Exposure to foreign media and changes in cultural traits: Evidence from naming patterns in France *

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Abstract

Free trade in audio-visual services has faced opposition on the grounds that foreign media undermine domestic culture, and ultimately, global diversity. We assess the media-culture link using name frequencies as a measure of tastes. Using a 47-year panel of French birth registries, we first show that names appearing on television shows, movies, or in songs are about five times more popular than other names. Most, but not all, of this relationship arises from endogeneity: song and script writers, as well as performers and their parents, select names that would be popular anyway. Using name attributes, fixed effects, and lagged popularity as controls, our regression results suggest that media affect choices by informing parents of unfamiliar names.

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Keywords: Endogenous Tastes, Cultural transmission, Television, Cinema, Popular Music

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"Nearly every country in the world is grappling with the question of how to maintain its cultural identity at a time when 'global culture' is washing over the earth."
Sheila Copps, 1997, as Minister of Canadian Heritage

1 Introduction

Following the GATT's success in reducing trade barriers on industrial goods, emphasis in multilateral negotiations has shifted to areas, like agriculture and services, where future progress faces severe political obstacles. One of the most contentious issues relates to liberalization of trade in cultural goods and services. On the one hand, countries such as the United States would like to see television programs and films subjected to the same requirements for national treatment and non-discrimination as standard commodities. Opposing this, countries such as France and Canada have advocated a "cultural exception." For example, prior to the signing of the Uruguay Round in 1994, France insisted that the WTO should not apply its trade rules to audio-visual services.[1] France also insisted that cultural diversity be included as one of the fundamental rights in the proposed EU constitution, together with the explicit authorization of subsidies and protection schemes for cultural industries. Canada seeks a "general exemption for culture" in their bilateral trade agreements and in the proposed Free Trade Agreement of the Americas.[2] Article 8 of the United Nations *Universal Declaration on Cultural Diversity* appears to support the Franco-Canadian view: "cultural goods and services which, as vectors of identity, values and meaning, must not be treated as mere commodities or consumer goods."[3]

Cultural exceptions might be dismissed as just another form of protectionism. However, as pointed out by Mas-Colell (1999), cultural goods seem to have some distinguishing attributes. Unlike typical goods, individuals not only know what they prefer, they also have preferences over the preferences of others. Bisin and Verdier (2001) emphasize that parents exert effort to pass their own cultural traits on to their children. Three recent papers present formal models in which the standard presumption for free trade may not apply for cultural goods. Francois and van Ypersele (2002) show that losses from trade can occur in a model where the cultural good is characterized by fixed costs and heterogenous valuations. Bala and Van Long (2005) model the evolution of preferences using replicator dynamics and show that a large country's preferences can extinguish the preferences of its smaller trading partner. Janeba (2004) follows Akerlof and Kranton (2000) in modeling cultural identity in a way that resembles a network externality. Under certain conditions, opening up to trade can lower welfare. Rauch and Trindade (2005) extend the consumption externalities approach of Janeba to consider innovation in cultural goods. They argue that "by preserving cultural diversity, protection of cultural goods production can generate dynamic welfare gains that offset the static welfare losses it causes." This emerging theoretical literature does not justify cultural protectionism but it does motivate the need for closer scrutiny of the argument and its underlying empirical assumptions.

The notion that foreign cultural goods transform domestic tastes, thereby undermining cultural diversity, seems to be based entirely on casual observation. This paper brings statis-

[1] `www.isanet.org/noarchive/freedman.html`

[2] `www.dfait-maeci.gc.ca/tna-nac/FTAA/faq-en.asp`

[3] `http://unesdoc.unesco.org/images/0012/001271/127160m.pdf` page 12

tical evidence to the culture and trade debate by examining whether media exposure changes preferences over names given to babies born in France. We estimate whether the popularity of a first name increases when it appears on one of three main media—movies, television, and popular radio—as either a performer or a character. We establish that name popularity evolves over time according to fashion processes suggested by the work of sociologists such as Lieberson (2000). Once these are taken into account in an econometric model of name frequency, the magnitude of the media effect is sharply reduced. Nevertheless, the media effect remains statistically significant, especially for foreign names.

Names have some useful advantages as measures of cultural traits. First, they are consistently and carefully measured (being recorded for virtually everyone by birth registries) over time. Other traits, such as clothing styles or religious beliefs, tend to be difficult to quantify or poorly measured. Second, names are freely available and firms have no profit motive to influence their popularity. This contrasts with, for example, toys, where makers consciously attempt to raise demand via pricing and advertising strategies. Most importantly, there is evidence that names given to children are expressions of cultural identity. For example, Fryer and Levitt (2004) observe that the rapid growth in the use of distinctively Black names might be attributable to a desire by Blacks to "accentuate and affirm Black culture." They also invoke the Akerlof and Kranton (2000) model where following identity-appropriate norms of behaviour raises utility.[4]

Our paper proceeds as follows. The next section describes the name data and French regulation of name choice. Section 3 proposes three mechanisms through which media exposure could influence naming decisions. We refer to them as the *introduction*, *association*, and *coordination* effects. We also consider non-causal sources of media-naming correlations. Section 4 scrutinizes some of the anecdotes of media exposure that are thought to have influenced naming patterns. Section 5 proposes a regression-based approach and presents a set of control variables to account for non-media influences on name popularity. Our results provide support for the introduction effect: media-exposed names that are likely to be less familiar to parents have a greater impact on name frequencies. Section 6 considers the implications of our results for the merits of a "cultural exception" for trade in audio-visual services.

2 French name data and regulations

The data on name frequencies were purchased from the French national statistical agency, INSEE. Based on birth registries, the data set provides the number of babies born in France by name, sex, and year from 1900 to 2002. The panel includes several thousand names each year—every name that was given at least three times. INSEE codes names given to two or fewer children as "rare."[5]

The variable we wish to explain is n_{kt}, the number of children of a given sex, who receive name k in year t. Since the subscript k denotes a name-sex combination, "Camille" would be considered a different name when given to a boy from when it is given to a girl. Furthermore, the data set defines names as distinct spellings (not sounds), meaning that "Camille" and

[4]The choice a distinctively Black name appears to be costly: Bertrand and Mullainathan (2004) find that employers are less likely to respond positively to (fake) job applicants whose resumes use Black names. Figlio (2005) finds that teachers are less likely to refer Black-named students to a gifted program.

[5]See the data appendix for more detail.

"Camylle" are treated as different names.[6]

The original regulation governing names in France dates back to 1803.[7] Napoleonic legislation permitted names drawn from the following set: Saints in French calendars, historical figures from ancient Greece and Rome, and Biblical names. The civil registrars charged with enforcing the law were given the discretion to allow some regional and foreign names as well as some spelling variations. They could refuse to register a name in which case parents would have to go to court to overturn the decision. A ministerial directive in 1966 urged registries to show greater tolerance for new names, including foreign names. Using "prudence," the officials might even accept some diminutives (Ginette for Geneviève), contractions (Marianne for Marie-Anne), and spelling variations (Magdeleine for Madeleine). Legislation in 1993 dramatically shifted the rules. Now parents can choose any name and register it immediately. If the civil registrars deem a chosen name to be contrary to the interest of the child, they can challenge it in court.

Figure 1 shows the decline of traditional names and the rise of name diversity over the last century in France. To define the set of traditional names we made use of the Napoleonic legislation, which explicitly authorized the typical French spellings of the names of Saints from official calendars. Parents are gradually moving away from the both Saint names and from typical orthographies. In 1900 only 14% of children did not receive Saint names (see data appendix). The non-Saint share has since risen substantially, reaching 59% in the most recent data. Deviant spellings are also becoming more common.[8] Third, the share of "rare" names (those given to fewer than three children in a year) has risen from one to six percent.

Figure 2 shows the trends in media that occurred during the same period as the decline in traditional names. First, TV ownership diffuses throughout the population starting in the 1950s. The figure also depicts the erratic, but mainly decreasing, movement in the domestic share of music, movies, and TV shows in the French market. For movies and TV, the nationality of a show is provided on the websites we consulted. For music, we determined the French share based on the language of the title of the song and information on the national origins of the performers.

Figure 2 also depicts the 1986 introduction of quotas for audio-visual services. French law requires that 60% of the movies and shows on TV be of European origin. Of those, 40% of free-channel programming should be in French. In addition, the law imposes compulsory investment in the production of European and French-language content. With respect to radio, at least 40% of the songs played should be in French.[9]

The trends in naming practice and media exposure do not warrant any strong conclusions. Saints started to decline before the introduction of TV but it seems possible that TV hastened the decline. On the other hand, other factors could contribute to these trends such as declining church attendance, rising tourism, non-Catholic immigration, and foreign-language education. Since identification from aggregate time-series data is doomed to be unconvincing,

[6] In our empirics, we investigate the growth and the possible influence of the media on deviant spellings.

[7] See `www.babyfrance.com/prenoms/legislation.htm` for more detail (in French).

[8] We define a spelling as deviant if, over the course of the century, it is not the most popular orthography for a given sound.

[9] See `http://www.csa.fr/infos/controle/controle_intro.php` for more detail on the French quota system. Other countries employ similar quota systems. South Korea requires movie theatres to show locally-produced firms at least 40% of the year—until the signing of the Korea-US FTA, which lowers the requirement to 20%. Canadian content rules require that 60% of broadcast TV programming and 35% of broadcast radio be of Canadian origin.

