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Working Paper

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Working Paper, No. 633

Provided in Cooperation with:
Inter-American Development Bank (IDB), Washington, DC

Inter-American Development Bank
Banco Interamericano de Desarrollo (BID)
Research Department
Departamento de Investigación
Working Paper #633

Soap Operas and Fertility: Evidence from Brazil

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June 2008

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

La Ferrara, Eliana.

Soap operas and fertility : evidence from Brazil / by Eliana La Ferrara, Alberto Chong, Suzanne Duryea.

p. cm.
(Research Department Working paper series ; 633)
Includes bibliographical references.

1. Fertility, Human—Brazil. 2. Soap operas—Brazil. 3. Fertility, Human—Brazil—Effect of soap operas on. I. Chong, Alberto. II. Duryea, Suzanne. III. Inter-American Development Bank. Research Dept. IV. Title. V. Series.

HB973 .L487 2008
304.63 L487-----dc22

Abstract[*]

This paper focuses on fertility choices in Brazil, a country where soap operas (*novelas*) portray families that are much smaller than in reality, to study the effects of television on individual behavior. Using Census data for the period 1970-1991, the paper finds that women living in areas covered by the Globo signal have significantly lower fertility. The effect is strongest for women of lower socioeconomic status and for women in the central and late phases of their fertility cycle. Finally, the paper provides evidence that *novelas*, rather than television in general, affected individual choices.

[*] We thank Stefano DellaVigna, Abigail Barr, Francesco Billari, Erica Field, Hugo Ñopo, Ben Olken, Fabrizio Zilibotti and seminar participants at the University of Zurich, Oxford University, Bocconi University, the CEPR 2007 Development Economics Conference in Stockholm and the BREAD 2007 workshop in Princeton for helpful comments. Silvia Redaelli, Enestor Dos Santos Junior, Gianmarco León, María Victoria Rodríguez Pombo and Daniella Kobayashi provided excellent research assistance.

1. Introduction

In the early 1990s, after more than 30 years of expansion of basic schooling, over 50 percent of 15-year-olds in Brazil scored at the lowest levels of the literacy portion of the Programme for International Student Assessment (PISA), indicating that they could not perform simple tasks such as locating basic information within a text. People with four or fewer years of schooling accounted for 39 percent of the adult population in urban areas, and nearly 73 percent in rural areas as measured by the 2000 Census. On the other hand, the share of households owning a television set had grown from 8 percent in 1970 to 81 percent in 1991, and remained approximately the same 10 years later. The spectacular growth in television viewership in the face of slow increases in education levels characterizes Brazil as well as many other developing countries. Most importantly, it suggests that a wide range of messages and values, including those with important implications for development policy, have the potential to reach households through the screen as well as through the classroom.

This paper examines the effect of three decades of expansion of commercial television on fertility patterns in Brazil. Fertility is an interesting dimension of development policy to explore in the context of Brazil. In fact, this country experienced a dramatic drop in fertility in the past 40 years. The total fertility rate was 6.3 in 1960, 5.8 in 1970, 4.4 in 1980, 2.9 in 1991, and 2.3 in 2000 (Lam and Marteleto, 2005). The only other developing country comparable in size to have experienced such a sharp and generalized decline is China, where the decline was the result of deliberate government policy. In Brazil no population control policy was ever enacted by the government, and for a period of time advertising of contraceptive methods was even illegal. The change was therefore demand driven. What led Brazilians to desire smaller family sizes? While there are certainly important changes in the structure of the Brazilian economy that may be associated with fertility decline, in this paper we focus on television as a vehicle for shaping individual preferences towards fewer births.

In particular, we examine the effect of exposure to one of the most pervasive forms of cultural communication in Brazilian society: soap operas, or *novelas*. The vast majority of the Brazilian population, across all social classes, regularly watches regularly the 8 p.m. *novela* broadcast by Rede Globo, the network that has a virtual monopoly on the production of Brazilian *novelas*. A content analysis of 115 Globo *novelas* aired between 1965 and 1999 in the two time slots with the largest highest audience between 1965 and 1999 reveals that 72 percent of the main female characters (aged 50 or below) had no children at all, and 21 percent had only one child. This is in marked contrast with the prevalent fertility rates in Brazilian society over the same period.

To identify the effects on fertility of exposure to *novelas*, we exploit information on the timing of Globo entry into different areas. Our key independent variable, a dummy that captures whether an area receives the Globo signal in a given year, is constructed from information on the location and radial reach of Globo broadcasting and retransmitting stations in every year.

In a first set of results we examine the relationship at the aggregate level, i.e., over time and across 3,659 Minimally Comparable Areas (AMCs) in Brazil. Using Census data for the period 1970-1991 we find that, after controlling for time-varying covariates and for time-invariant area characteristics, AMCs reached by the Globo signal had significantly lower fertility, measured as the number live births for women aged 15-49. The magnitude of the effect is about 1/10 of the effect of being married, and is comparable to that associated with an increase of 1 doctor or nurse per 1,000 population. These results appear not to be driven by selection in Globo entry: after controlling for area fixed effects, Globo coverage is uncorrelated both with previous fertility levels and with lagged changes in fertility.

In a second set of results we use individual-level data and estimate the likelihood that a woman gives birth in any given year between 1980 and 1991, as a function of individual and household characteristics and of the availability of Globo's signal in the area where the woman lives. Ceteris paribus, Globo coverage is associated with a decrease in the probability of giving birth of 0.6 percentage points, which is 6 percent of the mean. The magnitude of this effect is comparable to that associated with an increase of two years in women's education. The (negative) effect of Globo exposure is stronger for households with lower education and wealth, as one would expect given that these households are relatively less likely to obtain information from written sources or to interact with peers that have small family sizes. There is also considerable heterogeneity along the age dimension. Interestingly, the effect of Globo coverage is insignificant for women aged 15-24 and is quantitatively larger and significant for women aged 25-34 (a decrease of 8 percent of the mean probability of giving birth for this age group) and for women aged 35-44 (a decrease of 11 percent of the mean). This is consistent with the demographic literature on Brazil, which has highlighted how the decline in fertility was mostly due to stopping and not to delayed first births. We also show that our results are robust to placebo treatments constructed using Globo's future entry or women who are not of childbearing age.

In the last part of the paper we discuss the extent to which these results may be interpreted as related to television viewing per se, or also to the type of programs (*novelas*) broadcast by Globo. While our identification strategy does not allow us to separately identify the two effects, we find evidence consistent with the idea that *novelas* did play a role in family decisions, possibly including those on fertility. Our first piece of evidence comes from naming patterns among school-aged children. Using administrative data on a random sample of AMCs, we find that parents living in areas that are reached by Globo are significantly more likely to name their children after the name of the main characters of *novelas* aired in the year in which the children were born. Our second piece of evidence comes from the entry of the second largest commercial network, Sistema Brasileiro de Televisão (SBT). Running similar regressions to those that we run for Globo, we find that exposure to SBT does not significantly affect fertility patterns. Interestingly, SBT broadcasts programs that are imported from Mexico and the United States are generally not perceived as realistic portraits of Brazilian society. While only suggestive, these results indicate that exposure to television programs that are framed in a way that makes them immediately relevant for people's everyday life may have significant effects on individual choices.

Our paper is related to two strands of literature. The first is the literature on the determinants of fertility, with particular reference to the role of television in Latin America. We shall not review this literature here, as we discuss it in Section 2 below in the context of Brazilian *novelas*. It should be observed that, with respect to these contributions, which are mostly sociological and based on case studies, our work is the first attempt to identify a causal link with econometric techniques using a country-wide dataset.

The second strand of literature related to our paper is that on the effects of the media on social and political outcomes. Contributions in this field have largely focused on the role of newspapers and radio as mechanisms of accountability for politicians (Besley and Burgess, 2002; Stromberg, 2004), and on the effects of the media on voters' behavior (Gentzkow, 2006; DellaVigna and Kaplan, 2007). Other studies investigate the effects of television on social, as opposed to political, behavior, in particular on children's school performance (Gentzkow and Shapiro, 2006) and on adults' participation in social activities and trust (Olken, 2006).

In a recent contribution, Jensen and Oster (2007) estimate the impact of the entry of cable television on subjective measures of female autonomy, school enrollment and fertility. They use survey data on a sample of 180 rural villages in India for the years 2001-2003. Of these villages, 21 introduced cable television during the survey period. One difference between our work and Jensen and Oster's lies in the breadth of the area covered (using Census data we cover the universe of Brazilian municipal areas) and time horizon (we explore the effects of Globo from its entry in the mid-1960s until the early 1990s). This allows us to have a considerable degree of variation across areas over time and to examine the long-run impact of television viewing on fertility. At the same time, the Census does not contain information on attitudes.

Another difference with respect to Jensen and Oster (2007)—and most of the literature cited above—is that the authors do not exploit information on the content of media programs. In our analysis we provide suggestive evidence that what matters is not only television viewing, but also viewing a set of programs—*novelas*—that portray situations to which viewers can relate. Two recent papers have explored the role of media content. The first, Dahl and DellaVigna (2008), focus on the short-run effects of movie violence on crime. The second, Paluck (2008), estimates the effects on beliefs and norms of a radio soap opera featuring messages of intergroup tolerance in Rwanda. Our work shares largely the same motivation as Paluck's in that we are also interested in the possibility that media programs may become vehicles of development policy.

The remainder of the paper is organized as follows. In Section 2 we provide some information on Brazilian *novelas* and on their main producer, Rede Globo. Sections 3 and 4 illustrate, respectively, our empirical strategy and the data. Section 5 contains our econometric results. Section 6 discusses the interpretation of our results in terms of television exposure and media content. Finally, Section 7 concludes.

2. Background on Brazilian *Novelas*

Television has played a central role for the functioning and reproduction of contemporary Brazilian society and has played a strategic role in the process of articulating, diffusing, and institutionalizing new behavioral and attitudinal patterns in the country (Faria and Potter, 1999). In the span of three decades, exposure to television messages rose from zero to become universal in urban areas and to almost half of rural households. One of the crucial reasons for television's influence in Brazil is the strength of the country's oral tradition.[1] In the early 1990s, after more than 30 years of expansion of basic schooling, adult literacy had reached only 80 percent. Ten years later, people with four or fewer years of schooling accounted for 39 percent of the adult population in the urban areas, and 73 percent in rural areas (Census 2000). Another characteristic of the country that contributes to the impact of television is the high rate of geographical, occupational, and social mobility: in this context, television helps to provide a sense of belonging (Faria and Potter, 1999).

2.1 Rede Globo

Television became a mass medium in Brazil earlier than in most developing countries. The military government in power in 1964 saw the potential of television as a tool for integrating the country, creating a national identity, developing markets, and controlling political information. The military pushed television deeper into the population by subsidizing credit for sales of television sets and, in particular, by promoting the growth of one specific network to encourage national production. Rede Globo, selected as the privileged partner, began functioning in 1965 and quickly became the leading national network. Today, Rede Globo is the fourth-largest commercial network in the world, after ABC, CBS, and NBC, with coverage of about 98 percent of the total number of municipalities in Brazil, representing approximately 17.6 million households.

