helps to deepen this paper's empirical insights as price level of household and government consumption are both nominal variables. Further, the classical dichotomy between nominal and real variables in economics means that variables like household and government consumption are nominal—suggesting they are susceptible to inflationary distortions in the data.³⁹ So, including PPP-adjusted GDP—a real variable—helps balance the research in this paper by including an inflation-resistant economic indicator. The PPP-adjusted GDP helps also show longer-run impacts of Decree 770 on Romania's macroeconomy given the reliability of the data and the time controls, as this data is benchmarked to current price levels.

³⁶P Peña, *Piece of Cake: A Practical Introduction to Econometrics* (2022).

³⁷*Ibid.*

³⁸“Consumption Share of Purchasing Power Parity Converted GDP per Capita at Current Prices for Romania,” September 17, 2012, <https://fred.stlouisfed.org/series/CSPPPGROA156NUPN>.

³⁹P Peña, *Piece of Cake: A Practical Introduction to Econometrics* (2022).

The third dependent variable in the regression is the price level of government consumption from the Saint Louis Federal Reserve.⁴⁰ From a macroeconomic perspective, government consumption—much like household consumption—measures how much income the government is spending on goods and services within a country’s market. If there is a decrease in the price level of government consumption, it typically suggests a decrease in government spending relative to the overall economy; such a sign is common during times of austerity as governments attempt to curb excessive budgets.⁴¹ Aside from austerity, a decreasing price level of government consumption also reflects fiscal consolidation on the part of the federal government, such as cutting government services, freezing government services at current price levels, or scaling back public-sector operations in the market. Given Romania’s socialist, state-planned economy during this time period, changes in government consumption are only due to intentional modifications in government spending, as opposed to organic growth in the private sector. Fundamentally, any decrease observed in government consumption can be directly associated with decreases in government spending, principally welfare. Given Romania’s macroeconomic strain due to the new births from Decree 770, a decrease in government consumption would suggest the government was unable to raise funds to provide more support for families. Overall, this dependent variable is an effective way to measure how government spending was impacted in the wake of Decree 770.

The use of robust linear regressions within this paper reflects a strategic methodological decision designed to reduce multicollinearity bias concerns by conducting regressions over both short (1964-1968) and long (1960-1989) time periods. Such a staggered method can pinpoint specific temporal dynamics, facilitating a deeper exploration of the impacts of Decree 770. There is a risk that the data could capture exogenous variables and create a spurious correlation, so staggering the time horizons avoids these issues. Overall, the robust linear regression models are useful since they lessen the impact of outliers and violators of model assumptions. The regressions are useful for this paper since they will help understand the relationship between the independent and the dependent variables, and it will demonstrate how the independent variables capturing the effects of Decree 770 impact the dependent variables.

⁴⁰University of Pennsylvania. “Government Consumption Share of Purchasing Power Parity Converted GDP Per Capita at Current Prices for Romania,” FRED, Federal Reserve Bank of St. Louis, FRED, Federal Reserve Bank of St. Louis, January 1, 1960. <https://fred.stlouisfed.org/series/CGPPPGROA156NUPN>.

⁴¹Demekas and Khan, “The Romanian Economic Reform Program.”

The RDD is only included in this paper for household consumption, and this stems from the necessity to analyze household consumption over a shorter time horizon to adjust for issues relating to inflation and eliminate potential exogenous variables. An RDD is an experimental design which uses a cut-off (Decree 770) that impacted the entire country to analyze if there were statistically significant changes pre and post Decree over a short-time period. The RDD will be deployed to supplement the robust linear regression given the low number of years included in the regression.

To ensure the validity of the regression, this paper also considers issues surrounding using small N-value regressions, multicollinearity biases, and data integrity. First, the regressions from 1960-1989 include an N of 40, with each variable including data over forty years of Ceausescu's reign. While an N of 40 is comparatively small, it provides enough data points to signify significant trends.⁴² While the regressions from 1964-1968 have a smaller N-value, these regressions were still run to explore the implications of the results; while their findings hold less statistical power, they are valuable in providing reference information for the paper. Additionally, the RDD is used to provide a secondary statistical test which is capable of operating in short-time horizons. Second, the paper runs time-adjusted regressions to try and examine if the intensity of Decree 770 was stronger in the short-term or long-term. This way, the multicollinearity risk is mitigated as time-effects are addressed. Finally, the data cuts off at 1989 since this paper's main dependent variables undertake a fundamentally different macroeconomic context once Romania adopted a capitalist, market-driven economy in 1990. Price levels of household and government consumption theoretically fluctuate more in market economies given there are no government price-setting mechanisms and regulations on wages, so the data stops at 1989 to isolate how Decree 770 impacted socialist Romania alone.

4 Results & Analysis

Overview of Findings

Using this paper's methodological approach, the data demonstrated that Decree 770 yielded statistically significant impacts on three dependent variables of interest: (1) household consumption; (2) PPP-adjusted GDP per capita, and (3) government consumption. Still, the

⁴²P Peña, *Piece of Cake: A Practical Introduction to Econometrics*

effects were inconsistent over different time horizons. Household consumption was most strongly affected by Decree 770—which was captured with the three independent variables. Meanwhile, PPP-adjusted GDP and government consumption were more significant in the long run (1960-1989). To demonstrate these findings, this paper ran robust linear regressions for every regression equation over both time horizons, and added an additional regression discontinuity design (RDD) to further examine the association between household consumption and Decree 770. The paper added an additional correlation matrix to help facilitate a broader understanding of the trends the paper sought to lay out. The result section will: (1) explore the variables over time, (2) assess the regressions and the regression discontinuity design, and (3) analyze the correlation matrix and regional data to relate them to the regressions.

Independent Variable Analyses

There were three primary independent variables the regression included to assess Decree 770's impact on Romania's macroeconomic variables. All three independent variables displayed a significant uptick 1-10 years post-Decree (Fig 1; Fig 2; Fig 3). Generally, the independent variables display significant fluctuations in the short term. However, the Ceausescu regime gradually mitigated the negative effects of Decree 770—which the independent variables reflect—with the notable exception of adolescent fertility rates, which remained persistently high. Looking through the data, one can see that, despite efforts to control the effects of Decree 770, fertility remained an enduring factor driving Decree 770's impact to potentially last longer than what scholarship has previously estimated.

First, net migrations, measured as immigrations minus emigrations, displayed a significant fluctuation between 1966 and 1970, with emigrations overtaking immigrations to such an extent that Romania posted a -150,000 net migration value in 1967 (Fig 1). After 1970, the Romanian government managed to stabilize net migrations, with an increase in migrant workers entering the country.⁴³ Looking at the scholarly literature, it is clear there is an acute, short-term effect of net migrations, but that it stabilizes rapidly—hinting that some of the effects of Decree 770 were likely restricted to only the short-term time horizon.

⁴³Ilarion Tiu, "Republica Africa Centrală, La Picioarele Lui Ceaușescu," *Adevărul*, August 8, 2022, <https://adevarul.ro/stil-de-viata/cultura/republica-africa-centrala-la-picioarele-lui-1412180.html>.

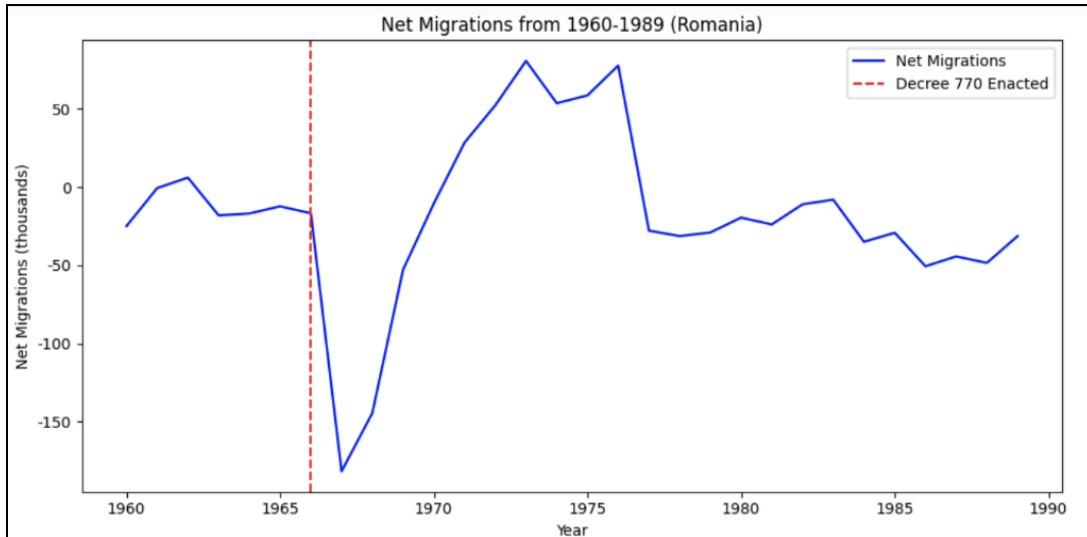


Fig. 1 | Net Migrations from 1960-1989 (Romania)