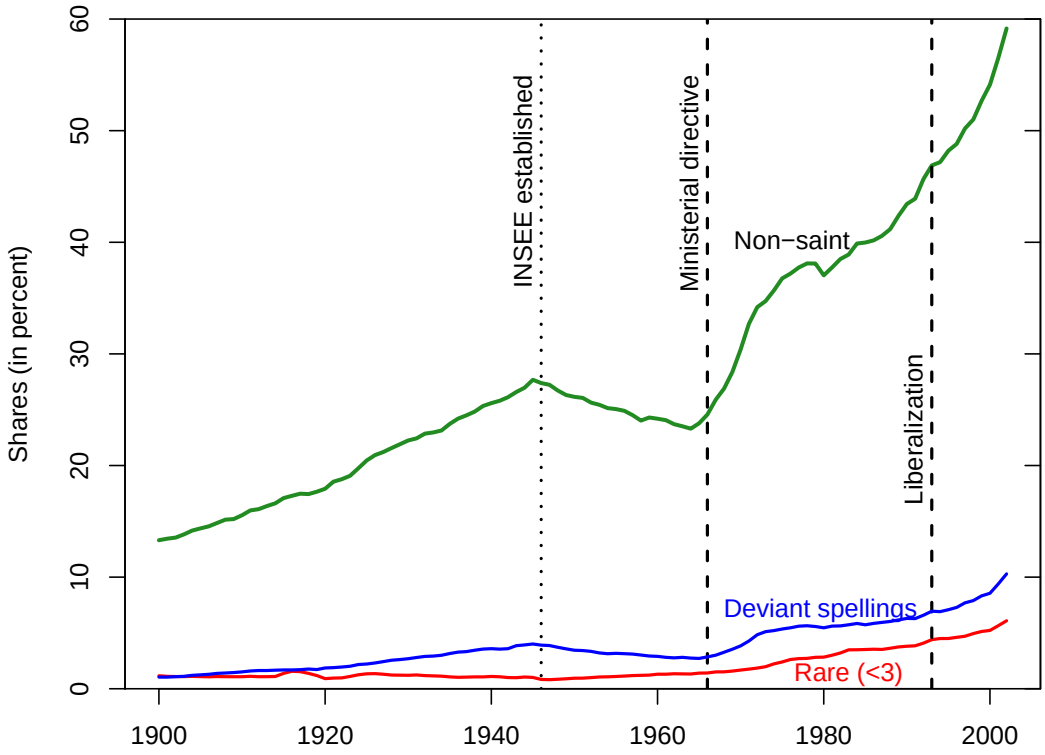

Figure 1: The rise of non-traditional names

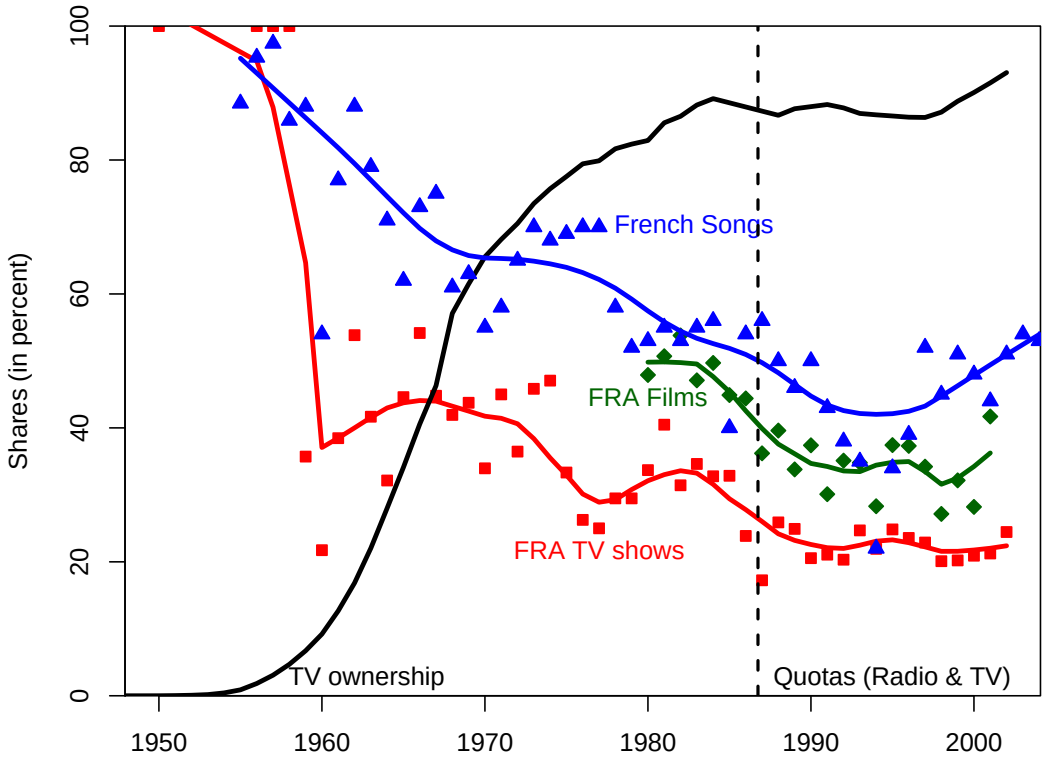

Figure 2: Domestic shares for three media in France, ownership shares for televisions

our approach exploits name-level variation in media exposure.

3 Mechanisms for media influence

This section considers some possible mechanisms behind a statistical relationship between name choices and media exposure. We are most interested in channels through which the appearance of a name in a movie, TV show, or song might *cause* an increase in the popularity of the name. However, it is also important to recognize that media names are endogenous. This could lead to spurious positive correlations.

Parents choose a name from a choice set of known, permissable names. This immediately suggests two broad categories for media influence. First, the *introduction effect* occurs when the media inform parents of names that had not previously entered their choice sets. Second, media exposure can affect the relative attractiveness of names within the choice set. Within the second category, we see two distinct mechanisms. As noted by Lieberson (2000), parents may form a mental linkage between attributes of performers or fictional characters and their names. For example, the television show *Thierry la Fronde*, shown in France from 1963–1966, depicted the adventures of a knight battling the English occupiers of France. Viewers might therefore associate the name "Thierry" with appealing traits such as bravery, strength, and national pride. Conversely, names of villains may come to be viewed negatively. We refer to this mechanism of media influence—which can be positive or negative—as the *association effect*. A third mechanism arises when we consider the interdependence of parental naming decisions. The attractiveness of a name to a given parent could depend on the share of other parents selecting that name. This interdependence could easily give rise to multiple equilibria. Media exposure for a name could then act as a focal point, leading parents to coordinate on choosing—or even avoiding—the exposed names. We refer to this as the *coordination effect*.

Further insight on the operation of the introduction, association, and coordination effects can be derived from an algebraic equation for name popularity. The expected number of children given name k in year t, $\mathrm{E}[n_{kt}]$, is the product of three factors: the probability that parents i prefer name k over the other names in their choice set, the probability that name k is in parent i's choice set, and the number of children born in year t. Denoting utility of a name with U and the choice set with $\mathcal{C}$, we can express this as

$$\mathrm{E}[n_{kt}] = \left(\sum_i \Pr(U_{kit} > U_{jit} \mid k, j \in \mathcal{C}_{it}) \times \Pr(k \in \mathcal{C}_{it}) \right) \times n_t.$$

The association and coordination effects for name k enter U_{kit} in the first factor. The introduction of new names to the choice set appears in the second factor.

While the influences of association and coordination are difficult to specify *a priori*, we can derive a simple testable prediction for the introduction effect. The probability of name k being in the choice set for i is the sum of the probability that i has learned of k via prior social interactions and the probability that i learned of k via the media. We model the first term as the outcome of a Bernoulli process. Let $0 \leq \gamma \leq 1$ be the probability that parents i know socially any given individual in France. If there are S_{kt} individuals with name k alive at time t, then the probability that i does *not* know anyone named k is just $(1-\gamma)^{S_{kt}}$. This probability is decreasing in the intensity of social interactions, γ, and the stock of people named k. For someone who does not personally know anybody name k socially, the name

can still be learned from the media if the name is currently in use in one of the media we consider. Let $M_{kt} = 1$ indicate current media exposure and let μ measure the probability of an individual observing name k conditional on media exposure. Combining these ideas and notation,

$$\Pr(k \in \mathcal{C}_{it}) = 1 - (1-\gamma)^{S_{kt}} + (1-\gamma)^{S_{kt}}\mu M_{kt} = 1 - (1-\gamma)^{S_{kt}} \times (1 - \mu M_{kt}). \quad (1)$$

We can therefore define the media exposure effect on the choice set as

$$\Pr(k \in \mathcal{C}_{it} \mid M_{kt} = 1) - \Pr(k \in \mathcal{C}_{it} \mid M_{kt} = 0) = \mu(1-\gamma)^{S_{kt}}. \quad (2)$$

This expression carries two implications. First, the media effect is stronger for names that have not been frequently chosen in the past (i.e. those with low S_{kt}). We test this implication. Second, if social isolation were to increase, represented here by a decrease in γ, the media would become more important. Thus media and social interactions can be thought of as substitutes.

The association mechanism would be testable if one could classify *a priori* instances of media exposure as having good or bad associations. For example, if we knew who the heros and villains were in a movie, we might expect the former to have better associations than the latter. The number of arbitrary judgements required to implement this approach make it unappealing. However, it seems reasonable to believe that while roles vary in their associations, the "stars" (actors and singers) are likely to be viewed positively. Thus the association mechanism, if important, ought to generate larger media effects for actors and singers than for roles and titles.

We look for evidence of coordination effects by estimating whether media exposure of an unusually spelled name affects its use relative to standard spelling of the name. The idea is that there are multiple equilibria in spellings because standard orthographies arise from social coordination on how to map sounds to letters. Thus, French parents name children Marc and Catherine more often than Mark and Katherine, the spellings preferred in English-speaking countries. Media usage of a deviant spelling makes that spelling variant more likely to be a new focal point for coordination than other possible spellings of the same sound (such as Marck or Caterine).

Positive correlations between media exposure and contemporaneous name popularity could also arise for non-causal reasons. Lieberson (2000) points out that the writers creating character names and the actors adopting stage names choose names based in large part on their perceived associations. This implies that associations in the public mind can determine media name exposure, rather than vice-versa. Put more generally, media name exposure is endogenous and responds to shocks that affect popularity of names with parents, leading to inconsistent OLS estimates of the causal effect of media exposure.

