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Television and Divorce: Evidence from Brazilian *Novelas*

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Abstract[*]

This paper studies the link between television and divorce in Brazil by exploiting variation in the timing of availability of the signal of Rede Globo—the network that had a virtual monopoly on *telenovelas* in the country—across municipal areas. Using three rounds of Census data (1970, 1980 and 1991) and controlling for area fixed effects and for time-varying characteristics, the paper finds that the share of women who are separated or divorced increases significantly after the Globo signal becomes available. The effect is robust to controlling for potential determinants of Globo's entry strategy and is stronger for relatively smaller areas, where the signal reaches a higher fraction of the population.

JEL Classification Codes: O1, J12, N36
Key words: Divorce, Television, Brazil, Soap Operas, Media, Women, Empowerment

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1. Introduction

While policymakers have long believed that television can influence preferences and opinions in the population, until recently there has been very little evidence on the actual role of television, its possible impact channels, the role of content, and the permanence of its effects, among other issues. In developing countries, the role of television is of particular relevance as it is a medium for reaching large sectors of the population at relatively low cost.

This paper addresses the link between television and one particular dimension of family relations: divorce, a salient topic from the point of view of development. In fact, it has been observed that the possibility of divorce gives women leverage to achieve greater gender equality within marriage, e.g., in the distribution of work (Yodanis, 2005). Unilateral divorce laws have also been shown to decrease domestic violence, spousal homicide and suicide (Stevenson and Wolfers, 2006). At the same time, divorce may have long-term adverse effects on children (Gruber, 2004).

Our analysis focuses on Brazil, which is an interesting case study because divorce rates have increased rather dramatically in the last three decades, in spite of the stigma traditionally associated with divorce. It is estimated that divorce rates in Brazil increased from 3.30 per 100 marriages in 1984 to 17.7 in 2002 (United Nations, 2007), a steeper trend than in comparable Latin American countries.

While many social and political factors underlie these profound changes, in this paper we advance the hypothesis that the spread of television and the type of values and lifestyles portrayed on TV may have contributed to the increase in divorce rates. This makes Brazil an ideal case study for a second reason. Soap operas (or *novelas*, as they are called in Brazil) are by far the most popular TV programs, and they are broadcast by a network that has maintained a virtual monopoly of the sector for almost three decades, Rede Globo. As we discuss below, the images broadcast in Rede Globo's *novelas* typically include themes related with criticism of traditional values and the circulation of modern ideas such as female empowerment and emancipation, both in the work sphere and in private life. Separation and divorce are a natural reflection of these attitudes (Rios-Neto, 2001; Fadul, 1999).

We use Census data for the period 1970-1991 and exploit differences in the timing of entry of Rede Globo into different municipalities. We find that, after controlling for time and area fixed effects, as well as for time varying characteristics, areas that receive the Globo signal

have significantly higher separation and divorce rates. Our results are robust to controlling for variables that might have driven Globo's entry strategy, such as TV ownership rates and an Index of Potential Consumption used by the network, and appear not to be driven by selection. Also, the effect is stronger in geographically smaller municipalities, where the share of population reached by the signal of a given antenna is likely higher.

Our paper fits within a strand of recent research that has addressed the role of television on socioeconomic outcomes in developing countries. In related work, La Ferrara, Chong and Duryea (2008) study the effects of television on fertility choices in Brazil. Using an empirical strategy similar to that employed in this paper, they find that women living in areas covered by the Globo signal have significantly lower fertility. They also provide suggestive evidence that *novelas*, and not just television in general, affected individual choices. Jensen and Oster (2008) use data on five Indian states for the period 2003-2008 and show that the entry of cable TV led to increases in subjective measures of female autonomy, enrollment gains and declines in pregnancy rates. Perhaps less encouragingly, Olken (2006) investigates the effects of television and radio on social capital in Indonesia and finds that a stronger signal leads to less participation in social activities and lower trust. A few recent papers have also explored the role of media *content*. Dahl and DellaVigna (2008) focus on the effects of movie violence on crime in the United States, while Paluck (2008) estimates the effects on beliefs and norms of a radio soap opera featuring messages of intergroup tolerance in Rwanda.

