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TV and Entrepreneurship

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Abstract

This paper analyzes empirically whether individuals' decisions to start an own business can be influenced via television (TV). To identify its effect, we utilize exogenous regional variation in the availability of TV that conveyed images conducive to entrepreneurship and the notion that self-reliance, self-determination and proactive behavior are desirable from individual and social point of view. We use both regional-level as well as geo-referenced individual level data and show that the entrepreneurship incidence is higher among the residents of regions that had TV signal than in regions without TV, indicating a first-order effect on the directly exposed individuals. We find that the effect would fade out if only directly treated individuals are more likely to become entrepreneurs and the last exposed cohort becomes 'too old'. However, we also find that non-directly exposed successive cohorts and descendants of directly exposed individuals also wish to become entrepreneurs more often. We provide evidence that is consistent with second-order effects due to the intergenerational transmission of entrepreneurial mindset and suggests a formation of a self-sustaining entrepreneurial culture, which can cause long lasting differences between treated and non-treated population groups or regions.

JEL: L26, J24, M13, P20, P30, O30, D02, D03, Z10

Keywords: Entrepreneurship, TV, Culture, Occupational choice.

1. Introduction

Entrepreneurship is considered a key driver of growth and development in free market economies. In particular, entrepreneurs can deploy resources in a novel or a more efficient way, which generates welfare gains and creates jobs in the long run (Schumpeter 1912, 1942; Baumol 1990, 2010; Baumol et al. 2007). However, the entrepreneurial act itself is not always self-evident, but requires a proactive mindset, and cannot be fully explained within the standard economic framework with rational actors (Schumpeter 1912). Thus, understanding what determines entrepreneurial identity is crucial for understanding growth and development as well as for the design of respective policies.

In this paper, we analyze empirically whether the decisions of individuals to start an own business can be influenced via television (TV). TV can shape career choices by conveying information and pointing to business opportunities and/or by showing that entrepreneurship can be an alternative to dependent employment. Moreover, TV can influence career decisions by transmitting images that affect both, viewers' preferences and the esteem of occupations. On the one hand, the empirical literature on determinants of entrepreneurship documents that personality (i.e., subjective factors such as values, preferences and aspirations) is strong predictor of the decision to start an own business (Arenius and Minniti 2005; Hamilton 2000; Hyytinen et al. 2013; Berglann et al. 2011; Croson and Minniti 2012; Benz and Frey 2008a, b; van Gelderen and Jansen 2006). Akerlof and Kranton (2000) argue that individual's identity, namely person's self-perception or sense of self, influences behavior in general and the choice of a specific occupation in particular. Individuals reap utility not only from monetary outcomes, but also from acting in a certain way, in particular according to their own view of who they are or ideally should be and what they should or should not do to live up to their ideal concept of the self (Akerlof and Kranton 2000; Benz and Frey 2008a, b). Accordingly, values, preferences, view of life, status and esteem attached to different occupations and career paths play a role in individuals' decisions. On the other hand, research has also indicated that TV can shape—deliberately or not—individuals' view of the self while transmitting images that create specific attitudes, form specific values and preferences. In particular, TV viewers can identify with fictitious or real media characters and role models, and adopt (parts of) their personality and behavior (Bandura 2001; Rosengren and Windahl 1972; Cohen 2001; Adams-Price and Greene 1990; Hoffner and Buchanan 2005). Thereby, the identification process can extend well beyond the viewing situation (i.e., sharing emotions while watching). It can lead to durable changes in attitudes, values or aspirations and, therefore, in personality, identity and behavior (Rosengren et al. 1976; Bandura 1986, 2001; v. Feilitzen and Linne 1975; Hoffner 1996; Hoffner and Buchanan 2005).

To identify the effect of TV on entrepreneurship, we utilize an arguably exogenous regional variation in the availability of TV that conveyed images and information conducive to entrepreneurship. Specifically, after WWII and until the Reunification in 1990, Germany was divided into the capitalistic West Germany (Federal Republic of Germany, FRG) and the socialistic East Germany (German Democratic Republic, GDR). In West Germany, TV

promoted, according to the official doctrine, an image of a society, in which individuals are free and responsible for their own and where experimentation, self-discovery, self-realization, and proactive behavior define individual identity and social status. In East Germany, on the opposite, in accordance to the socialistic doctrine, private capital and entrepreneurship were banned and socially stigmatized, the economy was state-driven and starting an own business became possible only after the Reunification with West Germany in 1990 and the concomitant adoption of the free market system. However, despite the division, West German public TV signal was available in many East German regions since the 1960s, while few East German regions never had an access to West German TV solely due to topological reasons.

We are interested whether the entrepreneurship incidence is higher among exposed (or treated) individuals than among non-exposed (non-treated). Moreover, we are interested in whether the potential differences between treated and non-treated groups of individuals or regions fade out or possibly last over longer period of time and what the underlying mechanisms are, which is important for policy, too. On the one hand, the effects of a timely limited treatment will disappear if only directly exposed individuals are impacted and the last exposed cohort exceeds a certain age. On the other hand, there may be second-order effects due to intergenerational transmission of entrepreneurial mindset, which may trigger a self-sustaining entrepreneurial culture within a population group (Bisin and Verdier 2017) and cause, therefore, long lasting differences between population groups or regions. For instance, that individuals become entrepreneurs may signal to subsequent cohorts that entrepreneurship is an alternative to dependent employment (Halaby 2003). Higher incidence of entrepreneurship may remove biases and stigma, stimulate its societal legitimacy and pave the way for subsequent cohorts (Etzioni 1987; Kibler et al. 2014). Subsequent cohorts may notice the behavior by ascendants in their environment and, while viewing them—consciously or not—as role models, may adopt their norms, values, preferences, and view of life (Bandura 1986). Moreover, individuals may deliberately exert an effort in disseminating their own view of life to subsequent generations in order to influence their preferences and behavior. Particularly so, if they believe that their own value system is also the best for others and reap utility from their behavior and wellbeing (Bisin and Verdier 2000, 2001) or because of bounded-rationality and subjective biases over occupational alternatives (Chakraborty et al. 2016; Corneo and Jeanne 2010).

To assess the effect of TV on entrepreneurship, we focus on the period after the Reunification of the two German states in 1990, when starting an own company in East Germany became possible again, and apply econometric techniques to estimate the difference in the entrepreneurship incidence among the inhabitants of East German regions that had West German public TV signal since the 1960s until 1989 and that of the inhabitants of East German regions without West German TV signal in that period. We use both, data at the level of the NUTS3 regions (i.e., counties) that are fairly small units and map reasonably well the geographical availability of West German TV signal as well as geo-referenced individual level data that allow a deeper look into the underlying mechanisms.

The results of our analysis show that individuals' decision to start an own business can be influenced via TV. We regress the annual number of new businesses per working age population in a region for the period 1993-2016 on a binary time-invariant indicator for the regional availability of West German public TV signal prior to Reunification in 1990 and find

that entrepreneurship incidence is more than 10 percent higher in East German regions that had West German TV signal than in regions without. As detailed in the identification strategy (Section 4) below, we use different estimation approaches and perform a number robustness checks to strengthen causal inference, in particular to alleviate concerns of confounded and inconsistent estimates due potentially to unobserved regional characteristics correlated with local entrepreneurship and the availability of TV. The results of the individual level data analysis confirm that the residents of regions that had West German TV signal are, conditional on individual characteristics, more likely to start an own business after the Reunification in 1990. Moreover, we find that, in 1990, the residents of East German regions that had West German TV signal value 'independence' higher than the residents of East German region that had no West German TV signal. The findings are consistent with West TV promoting personality traits that shape the entrepreneurial identity of individuals, which (i) points to the actual micro-level mechanisms underlying the TV effect and (ii) helps alleviate concerns that unobserved regional factors (e.g., economic ones) confound the results, thus generally supporting causal interpretation.

We find evidence that the effect would disappear at the latest as the last exposed cohort exceeds a certain age if only directly treated individuals are more likely to become entrepreneurs. First, we interact the TV availability indicator with yearly dummies and find that entrepreneurship incidence is higher throughout the period of analysis in regions that had West German TV signal than in regions without TV signal. Yet, the differences between treated and non-treated regions initially tend to increase, then slightly decrease, though not completely gone even after a quarter of a century. Then, based on individual level data, we find that this hump-shaped temporal pattern of the TV effect appears to be an artefact of different age cohorts 'moving' throughout the period of analysis. The TV effect is strongest for the cohort of individuals that were (i) young and 'susceptible' to the treatment at the time of exposure, and (ii) in the period of analysis at age, in which the genuine probability to start an own business is comparably high. Within this cohort, we also find the largest difference in the value of independence. We find virtually and/or statistically insignificant differences for older individuals with common value system formed before the division of Germany, less influenced by the treatment, and 'too old' to start an own business in the period of analysis.

However, we also find evidence consistent with second-order effects due to intergenerational transmission of a pro-entrepreneurial mindset, which can cause long lasting differences in the entrepreneurship incidence of treated and non-treated population groups or regions. In particular, using the individual level data, we show that descendants (i.e., individuals born in 1985 or later and by the Reunification in 1990 arguably hardly exposed to the West German TV treatment) of parents that lived by 1989 in regions with West German TV signal are more likely to wish to start an own business than counterparts born in households that lived in regions without a signal. Being born in 1985 or later, these individuals are arguably less (if at all) influenced by West TV, so that an effect of TV is arguably channeled through their parents and closest peers.

Our conclusions are straightforward: Promoting entrepreneurial identity can increase entrepreneurial incidence and have, due to intergenerational transmission of mindset, long lasting effects. Such policies can constitute complements, yet preconditions, to other

instruments such as financial support and entrepreneurship education (Lerner 2009, 2020). TV and probably other media can play a role.

The remainder of the paper is organized as follows. Section 2 outlines the contribution to the existing literature. In Section 3, we describe the empirical setting, particularly the conditions for entrepreneurship in East Germany and the geographical availability of West German public TV signal. Section 4 outlines the identification strategy and describes the data. Section 5 presents the results of the empirical analysis. Section 6 summarizes and concludes.

2. Relation to the literature

This study relates to several strands of the literature. It contributes to the discussion on what drives individuals to become entrepreneurs, how entrepreneurial mindset is formed and how could be influenced. For instance, in the last decades many countries around the world have committed significant resources to promote entrepreneurship, particularly by means of entrepreneurship education and subsidies (Lerner 2009, 2020; European Commission 2004; OECD 1998). However, in many cases, the demand for such support is considered lower and/or the measures insufficiently effective in increasing the entrepreneurship incidence (Lerner 2009, 2020). We provide evidence that promoting certain values, preferences, attitudes and aspirations can influence the esteem of becoming an entrepreneur. We also allude to the broad literature on the importance of role models in entrepreneurship (Nanda and Sorensen 2010; Giannetti and Simonov 2009; Stuart and Sorenson 2005; Bauernschuster et al. 2010; Falck et al. 2012; Lerner and Malmendier 2013). Thereby, since watching TV excludes per definition direct interactions between individuals, our results indicates that the effect of role models are not confined to personal interactions. We also broadly tough upon the TV edutainment literature (Bjorvatn et al. 2015; Berg and Zia 2013; Banerjee and Duflo 2011; Singhal and Rogers 1999). Yet, the mechanisms in our case differ from those in the literature on TV edutainment that aims, similarly to traditional classroom entrepreneurship education, at transferring ‘hard’ skills as to increase the likelihood of successfully running a business.

This study adds also to the literature on the importance of values, norms and preferences for the decision to become an entrepreneur and the formation of self-sustaining (local) entrepreneurship culture, which matters for long-term economic development. For instance, growth in Chakraborty et al. (2016) is driven by the occupational choice of individuals, which is, in turn, influenced by the transmission of values, norms and preferences from one generation to the next. Similarly, in Doepke and Zilibotti (2013) growth depends on the fraction of the population choosing an entrepreneurial career. How many entrepreneurs there are in a society is endogenous and hinges on the transmission of personality characteristics, values, norms and preferences between generations. Also Corneo and Jeanne (2010) show that symbolic values can shape occupational choice and economic development. They propose a model of endogenous growth, in which occupations carry symbolic values that make them more or less attractive. Occupational choice is driven not only by the income the different occupations yield, but also by the esteem that they confer. The evolution of symbolic values is endogenous and determined by the transmission of value systems between generations. Face-to-face interactions

and close proximity can foster this transmission and cause, therefore, long lasting geographical differences in entrepreneurship and related economic outcomes (Glaeser et al. 2010).

Not least, our study adds to the literature on the influence of media in general and TV in particular on the mindset of individuals and their behavior by adding a new dimension: occupational choice, specifically entrepreneurship. Regarding TV, studies have analyzed possible effects on individuals' material aspirations as measured by the importance attached to consumption, material wealth and income (Hyll and Schneider 2013), the demand for advertised products (Bursztyn and Cantoni 2016), self-reliance (Hennighausen 2015), savings, debt and financial literacy (Berg and Zia 2013; Baker and George 2010), health care (Abdulla 2004; Ramafoko et al. 2012), status in the society, family planning and fertility (Rogers et al. 1999; La Ferrara et al. 2012; Jensen and Oster 2009), political preferences and voting behavior (McMillan and Zoido 2004; Gentzkow 2006; DellaVigna and Kaplan 2007; Enikolopov et al. 2011; Durante and Knight 2012), xenophobia (Hornuf and Reiger 2017), sexual orientation, gender schemata/roles (Calvert and Huston 1987; Signorielli 1990; Rivadeneyra Lebo 2008).