The next independent variable, under-five female mortality rates, exhibited a steady decrease in Pre-Decree 770 Romania; however, in the wake of the Decree the mortality rate began to increase until 1971 (Fig 2). Notably, while the Romanian government managed to reverse the increase in under-five female mortality, the rate of decrease never matched the same rate as pre-Decree Romania. The under-five female mortality rate is effective to include in the regression considering it documents a consequence of Decree 770 from the literature. Given the decrease in under-five female mortality rates occurred at a lower rate compared to pre-Decree, this variable helps show post-Decree Romania had long-term struggles controlling the female mortality rate.

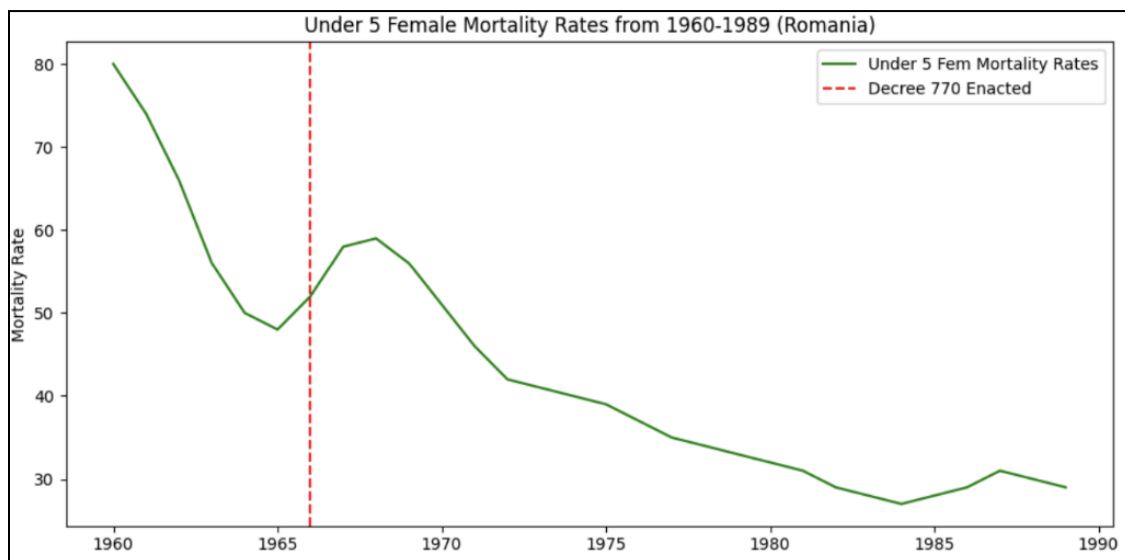


Fig. 2 | Under 5 Female Mortality Rates from 1960-1989 (Romania)

Finally, this paper includes the adolescent fertility rate, which is unique among the independent variables included in the regression because it remains consistently higher post-Decree 770. In the immediate aftermath, the fertility rate spiked from 45 to 75 per 1,000 people in under five years, and then it continued to fluctuate rapidly between years (typically between 55 and 75 per 1,000 people). These fluctuations evince that adolescent fertility rates were one of Decree 770's most enduring legacies on the demography of Romania. With abortion banned and the government seeking to increase the birth rate, adolescent fertility is an important measure because this is a demographic the Ceausescu regime would have placed under heightened surveillance.

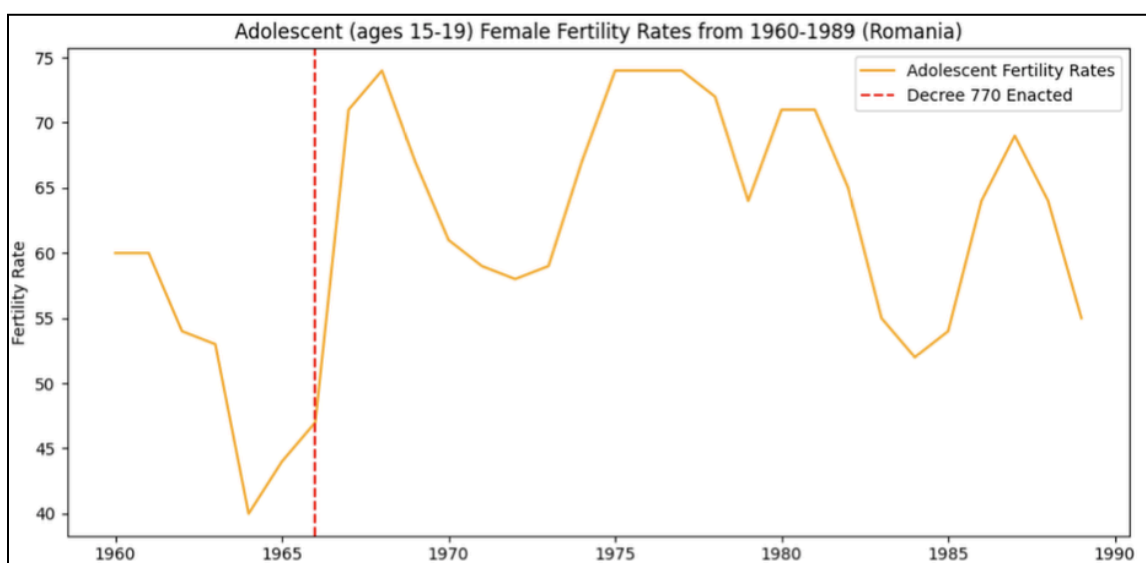


Fig. 3| Adolescent (ages 15-19) Female Fertility Rates from 1960-1989 (Romania)

Dependent Variable Analyses

Likewise, the trendlines for the three dependent variables (household consumption, government consumption, and PPP-adjusted GDP) also demonstrate important pre and post-decree distinctions. First, the price level of household consumption steadily increased in the immediate wake of the decree, but it eventually began to increase at a rapid rate in 1973, with it reaching a maximum increase around the 1980s (Fig 4). Such a finding suggests that household consumption may have a lag time until it reacts to the decree, as households adjust spending to accommodate for more mouths to feed with the birth of new children. Given children become

increasingly expensive as they enter adolescence, it is sensible that the time from 1970-1975 is around when the data exhibits its first major spike in price level (Fig 4).⁴⁴

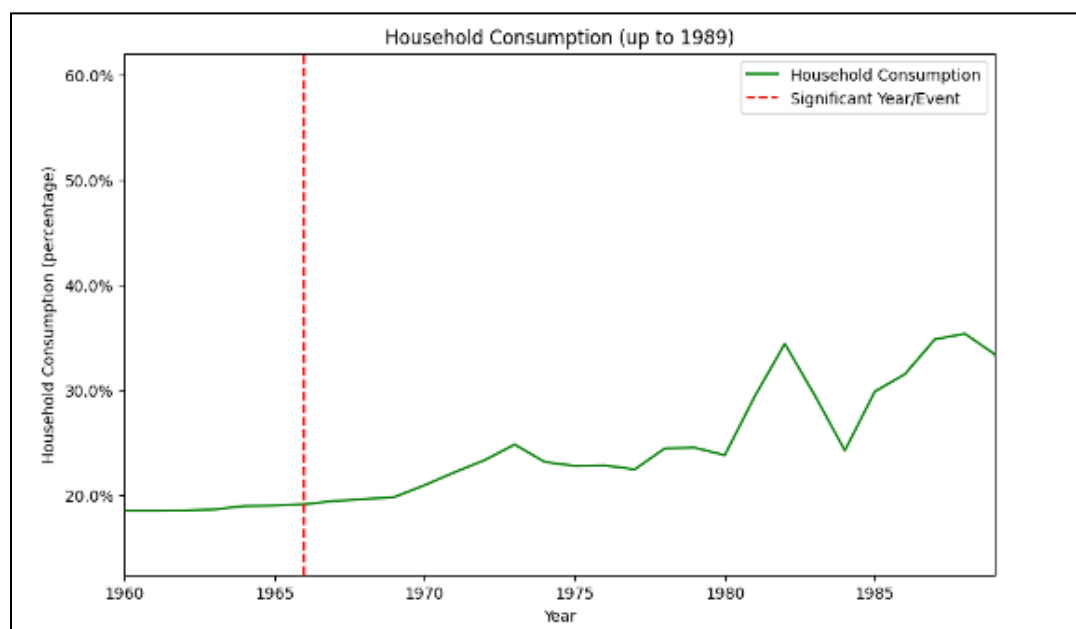


Fig. 4| Price Level of Household Consumption from 1960-1989 (Romania)

