Television and the Labour Supply: Evidence from the Digital Television Transition in the UK

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Abstract

This paper exploits exogenous variation in the date of transition from analogue to digital television signal in the UK across more than 40,000 geographical units to investigate the causal impact of television on employment probabilities and potential mechanisms. Using a large individual panel survey dataset and a difference-in-differences model that compares the outcomes of adults living in regions where the switchover occurred in different years, I find that the digital transition increases employment probabilities. The impact is driven by mothers and is due to an increase in part-time and self-employment. A possible explanation is that television keeps children busy, allowing parents to focus on their career. Consistent with this explanation, I show that the digital transition increases children's TV viewing time, and that the effect of television on employment is higher for parents who initially have higher family burdens and financial constraints to access childcare. I also show that, by keeping children busy, television reduces the time that mothers dedicate to housework and the suffering of families when mothers work.

Keywords: labour supply, employment, child, mother, television, digital transition

JEL classification: J01, J16, J22.

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1 Introduction

Television viewing, one of the most important leisure activities for the majority of individuals, has been commonly associated with obesity, disease, violence, and poor mental health (Tucker and Bagwell, 1991; Johnson et al., 2002; Hu et al., 2003; Hamer et al., 2010; Grøntved and Hu, 2011; Tahir et al., 2018), as well as with a reduction in the time parents spend with children (Vandewater et al., 2006). Changes in time allocation and adverse health outcomes can have implications for labour supply, but surprisingly, the effect of TV watching on employment has been largely unexplored. While prior evidence has shown that specific TV content improves academic achievement for children and their long–term labour outcomes (Kearney and Levine, 2019), the contemporaneous effect of TV watching on labour supply still remains unknown.[1]

The aim of this paper is to identify the causal contemporaneous effect of television on employment probabilities and to shed light on the underlying mechanisms. Estimating this impact is challenging as there may be confounders correlated with both the time spent watching TV and labour market status. Furthermore, the employment situation of an individual may be a determinant of the time s/he spends watching television. I address identification concerns by exploiting the transition from analogue to digital television signal in the United Kingdom as a natural experiment. This process took place between 2008 and 2012 and upgraded every television transmitter in the UK to interrupt the transmission of analogue signal and start the provision of high-power digital signal. As television transmitters are based in different regions and were upgraded at different times, individuals gained access to digital signal in different years depending on the region in which they lived. I obtain data on the digital transition deadlines by web-scraping the DigitalUK website, which allows me to exploit exogenous variation in the digital switchover date across more than 40,000 geographical units. The schedule of the digital transition

[1]Prior literature has also reported that watching television in childhood is positively correlated with the likelihood of being unemployed during adulthood (Landhuis et al., 2012).

was implemented by two independent organizations (Ofcom and DigitalUK), based on the physical features of television broadcasters that had been constructed in the 1960s and 1970s. This makes it unlikely that the digital transition is correlated with unobserved determinants of the labour market. The switchover introduced digital television to millions of households, and the number of terrestrial channels increased from 5 to 40 on the date of its implementation.[2] According to UK Broadcasters' Audience Research Board (BARB) data, this increased television viewing time by 10%.[3] Prior literature has used the digital transition in Italy to examine the causal impact of television on voting (Barone et al., 2015) and notions of crime (Mastrorocco and Minale, 2018), and the digital switchover in the UK to study the causal effect of television on education (Nieto, 2019).

I link the switchover information with the first seven waves of the Understanding Society Survey, which has tracked thousands of individuals in the UK on a yearly basis since 2009. By doing so, I assemble a large panel of approximately 180,000 observations that contains yearly data on the labour and time allocation outcomes of the sampled individuals and on their digital transition deadlines. Using this information, I implement a difference-in-differences model that compares the employment status of adults who received access to digital television signal in different years.

I first provide a novel finding after accounting for endogeneity, which is that the digital transition raises employment probabilities. Given that the previous result is subject to the digital transition being an exogenous event, I also provide evidence supporting the empirical strategy by (i) showing no pre-trends in labour outcomes, (ii) performing balancing tests, (iii) controlling for region-year dummies that capture differential trends in the labour market across regions, (iv) using control groups that are unlikely to be affected by the digital transition, (v) testing for selection, (vi) adopting alternative specifications, and (vii) using different samples.

[2]The digital transition also allowed TV content to be broadcasted in multiple languages, improved definition, and increased multimedia content.

[3]This is reported in https://www.barb.co.uk/trendspotting/data/average-weekly-viewing/ (accessed March 31, 2019).

My second set of results explores plausible explanations behind the positive effect of television on employment. I show that the digital transition increases the employment probabilities of mothers by 2.4 percentage points but find no impact for fathers and non-parents. I also investigate the types of employment driving this effect, and show that the digital transition only increases the likelihood of mothers being part-time employees and self-employed, which are flexible types of employment. The previous results show that the presence of children is crucial for television increasing employment, which may be due to television keeping children busy and allowing parents to focus on their career. Consistent with this explanation, I show that the digital transition increases the time children spend watching TV, and that the effect of television on employment is higher for parents who initially have higher family burdens and financial constraints to access childcare. By keeping children busy, the digital transition may reduce the amount of chores parents need to do (e.g. cleaning, laundry and childcare), as well as their family burdens, allowing parents to focus on their career. I show that television reduces the number of hours that mothers dedicate to housework but find no effect for fathers and non-parents. I also show that the digital transition decreases the likelihood of individuals reporting that families suffer when mothers work.

This paper contributes to several literatures. First, I contribute to the literature on the relationship between children and gender equality. Previous evidence has shown that children reduce labour market participation, hours of work, managerial duties, and the employment probability of mothers relative to fathers (Angrist and Evans, 1998; Lundberg and Rose, 2000; Bridges and Mumford, 2001; Michaud and Tatsiramos, 2011; Angelov et al., 2016; Cools et al., 2017; Kleven et al., 2019), which increases the gender wage gap. Given the key role of children in gender inequality, a large number of studies have investigated the impact of child arrangements on the labour market. Some important findings are that parental leave raises employment for females (Ruhm, 1998), childcare services and subsidies improve their career opportunities (Connelly, 1992; Chevalier and Viitanen, 2002; Del Boca, 2002; Berlinski

and Galiani, 2007; Del Boca and Sauer, 2009; Boeri and Van Ours, 2013; Brewer et al., 2016; Rupert and Zanella, 2018), and grandparent assistance matters for female labour market participation (Posadas and Vidal-Fernandez, 2013; Rupert and Zanella, 2018). I contribute to these studies by showing causal evidence on another factor that contributes towards mothers' labour supply: home-based leisure.

Second, this paper relates to the literature that explores the determinants of the labour performance of individuals. Previous studies have shown that a better health condition (Bartel and Taubman, 1979; Stewart, 2001) and higher level of education (Angrist and Krueger, 1991; Kearney and Levine, 2019) raise employment probabilities and earnings, and that a greater personal wealth increases the probability of women being entrepreneurs (Sauer and Wilson, 2016; Sauer and Wiesemeyer, 2018). Besides these socioeconomic characteristics, prior studies have shown that the propagation of household appliances increases labour participation (Cavalcanti and Tavares, 2008; Coen-Pirani et al., 2010) and that the supply of public services such as public transport and sport facilities improves career prospects (Lechner, 2009; Tyndall, 2017). I contribute to this literature by showing that home-based leisure is also a relevant determinant of the contemporaneous labour supply.

Lastly, I add to the literature on the impact of television on a wide range of outcome variables. For example, several studies have investigated the impact of television on educational performance (Keith et al., 1986; Christakis et al., 2004; Hancox et al., 2005; Gentzkow and Shapiro, 2008; Nieto, 2019; Kearney and Levine, 2019), political outcomes (Gentzkow, 2006; DellaVigna and Kaplan, 2007; Campante and Hojman, 2013; Barone et al., 2015; Ellingsen and Hernæs, 2018), crime concerns (Mastrorocco and Minale, 2018), terrorism (Jetter, 2019), living conditions of women (Jensen and Oster, 2009), divorce (Chong and Ferrara, 2009), fertility (La Ferrara et al., 2012; Kearney and Levine, 2015), consumption (Radfar, 1985), development (La Ferrara, 2016) and financial decisions (Berg and Zia, 2017). I contribute to this literature by examining whether television also has a causal contemporaneous effect on labour supply as well as by exploring plausible explanations.

The article proceeds as follows. Section 2 describes the digital television transition in the United Kingdom. Section 3 discusses the datasets I use in the analysis. Section 4 explains the empirical model and presents the estimates on the impact of the switchover on the labour market. Section 5 examines plausible explanations behind the effect of television on employment. Section 6 concludes.

2 The Digital Television Transition

This paper studies the causal effect of home-based leisure on the labour supply using the digital television transition that occurred in the UK between 2008 and 2012 as a natural experiment. This technological revolution consisted in the upgrade of every television transmitter to interrupt the transmission of analogue signal and begin the broadcast of high-power digital signal. The digital transition introduced digital television to more than 10 million people and increased the number of television channels they could watch from 5 to 40. The switchover revolution also introduced the possibility of watching television in multiple languages, offered multimedia services, improved definition, and permitted television channels to transmit more than one TV programme at the same time.

The digital transition occurred in different dates in the different Lower Layer Super Output Areas (LSOAs) in the UK. This variation comes from two main sources. First, the digital transition materialized on a different date for each of the 66 television transmitter groups in the UK, which are located in different regions.[4] Second, each LSOA receives TV signal from several different transmitter groups, and starts receiving access to digital signal when any of its transmitters starts providing high-power digital signal. Subsequently, even neighbouring LSOAs may have different switchover dates. There are more than 40,000 LSOAs in the UK,

[4]Each transmitter group consists of one principal and several relay transmitters. Principal broadcasters generate television signal, and relay broadcasters repeat the signal so that it reaches television sets that cannot receive it from the principal broadcasters. There are 1,157 TV broadcasters in the UK in total. Appendix A.1 shows the digital switchover deadlines of the transmitter groups.

which generates considerable geographical variation in the occurrence of the digital transition. Figures 1 and 2 show an overview of the switchover process by displaying the territory that obtained access to digital signal at some date during each quarter of each year during the period of analysis. The switchover started at the end of 2008, and all regions were already receiving digital signal by the end of 2012.

In addition to receiving access to digital signal, individuals needed to adapt their TV in order to be able to watch digital TV channels. This could be done by installing a set-top-box on their TV, which can be bought by 30 pounds and which were subsidized by the UK government for low-income individuals.

It is also important to bear in mind that the UK government assigned Ofcom and DigitalUK the task of implementing the digital transition. The former is the media administrator in the UK, and the latter is an autonomous not-for-profit institution.[5] Their unique objective was to complete the digital transition according to a schedule based on the physical features of the television transmitters in the UK. These had been constructed in the 1960s and 1970s, decades before the switchover revolution started. Consequently, it is unlikely that the digital transition is correlated with unobservable determinants of the labour market.

As shown in panel A of Figure 3, the digital transition substantially increases the average television viewing time in the United Kingdom. The commencement and completion date of the transition are displayed with blue lines. Television viewing time does not change much in the years prior to the commencement of the transition but sharply increases right after its start. TV viewing time remains higher during the transition but gradually falls after the end of the process. The latter may be due to a rise in the demand for subscription services such as Netflix and Amazon Prime Video or because of the increase in the time that people dedicate to smartphones and tablets. Panel A of Figure 3 shows that TV viewing time is 10% higher during the transition process than in the years prior to its start.[6]

[5] Nieto (2019) gives a full description of the tasks that were assigned to Ofcom and DigitalUK, respectively.

[6] I obtain this percentage from the difference between the minutes that a representative person spends watching TV in the last years of the transition and the minutes that s/he spends watching

Besides the increase in television viewing time, the digital transition reduced the audience share of the channels that could be watched through analogue signal.[7] As shown in panel B of Figure 3, the proportion of television viewing time that individuals dedicate to these channels declines by 6.6 percentage points during the digital transition. This is due to a rise in the audience share of the digital channels. However, despite the previous changes, the type of television content that people watch does not vary during the digital transition. To show this, Figure 4 displays the proportion of television viewing time that individuals dedicate to each type of television content from 2007 to 2014. I define eight genres of television content: entertainment, soap operas, cultural programmes, contemporary matters, newscasts, educational content, cartoons, and music/films. The audience shares of the different genres remain unchanged during the period of study, which suggests that the digital transition only raised television viewing time.[8]

3 Data

3.1 Digital Television Data

The analysis uses data on the digital transition deadlines in the United Kingdom at the LSOA level, which I obtain by web-scraping the DigitalUK website. The web-scraping programme first compiles data on the broadcasters that provide television signal to a particular LSOA, and then assigns to the LSOA the switchover deadline of the first of its television transmitters in being upgraded. I extract additional data on several features of the digital transition such as the quality of the digital signal that every television transmitter provides to each LSOA and whether television broadcasters are principal or relay ones. The number of LSOAs in the

TV in the years prior to the transition. I then divide this difference by the average TV watching time prior to the switchover.