The endogeneity concerns can be mitigated by controlling for characteristics of names that simultaneously determine their attractiveness to parents and writers. We employ a number of such variables and also employ methods to deal with other, unobserved, determinants. While we cannot rule out the influence of contemporaneous shocks affecting writers and parents, we think that the simultaneity issue is much less of a concern with respect to actors than roles. This is because actors and singers generally retain the same stage names throughout their careers and many use their birth names. Thus, if one can control for past popularity of a name, the current appearance in the media of an actor with that name should have a causal

effect on parent choices. The simultaneity bias therefore predicts that role names should have larger estimated coefficients than actor names (after controlling for name-specific fixed effects).

How might foreign media differ from domestic media? First, foreign media are more likely to introduce unfamiliar names. While both domestic and foreign screen writers can invent or re-invent new character names, the actors in domestic productions are much more likely to have traditional French names. Second, foreign names may be difficult to pronounce or may otherwise conflict with domestic naming conventions. Our empirical model will introduce some controls designed to capture past usage of a name and current naming conventions. Third, if authors choose names for their characters based on current popularity, they should do so based on the frequency of a name in their domestic market. With foreign media, therefore, the simultaneity bias between writer and parent name choices is expected to be of minimal importance.

4 Media-name anecdotes

Casual empiricism often attributes name popularity to the influence of mass media. Here we consider a number of anecdotes, many of them recounted to us by multiple sources, that sustain the conventional wisdom that media matter a great deal for names. Many French people attribute the popularity of the name "Thierry" to the popularity of the show *Thierry la Fronde* mentioned above. As shown in Figure 3, the name peaked in popularity while the show was being broadcast (on the sole French station at the time, ORTF). The figure makes it clear that Thierry became a popular name well before the TV show was broadcast. Moreover, it points to the endogeneity of actor and singer names. The tick marks on the bottom of the figure show years in which we observe a Thierry performing in one of the three media. Given the popularity of Thierry as a baby name in the 1960s, it is not surprising that actors with that name become common in the 1990s. This type of feedback occurs with long lags (except when actors adopt "stage names"). On the other hand, there can be immediate feedback from a name being selected by current parents for their children to the name being seen as appealing for script-writers.

Movie stars may enhance the popularity of a name by associating it with good looks or other desired traits. At first glance, there seem to be many supporting examples in France. Brigitte was the number one name in 1959 (ending Marie's reign of at least 58 years), three years after the release of *And God Created Woman* starring Brigitte Bardot. Catherine became the number one name in the same year, 1960, as actress Catherine Deneuve appeared in her first leading role (*Les Portes Claquent*). Kevin was the number one name for French boys in 1990, the same year as Kevin Costner directed and starred in the Oscar-winning *Dances With Wolves*.

The problem with all these examples is that the names in question were already quite popular in France *before* the actors in question had released any movies. Lieberson (2000, Chapter 8) discusses this phenomenon, which he calls "riding the wave," using a variety of examples from the United States. French sociologists Besnard and Desplanques (2004) refer to the phenomenon as the "illusions of coincidences," although they do not hesitate to blame American TV shows for spreading undesirable naming practices (pages 46–49).

Figure 4 considers the influence of an American television show that was very popular in

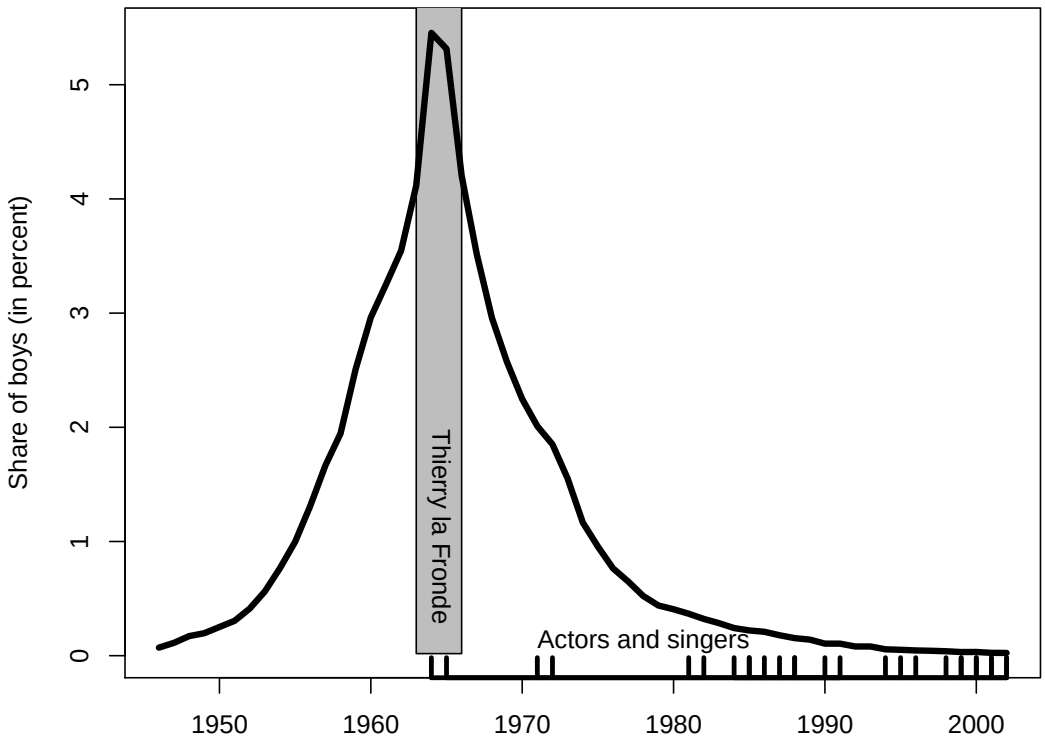

Figure 3: The rise and fall of "Thierry"

France, *Beverly Hills 90210*. This show ran in the US from 1990–2000. Of the four main characters, Brandon, Brenda, and Dylan rose in popularity immediately after the show was released in France in 1993. In contrast, the frequency of Kelly hardly changed. Kelly had already grown before—part of her rise seems attributable to the release of an earlier show, *Santa Barbara*, in 1985. Names such as Brandon or Dylan sound very American to French ears and have been typical examples presented by people arguing that the influence of foreign media on French culture was becoming excessive.[10] Indeed Dylan, climbed up to 6th position in 1996.

We find these illustrations of the possibility of media-enhanced name diffusion intriguing but hardly convincing. Even if a media figure were found that appeared with exactly the right timing to explain the surge in some name's popularity, this could arise because of non-random selection, or "data-mining."

5 Regression analysis

In order to move away from cases selected *ex post* based on stories of name growth, we build a data set of performer and character names appearing on the most successful movies, TV shows, and popular songs in France. We then regress the popularity of name k in year t on

[10]These names were rising just after American-sounding "Kevin" became the number one name in France. Although French people tend to view these names as American, Dylan, Kelly, and Kevin are actually traditional Welsh and Irish names.

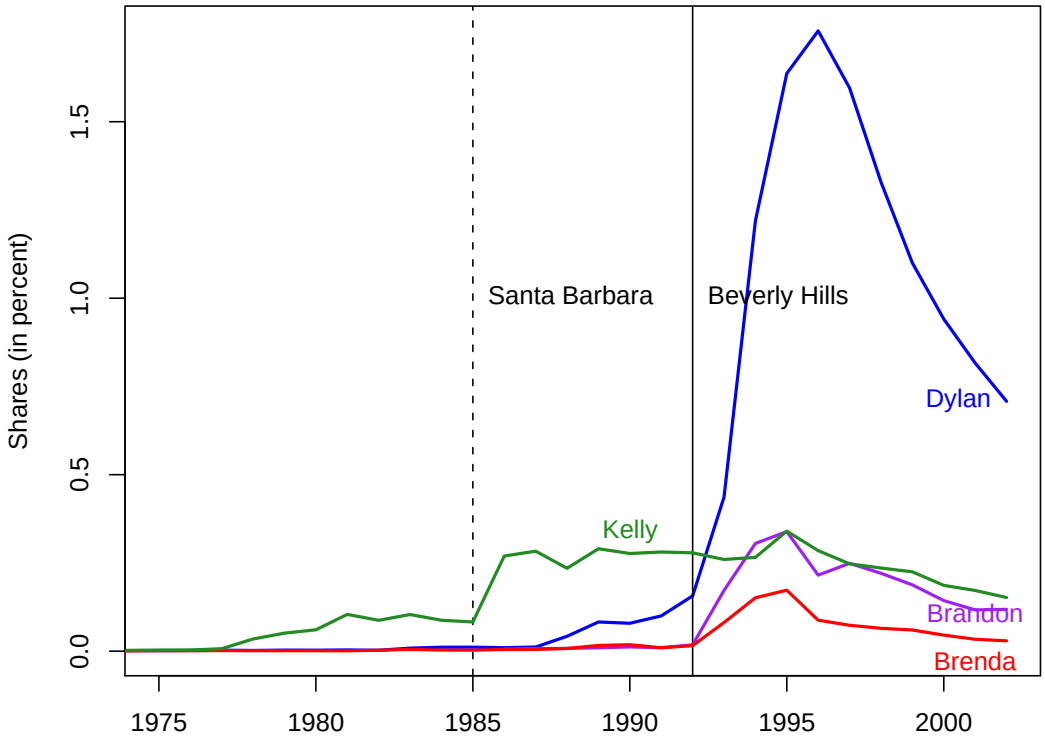

Figure 4: The rise names originating in the TV show "Beverly Hills, 90210"

the media exposure variables and a set of controls to capture non-media influences on name choice.

5.1 Specification

Theory provides little guidance on specification. However, we know that there are some observed characteristics of names that could simultaneously influence the names chosen by parents and the names chosen by performers and writers. We introduce these controls in three sets and show how they affect the estimated impact of media. Naturally, there should also be an error term, denoted ϵ_{kt}, and we use different econometric methods to account for unobserved heterogeneity in the attractiveness of names to parents. Because the distribution of name-frequency is highly skewed, our specification uses the *logged* number of babies given each name as the dependent variable:

$$\ln n_{kt} = \mu \mathbf{Media}_{kt} + \mathbf{Controls}_{kt} + \epsilon_{kt}, \tag{3}$$

where n_{kt} is the number of births of name k in year t, and $\mathbf{Media}_{kt}$ comprises several time-varying indicators of names in 180 major movies, 927 broadcast TV shows, and 4845 popular songs.[11]We consider the names of the actors and roles for the top three roles in each show or movie. Thus, in principal there could be up to $6 \times 180 = 1080$ names in movies and

[11]In unreported regressions we allowed media exposure of name k to affect the number of children named k' for names pronounced the same in French. The results were similar but with generally lower media effects.