Our work shares a similar motivation to some of the papers above. However, none of them has looked at the possibility that exposure to new role models may challenge traditional notions of family to the point of inducing marital dissolution. We think that focusing on separation and divorce may be a particularly strong test of the potentially empowering role of TV, due to the obvious social visibility and to the stigma associated with divorce in many contemporary developing societies.

The paper is organized as follows. The next section provides a summary of the political economy of divorce in Brazil in recent decades. Section 3 discusses the link between television and divorce. Section 4 describes our data and empirical strategy. Section 5 reports our results. Finally, Section 6 concludes.

2. A Brief History of Divorce Legislation in Brazil

Until the late nineteenth century, the Catholic Church had exclusive responsibility for marriage in Brazil. In 1934, the political power of the Church was so strong that the Congress legalized the indissolubility of marriage, making Brazil the only country in Latin America with such a characteristic. During the 1950s and 1960s several attempts to legalize divorce or to pass bills related with annulment of marriage failed. However, these attempts dramatically raised awareness of this issue among Brazilians, so that by the early 1970s many people had become favorable to divorce (Vidal-Luna and Klein, 2006).

By this time, a relatively large number of congressmen had formed a coalition with the aim of seeking the passage of a divorce bill. This was not possible so long as the principle of the indissolubility of marriage held. In the mid 1970s legislators tried to vote in Congress to eliminate that principle, but they did not manage to reach the two-thirds of the votes required in each chamber. Eventually, the military government intervened and lowered the vote threshold required for a constitutional amendment from two-thirds to one-half of Congress, effectively permitting divorce to be legalized (Lima and Capparelli, 2004; Htun, 2003).

This action by the government is explained by the fact that its relationship with the Catholic Church grew strained over the years. At the beginning of the dictatorship, in 1964, the military regime established a strong relationship with the Church, but in subsequent years the government became more repressive and the Church more committed to the defense of human rights and the promotion of social justice. These opposite trajectories of Church and state set the stage for a collision in the mid-to-late 1970s.

In 1977 the military government unilaterally lowered the quorum required for a Constitutional amendment from two thirds to a simple majority. The official rationale was the government's desire to reform the judiciary, yet Brazilian observers maintain that facilitating divorce was the real motive, since it would further the president's political objectives in several ways.

The first was to strike a blow to the Church, which had effectively assumed a role of political opposition through harshly criticizing the government's policies toward the poor (Htun, 2003). By promulgating legislation that was popular with the public, yet opposed by the Church, the government could take away some of the Church's social authority. Legalizing divorce additionally meant that the government was also able to pit against one another the two principal

opponents to military rule, the Movimiento Democratico Brasileiro (MDB) and the Church. In fact, MDB politicians were the main proponents of the divorce law that priests and bishops had vowed to defeat.

The 1977 vote resulted in a law that allowed divorce only after five years of de facto separation or three years of judicial separation, and individuals were allowed to obtain only one divorce in their lifetime.[1] As this brief overview highlights, the issue of divorce was far from being a purely legislative matter, as it encompassed a wide range of cultural, social and political changes. We next discuss how television may have contributed to shaping the attitudes of Brazilians in a way that complemented these changes.

3. Television and Divorce

Whereas television has played a very important role in the integration and communication of many countries all over the world, such a role has been particularly important in Brazil. The military government that took power in 1964 saw the potential of television as a tool for integrating the country. As a consequence, the government increased the market penetration of television by promoting the growth of a chosen network to encourage national production. This network was Rede Globo, which was established in 1965 and to this day is the leader broadcasting company in the country. According to our data, only 0.1 percent of Brazil's Minimally Comparable Areas (AMCs, defined below) received the Globo signal in 1970, but this number increased to 35.5 percent in 1980, 86 percent in 1991 and 90 percent in 2000. As discussed in detail in La Ferrara, Chong and Duryea (2008), a key determinant of Globo's expansion strategy was the use of TV licensing as a clientelistic tool on behalf of the government. This is helpful from the point of view of our identification strategy, as it mitigates concerns about possible endogeneity of Globo's presence.