[7] The channels BBC One, BBC Two, ITV, Channel 4, and Channel 5 were available via analogue television.

[8] I adopt a finer classification of genres in Appendix A.2 and also find that the transition process had no effect on the audience shares of the different genres.

United Kingdom is 42,621 and their average population is 1,500.[9] Therefore, I use accurate geographical information on the date when the digital transition occurred.

3.2 Understanding Society Survey Data

The paper uses the first seven waves of the Understanding Society survey (UKHLS, 2019a). This is a large longitudinal survey dataset representative of the UK population that contains labour and time-allocation information for thousands of individuals who have been followed on a yearly basis since 2009. Regarding labour outcomes, the Understanding Society survey provides data on employment status (employed, self-employed, or unemployed), labour income, managerial duties, absenteeism, and hours of work. Moreover, the dataset contains information on whether individuals are white-collar, hold full-time labour contracts, and are permanent employees. Regarding time allocation, the Understanding Society survey includes data on the time that adults dedicate to housework, sleeping and commuting, among other activities.

The Understanding Society survey contains rich sociodemographic data about individuals. For example, it provides data on their gender, age, sexual orientation, ethnicity, nationality, level of education, parental, marital, and religious status. Moreover, it contains data on household characteristics such as household income, size, number of children, bedrooms, and cars. Finally, the Understanding Society survey provides data on the LSOA of residence of individuals, which I access after receiving permission from the UK Data Service (UKHLS, 2019b). Using this information, I merge the Understanding Society dataset with the information on the digital transition deadlines at the LSOA level in the UK. The analysis exploits variation in the switchover deadlines at the LSOA level and is based on the sample

[9] There are no LSOAs in Scotland and Northern Ireland. Instead, the names of the most precise areas that are available in the dataset for these two countries are Data Zones and Super Output Areas, respectively. There are 6,505 Data Zones in Scotland, and their populations range from 500 to 1,000 people. There are 890 Super Output Areas in Northern Ireland, and their populations are between 1,300 and 2,800. The analysis uses these geographical units instead of LSOAs for Scotland and Northern Ireland, respectively.

of individuals who are present in the dataset before and after their respective digital transition deadlines. I can identify individuals across the different waves of the Understanding Society survey, and so I assemble a large panel that provides yearly labour and time allocation information at the individual level. Overall, I use an unbalanced panel of more than 180,000 observations, which follows approximately 40,000 individuals on a yearly basis from 2009 to 2014.

3.2.1 Summary Statistics

This section presents summary statistics of several sociodemographic and labour characteristics of the sample.[10] Column 1 of Table 1 provides unweighted descriptive statistics regarding the gender, nationality, age, civil status, and size of the household where individuals live. It also presents unweighted summary statistics of some labour characteristics such as the type of contract, level of qualification, probability of having a job, likelihood of being unemployed and active in the labour market. Columns 2–5 of Table 1 split the sample depending on the year in which individuals obtained access to digital television. This allows me to explore whether adults who obtain access to digital signal in different years differ in observable characteristics. As shown in Table 1, people living in areas where the digital transition occurred earlier are more likely to be native, single, separated, widowed, older, and live in households with fewer members. Individuals who obtain access to digital signal in different years do not seem to differ in the type of contract they hold, their employment and labour participation probabilities, or other sociodemographic characteristics. Later in the paper, I provide evidence on the introduction of the digital transition being conditionally uncorrelated with prior sociodemographic and labour characteristics once I account for LSOA and year fixed effects.

[10] Given that the analysis shows gender differences in the impact of the digital switchover on employment probabilities, Appendix A.3 also presents summary statistics separately for males and females.

4 Methodology and Baseline Results

4.1 Empirical Model

This section describes the difference-in-differences model that I estimate to study the causal impact of television on employment probabilities. I use the digital television transition that occurred in the United Kingdom between 2008 and 2012 as a natural experiment and take advantage of exogenous variation in the date when it was implemented across 42,621 LSOAs in the UK. I estimate the following model:

$$y_{i,j,t} = \alpha + \beta DT_{j,t} + \theta X_{i,j,t} + \eta_j + \lambda_t + \varepsilon_{i,j,t}, \tag{1}$$

where $y_{i,j,t}$ is a dummy that takes a value of 1 if individual i, who lives in LSOA j, has a job at year t and 0 otherwise.[11] $DT_{j,t}$ is a dummy that takes a value of 1 if the digital transition has taken place by the date of the interview in the LSOA where individual i lives and 0 if it has not yet occurred.[12] Given the large number of LSOAs, I exploit accurate geographical variation in the occurrence of the digital transition. $X_{i,j,t}$ is a vector of individual characteristics that includes gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. η_j are LSOA fixed effects controlling for time-invariant unobserved characteristics at the LSOA level. λ_t is a set of year dummies that accounts for yearly variation in the outcome variable common across individuals. Finally, $\varepsilon_{i,j,t}$ is the error of the specification and varies at the individual level and over time. Standard errors are clustered within LSOAs.

β is the effect of the digital transition on employment probabilities. The validity of the empirical approach relies on the digital transition being uncorrelated

[11] Therefore, $y_{i,j,t}$ takes a value of 1 if individual i is either employed or self-employed at year t, and 0 otherwise.

[12] I use as explanatory variable of interest a dummy that takes a value of 1 if the digital transition has occurred by the date of the interview in LSOA j because I am interested in knowing the effect of the digital television reform on employment probabilities. Besides this definition, Figure 6 exploits variation in the amount of time that has passed since the introduction of digital signal in LSOA j by the date of the interview to explore non-linearities in the previous effect and to provide evidence on the intensive margin of the impact.

with unobserved determinants of the labour supply once I control for observable covariates, LSOA indicators, and year dummies. This is likely to be the case because the digital transition is implemented by Ofcom and DigitalUK, which are two independent organizations. The task of these institutions was to complete the digital transition following a specific schedule based on the physical attributes of the television transmitters in the UK, which had been constructed in the 1960s and 1970s. Section 4.3 provides evidence supporting the empirical strategy and showing that the exogeneity claim is likely to be satisfied.

4.2 Baseline Results

This section presents evidence of the causal effect of the digital transition on employment.[13] To do so, Table 2 presents the estimate of the impact of the digital switchover on the employment probability of individuals after having controlled for individual time-varying covariates, LSOA and year fixed effects. As shown in Table 2, the digital transition raises employment probabilities, and the estimate is highly significant.[14] Regarding the magnitude of the impact, I show that the switchover process increases the employment probability by 0.6 percentage points. The average employment probability of the sample is 56.3%, and so the digital transition increases employment by 1.1%. This is a considerable impact, which is not surprising as the digital transition introduced digital signal to millions of individuals for the first time and substantially increased television viewing time. Furthermore, it is important to bear in mind that the digital transition may have changed TV habits differently for different individuals. For example, the digital transition may have changed more the TV habits of socio-economically disadvantaged individuals, as they are less likely to have access to additional private TV services such as satellite TV. Later in the

[13] Despite the aim of the paper is to study whether the digital transition actually changed employment probabilities, it is also relevant to study its effect on labour market participation. Appendix A.4 explores this possibility.

[14] Throughout the analysis, I cluster standard errors at the LSOA level as this is the level of variation of my independent variable of interest. Appendix A.5 shows that the estimates are also robust to accounting for an arbitrary correlation of standard errors at the household level.

paper, I will explore heterogeneity in the baseline estimate and analyse the effect of the digital transition on alternative outcomes to understand possible explanations behind the baseline result. Before doing so, it is important to provide evidence supporting the empirical strategy.

4.3 Robustness

4.3.1 Balancing Tests

This section performs a number of balancing tests that examine whether the digital transition is correlated with pre-determined characteristics of individuals. In particular, panel A of Figure 5 shows the unconditional estimates of the digital transition on a number of pre-determined observable characteristics such as gender, age, race, nationality, sexual orientation, level of qualification, and whether individuals are religious. I also estimate whether the digital transition has an impact on the probability of individuals living in an urban area, having siblings, and on the race, nationality, and level of qualification of their parents.[15] Panel B estimates the same balancing tests but controlling for LSOA and year dummies. The estimates indicate that the digital transition is unconditionally correlated with multiple pre-determined characteristics. However, once I control for LSOA and year dummies, every estimate turns out negligible and not statistically significant, except the one for age. The latter finding is not surprising because the availability of digital television signal increases as individuals age. However, this is not a concern as I control for age throughout the analysis.

4.3.2 Effect over Time and Pre-trends

This section examines the evolution of the impact of the digital transition on employment probabilities and whether there are pre-trends in the labour outcomes of

[15]It would also be interesting to estimate whether the digital transition has an effect on the number of siblings that individuals have, as this variable is a better proxy for the socio-economic status of individuals than the probability of having a sibling. However, the dataset does not provide information on the number of siblings living outside the sampled individuals' household.

individuals previous to the transition deadlines. To do so, I estimate a specification where I control for a set of indicators for the number of years that are remaining or have passed by the date of the interview relative to the transition deadline in LSOA j. In particular, I test for pre-trends by including three dummies equal to 1 when, by the date of the interview t, there are 0–12, 13–24, and 25–36 months left for the transition to occur in LSOA j, respectively. I also include an indicator that equals 1 when there are 36 or more months left until the transition date of LSOA j. To study the evolution of the effect of television on employment probabilities, I control for three dummies that equal 1 when, by the date of the interview t, 1–12, 13–24, and 25–36 months have passed since the transition deadline in LSOA j, respectively. I also include a dummy equal to 1 when the number of months that have passed since the transition deadline is 36 or higher. In the specification, I control for LSOA and year fixed effects. However, there is still sufficient variation in the digital switchover dummies because the transition deadlines vary across LSOAs. I also control for LSOA trends to examine whether there is still variation in employment probabilities around the switchover dates once I account for local trends in the labour market.

Figure 6 shows that the labour outcomes of individuals remain invariant in the years preceding the switchover. The estimates are small and not statistically significant. Figure 6 also shows that the employment probabilities of individuals increase right after the start of the switchover. The estimates are highly statistically significant, and the impact of television on the labour market is persistent over time.

4.3.3 Local Labour Markets

Another possible concern is that the digital transition may be correlated with the implementation of policies or changing factors at the regional level that have an impact on the labour market. As previously argued, this is unlikely because the digital transition is implemented by two independent organizations according to the physical characteristics of television transmitters that had been built decades before the start of the switchover. Yet, this subsection further addresses this concern by es-

timating specifications that study the impact of the digital transition on employment probabilities once I control for year dummies, LSOA fixed effects, and region-year dummies. These models allow controlling for differential non-linear trends in the local labour markets. More specifically, columns 1–3 of Table 3 present the estimates of a specification that controls for year dummies, LSOA fixed effects, and the following region-year dummies: (i) country-year dummies, (ii) government office region-year dummies, and (iii) local authority-year dummies, respectively. There are 4 countries, 12 government office regions, and 408 local authorities in the UK. As shown in Table 3, the estimates of the digital transition are robust to the inclusion of region-year dummies.

4.3.4 Further Sensitivity Checks

I next estimate multiple robustness tests that support the validity of the empirical strategy and examine whether the estimates are sensitive to the adoption of alternative models. First, a potential threat to the analysis is that a part of the population may move from areas where there is no access to digital signal to areas where there is. If these individuals differ from the rest of the population in unobservable characteristics that determine labour outcomes, the baseline estimates will be biased. Column 1 of Table 4 explores this possibility by estimating the baseline model on the subsample of people who always lived in the same region. The estimate of the digital transition is analogous in magnitude to the baseline estimate and significant at the 1% confidence level. This suggests that the baseline results are not driven by individuals moving across regions. Column 2 estimates the baseline specification on the sample of individuals who do not have a TV. This test is important because the digital transition should have no impact on the employment probability of people who cannot watch TV. As shown, the estimate of the transition reform is not statistically significant for this subgroup of the population. Column 3 presents the estimates of a specification similar to the baseline one but that also controls for transmitter fixed effects. This addresses the concern of individuals receiving

television signal from different transmitters being different in unobservable characteristics that determine their labour outcomes.[16] Column 4 presents the estimates of the baseline model using the period of 2009–2013, which allows me to focus on the years when the digital transition occurred. As shown in columns 3–4, the estimates are robust to the use of different models and sample periods.