For the purpose of our identification strategy, it is important to understand how the expansion of Rede Globo occurred. During the military regime of general João Baptista Figueredo (1978-1985), the concession of television network rights followed clientelistic, political, and ideological criteria, and the dictator was invested with absolute power over licenses for radio and television stations. Although the law was later changed so that Congress was in charge of approving broadcast licenses, the clientelistic criterion remained in place (de Lima, 2001). The relevance of the role of the media for the military regime was central. As several authors have stated, the military regime had an "obsession" with national integration, and the

[1] In 2006, according to the PISA survey 39 percent of 15-year students in Brazil reported that they lived in homes with fewer than 10 books. In comparison, fewer than 10 percent of students from the OECD countries (excluding Mexico) lived in homes with so few books (OECD, PISA 2006). The sample excludes 15-year olds who have left school.

media were in charge of cultural, political and economic integration. During that period the association between the government and Rede Globo was clear (Miguel, 2001).

Under the government of President Jose Sarney (1985-1990), the first elected government after the fall of the military dictatorship, the clientelistic provision of licenses continued. This practice was readily apparent in 1989, when the constitution was amended to lengthen the presidential term from four to five years. In the previous two years the government had granted a large number of television and radio licenses to companies associated with congressmen who later voted in favor of the constitutional amendment (Costa and Brener, 1997). A similar situation occurred during the first term of President Fernando Henrique Cardoso (1995-1998), when the Congress was about to vote on another constitutional amendment that would allow presidential reelection. Again, a large number of broadcast licenses for retransmission stations were given to firms associated with congressmen (Capparelli and Lima, 2004). Indeed, media ownership in Brazil remains highly concentrated, especially television concessions, which are controlled by only eight families or groups.

In keeping with the criteria discussed above, the government's choice of Rede Globo as a partner was based largely on the network's long-standing cooperation agreement with Time-Life during the 1960s, including assistance with marketing strategies that were at the time unheard of in Brazil. The military government apparently assessed that Rede Globo provided the best platform for its integration platform, and by the early 1970s Time-Life's marketing know-how had already been assimilated (dos Santos and Capparelli, 2005).

The instrumental use of licenses for clientelistic and political goals helps our identification strategy in that it mitigates concerns that Globo entry in different municipal areas may be driven by pre-existing (declining) fertility trends. Indeed, we empirically test for this possibility below and find that it is not supported in the data.

Obviously, political clientelism and a solid marketing strategy had to be complemented with a viable, high-quality product, and the *novela* is just such a product. In fact, to this day a typical *novela* is watched by anything between 60 to 80 million viewers. The reason for the enormous success of this television format from Rede Globo during the last three decades can be traced to three factors. First, *novelas* are set in easily recognizable locations so that viewers can better relate with the story; the context and the issues addressed in *novelas* always relate to the daily life of the Brazilian population. Second, the network makes *novelas* accessible to viewers through the following means: i) colloquial language; ii) a middle-class setting, with which most viewers identify regardless of their own socioeconomic background; iii) an element of social mobility; and iv) the integration of *novelas* with everyday life, as its characters celebrate the national festivities and events in "real time." Third, the network spares no expense in order to produce *novelas* of the highest technical and artistic quality. In fact, each episode of an average *novela* costs around $125,000, approximately 15 times greater than the production costs of the other Latin American *novela* powerhouse, Mexico's Televisa (Marques de Melo, 1988).

2.2 Fertility Decline in Brazil

As mentioned in Section 1, in a few decades fertility fell rapidly in Brazil, with the total fertility rate (TFR) declining by over 50 percent from 1970 to 1990. Given that the military government was far more interested in populating remote areas to protect borders than in organizing and promoting family planning programs, Brazil has often been described as an ideal environment for exploring specific determinants of fertility decline.

A large demographic literature has examined the proximate determinants of fertility. High rates of female sterilization have played a role as a main proximate determinant, along with increased use of the birth control pill (Merrick and Berquó, 1983; Rutenberg, Ocho and Arruda, 1987). The rank of sterilization as a preferred method of contraception is related to institutional policies encouraging the delivery of births by Caesarean section as well as government propaganda in the late 1960s that warned of the dangers of the birth control pill. The role of abortion, illegal in Brazil, is less clear.

The timing of births over the life cycle has also been explored in detail. Changes in the starting age of fertility have been negligible, related both to relatively stable marital patterns as well as persistently high rates of adolescent fertility. An increased spacing of births has contributed to the overall decline, although the stopping of childbirth at younger ages has been found to be more important (Martine, 1996; Flórez and Nuñez, 2003). While the increase in education explored by Lam and Duryea (1999) can explain a large share of the overall decline, none of the aforementioned factors satisfactorily replicate the intertemporal and interspatial pace of the decline. Additionally, these studies typically do not address the underlying forces driving higher demand for contraceptives or education.

2.3 **Novelas** ***and Fertility***

One of the ideas advanced in sociological and communication studies is that there may be a link between the diffusion of television, particularly *novelas*, and fertility decline (e.g., Vink, 1988).

Brazilian *novelas* are rather different from their Mexican counterparts, and in general from many stereotypical Latin American *telenovelas,* because of the high quality of their scripts and production. Since military-imposed censorship was in effect during most of the developmental period of the *novela*, a number of important writers, some of whom were having political problems with the military government, started to write screenplays for Rede Globo.[2] These authors saw the opportunity of employment in the cultural industry as a way to fight the dictatorship through the reinforcement of new values and ideas in their plots. In addition to freedom, recurrent themes include: criticism of religious and traditional values, consumption of luxurious goods, the portrayal of wealthy families, the display of new lifestyles, the circulation of modern ideas such as female emancipation in the workplace, the female pursuit of pleasure and love even if through adultery, display of homosexuality, criticism of machismo, and an emphasis on individualism (Rios-Neto, 2001; Fadul, 1999). In Section 4.2 below, we try to quantify the extent to which some of these values (specifically, those relating to fertility, marriage and divorce) are contained in the *novelas* produced by Rede Globo.

Interestingly, family planning and population control were not explicitly addressed by Brazilian television or by *novelas*. Moreover, until the late 1970s the government was reluctant to adopt population control policies: even advertising of contraception methods was illegal. Still, *novelas* in Brazil were, and still are, replete with material directly or indirectly relevant to family size preferences. Television reiterates the discourse of a very specific model: a small, beautiful, white, healthy, urban, middle or upper middle class consumerist family. *Novelas* have thus provided a powerful medium for idealizing the small family. On the one hand, in many instances, the content of the story is related to the urban middle class of Rio de Janeiro and Sao Paulo, and the material of the *novela* consequently deals with this family type, spreading its values, attitudes and behavioral patterns. On the other hand, the small family may result from the constraints imposed by the plot. In Brazilian *novelas* the drama typically revolves around four or five

[2] The extreme example is the case of *Roque Santeiro*, the most popular Brazilian *novela* ever. Initially censored by the military government, it was viewed by nearly 100 million people when democracy was restored, achieving a rating that fluctuated between 90 percent and 100 percent of the television audience. The censorship of the *novela* had little to do with the topic itself, but rather with the fact that the author was a Communist.

families. In order to keep the number of characters manageable, no family can be very large. Sometimes this constraint leads to highly unrealistic family profiles.

The findings of an experimental focus group discussion illustrate this point. Herzog (1994) asked the group subjects, adult women of middle and lower-class backgrounds, to portray the families that are most frequently displayed on television by using available photographs, drawings, and printed material. They asked the same subjects to portray the family of common people using the same material. The results were clear: television families are small, rich and happy; the families portrayed as common people are poor and contain more children, and the faces portrayed more often seem unhappy.

In summary, constant exposure to smaller, less burdened television families may have created a preference for fewer children and greater sensitivity to the opportunity costs of raising children (Faria and Potter, 1999).

3. Empirical Strategy

In this paper we try to provide empirical evidence for the above conjecture, as advanced by the sociological literature. We shall do so by combining information on fertility with information on the timing of Rede Globo penetration in different areas of Brazil. We shall conduct our analysis at different levels of aggregation.

The first set of results uses aggregate data at the Minimal Comparable Area (AMC) level, defined below, over three time periods covering Census years 1970, 1980 and 1991. We estimate:

$$y_{jt} = X_{jt}\beta + \gamma G_{jt} + \mu_j + \lambda_t + \varepsilon_{jt} \quad (1)$$

where y_{jt} is the outcome of interest (average fertility in area *j* at time *t*, as defined below), G_{jt} is a dummy equal to 1if area *j* received the signal of Rede Globo in year *t*, X_{jt} is a set of time-varying controls at the area level, μ_j and λ_t are, respectively, area and year fixed effects, and ε_j is the error term. Time-varying controls X_{jt} include the share of married women in the area, the share of Catholic households, the average years of education of the household head, an index of household wealth, and the number of doctors and nurses per 1,000 population in the area. Note that by adding area fixed effects (μ_j) we control for time-invariant unobserved characteristics that affect fertility and may also be correlated with the timing of Globo entry. The time dummies capture instead the secular (declining) trend in fertility that is common to all areas. Our identifying assumption is that, conditional on area and time fixed effects and on the time-varying controls X_{jt}, the year of Globo entry is orthogonal to the error term. We shall test the plausibility of this assumption in Section 4.2 below. In all regressions our standard errors are clustered by AMC.

There are two potential sources of endogeneity in the timing of Globo entry in different locations. The first is that the Ministry of Telecommunications may have used selective criteria in awarding licenses. As discussed in Section 2 above, the considerations underlying the Ministry's choices were mostly linked to patronage vis-à-vis influential Brazilian families, and with no obvious link to local fertility patterns. A second concern is that, because Globo is a commercial television network, it may have chosen to enter wealthier locations first, as the latter would yield higher profits from advertising. For these reasons, we control for area fixed effects and for time-varying characteristics by including a proxy for wealth in our regressions. We also explicitly assess the potential selection on our variables of interest.

In a second set of results we exploit individual level data to estimate the probability that a woman gives birth in a given year as a function of individual controls and Globo presence. As we explain below, in these regressions we employ the 1991 Census wave and build a retrospective history of a woman's fertility for the previous 12 years. We thus have 13 observations (years) for each woman in childbearing age. We estimate the following linear probability model:

$$y_{ijt} = X_{ijt}\beta + \gamma G_{jt} + \mu_j + \lambda_t + \varepsilon_{ijt} \quad (2)$$

where y_{ijt} is equal to 1if a woman *i* living in area *j* gives birth to a child in year *t*; G_{jt} is a dummy equal to 1if area *j* received the signal of Rede Globo at least 9 months prior to year *t*; μ_j are AMC fixed effects and λ_t are year fixed effects. The variables in X_{ijt} include the woman's age, the number (stock) of children she had up to year *t*, and a dummy for whether she gave birth in *t*-1, plus her marital status, religion, the education of the household head and an index of household wealth. We shall estimate (2) both for the full sample of women aged 15-49, and for different age brackets, to assess what are the age categories on which Globo viewing has a relatively larger impact. We cluster our standard errors by AMC in all regressions.