As for the price level of government consumption, it declines in the immediate aftermath of Decree 770, but the rate of decrease becomes more severe as time goes on—suggesting another lag time dynamic where the dependent variable may take a few years to demonstrate the effects of Decree 770 (Fig 5). Government consumption remained relatively constant until 1970, which could reflect that social services only became strained by the spiked birth rate after children began to reach early adolescence, and were inducted into the Romanian orphanage system. The price level of government consumption, given Romania was a socialist state, specifically hones in on modifications to government spending, as opposed to in market economies where fluctuations in government consumption could be from a growth in private sector activity. This makes government consumption an effective tool to isolate the effects of Decree 770 on Romania’s fiscal policy. For this paper, the price level of government consumption is insightful in a long-term robust linear regression because the price level of government consumption is especially salient in revealing the long-term fiscal ramifications pronatalist policies can exert on

⁴⁴Elisabeth Croll, “Amartya Sen’s 100 Million Missing Women.”

state resources. These strains are particularly in socialist economies where the government bears a substantial role in providing social services.

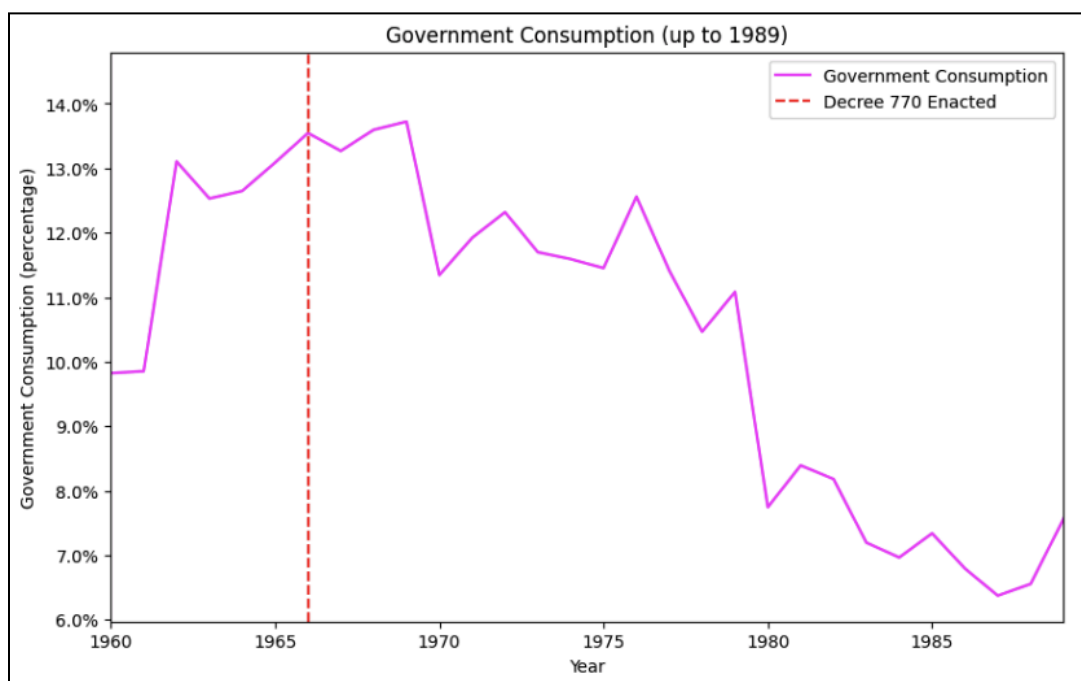


Fig. 5| Price Level of Government Consumption from 1960-1989 (Romania)

Finally, the consumption share of PPP-adjusted GDP per Capita demonstrates a steady decline after Decree 770. PPP-adjusted GDP bottoms out by 1985, a few years before the regime's overall collapse (Fig 6). The decrease pre-Decree, while sharp, had stabilized 5-10 years pre-Decree, meaning that the post-Decree decrease occurred almost immediately after it came into effect across the country. Including this variable is challenging since, while it is fruitful to include as PPP-adjusted GDP per capita is a standard indicator of economic well being, it likely includes other effects occurring simultaneously. Therefore, this variable has risks with multicollinearity biases. Given Ceausescu's legacy as a flawed economic operator, this variable could include other effects aside from Decree 770 which could create a spurious correlation. Nevertheless, Decree 770 was undeniably a factor motivating per capita changes in PPP-adjusted GDP per capita, meaning that this variable is still a reliable measure to show the populations' macroeconomic health over time. Seeing these trendlines in isolation invites a larger conversation on causality, with the regressions and RDD as welcome solutions to the dilemma.

Having seen the trends, it is now appropriate to dissect the specific regressions to assess the temporal impacts the Decree had, and whether these effects were significant or not.

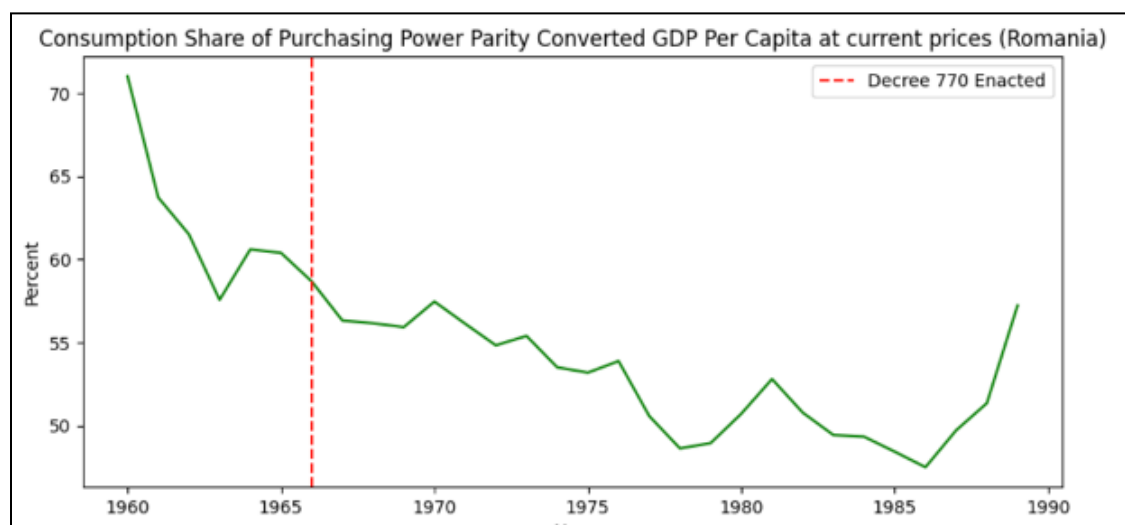


Fig. 6 | Consumption Share of PPP-Adjusted GDP per Capita 1960-1989 (Romania)

Regressions Regarding Household Consumption

Household consumption included an RDD and a robust linear regression measured over both short and long-term time horizons. The regression can be modeled as such:

$$\text{Household Consumption} = \beta_0 + \beta_{ad_fertility} + \beta_{ad_fem_mortality} + \beta_{net_migration} + \beta_{year} + \varepsilon$$