5 Plausible Explanations

5.1 The Importance of Parental Status and Gender

The previous analysis has shown that the digital transition increases employment probabilities. I next explore potential drivers behind this effect. First, previous research has shown that television changes time allocation for parents (Vandewater et al., 2006), and so it is relevant to study whether the estimates differ by parental status. To do so, I estimate a model analogous to the baseline one, except that I control for a binary variable equal to 1 when adult i lives with a child younger than 16 years old and 0 otherwise, and for an interaction term between this indicator and the digital transition dummy. Panel A of Figure 7 presents the average marginal effects of the digital transition by parental status. I find that the digital switchover markedly raises the likelihood of parents having a job and that the estimate is statistically significant at the 1% confidence level. However, the digital transition has a small and not statistically significant impact on the employment probability of non-parents. The results indicate that the impact of television on the labour market is driven by parents and therefore, that the presence of children plays a crucial role in the estimates obtained.[17]

Previous research has shown that children reduce working hours and increase

[16] Appendix A.6 also presents the estimates of the baseline specification after I control for individual fixed effects. The estimates are robust to their inclusion, albeit controlling for individual fixed effects substantially limits the variation I can exploit in the digital transition dummy.

[17] Appendix A.7 explores whether the positive impact of television on employment probabilities for parents also leads to an increase in their household income. I show that the digital transition only increases household income for parents, providing further evidence of television allowing parents to focus on their career.

housework for mothers relative to fathers (Sanchez and Thomson, 1997). Therefore, it is important to investigate whether the impact of the digital transition on the labour market differs not only by parental status but also by gender. To do so, panel B of Figure 7 reports the estimates of the specification I estimated in panel A separately by gender. As shown, the digital transition increases the employment probability of mothers by 2.4 percentage points, and the estimate is statistically significant at the 1% confidence level. The estimates for fathers and non-parents are small and not statistically significant, which indicates that the impact of television on the labour market is driven by mothers.[18]

I next explore which are the types of employment that drive the positive effect of the digital transition on the employment probabilities of mothers. To do so, I re-estimate the specification I adopted in panel B of Figure 7 but using the following outcome variables: (i) a dummy equal to 1 if individual i is self-employed at year t and 0 otherwise, (ii) an indicator for whether the individual is an employee, (iii) a dummy that takes a value of 1 if individual i is a part-time employee at year t and 0 otherwise, and (iv) an indicator for whether individual i is a full-time employee, respectively.[19] Panels A–D of Figure 8 present the estimates of the effect of the digital switchover on the previous labour outcomes, respectively. I show that the digital transition increases the probability of mothers being self-employed and employed part-time and that the estimates are highly significant. I also find that the digital transition increases the likelihood of male non-parents being self-employed, but at the cost of decreasing their chances of holding full-time contracts. The rest of the estimates are not statistically significant. Overall, these results indicate that the positive impact of the digital transition on the employment probability of mothers is driven by an increase in their likelihood of being self-employed and holding part-time contracts, which are flexible types of employment.

[18] Appendix A.8 evaluates whether these effects also lead to an increase in gender equality in the labour market. Moreover, Appendix A.9 presents the tables corresponding to every figure in the heterogeneity analysis section.

[19] Appendices A.15–A.16 further examine whether the digital transition has an impact on working hours and the probability of working from home, respectively. Appendices A.15–A.16 also examine whether these effects are heterogeneous in parental status and gender.

A possible explanation for the digital switchover increasing mothers' employment probabilities is that television keeps children busy, reducing the amount of housework that mothers need to do and allowing them to focus on their career. I next explore whether the impact of television on employment varies by household composition to examine whether the previous explanation holds.

5.2 Composition of the Household

This section studies whether the impact of the digital transition on employment probabilities is heterogeneous in cohabitation status, the number and age of children, and the socio-economic status of individuals. First, if television keeps children busy allowing parents to focus on their career, non-cohabiting parents may benefit more from television as they cannot share the costs of children with a partner. I examine this possibility by re-estimating the specification I used in panel A of Figure 7 but separately for the subsample of individuals who live with a partner/spouse and for those who do not. As shown in panel A of Figure 9, the greatest impact of the digital transition on the probability of having a job is for parents who do not cohabit with a partner, and the estimate is significant at the 1% level. The estimate for parents who cohabit with a partner is also positive and significant at the 1% level, albeit it is smaller in size. The estimates are small and not statistically significant for non-parents independently of their cohabitation status.

Second, parents with more children usually have to dedicate a higher amount of time to childcare, and so, may benefit more from television if it keeps children busy. I examine this possibility by estimating a specification similar to the baseline one but that controls for a set of dummies indicating the number of children younger than 16 years old living in the household of adult i and for interaction terms between the aforementioned variables and the digital transition indicator. Panel B of Figure 9 displays the estimates of the switchover process and shows that the magnitude of the impact of television on the probability of having a job increases with the number of children in a household. The estimates are positive and highly significant

for parents of two or more children.

Third, it is important to explore whether the positive impact of television on employment is driven by parents of children of any age or only by parents of children of a particular age. I do so by estimating a model analogous to the baseline one but that controls for three dummies equal to 1 when a child between 0–4, 5–9, and 10–15 years old lives in adult i's household at year t and 0 otherwise, respectively. In this model, I also control for three interaction terms between the aforementioned dummies and the digital transition indicator, respectively. As shown in panel C of Figure 9, the baseline estimates are driven by parents who have children between 5 and 9 years of age.[20]

Finally, I examine whether parents who benefit more from television are the ones who have less resources to use childcare services. To do so, I estimate a specification similar to the baseline one but that also controls for quartiles of the gross household income prior to the start of the switchover process, and their interactions with the digital switchover dummy. As shown in panel D, the positive impact of the digital transition on employment probabilities is driven by socio-economically disadvantaged individuals, and television has a negative effect on employment probabilities for more socio-economically advantaged adults. Overall, the estimates suggest that individuals who benefited more from television are the ones who have higher family burdens and financial constraints.[21]

[20] Appendix A.10 shows the estimates of a specification similar to the one estimated in this section, but that uses two dummies equal to 1 when a child is between 0–2 and 3–4 years old, respectively, rather than using one dummy for the age range 0–4. This allows to explore further whether the digital switchover has an impact on employment for parents of pre-school-age children. As shown, the estimates are very similar to the ones presented in this section. Given data constraints, I am not able to use more specific age ranges.

[21] Appendices A.11–A.12 further explore whether the impact of television on employment probabilities is heterogeneous in terms of the amount of public services provided in the local area and the level of qualification of individuals, respectively.

5.3 Children's TV Viewing Time

The previous sections have shown that the digital television transition increases employment probabilities only for mothers and that the effect of television on employment increases for parents who have higher family burdens and financial constraints to access childcare. If these effects are due to television keeping children busy, the digital transition must increase children's television viewing time. I next examine whether this is the case by estimating a specification similar to the baseline model that uses the hours that children spend watching television on weekdays as dependent variable.[22] I also explore heterogeneity by income as I previously showed that the effect of television on employment is driven by disadvantaged families. Figure 10 shows that the digital television transition increases children's TV viewing time, and that the effect is driven by children from socio-economically disadvantaged families. This may be due to richer families having access to other forms of TV watching such as cable or satellite TV and therefore not changing their TV habits as a response of a richer supply of free television channels. Regarding the magnitude of the effect, the estimates suggest that the digital transition increases children's TV viewing time up to 22 minutes per day. This is an important effect not only because of the direct impact of the digital transition on TV viewing time, but also because the digital transition may be saving a substantial amount of time to parents in form of housework. For example, by increasing children's TV viewing time, the digital transition may prevent children from cluttering the house, dirtying their clothes and asking parents to go outside. I next test for this hypothesis by examining the effect of the digital transition on housework and family burdens.

[22]The dependent variable comes from the youth questionnaire of the Understanding Society survey, and it takes 4 possible values: 1) None, 2) less than an hour, 3) 1-3 hours, 4) 4-6 hours and 5) 7 or more hours. I take the average of the previous ranges of hours for each category, respectively. In the specification, I control for the following time-varying covariates: household income quartile dummies, whether the child lives in an urban area, number of members, children and bedrooms in the household. I control for the switchover indicator and interact it with the household quartile dummies. I also control for year dummies and individual fixed effects to account for unobserved individual time-invariant characteristics such as preferences.

5.4 Housework and Family Burdens

This section explores the effect of the digital transition on housework and family burdens. In theory, parents may need to do less chores (e.g. cleaning, laundry or childcare) and may have less family burdens because television keeps their children busy, which may allow parents to focus on their career. To examine this hypothesis, I first estimate a specification similar to the baseline model but that controls for parental status and its interaction with the digital transition indicator. I adopt as dependent variable the weekly number of hours that individuals dedicate to housework.[23] As shown in panel A of Figure 11, the digital transition decreases the amount of housework that parents do, and the estimate is significant at the 1% confidence level. In contrast, the digital switchover has no impact on the amount of housework for non-parents.

As children increase the amount of housework for mothers relative to fathers (Sanchez and Thomson, 1997), it is important to explore whether the impact of the digital transition on housework also differs by gender. To do so, panel B of Figure 11 presents the estimates of the specification I estimated in panel A but separately for men and women. As shown, the digital transition reduces the number of hours that mothers dedicate to housework by 0.74, and the estimate is statistically significant at the 1% level. However, I do not find statistically significant estimates of the digital transition for fathers and non-parents. Regarding the magnitude of the effect, mothers and fathers dedicate, on average, 16.8 and 6.4 hours per week to housework, respectively. Therefore, taking into account the estimates I have obtained, the digital transition decreases the gender difference in the time dedicated to housework by 8.3% for parents.

Lastly, table 5 provides evidence of the digital transition reducing the attention that parents need to provide to children. To do so, I estimate the baseline

[23] Appendix A.13 tests whether the digital transition changes the time that individuals dedicate to activities other than housework. I only find that the digital transition increases TV watching at the cost of reducing reading time. This is unlikely to explain the positive impact of television on employment.

model adopting as dependent variable the opinion of interviewees about the following statements: (i) "Children suffer when mother works" and (ii) "Family suffers when mother works full-time", respectively. The opinions are measured on a scale that ranges from 1 to 5, with a higher value indicating a stronger agreement with the statement. As shown in columns 1 and 2, the digital transition reduces the suffering of families and children when mothers work. Overall, the estimates suggest that, by keeping children busy, television reduces housework and family burdens for mothers, helping them focus on their career.[24]

6 Conclusions

This paper exploits exogenous variation in the date when the digital television transition occurred in the UK across more than 40,000 geographical units to study the causal impact of television on employment probabilities and to investigate potential mechanisms. The digital transition process transformed, in stages, every television transmitter in the UK, ceasing the broadcast of analogue television signal and starting the provision of high-power digital signal, which increased the number of TV channels available from 5 to 40. Using a large panel survey dataset at the individual level and a difference-in-differences model that compares the outcomes of adults who received access to digital signal in different years, I show that the digital transition increases employment probabilities. I provide evidence supporting my empirical strategy by (i) testing for pre-trends, (ii) estimating balancing tests, (iii) controlling for region-year dummies, (iv) using control groups unlikely to be affected by the switchover, (v) testing for selection, (vi) adopting alternative specifications, and (vii) using different samples. The baseline results are robust to these tests.

The paper also examines plausible explanations behind the positive impact of the digital television transition on employment. I show that the digital switchover

[24] Appendix A.14 tests for alternative mechanisms, such as whether the impact of television on employment probabilities may be driven by television changing views about gender equality.

increases the employment probabilities of mothers but I find no impact for fathers and non-parents. Furthermore, I show that the digital transition only increases the likelihood of mothers being part-time employees and self-employed, which are flexible types of employment. The previous results show that the presence of children is crucial for the digital transition increasing employment probabilities. This may be because television keeps children busy, allowing parents to focus on their career. Consistent with this explanation, I show that the digital transition increases the time that children spend watching television, and find that the positive effect of television on employment is higher for parents who have higher family burdens and financial constraints to access childcare services. By keeping children busy, television may reduce the amount of household chores that parents need to do, such as cleaning, laundry and childcare, as well as their family burdens, allowing parents to focus on their career. I show that the digital transition reduces the amount of housework that mothers do but I find no effect for fathers and non-parents. I also show that the digital transition decreases the suffering of families when mothers work.

References

Angelov, N., P. Johansson, and E. Lindahl (2016). Parenthood and the gender gap in pay. *Journal of Labor Economics 34*(3), 545–579.

Angrist, J. D. and W. N. Evans (1998). Children and their parents' labor supply: Evidence from exogenous variation in family size. *The American Economic Review 88*(3), 450–477.

Angrist, J. D. and A. B. Krueger (1991). Does compulsory school attendance affect schooling and earnings? *The Quarterly Journal of Economics 106*(4), 979–1014.