3. Empirical Setting—Entrepreneurship and West German TV in the GDR

This section describes the historical background, the conditions for entrepreneurship in the GDR and the availability of West German public TV, which constitute the framework for our empirical analysis.

3.1. Entrepreneurship in the GDR

Entrepreneurship (i.e., starting an own company) and, with very few exceptions, self-employment (i.e., work on own account and risk) was banned in the GDR since not compatible with the socialistic ideology fundamentally based on the belief that a free market economy fails to provide a 'fair' distribution of the value added between capital owners and workers. Whenever capital is privately owned and wealth defines wellbeing and prospects, individuals would actually not be free. Such a system would inevitably generate tensions and ultimately break down. A nationalization of private assets and capital and the establishment of a redistributive and more social state would help create an egalitarian society, which would guarantee independence of economic restraints, equality of opportunities and social peace.

Entrepreneurship was seen in the GDR neither as an expression of a fundamental individual and economic freedom, nor as a mechanism to create jobs and foster innovation and economic development. Entrepreneurs were rather capitalists that exploit workers and were stigmatized in public life and referred to as unsocial. Starting an own business in the GDR was banned, getting self-employed restricted to very few small-scale private service industries and a process of expropriation (or nationalization) of private firms, land as well as further private property and wealth was launched with the establishment of the East German state after WWII, which forced private companies flee 'head over heels' to the West (Pickel 1992). Education in

East Germany was instrumented for the purpose of the official state doctrine to inculcate socialist individuals with a critical attitude toward liberal economies and the role of capital and entrepreneurs (Latsch 2015; Falck et al. 2016; Fuchs-Schuendeln and Masella 2016). The alleged exploitation of workers by entrepreneurs was implemented into school curricula (a discipline called Social Studies, *Staatsbuergerkunde*) and students were taught that entrepreneurs 'pocket' the value created by workers (Grammes et al. 2006). From essentially identical levels prior WWII, the share of self-employed individual in the GDR dropped to 1.65 percent and stayed at this level until 1989, while it was 10.5 percent in West Germany in 1989. Only a handful private businesses firms existed, solely in cases where a 'solution' could not be provided by the central state (e.g., retail such as greengrocery, handicraft such as shoe repair, dressmaking and alternation, arts and entertainment such as actors and musicians). However, since prices were centrally defined, also these firms were effectively ran by the state (Brezinski 1987).

The socialistic ideology in the GDR had devastating effects on a broad set of individual characteristics distinctive for entrepreneurs. It implied removing differences in all respects and an equalization of socioeconomic conditions in order to ensure equality of opportunities and prospects for everybody and everywhere. Accordingly, the role of the central state in private, social and economic life was extended. Specifically, a paternalistic and redistributive state was established, which guaranteed a right to work, a retirement pension, as well as medical care and other social services to everybody. The equal economic and social treatment, irrespective of individual efforts, and the fact that the central state decided for and provided the needs of the own citizens, undermined responsibility and discouraged creativity, own initiative and proactive behavior. Alesina and Fuchs-Schuendeln (2007) find that, even after the Reunification, East Germans still believe less than West Germans that own behavior, initiative and effort rather than the state or mere luck determine wellbeing, and are more in favor of redistribution and state intervention. The effects of the GDR socialization appear especially strong for cohorts, who lived under communism for a longer time. Alesina and Fuchs-Schuendeln (2007) estimate that the effects of the socialistic regime will last over generations, for 20 to 40 years. Moreover, research shows that socialization in the GDR resulted in lack of self-reliance and differences in the behavior and the economic prospects of former GDR citizens compared to former West Germans (Bauernschuster et al. 2012). These differences seem to be of a significant magnitude and to last after the breakdown of the socialistic regime in 1989. Furthermore, Falck et al. (2016) show that East German students, irrespective of whether they received some education in the GDR or in the free-market economy after the Reunification, have lower entrepreneurial intentions than students that grew up in West Germany. Friehe et al. (2015) find significant differences between former GDR and FRG residents regarding a number of personality traits such as locus of control, neuroticism, conscientiousness and openness, which are also found to be related to entrepreneurship (Parker 2009; Acs and Audretsch 2010).

3.2. West German TV in the GDR

Germany was divided since WWII until 1990 into the capitalistic West Germany (Federal Republic of Germany, FRG) with a free market economy and the socialistic East Germany

(German Democratic Republic, GDR) with a state-directed (i.e., centrally-planned) economy. However, West German public TV signal was available at latest since the early 1960s in large parts of the GDR. In fact, West Germany refused to officially recognize the existence of another German state for many years and it was a politically motivated objective to make TV available also to all East German citizens and to influence their opinion.[1] The first West German public TV channel, *ARD,* started regularly broadcasting on Dec 25, 1952, the second, *ZDF*, on April 01, 1963.[2] By 1960, West German TV transmitters were purposely located along the inner German border and in West Berlin as to cover as much as possible of the territory of the GDR. Since 1961 parts of the West German public TV program broadcasted by *ARD* and (later) *ZDF* were specifically designed for the GDR, for instance 'The Morning Show' (*Vormittagsprogramm*).

West German TV was hugely popular in the GDR. East German TV launched officially in 1952 and with the spread of private TV receivers in the GDR, more and more East German households watched West German TV. By 1960 around 30 percent of the households possessed a TV receiver, by 1970 already 70 percent, by 1986 as much as 95 percent (cf., Table A1 in the Appendix and Meyen 2003).[3] Survey data anonymously collected prior the Reunification by the *Zentralarchiv fuer Empirische Sozialforschung ZA 6073* and *ZA 6008* show that more than 90 percent of inhabitants of East German regions that were able to receive West German TV actually watched it regularly (cf., Table 1 and Table A2 in the Appendix).

The huge popularity of West German TV in the GDR became widely known as 'enduring subscription' of East German citizens to West German TV or a 'collective desertion from the Republic every evening' (Dohlus 1991; Braumann 1994; Holzweissig 2002).[4] On the one hand, West German TV conveyed images and messages suggesting that self-reliance, self-determination and experimentation are desirable from an individual and social perspective, since such a view of life was fundamental in the post-WWII West German social model and the official state doctrine.[5] Entertaining on West German public TV was highly popular due to its diversity and authenticity. Free Western journalism was much appreciated as a source of information and alternative point of view that provides 'food' for critical discussion and stimulates own thinking and opinion.[6] On the other hand, the popularity of West German TV

[1] West Germany refused to officially recognize another German state until the Basic Treaty (*Grundlagenvertrag*) in 1972. Even after that, a reunification was a fundamental element in the West German doctrine.

[2] Private West German TV started much later and could be received almost exclusively by satellite or cable, both technologies that were unavailable in the GDR until 1990. The reception of *RTL* by aerials was possible only in some areas in West Germany but not in East Germany.

[3] Thereby, there is no evidence for systematic regional differences in the availability of private TV receivers in the GDR (Meyen 2003; Holzweissig 2002). Rather, because TV in East Germany was instrumented to promote the socialistic ideology, the central state put—despite initial technological backwardness, material shortages and production difficulties—tremendous efforts to guarantee the availability of both TV signal and receivers in the entire country (Norden 1965; Honecker and Lamberz 1977). In fact, both TV signal coverage and TV receivers availability in the GDR were comparable to that in West Germany and other Western countries (cf., Table A1 in the Appendix as well as Meyen 2003; Holzweissig 2002).

[4] See Appendix for more detailed explanation for the popularity of West German TV in East Germany.

[5] Promoting such individual characteristics was a fundamental part of the post WWII denazification strategy in West Germany.

[6] Evidence from interviews with East German citizens even suggests that many learned about the true nature of the socialistic state from West German TV, which contributed to the fall of the 'Iron Curtain' in 1989 (Braumann 1994; Holzweissig 2002).

with East German citizens benefited from the fact that East German TV was perceived as drab and dreary. Its politically motivated objective to 'lull' the public and to inculcate socialistic individuals led to a heavy bias with respect to both, entertaining as well as the representation and discussion of social, political and economic topics and to a continuously decreasing identification of East German citizens with the own TV (Braumann 1994; *Zentralarchiv fuer Empirische Sozialforschung ZA 6073* and *ZA 6008*).

However, historical records indicate that few East German regions in the very North-East in Western Pommerania and in the South-East around the city of Dresden (also known as the 'valley of the clueless') were never able to receive West German TV signal due to purely geographical and topological reasons (Hesse 1988; Buhl 1990; Etzkorn and Stiehler 1998; Stiehler 2001). These areas were too far away from West German TV transmitters or surrounded by mountains and the strength of the West German public TV signal was below the threshold required for reception. To map the availability of West German public TV signal to the entrepreneurship data that is available at finest at the level of the NUTS3 regions (i.e., counties), we follow Bursztyn and Cantoni (2016) who apply the Irregular Terrain Model (ITM version 1.2.2; Hufford 1995) to estimate the strength of West German public TV signal at different locations depending on characteristics of the transmitter (height, power, frequency) and characteristics of the respective location (distance from transmitter, geography, topology). In particular, the territory of the GDR is divided in 1×1 kilometer cells (ca. 52 arc-seconds) and the strength of the signal of the first public West German TV (*ARD*) is predicted at 10 meters above the ground under normal weather conditions. Then, the (unweighted) average signal strength for each NUTS3 region is calculated and a region is classified as had been able to receive West German public TV if the signal strength exceeds -86.8 dB, the signal strength in the city of Dresden. The choice of this particular discontinuity-threshold is based on an anecdotal evidence that West German public TV signal was just too weak in Dresden, except for only few areas located at hills and under optimal weather conditions (Bursztyn and Cantoni 2016). This is strongly supported by the data of *Zentralarchiv fuer Empirische Sozialforschung ZA 6073* and *ZA 6008*, according to which less than 6 percent of the inhabitants of Dresden watched West German TV daily and ca. 68 percent never. In neighboring regions, in which according to the ITM the TV signal was strong enough, 90-95 percent of the inhabitants watched West German TV daily or several times per week and only 1-2 percent never (cf., Table 1 and Table A2 in the Appendix). Overall, following this procedure, we identify 71 East German NUTS3 regions, in which West German public TV signal was available, and 5 NUTS3 regions, in which it was not (Figure 1).[7]

[7] NUTS3 regions classified as such, in which West German public TV signal was not available on average are: Vorpommern-Ruegen, Vorpommern-Greifswald, Dresden, Saechsiche Schweiz-Osterzgebirge and Goerlitz. All other NUTS3 regions are classified as such, in which West German public TV signal was available on average. Berlin is not included in our analysis, because entrepreneurship data are not separately available for East and West Berlin. We obtain exactly the same results when we use only distance to the transmitter.

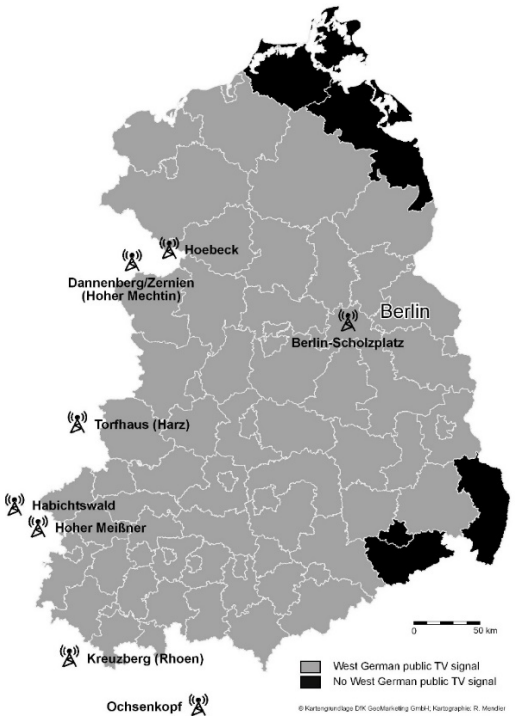


Figure 1: East German regions with and without West German public TV signal

4. Data and identification

The empirical setting can be summarized as follows (for details see Section 3). Starting an own business in East Germany was banned with the establishment of the socialistic state in 1949 and became possible only after the Reunification with the capitalistic West Germany and the adoption of the free-markets system in 1990. For forty years entrepreneurship was stigmatized, the formal and informal institutions in place discouraged own initiative and proactive behavior. Yet, since the 1960s West German public TV that conveyed images conducive to entrepreneurship was available in 71 of the 76 East German NUTS3 regions (Berlin excluded, cf., Section 3.1 and footnote 7). West German TV had also a politically motivated objective to influence the opinion of all East German citizens and West TV transmitters were purposely located to cover possibly the entire territory of the GDR. In 5 counties West TV was not available due to geographic/topological reasons (i.e., regions were too far away from West TV transmitters or surrounded by mountains and the signal too weak) rather than as a result of selection (cf., Yanagizawa-Drott 2014). Moreover, previous research does not indicate a systematic spatial sorting of individuals with certain characteristics that might be related to West German view of life and entrepreneurship in East German regions with West German public TV signal prior 1990. Specifically, the 'price' of a guaranteed right to employment in the GDR was a heavy regulation of the supply of quantity and quality of labor, which reduced both, the job and the geographical mobility of individuals (Mohs 1980). Professional training as well as job supply and allocation were centrally planned and coordinated, so that people

typically stayed a lifelong at the first job (they were given), vastly at their birthplace. Data show that inter-firm mobility in the GDR dropped sharply with the establishment of the socialistic state and then continued decreasing to reach ca. 9 percent in 1979 and ca. 7 percent by the collapse of the regime in 1989; for a comparison, inter-firm mobility in West Germany was 17 percent at its lowest during the global economic crisis in 1983 and 24 percent in years prior the Reunification in 1990 (Gruenert 1997a, b). Spatial mobility, that is naturally lower than job mobility, was particularly low in the GDR due to shortage and centrally planned allocation of housing (Ehmer 2013). Specifically, between 1970 and 1988 the geographical mobility in the GDR was ca. 2.5 per 100 citizens on average per year, around the half of the respective figure in West Germany (various Statistical Yearbooks of the GDR; Ehmer 2013).