Over the short-term time horizon of 1964-1968, year is not included. This paper uses the RDD, which is a quasi-experimental pretest-posttest design that can allow for estimations of a treatment's causal effects (in this case Decree 770). An RDD is appropriate here since it exploits the natural, nationally-imposed cutoff of Decree 770, and examines whether the pre- versus post-Decree 770 macroeconomic landscape changed substantially in the short-term. Looking at the RDD, the Skew, Jacque-Bera, Durbin-Watson, Kurtosis, and Prob (JB) values, are all statistically insignificant, which suggests a normal distribution of the residuals and validates the integrity of the research design (Fig 7). The RDD demonstrates that household consumption is statistically significantly affected by two of the three independent variables, with the P-values for all of them falling below 0.05, with net migrations being the exception. Still, net migrations has a P-value of 0.058, which is nearly statistically significant. Importantly, the running variable, which captures the time, was found to be statistically significant ($P < 0.01$) and with a coefficient of 0.28, demonstrating that time is significant in changing household consumption over the pre

and post Decree timeline (Fig 7). The treatment variable in the RDD, which shows if there was in fact a statistically significant cut-off in household consumption pre and post Decree, was found to have a P-value of 0.062, which is nearly statistically significant (Fig 7). This finding suggests that Romania's macroeconomy pre and post-Decree 770 was very likely statistically significant, with household consumption being forced to augment, as shown with the coefficient of -0.29 on the treatment variable. While not below the 0.05 threshold, the RDD demonstrates that there were significant short-term fluctuations. Perplexingly, however, the coefficient of -0.29 suggests that, in the immediate aftermath of Decree 770, household consumption actually decreased. This finding, while varying from initial suspicions that household consumption would rise in the short-term, could suggest that households began consuming less around the time Decree 770 was enacted.

OLS Regression Results						
Dep. Variable:	Household Consumption	R-squared:	0.993			
Model:	OLS	Adj. R-squared:	0.985			
Method:	Least Squares	F-statistic:	118.3			
Date:	Mon, 12 Feb 2024	Prob (F-statistic):	0.000196			
Time:	10:35:25	Log-Likelihood:	18.570			
No. Observations:	10	AIC:	-25.14			
Df Residuals:	4	BIC:	-23.32			
Df Model:	5					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	18.4940	0.174	106.495	0.000	18.012	18.976
net migrations	-1.89e-06	7.19e-07	-2.628	0.058	-3.89e-06	1.07e-07
ad mortality rates	0.0363	0.009	3.996	0.016	0.011	0.061
ad fertility rates	-0.0208	0.007	-2.886	0.045	-0.041	-0.001
Treatment	-0.2870	0.111	-2.574	0.062	-0.597	0.023
RunningVar	0.2848	0.037	7.775	0.001	0.183	0.386
Omnibus:	1.209	Durbin-Watson:	2.446			
Prob(Omnibus):	0.546	Jarque-Bera (JB):	0.731			
Skew:	-0.609	Prob(JB):	0.694			
Kurtosis:	2.478	Cond. No.	7.49e+05			

Fig. 7 | Regression Discontinuity Design run on Household Consumption (1964-1968)

To further probe the data after the RDD's result, this paper included a robust linear regression over the same time period, which showed every independent variable and dependent variable having a P-value below 0.05 (Fig 8). In the long-run robust linear regression, all the coefficients are statistically significant, which shows the enduring nature of household

consumption's shift throughout the Decree's implementation (Fig 8). Additionally, the positive coefficients suggest that household consumption was associated with modest increases in fertility and mortality rates (Fig 8). Performing this analysis with the RDD and robust linear regression in the short-run demonstrated that household consumption had statistically significant shifts in the immediate aftermath of Decree 770; moreover, using such a short timespan prevents inflation from distorting these findings. The coefficients in the short-run regression and RDD clearly demonstrate the immediate increases in emigrations, mortality rates, and fertility rates.

Robust linear Model Regression Results						
Dep. Variable:	Household Consumption	No. Observations:	5			
Model:	RLM	Df Residuals:	1			
Method:	IRLS	Df Model:	3			
Norm:	HuberT					
Scale Est.:	mad					
Cov Type:	H1					
Date:	Sun, 11 Feb 2024					
Time:	22:47:02					
No. Iterations:	2					
	coef	std err	z	P> z	[0.025	0.975]
net migrations	1.817e-06	4.29e-07	4.234	0.000	9.76e-07	2.66e-06
ad mortality rates	0.0194	0.008	2.584	0.010	0.005	0.034
ad fertility rates	0.0208	0.003	7.085	0.000	0.015	0.027
Constant	17.1927	0.302	56.853	0.000	16.600	17.785

Fig. 8| Robust Linear Regression Model of Household Consumption (1964-1968)

Meanwhile, Figure 9 shows that the long-run data adequately reflect household consumption's continued increase throughout the Ceausescu regime. Figure 9 indicates that Household Consumption continued to increase in Romania even in the long run after the Romanian government had started to mitigate, and even reduce, Decree 770's detrimental effects. The negative coefficients for the independent variables suggest that Decree 770's impact was so salient that even the Romanian government's costly efforts to address the main consequences of the decree (migrations and increased mortality and fertility rates) in the long run did not halt the increased needs households had for consumption. It is plausible household consumption yielded strong fluctuations in the short-term, which eventually translated into long-run needs for increased consumption to support growing families. This theory would explain the coefficients' positive values in the short-run post-decree and their subsequent negative values in the long-run. Since, even in the long-run, Romania's households had grown so large as to need increased consumption *despite* the government slowly remedying the immediate after effects of the Decree.

Robust linear Model Regression Results						
Dep. Variable:	Household Consumption	No. Observations:	44			
Model:	RLM	Df Residuals:	39			
Method:	IRLS	Df Model:	4			
Norm:	HuberT					
Scale Est.:	mad					
Cov Type:	H1					
Date:	Sun, 14 Jan 2024					
Time:	08:38:45					
No. Iterations:	38					
	coef	std err	z	P> z	[0.025	0.975]
net migrations	-1.771e-05	6.7e-06	-2.643	0.008	-3.08e-05	-4.58e-06
ad mortality rates	-0.1352	0.066	-2.056	0.040	-0.264	-0.006
ad fertility rates	-0.1064	0.049	-2.189	0.029	-0.202	-0.011
Year	0.2821	0.103	2.743	0.006	0.081	0.484
Constant	-521.2811	204.193	-2.553	0.011	-921.492	-121.070
If the model instance has been used for another fit with different fit parameters, then the fit options might not be the correct ones anymore .						

Fig. 9| Robust Linear Regression Model of Household Consumption (1960-1989)

Having assessed these regressions, the theory this paper derives from these results is that the Romanian government managed to cope with the initial increases in mortality and emigration post-Decree; in fact, in the long-run these after-effects began to steadily decrease once again. Nevertheless, the persistently higher fertility rate kept raising the needs for household consumption. Effectively, in spite of managing Decree 770's effects in the long run, the country still suffered since fertility rates remained elevated. To illustrate this point, this paper ran a side-by-side comparison of the price level of household consumption and fertility rates (Fig 10). Such a visual demonstrates how the immediate influx in the fertility rate, alongside its continued elevation throughout the next two decades, slowly was associated with increases in household consumption as family sizes grew (Fig 10). Overall, it is clear that the data are ambiguous in the long-run, yet the trendlines demonstrate a nuanced picture. Namely, Romania experienced immediate, negative aftershocks in the wake of Decree 770, but that these aftershocks began to subside within a decade of the Decree. Nevertheless, fertility remains persistently elevated after the Decree, which would have helped to fuel the rapid increases in household consumption which strained Romanian households up until the 1989 revolution.