Barone, G., F. D'Acunto, and G. Narciso (2015). Telecracy: Testing for channels of persuasion. *American Economic Journal: Economic Policy 7*(2), 30–60.

Bartel, A. and P. Taubman (1979). Health and labor market success: The role of various diseases. *The Review of Economics and Statistics*, 1–8.

Berg, G. and B. Zia (2017). Harnessing Emotional Connections to Improve Financial Decisions: Evaluating the Impact of Financial Education in Mainstream Media. *Journal of the European Economic Association 15*(5), 1025–1055.

Berlinski, S. and S. Galiani (2007). The effect of a large expansion of pre-primary school facilities on preschool attendance and maternal employment. *Labour Economics 14*(3), 665–680.

Boeri, T. and J. Van Ours (2013). *The economics of imperfect labor markets*. Princeton University Press.

Brewer, M., S. Cattan, C. Crawford, B. Rabe, et al. (2016). Does more free childcare help parents work more? Technical report, Institute for Fiscal Studies.

Bridges, S. and K. Mumford (2001). Absenteeism in the UK: a comparison across genders. *The Manchester School 69*(3), 276–284.

Campante, F. R. and D. A. Hojman (2013). Media and polarization: Evidence from the introduction of broadcast TV in the United States. *Journal of Public Economics 100*, 79 – 92.

Cavalcanti, T. V. and J. Tavares (2008). Assessing the "engines of liberation": Home appliances and female labor force participation. *The Review of Economics and Statistics 90*(1), 81–88.

Chevalier, A. and T. K. Viitanen (2002). The causality between female labour force participation and the availability of childcare. *Applied Economics Letters 9*(14), 915–918.

Chong, A. and E. L. Ferrara (2009). Television and Divorce: Evidence from Brazilian Novelas. *Journal of the European Economic Association 7*(2-3), 458–468.

Christakis, D. A., F. J. Zimmerman, D. L. DiGiuseppe, and C. A. McCarty (2004). Early television exposure and subsequent attentional problems in children. *Pediatrics 113*(4), 708–713.

Coen-Pirani, D., A. León, and S. Lugauer (2010). The effect of household appliances on female labor force participation: Evidence from microdata. *Labour Economics 17*(3), 503 – 513.

Connelly, R. (1992). The effect of child care costs on married women's labor force participation. *The Review of Economics and Statistics*, 83–90.

Cools, S., S. Markussen, and M. Strøm (2017). Children and careers: How family size affects parents' labor market outcomes in the long run. *Demography 54*(5), 1773–1793.

Del Boca, D. (2002). The effect of child care and part time opportunities on participation and fertility decisions in Italy. *Journal of Population Economics 15*(3), 549–573.

Del Boca, D. and R. M. Sauer (2009). Life cycle employment and fertility across institutional environments. *European Economic Review 53*(3), 274 – 292.

DellaVigna, S. and E. Kaplan (2007). The Fox News effect: Media bias and voting. *The Quarterly Journal of Economics 122*(3), 1187–1234.

Ellingsen, S. and Ø. Hernæs (2018). The impact of commercial television on turnout and public policy: Evidence from Norwegian local politics. *Journal of Public Economics 159*, 1–15.

Gentzkow, M. (2006). Television and voter turnout. *The Quarterly Journal of Economics 121*(3), 931–972.

Gentzkow, M. and J. M. Shapiro (2008). Preschool television viewing and adolescent test scores: Historical evidence from the Coleman study. *The Quarterly Journal of Economics 123*(1), 279–323.

Grøntved, A. and F. B. Hu (2011). Television Viewing and Risk of Type 2 Diabetes, Cardiovascular Disease, and All-Cause Mortality: A Meta-analysis. *JAMA 305*(23), 2448–2455.

Hamer, M., E. Stamatakis, and G. D. Mishra (2010). Television-and screen-based activity and mental well-being in adults. *American Journal of Preventive Medicine 38*(4), 375–380.

Hancox, R. J., B. J. Milne, and R. Poulton (2005). Association of television viewing during childhood with poor educational achievement. *Archives of Pediatrics & Adolescent Medicine 159*(7), 614–618.

Hu, F. B., T. Y. Li, G. A. Colditz, W. C. Willett, and J. E. Manson (2003). Television watching and other sedentary behaviors in relation to risk of obesity and type 2 diabetes mellitus in women. *JAMA 289*(14), 1785–1791.

Jensen, R. and E. Oster (2009). The power of TV: Cable television and women's status in India. *The Quarterly Journal of Economics 124*(3), 1057–1094.

Jetter, M. (2019). The inadvertent consequences of al-Qaeda news coverage. *European Economic Review 119*, 391 – 410.

Johnson, J. G., P. Cohen, E. M. Smailes, S. Kasen, and J. S. Brook (2002). Television viewing and aggressive behavior during adolescence and adulthood. *Science 295*(5564), 2468–2471.

Kearney, M. S. and P. B. Levine (2015). Media influences on social outcomes: The impact of MTV's 16 and pregnant on teen childbearing. *American Economic Review 105*(12), 3597–3632.

Kearney, M. S. and P. B. Levine (2019). Early childhood education by television: Lessons from Sesame Street. *American Economic Journal: Applied Economics 11*(1), 318–50.

Keith, T. Z., T. M. Reimers, P. G. Fehrmann, S. M. Pottebaum, and L. W. Aubey (1986). Parental involvement, homework, and TV time: Direct and indirect effects on high school achievement. *Journal of Educational Psychology 78*(5), 373.

Kleven, H., C. Landais, and J. E. Søgaard (2019). Children and gender inequality: Evidence from Denmark. *American Economic Journal: Applied Economics 11*(4), 181–209.

La Ferrara, E. (2016). Mass media and social change: Can we use television to fight poverty? *Journal of the European Economic Association 14*(4), 791–827.

La Ferrara, E., A. Chong, and S. Duryea (2012). Soap operas and fertility: Evidence from Brazil. *American Economic Journal: Applied Economics 4*(4), 1–31.

Landhuis, C. E., D. K. Perry, and R. J. Hancox (2012). Association between childhood and adolescent television viewing and unemployment in adulthood. *Preventive Medicine 54*(2), 168–173.

Lechner, M. (2009). Long-run labour market and health effects of individual sports activities. *Journal of Health Economics 28*(4), 839–854.

Lundberg, S. and E. Rose (2000). Parenthood and the earnings of married men and women. *Labour Economics 7*(6), 689–710.

Mastrorocco, N. and L. Minale (2018). News media and crime perceptions: Evidence from a natural experiment. *Journal of Public Economics 165*, 230 – 255.

Michaud, P.-C. and K. Tatsiramos (2011). Fertility and female employment dynamics in Europe: the effect of using alternative econometric modeling assumptions. *Journal of Applied Econometrics 26*(4), 641–668.

Nieto, A. (2019). Television, time use and academic achievement: Evidence from a natural experiment. *Granger Centre Discussion Paper 19/06*.

Posadas, J. and M. Vidal-Fernandez (2013). Grandparents' childcare and female labor force participation. *IZA Journal of Labor Policy 2*(1), 14.

Radfar, M. (1985). The effect of advertising on total consumption of cigarettes in the U.K.: A comment. *European Economic Review 29*(2), 225 – 231.

Ruhm, C. J. (1998). The economic consequences of parental leave mandates: Lessons from Europe. *The Quarterly Journal of Economics 113*(1), 285–317.

Rupert, P. and G. Zanella (2018). Grandchildren and their grandparents' labor supply. *Journal of Public Economics 159*, 89 – 103.

Sanchez, L. and E. Thomson (1997). Becoming mothers and fathers: Parenthood, gender, and the division of labor. *Gender and Society 11*(6), 747–772.

Sauer, R. M. and K. H. Wiesemeyer (2018). Entrepreneurship and gender: Differential access to finance and divergent business value. *Oxford Review of Economic Policy 34*(4), 584–596.

Sauer, R. M. and T. Wilson (2016). The rise of female entrepreneurs: New evidence on gender differences in liquidity constraints. *European Economic Review 86*, 73 – 86.

Stewart, J. M. (2001). The impact of health status on the duration of unemployment spells and the implications for studies of the impact of unemployment on health status. *Journal of Health Economics 20*(5), 781–796.

Tahir, M. J., W. Willett, and M. R. Forman (2018). The Association of Television Viewing in Childhood With Overweight and Obesity Throughout the Life Course. *American Journal of Epidemiology 188*(2), 282–293.

Tucker, L. A. and M. Bagwell (1991). Television viewing and obesity in adult females. *American Journal of Public Health 81*(7), 908–911.

Tyndall, J. (2017). Waiting for the R train: Public transportation and employment. *Urban Studies 54*(2), 520–537.

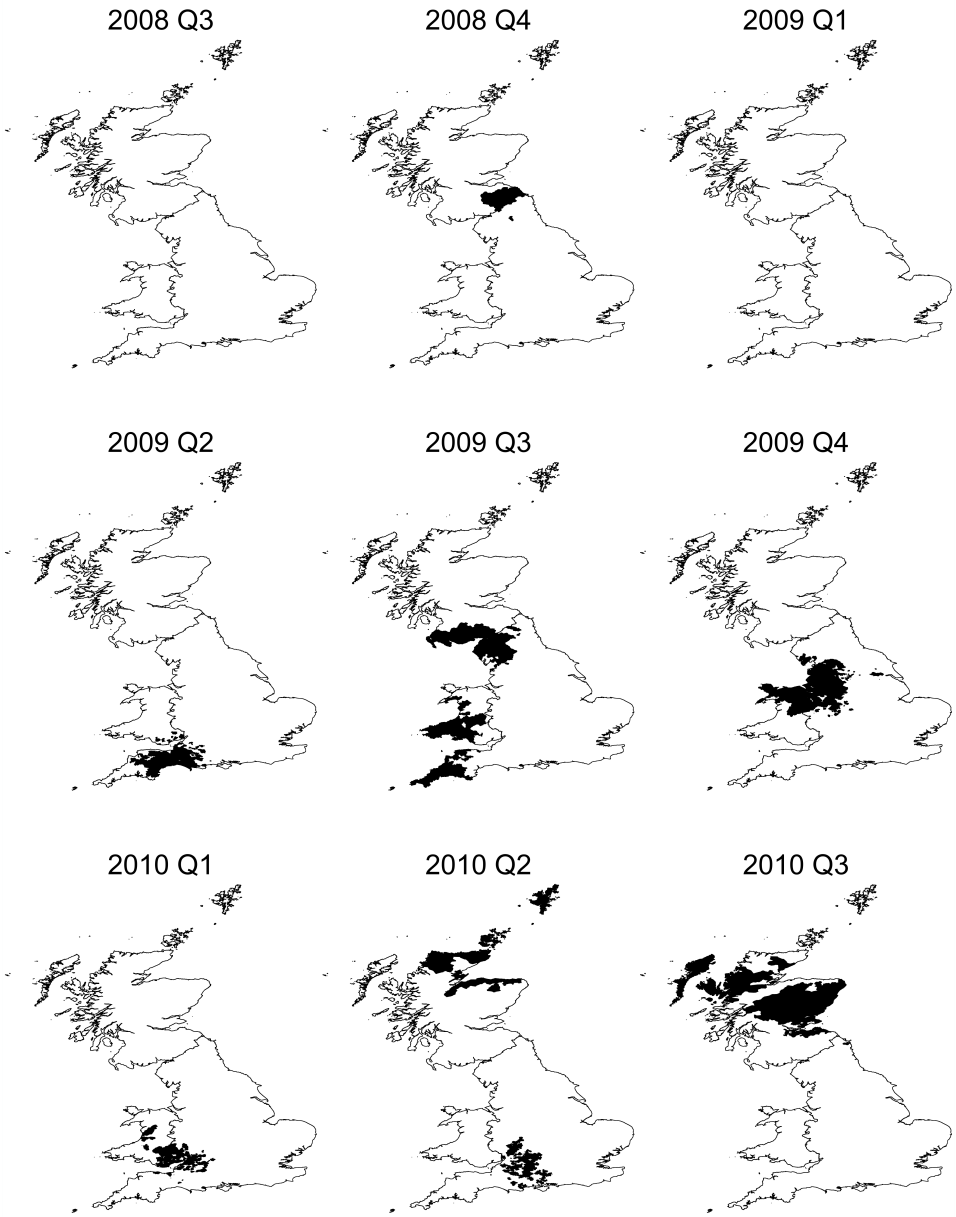
UKHLS (2019a). University of Essex, Institute for Social and Economic Research. (2019). *Understanding Society: Waves 1-9, 2009-2018 and Harmonised BHPS: Waves 1-18, 1991-2009. [data collection]. 12th Edition. UK Data Service. SN: 6614, http://doi.org/10.5255/UKDA-SN-6614-13*.