We shall also consider if exposure to television during different periods of a woman's life leads different outcomes in terms of fertility behavior. For this purpose, we shall modify our estimating equation as follows:

$$y_{ijt} = X_{ijt}\beta + \gamma_1 N_{ijt}^{10-19} + \ldots + \gamma_4 N_{ijt}^{40-49} + \mu_j + \lambda_t + \varepsilon_{ijt}, \quad (3)$$

where N_{ijt}^{10-19} is the number of years woman *i* living in area *j* ^{j} at time *t* has been exposed to Globo programs during ages 10-19, 20-29, and so on in 10-year brackets until N_{ijt}^{40-49}, which is the number of years of exposure to Globo during ages 40-49.

Using individual-level data we shall also test for the presence of heterogeneous effects in the impact of Globo according to socioeconomic status, and estimate the interacted specification:

$$y_{ijt} = X_{ijt}\beta + \gamma G_{jt} + \delta(G_{jt} * x_{ijt}) + \mu_j + \lambda_t + \varepsilon_{ijt}, \quad (4)$$

where x_{ijt} will be, alternatively, education and wealth.

Finally, in a last set of results we shall explore the extent to which our results can be linked to *novela* viewing rather than simply television viewing, and rely on ancillary regressions as well an on estimates of (1) and (2) where, instead of a dummy for the presence of the Globo signal, we introduce a dummy for the presence of another TV network with different programming characteristics.

4. Data

4.1 Fertility

For the first set of regressions (1), our dependent variable is constructed by aggregating individual-level data from three rounds of the Brazilian Census: 1970, 1980 and 1991. We restrict the sample to women aged 15 to 49. Each woman has a geographic identifier that allows us to attribute her to the municipality where she lives. We do not actually use municipalities but rather Minimally Comparable Areas (AMCs) as our spatial unit of analysis because this is the smallest consistently defined geographic area provided by the Brazilian Statistical Institute. The geographic borders of Brazil's approximately 5,000 municipalities have changed over time, while there are 3,659 consistently defined AMCs for each round of the Census.

We define fertility as the number of live births that a woman declares to have had. This variable, which we denote as *LIVEBIRTHS*, is recorded directly as a specific question in each round of the Census and includes children born alive to a woman, regardless of whether the child is currently living in the household. Our dependent variable y_{jt} is the average value of *LIVEBIRTHS* for all women aged 15-49 in AMC *j* and Census year *t*. Note that this variable moves rather slowly over time: in our sample the average number of live births across AMCs decreases from 3.0 in 1970 to 2.4 in 1991.

From the Census we also construct the following independent variables at the AMC level: average age of women aged 15-49; average years of education of the household head;[3] a proxy for average wealth that is constructed through principal component analysis from durables ownership and access to basic services (electricity, sanitation, etc.);[4] share of women aged 15-49 who are married; share of Catholic households; and the number of doctors and nurses with a diploma per 1,000 population. The latter variable is meant to control for supply-side factors that may have driven the reduction in fertility contemporaneously with the entry of Globo into different areas, notably health facilities and medical staff.

For the individual level regressions (2) we shall employ as dependent variable a "flow" variable, that is, a dummy $BIRTH_{ijt}$ equal to 1 if woman *i* living in area *j* gave birth in year *t*. This variable is not explicitly incorporated in the Census questionnaire. We therefore impute it using the following procedure. For each woman in the age range 15-49, we know from the household roster which children of hers are living in the household. We retain only children younger than 12, as this increases our confidence that we measure all the births occurred in that time period. In

[3] We chose the education of the household head, rather than that of the woman, to mitigate potential endogeneity problems. For younger women, the decision to acquire more education may be a response to *novela* viewing; also, for these women the causality may run from fertility to education as they may stop studying once they have a child. If we include among the controls the number of years of education of the woman (as opposed to those of the head), our estimates of the Globo effect remain virtually unchanged. We show this for the individual-level regressions in Table 5.

[4] The variable denoted as "wealth" in the regressions is the first principal component extracted from the following set of variables: share of households with access to piped water from the public system, share of households with sanitation, share of households with electricity, share of households owning a radio, share of households owning a refrigerator, share of households owning a car. We do not consider ownership of a television set, as this is likely endogenous to the availability of the Globo signal.

fact in the Brazilian context it is extremely unlikely that a child leaves the household before the age of 12. Given that the Census reports the age of all household members, we compute the year of birth of a child as the difference between the year of the Census interview and the age of the child. We thus recover every year in which a woman gave birth over the 12-year period before the Census. Consider, for example, a woman interviewed in 1991 who has two children living with her, one two years old and the other seven years old. We can therefore infer that this woman gave birth in 1984 and 1989 and, according to our procedure, in no other year during the period 1979-91. We thus construct a dummy taking a value of 1 in years 1984 and 1989, and 0 in the remaining years during the period 1979-1991.

Due to the size of the original data, for the individual-level regressions we extract a 5 percent random sample from the 1991 Census. We chose this Census wave because the previous 12 years represent the period where the bulk of Globo expansion occurred, as shown in the next section (Figure 1).

The construction of the variable $BIRTH_{ijt}$ rests on the assumption that a woman's children do not leave the household before the age of 12. While we cannot rule out that this may occur in a small number of cases—which would lead us to underestimate fertility—we have checked the consistency of our method by comparing our imputed figures with the answer to the Census question on the number of children currently alive for women younger than 25. In fact, given their age, these are women whose children should all be in the household if our conjecture is correct. Our results indicate that our method is quite reliable: in 96 percent of the cases our imputed number of children exactly coincides with the number of births these women declare; in a remaining 3.5 percent of the cases we underestimate the number of children born by 1 unit.

From the Census we also take the following independent variables: age of the woman; years of education of the household head; a proxy for wealth constructed from durable goods ownership and access to basic services;[5] a dummy equal to one if the woman is married, a dummy for Catholic religion, and the number of doctors and nurses with a diploma per 1,000 population.

Summary statistics of all variables are reported in Appendix Table A1.

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[5] The variable denoted as "wealth" in the regressions is the first principal component extracted from the following set of dummies for each household: access to piped water from the public system; sanitation; electricity in the house; ownership of a radio; ownership of a refrigerator; ownership of a car.

4.2 Rede Globo and **Novelas**

Our second data source is information provided by Rede Globo on the year in which different areas obtained access to their programs. For each broadcasting or retransmitting station, we know the year and the location where it was installed (latitude and longitude), as well as its radial reach in kilometers. This allows us to know which municipios where reached by the signal of any particular antenna and in which year they first started receiving the signal. We then match this information with the AMC corresponding to each municipio, and construct a variable $Globo\ coverage_{jt}$ equal to 1if AMC *j* is within the signal radius of a Globo broadcasting or retransmitting station in year *t*, and 0 otherwise.

Figure 1 shows the increase over time in the number of AMCs reached by the Globo signal. In 1970, only four AMCs out of 3,659 were receiving the Globo signal; in 1980 the number had increased to 1,300 and in 1991 to 3,147. Figure 2 shows the geographic expansion of the network between 1970 and 2000. Lighter colors represent earlier exposure to the signal (with the exception of white, which stands for "no signal"). This figure suggests that the entry of Globo into different areas may not have been random. Globo reached the most developed parts of Brazil first, which is potentially a concern for our identification strategy because these areas are also those with lower fertility. However, we show below that after controlling for our time-varying controls and for AMC fixed effects there seems to be no evidence of selection in unobservables correlated with fertility trends.

To motivate our analysis and help us interpret the results, we have collected a large amount of data on the content of individual *novelas* broadcast by Rede Globo since the start of its operations. Rede Globo traditionally airs three sets of *novelas*:

- *novelas das seis*, at 6 p.m., which are typically historical stories about slavery and colonial times and have romantic content. These are the *novelas* with the smallest audience.
- *novelas das sete*, at 7 p.m., which are mostly contemporary comedies and often include elements of envy and conspiracy;
- *novelas das oito*, at 8 p.m. (or 9 p.m.), which focus largely on social issues and have by far the largest audience throughout the country.

We have coded a number of variables for all 7 p.m. and 8 p.m. *novelas* from 1965 to 1999. Appendix Table A2 reports the full list of titles with beginning and ending date. For the purpose of the present analysis, the most relevant variables coded are: age of first female character; number of children of first female character; marital status of first female character; and whether the first female character is unfaithful to her partner (in the case of a married woman, whether she has an extramarital relationship). The distribution of these variables is shown in Table 1.

Over the full sample of 7 and 8 p.m. *novelas* aired between 1965 and 1999, in 62.2 percent of *novelas* the main female character does not have any children, in 20.7 percent she has one child, in 9 percent two children, 4.5 percent three children, and in the remaining cases has four or more children. It is also interesting to consider a restricted sample of *novelas* where the main female character is under 50 years of age (still the vast majority, at 97 of the 115 *novelas* in the sample), as these may be the characters with whom women of childbearing age most easily identify. In this smaller sample, the percentage of childless women increases to 71.6, 21.1 percent of the women have one child, and only 7.4 percent have two or three children; no woman has four or more. Finally, if we look at married women only, 41.2 percent have no children, 33.3 percent have one child and 20.1 percent have two. These figures are quite astonishing if we compare them to actual fertility patterns in the Brazilian population over this period. Furthermore, the low fertility among *novela* heroines is not driven by the more recent *novelas*: if anything, quite the opposite.

Figure 3 shows the average number of children of the main female character of all 7 p.m. and 8 p.m. *novelas* aired in a given year. The numbers corresponding to each observation represent the sample size (number of *novelas*) from which the average is computed. As a general observation, with the exception of the year 1996, the average female main character has no more than one child in each and every year between 1965 and 1999. Most strikingly, in the first decade of operation of Rede Globo, almost all 7 p.m. and 8 p.m. *novelas*—with only two exceptions—were about a woman who had no children at all. Similar observations apply to variables such as marriage, divorce and extramarital relationships. Only 29 percent of the main female characters in *novelas* are married (27 in the sample younger than 50), and 12 percent are divorced or separated (10 percent in the sample younger than 50). In the full sample, 26 percent of the main female characters are unfaithful to their partner (29 percent in the sample younger than 50 and

42.3 in the married sample younger than 50). While for the latter variable it is not possible to find a counterpart in Census data, in *novelas* marriage rates are markedly lower and divorce rates markedly higher than in Brazilian society at the time. These observations make us confident that the role models portrayed in the programs of the television channels we shall analyze were clearly consistent with a radical re-orientation of society's attitudes towards women's roles in the family, including fertility.