Official GDR data from 1989 show (cf., Table 1) that, at the end of the socialistic era, East German regions without West German TV, though rather located in the periphery, are on average similar to East German regions with West TV with respect to (i) a number of observable characteristics, and (ii) the share of self-employed individuals. In particular, regions with and without West German TV show a similar industry structure as indicated by employment shares in different sectors. Also, we find virtually no differences in employment levels and qualification structure. We find very similar shares of self-employed persons in working-age population despite pronounced differences in the intensity of watching West German TV, which is in line with the fact that, during the 40 years of the GDR existence, starting a new firm was central state decision and not an individual one. Moreover, we also find virtually identical self-employment shares in the year 1925. As to the degree, in which self-employment shares can be considered a catch-all proxy for the entrepreneurial conditions, this indicates that TV and non-TV East German regions are on average historically similar.

Table 1: Characteristics of East German regions with and without West German public TV signal since the 1960s until 1990

	Regions without West German public TV (N=5)	Regions with West German public TV (N=71)	Regions with West German public TV bordering on regions without West German public TV (N=9)	Regions with West German public TV not bordering on regions without West German public TV (N=62)
Sector employment in total employment in 1989 (%)				
Construction	6.04	6.52	6.88	6.47
Energy	3.27	2.78	5.50	2.39
Chemicals	1.80	4.21	3.54	4.31
Metals	1.04	1.71	1.77	1.70
Engineering	18.44	17.76	12.22	18.57
Light	6.93	6.65	6.12	6.73
Textiles	1.76	2.35	2.29	2.35
Food	4.63	4.10	4.57	4.04
Agriculture	12.54	13.09	14.14	12.94

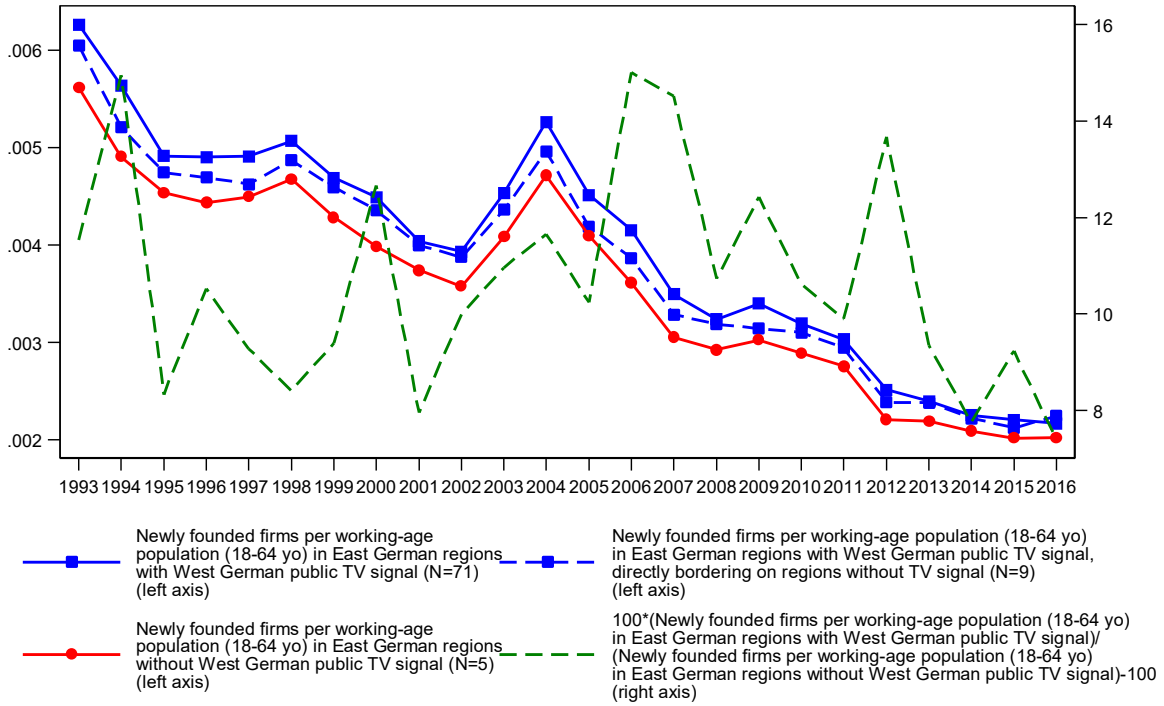
Post, Telecom, Banks, Retail, etc. (omitted)				
Share of employment in working-age population in 1989 (%)	80.67	81.04	83.23	80.72
Qualification of employees in 1989 (%)				
Tertiary education	7.66	7.02	7.14	7.00
Technical college (*Fachschule*)	14.31	13.83	13.99	13.81
Master craftsman diploma	4.15	4.31	4.77	4.25
Secondary education with full degree (*Facharbeiter*)	59.82	61.92	61.50	61.99
Secondary education without full degree	3.21	3.53	3.34	3.56
Without above education	10.85	9.38	9.27	9.39
Residents watching West German public TV in 1988/89 (%)				
Daily or several times per week	15.12 [a)]	92.50 [b)]	95.28 [c)]	91.38 [d)]
Never	67.85 [a)]	1.84 [b)]	1.88 [c)]	1.82 [d)]
Self-employed in working-age population, year 1989 (%)	1.87	1.71	1.50	1.74
Self-employed share, year 1925 (%)	11.72	11.81	11.93	11.79

Notes: Information about industry structure, employment and qualification stem from official East German data processed at the Institute of Employment Research Nuremberg (*IAB*) and is available at the NUTS3-level (*Kreise*, definition 2012) (cf., Rudolph 1990).The GDR definition of working-age population includes students, disabled individuals, self-employed and family workers, service members and retired women between 60 and 64 (retirement age for women in GDR was 60), which explains the low share of employment in that age category.
Information about the intensity of watching West German TV by residents of East German regions stem from high-quality data collected by the Central Institute for Youth Research (*Zentralinstitut fuer Jugendforschung*) by means of anonymous and unmarked individual questionnaires in 1988-1989, immediately prior the fall of the Berlin Wall. Intensity of watching was measured in five categories: daily, several times per week, ones per week, seldom, never. Here, only the share of residents that watched West German TV daily or several times per week/never is reported. Regional assignment is possible only at the level of the GDR districts (*Bezirke*), which are significantly larger than the NUTS3 regions that we use in the empirical analysis. Precisely due to this relative large size, some parts of the Dresden district actually had access to West German TV, which explains the comparably large share of individuals that watched West German TV daily or several times per week. Data have been collected for the districts of Schwerin, Magdeburg, Berlin, Cottbus, Leipzig, Karl-Marx and Erfurt, in which West German TV was available as well as the district of Dresden, where West German TV was only partly available. Data from the further districts with West German TV access (Neubrandenburg, Potsdam, Frankfurt Oder, Halle, Gera, Suhl) as well as from the second district (Rostock), parts of which had no access to West German TV, are not available.
a) Figures based on information from the district of Dresden; information from the second district without West German TV, Rostock, is not available.
b) Average of the districts of Schwerin, Magdeburg, Berlin, Cottbus, Leipzig, Karl-Marx and Erfurt.
c) Average of the districts Karl-Marx and Cottbus.
d) Average of the districts Schwerin, Magdeburg, Berlin, Leipzig and Erfurt.
Data on self-employment in East Germany in 1989 have been originally collected by the GDR Statistical Office and then translated to the NUTS3 regional definition (Kawka 2007).
Self-employment in 1925 is the share of self-employed males in non-agricultural private sector industries in all male employees without helping female members. Self-employment/entrepreneurship by women was not typical in Germany in 1925 (Fritsch and Wyrwich 2014). Data stem from *Statistik des Deutschen Reiches* (1927).

In our main analysis on the effects of TV on entrepreneurship, we use data on entrepreneurship at the finest available geographical level of the German NUTS 3 regions (counties) from the 'Mannheim Foundation Panel', which are originally collected by the *Creditreform*, Germany's largest credit rating agency, and managed by the Center for European Economic Research (*ZEW*) located in Mannheim (Engel and Fryges 2002). The data on East Germany are available since 1990 and contain information on both, new firms and solo entrepreneurs.[8] This is of a particular importance, since a non-negligible fraction of the newly started businesses in East Germany is in retail, handicraft and personal services. Another advantage related to the specific East German context is that the data allow us to identify and sort out firms that are not de novo entrants, for instance such that were privatized after the Reunification in 1990. We use data from 1993 until 2016. The 1990-1992 period is dominated by the privatization (Engel and Fryges 2002). We stop in 2016 because new businesses are often recorded in the data with a time lag. This is particularly the case for small businesses that belong to specific industries and are typically unregistered and enter the *Creditreform* database only with their first credit demand of a certain volume (Engel and Fryges 2002). To address the question about the underlying micro-mechanisms, we use geo-referenced individual-level data from the German Socioeconomic Panel (GSOEP); we will describe these data and the empirical approach in Section 5.3 below.

A first look at the data (Figure 2) reveals that, throughout the period of analysis from 1993 to 2016, entrepreneurship incidence was higher in East German regions that had West German public TV signal since the 1960s until 1990 (blue solid line, squares) than in regions that had no signal (red solid line, circles). The difference (green dashed line) tends to increase by 2007, then decreases somewhat, but is still of a sizeable magnitude. We find the same pattern even if we compare regions without West German TV signal to only directly neighboring and arguably more similar regions with West German TV signal (blue dashed line, squares).

[8] For instance, in the Establishment History Panel *(Betriebshistorikpanel, BHP*) of the Institute for Employment Research Nuremberg (*IAB*) new businesses can be identified only if they have at least one employee subject to social insurance.



Note: Information on the number of firms founded each year stems from the 'Mannheimer Foundation Panel' of the Center for European Economic Research (ZEW) and includes yearly number of newly founded firms and persons becoming self-employed. Working-age population is population aged 18-64 from Federal Statistical Office. Regions are NUTS3 (definition 2010): 71/5 regions had/not West German public TV signal prior the Reunification in 1990; Berlin is excluded.

Figure 2: Entrepreneurship in East German regions with and without West German public TV signal since the 1960s until 1990

We start our analysis with an assessment of the effect of TV on entrepreneurship for the period 1993-2016 on average. We estimate (by OLS) the difference in the entrepreneurship incidence between East German regions that had West German public TV signal and such that hat not:

$$Y_{it} = \beta TV_i + \gamma' \boldsymbol{X}_{it} + \delta' \boldsymbol{Z}_i + \mu_t + \varepsilon_{it}. \qquad (1.1)$$

Y_{it} is (the log of) the number of new firms started each year t of the period 1993-2016 per working-age population (18-64 years old) in an East German NUTS3 region i. TV_i is a binary, time-invariant treatment indicator for the availability of West German public TV signal in a region i since the 1960s until 1990 (cf., Figure 1 and Footnote 7). We are particularly interested in β that provides us with an estimate for the average post-treatment difference in the entrepreneurship incidence in East German regions that had and regions that had no West German public TV signal.

$\boldsymbol{X}_{it}$ and $\boldsymbol{Z}_i$ are comprehensive sets of time-variant and time-invariant region-specific characteristics (in logs) identified by prior research as important determinants of local entrepreneurship (for overview see Acs and Audretsch 2010; Fritsch and Storey 2015). We include the (log) employment shares in 16 NACE macro-sectors (A-Q) as well as the (log) shares of local firms in different size classes to account for arbitrary sectoral, technology and

further structural differences across regions. We also include the (log) local unemployment rate to account for local business cycles, labor market effects and differential entrepreneurship propensity from un-/employment. We add the (log) shares of local residents that in- and out-migrate to account for the possibility that (i) (in- and/or out-)migration is related to entrepreneurship (i.e., indicates more or less favorable local conditions), and (ii) not all current local residents might have lived in the region prior 1990. We also include the (log) shares of local residents in different age categories to account for that the entrepreneurship propensity differs with age. Similarly, we add the (log) shares of local workforce with different qualification levels. Further, we include the (log) distance to the next West German NUTS3 region to account for that (i) the proximity to large West German markets might stimulate entrepreneurship and/or (ii) lower costs of production (i.e., wages) and public subsidies in East Germany attract West German entrepreneurs to start their firms in East Germany, particularly in regions along the former inner German border.[9] We also include the (log) share of self-employed individuals in working-age population in 1989 as a catch-all proxy for regional characteristics and conditions at the end of the socialistic regime, which might influence subsequent development. Similarly, we include the (log) share of self-employment in 1925 as a catch-all proxy for further deeply rooted regional factors that might influence entrepreneurship in the very long term. μ_t is a full set of year dummies that control for yearly shocks common to all regions.

However, we apply also further strategies in order to alleviate concerns due to the possibility that unobserved regional characteristics threaten the causal interpretation of β. As discussed above, West TV availability was a function of mainly distance (cf., Figure 1 and Footnote 7). In (1.1) we control for the distance to the West, but because TV availability is time-invariant, we cannot introduce regional fixed effects to control for further unobserved time-invariant manmade and natural factors potentially affecting local entrepreneurship (climate, soil quality, natural resources/deposits, ports, etc.). In Table 1 we found no systematic differences between TV and non-TV regions in 1989 immediately prior the period of analysis regarding both, a number of important observables related to entrepreneurship and self-employment; something to be expected given the 40 years of socialistic treatment. Moreover, we found virtually identical historical self-employment rates in 1925. However, in (1.1) we cannot definitely rule out that, for whatever unobserved reason(s), regions might switch to differential entrepreneurial trends once free market conditions are restored, and that this, though not very likely given the comprehensive controls, is not fully accounted for by $\boldsymbol{X}_{it}$. We proceed as follows.