UKHLS (2019b). University of Essex, Institute for Social and Economic Research (2019). *Understanding Society: Waves 1-9, 2009-2018: Special Licence Access, Census 2011 Lower Layer Super Output Areas. [data collection]. 9th Edition. UK Data Service. SN: 7248, http://doi.org/10.5255/UKDA-SN-7248-9*.

Vandewater, E. A., D. S. Bickham, and J. H. Lee (2006). Time well spent? relating television use to children's free-time activities. *Pediatrics 117*(2), e181–e191.

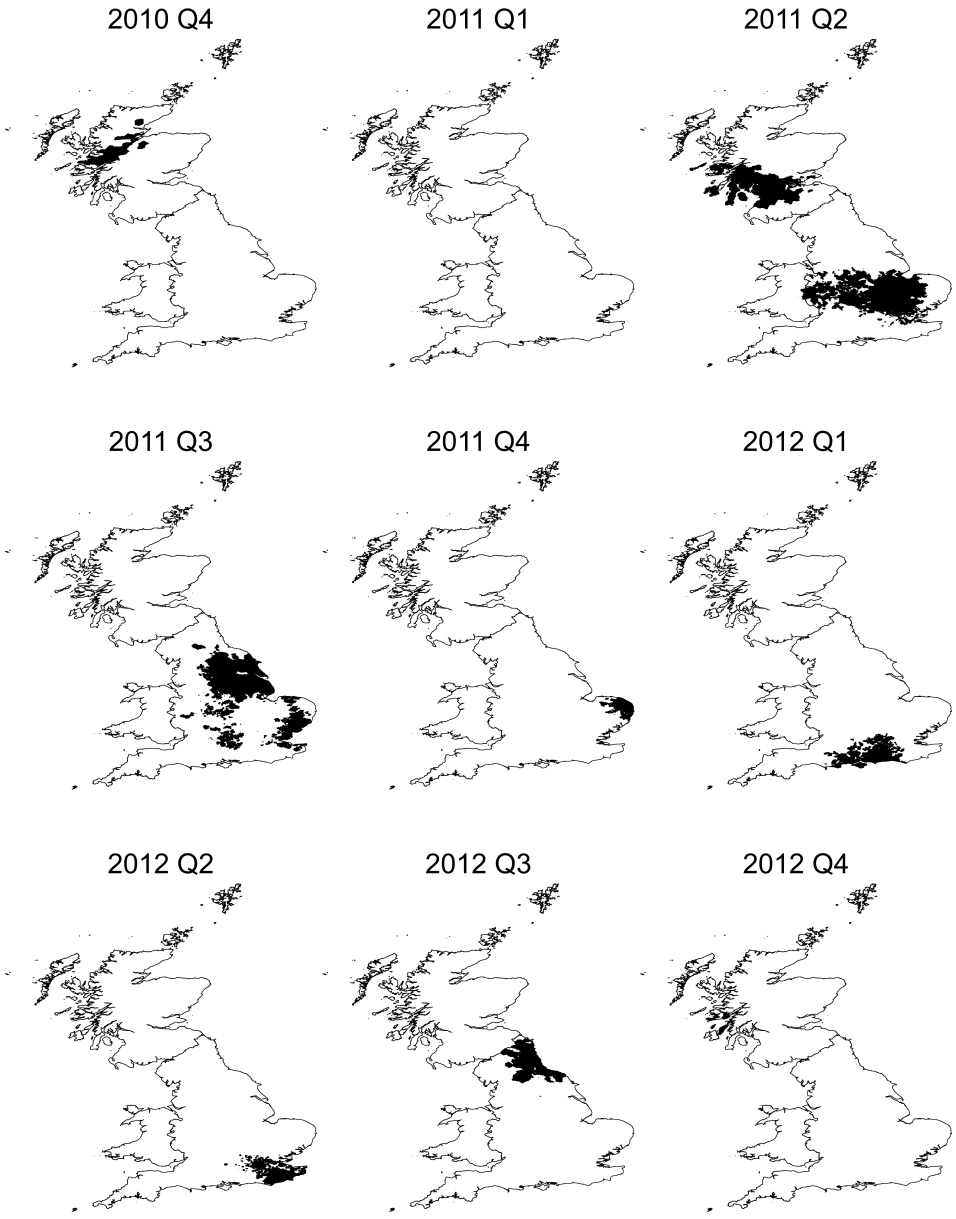
7 Figures

Figure 1: The Digital Television Transition in the UK



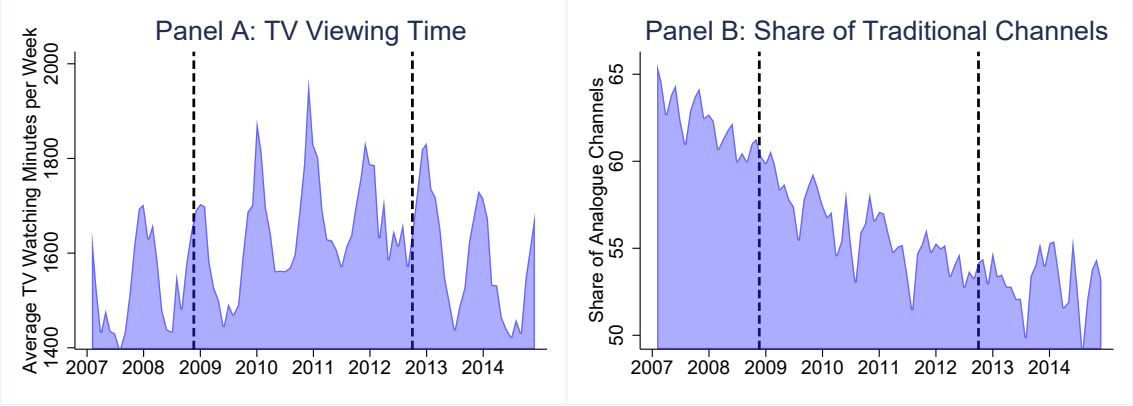
The figure shows the implementation of the digital television transition in the UK over the period of 2008–2012. The digital transition occurred in different dates in the different LSOAs. Albeit not shown in the map, the analysis also includes individuals who live in Northern Ireland, where the switchover also took place between 2008 and 2012.

Figure 2: The Digital Television Transition in the UK



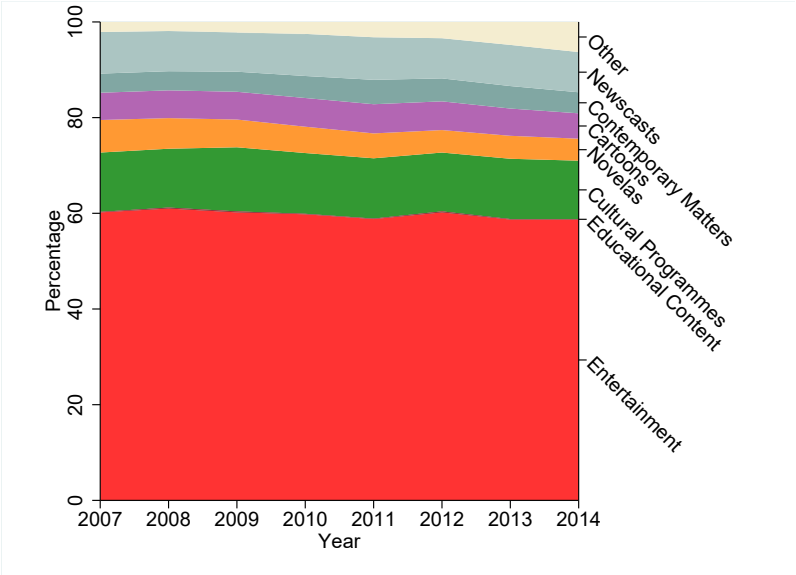
The figure shows the implementation of the digital television transition in the UK over the period of 2008–2012. The digital transition occurred in different dates in the different LSOAs. Albeit not shown in the map, the analysis also includes individuals who live in Northern Ireland, where the switchover also took place between 2008 and 2012.

Figure 3: TV Watching Time and Audience Share of Traditional Channels



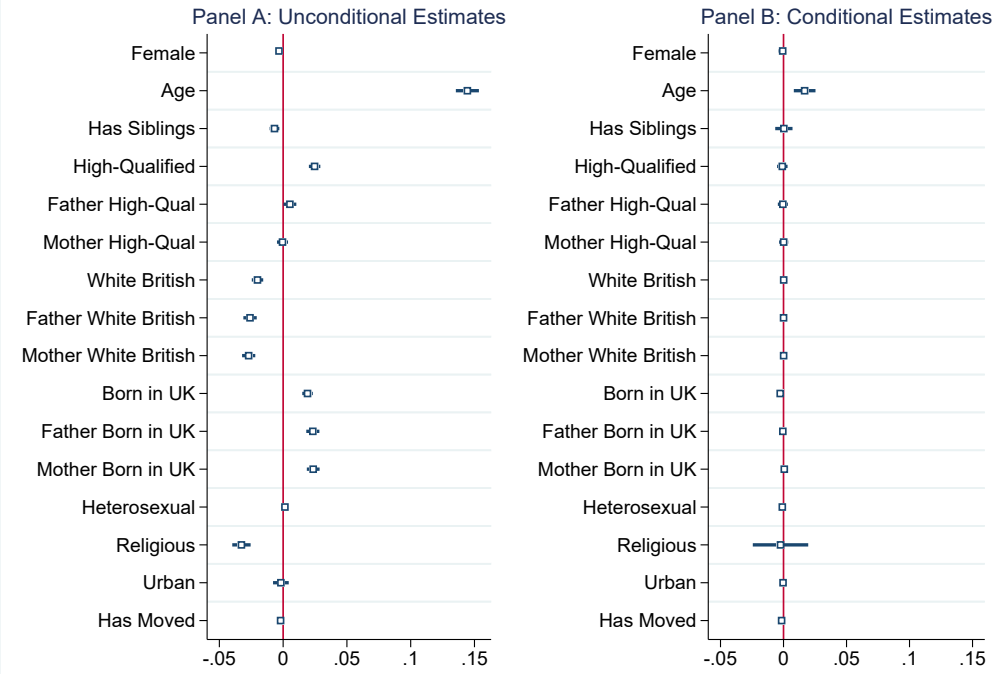
The figure uses data from BARB. Panel A shows the average television viewing time in the UK during the period of analysis, measured in minutes per week. Panel B shows the audience share of the television channels that were available through analogue signal during the period of analysis.

Figure 4: TV Viewing Share by Genre



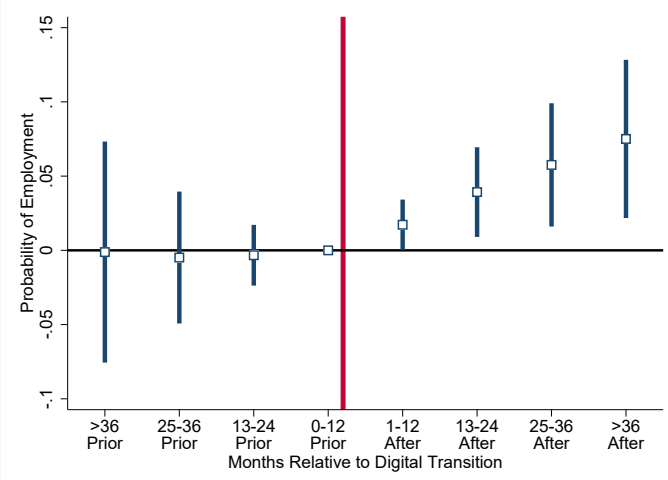
The figure uses data from Ofcom to show the proportion of television watching time that viewers dedicated to each genre during the period of study. I classify genres as follows: entertainment, soap operas, cultural programmes, contemporary matters, newscasts, educational content, cartoons, and music/films.