Table 1: Definition of variables

variable	definition
n_{kt}	number of year t births given name k
male_k	$= 1$ if the n_{kt} births were boys
Saint_k	$= 1$ if name k is the French spelling of a Saint name
Regime_t	indicators for 1955–1965, 1966–1992, 1993–2002 regulations
Deviant_k	$= 1$ if name k is not the most common spelling
S_{kt}	cumulative number given name k before year t $\left(= \sum_{\tau=0}^{t-1} n_{k\tau}\right)$
age_{kt}	expected "age" of name k in year t (see text)
L_k	length (# of letters) of name k
n_{kt}^E	# of same-ending (e.g. "ine") names excl. name k
n_{kt}^R	# of same-root (e.g. "Catherine") names excl. name k

$6 \times 927 = 5562$ names on TV. In practice, names often make repeat appearances and a few shows had less than three characters. Movies contributed 581 distinct names while TV shows contributed 1802. The movie exposure dummies equal one in the year the movie was released in France. The "TV Show" dummies turn on for the estimated duration of the show (see appendix). The song dummies equal one in a given year if the name appears as a word in a Top 100 song title that year or as part of the performer's name. Performers contributed 866 distinct names, but of course there are many repeat appearances. Performer names appear 26–91 times per year (the performers of the other songs did not have a recognizable name) for a total of 3080 name appearances. Pop song titles contributed a total of 485 distinct names. There were 1022 name appearances in titles since 1955, ranging from 4 to 36 per year.

The controls variables are specified in the following equation, with definitions of variables provided in Table 1:

$$\mathbf{Controls}_{kt} \equiv \underbrace{a(t) + \beta_0 \text{male}_k}_{\text{Base}} + \underbrace{\theta[\text{Saint}_k \times \text{Regime}_t] + \delta[\text{Deviant}_k \times \text{Regime}_t]}_{\text{Rules}}$$
$$+ \underbrace{\beta_1 \ln(1 + S_{kt}) + \beta_2 \text{age}_{kt} + \beta_3 \text{age}_{kt}^2 + \beta_4 \mid L_k - \bar{L}_{t-1} \mid + \beta_5 \ln(1 + n_{k,t-1}^E) + \beta_6 \ln(1 + n_{k,t-1}^R)}_{\text{Attributes}}$$

All estimated specifications include the "base" controls. The $a(t)$ function captures aggregate influences on the mean frequency of names, such as n_t, the total number of children born each year. In most specifications $a(t)$ is estimated with year dummies. The variable male_k (which equals one if the observation is for a name given to a boy) controls for differences between the sexes in expected log frequency.[12]

Our framework for thinking about name choices comprises two separate sets of controls: "rules," reflecting the laws governing name choice, and "attributes," reflecting determinants of name popularity drawn mainly from the work of Lieberson (2000). Rules about acceptable names for French children were quite strict at the beginning of our sample period, before they were relaxed in 1966, and almost totally removed in 1993. We therefore define three

[12]We began by estimating the equations for boys and girls separately but this doubles the number of coefficients to report and comment upon and did not appear to reveal interesting differences in the name selection process.

Regime_t dummy variables to account for those changes over time, and interact ruling regimes with two of the main features of this regulation: whether the name is a Saint's name and whether the name is a deviant spelling. We have argued that Saint names are a good way to identify traditional French names. Such "domestic" names were protected by regulation prior to 1993. To the extent that regulations were binding, we expect declines in the coefficients for the saint-law interactions after 1966 and particularly after 1993. We also expect rises in the deviant spellings following deregulation.

The second set of determinants of name popularity relates to the familiarity and attractiveness of that name as seen by parents (not regulators). As described in Section 3, parental awareness of name k is likely to be increasing (at a decreasing rate) in the stock of individuals given that name in the past. We calculate S_{kt} by summing over all births from 1900 to the year t.[13] The awareness effect implies that names given in the past will remain in use, and hence $\hat{\beta}_1 > 0$.

The stocks indicate the overall popularity of the name prior to the year of birth but they do not say *when* the name was popular. The notion of fashion involves a taste for things that are "current." By selecting against things that were popular in the past, parents signal that they are not "old-fashioned." We formalize this by assuming that the parents wish to avoid names that are statistically linked to age. The probability that a child named k was born in any year t is given by $\text{Prob}(t \mid k) = [\text{Prob}(k \mid t) \cdot \text{Prob}(t)]/[\text{Prob}(k)] = n_{kt}/n_k$. Let $\hat{b}_{kt}$ denote the expected birth-year of a baby born with name k based on the distribution of name-frequencies observed up until time t.

$$\hat{b}_{kt} = \sum_{\tau=0}^{t} \tau \cdot \text{Prob}(\tau \mid k).$$

The age signaled by a name k at the end of year t is $\text{age}_{kt} = t - \hat{b}_{kt} + .5$, the difference between the current year and the estimated birth year, plus 0.5 if births are distributed evenly over the year. For example in 1962, the expected birth year of someone named Thierry would be 1958. The "age" signalled by the name would be 4 years. Four decades later, naming a baby "Thierry" signals an age of 37. According to our measure, names that signal "youth" in 2002 include "Neo" (age = 1.1, first appeared in 2000) and "Elijah" (age = 2.5, first appeared in 1995).[14] We expect "older" names to be avoided, and hence $\hat{\beta}_2 < 0$. However, as a name becomes very old, it seems possible that it could return to popularity. This sometimes happens in other areas of fashion.[15] To allow for this possibility, for which there is some anecdotal support, we include age squared and expect a positive coefficient ($\hat{\beta}_3 > 0$).

The third aspect of naming is a desire to conform with existing fashions. We consider three name attributes emphasized by the French (Besnard and Desplanques, 2004) and American (Lieberson, 2000) sociologists who have studied names: length, endings, and roots. Figures 5, 6, and 7 illustrate the variation in the popularity of long names, common female name endings,

[13] We thereby ignore (due to lack of data) deaths and the truncation induced by the start year. Our regressions start in 1955 which should mitigate the truncation problem. Furthermore, even dead individuals could influence current names.

[14] These names were not chosen at random. Neo was a character in the 1999 release *The Matrix* and Elijah Woods played Frodo in December 2001's *Fellowship of the Ring*. Neither name was very popular in France, being chosen for only 91 and 42 boys in 2002, respectively.

[15] See Lieberson's (2000) discussion of the dimensions of women's dresses.

and the popularity of names derived from "Catherine." These figures give *prima facie* support for the notion of waves of fashionability for certain aspects of names.

Recently the top names in France have tended to have a small number of letters (Lea and Emma for girls, Lucas and Theo for boys). As shown in Figure 5, this has not always been the case. At the beginning of the century short names like "Jean" and "Marie" were common. After 1925, there was a sustained period of name-lengthening for both sexes. Partly this occurred because of the rise in use of compound names (e.g. Jean-Jacques).[16] The figure shows that even when removing hyphenated names, average name length (weighted by number of children given each name) rose and fell during the century. We hypothesize that parents avoid names with lengths, L_k, that deviate from the weighted mean length the previous year, $\bar{L}_{t-1}$. Thus we expect $\hat{\beta}_4 < 0$.

The attractiveness of a name to parents also seems to depend on the sound of its ending. Figure 6 shows variation in popularity of girl names with the standard French "feminized" endings: "ette," "elle," "ie," "ine," and "a." Collectively these endings have accounted for 44%-67% of all girls. In 2002, 53% of girls received one of the five. There have been great swings in their relative popularity. The most notable patterns are the rise and fall of "ette" in the first half of the century and the recent rise in "a," displacing all the other endings. It is interesting to note that "ette" is typically French whereas the "a" ending is common in most Latin-based languages and has also risen steadily since 1900 in England and the United States (Lieberson, 2000, 99–101). We coded 574 different name endings (see Appendix for details) used in boy and girl names. Let n^E_{kt} denote the number of children given names with the same ending as name k—other than name k itself. We lag by one year, add one, and take logs to create our explanatory variable. The desire to conform to conventional practices in name endings should lead to $\hat{\beta}_5 > 0$.

In 2002, girls received 4786 different names, *excluding* the 6% of girls given "rare" names. An additional 6378 girl names were used in prior years but had become "rare" in 2002 (The corresponding figures for boys are 4209 and 5178). Most names (78% for girls and 71% for boys) are variants of roots (classified by Jouniaux, 2001) that generated at least 2 names. The root Catherine contributed 119 variants, with as many as 56 in use at one time. Figure 7 plots the frequency of the root and its three most popular variants in 2002 (Cathy, Katia, and Kathleen). The dashed black line shows the collective popularity of the root and all its variants. Interestingly, two variants end up slightly more popular than the root in 2002.

To test whether the popularity of the root contributes to the popularity of a name, we sum up the numbers of all names that share the same root as name k—other than k itself—and call it n^R_{kt}. While our initial intent was to capture common taste for all variants of a name, and hence expected $\hat{\beta}_6 > 0$, the case of "Catherine" suggests a possible pattern of displacement of incumbent names by "knock-off" entrants.

Our set of controls captures the main variables cited by sociologists who have studied naming as well as the particular influences of French regulation. Nevertheless, it would be naive to imagine that any set of measured controls would fully capture the heterogeneity in the appeal names have for parents. This is important due to the endogeneity of media names. Hence we use two main econometric methods to account for this heterogeneity. The first is to estimate our model with name-specific fixed effects. The second is to use five lags of name frequency. We refer to the specifications that used fixed effects and autoregressive terms as

[16]The rise itself may be overstated. Prior to 1945, Besnard and Desplanques (2004) report that INSEE was not very accurate in keeping track of compound names, and many "Jean-XXX" were recorded as just "Jean."