We account for unobserved arbitrary differences in region-specific entrepreneurial trends by estimating specifications, in which the time fixed-effects (μ_t) that apply equally to all regions are replaced by region-specific flexible (quadratic) time trends:

$$Y_{it} = \beta TV_i + \gamma' \boldsymbol{X}_{it} + \delta' \boldsymbol{Z}_i \; + time\_trend_i \; + time\_trend_i^2 + \varepsilon_{it}. \qquad (1.2)$$

[9] Distance to the next West German NUTS3 region is highly correlated with distance to West TV transmitters.

We further estimate specifications that include Federal States (*Bundesland*) dummies, $\zeta_{FS(i)}$, and Federal States × year dummies, $\zeta_{FS(i)} \times \mu_t$:

$$Y_{it} = \beta TV_i + \gamma' \boldsymbol{X}_{it} + \delta' \boldsymbol{Z}_i \ + \zeta_{FS(i)} + \mu_t + \varepsilon_{it}, \qquad (2.1)$$

$$Y_{it} = \beta TV_i + \gamma' \boldsymbol{X}_{it} + \delta' \boldsymbol{Z}_i \ + \zeta_{FS(i)} \times \mu_t + \varepsilon_{it}. \qquad (2.2)$$

Since Federal States comprise of relatively similar NUTS3 regions, *i*, and are the next larger economic and political unit, this minimizes unobserved geographical differences and rules out that results are confounded by arbitrary Federal State level factors (e.g., policies) affecting entrepreneurship.

We also estimate variants of (1.1) and (2.2), where we compare the entrepreneurial incidence in East German regions without West German TV signal to that in directly geographically neighboring regions with West German TV signal. As treatment and control groups are arguably even more similar, this specification further minimizes concerns of unobserved systematic regional differences confounding the results.[10]

To address the question, whether the TV effect fades out or not, we estimate (again by OLS) a specification similar to (1.1), in which, however, TV_i is interacted with year dummies, μ_t :

$$Y_{it} = \xi_t'(TV_i \times \mu_t) + \gamma' \boldsymbol{X}_{it} + \delta' \boldsymbol{Z}_i \ + \mu_t + \varepsilon_{it}. \qquad (3)$$

The ξ_t's indicate whether and how the possible impact of TV on entrepreneurship changes over time.

5. Results

5.1. Can entrepreneurship be influenced via TV?

Table 2 reports the results from OLS estimations of different specifications of equations (1.1)-(2.2) for the effect of the availability of West German public TV signal in East German regions since the 1960s until 1989 on the entrepreneurship incidence in these regions in the period 1993-2016 on average. As discussed in the previous Section 4, a comparison of the results of the different specifications will provide us with a sense of the robustness and the reliability of the results.

In specification (1) in Table 2 the TV effect is estimated conditional on the sets of time-variant and time-invariant regional controls discussed in Section 4: industry structure, firm size structure, residents' age structure, workforce qualification, unemployment rate, distance to the next West German NUTS3 region, self-employment shares in 1989 and 1925, and time

[10] Approaches to identify the effects of time invariant regressors such as Hausman and Taylor (1981) or correlated random effects (Mundlak 1978; Wooldridge 2010) and hybrid models (Allison 2009) yield similar results. Since subject to no less identifying assumptions, we do not report these.

dummies. In specification (2), we add the shares of local residents that in- and out-migrate.[11] In specification (3) we control only for industry structure, common year effects, distance to West Germany, self-employment in 1989 and in 1925, i.e. only variables that are arguably strongly exogenous to West German TV, to avoid potential 'bad controls' problems (Angrist and Pischke 2008).

With the next specifications, we test the robustness of the results to potentially confounding regional unobservables. Specification (4) is based on specification (3), but includes region-specific time trends (flexible, second order quadratic polynomial) instead of common year dummies. Specifications (5) – (7), are essentially variants of specifications (1) – (3), but include Federal State fixed effects to account for further unobserved, time-invariant factors common to NUTS3 regions that belong geographically, economically and politically to the same larger administrative unit, the Federal State (*Bundesland*). Specifications (8) – (10) are more flexible as the Federal State fixed effects are interacted with year dummies. Finally, in specifications (11) – (13) we compare the entrepreneurship incidence in regions without West German TV signal to that in only directly neighboring regions with West German TV signal, which are more similar.

Overall, the estimates of equations (1.1)-(2.2) for the effect of TV reported in Table 2 are of similar magnitude across the different specifications and indicate that, throughout the period 1993-2016 on average, the entrepreneurship incidence in regions that had West German public TV signal since the 1960s until 1990 is 10-12 percent higher than in regions without signal.

[11] We lose two years, 1993 and 1994, because migration data are available only from 1995 onwards.

Table 2: TV and entrepreneurship – General effects (1993-2016, average)

Dep: NEW_ BUSINESSES / POP_18-64 $_{it}$ (log)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
TV $_{i}$ (yes=1; no=0)	0.133***	0.129***	0.167***	0.158*	0.105***	0.112***	0.117***	0.100***	0.111***	0.113***	0.095*	0.124	0.131*
	(0.030)	(0.030)	(0.038)	(0.093)	(0.030)	(0.030)	(0.037)	(0.030)	(0.031)	(0.038)	(0.052)	(0.075)	(0.073)
IND_SHARES $_{it}$ (log)	+	+	+	+	+	+	+	+	+	+	+	+	+
D $_{t}$	+	+	+		+	+	+				+		
D $_{i}$ * LINEAR TREND				+									
D $_{i}$ * LINEAR TREND^{2}				+									
D $_{\text{FEDERAL STATE}}$					+	+	+						
D $_{\text{FEDERAL STATE}}$ * D $_{t}$								+	+	+		+	+
DIST_KM_TO_WEST $_{i}$ (log)	0.022	0.023	0.042*	0.054	0.008	0.006	-0.006	0.016	0.014	-0.002	-0.047	-0.287**	-0.427***
	(0.021)	(0.020)	(0.022)	(0.041)	(0.026)	(0.025)	(0.031)	(0.027)	(0.025)	(0.032)	(0.103)	(0.104)	(0.112)
POP_18-24_YO_SHARE $_{it}$ (log)	-0.116	-0.106			-0.132	-0.102		-0.176	-0.132		-0.428	-0.226	
	(0.118)	(0.113)			(0.109)	(0.106)		(0.116)	(0.117)		(0.272)	(0.275)	
POP_25-34_YO_SHARE $_{it}$ (log)	-0.105	-0.209			-0.063	-0.159		-0.093	-0.227		0.479	0.495	
	(0.149)	(0.153)			(0.147)	(0.153)		(0.169)	(0.173)		(0.303)	(0.395)	
POP_35-44_YO_SHARE $_{it}$ (log)	0.349**	0.326*			0.299	0.327*		0.148	0.132		0.286	-0.850	
	(0.168)	(0.165)			(0.180)	(0.182)		(0.202)	(0.200)		(0.350)	(0.625)	
POP_45-54_YO_SHARE $_{it}$ (log)	0.083	0.218			0.079	0.235		0.141	0.361*		0.162	0.051	
	(0.128)	(0.137)			(0.136)	(0.151)		(0.181)	(0.197)		(0.223)	(0.235)	
POP_55-64_YO_SHARE $_{it}$ (log)	0.011	-0.086			-0.030	-0.085		-0.170	-0.295*		-0.252	-0.340	
	(0.154)	(0.146)			(0.148)	(0.143)		(0.173)	(0.171)		(0.326)	(0.486)	
POP_REST_SHARE $_{it}$ (log) (reference)													
EMPL_UNKNOWN_QUALI_SHARE $_{it}$ (log)	0.139***	0.136***			0.123***	0.120***		0.120***	0.095**		0.141*	0.127*	
	(0.034)	(0.038)			(0.036)	(0.038)		(0.041)	(0.046)		(0.066)	(0.061)	
EMPL_MIDDLE_QUALI_SHARE $_{it}$ (log)	-0.144	0.0368			-0.124	0.0788		-0.202	-0.112		-0.248	-0.461	
	(0.176)	(0.194)			(0.172)	(0.196)		(0.209)	(0.229)		(0.569)	(0.503)	
EMPL_HIGH_QUALI_SHARE $_{it}$ (log)	0.151***	0.150**			0.157***	0.156**		0.0939	0.103		0.242***	0.090	
	(0.050)	(0.060)			(0.055)	(0.062)		(0.064)	(0.069)		(0.075)	(0.152)	
EMPL_LOW_QUALI_SHARE $_{it}$ (log) (reference)													

FIRMS_20-49_EMPL_SHARE $_{it}$ (log)	0.108	0.084			0.127	0.094		0.141	0.106		0.040	-0.047	
	(0.086)	(0.093)			(0.085)	(0.093)		(0.090)	(0.095)		(0.164)	(0.144)	
FIRMS_50-199_EMPL_SHARE $_{it}$ (log)	0.085	0.062			0.075	0.061		0.122	0.108		0.141	-0.016	
	(0.087)	(0.096)			(0.083)	(0.094)		(0.087)	(0.097)		(0.140)	(0.188)	
FIRMS_200+_EMPL_SHARE $_{it}$ (log)	-0.012	-0.029			-0.027	-0.036		0.014	0.004		0.026	0.017	
	(0.061)	(0.064)			(0.059)	(0.065)		(0.065)	(0.070)		(0.051)	(0.093)	
FIRMS_1-19_EMPL_SHARE $_{it}$ (log) (reference)													
UNEMPL / POP_18-64 $_{it}$ (log)	-0.036	-0.013			-0.057	-0.031		-0.083*	-0.048		-0.155	-0.113	
	(0.049)	(0.052)			(0.049)	(0.049)		(0.049)	(0.049)		(0.090)	(0.109)	
IN_MIGRATION / TOTAL_POP $_{it}$ (log)		0.162***				0.152***			0.155***				
		(0.042)				(0.045)			(0.047)				
OUT_MIGRATION / TOTAL_POP $_{it}$ (log)		-0.092*				-0.082*			-0.096*				
		(0.049)				(0.049)			(0.050)				
Self-employed / WORKING_POP 1989 $_{i}$ (log)	0.116**	0.115**	0.173***	0.075	0.070	0.074	0.117*	0.056	0.060	0.108	0.123*	0.198	0.252**
	(0.047)	(0.048)	(0.047)	(0.084)	(0.067)	(0.066)	(0.069)	(0.067)	(0.065)	(0.070)	(0.0601)	(0.127)	(0.0944)
Share of self-employed males 1925 $_{i}$ (log)	0.313***	0.282***	0.298***	0.424**	0.387***	0.336***	0.343***	0.402***	0.350***	0.359***	0.260	0.0658	-0.0691
	(0.094)	(0.087)	(0.103)	(0.184)	(0.108)	(0.099)	(0.122)	(0.106)	(0.098)	(0.125)	(0.199)	(0.260)	(0.256)
Constant			-	-			-			-			
	-2.425**	-2.501*	3.225***	3.702***	-2.329*	-2.202*	2.934***	-3.207**	-3.246**	3.113***	-1.214	-1.365	0.313
	(1.149)	(1.185)	(0.596)	(0.683)	(1.195)	(1.269)	(0.575)	(1.281)	(1.332)	(0.621)	(2.241)	(3.635)	(1.137)
R^2	0.881	0.878	0.864	0.888	0.883	0.880	0.870	0.894	0.890	0.880	0.942	0.957	0.951
Observations (NUTS3 regions * Years)	1,824	1,672	1,824	1,824	1,824	1,672	1,824	1,824	1,672	1,824	336	336	336
NUTS3 regions	76	76	76	76	76	76	76	76	76	76	14	14	14
Years	1993-2016	1995-2016	1993-2016	1993-2016	1993-2016	1995-2016	1993-2016	1993-2016	1995-2016	1993-2016	1993-2016	1993-2016	1993-2016

Notes: This table reports the results of OLS estimations of various specifications of equations (1.1)-(2.2) for the effect of the availability of West German public TV signal on the entrepreneurship incidence in East German NUTS3 regions (definition 2012) on average for the period 1993-2016; there are 71/5 regions with/without West German public TV signal, Berlin is excluded. Standard errors are clustered at NUTS3-region level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable, *NEW_BUSINESSES / POP_18-64*, is (the log of) the yearly number of new businesses from the Mannheim Foundation Panel of Center for European Economic Research (*ZEW* Mannheim) in working age population (18-64 yo) from the Federal Statistical Office (*destatis*). *IND_SHARES* are the (log) shares of employment in 16 NACE macro-sectors (A-Q) from the Establishment History Panel (*Betriebshistorikpanel, BHP*) of the Institute for Employment Research Nuremberg (*IAB*). *DIST_KM_TO_WEST* is the distance (in log km) to the next West German NUTS3 region. *POP_*_YO_SHARE* are the (log) shares of employment in different age categories from the Federal Statistical Office (*destatis*). *EMPL_*_QUALI_SHARE* are the (log) shares of employment with different qualification from the Establishment History Panel (*Betriebshistorikpanel, BHP*) of the Institute for Employment Research Nuremberg (*IAB*). *FIRMS_*_EMPL_SHARE* are the (log) shares of firms in different size classes from the Establishment History Panel

(*Betriebshistorikpanel, BHP*) of the Institute for Employment Research Nuremberg (*IAB*). *UNEMPL / POP_18-64* is (the log of) the number of unemployed persons in working age population (18-64 yo) provided by the Federal German Employment Agency (*BA*) and available at Federal Statistical Office (*destatis*). *IN_MIGRATION / TOTAL_POP* and *OUT_MIGRATION / TOTAL_POP* are the (log) shares of individuals that in- and out-migrated across NUTS3 regions' borders in total regional population from the Federal Statistical Office (*destatis*). *Self-employed 1989 / WORKING_POP* is the (log) share of self-employed in working age population in 1989, originally collected by the GDR Statistical Office and then translated to the NUTS3 regional definition (Kawka 2007). *Share of self-employed male 1925* is the (log) share of self-employed males in non-agricultural private sector industries in all male employees without helping female members in 1925 from the *Statistik des Deutschen Reiches* (1927) (cf., Fritsch and Wyrwich 2014).