Figure 5: Balancing Tests



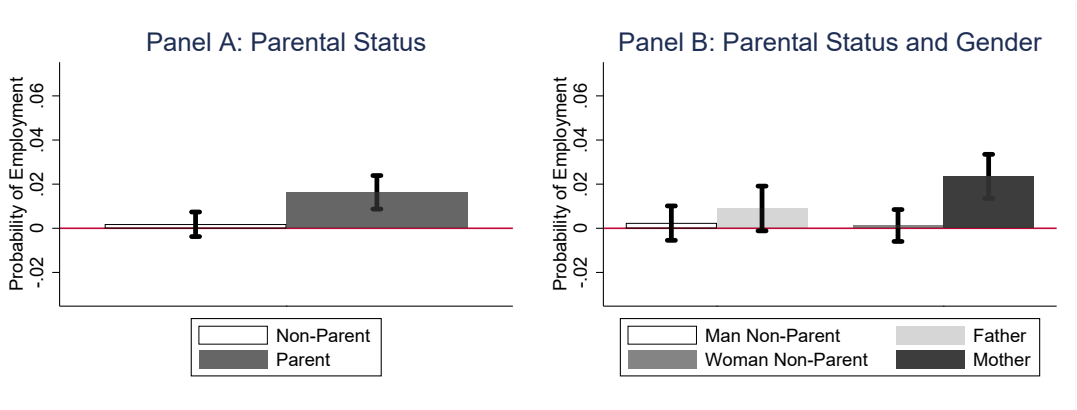
The figure shows the estimates of the impact of the digital transition on a set of predetermined characteristics. Panel A presents the unconditional estimates. Panel B displays the conditional estimates once I account for LSOA and year fixed effects.

Figure 6: Evolution of the Effect of the Digital Transition



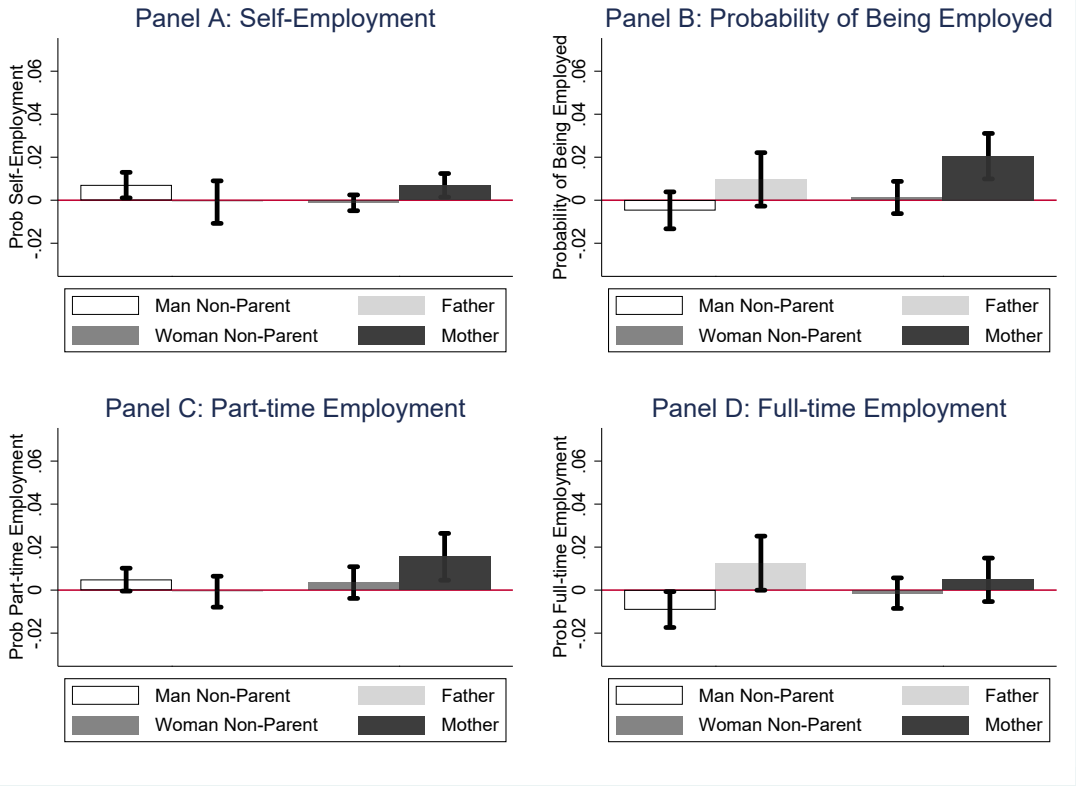
The figure shows the evolution of the impact of the transition from analogue to digital television on the probability of employment.

Figure 7: Parental Status and Gender



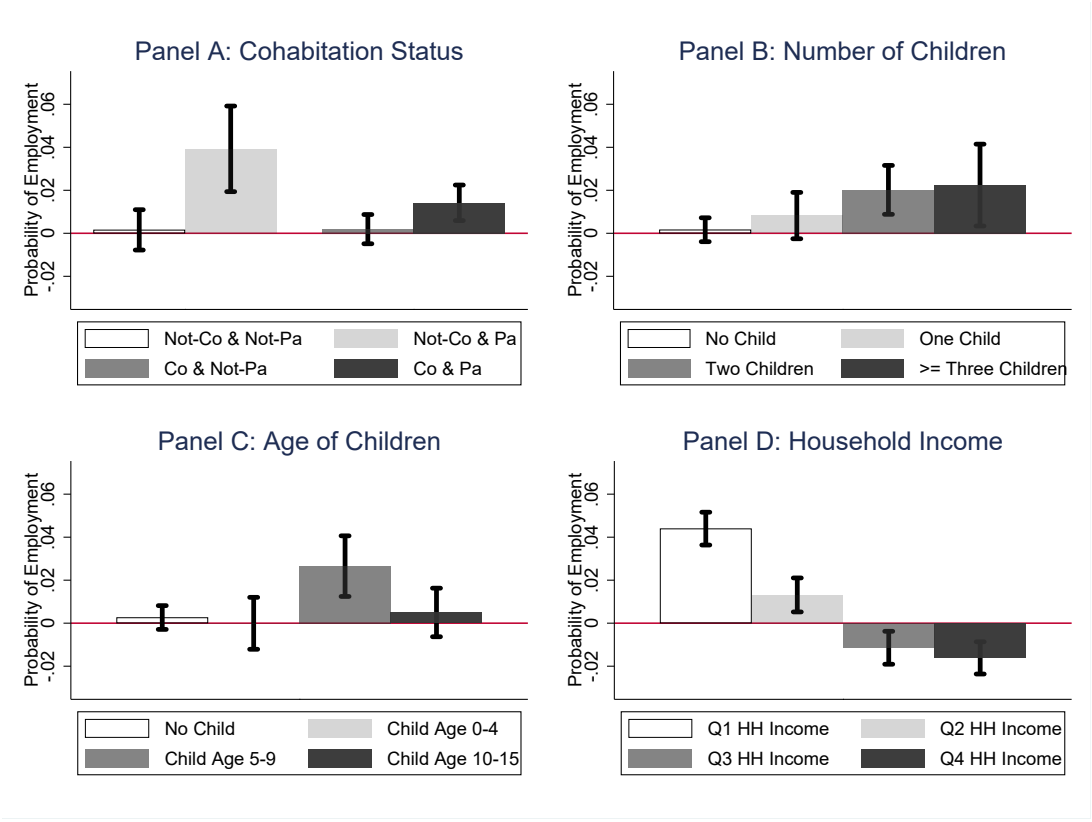
The figure examines whether the impact of television on the employment probability is heterogeneous in parental status and gender.

Figure 8: Type of Employment



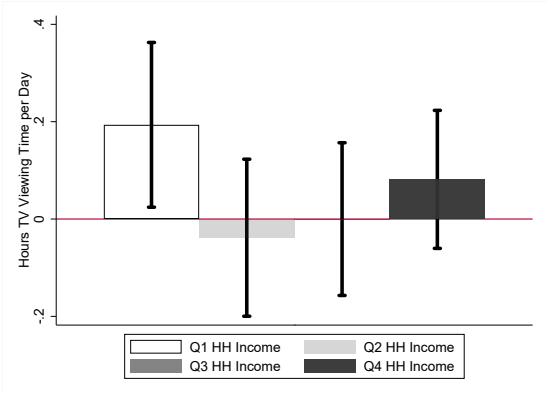
Panels A–D examine the impact of television on the following labour outcomes: (i) self-employment, (ii) the probability of being employed, (iii) part-time employment, and (iv) full-time employment, respectively.

Figure 9: Composition of the Household



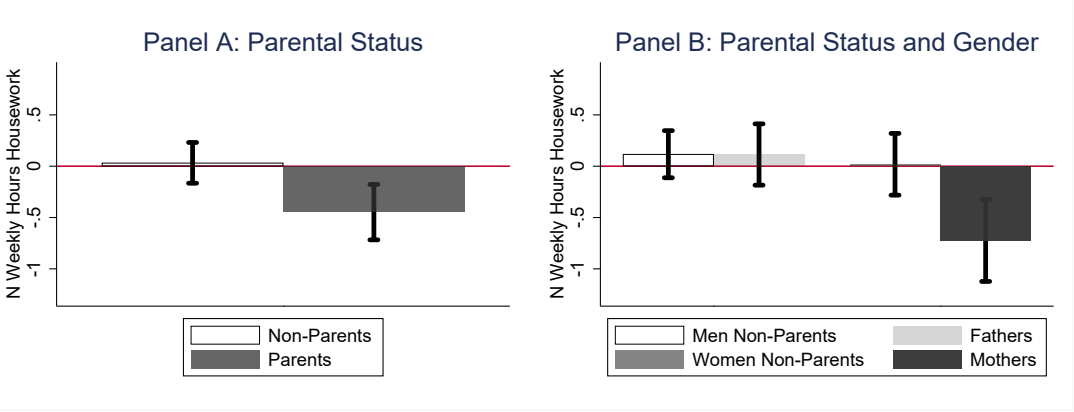
The figure examines whether the impact of television on employment probabilities is heterogeneous in cohabitation status, the number and age of children, and household income.

Figure 10: TV Viewing



The figure examines the effect of the digital transition on the time that children spend watching television on weekdays. I explore whether the effect is heterogeneous in household income.

Figure 11: Housework



The figure examines whether the impact of television on the amount of housework is heterogeneous in gender and parental status.

8 Tables

Table 1: Descriptive Statistics

		Digital Television Introduction Year			
		2009	2010	2011	2012
Female	0.55	0.56	0.54	0.55	0.55
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
Age	48.37	49.26	49.57	48.57	47.66
	(17.83)	(18.04)	(17.71)	(17.82)	(17.80)
Non–White British	0.19	0.10	0.07	0.16	0.27
	(0.39)	(0.30)	(0.25)	(0.37)	(0.45)
Single	0.20	0.18	0.17	0.19	0.23
	(0.40)	(0.38)	(0.37)	(0.39)	(0.42)
Married/Civil Partner	0.55	0.55	0.55	0.55	0.54
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
Separated/Divorced	0.08	0.10	0.09	0.08	0.08
	(0.28)	(0.30)	(0.28)	(0.28)	(0.27)
Widowed	0.06	0.07	0.07	0.06	0.06
	(0.24)	(0.26)	(0.25)	(0.23)	(0.24)
Living as a Couple	0.10	0.11	0.13	0.12	0.08
	(0.30)	(0.31)	(0.33)	(0.32)	(0.27)
Household Size	2.91	2.71	2.64	2.87	3.04
	(1.50)	(1.36)	(1.28)	(1.46)	(1.59)
Highly Qualified	0.35	0.35	0.38	0.33	0.37
	(0.48)	(0.48)	(0.49)	(0.47)	(0.48)
Labour Market Participation	0.61	0.60	0.63	0.62	0.61
	(0.49)	(0.49)	(0.48)	(0.49)	(0.49)
Has a Job	0.56	0.55	0.59	0.56	0.56
	(0.50)	(0.50)	(0.49)	(0.50)	(0.50)
Unemployed	0.05	0.05	0.04	0.05	0.06
	(0.22)	(0.21)	(0.19)	(0.22)	(0.23)
Permanent Employee	0.92	0.92	0.92	0.93	0.91
	(0.27)	(0.27)	(0.27)	(0.26)	(0.29)
Full-Time Employee	0.72	0.73	0.72	0.72	0.73
	(0.45)	(0.45)	(0.45)	(0.45)	(0.45)
Observations	184,092	15,210	13,569	87,866	67,447

The table presents the averages of several labour outcomes and sociodemographic characteristics, together with their standard deviations in parentheses. Column 1 presents unweighted summary statistics of the sample. Columns 2–5 split the sample according to the year when individuals received access to digital signal.

Table 2: Baseline Results

	Dep Var: Prob Employment
DT	0.006**
	(0.002)
Individual Covariates	Yes
LSOA Dummies	Yes
Year Dummies	Yes
Observations	178,724

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. The individual covariates that I control for are the following: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Table 3: Local Labour Markets

	Dep Var: Prob of Employment		
DT	0.013***	0.010***	0.011**
	(0.003)	(0.004)	(0.004)
LSOA Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Country*Year Dummies	Yes	No	No
GOR*Year Dummies	No	Yes	No
LA*Year Dummies	No	No	Yes
Observations	184,092	184,092	184,074

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. GOR is the abbreviation for Government Office Region. LA is the abbreviation for Local Authority. Columns 1–3 present the estimates of a specification similar to the baseline model but that controls for an interaction term between the year dummies and (i) country, (ii) GOR and (iii) LA dummies, respectively. I cluster standard errors at the LSOA level.