5. Econometric Results

In this section we take advantage of variation in the timing of Globo entry into different areas to formally test the hypothesis that exposure to the programs of this television network was associated with a reduction in fertility rates. We start by presenting evidence at the aggregate level, and then move to individual level regressions.

5.1 Aggregate Regressions

5.1.1 Baseline Results

Table 2 contains our first set of results, obtained using aggregate data at the Minimal Comparable Area (AMC) level for the Census years 1970-1991.

The dependent variable in this table is $LIVEBIRTHS_{jt}$, i.e., the average number of live births for women aged 15-49 in the AMC in any given Census year. Our key variable of interest (*Globo coverage*) is a dummy equal to one if the AMC receives the Globo signal in that year. The table reports OLS coefficients and standard errors clustered by AMC. In column 1 we run a simple regression on the full sample controlling only for time dummies. On average, after accounting for the secular declining trend in fertility, areas reached by Globo have an average number of live births that is lower by 0.29. Of course, this coefficient cannot be interpreted due to the fact that Globo presence in an area may be correlated with unobserved characteristics that are associated with lower fertility. In columns 2 to 4 we thus introduce different area fixed effects to control for differences in time-invariant unobservables across locations. We start with State (Unidade Federação, UF) fixed effects in column 2, proceed with microregion fixed effects in column 3 (for a total of 522 microregions), and finally include AMC fixed effects in column 4, which gives a full panel fixed effects regression. In this last regression the coefficient of the Globo variable is -0.024 and is significant at the 5 percent level.

In columns 5 to 8 we include a number of controls to account for time-varying differences across AMCs. These variables are: the average years of education of the household head, an index of wealth built from information on durable goods ownership and quality of the house, the share of married women in the AMC, the share of Catholic households in the AMC, and the number of doctors and nurses with a diploma per 1,000 people in the AMC. We do not include the share of households owning a TV set as this is likely an endogenous variable.[6] After we include these time-varying controls and we control for AMC fixed effects, the coefficient on the Globo variable is -0.027 and is significant at the 1 percent level (column 8). Surprisingly, once we control for AMC fixed effects, the education of the head has a very small (and only marginally significant) effect on fertility. Wealth, marriage rates and health supply factors play a significant role in explaining fertility. The coefficient on the share of Catholic households is not statistically significant.

Prima facie, the effect we find on Globo coverage may seem small. The mean of our dependent variable across AMCs is 2.67, and the standard deviation is 0.55. However, it should be noted that the average number of live births changes very little over time. In fact, the mean value of *LIVEBIRTHS* is 2.98 in 1970, 2.66 in 1980 and 2.36 in 1991. If we compare the effect of Globo exposure with that of one more year of education of the household head, the effect of Globo is substantially larger. This is remarkable in a country where the average education of household heads over this period is 2.72 years (and the standard deviation is 2.38). Also, from column (8) of Table 2 we see that the effect of Globo exposure is comparable in size to that of having one more doctor or nurse per 1,000 people, which is also remarkable given that the mean of this variable is 0.2 (standard deviation 0.74).

Finally, to quantify the magnitude of the effect it can be useful to combine the estimated coefficient of Globo coverage with the rate of TV ownership in the population, which is 0.41 on average over this period. If all and only women living in households that owned a television watched Rede Globo, the effect of Globo on women effectively watching TV would be a decrease in *LIVEBIRTHS* of 0.058. This rough estimate may still be downward biased if the audience of Rede Globo were below 100 percent. On the other hand, it may be biased upwards if people watched television in their neighbors' house or in public places.

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[6] However, if we control for TV ownership the effect of Globo coverage is actually stronger (the estimated coefficient in column 8 is -0.032 and is significant at the 1 percent level).

In Table 3 we estimate a similar set of regressions, but we focus on the length of exposure to Globo programs, rather than simply on whether an area was reached by the signal. Our variable of interest is the number of years for which an AMC was covered by the Globo signal. The results we obtain are very similar to those shown in Table 2. In the specification with all controls and AMC fixed effects (column 8), ceteris paribus one more year of Globo coverage is associated with a reduction in LIVEBIRTHS of 0.009.

5.1.2 Selection

The key identification assumption underlying our approach is that Globo entry in a market, though not random, was uncorrelated with pre-existing differences in fertility trends across areas, after controlling for time varying controls and time invariant area characteristics. To assess the plausibility of this assumption and investigate the nature of the selection, we estimate the following linear probability models:

$$Globo\ coverage_{jt} = X_{jt}\lambda + \zeta y_{j,t-1} + \mu_i + \delta_t + \varepsilon_{jt}$$
$$Globo\ coverage_{jt} = X_{jt}\lambda_0 + \Delta X_{j(t-1,t)}\lambda_1 + \zeta \Delta y_{j,(t-1,t)} + \mu_i + \delta_t + \varepsilon_{jt}$$
$$Globo\ coverage_{jt} = X_{jt}\lambda_0 + \Delta X_{j(t-2,t-1)}\lambda_1 + \zeta \Delta y_{j,(t-2,t-1)} + \varepsilon_{jt}$$

where $Globo\ coverage_{jt}$ is a dummy equal to 1 if AMC *j* receives the Globo signal in year *t* and 0 otherwise; X_{jt} is the set of time-varying controls that we use in all regressions, $y_{j,t-1}$ is the fertility level in the previous period, $\Delta y_{j,(t-1,t)}$ is the change in fertility between *t*-1 and *t*, and $\Delta y_{j,(t-2,t-1)}$ is the change in fertility between *t*-2 and *t*-1; and μ_i and δ_t are AMC and time fixed effects. The results are reported in Table 4.

In column 1 of Table 4 we estimate the probability of having Globo in a given year as a function of lagged fertility, as well as contemporaneous controls, time and AMC dummies. The set of controls is the same as employed in Tables 2 and 3. As we can see from the table, once we introduce area fixed effects there is no correlation between Globo presence and previous fertility levels.

We also examine whether selection may occur on previous changes in fertility. In columns 2 and 3 we regress Globo presence at time *t* on the change in fertility between *t*-1 and *t*. In this regression, we control for contemporaneous levels of the controls (column 2) and additionally for changes in the controls between *t*-1 and *t* (column 3). Again, we find no significant correlation between changes in fertility and Globo coverage.

Finally, in columns 4, 5 and 6 we regress Globo presence at time *t* on the change in fertility between t-2 and t-1.[7] The three columns vary the specification regarding the timing of the controls. In none of the specifications, however, is the fertility trend a significant predictor of Globo presence. Overall, we believe these results should mitigate possible concerns about our identification strategy.

5.2 Individual-Level Regressions

We next move to another set of results which employs yearly data at the individual level. The sample includes women aged 15 to 49 in the years 1980-1991.[8] We estimate model (2) as a linear probability model and cluster the standard errors by AMC. We have also tried clustering by individual, to allow for arbitrary autocorrelation for an individual woman over time, and we found that our standard errors were actually smaller. In what follows we therefore chose to report the more conservative standard errors, i.e. those clustered by AMC.

The dependent variable $BIRTH_{ijt}$ is a dummy equal to 1 if woman *i* living in area *j* gave birth in year *t*, and 0 otherwise. Our variable of interest is a dummy capturing whether the area where the woman lived received the Globo signal in that year.[9] Other controls include the age of the woman and its square, the stock of children the woman already has (excluding the newborn) and the square of this variable, a dummy for whether the woman gave birth in the previous year, marital status of the woman, the average years of education of the household head (or of the woman, depending on the specification), and an index of wealth built from information on durable goods ownership and quality of the house.[10] The results are reported in Table 5.

Column 1 displays our baseline estimates for the full sample of women aged 15 to 49. The coefficient of Globo coverage is negative and significant at the 1 percent level. Ceteris

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[7] Given that we are using three Census rounds, this means we can only exploit a cross-section of AMCs for this regression, hence we do not include AMC and time fixed effects.

[8] Our procedure recovers birth flows starting in 1991 and going back to 1979. However, because in our regressions we include a dummy for whether the woman gave birth in the previous year, we lose 1979. Our results are essentially unchanged if we omit the control for birth in the previous year and use the sample 1979-1991.

[9] To take into account the length of the pregnancy period, at any point in time we consider the AMC as covered if it was reached by the signal at least the year before.

[10] Age and the stock of children vary across women and are time-varying for each woman; marital status, education and wealth vary across women but are time invariant. We do not control for doctors and nurses per 1,000 people in these regressions because this variable only varies across AMCs and is absorbed by the AMC fixed effect.

paribus, a woman living in an area that receives Globo is 0.6 percentage points less likely to give birth in any given year (the mean of the dependent variable is 0.10). In column 2 we control for the number of years of education of the woman, rather than of the household head. The estimated coefficient of the Globo variable is unchanged. The magnitude of the coefficients indicates that, ceteris paribus, being exposed to Globo programs leads to the same decrease in the probability of giving birth as an increase of two years in the woman's education. This is quite relevant, given that the average education of women in our sample is 5.6 years.

In columns 3 to 5 we test for the presence of heterogeneous effects along the dimensions of education and wealth. We introduce among the regressors an interaction term between Globo coverage and (i) the years of education of the household head (column 3); (ii) the years of education of the woman (column 4); and (iii) the wealth index of the household (column 5). In all cases we find that the negative effect of Globo exposure on fertility is strongest for women living in poorer households and households with lower levels of education, and is attenuated for richer and more educated households. This is quite important from a policy point of view, because it is precisely among poorer and less educated individuals that we should expect a medium like television to have the most communication potential. Rich and educated households may already be exposed to different lifestyles and role models through written media or social interactions.

In Table 6 we explore age, another dimension of heterogeneity in impact. In columns 1 to 3 we split the sample into three age groups: 15-24, 25-34, 35-44. The results in the table suggest interesting differences among age groups. For the youngest age bracket, i.e., women aged 15-24, Globo coverage decreases the probability of giving birth by 0.2 percentage points, but the effect is not statistically significant (the mean of *BIRTH* for this group is 0.11). For the age group 25-34, which on average has a probability of giving birth in any given year of 0.136, the coefficient is -0.0107. For this group Globo presence is associated with a reduction of over one percentage point in the likelihood of giving birth. The effect is also very strong for the next age group, i.e., women aged 35 to 44. The average probability of giving birth for this group is 0.058, and exposure to Globo leads to a reduction of 0.65 percentage points, which is quite sizeable in relation to the mean.

In columns 4 and 5 of Table 6 we estimate the effect of length of exposure to Globo, allowing for a differential effect of exposure at different ages.[11] We find that among women aged 30 to 49, one more year of exposure as a teenager (i.e., during age 10-19) decreases the likelihood of giving birth by 0.003 and has a similar impact in terms of magnitude as one more year of exposure during ages 20 to 29. On the other hand, years of exposure during ages 30 to 39 has the strongest effect on fertility, with an estimated coefficient of -0.006. Among women aged 40 to 49 (column 5) we find that one more year of exposure during ages 20 to 29 decreases the likelihood of giving birth by 0.008, a similar effect as one more year of exposure during ages 30 to 39 (the estimate being -0.009). Exposure during the ages 40-49 leads to a reduction of 0.2 percentage points in the probability of giving birth.