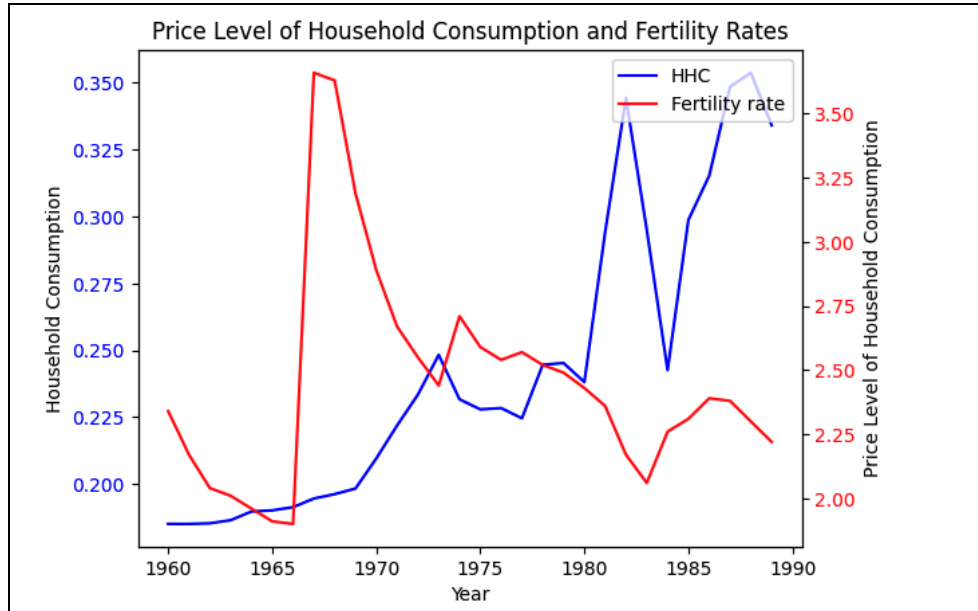


Fig. 10| Comparison of Price Level of Household Consumption and Fertility Rates (1960-1989)

Regressions Regarding Government Consumption

As for government consumption, all independent variables demonstrated statistically significant impacts on the price level of government consumption in the long run (Fig 11). For this robust linear regression, it was the same over both time horizons; however, this paper focuses on the long-term linear regression as only that one yielded significant results. The formula:

$$\text{Government Consumption} = \beta_0 + \beta_{ad_fertility} + \beta_{ad_fem_mortality} + \beta_{net_migration} + \beta_{year} + \varepsilon$$

Every independent variable's P-value was below 0.05, and the coefficients being positive demonstrate how, as government consumption faltered, mortality rates (0.03) and fertility rates (0.03) continued to steadily fluctuate upwards year over year (Fig 11). The positive coefficients underscore how government consumption's decline was associated with the Romanian states' longer-term efforts at combating the adverse effects Decree 770 had on the Romanian population (Fig 11). Given the negative coefficient of year (-0.11) outpaces the independent variables, it appears that government consumption's decline was more acute than the fluctuations in mortality and fertility rates (Fig 11). So, the needs driven by mortality and fertility rates (which would require government funds) distressed the Romanian economy, potentially leading to increased

strain on social services that led to a collapse in government consumption levels. Looking at the trendlines in the figures of the independent and dependent variables affirm this inference.

Robust linear Model Regression Results						
Dep. Variable:	Government Consumption	No. Observations:	44			
Model:	RLM	Df Residuals:	39			
Method:	IRLS	Df Model:	4			
Norm:	HuberT					
Scale Est.:	mad					
Cov Type:	H1					
Date:	Sun, 14 Jan 2024					
Time:	08:28:34					
No. Iterations:	34					
	coef	std err	z	P> z	[0.025	0.975]
net migrations	1.564e-05	3.45e-06	4.528	0.000	8.87e-06	2.24e-05
ad mortality rates	0.1004	0.034	2.961	0.003	0.034	0.167
ad fertility rates	0.0820	0.025	3.273	0.001	0.033	0.131
Year	-0.1108	0.053	-2.090	0.037	-0.215	-0.007
Constant	220.6349	105.274	2.096	0.036	14.301	426.969

Fig. 11| Robust Linear Regression Model of Government Consumption (1960-1989)

Regressions Regarding Purchasing Power Parity Adjusted GDP per Capita

Lastly, the robust linear regression measuring the PPP-adjusted GDP per capita over 1960 to 1989 revealed that all independent variables were statistically significant ($P < 0.05$) in their effect on PPP-adjusted GDP per capita (Fig 12). The formula for the regression was:

$$PPP(adj) \text{ GDP per capita} = \beta_0 + \beta_{ad_fertility} + \beta_{ad_fem_mortality} + \beta_{net_migration} + \beta_{Year} + \varepsilon$$

The data were notably showing that, as PPP-adjusted GDP per capita went down, adolescent fertility rates actually tracked higher (-0.12) (Fig 12). This finding is salient since it shows adolescent fertility rates remained a persistent obstacle for the Romanian government to control in the long-run. Meanwhile, the data on PPP-adjusted GDP per capita paint a similar picture as the price level of government consumption data did, namely that long-run declines in key macroeconomic indicators often continued *in spite* of Romania's government beginning to control for many of Decree 770's most adverse initial impacts (Fig 12). The coefficient on fertility rates, adolescent mortality rates, and net migrations validate the associations made when looking at the independent and dependent variables charted out over time. In sum, the results from this paper's study revealed household consumption was a short-term and long-term impact

of Decree 770 on Romania's macroeconomy, while government consumption and PPP-adjusted GDP captured the longer-run effects of Decree 770.

Robust linear Model Regression Results						
Dep. Variable:	GDPPPP	No. Observations:	30			
Model:	RLM	Df Residuals:	25			
Method:	IRLS	Df Model:	4			
Norm:	HuberT					
Scale Est.:	mad					
Cov Type:	H1					
Date:	Mon, 12 Feb 2024					
Time:	12:10:55					
No. Iterations:	18					
	coef	std err	z	P> z	[0.025	0.975]
net migrations	1.627e-05	7.01e-06	2.320	0.020	2.52e-06	3e-05
ad mortality rates	0.3664	0.067	5.453	0.000	0.235	0.498
ad fertility rates	-0.1179	0.040	-2.945	0.003	-0.196	-0.039
Year	0.0801	0.112	0.716	0.474	-0.139	0.299
Constant	-111.8444	222.839	-0.502	0.616	-548.601	324.912

Fig. 12| Robust Linear Regression Model of PPP-Adjusted GDP per Capita (1960-1989)

Regional Comparison Data

To add an additional empirical measure to underscore the uniqueness of Decree 770 in the Eastern bloc, this paper ran a comparison of Romania's fertility rate across all age groups and compared it with fertility rates across the Eastern bloc (Fig 13). Including this comparison shows a significant demonstration that Decree 770 was a unique challenge for Romania compared to the rest of the Eastern bloc, and helps to tease out Romania's unique abortion ban from the broader backdrop of long-run economic deterioration in Eastern Europe during the authoritarian era. In Figure 13, it is evident Romania's fertility rate was below the Eastern bloc aggregate average from 1960 to 1966, but when Decree 770 was implemented Romania became an outlier in the region, with fertility increasing from 2.00 to 3.50 children per woman in under one year (Fig 13). Even after the Decree, Romania's fertility rate remained at least 0.5 above its neighbors—underscoring that Decree 770 was a unique contributing factor to immiserating Romania's macroeconomy, aside from the poor economic mismanagement baked into the Eastern Bloc.

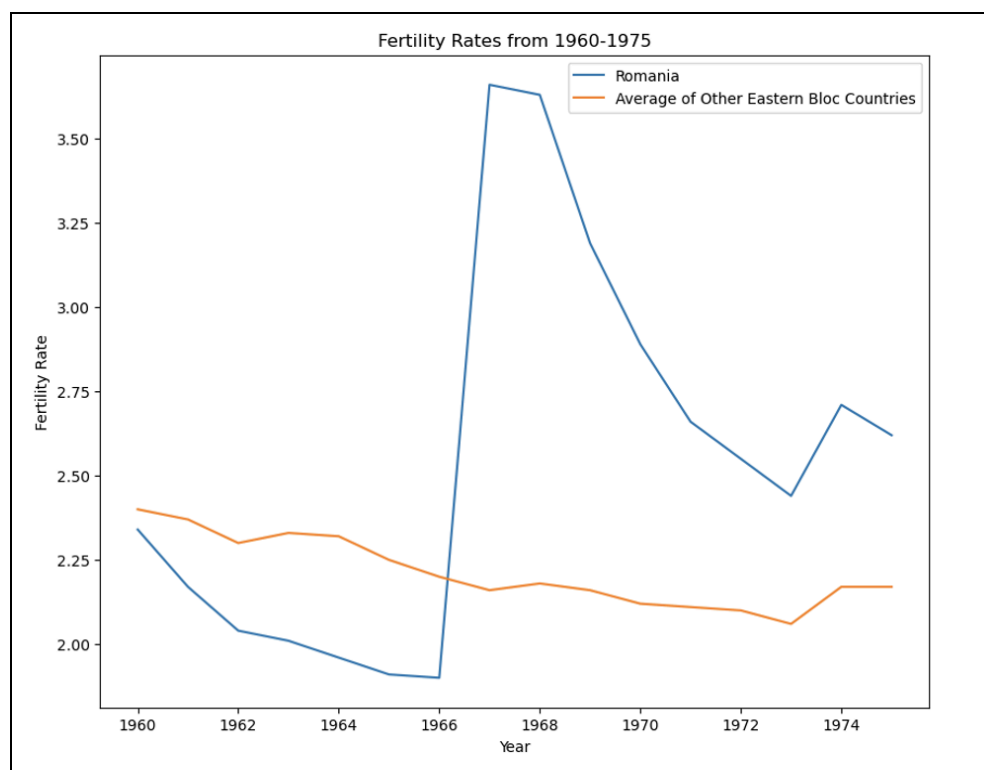


Fig. 13| Fertility Rate (per 1,000 people) between Romania and Eastern Bloc Neighbors