Table 4: Further Robustness Tests

	Dep Variable: Probability of Employment			
	Never Moved	No TV	Transmitter Dummies	2009–2013
DT	0.008***	0.018	0.006**	0.004*
	(0.003)	(0.030)	(0.002)	(0.003)
Individual Covariates	Yes	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Transmitter Dummies	No	No	Yes	No
Observations	140,445	1,852	178,724	150,401

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. Columns 1–2 present the estimates of the baseline specification using the sample of individuals who (i) always live in the same region and who (ii) have no television set at home, respectively. Column 3 presents the estimates of the baseline model controlling for transmitter fixed effects. Column 4 displays the estimates of the baseline specification based on the period of 2009–2013. I control for the following individual covariates in all columns: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Table 5: Family Suffering

	Family Suffers if...	
	Mother Works	Mother Full-time
DT	-0.025	-0.037**
	(0.016)	(0.016)
Individual Covariates	Yes	Yes
LSOA Dummies	Yes	Yes
Year Dummies	Yes	Yes
Observations	54,650	54,659

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. I control for the following individual covariates: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

A Appendix

A.1 Transmitter Groups' Switchover Deadlines

Table A.1: Transmitter Groups' Switchover Deadlines

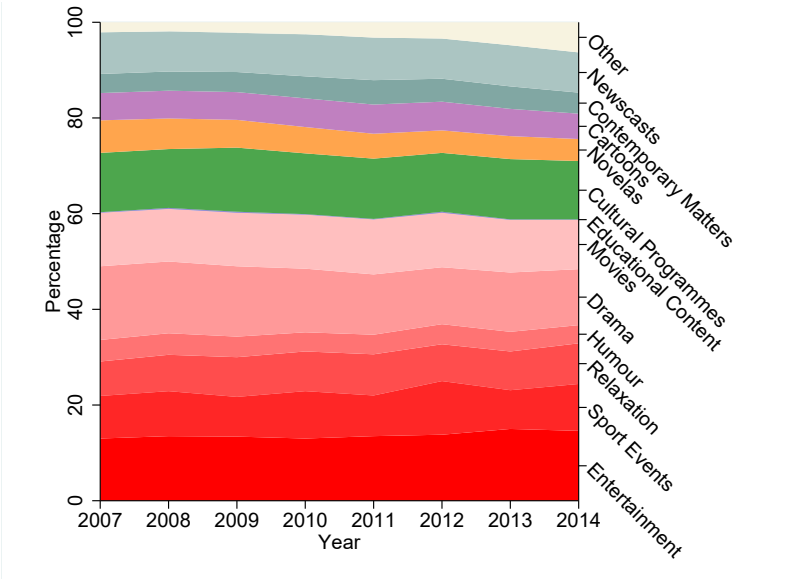
Selkirk	20 Nov 2008	Nottingham	13 Apr 2011
Douglas	16 Jul 2009	Lark Stoke	20 Apr 2011
Caldbeck	22 Jul 2009	Bromsgrove	20 Apr 2011
Beacon Hill	22 Apr 2009	Ridge Hill	20 Apr 2011
Stockland Hill	20 May 2009	The Wrekin	20 Apr 2011
Huntshaw Cross	29 Jul 2009	Waltham	31 Aug 2011
Redruth	5 Aug 2009	Sutton Coldfield	21 Sep 2011
Caradon Hill	9 Sep 2009	Fenton	21 Sep 2011
Kilvey Hill	9 Sep 2009	Oxford	28 Sep 2011
Preseli	16 Sep 2009	Oliver's Mount	17 Aug 2011
Carmel	23 Sep 2009	Belmont	17 Aug 2011
Llanddona	18 Nov 2009	Sheffield	24 Aug 2011
Moel y Parc	25 Nov 2009	Chesterfield	24 Aug 2011
Long Mountain	3 Dec 2009	Emley Moor	21 Sep 2011
Blaenplwyf	10 Mar 2010	Sandy Heath	13 Apr 2011
Wenvoe	31 Mar 2010	Sudbury	20 Jul 2011
Winter Hill	2 Dec 2009	Tacolneston	23 Nov 2011
Mendip	7 Apr 2010	Hannington	22 Feb 2012
Bressay	19 May 2010	Midhurst	14 Mar 2012
Keelylang Hill	26 May 2010	Whitehawk Hill	21 Mar 2012
Rumster Forest	16 Jun 2010	Rowridge	21 Mar 2012
Eitshal	21 Jul 2010	Tunbridge Wells	13 Jun 2012
Skriaig	28 Jul 2010	Heathfield	13 Jun 2012
Angus	18 Aug 2010	Hastings	13 Jun 2012
Durris	15 Sep 2010	Bluebell Hill	27 Jun 2012
Knockmore	22 Sep 2010	Dover	27 Jun 2012
Rosemarkie	20 Oct 2010	Crystal Palace	18 April 2012
Fremont Point	17 Nov 2010	Bilsdale	26 Sep 2012
Torosay	27 Oct 2010	Chatton	26 Sep 2012
Darvel	25 May 2011	Pontop Pike	26 Sep 2012
Rosneath	25 May 2011	Limavady	24 Oct 2012
Craigkelly	15 Jun 2011	Brougher Mountain	24 Oct 2012
Black Hill	22 Jun 2011	Divis	24 Oct 2012

The table shows the dates when the digital switchover took place in the transmitter groups in the UK.

A.2 TV Viewing Share by Genre

Figure A.1 presents the proportion of TV watching time that viewers dedicate, on average, to each genre. I classify TV content into thirteen genres: entertainment, movies, sports, relaxation, humour, drama, soap operas, cultural programmes, contemporary matters, newscasts, educational content, cartoons, and other. As shown, TV content does not change much during the period of 2007–2014.

Figure A.1: TV Viewing Share by Genre



The figure uses data from Ofcom to show the proportion of television watching time that viewers dedicate on average to each genre. I classify TV content into the following genres: entertainment, movies, sports, relaxation, humour, drama, soap operas, cultural programmes, contemporary matters, newscasts, educational content, cartoons, and other.

A.3 Summary Statistics by Gender

Table A.2: Descriptive Statistics Males

		Digital Television Introduction Year			
		2009	2010	2011	2012
Age	48.45	49.54	49.31	48.78	47.60
	(17.88)	(18.05)	(17.75)	(17.91)	(17.79)
Non–White British	0.19	0.11	0.06	0.16	0.27
	(0.39)	(0.31)	(0.24)	(0.37)	(0.44)
Single	0.22	0.20	0.19	0.20	0.25
	(0.41)	(0.40)	(0.39)	(0.40)	(0.43)
Married/Civil Partner	0.59	0.59	0.58	0.59	0.58
	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
Separated/Divorced	0.06	0.07	0.06	0.06	0.05
	(0.23)	(0.26)	(0.24)	(0.23)	(0.22)
Widowed	0.03	0.04	0.03	0.03	0.03
	(0.18)	(0.18)	(0.17)	(0.18)	(0.18)
Living as a Couple	0.11	0.11	0.13	0.12	0.09
	(0.31)	(0.31)	(0.34)	(0.32)	(0.28)
Household Size	2.92	2.72	2.65	2.89	3.07
	(1.49)	(1.36)	(1.28)	(1.46)	(1.59)
Highly Qualified	0.35	0.35	0.38	0.33	0.37
	(0.48)	(0.48)	(0.48)	(0.47)	(0.48)
Labour Market Participation	0.67	0.63	0.68	0.67	0.68
	(0.47)	(0.48)	(0.47)	(0.47)	(0.47)
Has a Job	0.61	0.58	0.63	0.61	0.61
	(0.49)	(0.49)	(0.48)	(0.49)	(0.49)
Unemployed	0.06	0.05	0.05	0.06	0.07
	(0.24)	(0.23)	(0.22)	(0.24)	(0.26)
Permanent Employee	0.92	0.91	0.93	0.92	0.91
	(0.27)	(0.28)	(0.26)	(0.27)	(0.28)
Full-Time Employee	0.87	0.86	0.88	0.87	0.86
	(0.34)	(0.35)	(0.33)	(0.34)	(0.34)
Observations	83,036	6,730	6,174	39,896	30,236

The table presents the averages of several labour outcomes and sociodemographic characteristics, together with their standard deviations in parentheses. Column 1 presents unweighted summary statistics for males. Columns 2–5 split the sample according to the year when males received access to digital signal.

Table A.3: Descriptive Statistics Females

		Digital Television Introduction Year			
		2009	2010	2011	2012
Age	48.30	49.04	49.79	48.39	47.71
	(17.80)	(18.03)	(17.67)	(17.74)	(17.81)
Non–White British	0.19	0.10	0.08	0.17	0.28
	(0.40)	(0.30)	(0.27)	(0.37)	(0.45)
Single	0.19	0.16	0.15	0.18	0.22
	(0.39)	(0.37)	(0.36)	(0.38)	(0.41)
Married/Civil Partner	0.52	0.52	0.52	0.52	0.51
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
Separated/Divorced	0.11	0.12	0.11	0.11	0.11
	(0.31)	(0.32)	(0.31)	(0.31)	(0.31)
Widowed	0.09	0.10	0.10	0.08	0.09
	(0.28)	(0.30)	(0.29)	(0.27)	(0.28)
Living as a Couple	0.10	0.10	0.12	0.11	0.08
	(0.30)	(0.31)	(0.33)	(0.32)	(0.27)
Household Size	2.89	2.71	2.64	2.86	3.02
	(1.50)	(1.36)	(1.27)	(1.46)	(1.60)
Highly Qualified	0.35	0.36	0.39	0.33	0.37
	(0.48)	(0.48)	(0.49)	(0.47)	(0.48)
Labour Market Participation	0.57	0.57	0.59	0.57	0.56
	(0.50)	(0.50)	(0.49)	(0.50)	(0.50)
Has a Job	0.52	0.53	0.56	0.52	0.51
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
Unemployed	0.04	0.04	0.03	0.04	0.04
	(0.20)	(0.20)	(0.18)	(0.20)	(0.21)
Permanent Employee	0.92	0.92	0.92	0.93	0.91
	(0.27)	(0.27)	(0.28)	(0.26)	(0.29)
Full-Time Employee	0.60	0.62	0.59	0.59	0.61
	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
Observations	101,047	8,480	7,395	47,965	37,207

The table presents the averages of several labour outcomes and sociodemographic characteristics, together with their standard deviations in parentheses. Column 1 presents unweighted summary statistics for females. Columns 2–5 split the sample according to the year when females received access to digital signal.

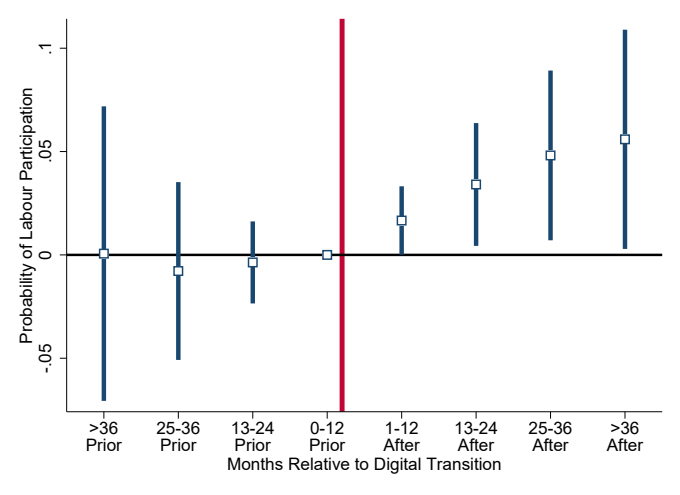
A.4 Analysis on Labour Market Participation

Table A.4: Analysis on Labour Market Participation

	Dep Var: Labour Market Participation
DT	0.009***
	(0.002)
Individual Covariates	Yes
LSOA Dummies	Yes
Year Dummies	Yes
Observations	178,724

* p<0.10, ** p<0.05, *** p<0.01
Standard errors in parentheses. The individual covariates that I control for are the following: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Figure A.2: Evolution of the Effect of the Digital Transition



The figure shows the evolution of the impact of the transition from analogue to digital television on the probability of labour market participation.

A.5 Alternative Cluster Level of Standard Errors

Table A.5: Alternative Clustering

	Dep Var: Prob Employment
DT	0.006**
	(0.003)
Individual Covariates	Yes
LSOA Dummies	Yes
Year Dummies	Yes
Observations	178,724

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. The individual covariates that I control for are the following: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the household level.