Regarding the spread of television in general, Brazil experienced a dramatic increase in TV ownership in the span of two decades. According to Census data, the share of households owning a TV across AMCs was on average 7.7 percent in 1970, 35.4 percent in 1980, 81.2 percent in 1991 and 82 percent in 2000.

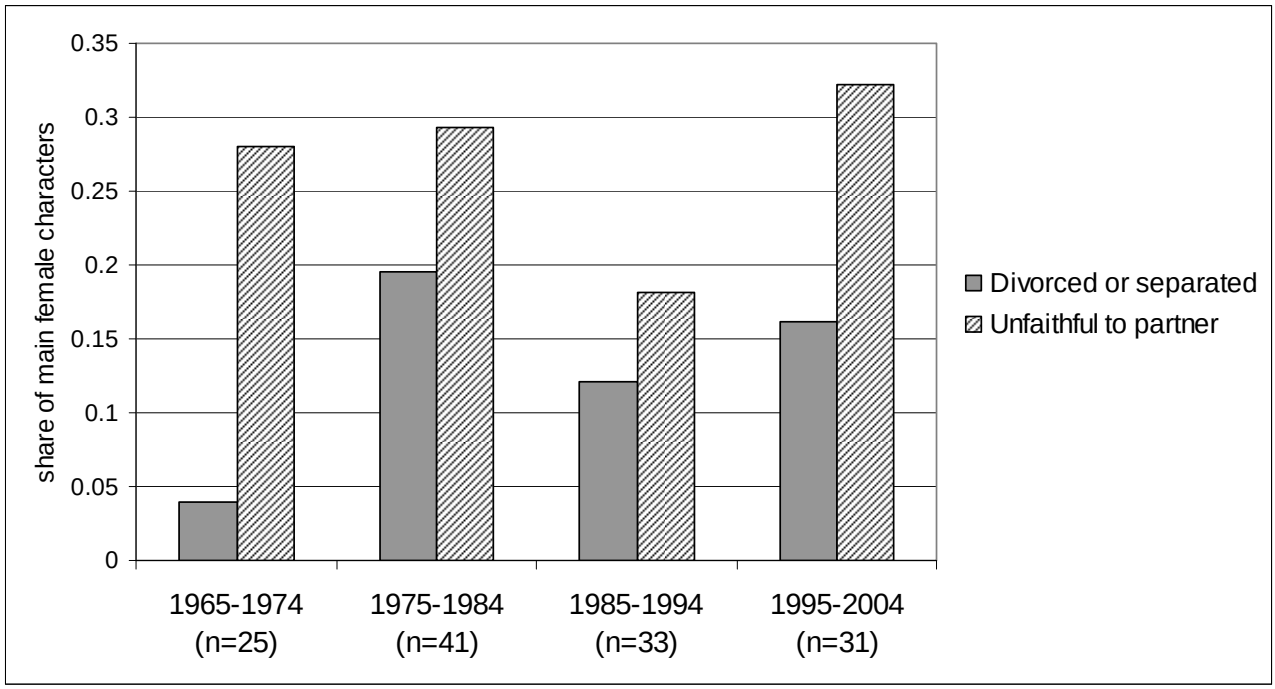
One of the reasons for the growing influence of television over time is the strength of the oral tradition in the country. The success of Brazilian *novelas* can also be related to the high

[1] In 2007 a new divorce law that included more flexible reasons for divorce was introduced.

quality of their plots. In fact, several Brazilian authors who faced censorship from the military dictatorship started writing for *novelas* as a way to transmit new values and ideas to society. In addition to the fight for freedom, recurrent themes included criticisms of religious and traditional values, an appreciation of high standards of living and of "modern" lifestyles, female emancipation, adultery and criticisms of machismo (Rios-Neto, 2001; Fadul, 1999).