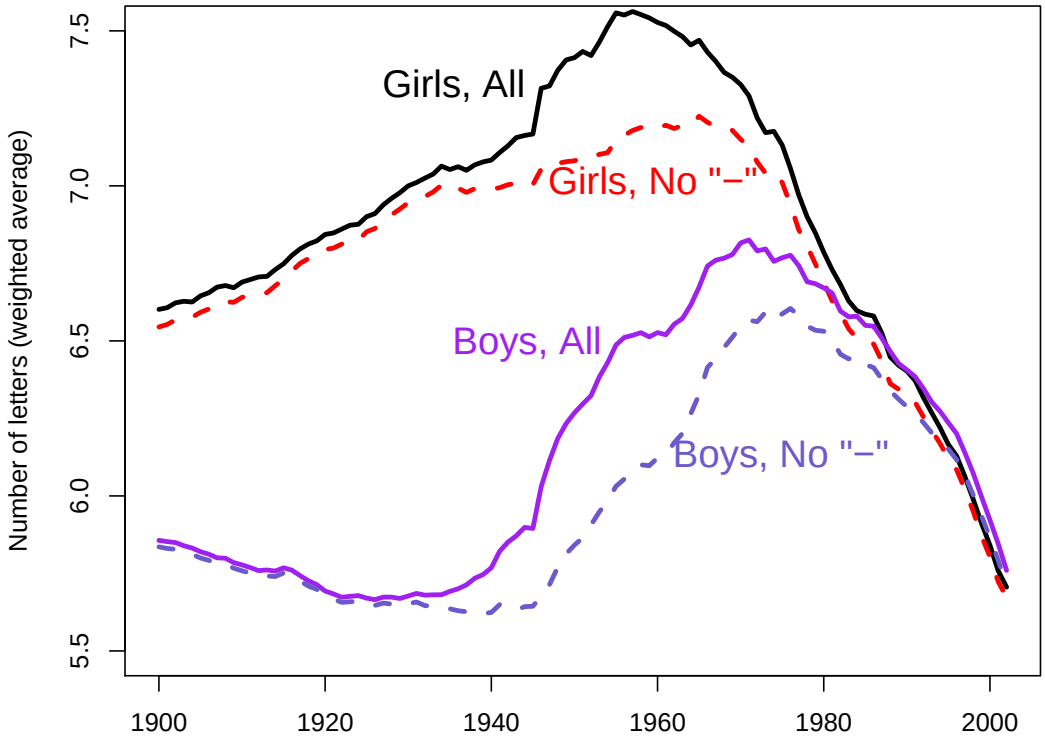

Figure 5: The rise and fall in the length of names

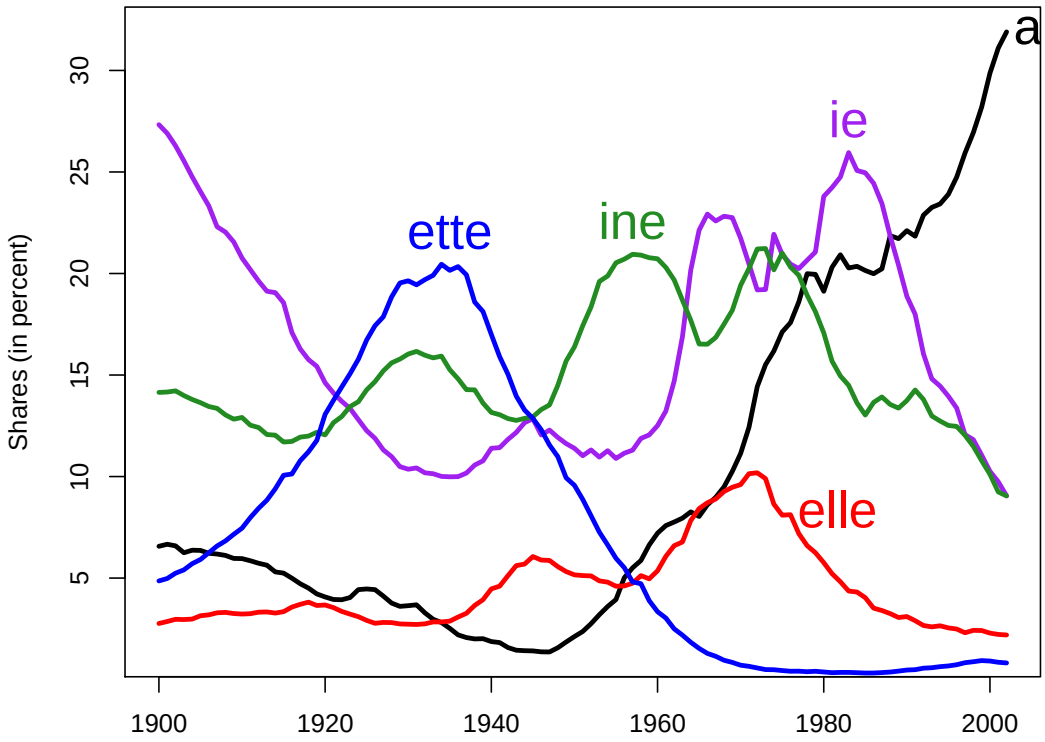

Figure 6: Fluctuations in the most common "feminine" name endings

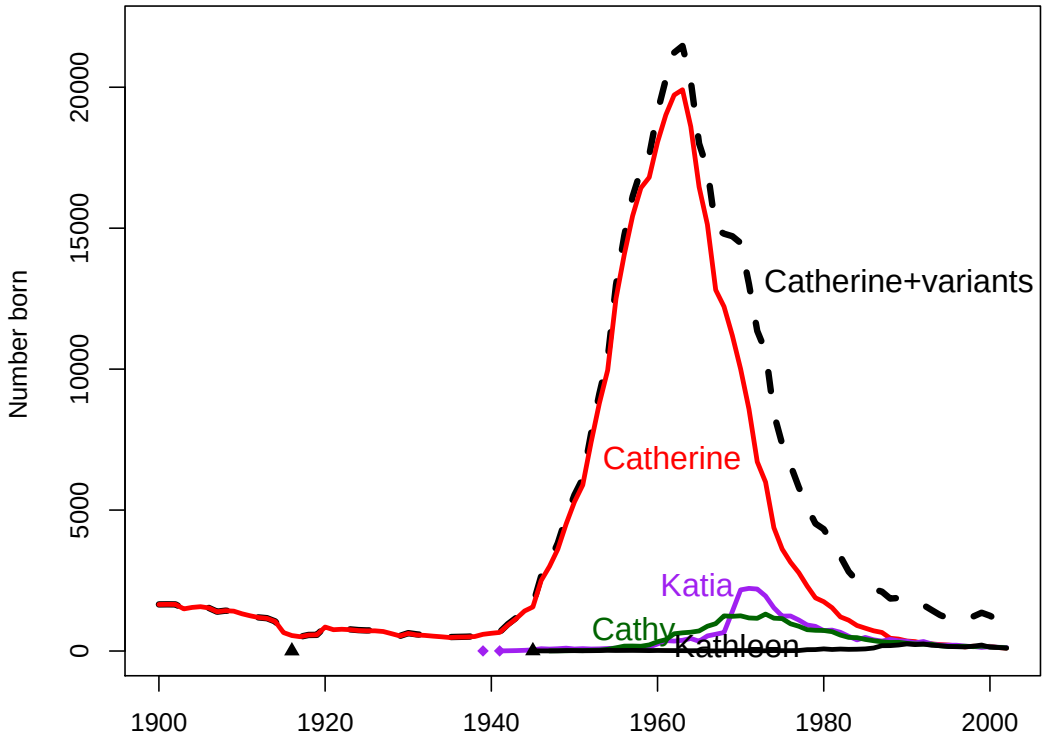

Figure 7: Selected variants of the name Catherine

"FE" and "AR," respectively.

Before moving to regressions, we provide some descriptive statistics on media and non-media names. Table 2 shows attributes of names appearing in movies, TV shows and songs, compared to a control group of names that did not appear in the media. We see that "media names" are distinct in a number of ways. First, media names are older than non-media names, and French media names are more dated than foreign ones. Foreign media are therefore more likely to introduce new alternatives in the choice set, which will raise their impact (as will be seen later). Foreign media names are also characterized by lower stocks, and considerably lower levels of saintliness than French media names. This points to a possible role for non-French media in introducing new names and displacing traditional ones.

The fact that media names are more dated, less rare, and more saintly, than non-media names might arise from two effects. First, performers reach media at an age where the stock of their name has had time to establish itself, and their name distribution quite naturally reflects the set of names that were popular 20 or more years ago. A second mechanism comes from reverse causation. Script and song writers may want to look for currently popular names for their characters, in order to improve the first impression made on the public. Table 2 shows that at the time a role or title name appears in the media, it is much more common (high S_{kt}) and currently popular (high n_{kt}) than the names given to the performers. Foreign script and song writers do not appear to respond to the French popularity of names, as can be seen from the much lower differences in stocks and numbers in the rows labeled "N."

Table 2: Media and non-media name attributes: 1955–2002

	French	non-media	Movies		TV Shows		Songs	
			actor	role	actor	role	singer	title
age	Y	14.13	33.25	26.85	36.32	30.68	26.68	21.86
(years)	N		17.21	17.15	20.72	19.9	16.01	15.27
Saint	Y	17%	63%	59%	74%	70%	41%	53%
(%)	N		29%	28%	27%	19%	14%	19%
stock (S_{kt})	Y	5.63	91.62	198.55	132.57	177.11	37.84	96.05
(1000s)	N		29.31	20.7	24.08	28.11	7.4	25.24
number (n_{kt})	Y	28295.73	297.45	462.42	988.5	1304.5	142.35	1719.63
(1000s)	N		52.5	67.16	835.87	995.48	27.49	167.75

Note: Section 5.1 provides definitions of age, saint, and stocks.