It is worth discussing the above findings in relation to the demographic literature on Brazil. An apparently puzzling result in Table 6 is the absence of significance of Globo exposure for the youngest age group, women aged 15 to 24. However, this is very consistent with what is known about the nature of changing fertility patterns in Brazil. Martine (1996) and Flórez and Núñez (2003) find that changes in the starting age of fertility have been negligible in Brazil country, related both to relatively stable marital patterns as well as persistently high rates of adolescent fertility. On the other hand, increased spacing of births and—especially—stopping of childbirth have been found to be more important (Moreno, 1991). These findings are confirmed in our data, as illustrated in Figure 4.

The histograms in Figure 4 represent the average number of live births for women aged 15-19, 20-24, and so on until 40-44, for the three Census years in our sample. Interestingly, over the period 1970-1991 there has been absolutely no decrease in the average number of live births for women younger than 25. By the age of 24, the average woman in our sample had one child both in 1970 and in 1991. What happens between the age of 25 and that of 35, on the other hand, is very different over this period. In 1970, a woman aged 30 to 34 would have had on average 4.4 live births in her life; in 1991 this number had decreased to 3.2. A similar decline occurred between 35 and 45 years of age. In 1970, a woman aged 40-45 would have had on average 6.4

[11] The variables "Years exposed during 10-19", ... "Years exposed during 40-49" are defined only for women who have reached the relevant age bracket. Therefore the sample in column 5 includes women aged 40 to 49 because these are the only ones for whom "Years exposed during 40-49" is not missing. On the other hand, in this column "Years exposed during 10-19" is not included among the regressors because it is identically zero for the 40-49 age group. Column 4 enlarges the sample to women aged 30 to 49, and for this group the coefficient on "Years exposed during 10-19" can be estimated.

live births in her life; in 1991 this number had decreased to 4.9. These data suggest that it is in the intermediate and late stages of their reproductive life that Brazilian women chose to have fewer children, which is consistent with our estimates in Table 6.

5.3 Robustness

To corroborate the validity of our results, in this section we perform some falsification tests and robustness analysis. The results are reported in Table 7. In panel A of the table we construct a placebo treatment using the timing of Globo entry. We perform analogous regressions to the ones we performed in Table 2 (our baseline AMC-level specification), but instead of looking at the effects of Globo past entry on current behavior, we look at the effects of *future* entry for areas that are not covered by Globo at a given point in time. Our dependent variable is $LIVEBIRTHS_{jt}$, i.e., the average number of live births for women aged 15-49 in AMC j in Census wave t. Our regressor of interest (*Globo coverage in t+1*) is a dummy equal to one if AMC j will receive the Globo signal in Census wave t+1. For each wave t, we only include in the sample AMCs that do not receive the signal in that wave (otherwise changes in fertility may have been induced by previous exposure to Globo), and that may or may not receive it in t+1. Our hypothesis for the "placebo" experiment is that fertility in places that do not receive the Globo signal should not be affected by the fact that the signal may become available in the future. Indeed, the results of panel A show that both when we omit time-varying controls (column 1) and when we include them (column 2), future presence of Globo has no predictive power on current fertility levels.

In panel B of Table 7, we use individual-level data and work with sub-samples of the original dataset. The first subsample is made up of women aged 45 to 54 in any given year between 1980 and 1991. We expect that these women should have already completed their fertility cycle, hence there should not be any correlation between Globo presence and their likelihood of giving birth. Indeed, the coefficient on the Globo variable reported in column 3 of Table 7 is not statistically different from zero, suggesting that our variable is not capturing unobserved (time-varying) characteristics of the area where women live.

A second strategy is to restrict the analysis to migrants. We exploit a question in the Census that asks the respondent if she has lived continuously in the current municipality for at least 10 years, and if not, records the name of the municipality where she was living immediately before. If the underlying reason for the negative relationship between Globo presence and fertility is related to exposure to Globo programs and their role models, as we hypothesize, we should find a similar (negative) effect when we use Globo presence in the area the respondent is coming from. If, on the other hand, the Globo variable is capturing unobserved time-varying characteristics correlated with fertility in the destination area, then our result should disappear. The estimates in column 4 of Table 7 show that indeed the effect of Globo coverage in the AMC of origin of migrant women is negative and significant at the 5 percent level, and it is similar in magnitude to our baseline estimate.

Taken together, the results in Table 7 increase our confidence that our findings are not spurious.

6. Interpretation: TV or *Novelas*?

Our results so far indicate a robust and negative effect of Globo presence on fertility choices in Brazil. In this section we try to understand to what extent this is a general effect of television viewing, and to what extent it may be linked to the particular type of programs broadcast by Rede Globo. The data available do not allow us to identify the effect of Globo programming separately from the effect of Globo entry, hence our arguments in this section should be considered only suggestive. Nonetheless, given that a sizeable anthropological and sociological literature in Brazil has stressed the role of *novela* content in shaping individual behavior, we think it can be interesting to explore different strategies to assess the plausibility of such hypotheses.

A first step is to show that indeed people watched *novelas* and that some of the decisions people made were affected by the content of novelas. We focus on naming patterns among children and test whether, ceteris paribus, it is more common for parents living in areas that are reached by Globo to name their children after popular characters in *novelas*. In particular, we use administrative data on the names of Brazilian fifth-graders in 2004 (Ministry of Education of Brazil, 2005) and compare the pattern of their first names with the first names of the main characters in the novelas aired in the year in which these children were born, typically 1994.[12] We do this for a 10 percent random sample of AMCs in the country, i.e., for 366 AMCs.[13]

Our variable of interest is a dummy *NAMESMATCH* that equals 1 if at least one of the top 20 most prevalent names of children born in 1994 is one of the names of the main *novela* characters of that year. Since *novela* names tend to be very idiosyncratic in Brazil and elsewhere in Latin America, we believe that evidence on possible name patterns strongly suggests a link between *novela* content and behavior. Table 8 reports the results of this exercise.

Of the 366 AMCs for which we have data, 319 had received the Globo signal by 1994 (the birth year of the children in our sample), and 47 received it after 1994 or did not receive it at all. Panel A of the table shows a simple comparison of means in the two subsamples. The mean of the *NAMESMATCH* variable is 0.329 in the group of AMCs covered by Globo and 0.085 in the other group. In other words, the likelihood that the 20 most popular names chosen by parents for their newborns would include one or more names of the main characters of *novelas* aired that year was about 33 percent if the area where parents lived received the Globo signal and only 8.5 percent if it did not. Panel A also reports confidence intervals and shows that the difference is statistically significant at the 1 percent level.

In Panel B we run a linear probability model and a probit model using as dependent variable *NAMESMATCH* and clustering the standard errors at the State (Unidade Federação) level. The Globo coverage variable has a positive and significant effect also after we control for the same variables used in previous regressions (columns 2 and 4), and the size of the coefficient is basically the same as without the controls (columns 1 and 3). Our estimates suggest that, ceteris paribus, AMCs that receive the Globo signal have a 24 percent higher probability of displaying a "match" between children's and *novela* characters' names.

A second way to assess the role of Globo programming separately from general TV viewership is to test if the entry of other TV networks had similar effects on fertility. The channel we focus on is SBT (Sistema Brasileiro de Televisão), which started operating in 1980 and is the second most popular network after Globo in Brazil. Appendix Table A3 shows

[12] We coded the names of the three main male and female characters of Globo novelas aired in 1994 based on detailed plot descriptions provided by Globo itself.

[13] While we would have liked to compare names for the full spectrum of AMCs in our sample, this was not possible due to data limitations. However, we tested for possible differences in observables among the AMCs for which we had names and the remaining ones, and in no case we could reject the null of equality of means, suggesting that the randomization worked well.

audience rates of all major networks in Brazil from 1975 to 2000, the only years for which data are available. The table clearly shows the virtual monopoly of Globo until the early 1990s, as well as the fact that SBT is the only other network whose impact may be easily detected, given its audience shares. Interestingly, the marketing strategy of SBT was very different from that of Rede Globo. While Globo heavily relied on national productions, strengthening the concept of "Brazilian identity," SBT always relied heavily on imports, including foreign shows and Mexican and US soap operas.

In Table 9 we estimate equations (1) and (2) at the AMC and individual level, respectively, including among the controls the entry of SBT instead of Rede Globo. In particular, the dummy $SBTcoverage$ is constructed exactly in the same way as $Globo\ coverage$, namely assigning a value of 1 to the observations reached by the SBT signal in a given year (as calculated from the radial reach of SBT broadcasting and retransmitting stations in that year) and 0 otherwise. In columns 1 to 4 the units of observations are AMCs for the Census years 1970, 1980 and 1991, and the dependent variable is the average number of live births for women aged 15-49 in the AMC in a given year ($LIVEBIRTHS_{jt}$). In columns 5-6, the units are individual women aged 15-49 in the 12 years 1980-1991, and the dependent variable is a dummy equal to 1 if a woman gave birth in a given year ($BIRTH_{ijt}$). All specifications include the same set of controls as the AMC level and the individual-level regressions. Columns 1, 2 and 5 use the full sample of AMCs available. In this sample, SBT presence has no significant effect on fertility. However, in its decisions to enter any given market, SBT may have been a follower with respect of Rede Globo. Therefore we cannot exclude that an AMC where SBT enters in a given year may have received Globo programming earlier on. To rule out this possibility, in columns 3, 4 and 6 we restrict the sample to areas that were not reached by Rede Globo in a given year (i.e., for which the variable $Globocoverage$ was equal to 0 in that year). Also in this smaller sample, SBT presence never has a significant effect on fertility.

One way to interpret the above findings is that Globo programming had a stronger impact on fertility choices because it portrayed a reality with which Brazilian viewers could more easily identify. The role of "frame salience" has been underlined in the communications literature on Brazilian *novelas* (e.g., Vink, 1988), which has stressed how viewers tend to be more affected by the content of a *novela* when they can more easily relate to its main character(s) and to the environment.

7. Conclusions

This paper has explored the effects of television, and in particular of programs such as soap operas, on women's fertility. Our analysis draws on the experience of Brazil, a country where soap opera watching is ubiquitous and cuts across social classes. We exploit differences in the timing of entry into different markets of Rede Globo, which until the early 1990s had an effective monopoly on the production of *novelas* in Brazil, to estimate the impact of Globo availability on fertility choices. We find that, after controlling for time-varying controls and for time-invariant area characteristics, the presence of the Globo signal leads to significantly lower fertility. This effect is stronger for women of low socioeconomic status, as measured by education or durable goods ownership. The effect is also stronger for women who are in the middle and late phases of their child-bearing life, suggesting that television contributed more to stopping behavior than to delayed first births, consistent with demographic patterns documented for Brazil. Finally, suggestive evidence in the last part of the paper indicates that the results may be interpreted not only in terms of exposure to television, but also of exposure to the particular reality portrayed by Brazilian *novelas*.