In order to gauge the extent to which these values may have shaped individual attitudes towards marital dissolution, we performed content analysis on the most popular *novelas* aired by Rede Globo since the start of its operations. In particular, we coded all the 7 p.m. and 8 p.m. novelas from 1965 to 2004 and recorded two variables for the main female character of each *novela*: (i) whether she was separated or divorced; and (ii) whether she was unfaithful to her partner. The results are illustrated in Figure 1. The data are divided into four decades, and the number of novelas (*n*) coded for each decade is reported in parenthesis.

Figure 1. *Novela* Content and Marital Dissolution



Source: Authors' coding of Rede Globo *novelas.*

A first interesting fact is that the prevalence of extramarital relationships is relatively high and constant over time. Between the mid-1960s and the mid-1980s, already about 30 percent of the main female characters displayed on TV were unfaithful to their partners. This percentage declines to around 20 percent from the mid-1980s to the mid-1990s, to increase again above 30 percent in the following decade. These characters were therefore somewhat at odds with traditional models of "faithful wives."

A second revealing pattern in Figure 1 is that, while separation and divorce were virtually absent from the plots until the mid 1970s, between 1975 and 1984 on average 20 percent of the main characters were divorced or separated. This was the decade when the debate on divorce was at its height and when divorce was legalized. Separation and divorce rates remained consistently high in subsequent years.

While these data do not allow for drawing causal inferences on the relationship between *novela* content and individual behavior, it provides suggestive evidence that our interpretation of the relationship between Globo penetration and divorce rates may be grounded in the specific type of programs broadcast by the network.

4. Data and Empirical Approach

Our empirical specification uses aggregate data at the Minimal Comparable Area (AMC) level (defined below) for three Census rounds: 1970, 1980, and 1991. We estimate:

$$y_{it} = X_{it}\beta + \gamma Globo_{it} + \mu_i + \lambda_t + \varepsilon_{it} \qquad (1)$$

where y_{it} is the share of women divorced or separated in area *j* at time *t*, $Globo_{it}$ is a dummy equal to 1 if area *i* received the signal of Rede Globo in year *t*, X_{it} is a set of time-varying controls at the area level, μ_i and λ_t are, respectively, area and year fixed effects, and ε_i is the error term. Time-varying controls X_{it} include the an index of household wealth,[2] the average years of education of women, share of employed women in the AMC, average age and its square, share of Catholic households, share of rural households and population density in each AMC.

Our dependent and independent variables are constructed aggregating individual-level data from three Census rounds: 1970, 1980, and 1991. Our sample includes women aged 15 to

[2] The index is constructed using principal component analysis from durables ownership and access to basic services (electricity, sanitation, etc.).

49. Since the geographic borders of Brazil's municipalities have changed over time, we use Minimal Comparable Areas (AMCs) as our spatial unit of analysis. This is the smallest defined geographic area provided by the Brazilian Statistical Institute that can be compared over time. In all there are 3,659 consistently defined AMCs for each round of the Census. The mean of our dependent variable, i.e., the share of women divorced or separated across AMCs over the sample period is 2.8 percent.

Our second data source comes from Rede Globo. We collected information on the year and the location of broadcasting and retransmitting antennas as well as their radial reach. As in La Ferrara, Chong and Duryea (2008), this allows us to record which *municipios* received a Globo signal and the year in which they first started receiving it. We match this information with the AMC corresponding to each *municipio*, and construct the variable $Globo_{it}$, which is equal to 1 if AMC *i* is within the signal radius of a Globo broadcasting or retransmitting station in year *t*, and 0 otherwise. Over the three periods, on average 40.5 percent of AMCs receive the Globo signal, with an upward trend starting at 0.1 percent in 1970 and reaching 86 percent in 1991.