5.2 Results

Table 3 shows the results for movies, television, and songs in five different specifications. We start with what can be called the "naive" model in which name popularity only depends on the base controls (gender and the year dummy variables) and media exposure variables. Then we add further controls, starting with the co-variates for rules and then the ones for attributes.

Specification (1) shows that the media effect on names is not just a matter of anecdotes and data-mining. Names that are currently exposed on TV, at the cinema or on the radio are systematically more popular than other names. The coefficients are uniformly positive and often quite large. To take the largest effect, the number of babies named k increases by 619% ($= 100[\exp(1.972) - 1]$), when an performer with name k has a hit song. The other effects of roles and actors on TV and in the movies are of the same order of magnitude. Names appearing in titles of popular songs have smaller coefficients—but they still correspond to large popularity multiples.

Specification (2) shows that the first set of controls (the rules imposed on the choice process by the French administration) lower the estimated coefficients of the media variables by a little more than one standard error. Much more substantial decreases follow in Specifications (3), (4), and (5) which use the complete set of controls. The results for the rules and attributes controls are shown in Table 4 but we will delay discussion of them until all specifications of Table 3 have been introduced. In column (3), it appears that none of the actor variables remain significant in a positive direction. The role variables retain some positive influence but they are an order of magnitude smaller than the coefficients from the first two columns. The same pattern of dramatically reduced estimates of the influence of the media holds true for songs, the fall being especially strong for performers. This suggests that endogeneity is an important issue in the naive regression. The media-*person* (actors and singers) effect arises in the naive specification because the names parents (or the performers themselves—in the case of pseudonyms) liked at the time remain popular with current parents.

Specifications (1) to (3) pool *between* variation (names that are and are not exposed in a given year) with *within* variation (the difference in a given name's popularity during the years when it is media-exposed). As a first method to account for heterogeneity in the appeal

Table 3: Influence of cinema, TV and songs on French names

	Dependent Variable: $\ln n_{kt}$				
Specification:	(1)	(2)	(3)	(4)	(5)
Heterogeneity:	none	none	none	FE	AR
Controls†:	Base	Rules	Rules+Attributes		
Movie: actor	1.723^a	1.488^a	0.067	-0.001	0.025^b
	(0.143)	(0.132)	(0.091)	(0.056)	(0.011)
Movie: role	1.607^a	1.324^a	0.253^a	0.118^b	0.051^a
	(0.178)	(0.166)	(0.084)	(0.051)	(0.014)
TV Show: actor	1.716^a	1.510^a	0.073	-0.081^b	0.009
	(0.096)	(0.087)	(0.058)	(0.037)	(0.006)
TV Show: role	1.604^a	1.369^a	0.346^a	0.043	0.039^a
	(0.095)	(0.089)	(0.051)	(0.033)	(0.007)
Song: performer	1.972^a	1.741^a	0.292^a	0.160^a	0.047^a
	(0.123)	(0.109)	(0.052)	(0.038)	(0.009)
Song: title	1.017^a	0.883^a	0.458^a	0.180^a	0.140^a
	(0.137)	(0.123)	(0.060)	(0.041)	(0.023)
# of obs.	269613	269613	210499	210499	150397
R^2	0.08	0.152	0.762	0.582	0.954
RMSE	1.524	1.464	0.799	0.543	0.357

Note: Standard errors (name-sex clustered) in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels. AR is autoregressive with 5 lags of the dependent variable. FE uses name-sex fixed effects. The R^2 in column (4) is for *within* variation.

†: See section 5.1 for explanation and Table 4 for estimates.

of different names, Column (4) estimates the within regression, which in effect adds name-sex specific effects (FE) to specification (3). The media coefficients decline further in all cases, with only song-related names and roles in movies remaining positive and statistically significant. Actor on TV even enters negatively.

The fixed effects of column (4) cannot capture one of the most intriguing aspects of names—that they seem to exhibit waves of popularity such as we observed in Figure 3. The name-specific effect is almost certainly *not* fixed over the long run. Column (5) incorporates five lags of the dependent variable on the right-hand-side of the regression (*instead* of the fixed effects). The auto-regressive (AR) specification radically increases the R^2, even compared to the most complete OLS specification in column (3).[17] As for the lags themselves, the first four are positive and the fifth is slightly negative. They sum to one ($.60 + .32 + .14 + .04 - .04 = 1.06$), indicating that shocks to name popularity are extremely persistent. We have also estimated the same model without the lagged dependent variables but with the dependent variable first differenced. The results were so similar to the AR specification that they do not bear reporting separately.

The media effects in specification (5) are somewhat weaker than in the fixed effects specification. This is partly because the AR specification conditions on popularity just prior to the appearance of a name on media. A striking fact arising from inspection of all the media effects over the columns is that adding attributes of the names reduces the coefficients by about one order of magnitude, a movement repeated when adding either fixed effects or auto-regressive terms. Furthermore, names conveyed by music, either through singers or titles, are the only ones to persist in statistical significance at the 1% level over all specifications.

The set of controls subjects some of the sociologists' conjectures on collective behavior to statistical scrutiny, as well as the impact of regulations.[18] Table 4 begins by presenting the impact of saint and deviant names before and after the reforms in 1966 and 1993. To facilitate comparisons, the specifications employ the same numbering as in Table 3. For each specification number, the estimates in both tables come from the same regression.

Specification (4), using within-name variation, provides results that are the most useful. It shows that saint names are 25% ($100[\exp(-.283)-1]$) less popular after the 1993 liberalization than they were pre-1966. Deviant spellings of names are about 8% more popular post-1993 than before the 1966 reform. Those results corroborate the trends shown graphically in Figure 1. The rules controls, while robust in their influence, do not contribute much explanatory power to the model (as can be seen from the small R^2 in specification (2).

The results for the six name attributes in specifications (3)–(5) of Table 4 reveal that naming practices are not just a random process but exhibit systematic tendencies. The level of popularity of a name depends on the number of people who received that name in the past. One reason for this was discussed in Section 3: the more people given a name in the past (S_{kt}), the more parents will be aware of that name today. The stock variable does not take into account the "vintage" of a name. We find strong support for the hypothesis that names that were popular years ago are now seen as "dated."in specifications (3) and (4). Signalling a name age of one decade (the median) lowers the number of times it will be given by 62% ($100[\exp(-1.043 + .08) - 1]$) in specification (3). The negative effect of age is strongest for

[17] Column (4) is not comparable because the R^2 in that case is for the within-regression. The R^2 of 0.582 in this specification shows that the share of within variation explained by the controls and media variables is actually quite high.

[18] All regressions include unreported year effects and a dummy for male names.

Table 4: Coefficients on the set of controls

	Dep. Var: ln number of babies named			
Specification:	(2)	(3)	(4)	(5)
Heterogeneity:	none	none	FE	AR
Controls:	Rules	Rules+Attributes		
Saint name	0.957^a	0.257^a		0.014^b
	(0.067)	(0.030)		(0.006)
Saint: 1966–92	0.061	0.066^c	-0.036	0.010
	(0.054)	(0.034)	(0.036)	(0.006)
Saint: after 92	-0.072	0.000	-0.283^a	-0.047^a
	(0.078)	(0.052)	(0.053)	(0.007)
Deviant spelling	-0.402^a	-0.279^a		-0.056^a
	(0.047)	(0.026)		(0.008)
Deviant: 1966–92	0.044	0.134^a	0.037	0.039^a
	(0.041)	(0.027)	(0.034)	(0.009)
Deviant: after 92	0.110^b	0.219^a	0.076^c	0.048^a
	(0.051)	(0.031)	(0.041)	(0.009)
Stock: $(\ln 1 + S_{kt})$		0.719^a	0.486^a	-0.071^a
		(0.005)	(0.010)	(0.002)
Age of name (in decades)		-1.043^a	-1.551^a	-0.001
		(0.020)	(0.026)	(0.003)
Age of name squared		0.080^a	0.116^a	0.007^a
		(0.004)	(0.004)	(0.000)
Endings: $\ln(1 + n^E_{k,t-1})$		0.027^a	0.145^a	0.002^a
		(0.003)	(0.010)	(0.000)
Roots: $\ln(1 + n^R_{k,t-1})$		0.017^a	0.141^a	0.001
		(0.002)	(0.007)	(0.000)
Length: $\mid L_k - \bar{L}_{t-1} \mid$		-0.088^a	-0.098^a	-0.008^a
		(0.005)	(0.018)	(0.001)
# of obs.	269613	210499	210499	150397
R^2	0.152	0.762	0.582	0.954
RMSE	1.464	.799	.543	.357

Note: Standard errors (name-sex clustered) in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels. FE uses sex-name fixed effects.

6.5 decades at −97%, before gradually coming back. However the implied age where further increases actually raises popularity is not until 13 decades, well outside the sample range. Thus, the notion that old names come back into fashion receives little support from the data. Some old names like "Louis" and "Amélie" have indeed resurged but most of the other names that were used in the early part of the century and then declined remain unpopular today. The AR results differ in that stock enters negatively and age does not seem to matter. However, the lagged numbers of births effectively take into account the stock, implying that its coefficient will be identified from changes, as will the age and age squared variables. This makes interpretation quite difficult.

The next three controls shown in Table 4 are introduced to capture the desire to conform to specific "styles" of names. We find that parents are attracted to names that do not deviate too much from the average current length. Also they like names that use the currently fashionable endings and are part of popular families of names. In a way, these regression results are simply replicating the time-series patterns shown in figures 5, 6 and 7.

We can now turn to the international aspect of media effects: do foreign media have a stronger impact? Table 5 presents the results of re-estimating the same specifications shown in Table 3 with the addition of interactions on each media variable for French origin. This means that the base coefficients on media now correspond to those of foreign-origin. The variables marked FRA are the amount one adds or subtracts from the base (foreign) effect in order to determine the effect on names of domestic media. The FRA interactions could take either sign. If foreign media introduce new names or attach glamorous associations to existing names, the FRA interactions would enter negatively, indicating stronger foreign effects. If names on foreign-exposed media just seem strange, the FRA interactions would enter positively.