Our findings have important policy implications for other developing countries. In societies where literacy is relatively low and newspaper circulation limited, television plays a crucial role in circulating ideas. Our work suggests that programs targeted to the culture of the local population have the potential of reaching an overwhelming number of people at very low cost and could thus be used by policymakers to convey important social and economic messages (e.g., about HIV/AIDS prevention, children's education, the rights of minorities, etc.). Recent work by social psychologists (e.g., Paluck, 2008) stresses the role of the media, and of radio soap operas in particular, as a tool for conflict prevention. Our paper suggests that programs of this type may be usefully employed for a broader set of development policies.

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Figure 1. Rede Globo Expansion over Time

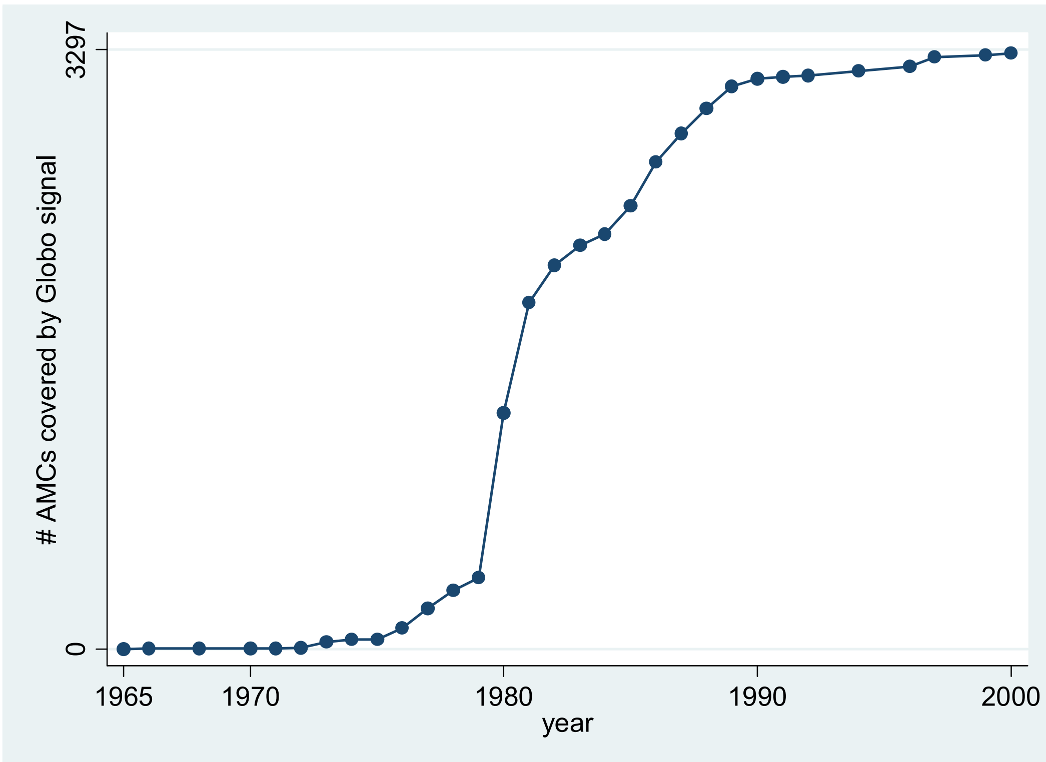


Figure 2. Rede Globo Expansion across Space

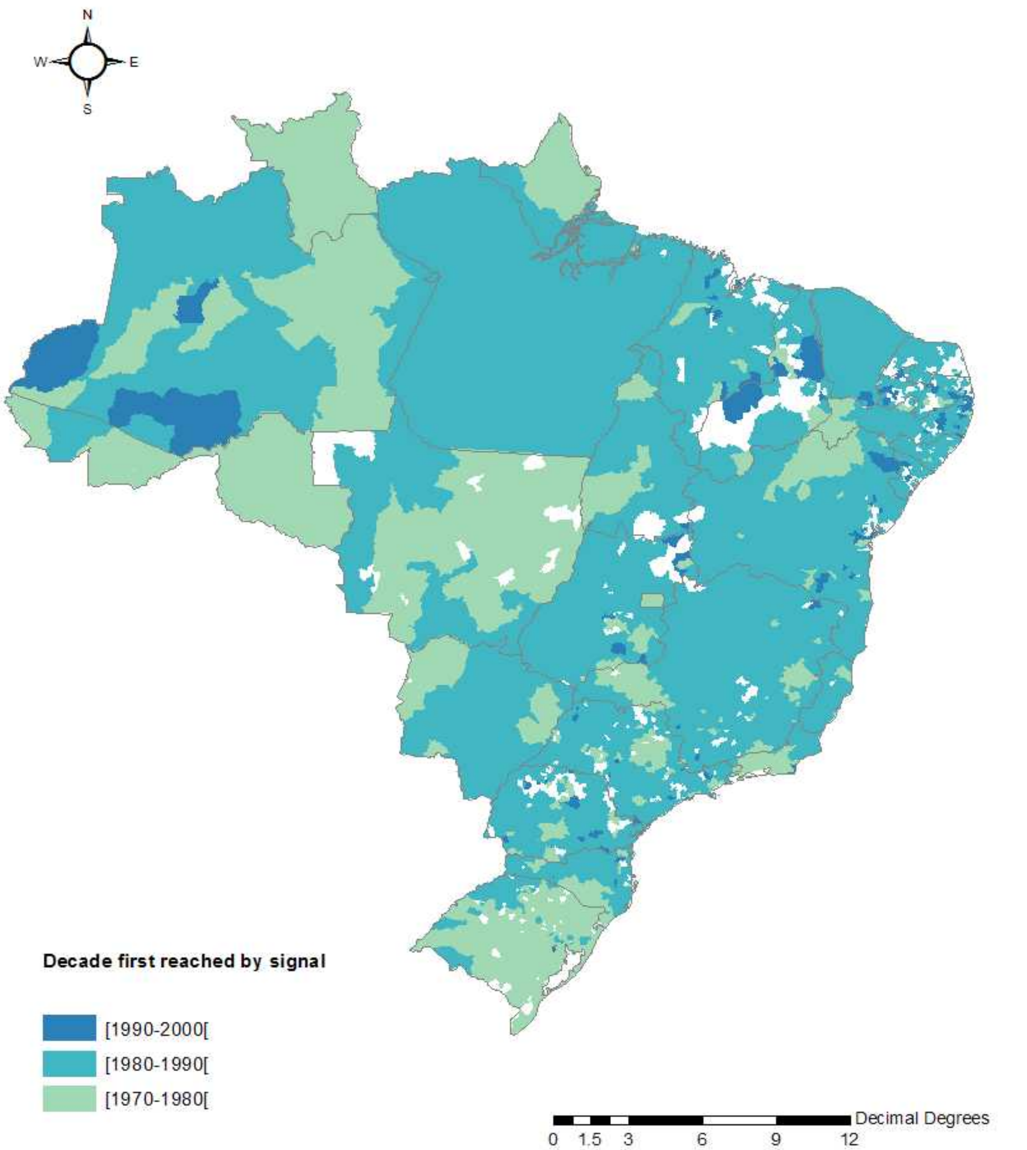
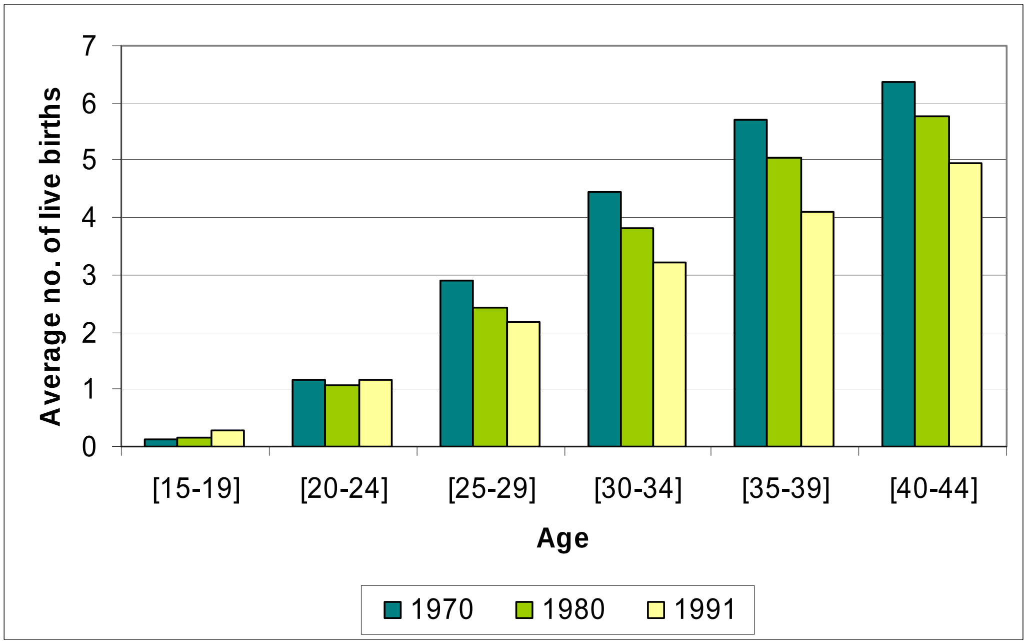


Figure 3. Average Number of Children of Main Female Character in *Novelas*, by Year
(Numbers on each data point indicate the number of *novelas* from which average is computed)

Figure 4. Average Number of Births, by Age Cohort



Source: Authors' calculations based on Census data.

Table 1. *Novela* Content Analysis: Characteristics of Main Female Character

	Full sample % novelas	*Age of Female1 <50 % novelas*	*Age of Female1 <50 & married, % novelas*
Number of children			
0	62.2	71.6	41.2
1	20.7	21.1	33.3
2	9.0	6.3	20.1
3	4.5	1.1	4.2
4 or more	3.6	0	0
	(N=111)	(N=95)	(N=24)
Married			
Yes	29.0	26.8	-
	(N=114)	(N=97)	
Divorced or separated			
Yes	12.2	10.3	-
	(N=115)	(N=97)	
Unfaithful to partner			
Yes	26.1	28.9	42.3
	(N=115)	(N=97)	(N=26)

Source: Authors' calculations based on *novela* content analysis.