The key identification assumption underlying our approach is that Globo entry into a market, though not random, was uncorrelated with pre-existing differences in divorce trends across areas, after controlling for time-varying controls, for a common time trend, and for time-invariant area characteristics. To shed light on the plausibility of this assumption we estimated a linear probability model for the presence of Globo in area *i* at time *t* as a function of lagged divorce rates, lagged values of the controls included in the main regressions (column 4 of table 2), plus area and time fixed effects. The coefficient on lagged divorce was -0.74 (standard error 0.83). We also estimated the same model as a function of lagged *changes* in divorce rates and in the same controls. The coefficient on lagged change in divorce was 0.43 (standard error 0.54). The coefficients on lagged controls and changes in controls were typically not statistically significant, except for the education variable and for population density, which displayed negative coefficients. However, as we will show in Table 1, education is *positively* associated with divorce (population density is not significant), so if there is a bias due to unobserved correlates of education, it should work against finding a positive relationship between *novelas* and divorce. In any case, the above results suggest that changes in Globo coverage do not seem to be correlated to trends in unobserved determinants of separation and divorce.

5. Findings

Table 1. Globo Coverage and Divorce

Dependent variable: Share of women aged 15-49 who are divorced or separated in AMC

	[1]	[2]	[3]	[4]
Globo coverage	0.0019	0.0015	0.0017	0.0014
	(0.0004)**	(0.0006)**	(0.0004)**	(0.0005)*
Household's wealth			-0.0026	-0.0031
			(0.0002)**	(0.0003)**
Years of education			0.0006	0.0047
			(0.0003)*	(0.0005)**
Share employed			0.0194	0.0233
			(0.0018)**	(0.0028)**
Age			-0.0268	-0.0319
			(0.0111)*	(0.0123)**
Age squared[(a)]			0.4939	0.5858
			(0.1948)*	(0.2154)**
Share Catholic			-0.024	-0.0257
			(0.0029)**	(0.0072)**
Share rural			-0.036	-0.0163
			(0.0012)**	(0.0028)**
Population density[(a)]			0.0189	-0.02
			(0.0365)	(0.0118)
Constant	0.0242	0.0242	0.4288	0.4814
	(0.0002)**	(0.0002)**	(0.1574)**	(0.1759)**
Year fixed effects	Yes	Yes	Yes	Yes
Area fixed effects	State	AMC	State	AMC
Observations	10,977	10,977	10,977	10,977
R-squared	0.3886	0.7157	0.5264	0.7415

Notes: * significant at 5%; ** significant at 1%

OLS coefficients. Standard errors in parentheses are corrected for clustering at the AMC level.

(a) Coefficient and standard error multiplied by 1,000.

Table 1 contains our main set of results. It reports ordinary least squares coefficients and standard errors clustered by AMC. In the first two columns we run a simple regression on the full sample including time dummies and area fixed effects to control for differences in time-invariant unobservables across locations. We start with State (*Unidade Federação*) fixed effects in column 1 and move to AMC fixed effects in column 2, which gives a full panel fixed effects regression. In each regression, the coefficient of the Globo variable is approximately 0.002 approximately and is significant at the 1 percent level. The magnitude of the effect is relatively small,

corresponding to andincrease in separation and divorce rates of about 1/10 of a standard deviation (as well as 1/10 of the mean). However, it is non-negligible if compared to the effect of other relevant variables. In particular, ceteris paribus Globo coverage has the same effect as an increase of almost ½ year in women's education, in a context where the mean of women's years of education over the period is 3.2 years.

In columns 3 to 4 we include a number of controls, described in the previous section, to account for time-varying differences across AMCs. For these cases, the coefficients on the Globo variable are very similar: 0.0017 and 0.0014, respectively. The results of our benchmark specification (column 4) show that AMCs with women who are more educated, work, are younger, and live in non-Catholic and non-rural households, tend to have more divorced or separated women.

Table 2. Robustness and Interpretation

Dependent variable: Share of women aged 15-49 who are divorced or separated in AMC

	[1]	[2]	[3]	[4]
Globo coverage	0.0016	0.0014	0.0015	
	(0.0006)**	(0.0005)*	(0.0006)**	
Globo coverage*Size of AMC (in '000s km2) [(a)]			-0.0245	
			(0.0187)	
Globo coverage | AMC<=median size				0.0021
				(0.0007)**
Globo coverage | AMC>median size				0.0007
				(0.0006)
Share Owning TV	-0.0024			
	(0.0014)			
Index of Potential Consumption		0.0906		
		(0.1672)		
Controls[(b)]	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Area fixed effects	AMC	AMC	AMC	AMC
Observations	10,977	10,977	10,977	10,977
R-squared	0.7417	0.7415	0.7416	0.7418

Notes: * significant at 5%; ** significant at 1%

OLS coefficients. Standard errors in parentheses are corrected for clustering at the AMC level.