5.2. Does the TV effect fade out?

Table 3 reports the results from OLS estimations of different specifications of equation (3), where we interact the indicator for the availability of West German public TV signal with time dummies in order to better understand whether and how the TV effect changes over time. In specification (1), we control for distance to West Germany, industry structure, age, qualification, firm size structure, unemployment, self-employment from the years 1989 and 1925 as well as common time effects. In specification (2), Federal State dummies are added to account for unobserved time-invariant effects common to NUTS3 regions belonging to the same administrative unit, the Federal State. In specification (3), the Federal State dummies are interacted with the time dummies. Specifications (4) – (6) are alternative to (1) – (3), as in- and out-migration are additionally account for.

Overall, the results in Table 3 reveal a hump-shaped temporal pattern of the TV effect. According to the estimates, entrepreneurship incidence is higher in East German regions that had West German public TV signal than in regions that had no TV signal throughout the entire period of analysis 1993-2016. However, the differences tend to somewhat increase until 2007, then tend to somewhat decrease, which is broadly consistent with a starting fade out. Yet, by the end of our period of analysis, i.e., even a quarter of a century after the end of the differential treatment, the differences are still pronounced. Hence, a more definitive conclusion requires lifting the underlying micro-mechanisms, a subject of the next Section 5.3.

Table 3: TV and entrepreneurship – Temporal pattern of the effects

Dep: NEW_BUSINESSES / POP_18-64 $_{it}$ (log)	(1)	(2)	(3)	(4)	(5)	(6)
1993*TV $_{i}$ (yes=1; no=0)	0.103*	0.079	0.023			
	(0.058)	(0.058)	(0.054)			
1994*TV $_{i}$ (yes=1; no=0)	0.160***	0.130**	0.066			
	(0.056)	(0.053)	(0.060)			
1995*TV $_{i}$ (yes=1; no=0)	0.115*	0.084	0.060	0.129*	0.111*	0.076
	(0.066)	(0.063)	(0.065)	(0.065)	(0.064)	(0.072)
1996*TV $_{i}$ (yes=1; no=0)	0.170	0.141	0.112	0.174	0.158	0.123
	(0.119)	(0.114)	(0.100)	(0.115)	(0.111)	(0.104)
1997*TV $_{i}$ (yes=1; no=0)	0.113*	0.087	0.054	0.115**	0.101*	0.064
	(0.058)	(0.055)	(0.049)	(0.057)	(0.055)	(0.056)
1998*TV $_{i}$ (yes=1; no=0)	0.101	0.074	0.058	0.096	0.081	0.061
	(0.062)	(0.059)	(0.062)	(0.063)	(0.061)	(0.069)
1999*TV $_{i}$ (yes=1; no=0)	0.101**	0.071	0.101**	0.094*	0.078	0.107**
	(0.048)	(0.050)	(0.044)	(0.052)	(0.052)	(0.047)
2000*TV $_{i}$ (yes=1; no=0)	0.117***	0.088***	0.135***	0.114***	0.098***	0.139***
	(0.029)	(0.029)	(0.032)	(0.029)	(0.030)	(0.034)
2001*TV $_{i}$ (yes=1; no=0)	0.086**	0.055	0.111***	0.080**	0.063*	0.113***
	(0.033)	(0.034)	(0.037)	(0.032)	(0.032)	(0.036)
2002*TV $_{i}$ (yes=1; no=0)	0.122***	0.092*	0.108**	0.119***	0.103**	0.114**
	(0.045)	(0.050)	(0.051)	(0.043)	(0.047)	(0.047)
2003*TV $_{i}$ (yes=1; no=0)	0.135***	0.107**	0.117**	0.134***	0.119**	0.124**
	(0.041)	(0.044)	(0.048)	(0.044)	(0.046)	(0.049)
2004*TV $_{i}$ (yes=1; no=0)	0.142***	0.114***	0.079*	0.142***	0.127***	0.087**
	(0.037)	(0.040)	(0.046)	(0.034)	(0.038)	(0.043)
2005*TV $_{i}$ (yes=1; no=0)	0.128***	0.101**	0.058	0.131***	0.117***	0.072
	(0.040)	(0.041)	(0.048)	(0.040)	(0.042)	(0.050)
2006*TV $_{i}$ (yes=1; no=0)	0.169***	0.142***	0.107**	0.174***	0.160***	0.125***
	(0.046)	(0.046)	(0.048)	(0.042)	(0.044)	(0.047)
2007*TV $_{i}$ (yes=1; no=0)	0.172***	0.146***	0.144***	0.174***	0.160***	0.157***
	(0.032)	(0.034)	(0.036)	(0.032)	(0.034)	(0.037)
2008*TV $_{i}$ (yes=1; no=0)	0.145***	0.119***	0.151***	0.148***	0.134***	0.166***
	(0.040)	(0.042)	(0.043)	(0.038)	(0.041)	(0.042)
2009*TV $_{i}$ (yes=1; no=0)	0.167***	0.142***	0.144***	0.165***	0.151***	0.156***
	(0.047)	(0.047)	(0.035)	(0.043)	(0.044)	(0.034)
2010*TV $_{i}$ (yes=1; no=0)	0.151***	0.125***	0.098**	0.146***	0.131***	0.107**
	(0.043)	(0.046)	(0.044)	(0.039)	(0.042)	(0.041)
2011*TV $_{i}$ (yes=1; no=0)	0.110***	0.083**	0.101**	0.101***	0.084**	0.104**
	(0.034)	(0.036)	(0.039)	(0.036)	(0.039)	(0.044)
2012*TV $_{i}$ (yes=1; no=0)	0.164***	0.135**	0.173***	0.154**	0.135**	0.176**
	(0.061)	(0.060)	(0.064)	(0.065)	(0.065)	(0.069)
2013*TV $_{i}$ (yes=1; no=0)	0.122**	0.092*	0.103**	0.113**	0.093*	0.108**
	(0.048)	(0.050)	(0.048)	(0.053)	(0.055)	(0.053)
2014*TV $_{i}$ (yes=1; no=0)	0.117***	0.086**	0.089**	0.098**	0.078*	0.082*
	(0.040)	(0.042)	(0.043)	(0.046)	(0.047)	(0.046)
2015*TV $_{i}$ (yes=1; no=0)	0.146***	0.114***	0.093*	0.119***	0.099**	0.080
	(0.041)	(0.041)	(0.055)	(0.044)	(0.044)	(0.054)
2016*TV $_{i}$ (yes=1; no=0)	0.146**	0.114*	0.112	0.121*	0.101	0.101
	(0.065)	(0.065)	(0.070)	(0.072)	(0.070)	(0.071)
IND_SHARES $_{it}$ (log)	+	+	+	+	+	+
D $_{t}$	+	+		+	+	
D $_{FEDERAL\ STATE}$		+			+	
D $_{FEDERAL\ STATE}$ x D $_{t}$			+			+
DIST_KM_TO_WEST $_{i}$ (log)	0.021	0.007	0.016	0.023	0.006	0.013
	(0.021)	(0.027)	(0.027)	(0.021)	(0.025)	(0.026)

POP_18-24_SHARE $_{it}$ (log)	-0.124	-0.140	-0.180	-0.113	-0.108	-0.137
	(0.118)	(0.109)	(0.116)	(0.112)	(0.105)	(0.116)
POP_25-34_SHARE $_{it}$ (log)	-0.100	-0.057	-0.092	-0.206	-0.156	-0.226
	(0.149)	(0.148)	(0.169)	(0.153)	(0.152)	(0.173)
POP_35-44_SHARE $_{it}$ (log)	0.344**	0.293	0.151	0.316*	0.317*	0.126
	(0.172)	(0.183)	(0.207)	(0.168)	(0.185)	(0.203)
POP_45-54_SHARE $_{it}$ (log)	0.082	0.077	0.142	0.216	0.234	0.363*
	(0.129)	(0.136)	(0.183)	(0.138)	(0.152)	(0.199)
POP_55-64_SHARES $_{it}$ (log)	0.002	-0.039	-0.176	-0.095	-0.093	-0.305*
	(0.155)	(0.149)	(0.175)	(0.147)	(0.145)	(0.173)
POP_REST_SHARE $_{it}$ (log) (reference)						
EMPL_UNKNOWN_QUALI_SHARE $_{it}$ (log)	0.141***	0.124***	0.121***	0.137***	0.120***	0.096**
	(0.034)	(0.036)	(0.042)	(0.038)	(0.039)	(0.047)
EMPL_MIDDLE_QUALI_SHARE $_{it}$ (log)	-0.138	-0.117	-0.196	0.047	0.092	-0.103
	(0.177)	(0.173)	(0.213)	(0.196)	(0.197)	(0.233)
EMPL_HIGH_QUALI_SHARE $_{it}$ (log)	0.153***	0.160***	0.098	0.153**	0.160**	0.106
	(0.051)	(0.055)	(0.064)	(0.060)	(0.062)	(0.070)
EMPL_LOW_QUALI_SHARE $_{it}$ (log) (reference)						
FIRMS_20-49_EMPL_SHARE $_{it}$ (log)	0.104	0.123	0.139	0.080	0.090	0.105
	(0.087)	(0.086)	(0.091)	(0.095)	(0.094)	(0.096)
FIRMS_50-1999_EMPL_SHARE $_{it}$ (log)	0.083	0.072	0.119	0.061	0.060	0.107
	(0.089)	(0.085)	(0.088)	(0.097)	(0.095)	(0.099)
FIRMS_200+_EMPL_SHARE $_{it}$ (log)	-0.014	-0.030	0.010	-0.030	-0.037	0.003
	(0.062)	(0.060)	(0.066)	(0.065)	(0.066)	(0.071)
FIRMS_1-19_EMPL_SHARE $_{it}$ (log) (reference)						
UNEMPL / POP_18-64 $_{it}$ (log)	-0.034	-0.056	-0.079	-0.013	-0.031	-0.047
	(0.052)	(0.050)	(0.050)	(0.053)	(0.050)	(0.050)
IN_MIGRATION / TOTAL_POP $_{it}$ (log)				0.164***	0.154***	0.156***
				(0.043)	(0.045)	(0.047)
OUT_MIGRATION / TOTAL_POP $_{it}$ (log)				-0.093*	-0.084*	-0.097*
				(0.050)	(0.049)	(0.050)
Self-employed / WORKING_POP 1989 $_{i}$ (log)	0.116**	0.070	0.057	0.114**	0.073	0.060
	(0.048)	(0.068)	(0.068)	(0.048)	(0.066)	(0.066)
Share of self-employed males 1925 $_{i}$ (log)	0.312***	0.387***	0.401***	0.281***	0.336***	0.349***
	(0.095)	(0.109)	(0.107)	(0.088)	(0.100)	(0.098)
Constant	-2.463**	-2.371*	-3.165**	-2.552**	-2.241*	-3.248**
	(1.156)	(1.207)	(1.296)	(1.199)	(1.286)	(1.342)
R^2	0.881	0.883	0.894	0.879	0.880	0.890
Observations (NUTS3 regions * Years)	1,824	1,824	1,824	1,672	1,672	1,672
NUTS3 regions	76	76	76	76	76	76
Years	1993-2016	1993-2016	1993-2016	1995-2016	1995-2016	1995-2016

Notes: This table reports the results of OLS estimations of various specification of equation (3) for the temporal pattern (1993-2016) of the effect of the availability of West German public TV signal on the entrepreneurship incidence in East German NUTS3 regions (definition 2012); there are 71/5 regions with/without West German public TV signal, Berlin is excluded. Standard errors are clustered at NUTS3-region level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable, *NEW_BUSINESSES / POP_18-64*, is (the log of) the yearly number of new businesses from the Mannheim Foundation Panel of Center for European Economic Research (*ZEW* Mannheim) in working age population (18-64 yo) from the Federal Statistical Office (*destatis*). *IND_SHARES* are the (log) shares of employment in 16 NACE macro-sectors (A-Q) from the Establishment History Panel (*Betriebshistorikpanel,*

BHP) of the Institute for Employment Research Nuremberg (*IAB*). *DIST_KM_TO_WEST* is the (log) distance (in km) to the next West German NUTS3 region. *POP_*_YO_SHARE* are the (log) shares of employment in different age categories from the Federal Statistical Office (*destatis*). *EMPL_*_QUALI_SHARE* are the (log) shares of employment with different qualification from the Establishment History Panel (*Betriebshistorikpanel, BHP*) of the Institute for Employment Research Nuremberg (*IAB*). *FIRMS_*_EMPL_SHARE* are the (log) shares of firms in different size classes from the Establishment History Panel (*Betriebshistorikpanel, BHP*) of the Institute for Employment Research Nuremberg (*IAB*). *UNEMPL / POP_18-64* is (the log of) the number of unemployed persons in working age population (18-64 yo) provided by the Federal German Employment Agency (*BA*) and available at Federal Statistical Office (*destatis*). *IN_MIGRATION / TOTAL_POP* and *OUT_MIGRATION / TOTAL_POP* are the (log) shares of individuals that in- and out-migrated across NUTS3 regions' borders in total regional population from the Federal Statistical Office (*destatis*). *Self-employed 1989 / WORKING_POP* is the (log) share of self-employed in working age population in 1989, originally collected by the GDR Statistical Office and then translated to the NUTS3 regional definition (Kawka 2007). *Share of self-employed male 1925* is the (log) share of self-employed males in non-agricultural private sector industries in all male employees without helping female members in 1925 from the *Statistik des Deutschen Reiches* (1927) (cf., Fritsch and Wyrwich 2014).