Table 2. Globo Coverage and Aggregate Fertility

Dependent variable: Avg. number of live births for women aged 15-49 in AMC (LIVEBIRTHS)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Globo coverage	-0.2926	-0.0458	-0.0498	-0.0236	-0.0913	-0.0233	-0.0239	-0.0268
	(0.0146)**	(0.0107)**	(0.0088)**	(0.0096)*	(0.0090)**	(0.0082)**	(0.0076)**	(0.0094)**
Education of head					-0.0136	-0.0054	-0.0038	-0.0026
					(0.0016)**	(0.0015)**	(0.0015)**	-0.0015
Wealth					-0.1565	-0.1367	-0.1247	-0.1239
					(0.0020)**	(0.0025)**	(0.0028)**	(0.0056)**
Married					-0.2626	0.1055	0.4824	0.2168
					(0.0542)**	(0.0655)	(0.0717)**	(0.0884)*
Catholic					-0.068	-0.2944	-0.0545	0.0501
					(0.0577)	(0.0601)**	(0.0535)	(0.1203)
Doctors&nurses					-0.0178	-0.0292	-0.027	-0.029
					(0.0036)**	(0.0035)**	(0.0037)**	(0.0051)**
Constant	2.984	2.984	2.984	2.984	3.221	3.2113	2.7651	2.8175
	(0.007)**	(0.007)**	(0.006)**	(0.005)**	(0.0637)**	(0.0663)**	(0.0639)**	(0.1140)**
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area fixed effects	No	State	Micro-region	AMC	No	State	Micro-region	AMC
Number of Areas		27	522	3659		27	522	3659
Observations	10,977	10,977	10,977	10,977	10,977	10,977	10,977	10,977
R-squared	0.245	0.572	0.697	0.823	0.6275	0.6929	0.7629	0.8358

Standard errors in parentheses are corrected for clustering at the AMC level.
* significant at 5%; ** significant at 1%
AMC stands for Minimally Comparable Area and is a geographic aggregate slightly larger than a municipio.
Each observation is a joint AMC-Census year. Reference year: 1970

Table 3.Years of Globo Coverage and aggregate fertility

Dependent variable: Avg. number of live births for women aged 15-49 in AMC (LIVEBIRTHS)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
# years of Globo coverage	-0.0433	-0.0079	-0.0087	-0.0082	-0.0137	-0.0058	-0.0077	-0.0092
	(0.0019)**	(0.0014)**	(0.0012)**	(0.0014)**	(0.0011)**	(0.0011)**	(0.0011)**	(0.0013)**
Education of head					-0.0112	-0.0041	-0.0022	-0.0007
					(0.0016)**	(0.0015)**	(0.0014)	(0.0014)
Wealth					-0.1569	-0.1371	-0.1251	-0.1248
					(0.0020)**	(0.0025)**	(0.0027)**	(0.0055)**
Married					-0.2144	0.13	0.5214	0.2872
					(0.0547)**	(0.0658)*	(0.0718)**	(0.0892)**
Catholic					-0.0604	-0.2949	-0.0616	-0.0059
					(0.0574)	(0.0602)**	(0.0540)	(0.1202)
Doctors&nurses					-0.0166	-0.0285	-0.0259	-0.0271
					(0.0036)**	(0.0035)**	(0.0037)**	(0.0050)**
Constant	2.984	2.984	2.984	2.984	3.1823	3.1957	2.7469	2.8269
	(0.0075)**	(0.0066)**	(0.0058)**	(0.0045)**	(0.0635)**	(0.0664)**	(0.0640)**	(0.1130)**
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area fixed effects	No	State	Micro-region	AMC	No	State	Micro-region	AMC
Number of Areas		27	522	3659		27	522	3659
Observations	10,977	10,977	10,977	10,977	10,977	10,977	10,977	10,977
R-squared	0.2567	0.5725	0.6975	0.8234	0.6285	0.6934	0.7637	0.8368

Standard errors in parentheses are corrected for clustering at the AMC level.
* significant at 5%; ** significant at 1%
AMC stands for Minimally Comparable Area and is a geographic aggregate slightly larger than a municipio.
Each observation is a joint AMC-Census year. Reference year: 1970

Table 4. Possible Selection in Globo Entry

Dependent variable =1 if Globo coverage in year *t*

	[1]	[2]	[3]	[4]	[5]	[6]
LIVEBIRTHS in t-1	-0.0207					
	(0.0222)					
ΔLIVEBIRTHS (t-1,t)		0.043	0.0465			
		(0.0239)	(0.0242)			
ΔLIVEBIRTHS (t-2,t-1)				-0.0071	-0.0139	-0.0308
				(0.0182)	(0.0184)	(0.0191)
Controls[(a)] in t	Yes	Yes	Yes	Yes	Yes	Yes
ΔControls (t-1,t)	No	No	Yes	No	Yes	No
ΔControls (t-2,t-1)	No	No	No	No	No	Yes
AMC fixed effects	Yes	Yes	Yes	No	No	No
Year fixed effects	Yes	Yes	Yes	No	No	No
Observations	7,318	7,318	7,318	3,659	3,659	3,659
R-squared	0.752	0.752	0.754	0.034	0.054	0.055

Standard errors in parentheses are corrected for clustering at the AMC level.
* significant at 5%; ** significant at 1%
(a) Time-varying controls are the same as in Tables 2 and 3.

Table 5. Globo Coverage and Probability of Giving Birth, Individual Level
(Dependent variable =1 if gives birth in year *t* (BIRTH)—Years 1980-1991)

	[1]	[2]	[3]	[4]	[5]
Globo coverage	-0.006	-0.006	-0.0109	-0.0133	-0.005
	(0.0015)**	(0.0015)**	(0.0016)**	(0.0017)**	(0.0015)**
Globo coverage*Education of head			0.0013		
			(0.0002)**		
Globo coverage*Education of woman				0.0017	
				(0.0002)**	
Globo coverage*Wealth					0.0023
					(0.0006)**
Birth previous year	-0.0255	-0.0253	-0.0255	-0.0254	-0.0255
	(0.0018)**	(0.0018)**	(0.0019)**	(0.0018)**	(0.0018)**
Age	0.0196	0.0201	0.0196	0.0201	0.0196
	(0.0004)**	(0.0004)**	(0.0004)**	(0.0004)**	(0.0004)**
Age sq.(a)	-0.3753	-0.3856	-0.3747	-0.3847	-0.3751
	(0.0087)**	(0.0087)**	(0.0087)**	(0.0086)**	(0.0087)**
Stock of children	0.0035	0.0014	0.0035	0.0014	0.0035
	(0.0007)**	(0.0007)*	(0.0007)**	(0.0007)*	(0.0007)**
Stock of children sq.(a)	-0.1535	-0.0382	-0.1567	-0.045	-0.155
	(0.0377)**	(0.0386)	(0.0378)**	(0.0385)	(0.0377)**
Education of head	0		-0.001		0
	(0.0001)		(0.0002)**		(0.0001)
Education of woman		-0.003		-0.0044	
		(0.0001)**		(0.0002)**	
Wealth	-0.021	-0.0165	-0.0209	-0.0164	-0.0228
	(0.0003)**	(0.0004)**	(0.0003)**	(0.0004)**	(0.0005)**
Married	0.0607	0.0617	0.0608	0.0618	0.0608
	(0.0012)**	(0.0012)**	(0.0012)**	(0.0012)**	(0.0012)**
Catholic	-0.0027	-0.0031	-0.0027	-0.0031	-0.0027
	(0.0007)**	(0.0006)**	(0.0007)**	(0.0006)**	(0.0007)**
Constant	-0.1326	-0.1197	-0.1281	-0.1131	-0.1333
	(0.0058)**	(0.0054)**	(0.0057)**	(0.0056)**	(0.0058)**
Year fixed effects	Yes		Yes	Yes	Yes
AMC fixed effects	Yes		Yes	Yes	Yes
Observations	2,152,451	2,152,451	2,152,451	2,152,451	2,152,451
R-squared	0.050	0.051	0.050	0.051	0.050

Standard errors in parentheses are corrected for clustering at the AMC level.
* significant at 5%; ** significant at 1%
AMC stands for Minimally Comparable Area. Each observation is a woman in a given year.
(a) Coefficient and standard error multiplied by 1,000.

Table 6. Age Effects, Individual Level

(Dependent variable =1 if gives birth in year *t* (BIRTH)—Years 1980-1991)

Age range:	15-24	25-34	35-44	30-49	40-49
	[1]	[2]	[3]	[4]	[5]
Globo coverage	-0.0019	-0.0107	-0.0065		
	(0.0017)	(0.0029)**	(0.0022)**		
Yrs exposed 10-19				-0.0033	
				(0.0009)**	
Yrs exposed 20-29				-0.004	-0.0083
				(0.0006)**	(0.0011)**
Yrs exposed 30-39				-0.006	-0.0089
				(0.0006)**	(0.0008)**
Yrs exposed 40-49					-0.0019
					(0.0007)**
Controls[(a)]	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
AMC fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	2,152,451	2,152,451	2,152,451	1,169,142	609,812
R-squared	0.0511	0.0512	0.0512	0.0549	0.0636

Standard errors in parentheses are corrected for clustering at the AMC level.
* significant at 5%; ** significant at 1%
AMC stands for Minimally Comparable Area. Each observation is a woman in a given year.
(a) Controls are the same as in col. 1 of Table 5.

Table 7. Placebo and Robustness

Panel A: Current fertility and future Globo entry (aggregate level)

Dependent variable: Avg. number of live births in year t *($LIVEBIRTHS_t$)*[(a)]

	[1]	[2]
Globo coverage in t+1	-0.0162	-0.0423
	(0.0290)	(0.0282)
Controls[(b)] in t	No	Yes
AMC fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	6526	6526
R-squared	0.828	0.842

Panel B: Subsamples (individual level)

Dependent variable =1 if gives birth in year t ($BIRTH_t$)

Sample:	Women aged 45-54	Migrants[(c)]
	[3]	[4]
Globo coverage	-0.0016	
	(0.0009)	
Globo coverage in AMC of origin		-0.0053
		(0.0026)*
Controls[(d)]	Yes	Yes
AMC fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	332124	421284
R-squared	0.028	0.048

Standard errors in parentheses are corrected for clustering at the AMC level.
* significant at 5%; ** significant at 1%
(a) Sample includes AMCs that do not have Globo coverage in year *t*.
(b) Controls are the same as in col. 8 of Table 2.
(c) Sample includes women who lived in AMC different from current residence in past 10 years.
(d) Controls are the same as in col. 1 of Table 5.