(a) Coefficient and standard error multiplied by 1,000.

(b) Controls include those in column 4 of Table 1.

In Table 2 we provide additional results to corroborate our interpretation. As mentioned above, a key determinant of Globo's expansion path was clientelistic behavior on behalf of the licensing authorities. It is possible, though, that being a commercial network Globo may have targeted areas in which the propensity to divorce was growing faster for reasons not captured by the controls in our regressions. One key indicator that Globo might have used in its targeting policy was the prevalence of TV ownership in a given area. In column 1 of Table 2 we include among the regressors the share of households owning a TV, and we find that it is uncorrelated with divorce rates, and that the coefficient of our Globo variable is unaffected both in size and in significance.

A second possible variable for the network's targeting policy is the Index of Potential Consumption (IPC) estimated by the *Instituto Target Pesquisas e Serviços de Marketing*, an index use by Globo in order to measure the acquisitive power of the different areas.[3] We include the IPC in column 2 and find again that this variable is uncorrelated with divorce, having no effect on our coefficient of interest.

In columns 3 and 4 we exploit variation in the coverage variable related to the size of the AMC. Because our construction of the Globo variable attributes coverage to the entire AMC as long as some part of the AMC is within the radial reach of the antenna in a given year, we are effectively overestimating coverage (and underestimating the impact of coverage on divorce). The extent of this underestimation is more sizeable, the greater the size of the AMC. In column 3 we include an interaction between Globo coverage and AMC size (in thousands of square kilometers). Note that we only add the interaction, and not size per se, because the latter is time-invariant and all regressions in Table 2 include AMC fixed effects. We find that the interaction term has a negative coefficient, as expected, though not significant at conventional levels. In column 4 we allow the coefficient of Globo coverage to differ for AMCs that are below median size and AMCs that are above the median. As expected, we find that the estimated effect is greater for the sample of smaller AMCs. Note that we think it is unlikely that this result may reflect differences in Globo's targeting policy, as we are already controlling for the main variable that could affect Globo's entry and that is related to area size, namely, population density.

[3] We were not able to receive the index directly from the Instituto Target, but we constructed it from raw data using the methodology described by Target in its supporting documentation.

6. Conclusions

This paper has explored the effect of television expansion on the pattern of marital dissolutions in Brazil over the period 1970-1991. Building on the empirical strategy used by La Ferrara, Chong and Duryea (2008) to study the impact on fertility patterns, we focus here on divorce and separation rates. Our analysis draws on the experience of a country where television viewing, and in particular soap opera viewing, is extremely widespread and cuts across social classes. We find that exposure to modern lifestyles as portrayed on TV, to emancipated women's roles and to a critique of traditional values was associated with increases in the share of separated and divorced women across Brazil's municipal areas. Our findings have potentially important policy implications for developing countries and confirm previous research by Jensen and Oster (2008), La Ferrara, Chong and Duryea (2008) and Paluck (2008), which suggest that media programs have the potential of targeting specific groups at low cost and may be employed as a public policy tool.

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Appendix Table A1: Summary Statistics

	No. Obs.	*Mean*	*Std. Dev*
Divorced	10,977	0.02795	0.01834
Globo coverage	10,977	0.405484	0.491008
Years of education	10,977	3.166115	1.55046
Wealth	10,977	-5.65E-11	2.105198
Employed	10,977	0.240776	0.128872
Age	10,977	28.43542	0.780015
Age squared	10,977	0.809182	0.044596
Catholic	10,977	0.923396	0.076348
Rural	10,977	0.537158	0.243236
Population density	10,977	0.0572	2.88222
Share owning TV	10,977	0.41444	0.34887
Index of Potential Cosumption	10,977	0.00027	0.00333

Note: Data are at the AMC level for Census years 1970, 1980, 1991.