The results depend on the specification in an instructive way. The naive specification (1) seems to support the second ("foreign is strange") hypothesis. Names appear to have a much bigger impact if they are on French shows or are carried by French actors, roles, singers, and songs. Considering the case of an actor in a show, the impact is a rise of 279% if foreign but 1037% ($= 100[\exp(1.332 + 1.099) - 1]$) if French.

Adding the attributes set of controls in specification (3) reverses the conclusion of specification (1). When they are significantly different, foreign effects tend to be considerably stronger than the French origin effects. An actor on a foreign-origin TV show raises popularity by 32% in Specification (3) but French-origin actors actually seem to lower popularity by 25% ($100[\exp(0.277 - 0.565) - 1]$). The same can be shown for movie actors. However, roles in French-origin TV and movies are not significantly different from foreign roles. The last two specifications reinforce the impression that, when significant, the media effects on naming patterns mostly come from foreign media. The negative French interactions do not occur across all variables in all specifications (for example, song-related names usually retain positive and significant French-origin effects). However, the dominant pattern of the results is that, after adding controls, foreign media names seem more potent. One explanation would emphasize the "Hollywood glamor" effect. If believed, it would raise concern over a loss in world cultural diversity as seductive American names displace traditional French choices. An alternative view is that foreign media raise French parents' welfare by disseminating unfamiliar names. The next step is to try to find evidence to support one channel or the other but as an intermediate step we first aggregate media along two dimensions.

Table 6 presents, for the same specifications as in Tables 3 and 5, coefficients of variables

Table 5: Interactions between country of origin and names on media

	Dependent Variable: ln number of babies named				
Specification:	(1)	(2)	(3)	(4)	(5)
Heterogeneity:	none	none	none	FE	AR
Controls:	Base	Rules	Rules+Attributes		
Movie: actor	1.145^a	1.045^a	0.373^a	0.087	0.052^a
	(0.184)	(0.174)	(0.080)	(0.060)	(0.016)
Movie: role	1.018^a	0.916^a	0.318^a	0.102	0.089^a
	(0.230)	(0.234)	(0.092)	(0.063)	(0.026)
TV Show: actor	1.332^a	1.279^a	0.277^a	0.052	0.011
	(0.111)	(0.105)	(0.046)	(0.037)	(0.008)
TV Show: role	1.310^a	1.178^a	0.324^a	0.103^a	0.037^a
	(0.105)	(0.101)	(0.052)	(0.036)	(0.008)
Song: performer	0.884^a	0.828^a	0.256^a	0.087^b	0.038^b
	(0.120)	(0.118)	(0.047)	(0.036)	(0.016)
Song: title	0.352^b	0.372^b	0.248^a	0.097^c	0.053^b
	(0.161)	(0.159)	(0.072)	(0.057)	(0.027)
Movie: actor: FRA	0.980^a	0.768^a	-0.557^a	-0.173^c	-0.048^b
	(0.267)	(0.250)	(0.145)	(0.099)	(0.021)
Movie: role: FRA	0.901^a	0.638^b	-0.075	0.024	-0.059^b
	(0.326)	(0.315)	(0.146)	(0.093)	(0.030)
TV Show: actor: FRA	1.099^a	0.685^a	-0.565^a	-0.361^a	-0.005
	(0.176)	(0.167)	(0.126)	(0.074)	(0.011)
TV Show: role: FRA	1.134^a	0.768^a	0.001	-0.195^a	0.006
	(0.169)	(0.162)	(0.118)	(0.067)	(0.013)
Song: performer: FRA	1.60^a	1.362^a	0.073	0.108^c	0.014
	(0.167)	(0.157)	(0.077)	(0.056)	(0.019)
Song: title: FRA	1.109^a	0.854^a	0.329^a	0.132^c	0.133^a
	(0.228)	(0.220)	(0.106)	(0.075)	(0.042)
# of obs.	269613	269613	210499	210499	150397
R^2	0.088	0.155	0.763	0.583	0.954
RMSE	1.518	1.46	.797	.543	.357

Note: Standard errors (name-sex clustered) in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.

Table 6: Influence of any mass-media on names

	Dependent Variable: ln number of babies named				
Specification:	(1)	(2)	(3)	(4)	(5)
Heterogeneity:	none	none	none	FE	AR
Controls:	Base	Rules	Rules+Attributes		
Media	1.659^a	1.549^a	0.424^a	0.124^a	0.047^a
	(0.088)	(0.082)	(0.035)	(0.025)	(0.006)
French Media	1.547^a	1.139^a	-0.220^a	-0.116^a	0.011
	(0.120)	(0.110)	(0.067)	(0.039)	(0.008)
# of obs.	269613	269613	210499	210499	150397
R^2	0.09	0.157	0.762	0.582	0.954
RMSE	1.516	1.459	.798	.543	.357
Media	1.964^a	1.679^a	0.422^a	0.112^a	0.074^a
	(0.091)	(0.083)	(0.050)	(0.028)	(0.007)
Media Person	0.578^a	0.555^a	-0.141^b	-0.066^c	-0.033^a
	(0.110)	(0.099)	(0.064)	(0.037)	(0.008)
# of obs.	269613	269613	210499	210499	150397
R^2	0.082	0.154	0.762	0.581	0.954
RMSE	1.522	1.462	.798	.543	.357

Note: Standard errors (name-sex clustered) in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.

Table 7: Testing the introduction and coordination channels

	Dependent Variable: ln number of babies named					
Specification :	(1)	(2)	(3)	(4)	(5)	(6)
Heterogeneity	Fixed Effects			Auto-regressive		
Controls:	Rules+Attributes					
Media	0.158^a	0.630^a	0.657^a	0.068^a	0.194^a	0.207^a
	(0.032)	(0.068)	(0.070)	(0.008)	(0.019)	(0.020)
French Media	-0.112^a	0.007	0.002	0.015^c	0.055^a	0.052^a
	(0.039)	(0.040)	(0.041)	(0.008)	(0.010)	(0.010)
Media Person	-0.058	-0.042	-0.040	-0.034^a	-0.025^a	-0.024^a
	(0.037)	(0.036)	(0.036)	(0.008)	(0.008)	(0.008)
Media $\times \ln(1+S_{kt})$		-0.063^a	-0.065^a		-0.017^a	-0.017^a
		(0.009)	(0.009)		(0.002)	(0.002)
Media $\times$ deviant			-0.083			-0.036^a
			(0.053)			(0.014)
# of obs.	210499	210499	210499	150397	150397	150397
R^2	0.582	0.583	0.583	0.954	0.954	0.954
RMSE	.543	.543	.543	.357	.357	.357

Note: Standard errors (name-sex clustered) in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10%

aggregating the media exposure variables presented separately until now. The media variables take a value of one if the name appeared that year in *any* of the three outlets (movies, shows, songs). The upper panel distinguishes between French and foreign origins, and shows that this aggregation yields very similar qualitative results as the disaggregated media results. After controlling for attributes of the name that make it attractive to French parents, foreign media's influence collapses, and French media's influence disappears altogether.

The regressions reported in the lower panel allow us to test the association mechanism. They distinguish media exposure based on whether the name is carried by a performer (actor or singer) or a character (role or title). While a character can convey negative associations if depicted negatively, the glamor carried by star performers may not be affected by this transitory negative association, as the audience recognizes a performer as talented or attractive even when portraying a villain or singing a sad song. Here again, the naive regression is quite deceptive. Without for controlling for name attributes, it would seem that actors and singers are substantially more influential than roles and titles, giving *prima facie* support to the association mechanism. Once the age, stock, and conformity with current fashions are taken into account, this conclusion is reversed. Hence, as discussed following Tables 3, it seems that the superficial larger impact of performers, comes entirely from the fact that their names are drawn from a subset of available names, the one that includes the most attractive names to parents over most of the studied period in France.

Table 7 continues the investigation of the different mechanisms that can possibly explain the impact of media on naming decisions. The first three columns present results using name-sex fixed effects, while the last three use the autoregressive method. The empirical strategy

involves two interactions of the media variables, first with stocks of a name k at time t, and second with a deviant dummy variable. As discussed in section 3, the introduction mechanism of our theoretical framework predicts that a large existing pool of people with name k reduces the possible impact of the media appearance of that name. The simple model predicts the media-stock interaction term to enter negatively if the introduction channel is important.

Column (2) introduces stock interaction to specification (4) of Table 6. The interaction terms are negative, as expected, which supports the introduction hypothesis. Appearing on a foreign media yields an $\exp(.63) - 1 = 88\%$ rise in the popularity of a name never before given in France. The effect goes to zero when the stock of people having that name reaches $\exp(0.630/0.063) = 22,026$ individuals. Compared to the column (1) results lacking the stock interaction, a major change is that the impact of French media is not significantly lower than that of foreign media. The apparent lower impact of French media names in other specifications comes from the fact that those names are more common among the population to start out with, and thus have less of an innovative appeal. In contrast, the negative effect of media persons (actors, singers) remains significantly negative after controlling for the stock interaction. This negative effect holds up in other specifications and leads us to doubt the importance of the association effect—or to conclude that performers have more negative associations than characters.

In column (3), we use deviant spellings to test whether parents use media appearances as a coordination mechanism. A positive coefficient would suggest that media exposure leads parents to simultaneously adopt a given orthography of a name, out of the many different possibilities. However, the media-deviant interaction enters negatively, but insignificantly, providing no support for the coordination hypothesis. The variable even enters significantly negative in column (6) when the autoregressive set of controls is included. Comparison of columns (4) and (5) shows that this alternative set of controls gives quite similar and expected results for the introduction hypothesis. The negative coefficient on the stock interaction term supports the hypothesis that media names are primarily attractive because they introduce new names into the choice set of parents.

The sample we have used in the estimations so far comprises the number of children given each name in each year—as long as the name was given more than twice. This is the most comprehensive data available, including around five thousand names in a given year. However there are thousands of other possible names (especially when one considers possible alternate spellings) that were not used at all or given to just one or two babies. Thus our sample was selected based on a minimum threshold of popularity. The effect of this selection on the media coefficients is unclear. On the one hand there are names like "Chuck" that appeared in media (Berry, the 1950s singer) but were never non-rare in France. On the other hand, there are names like Brandon that were not observed prior to 1986 in France. One reason they might have been rare is that the French public were not aware of them due to lack of media exposure.