Table 8. Naming Children after *Novela* Characters

Panel A: Test of means

	Obs.	*Mean of NAMESMATCH*[(a)]	*95% Conf. Interval* *Lower*	*Upper*	*Difference of means (p-value)*
Globo coverage					
Yes	319	0.329	0.277	0.381	
No	47	0.085	0.002	0.168	0.0003

Panel B: Multivariate regression

Dependent variable: *NAMESMATCH*

	OLS coeff.[(b)]		*Marginal Probit coeff.*[(b)]	
	[1]	[2]	[3]	[4]
Globo coverage	0.244	0.2461	0.244	0.2456
	(0.0566)**	(0.0549)**	(0.0566)**	(0.0567)**
Controls[(c)]	No	Yes	No	Yes
Predicted P			0.287	0.284
R-squared	0.032	0.048	0.032	0.046
No. Obs.	366	366	366	366

Notes:
(a) The variable NAMESMATCH is a dummy equal to 1 if any of the names of the three main characters of Globo *novelas* aired in 1994 appears among the top 20 names of children born that year.
(b) Standard errors in parentheses are clustered by State (UF). * significant at 5%; ** significant at 1%
(c) Controls are the same as in col. 8 of Table 2.

Table 9. Fertility and Other TV Networks

Dependent variable:	*Avg. Number of live births in AMC*				*B=1 if gives birth in year t*	
	[1]	[2]	[3]	[4]	[5]	[6]
SBT coverage	0.0239	0.005	0.0705	0.0531	-0.0023	-0.0048
	(0.0183)	(0.0179)	(0.0828)	(0.0821)	(0.0016)	(0.0038)
Controls[(a)]	No	Yes	No	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Area fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Full	Full	Not covered by Globo	Not covered by Globo	Full	Not covered by Globo
Observations	10977	10977	6526	6526	2152451	394316
R-squared	0.823	0.836	0.828	0.842	0.050	0.061

Standard errors in parentheses are corrected for clustering at the AMC level.
* significant at 5%; ** significant at 1%
AMC stands for Minimally Comparable Area and is a geographic aggregate slightly larger than a municipio.
Each observation in columns [1]-[4] is a joint AMC-Census year. In [5]-[6] it is a joint woman/year.
(a) In columns [2] and [4], controls are the same used in col. 8 of Table 2. In columns [5]-[6], controls are the same used in col. 1 of Table 5.

Appendix Table A. Summary Statistics

	Mean	Std. Dev	No. Obs.
AMC level (years 1970, 1980, 1991)			
LIVEBIRTHS	2.669	0.549	10977
Globo coverage	0.405	0.491	10977
Years Globo coverage	2.615	4.403	10977
Education of head	2.718	2.378	10977
Wealth	0.000	2.105	10977
Married	0.538	0.082	10977
Catholic	0.923	0.076	10977
Doctors & nurses per 1,000 population	0.200	0.739	10977
SBT coverage (full sample)	0.067	0.250	10977
SBT coverage (not covered by Globo)	0.011	0.104	6526
Individual level (years 1980-1991)			
BIRTH	0.100	0.300	2152451
BIRTH year before	0.100	0.300	2152451
BIRTH (sample aged 15-24)	0.114	0.317	786668
BIRTH (sample aged 25-34)	0.136	0.342	699740
BIRTH (sample aged 35-44)	0.058	0.233	485616
BIRTH (sample aged 45-54)	0.008	0.088	332124
BIRTH (sample aged 30-49)	0.077	0.267	1169142
BIRTH (sample aged 40-49)	0.052	0.222	609812
Globo coverage	0.792	0.406	2152451
Globo coverage in AMC of origin (migrants)	0.774	0.418	421284
Yrs exposed 10-19 (sample aged 30-49)	0.128	0.602	1169142
Yrs exposed 20-29 (sample aged 30-49)	2.794	3.736	1169142
Yrs exposed 30-39 (sample aged 30-49)	3.840	3.436	1169142
Yrs exposed 20-29 (sample aged 40-49)	0.168	0.683	609812
Yrs exposed 30-39 (sample aged 40-49)	3.571	3.917	609812
Yrs exposed 40-49 (sample aged 40-49)	3.002	3.242	609812
SBT coverage	0.135	0.341	2152451
Married	0.562	0.496	2152451
Education of head	5.109	4.526	2152451
Education of woman	5.595	4.442	2152451
Wealth	0.147	1.508	2152451
Age	29.485	9.336	2152451
Age squared	956.515	589.362	2152451
Stock of children	2.113	2.669	2152451
Stock of children sq.	11.591	27.934	2152451
Globo coverage*Wealth	0.240	1.301	2402681
Globo coverage*Education of head	4.312	4.625	2402681
Globo coverage*Education of woman	4.677	4.625	2402681

Appendix Table A2. Globo *Novelas* in Sample

Title	Start date	End date
rosinha do sobrado	3/8/1965	1/10/1965
o sheik de agadir	18/7/1966	17/2/1967
o rei dos ciganos	12/9/1966	20/2/1967
a sombra de rebeca	21/2/1967	23/6/1967
anastacia, a mulher sem destino	28/6/1967	16/12/1967
sangue e areia	18/12/1967	25/7/1968
a grande mentira	5/6/1968	4/7/1969
passo dos ventos	26/6/1968	1/1/1969
rosa rebelde	15/1/1969	13/10/1969
a cabana do pai tomas	7/7/1969	1/3/1970
veu de noiva	10/11/1969	29/6/1970
pigmaliao 70	2/3/1970	24/10/1970
irmaos coragem	29/6/1970	15/7/1971
a prossima atracao	26/10/1970	18/4/1971
minha doce namorada	19/4/1971	25/1/1972
o homen que deve morrer	16/7/1971	11/4/1972
o primeiro amor	24/1/1972	17/10/1972
selva de pedra	12/4/1972	23/1/1973
uma rosa com amor	18/10/1972	3/7/1973
cavalo de aço	24/1/1973	21/8/1973
o bem amado	24/1/1973	9/10/1973
carinhoso	4/7/1973	22/1/1974
o semi deus	22/8/1973	7/5/1974
super manoela	21/1/1974	2/7/1974
fogo sobre a terra	8/5/1974	4/1/1975
corrida do ouro	3/7/1974	25/1/1975
escalada	6/1/1975	26/8/1975
cuca legal	27/1/1975	13/6/1975
gabriela	14/4/1975	24/10/1975
bravo	16/6/1975	31/1/1976
pecado capital	24/11/1975	5/6/1976
anjo mau	2/2/1976	24/8/1976
o casarao	7/6/1976	11/12/1976
estupido cupido	25/8/1976	28/2/1977
escrava isaura	11/10/1976	5/2/1977
duas vidas	13/12/1976	13/6/1977
locomotiva	1/3/1977	12/9/1977
espelho magico	14/6/1977	5/12/1977
sem lenço sem documento	13/9/1977	4/3/1978
o astro	6/12/1977	8/7/1978
te contei?	6/3/1978	2/9/1978
dancin' days	10/7/1978	27/1/1979
pecado rasgado	4/9/1978	17/3/1979
pai heroi	29/1/1979	18/8/1979
final feliz	29/11/1982	4/6/1983
louco amor	11/4/1983	21/10/1983
guerra dos sexos	6/6/1983	7/1/1984
champagne	24/10/1983	5/5/1984
transas caretas	9/1/1984	21/7/1984
partido alto	7/5/1984	24/11/1984
vereda tropical	23/7/1984	2/2/1985
corpo a corpo	26/11/1984	21/6/1985
um sonho a mais	4/2/1985	2/8/1985
roque santeiro	24/6/1985	22/2/1986
ti ti ti	5/8/1985	8/3/1986
cambalacho	10/3/1986	4/10/1986
roda de fogo	25/8/1986	21/3/1987
hipertensao	6/10/1986	18/4/1987
o outro	23/3/1987	10/10/1987
brega e chique	20/4/1987	7/11/1987
mandala	12/10/1987	14/5/1988
sassaricando	9/11/1987	11/6/1988
vale tudo	16/5/1988	6/1/1989
bebe a bordo	13/6/1988	11/2/1989
o salvador da patria	9/1/1989	12/8/1989
que rei sou eu	13/2/1989	16/9/1989
tieta	14/8/1989	31/3/1990
top model	18/9/1989	5/5/1990
rainha da sucata	2/4/1990	26/10/1990
mico preto	7/5/1990	1/12/1990
meu bem meu mal	29/10/1990	18/5/1991
lua cheia de amor	3/12/1990	13/7/1991
o dono do mundo	20/5/1991	4/1/1992
vamp	15/7/1991	8/2/1992
pedra sobre pedra	6/1/1992	31/7/1992
perigosas peruas	10/2/1992	29/8/1992
de corpo e alma	3/8/1992	6/3/1993
deus nos acuda	31/8/1992	27/3/1993
renascer	8/3/1993	13/11/1993
o mapa da mina	29/3/1993	4/9/1993
olho no olho	6/9/1993	9/4/1994
fera ferida	15/12/1993	16/7/1994
a viajem	11/4/1994	22/10/1994
patria minha	18/7/1994	10/3/1995
quatro por quatro	24/10/1994	22/7/1995
a proxima vitima	13/3/1995	4/11/1995
cara & coroa	24/7/1995	30/3/1996
explode coraçao	6/12/1995	4/5/1996

Table A.2, continued

Title	Start date	End date	Title	Start date	End date
feijao maravilha	19/3/1979	4/8/1979	vira lata	1/4/1996	28/9/1996
malu mulher	24/5/1979	22/12/1980	o rei do gado	17/6/1996	15/2/1997
marron glace	6/8/1979	1/3/1980	salsa e merengue	30/9/1996	3/5/1997
os gigantes	20/8/1979	2/2/1980	a indomanda	17/2/1997	11/10/1997
agua viva	4/2/1980	9/8/1980	zaza	5/5/1997	10/1/1998
chega mais	3/3/1980	6/9/1980	por amor	13/10/1997	23/5/1998
coraçao alado	11/8/1980	14/3/1981	corpo dourado	12/1/1998	22/8/1998
plumas e paetes	8/9/1980	25/5/1981	torre de babel	25/5/1998	16/1/1999
baila comigo	16/3/1981	26/9/1981	meu bem querer	24/8/1998	20/3/1999
o amor è nosso	27/4/1981	24/10/1981	suave veneno	18/1/1999	18/9/1999
brilhante	28/9/1981	27/3/1982	andando nas nuvens	22/3/1999	6/12/1999
jogo da vida	26/10/1981	8/5/1982	terra nostra	20/9/1999	3/6/2000
setimo sentido	29/3/1982	8/10/1982	vila madalena	8/11/1999	6/5/2000
elas por elas	10/5/1982	27/11/1982			
sol de verao	11/10/1982	19/3/1983			

Appendix Table A3. Audience Share of Different TV Networks in Brazil
(Data refer to prime time (h. 18-24) and are measured in percentage points)

	Globo	SBT	Record	Bandeirantes	Other
1975	92	--	3	3	2
1980	87	6	2	2	3
1985	83	11	2	3	3
1990	79	14	2	4	1
1995	72	15	2	4	7
1996	65	14	4	6	11
1997	58	20	6	6	10
1998	61	20	9	4	6
1999	56	24	9	5	5
2000	58	21	7	4	9

Source: Brittos, Globo and Ibope.