5.3. Fade out or intergenerational value transmission Micro-level mechanisms

In this section, we deploy individual level data that not only help us corroborate the results from the regional level analysis (Section 5.1), but also to better understand how West German TV shapes the entrepreneurial behavior of East Germans and whether the hump-shaped temporal pattern of the TV effect indicates fade out (Section 5.2). The individual level data stem from the German Socioeconomic Panel (GSOEP), a longitudinal annual survey of a representative panel of individuals aged 18 or above, which collects comprehensive information on a variety of characteristics of both, the surveyed individuals and the entire household they belong to.[12] In particular, the data contain information about entrepreneurship/self-employment and the importance of 'independence' as general behavioral pattern, a personality trait distinctive for entrepreneurs/self-employed persons (Rauch 2014). Unique to first survey in East Germany in 1990 is that it collects information about the place of residence in 1989, immediately prior the fall of the Berlin Wall, which we use to identify individuals that lived in regions with West German public TV signal. Since interregional mobility in the GDR was very low (cf., Section 4), it seems justified to assume that, for all individuals that were at least 18 years old in 1990 (i.e., born no later than in 1972), the place of residence in 1989 is also largely the place where they lived or spent a significant part of their life during the GDR. For individuals that enter the GSOEP after 1990, e.g. born after 1972, residential information is available only for the current survey year, but not for 1989, unless these individuals can be linked to households surveyed in 1990; we will come back to this later, when discussing the assessment of potential second-order effects.

First, we analyze the effect of the exposure to West German TV on the sample of all individuals that were at least 18 years old in 1990 (i.e., born no later than in 1972) and for which information about residence in 1989 is available. Thereby, we also utilize the information about the age of the individuals contained in the data to divide the sample of individuals that were at least 18 years old in 1990 in different birth cohorts and analyze the effect of West German TV on these different cohorts separately in order to better understand whether and how age at the time of exposure and during the period of analysis could shape the findings. On the one hand,

[12] The panel is kept as stable as possible, with updates only to reflect changes in the socio-economic and demographic structures at the aggregate level.

age during the exposure defines the 'susceptibility' of individuals to the treatment. In fact, research suggests that particularly youths and young adults are at risk to be influenced via TV (Wright et al. 1995). On the other hand, empirical research documents that the likelihood to start an own business is inversely U-shaped in age, with a maximum at around 40 years (Parker 2009). Thus, the hump-shaped pattern that we found in the previous Section 5.2 might be due to differently influenced and differently entrepreneurship-likely cohorts 'moving' throughout the period of analysis. Had TV an effect only on directly exposed individuals, this would inevitably imply a fade out and vanishing differences as the last relevant cohort simply becomes 'too old'.

However, in a second step, we analyze also potential 'second-order' effects, arguably due to intergenerational transmission of entrepreneurial mindset, which could stimulate the formation of a self-sustaining entrepreneurial culture and lead to long lasting differences between treated and non-treated population groups and/or regions. As discussed above, that treated individuals become entrepreneurs might signal to subsequent cohorts that entrepreneurship is an alternative to dependent employment. Moreover, there might be a deliberate transfer of values, norms and preferences between generations (Bisin and Verdier 2000, 2001; Chakraborty et al. 2016; Corneo and Jeanne 2010). In particular, we focus on individuals that are born in and after 1985 and can be linked to households (i.e., their parents) surveyed in 1990, which we use to back out their residence in 1989.[13] For such individuals, it seems reasonable to assume no differential direct exposure to West German TV regardless of residence and signal availability. By 1990, when West TV became available everywhere in the GDR, many were not born and these that were, were arguably too young to watch West German TV. Even if they did, it seems plausible to assume that they were interested in only selected parts of West German TV that were aimed particularly at very young children and therefore unlikely conveyed any social, political or economic messages. Hence, it could be argued that an effect of TV on their entrepreneurship inclination is c.p. channeled by their exposed parents, which implies an interpersonal and intergenerational value transfer.

The results suggest that there would be a fade out if only directly exposed individuals are influenced. The effect of TV, i.e. the differences in the entrepreneurship incidence between regions that had West German TV signal and regions that had not will disappear with the last impacted cohort. Specifically, in Table 4 we present the results of estimations of the relationship between the availability of West German public TV signal at the place of residence by 1989 and (i) the post 1990 entrepreneurship/self-employment probability and (ii) the importance of 'independence' perceived in 1990 for the group of all individuals aged 18-64 in 1990 (i.e., born 1927-1972) as well as for three distinct birth cohorts: 1927-1945, 1946-1960 and 1961-1972. Overall, we find that individuals that resided by 1989 in regions with West German public TV signal are, on average, more likely to start an own business after the Reunification in 1990 than individuals that resided in regions without West German public TV signal (specifications 1 and 5 in Table 4), which supports the results of the analysis at regional level in Section 5.1. We also find that residents of regions with West German TV prior 1990 attribute on average higher importance to 'independence' (specification 9 in Table 4). An effect on the perceived

[13] We are aware that the choice this conservative 1985 threshold, while allowing a more robust interpretation, comes at the expense of a small sample size.

importance of 'independence' is in line with the politically motivated objective of West German TV to 'sow' Western values in the socialistic East Germany (cf., Section 3.2). As 'independence' is found to be an important motive for becoming an entrepreneur/self-employed, these findings also point to the actual mechanisms, through which the effects of West German TV unfold. In particular, the results are consistent with West TV promoting personality traits that are conducive to entrepreneurship/self-employment, thus shaping the entrepreneurial identity of individuals. Furthermore, the findings alleviate (some) concerns that unobserved factors (e.g., economic ones) confound the results.

However, the TV effects on entrepreneurship/self-employment appear particularly pronounced within the 1961-1972 birth cohort (specifications 4 and 8 in Table 4). For these individuals we find the strongest effect on the importance of 'independence' (specification 12 in Table 4). They were born and grew up under the socialistic regime. During the treatment period (starting in the early 1960s until 1989), these individuals were young and arguably relatively 'susceptible' to influences so that the exposure to West German TV could have a measurable impact on their value system. Moreover, in the period of analysis 1990-2016 they were at age, where entrepreneurship/self-employment is comparably likely. By 1990 they were on average 24 years old, by 2006 ca. 40 years old, an age where the statistical probability for entrepreneurship is highest (cf., last row in Table 4). Around this time, we find the largest differences between exposed and not-exposed regions (see also Figure 2). Within the 1927-1945 birth cohort, we find no differences in the entrepreneurship incidence of individuals from regions with and without West German public TV signal (specifications 2 and 6 in Table 4). Individuals born 1927-1945 were by 1990, when starting an own firm became possible again, arguably relatively old (on average 53 years old; cf., last row of Table 4), which implies a genuinely low entrepreneurial propensity in the period of analysis. For the 1946-1960 birth cohort, the estimates for the TV effect are somewhere in between (specifications 3 and 7 in Table 4). We find that individuals with access to West German TV attribute higher importance to independence, but a significant number of them are in the period of analysis 1990-2016 relatively 'old' for entrepreneurship/self-employment (20% were older than forty already in 1990). These findings, while providing a plausible explanation for the hump-shaped pattern that we found in the previous Section 5.2, point reasonably strongly to a fade out if there were not second order effects.[14]

[14] An analysis based on narrower and finer definition of the cohorts genuinely supports these conclusions, however, comes at the expense of smaller sample size and reduced statistical power of the estimates.

Table 4: Effect of West German public TV exposure on entrepreneurship/self-employment and the importance of independence by directly exposed individuals in different cohorts (first-order effects)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Dep: Entrepreneurship / Self-employment in 1990-2016 (yes=1; no=0)								Dep: Importance of 'independence' in 1990 (0=low; 10=high)			
	Probit, marginal effects at the mean of the explanatory variables				OLS				Ordered probit			
	All birth cohorts 1927-1972	Birth cohort 1927-1945	Birth cohort 1946-1960	Birth cohort 1961-1972	All birth cohorts 1927-1972	Birth cohort 1927-1945	Birth cohort 1946-1960	Birth cohort 1961-1972	All birth cohorts 1927-1972	Birth cohort 1927-1945	Birth cohort 1946-1960	Birth cohort 1961-1972
TV (yes=1; no=0)	0.021*	0.007	0.017	0.046*	0.030*	0.031	0.007	0.067*	0.211***	0.183	0.284***	0.352**
	(0.011)	(0.007)	(0.018)	(0.027)	(0.018)	(0.024)	(0.032)	(0.035)	(0.078)	(0.165)	(0.108)	(0.173)
Controls (see Notes)	+	+	+	+	+	+	+	+	+	+	+	+
Constant					+	+	+	+				
R^2					0.124	0.214	0.175	0.106				
N (Individuals)	2,331	849	838	640	2,331	853	838	640	2,414	808	981	625
Avrg. age in 1990	39.2	53.2	36.5	23.9	39.2	53.2	36.5	23.9	38.6	52.2	36.5	24.2

Notes: Entrepreneurship/self-employment is binary, with unity if an individual starts an own business in 1990-2016. The importance of independence is measures in 1990 and ranges from 0 (low) to 10 (high). *TV* is binary, with unity if an individual has lived in 1989 in an East German region with West German public TV signal. In all specifications age (in years), gender (1=female; 0=male) and schooling (in years) are accounted for. In specifications (9)-(12) occupation dummies (2-digits KldB 1988) are included. In specifications (1)-(8) industry dummies are included since KldB 1988 information is not collected for the entire period 1990-2016. Heteroscedasticity robust standard errors. *** p<0.01, ** p<0.05, * p<0.1. Data: German Socioeconomic Panel (GSOEP).

However, we also find evidence consistent with indirect, second-order effects, arguably due to intergenerational transmission of values conducive to entrepreneurship/self-employment (i.e., entrepreneurial mindset), which can cause long lasting differences between treated and non-treated population groups or regions. In particular, we focus on individuals that are born in and after 1985 and can be linked to households (i.e., parents) surveyed in 1990, which we use to back out their (parents') residence in 1989.[15] We find that those, whose parents lived in regions with West German TV signal, wish more often to become entrepreneurs than those, whose parents lived in regions without West TV signal (cf., Table 6).[16] For individuals born in and after 1985, it seems reasonable to assume that they either did not watch West German TV prior 1990 or if they did, were interested in only selected parts of West German TV that were particularly aimed at children and therefore unlikely conveyed any social, political or economic messages. Hence, an effect on their entrepreneurship inclination is arguably consistent with a values transfer between generations. Notably, the estimates are conditioned also on parents' entrepreneurial status to account for direct firm successorship effects.

Table 5: TV and entrepreneurship/self-employment by not-directly exposed individuals born in and after 1985 (second-order effects)

Dep: Wish to become entrepreneur / self-employed (yes=1; no=0)	(1)	(2)
	Probit, marginal effects at the mean of the dependent variable	OLS (linear probability)
	Birth cohort 1985+	Birth cohort 1985+
D_t	+	+
Education level dummies $_i$	+	+
Age $_i$ (years)	-0.003	-0.006
	(0.036)	(0.034)
Gender $_i$ (1=female; 0=male)	-0.140	-0.125
	(0.116)	(0.105)
Entrepreneurial parents $_i$ (1=yes; 0=no)	-0.093	-0.088
	(0.106)	(0.100)
TV $_i$ (yes=1; no=0)	0.166*	0.149*
	(0.084)	(0.085)
Constant		0.046
		(0.620)
R^2		0.152
N (Individuals)	127	135

Notes: This tables reports marginal effects at the mean of the explanatory variables from a probit estimations as well as the results from a linear probability model estimations by OLS of the probability of individuals born in and after 1985 to wish to become an entrepreneur or self-employed as a function of the regional availability of West German public TV signal prior 1990. Dependent variable is binary, with unity if an individual wish to start an own

[15] We are aware that the choice this conservative 1985 threshold, while allowing a more robust interpretation, comes at the expense of a small sample size.

[16] As these individuals are fairly young in the period of analysis and, we hardly observe actual new firm formations and use instead information about their entrepreneurial intentions.

business. *TV* is binary, with unity if parents have lived by 1989 in an East German region with West German public TV signal. Standard errors in parentheses are heteroscedasticity robust. *** p<0.01, ** p<0.05, * p<0.1. Data: German Socioeconomic Panel (GSOEP).

6. Summary and conclusions

In this paper, we empirically analyze whether the entrepreneurial behavior of individuals and, therefore, the entrepreneurship incidence within certain population groups or regions, can be influenced through TV. In fact, TV content can—deliberately or not—shape the esteem of occupations, increase awareness of entrepreneurship as an alternative to dependent employment, point to business opportunities, or impact on individual preferences, values and identity. We also analyze whether these effects fade out or can cause long lasting differences between treated population groups or regions and what are the underlying mechanisms.