Correlations between Variables over Time

Figure 14 presents a correlation matrix measuring the associations between each of the independent and dependent variables over 1960-1989. Such correlations are valuable to examine as they provide a means of conceptualizing the relationships between independent and dependent variables over time, as well as coloring in the associations outlined in the robust linear regressions discussed above. For government consumption, it is strongly inversely correlated with household consumption (-0.82) and year (-0.8); it is positively correlated with adolescent mortality rates (0.61) and PPP-adjusted GDP per capita (0.49); and it has no significant correlations with adolescent fertility rates (-0.076) and net migrations (0.057) (Fig 14). For government consumption, these findings track with the timelines discussed earlier, and demonstrate how—as PPP-adjusted GDP per capita declined—government consumption continued to decline at the same time. Interestingly, these associations also show how, in the long run, variables like net migration and adolescent fertility rates do not demonstrate strong connections with government consumption, lending further credence to the notion that some of Decree 770's effects were felt most strongly in the short run. These findings track with the regression looking at government consumption, as net migrations was not an impactful coefficient.

As for household consumption, it is strongly correlated with year (0.91); it is strongly negatively correlated with adolescent mortality rates (-0.78), government consumption (-0.82), and PPP-adjusted GDP (-0.64); it has a weak positive association with adolescent fertility rates (0.19); and it has no strong association with net migration (-0.012) (Fig 14). The most striking association is the strong, negative connection with PPP-adjusted GDP per capita. Such a finding is salient since it could suggest that, as the birth rate increases, the per capita component of PPP-adjusted GDP per capita reduces the average value per citizen; simultaneously, an increasing birth rate would necessitate increases in household consumption (Fig 14). Household consumption's strong negative relationship with adolescent mortality rate also furthers the idea that Decree 770 was most strongly felt in the short run, since this data runs associations over a long enough time scale that the Romanian government managed to return adolescent mortality rates to their pre-Decree downward trajectory, albeit at a slower rate than pre-Decree. Household consumption's relationships with the other variables provide insights that further bolster this paper's theory that increases in birth rate will diminish per capita values while still causing households to necessitate greater spending to accommodate the burden of larger, unplanned families.

Finally, PPP-adjusted GDP per capita revealed a strong positive association with adolescent mortality rates (0.89); a moderate positive association with government consumption (0.38); a strong negative association with household consumption (-0.64) and year (-0.82); a moderate negative association with adolescent fertility rates (-0.38); and no significant association with net migrations (0.043) (Fig 14). As mentioned earlier, the strong negative association with household consumption could affirm the theory that real levels of macroeconomic wellbeing decrease as family size increases, in part due to increased spending on larger, unplanned families. Additionally, the negative association with adolescent fertility rate and the strong negative association with adolescent mortality rate imply that, despite the Romanian government controlling the immediate effects of Decree 770 in the long run, the PPP-adjusted GDP continued to decline. Overall, these relationships imply stronger immediate effects in the short run, but longer-term economic scarring on PPP-adjusted GDP that outlasted the immediate adverse reaction to the Decree. In sum, the results section demonstrates that Decree 770 was statistically significant in its ability to influence key macroeconomic indicators of wellbeing in Romania, albeit household consumption was more salient over a short time

horizon and PPP-adjusted GDP per capita and government consumption more salient over a longer time horizon.

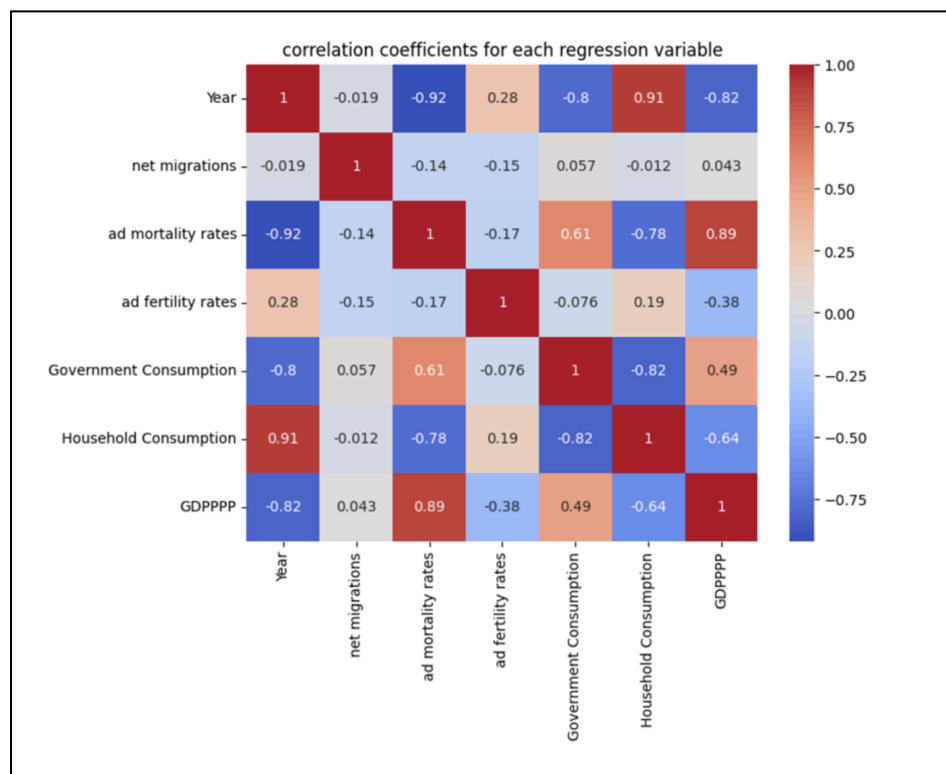


Fig. 14| Correlation Matrix of Independent and Dependent Variables in Regression (1960-1989)

5 Discussion

This paper's findings provide insight into three domains: (1) the literature's debate regarding Decree 770's motivations, effects, and ultimate impact on Romania's macroeconomy; (2) how Romania's transition to democracy was fundamentally distinct compared to other countries in the Eastern bloc; and (3) how modern pro-natalist policies should (not) be implemented. The data illustrate that Decree 770 resulted in adverse effects on both real (PPP-adjusted GDP) and nominal (price levels of household and government consumption levels) variables over both long- and short-term time horizons. These contributions to the literature are unique since few other scholars have considered integrating these macroeconomic indicators. The data demonstrate that Romania's population faced diminished quality of life as Decree 770 continued, and these effects were especially acute for households as they needed to increase their household spending.

The Findings Situated in the Literature

Situated within the literature, this paper's data paints a picture of Decree 770 as Ceausescu's strategic response to an internalized ideological norm equating population with power. When reviewing the data, it is evident that macroeconomic indicators continued to struggle as a result of the Decree; due to these dire economic outcomes, it appears Ceausescu allowed his ideological, dictatorial impulses to overshadow adjusting the policy based on economic rationale. In this sense, this paper comes out on the side favoring ideological motivations to Decree 770 rather than economic ones, as the economic data would have made it clear that the Decree was straining Romania's government and households alike (Table I). Additionally, the regime appears to have had an exogenous motivation considering Ceausescu perceived the Decree as a success as it made Romania's population grow on a trajectory that it could rival larger European powers.⁴⁵ The data map onto this trend, as the population increases while Decree 770 remains operational, which Kligman notes in her writing.⁴⁶ Effectively, Ceausescu internalized a norm that population equated to political power, with a large population being both a domestic benefit since it provided a new generation of minds to mold into his ideology and an international benefit since a larger population would prevent intervention from other European powers. Considering this paper's data, every economic indicator showed statistically significant signs of strain *throughout* Ceausescu's regime, making this paper bolster the side of the literature which emphasizes Decree 770's long-term impacts on Romania. Therefore, this paper situates itself in the literature as such: (1) this paper favors the view that Ceausescu had an ideological lens to Decree 770's implementation; (2) this paper, combined with written statements collected from Kligman, believes Decree 770 had exogenous motivations to enacting the legislation; and finally (3) this paper supports the argument that Decree 770 has had short and long term impacts on Romania's macroeconomy.