It seems worthwhile to pursue an alternate sample selection procedure that is not predicated on the use of the name in France. In light of our interest in media as a mode of international transmission of cultural traits, we use a sample based on popularity in the United States. This provides a natural way to relate our empirical method to the public policy concern over "invasion" of national culture by American cultural traits, transmitted by what is widely perceived as the world's dominant media industry. For each decade we consider the top 1000 names for boys and girls in the US.[19] Some of them have media exposure and some

[19]See data appendix for details on sources.

Table 8: Media effects on French use of popular American names

	Tobit on censored births					
Specification:	(1)	(2)	(3)	(4)	(5)	(6)
Heterogeneity:	none	none	RE	AR	RE	AR
Controls:	Base	Base	Rules+Attributes			
Media	2.752^a	1.645^a	0.244^a	0.091^a	0.702^a	0.399^a
	(0.071)	(0.066)	(0.019)	(0.010)	(0.032)	(0.015)
French Media	2.724^a	2.947^a	-0.074^a	-0.118^a	0.067^b	0.030^b
	(0.085)	(0.079)	(0.024)	(0.012)	(0.026)	(0.013)
Media Person	0.453^a	0.106	-0.078^a	-0.090^a	-0.083^a	-0.068^a
	(0.082)	(0.076)	(0.022)	(0.012)	(0.022)	(0.012)
US freq. ($\ln n_{kt}^{\mathrm{US}}$)		1.017^a	0.082^a	0.031^a	0.073^a	0.033^a
		(0.010)	(0.005)	(0.002)	(0.005)	(0.002)
Media $\times \ln(1+S_{kt})$					-0.067^a	-0.049^a
					(0.004)	(0.002)
# of obs.	96625	96625	95108	89040	95108	89040
Pseudo-R^2	0.037	0.077	0.594	0.710	0.595	0.713
$\hat{\sigma}$	3.55	3.27	0.79	0.48	0.78	0.48

Note: RE=random name effects, AR=autoregressive (5 lags). Standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.

do not, and we estimate whether those that appear in TV shows, movies or songs affect the choice of parents in France. For any name that is rare ($n_{kt} \leq 2$) in France, we code $\ln n_{kt}$ as $\ln 2$ and estimate using Tobit to account for this pattern of censoring. Over 56% of the cases in this specification are censored. Tobit methods were not feasible in the previous sample design since we had no way of selecting a finite set of censored names.

We aggregate the three media as in Table 7 and present results in a similar sequence. Again we start with naive regressions, and add controls gradually.[20] An additional natural control introduced in this sample is the popularity of the name in the United States. This allows for the possibility that names might be brought to the knowledge of French parents by other means than media, such as tourism.

A comparison of columns (1) and (2) in table 8 suggests an important role for non-media interactions. While the set of American names appearing on foreign media has a huge impact on naming patterns in France, the effect comes in part from the popularity of those names in the USA. Again, adding the different set of controls changes the picture dramatically.[21] The impact of foreign media falls by an order of magnitude and the French media effect is even negative in columns (3) and (4) as in comparable regressions of our original name sample.

[20]Two controls are left out: deviant and the number of same-root names. We could not reliably determine which American names sound the same as which French names. Also our sources did not allow us to map US-only names to French roots.

[21]Since Tobit does not use the within transformation, it cannot handle the 1000s of name-specific fixed effects used in linear specifications. Hence we used a random-effects Tobit. This computationally intensive technique balked at estimating the full set of year effects so used a cubic trend and the birth rate as alternative form for $a(t)$.

Tests of the introduction hypothesis deliver results that are strikingly similar: the media-stock interaction comes in negative as predicted and the French media effect returns to a positive sign. It appears that the impact of media consistently works through the introduction effect. Column (5) results indicate that even the stock threshold where the media effects turns negative remains about the same, occurring when $\exp(0.702/0.073) = 15,009$ people bear the name.

6 Conclusion

We investigate whether exposure to media in general and foreign-origin media in particular affect naming patterns in France. The names chosen for babies are emblematic characteristics of national cultural traditions. Changes in practices on this subject have been interpreted as one manifestation of globalization, possibly endangering cultural diversity. France has been at the forefront of political activity, arguing for a cultural exception that would allow for government intervention to protect domestic culture. In October 2005, with strong French and Canadian support, but against US opposition, a UNESCO conference overwhelmingly approved a new Convention on cultural diversity that asserted the right of a nation to provide public financial assistance to protect cultural diversity within its territory.[22]

The political discussion of protecting culture tends to obscure whether it is the consumer or the producer that requires protection. If it is the producer, then the old arguments of trade policy imply that it is more efficient to promote domestic production via subsidies than to inhibit import consumption via trade barriers. However, if import consumption has adverse external effects, the case for limiting foreign access could make more sense.

In this paper we offer what we believe to be the first systematic evidence of the impact of foreign media on a cultural trait. Our results show that foreign media have a limited influence on naming patterns in France. Anecdotal examples of rises of names appearing in American TV shows are supported by our "naive" regression analysis suggesting big effects of media exposure on a name's popularity. The introduction of controls for attributes that currently lend popularity to a name lowers media effects by about one order of magnitude. The small media effects are mainly still statistically significant and they are stronger for foreign-origin shows and movies. Our result that media exposure of common names has a lower effect than media exposure of rarely given names supports the introduction effect as an important mechanism.

Even if we had found stronger media exposure effects, it would not have provided a sufficient justification for barriers to trade in audio-visual services. Indeed, there are likely to be welfare gains from the introduction of new names. Our finding of weak media effects denies cultural protectionists a necessary condition for policies to impede cultural imports. Without strong media effects on local practices, we can rule out foreign displacement of domestic culture. For the cultural trait we investigate, media exposure seems to be one of the less important determinants of change.

[22] See Article 6 at `http://portal.unesco.org/culture/en/ev.php-URL_ID=28182&URL_DO=DO_TOPIC&URL_SECTION=201.html`

A Data appendix

A.1 French names

Fichier des Prénoms

The French statistical agency, INSEE, sells (for 1200 euros) a CD-ROM with national (1900–2002) and departmental (1946–2002) data based on filings of birth certificates at the Civil Registry. The database includes all babies born in all of France (including the overseas departments Reunion, Guadeloupe, Martinique, and Guiana). Particular names are shown if they were given to at least three babies for a given sex and year. The count of names given to just one or two babies are summed and reported under the name "rare." The main limitation of this data is the absence of information on the individual children and their parents. While such data exist for particular survey years, it is not available in the long, continuous panel form required for our study.

We define the name ending as the letters including the last sounded vowel. We coded an initial classification and then made amendments to correct for sequences of vowels that make one sound (the name ending for Antoine should be "oine" rather than "ine.")

Name roots were taken from Jouniaux (2001). For compounds, we use the root of the first element. For foreign names, we use the French root. Thus, our method classifies the root of "Juan-Carlos" as "Jean."

Saints

We used the website `nominis.cef.fr` to obtain a list of Saints recognized with "fêtes" in France. It uses the typical French spelling (e.g. Jean, not John). Of the 2664 listed Saints, 1101 are direct matches for names used in our data set and 1563 are names of Saints that were never used more than twice in France. We added compound names to the Saint list even if they were not the names of actual Saints if both elements are Saint names (as in Jean-Claude). This adds 910 additional names, giving 2011 Saint names in usage or 10.5% of the "universe" of 19,108 names given at least 3 times for a given gender in a year between 1900 and 2002.

A.2 Media-based names

The presence of names on French Media are measured using data for cinema, television and radio.

Movies

The data come from "Best-sellers du marché français de 1945 à 2003", available at `www.cnc.fr/d_stat/fr_d.htm`, the web site of the National Center of Cinematography (CNC). It comprises the 180 movies receiving the largest entries in France (regardless of the movie origin) since 1945. Using the Internet Movie Database, `imdb.com`, we obtained the given names and sexes of the three principal roles (as ordered by IMDB) and the corresponding actors. The variable "Movie: role$_{kt}$" equals one if name k is in a best-selling movie released in France in year t. The variable "Movie: actor$_{kt}$" is defined analogously.

Television shows

For each of the non-pay channels in France—ORTF, TF1, Antenne2 (now France2), FR3 (France3), La Cinq (La Cinquieme/Arte), M6—we record data for all shows covered on the

websites `www.leflt.com/annuseries` and `encyclopedie.snyke.com`. In most cases, we know the release dates in France and the US. In cases where we do not know the French release we set it at two years after the US release (the median gap in the data where both release years are known). We also know the number of seasons and assume that all seasons of the show are exhibited in France. As with movies, the main three role and actor names are taken from IMDB. This creates errors in the cases—mainly in the 1960s—when the French changed the character names in a TV show (e.g. Darrin was renamed Jean-Pierre in the French broadcast of Bewitched). We code the variable "TV Show: role$_{kt}$" equal to one if name k is on any show on a non-pay station in year t. The variable "TV Show: actor$_{kt}$" is defined analogously.

Songs

The website `www.infodisc.fr` provides, for a charge, the annual Top 100 popular song list for France going back to 1955 (note that the lists have less than 100 songs prior to 1959). The rankings aggregate multiple charts and take into account both sales of singles and radio play. We parsed the song title and the name of the performer into their constituent "words." We classified these words as names if they met two criteria: i) actually used as baby names in either France or the US, and ii) not among the most common 200 words in written French or English. Songs were classified as French origin (FRA in the regression tables) if the title consisted mainly of French words. In cases where the title was a ambiguous (e.g. Michelle), we looked at the probable nationality of the performer, or, in a few cases, at websites that provide song lyrics.

A.3 US names

The Social Security Administration tracks given names in the US and makes them available on its website, `www.ssa.gov/OACT/babynames/`. It provides the top 1000 names by sex by decade back to 1900. The decade data rely on 5% samples.

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