Empirically, we utilize the fact that during the division of Germany, West German public TV signal was, since the 1960s until 1989, exogenously available in some, but not all regions of the socialistic East Germany, where entrepreneurship was stigmatized and banned. We apply econometric techniques that essentially compare the entrepreneurship incidence after 1990, when starting an own company became possible again in East Germany, among the inhabitants of East German regions that had West German TV signal before 1990 to that of the inhabitants of East German regions that had no signal.. We use both regional-level data and geo-referenced individual-level data that allow us to illuminate the underlying mechanisms driving the magnitude and the durability of the TV effects. We perform a variety of robustness checks and use different econometric approaches to strengthen causal inference.

We document that the entrepreneurial incidence is higher among the inhabitants of East German regions that had West German TV signal than among the inhabitants of East German regions without West German TV signal. The results of the individual-level analysis show that exposure to West German TV influences the value system of individuals, with exposed ones valuing ‘independence’ significantly higher than non-exposed, which is distinctive to entrepreneurs/self-employed persons. We find evidence that the effects are driven by specific cohort(s) of individuals that were (i) relatively young and ‘susceptible’ at the time of the exposure and (ii) then in the period of analysis at an age, where the genuine likelihood for entrepreneurship is high. This suggests that the differences between treated and non-treated population groups/regions would inevitably disappear with the last impacted cohort if the effects are confined to only directly exposed individuals. However, we find also evidence for indirect, second-order effects as also not directly exposed descendants of directly exposed individuals wish to become entrepreneurs/self-employed more often. These findings are consistent with a mechanism of an intergenerational transmission of entrepreneurial mindset, which can cause long lasting differences between treated and non-treated groups.

A strand of the literature discusses how subjective values and their intergenerational transmission can affect occupational choices and, therefore, economic development and growth (Chakraborty et al. 2016; Doepke and Zilibotti 2013). Another strand of the literature discusses

how the choice of a particular occupation depends not only on expected monetary outcomes on the action taken, but also on the way individuals behave, particularly according to their own view of who they are or ideally should be and what they should or should not do to live up to this ideal concept of the self (Akerlof and Kranton 2000; Benz and Frey 2008a, b). In this paper, we connect these strands of the literature and provide evidence that images, values and 'role models' individuals are presented with on TV can shape their entrepreneurial behavior.

In terms of policy, the results point towards the relevance of further measures to stimulate entrepreneurship in addition to more traditional instruments. Indeed, existing entrepreneurship policies are typically aimed at supporting (nascent) entrepreneurs by (i) providing rather 'hard' skills conducive for successfully starting and running a business, and (ii) improving the general framework conditions relevant for entrepreneurship (e.g., infrastructure, finance, regulations, etc.). Only relatively recently, pro-entrepreneurship policy stated realizing the 'cultural' dimensions of the entrepreneurship phenomenon and considering measures based on entrepreneurial role models. Our results suggest a role for instruments aimed at stimulating preferences for specific occupations in a first place. Overall, this paper is a stimulus for further research aimed at a better understanding how subjective factors shape the individual occupational choice and aggregate economic development.

References

Acs, Z., Audretsch, D. B. 2010. *Handbook of Entrepreneurship Research*. 2nd Ed. Dordrecht: Kluwer.

Adams-Price, C., Greene, A. L. 1990. Secondary Attachments and Self-Concept during Adolescence. *Sex Roles* 22, 187-198.

Adena, M., Enikolopov, R., Petrova, M., Santarosa, V., Zhuravskaya, E. 2015. Radio and the Rise of the Nazis in Prewar Germany. *Quarterly Journal of Economics* 130, 1885-1939.

Akerlof, G. A., Kranton, R. E. 2000. Economics and Identity. *Quarterly Journal of Economics* 105, 715-753.

Aldrich, H. E., Kim, P. H. 2007. A Life Course Perspective on Occupational Inheritance: Self-Eemployed Parents and Their Children. *Research in the Sociology of Organizations* 25, 33-82.

Aldrich, H., Renzulli, L. A., Langton, N. 1998. Passing on Privilege: Resources Provided by Self-Employed Parents to their Self-Employed Children. *Research in Social Stratification and Mobility* 16, 291-317.

Alesina, A., Fuchs-Schuendeln, N. 2007. Good bye Lenin (or not?): The Effect of Communism on People's Preferences. *American Economic Review* 97, 1507-1528.

Allison, P. D. 2009. *Fixed Effects Regression Models*. Thousand Oaks, CA: Sage.

Angrist, J. D., Pischke, J.-S. 2008. *Mostly Harmless Econometrics*. Princeton University Press.

Arenius, P., Minniti, M. 2005. Perceptual Variables and Nascent Entrepreneurship. *Small Business Economics* 24, 233-247.

Audretsch, D. B., Grilo, I., Thurik A. R. 2007. *Handbook of Research on Entrepreneurship Policy*. Edward Elgar.

Baker, M. J., George, L. M. 2010. The Role of Television in Household Debt: Evidence from the 1950's. *BE Journal of Economic Analysis and Policy* 10, 1-36.

Bandura, A. 1986. *Social Foundations of Thought and Action*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. 2001. Social Cognitive Theory of Mass Communication. *Media Psychology* 3, 265-299.

Banerjee, A. V., Duflo, E. 2011. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. Public Affairs.

Bauernschuster, S., Falck, O., Gold, R., Heblich, S., 2012. The Shadows of The Socialist Past: Lack of Self-Reliance Hinders Entrepreneurship. *European Journal of Political Economy* 28, 485-497.

Bauernschuster, S., Falck, O., Heblich, S. 2010. Social Capital Access and Entrepreneurship. *Journal of Economic Behavior and Organization* 76, 821-833.

Baumol, W. J. 1990. Entrepreneurship: Productive, Unproductive and Disruptive. Journal of Political Economy 98, 893-921.

Baumol, W. J. 2010. *The Microtheory of Innovative Entrepreneurship*. Princeton, NJ: Princeton University Press.

Baumol, W. J., Litan, R. E., Schramm, C. J. 2007. *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity*. New Haven: Yale University Press.

Benz, M., Frey, B. S. 2008a. Being Independent is a Great Thing: Subjective Evaluations of Self-Employment and Hierarchy. *Economica* 75, 362-383.

Benz, M., Frey, B. S. 2008b. The Value of Doing What You Like: Evidence from the Self-Employed in 23 Countries. *Journal of Economic Behavior and Organization* 68, 445-455.

Berg, G., Zia, B. 2013. *Harnessing Emotional Connections to Improve Financial Decisions: Evaluating the Impact of Financial Education in Mainstream Media*. World Bank Policy Research Working Paper No. 6407.

Berglann, H., Moen, E. R., Røed, K., Skogstrøm, J. H. 2011. Entrepreneurship: Origins and Returns. *Labour Economics* 18, 180-193.

Bisin, A., Verdier, T. 2000. Beyond the Melting Pot: Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits. *Quarterly Journal of Economics* 115, 955-988.

Bisin, A., Verdier, T. 2001. The Economics of Cultural Transmission and the Dynamics of Preferences. *Journal of Economic Theory* 97, 298-319.

Bisin, A., Verdier, T. 2017. On The Joint Evolution of Culture and Institutions. CEPR-DP12000.

Bjorvatn, K., Cappelen, A. W., Helgesson Sekei, L., Sorensen, E., Tungodden, B., 2015. *Teaching through Television: Experimental Evidence on Entrepreneurship Education in Tanzania*. Discussion Paper No. 3/2015. NHH Department of Economics.

Braumann, C. 1994. Fernsehforschung zwischen Parteilichkeit und Objektivitaet. Zur Zuschauerforschung in der ehemaligen DDR. *Rundfunk und Fernsehen* 42, 524-541.

Brezinski, H. 1987. The Second Economy in the GDR. Pragmatism is Gaining Ground. *Studies in Comparative Communism* XX, 85-101.

Buhl, D. 1990. *Window to the West: How Television from the Federal Republic Influenced Events in East Germany*. Discussion paper D-5, Joan Shorenstein Barone Center, Harvard University.

Bursztyn, L., Cantoni, D. 2016. A Tear in the Iron Curtain: The Impact of Western Television on Consumption Behavior. *Review of Economics and Statistics* 98, 25-41.

Bosquet, C., Overman, H. G. 2019. Why does birthplace matter so much? *Journal of Urban Economics* 110, 26-34.

Calvert, S. L., Huston, A. C. 1987. Television and Children's Gender Schemata. *New Directions for Child and Adolescent Development* 38, 75-88.

Chlosta, S., Patzelt, H., Klein, S. B., Dormann, C. 2012. Parental Role Models and the Decision to Become Self-employed: The Moderating Effect of Personality. *Small Business Economics* 38, 121-138.

Cohen, J. 2001. Defining Identification: A Theoretical Look at the Identification of Audiences with Media Characters. *Mass Communication and Society* 4, 245-264.

Croson, D. C., Minniti, M. 2012. Slipping the Surly Bonds: The Value of Autonomy in Self-Employment. *Journal of Economic Psychology* 33, 355-365.

DellaVigna, S., Kaplan, E. 2007. The Fox News Effect: Media Bias and Voting. *Quarterly Journal of Economics* 122, 1187-1234.

Doepke, M., Zilibotti, F. 2013. *Culture, Entrepreneurship, and Growth*. NBER Working Paper 19141.

Dohlus, E. 1991. *Augen und Ohren nach Westen gerichtet? Zuschauer- und Hoererverhalten in den neuen Bundeslaendern*. ARD-Jahrbuch 1991.

Durante, R., Knight, B. 2012. Partisan Control, Media Bias, and Viewer Responses: Evidence from Berlusconi's Italy. *Journal of the European Economic Association* 10, 451-481.

Ehmer, J. 2013. *Bevoelkerungsgeschichte und historische Demographie 1800-2010*. 2nd Ed. Munich: Oldenburg Verlag.

Engel, D., Fryges, H. 2002. Aufbereitung und Angebot der ZEW Gruendungsindikatoren. *ZEW Dokumentation 02-01*.

Enikolopov, R., Petrova, M., Zhuravskaya, E. 2011. Media and Political Persuasion: Evidence from Russia. *American Economic Review* 101, 3253-3285.

Etzioni, A. 1987. Entrepreneurship, Adaptation and Legitimation. *Journal of Economic Behavior and Organization* 8, 175-199.

Etzkorn, K. P., Stiehler, H.-J. 1998. The 'Valley of the Clueless' - Results from an Historical Experiment. *European Journal of Communication Research* 23, 271-298.

European Commission 2004. *Action Plan: The European Agenda for Entrepreneurship*. Brussels: Commission of the European Communities.

Falck, O., Gold, R., Heblich, S. 2016. Lifting the Iron Curtain: School-Age Education and Entrepreneurial Intentions. *Journal of Economic Geography* 17, 1111-1148.

Falck, O., Heblich, S., Luedermann, E. 2012. Identity and Entrepreneurship: Do School Peers Shape Entrepreneurial Intentions? *Small Business Economics* 39, 39-59.

Friehe, T., Pannenberg, M., Wedow, M. 2015. Let Bygones be Bygones? Socialist Regimes and Personalities in Germany. *SOEP Papers 776*. DIW Berlin.

Fritsch, M. (Ed.) 2011. *Handbook of Research on Entrepreneurship and Regional Development*. Cheltenham, UK and Northampton, MA: Edward Elgar.

Fritsch, M., Mueller, P. 2007. The Persistence of Regional New Business Formation-Activity over Time - Assessing the Potential of Policy Promotion Programs. *Journal of Evolutionary Economics* 17, 299-315.

Fritsch, M., Storey, D. (Eds.) 2015. *Entrepreneurship in a Regional Context*. CRC Press.

Fritsch, M., Wyrwich, M. 2014. The Long Persistence of Regional Levels of Entrepreneurship: Germany, 1925-2005. *Regional Studies* 48, 955-973.

Fritsch, M., Bublitz, E., Sorgner, A., Wyrwich, M. 2014. How Much of a Socialist Legacy? The Re-emergence of Entrepreneurship in the East German Transformation to a Market Economy. *Small Business Economics* 43, 427-446.

Fuchs-Schuendeln, N., Masella, P. 2016. Long-Lasting Effects of Socialist Education. *Review of Economics and Statistics* 98, 428-441.

GEM 2013. *Global Entrepreneurship Monitor 2012 Global Report*.

Gentzkow, M. 2006. Television and Voter Turnout. *Quarterly Journal of Economics* 121, 931-972.

Giannetti, M., Simonov, A. 2009. Social Interactions and Entrepreneurial Activity. *Journal of Economics and Management Strategy* 18, 665-709.

Glaeser, E. L., Kerr, W. R., Ponzetto, G. A. M. 2010. Clusters of Entrepreneurship. *Journal of Urban Economics* 67, 150-168.

Grammes, T., Schluss, H., Vogler, H.-J. 2006. *Staatsbuergerkunde. Ein Dokumentenband*. Verlag fuer Sozialwissenschaften, Wiesbaden.

Gruenert, H. 1997a. Starrheit und Mobilitaet im Beschaeftigungssystem der DDR. *Der Hallesche Graureiher* 97-5. Forschungsberichte des Instituts fuer Soziologie. University of Halle-Wittenberg.

Gruenert, H. 1997b. *Beschaeftigungssystem und Arbeitsmarkt in der DDR*. Opladen: Leske und Budrich.

Halaby, C. H. 2003. Where Job Values Come From: Family and Schooling Background, Cognitive Ability, and Gender. *American Sociological Review* 68, 251-278.

Hamilton, B. 2000. Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment. *Journal of Political Economy* 108, 604-631.

Hausman, J. A., Taylor, W. E. 1981. Panel Data and Unobservable Individual Effects. *Econometrica* 49, 1377-1398.