To build out an explanation for the regime's motivations and the long-term effects of Decree 770, this paper provides a provisional theory which attempts to harmonize with the existing literature and provide a quantitative, economic validation to the discourse. Theorists Michael Barnett and Raymond Duvall describe compulsory power as the use of "symbolic and

⁴⁵Kligman, Review of "The Impact of Child Welfare Reform on Child Abandonment and Deinstitutionalization, Romania 1990-2000."

⁴⁶*Ibid.*

normative resources” alongside material resources to compel “targeted states to alter their policies.”⁴⁷ Such a definition of power is useful for understanding the ideological motivations allowing Decree 770 to continue in Romania. During World War II, Romania faced direct demands from the Soviet Union and Germany to cede territory to neighboring rivals, such as Hungary. Such experiences with compulsory power were salient on Romania’s national identity, especially Ceausescu’s perception of Romania’s national identity. The loss of land and brutalities of coercive power instilled a desire in Ceausescu and his elite staff to recoup Romania’s losses at the hands of historic rivals. Given land was easily ceded, Ceausescu looked to population as a means to bolster Romania’s power.⁴⁸ Historian Brooke Johnson validated this conclusion in her research, which showed that Ceausescu viewed Decree 770 as an opportunity to build a vast, suppliant labor force which could be mobilized into a burgeoning military-industrial complex.⁴⁹ The goal of such a military-industrial complex would be to serve as a bulwark against other powers ever applying compulsory power on Romania again. Given Romania’s insufficient manpower and peripheral status in Europe, these coercive interactions with European powers that enjoyed large populations instilled in Ceausescu—and the Romanian Communist Party—a perspective that population equates to power.

Thus far, this paper has proposed a theory which would situate itself in the camp of scholars that believe Decree 770 had exogenous, ideological motivations. The data found in this paper affirm the ideological motivation of Decree 770, as the robust regressions demonstrate that government consumption declined, household consumption rose, and PPP-adjusted GDP per capita declined—all the while, fertility rates continued to fluctuate and mortality rates revealed themselves to be difficult to manage. With such dire macroeconomic effects, it is clear there was not a coherent economic motivation, otherwise the Decree would have been modified to mitigate such damaging effects.

Where this paper diverges from existing scholarship is that it argues there were both short and long-term effects to Decree 770. In the literature, the short-term effects and visually salient imagery of Romanian orphanages remain the most prevalent examples of Decree 770, but this paper’s data reveal that the Decree had short-term, acute effects on changing household

⁴⁷Michael Barnett and Raymond Duvall, “Power in International Politics,” *International Organization* 59, no. 01 (January 1, 2005), <https://doi.org/10.1017/s0020818305050010>.

⁴⁸Johnson, “Politics of Duplicity: Controlling Reproduction in Ceausescu’s Romania.”

⁴⁹*Ibid.*

consumption habits. After a decade, however, government consumption came under strain, and PPP-adjusted GDP per capita suffered. Nevertheless, this paper cannot singlehandedly show Decree 770 was the main culprit behind such immiseration. Instead, this paper offers a more modest conclusion. Namely, Decree 770 was the quintessence of totalitarian policies Ceausescu favored to advance his ideological visions, and the trends seen in this paper validate that Decree 770—alongside a panoply of other ill-conceived social engineering projects—created the immiseration that faced Romania’s population during the Ceausescu regime. This paper’s findings would suggest Decree 770 had an ideological motivation and that it had both long and short-term impacts, but the shorter-term impacts were more tangible and severe, with longer-term impacts having a higher likelihood of multicollinearity bias influencing the data (Table I). This paper proposes that Decree 770 still manifested itself in the long-run, especially in its upward augmentation of the fertility rate, but that overall the Decree’s most acute effects were curbed within a decade post-implementation.

Given the issues of multicollinearity biases, there are limitations in concluding Decree 770 was the primary culprit; however, this paper’s data indicates Decree 770 was a substantial disruptor to macroeconomic wellbeing in Romania. The uniquely totalitarian underpinnings to Ceausescu’s ideological lens make him an outlier in the Eastern bloc, and further demonstrate that Ceausescu’s exogenous motivations differed from his fellow dictators in the region. No other Eastern bloc country in a similar position to Romania implemented policies similar to Decree 770 (Fig 13). Romania’s history is unique, as the historical conditions allowed for (a) the inculcation of a norm equating population with power, and (b) a totalitarian dictator to come to power. This combination is unique to the Eastern bloc, and could help explain Romania’s uniquely violent transition to democracy.

This paper’s conclusions, while limited, suggest that the literature must consider household-centric economic measures to capture insights into how Decree 770 impacted Romania’s macroeconomy. In the literature, few scholars attempt to show causal relationships between macroeconomic variables and Decree 770. One scholar, Bernard Berelson, argued the Ceausescu regime saw economic growth in the long-run despite Decree 770, and he used such a conclusion to downplay the impact of Decree 770 on macroeconomic outcomes.⁵⁰ While accurate from a nominal perspective, Berelson did not benchmark data to center around

⁵⁰Berelson, “Romania’s 1966 Anti-Abortion Decree: The Demographic Experience of the First Decade.”

household or government spending habits. By using macroeconomic measures which focus on household or government spending, this paper effectively demonstrated how fluctuations in spending *habits* impacted households, while Berelson strictly looked at the growth of the Romanian economy at large. Given macroeconomic indicators typically increase in the long run across the globe, it is challenging to integrate macroeconomic data into analyses of Decree 770 unless it is benchmarked to household and government spending habits.

Uniqueness of Romania's Transition to Democracy

Integrating economic data to explain the impacts of Decree 770 also helps facilitate a deeper understanding of Romania's transition to democracy. Romania is famously known as the only violent transition to democracy in Eastern Europe. Further, Romania's dictatorship was also the only personalist dictatorship in the region.⁵¹ These two factors make Romania a unique case study, as Ceausescu experimented with a policy toolkit much more similar to other personalist dictatorships like North Korea than neighboring authoritarian regimes.⁵² When taking this paper's data and situating it with data compiled at the Transitional Justice and Democratic Stability Lab, it becomes plausible that Romania's violent transition to democracy was rooted in totalitarian policies like Decree 770 that uniquely immiserated the population relative to the rest of the Eastern bloc. In fact, data compiled at the Transitional Justice and Democratic Stability Lab, notes Romania is its "severe" implementation of purges in the wake of the regime's collapse in 1989.⁵³ This paper puts weight behind the argument that, when a dictator decides to operate in a totalitarian manner, the risk of a violent transition to power increases. This paper's results help provide a potential explanation for how totalitarian regimes create conditions more predisposed for a violent transition to power, as their personalist nature creates an unstable cult of personality which inflicts more desperate conditions on the population

Authors like Anne Meng validate this paper's theory that totalitarianism prompts more violent transitions to democracy. Meng's work *Constraining Autocracy* suggested that totalitarian dictators can rely on their charisma to enforce sweeping policies, but that once these leaders face challenges to their rule, it is likely the regime will collapse.⁵⁴ Applying these

⁵¹ A Meng, *Constraining Dictatorship: From Personalized Rule to Institutionalized Regimes* (Cambridge University Press, 2020).

⁵²*Ibid.*

⁵³"TRANSITIONAL JUSTICE AND DEMOCRATIC STABILITY LAB," TRANSITIONAL JUSTICE AND DEMOCRATIC STABILITY LAB, n.d., <http://www.tjdemstabilitylab.com/>.

⁵⁴A Meng, *Constraining Dictatorship: From Personalized Rule to Institutionalized Regimes*

observations alongside this paper's data, it appears Ceausescu's personalist, totalitarian policies effectively etched his will into the country, creating rapid fluctuations in civilian economic well being that contributed to public discontent. Using Meng's work, autocratic regimes in the rest of the Eastern bloc would have not imposed such a Decree, as their autocracies still operated within a constrained set of rules designed to prevent power and enforcement from being condensed into a single, all-powerful ruler. In sum, this paper demonstrates that totalitarian regimes immiserate their citizens, and such misery creates conditions unlike authoritarian regimes—such unique conditions invite more violent transitions to democracy.

To delve deeper into Romania's transition to democracy, the first acts of the new regime were uncharacteristically aggressive relative to neighboring countries. Romania issued an immediate overruling of Decree 770, alongside the bulk of Ceausescu's decrees, disbanded the entire *Securitate*, and appointed a governing body to study and publish files on communist-era secret police.⁵⁵ These acts were done in rapid succession, with minimal procedural opportunities for conciliatory measures to take place. Coupling this aggressive movement with Romania's violent revolution, one can see that Romania's transition to democracy was more severe, with the extreme-nature of the transition potentially owing to policies like Decree 770 pushing the population to its breaking point. It is conceivable that Decree 770 played a major role in increasing the desperation felt across the country in 1989 when the revolution started; in fact, the final years of the regime saw household consumption skyrocket, PPP-adjusted GDP continuing to decline, and real GDP growth rates and current account balances tanking.⁵⁶ These deteriorating macroeconomic conditions are worthy of considering in Romania's broader transition to democracy, as they reflect socio-economic catalysts which could have pushed the country on a transition to democracy which is more severe relative to its peers. Effectively, this paper hopes to have demonstrated that totalitarian policies on female reproduction may have substantial influence on the character of a regime's transition to democracy. This is a relevant implication in the modern day, considering current totalitarian regimes—such as North Korea—have started to increase pro-natalist policies.⁵⁷

⁵⁵“TRANSITIONAL JUSTICE AND DEMOCRATIC STABILITY LAB,”

⁵⁶Demekas and Khan, “The Romanian Economic Reform Program.”

⁵⁷B Davis, “Kim Jong-un Cries as He Begs North Korean Women to Help Halt a Decline in Country's Birth Rate,” *The Independent*, December 6, 2023, <https://www.independent.co.uk/asia/east-asia/kim-jong-un-cries-north-korea-b2459144.html>.

Modern Pro-natalist Policies

This paper's findings are not strictly relevant to transitional justice or the study of Romania. This paper has critical policy implications for democracies as well. As referenced in this paper's introduction, democracies are facing an unprecedented rate of democratic backsliding.⁵⁸ A prime example is the U.S. Supreme Court, which overturned *Roe v. Wade* in 2022—such a policy moves in a worryingly totalitarian direction. Much like Ceausescu's desire to extend the public domain into family's private lives, overturning *Roe v. Wade* introduces public oversight over U.S. women's lives in an unprecedented manner. While this is not on the same scale as Decree 770, the general trajectory of Western liberal democracies toward illiberal populism has been associated with increased pro-natalist discourse in countries like France, the United States, and the United Kingdom.⁵⁹ Concerns over democratic backsliding, coupled with invasive reproductive policies, paints a picture redolent of Ceausescu's Romania. It is hoped this paper invites further research into why totalitarianism is associated with restrictions on female bodily autonomy. Further this research adds to such conversation by definitively revealing the deleterious effects restrictions on abortion have on a country's macroeconomic landscape.

In sum, the results of this paper are threefold in what it contributes to the literature. First, this paper provides insight into how best to measure macroeconomic health in the wake of totalitarian policies, this paper also situates itself in the literature showing how these sorts of policies are ideological. Given the adverse economic outcomes associated with policies like Decree 770, it is evident that policies restricting abortion and contraception emerge from a more ideological impetus than sound, rational economic planning. Second, this paper's results helped deepen the nuance around transitions to democracy when the *ancien regime* was totalitarian—it appears such totalitarianism may create desperate economic conditions that can create violent transitions. Third, this paper advances some recommendations for contemporary policy makers, namely, to remain vigilant against illiberal, anti-democratic policies which threaten the population's bodily autonomy. Not only are these policies economically deleterious, but they also feed into a larger totalitarian playbook that is associated with democratic backsliding.

⁵⁸S Levitsky, and D Ziblatt, 2019, *How Democracies Die*, Harlow, England: Penguin Books.

⁵⁹NEWS WIRES, “‘Natalist Injunctions’: Macron Sparks Uproar With Call to Revive France’s Birth Rate.”

6 Limitations & Strengths

While this paper provides critical insights into the literature on Decree 770 and transitional justice at-large, it is worth noting the balance between the limitations and strengths in the paper. Principally, this paper's strength is that it provides a unique series of dependent variables that all focus on consumption in relation to economic well being, such a result is refreshing in a paper as the previous literature focused on macroeconomic variables focused on industry, wider GDP metrics, and other indicators which did not effectively capture the wellbeing of common citizens. Moreover, this paper helps expand the presence of reproductive justice conversations into discourse around transitional justice, democratic backsliding, and the economic impacts of non-democracies.

As for limitations, there are three principal limitations, namely: (1) scarcity of reliable data, (2) a low N-value on most data present, and (3) the inherent difficulty of capturing economic causalities. First, the Ceausescu regime did not keep reliable records of every macroeconomic indicator that the World Bank currently has in its toolkit, meaning that much of the data analyzed from this period is pulled from what is available or possible to piece together. The consequence is that many of the regressions and analyses performed may be missing necessary controls or other critical means to ensure the reliability of the causalities they are trying to make. Such a scarcity of data invites risks like the multicollinearity bias. Still, the data presented was compiled and verified by the St. Louis Federal Reserve, so while the data are limited they have received verification from an independent body. As for this paper, the control year is included, but in future papers it is hoped more controls can be added to address the multicollinearity dilemma that arises from a lack of reliable data.

Second, the low N-value on most of the data present, which stems from the initial lack of reliable data, limits some of the statistical power many statistical models can have on the information. This paper tries to use the low N-values to its advantage by deploying both RDDs and robust regressions to attempt to depict from several different angles the trends visible in Romanian society before and after Decree 770. Nevertheless, this paper still demonstrates significant trends unique to Romania's totalitarian regime compared to authoritarian neighbors. The value of highlighting such trends is one of this paper's greatest strengths, despite the low N-value.

Finally, it is inherently difficult to create causality on macroeconomic variables, especially those which occur in authoritarian regimes over long time horizons. Considering the myriad tribulations impacted the Eastern Bloc, it is difficult for each model to reliably isolate how Decree 770 itself contributed to Romania's macroeconomic immiseration. On balance, this paper still provides statistically grounded, useful insights that can help drive the field's research forward.

7 Conclusion

To conclude, this paper sought to examine the impact of Decree 770 on macroeconomic indicators, namely household and government consumption and PPP-adjusted GDP. This paper was motivated by the scholarly debate which has emerged debating the origins, motivations, and effects of Decree 770. Moreover, literature has remained divided in appraising the ultimate economic impact of Decree 770. This paper takes a novel approach and uses three new macroeconomic indicators to isolate the effects households felt in the wake of Decree 770. Ultimately, this paper found the effects of Decree 770 to be strongest in the short-term, but that PPP and government consumption showed evidence that Decree 770 caused long-term scarring on the country's macroeconomy.

This paper demonstrated that the long-term effects of Decree 770 saw a persistent decrease in PPP-adjusted GDP per capita, and a collapse in the price level of government consumption, both signifying how the state apparatus buckled under the pressure of supporting its exploding population. These trends continued even despite the Romanian government addressing the primary impacts of Decree 770 after five years post-Decree. Using an RDD, this paper also showed household consumption had significant pre and post-Decree shifts.

This paper helps clarify the scholarly debate around Decree 770 and demonstrate that it was negative in both the short- and long-term. This paper also provides an important theory for how Decree 770, emblematic of Ceausescu's totalitarian inclinations, impacted Romania's transition to democracy and may have made it the outlier in a region which otherwise saw totally peaceful transitions to democracy. This paper invites the fields of transitional and reproductive justice to investigate Romania's experience with Decree 770 more closely, and consider integrating macroeconomy data focused on household economic health to buttress findings.

Finally, this paper's insights are of relevance in the current political climate, where threats to reproductive rights and democratic backsliding are both rising across the West.

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