Hennighausen, T. 2015. Exposure to Television and Individual Beliefs: Evidence from a Natural Experiment. *Journal of Comparative Economics* 43, 956-980.

Hesse, K. R.1988. *Westmedien in der DDR*. Cologne: Verlag Wissenschaft und Politik.

Hoffner, C. 1996. Children's Wishful Identification and Parasocial Interaction with Favorite Television Characters. *Journal of Broadcasting and Electronic Media* 40, 389-402.

Hoffner, C., Buchanan, M. 2005. Young Adults' Wishful Identification With Television Characters: The Role of Perceived Similarity and Character Attributes. *Media Psychology* 7, 325-351.

Holzweissig, G. 2002. *Die schaerfste Waffe der Partei. Eine Mediengeschichte der DDR*. Cologne, Weimar, Vienna: Boehlau.

Honecker, E., Lamberz, W. 1977. *Die weiteren Aufgaben der politischen Massenarbeit der Partei*. Konferenz des Zentralkomitees der SED am 25/26. Mai 1977. Berlin: Dietz Verlag.

Hornuf, L., Rieger, M. O. 2017. *Can Television Reduce Xenophobia? The Case of East Germany*. IAAEU Discussion Paper Series in Economics No. 02/2017.

Hout, M., Rosen, H. 2000. Self-Employment, Family Background, and Race. *Journal of Human Resources* 35, 670-692.

Hyll, W., Schneider, L. 2013. The Causal Effect of Watching TV on Material Aspirations: Evidence from the "Valley of the Innocent." *Journal of Economic Behavior and Organization* 86, 37-51.

Hyytinen, A., Ilmakunnas, P., Toivanen, O. 2013. The Return-to-Entrepreneurship Puzzle. *Labour Economics* 20, 57-67.

Jensen, R., Oster, E. 2009. The Power of TV: Cable Television and Women's Status in India. *Quarterly Journal of Economics* 124, 1057-1094.

Johnson, M. K. 2002. Social Origins, Adolescent Experiences, and Work Value Trajectories During the Transition to Adulthood. *Social Forces* 80, 1307-1340.

Kawka, R. 2007. Regional Disparities in the GDR: Do They Still Matter? In: Lentz, S. (Ed.). *German Annual of Spatial Research and Policy: Restructuring Eastern Germany*. 111-122. Berlin: Springer.

Kibler, E., Kautonen, T., Fink, M. 2014. Regional Social Legitimacy of Entrepreneurship: Implications for Entrepreneurial Intention and Start-up Behavior. *Regional Studies* 48, 995-1015.

La Ferrara, E., Chong, A., Duryea, S. 2012. Soap Operas and Fertility: Evidence from Brazil. *American Economic Journal: Applied Economics* 4, 1-31.

Latsch, G. 2015. Rotlichtbestrahlung. *SPIEGEL GESCHICHTE 3*, 88-89.

Lerner, J. 2009. *Boulevard Of Broken Dreams. Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed - and What to Do About It*. Princeton University Press.

Lerner, J. 2020. *Government Incentives for Entrepreneurship*. NBER Working Paper 26884.

McMillan, J., Zoido, P. 2004. How to Subvert Democracy: Montesinos in Peru. *Journal of Economic Perspectives* 18, 69-92.

Meyen, M. 2003. *Einschalten, Umschalten, Ausschalten? Das Fernsehen im DDR-Alltag*. Leipziger Universitaetsverlag.

Mohs, G. 1980. *Migration and Settlement: 4. German Democratic Republic*. International Institute for Applied Systems Analysis RR-80-6, Laxenburg, Austria.

Mundlak, Y. 1978. On the Pooling of Time Series and Cross Section Data. *Econometrica* 46, 69-85.

Nanda, R., Sorensen, J. B. 2010. Workplace Peers and Entrepreneurship. *Management Science* 56, 1116-1126.

Norden, A. 1965. Ideologische Waffen fuer Frieden und Sozialismus. *Neue Deutsche Presse* 1, 2-16.

OECD 1998. *Fostering Entrepreneurship*. Paris: OECD.

Parker, S. C. 2009. *The Economics of Entrepreneurship*. Cambridge University Press.

Pickel, A. 1992. *Radical Transitions: The Survival and Revival of Entrepreneurship in the GDR*. Westview Press Inc.

Ramafoko, L., Andersson, G., Weiner, R. 2012. Reality Television for Community Development: The Kwanda Initiative in South Africa. *Nordicom Review* 33, 149-162.

Rauch, A. 2014. Predictions of entrepreneurial behavior: A personality approach. In: Chell, E., Karatas-Ozkan, M. (Eds.). *Handbook of Research on Small Business and Entrepreneurship*. 165-183. Edward Elgar, London, UK.

Rivadeneyra, R., Lebo, M. J. 2008. The Association Between Television-Viewing Behaviors and Adolescent Dating Role Attitudes and Behaviors. *Journal of Adolescence* 31, 291-305.

Rogers, E. M., Vaughan, P. W., Swalehe, R. M. A., Rao, N., Svenkerud, P., Sood, S. 1999. Effects of an Entertainment-Education Radio Soap Opera on Family Planning Behavior in Tanzania. *Studies in Family Planning* 30, 193-211.

Rosengren, K. E., Windahl, S. 1972. Mass Media Consumption as a Functional Alternative. In: McQuail, D. (Ed.). *Sociology of Mass Communications*. 166-194. New York: Penguin.

Rosengren, K. E., Windahl, S., Hakansson, P.-A., Johnsson-Smaragdi, U. 1976. Adolescents' TV Relations: Three Scales. *Communication Research* 3, 347-366.

Rudolph, H. 1990. Beschaeftigungsstrukturen in der DDR vor der Wende. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* 23(4). Institute for Employment Research (IAB) Nuremberg.

Schumpeter, J. A. 1912. *The Theory of Economic Development*. New York: Oxford University Press.

Schumpeter, J. A. 1942. *Capitalism, Socialism and Democracy*. New York: Harper and Row.

Signorielli, N. 1990. Children, Television, and Gender Roles. Messages and Impact. *Journal of Adolescent Health Care* 11, 50-58.

Singhal, A., Rogers, E.M. 1999. *Entertainment-Education: A Communication Strategy for Social Change*. New Jersey: Lawrence Erlbaum Associates.

Statistik des Deutschen Reichs 1927. Vol. 403-405, Berlin: Reimar Hobbing.

Stiehler, H.-J. 2001. *Leben ohne Westfernsehen*. Leipzig: Leipziger Universitaetsverlag.

Stuart, T. E., Sorenson, O. 2005. Social Networks and Entrepreneurship. In: Alvarez, S., Agarwal, R., Sorenson, O. (Eds.). *The Handbook of Entrepreneurship: Disciplinary Perspectives.* 211-228. Berlin: Springer.

v. Feilitzen, C., Linne, O. 1975. Identifying with Television Characters. *Journal of Communication* 25, 51-55.

van Gelderen, M., Jansen, P. 2006. Autonomy as a Startup Motive. *Journal of Small Business and Enterprise Development* 13, 23-32.

Wooldridge, J. M. 2010. *Econometric Analysis of Cross Section and Panel Data*. 2nd ed. Cambridge, MA: MIT Press.

Wright, J. C., Huston, A. C, Truglio, R., Fitch, M., Smith, E., Piemyat, S. 1995. Occupational Portrayals on Television: Children's Role Schemata, Career Aspirations, and Perceptions of Reality. *Child Development* 66, 1706-1718.

Wyrwich, M. 2015. Entrepreneurship and the Intergenerational Transmission of Values. *Small Business Economics* 45, 191-213.

Yanagizawa-Drott, D. 2014. Propaganda and Conflict: Evidence from the Rwandan Genocide. Quarterly Journal of Economics 129(4), 1947-1994.

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Appendix

Table A1: TV spread in East and West Germany

	Share of households with TV receiver (in %)	
year	East Germany	West Germany
1954	1	4
1956	5	11
1958	17	24
1962	31	37
1964	42	50
1966	54	61
1968	64	71
1970	69	77
1974	80	76
1978	87	80
1982	90	92
1986	94	97

Source: Meyen (2003).

Table A2: Availability and intensity of watching West German public TV in East German regions in 1988/89

	Daily or several times per week / never (%)	West German public TV available
Schwerin	91.62 / 1.05	Yes
Magdeburg	95.57 / 1.11	Yes
Berlin	93.03 / 0.24	Yes
Cottbus	96.67 / 1.67	Yes
Leipzig	82.48 / 5.47	Yes
Dresden	15.12 / 67.85	No
Karl-Marx	93.89 / 2.09	Yes
Erfurt	94.22 / 1.25	Yes

Notes: Information about the intensity of watching West German TV by residents of East German regions stem from high-quality data collected by the Central Institute for Youth Research (*Zentralinstitut fuer Jugendforschung, Zentralarchiv fuer Empirische Sozialforschung ZA 6073 and ZA 6008*) by means of anonymous and unmarked individual questionnaires in 1988-1989, immediately prior the fall of the Berlin Wall. Intensity of watching was measured in five categories: daily, several times per week, ones per week, seldom, never. Here, only the share of residents that watched West German TV daily or several times per week/never is reported. Regional assignment is possible only at the level of the GDR districts (*Bezirke*), which are larger than the NUTS3 regions that we use in the empirical analysis. Precisely due to this relative large size, some parts of the Dresden district actually had access to West German TV, which explains the comparably large share of individuals that watched West German TV daily or several times per week. Data have been collected for the districts of Schwerin, Magdeburg, Berlin, Cottbus, Leipzig, Karl-Marx and Erfurt, in which West German TV was available as well as the district of Dresden, where West German TV was only partly available. Data from the further districts with West German TV access (Neubrandenburg, Potsdam, Frankfurt Oder, Halle, Gera, Suhl) as well as from the second district (Rostock), parts of which had no access to West German TV, are not available.

Popularity of East and West German TV with East German citizens

The central state in the GDR recognized the role of TV in influencing public opinion and, from the very beginning of broadcasting, heavily instrumented it for the purpose of the official doctrine, i.e., to spread the socialistic ideology and to streamline/raise individuals accordingly (Norden 1965; Holzweissig 2002). Moreover, West German public TV was perceived as a 'menace' for the socialistic state and the state-owned East German TV was used to counteract enemy's propaganda.[17] Erich Honecker, who was a General Secretary of the Socialist Unity Party of Germany and run the GDR 1989, called TV the most powerful weapon of the socialistic state (Honecker and Lamberz 1977). The East German TV broadcasted often and extensively discussions of political, social and economic topics, typically placed at prime time. Also entertainment on East Germany TV was prepossessed by the official state doctrine (Braumann 1994; Holzweissig 2002). However, what to be produced and broadcasted was carefully planned by the central authorities based on two criteria: (i) content, images, and messages had to be not critical with respect to the official state ideology, and (ii) the political orientation of the actors (Honecker and Lamberz 1977). This further exacerbated the political bias of the East German TV, making it even less popular. In the early 1980s, the socialistic state tried to eliminate the rising misalignment between own interests and those of the public, and since December 1982, the East German TV changed its program (*alternative Programmgestaltung*). Journalistic content was shortened and moved to later times and East German TV started broadcasting entertainment at prime time. This comprised movies, series, talks, humor, sports, and other shows to 'lull' the public (Holzweissig 2002).[18] However, the attempts to keep the public attached came too late. Official data collected in East Germany prior to the Reunification and classified until 1990 reveal a seriously disturbed and continuously decreasing identification of East German citizens with the own TV until the breakdown of the regime in 1989 (Braumann 1994; *Zentralarchiv fuer Empirische Sozialforschung ZA 6073* and *ZA 6008*).

[17] There were some unsuccessful attempts to prevent East German citizens from watching West German TV, which, however, turned out infeasible and ineffective, and were defaulted very soon. First, jamming West TV was infeasible since it could not be restricted to the territory of East Germany and would have impeded TV reception in West Germany too. A campaign, called '*Ochsenkopf*', was started in the early 1960s with the aim at removing aerials able to receive West German public TV, but was abandoned soon too. Specifically, 'voluntary' troops of the Free German Youth (*Freie Deutsche Jugend*, *FDJ*), the official youth movement of the GDR and the Socialist Unity Party of Germany, were sent out to seek, locate and remove such aerials able to receive West German TV, which due to difference in broadcasting frequencies looked differently and were recognizable ('*Ochsenkopf*-aerials, after the West German TV transmitter '*Ochsenkopf*' close to the former inner German border). However, also this venture failed. The number of households with '*Ochsenkopf*-aerials was too large. Moreover, in vicinity of West German transmitters, for instance in Berlin and surroundings or along the inner German border, reception of was also possible with indoor aerials. In cases where outdoor devices were required, East Germans showed creativity. For instance, the division 'Political Agitation' of the Central Committee of the Socialistic Party reported in 1966 that citizens often mounted '*Ochsenkopf*-aerials on balconies or window ledges just before starting watching and dismounted them afterwards. Not least, such campaigns were considered by the population as a violation of human rights and the Socialistic Party feared larger conflict with the public.

[18] A few West movies were imported like the Danish 'Olsen gang' about habitual, non-violent criminals. Such movies were supposed to give East Germans the feeling of having a window to the West. Similarly, the East German sport show '*Sport Echo*' was timed as to allow watching (admittedly) higher quality West German soccer, but actually to detract attention from other shows perceived as anti-socialistic. Absent from the East TV landscape were movies like 'Tucker: The Man and His Dream' about an entrepreneur with a vision of a revolutionary vehicle he won't give up on and runs up against incumbent manufacturers and state bureaucracy.

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