A.6 Alternative Specifications

Table A.6: Alternative Specification

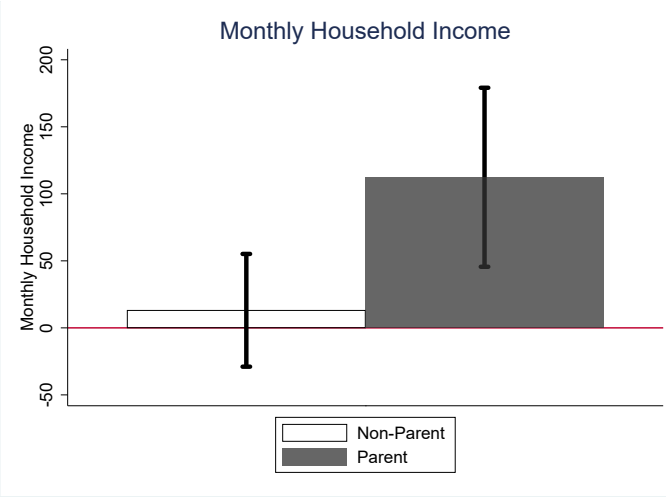
	Dep Var: Prob Employment
DT	0.005**
	(0.002)
Individual Covariates	Yes
LSOA Dummies	Yes
Year Dummies	Yes
Individual Fixed Effects	Yes
Observations	183,572

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. I only control for a third-order polynomial in age and marital status as time-varying covariates in order to not loose too many observations and use as much variation as I can in my explanatory variable of interest. I cluster standard errors at the LSOA level.

A.7 Household Income

Figure A.3: Household Income

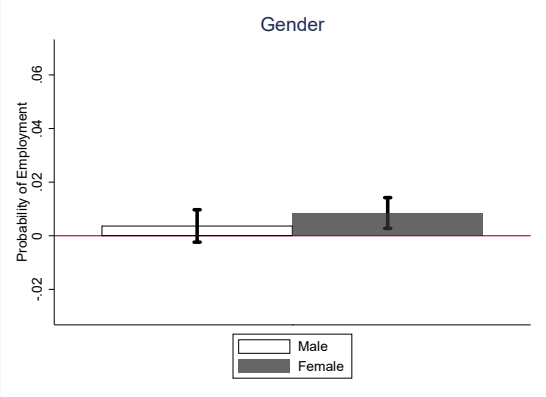


The figure examines whether the impact of television on net household income is heterogeneous in parental status.

A.8 Gender Equality

This section explores heterogeneity in the baseline estimates only by gender to quantify the effect of television on gender equality in the labour market. To do so, I estimate a model similar to the baseline one but that controls for an interaction term between the digital transition indicator and a binary variable equal to 1 for females and 0 for males. Figure A.4 displays the average marginal effects of the digital transition by gender. The switchover increases the probability of females having a job, and the estimate is significant at the 1% confidence level. However, the estimate of the impact of the digital transition is smaller and not statistically significant for males. Albeit the estimates are not statistically different, the magnitudes suggest that the digital transition may reduce gender inequality in the labour market. Regarding the size of this reduction, the digital transition increases the employment probability of females by 0.82 percentage points but only by 0.34 percentage points for males. According to OECD data, the average employment probability of females is 53.9% in the year prior to the start of the switchover, whereas it is 66.7% for males.[25] Therefore, the introduction of digital television in the UK may have decreased the gender gap in the employment probability by 3.75%.

Figure A.4: Gender Equality



The figure examines the impact of television on gender equality in the labour market.

[25]This is reported in https://stats.oecd.org/index.aspx?queryid=54741 (accessed April 15, 2019).

A.9 Tables of Heterogeneity Analysis

Table A.7: Heterogeneity by Parental Status and Gender

	Whole Sample	Males	Females
	Dep Var: Prob Employment		
DT	0.002	0.002	0.001
	(0.003)	(0.004)	(0.004)
Child × DT	0.015***	0.007	0.022***
	(0.004)	(0.005)	(0.005)
Individual Covariates	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Observations	170,602	73,282	95,563

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. The individual covariates that I use are: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Table A.8: Heterogeneity by SES, Number and Age of Children

	Dep Var: Prob Employment		
DT	0.002	0.003	0.060***
	(0.003)	(0.003)	(0.003)
1 Child × DT	0.007		
	(0.006)		
2 Children × DT	0.019***		
	(0.006)		
>=3 Children × DT	0.021**		
	(0.010)		
Child Aged 0-4 × DT		-0.003	
		(0.006)	
Child Aged 5-10 × DT		0.024***	
		(0.007)	
Child Aged 10-15 × DT		0.002	
		(0.006)	
HH Income Q2 × DT			-0.073***
			(0.005)
HH Income Q3 × DT			-0.073***
			(0.004)
HH Income Q4 × DT			-0.078***
			(0.004)
Individual Covariates	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Observations	170,602	170,557	171,972

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. The individual covariates that I use are: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Table A.9: Heterogeneity by Cohabitation Status

	Non–Cohabiting	Cohabiting
	Dep Var: Prob Employment	
DT	0.002	0.002
	(0.005)	(0.003)
Child × DT	0.038***	0.012***
	(0.010)	(0.005)
Individual Covariates	Yes	Yes
LSOA Dummies	Yes	Yes
Year Dummies	Yes	Yes
Observations	58,838	110,334

* p<0.10, ** p<0.05, *** p<0.01
Standard errors in parentheses. The individual covariates that I use are: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Table A.10: Housework

	Whole Sample	Males	Females
	Dep Var: Weekly Housework Hours		
DT	0.032	0.117	0.019
	(0.101)	(0.117)	(0.153)
Child × DT	-0.480***	-0.003	-0.741***
	(0.130)	(0.144)	(0.190)
Individual Covariates	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Observations	86,889	36,109	47,589

* p<0.10, ** p<0.05, *** p<0.01
Standard errors in parentheses. The individual covariates that I use are: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Table A.11: Types of Employment

	Males	Females	Males	Females
	Self-Employment		Employed	
DT	0.007**	-0.001	-0.005	0.001
	(0.003)	(0.002)	(0.004)	(0.004)
Child × DT	-0.008	0.008***	0.014**	0.019***
	(0.005)	(0.003)	(0.007)	(0.006)
Individual Covariates	Yes	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Observations	73,245	94,382	73,245	94,382

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. The individual covariates that I use are: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

Table A.12: Types of Employment

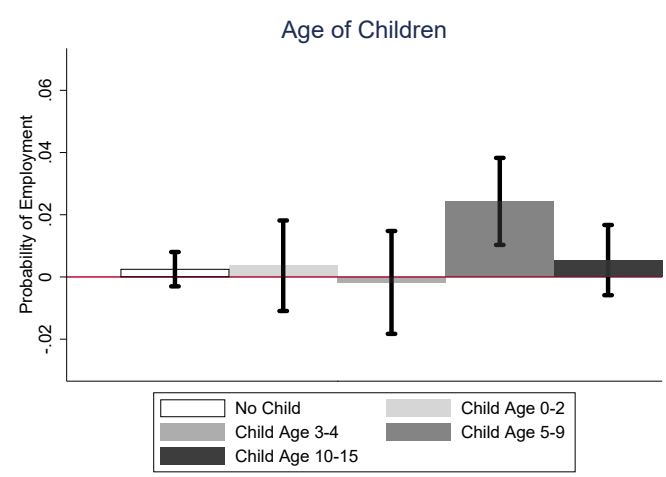
	Males	Females	Males	Females
	Part-time Employment		Full-time Employment	
DT	0.005*	0.004	-0.009**	-0.001
	(0.003)	(0.004)	(0.004)	(0.004)
Child × DT	-0.006	0.012**	0.022***	0.006
	(0.004)	(0.006)	(0.007)	(0.005)
Individual Covariates	Yes	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Observations	72,672	93,591	72,672	93,591

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. The individual covariates that I use are: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

A.10 Heterogeneity in Age

Figure A.5: Heterogeneity in Age



The figure examines whether the impact of television on employment probabilities is heterogeneous in age.

A.11 Local Services

It is important to explore whether the impact of television on employment probabilities varies according to the amount of public services provided in the local area. Table A.13 estimates the baseline specification and splits the sample according to the quality of (i) primary schools, (ii) leisure activities, and (iii) public transport in the local area. In particular, columns 1–2 study the effect of television on employment probabilities when the quality of primary schools that individuals report having in their local area is above/below the average of the sample, respectively. Columns 3–4 study heterogeneity in the quality of the leisure activities available in the local area. Columns 5–6 study heterogeneity in the quality of public transport. I only find that the estimates of the digital transition are higher when the quality of public transport is worse.

Table A.13: Heterogeneity in Local Services

	Dependent Variable: Probability of Employment					
	Primary Schools		Leisure Activities		Public Transport	
	High	Poor	High	Poor	High	Poor
DT	0.006	0.004	0.006*	0.005	0.004	0.012***
	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Individual Covariates	Yes	Yes	Yes	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	45,544	102,448	92,309	71,929	85,690	71,907

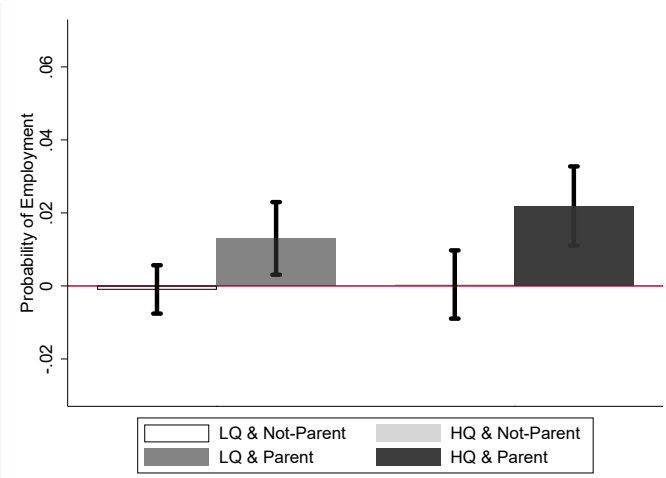
* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. The table presents the estimates of the baseline specification. I split the sample according to the quality of several services in the local area. I control for the following individual covariates: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

A.12 Level of Qualification

This subsection studies whether the impact of the digital transition on employment probabilities varies by parental status and level of qualification. To do so, I estimate a specification similar to the baseline model but that controls for parental status and its interaction with the switchover variable, separately by level of qualification. I classify individuals as high-qualified (if their highest qualification is a university degree or other higher degree) and low-qualified (if their highest qualification is A-levels, GCSE, other qualification, or no qualification). Figure A.6 shows that the digital transition increases more employment probabilities for high-qualified parents than for low-qualified ones, albeit these estimates are not statistically different.

Figure A.6: Parental Status and Level of Qualification



The figure examines whether the impact of television on employment probabilities is heterogeneous in parental status and level of qualification.

A.13 Other Activities

The positive impact of television on employment probabilities may also be driven by television changing the time allocation of adults for activities other than housework. Columns 1–11 of Table A.14 test for this hypothesis by estimating the baseline specification and using as dependent variable the number of hours that adults spend (i) watching TV, (ii) sleeping, and (iii) commuting per day, and the frequency with which individuals (iv) do sports, (v) take part in arts, (vi) attend arts events, (vii) go for a walk, (viii) eat with family, (ix) visit friends, (x) read, and (xi) get involved in any other kind of leisure activity, respectively.[26] As shown in Table A.14, the digital transition only increases the number of hours of television viewing and reduces reading frequency. The latter finding is unlikely to explain the positive impact of the digital transition on employment probabilities.

[26]Some of these frequencies are measured on different scales. For example, the frequency of sports ranges from 1 (do not do any sport) to 7 (3 or more times per week). In contrast, the frequency of taking part in arts or attending arts events ranges from 1 (once in the past year) to 5 (at least once per week). See www.understandingsociety.ac.uk/documentation/mainstage/dataset-documentation (accessed February 1, 2019) for more information.

Table A.14: Time Allocation

	TV Hours	Hours of Sleep	Hours of Commute	Sports	Arts	Arts Events	Walk	Eat with Family	Visit Friends	Read	Other Leisure
DT	0.096**	-0.057	-0.004	-0.024	-0.009	-0.003	0.098	0.051	-0.006	-0.017**	-0.016
	(0.040)	(0.044)	(0.004)	(0.037)	(0.020)	(0.024)	(0.222)	(0.050)	(0.007)	(0.008)	(0.038)
Individual Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LSOA Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46,082	51,998	85,911	34,731	43,491	42,085	50,005	3,782	46,305	59,826	31,498

* p<0.10, ** p<0.05, *** p<0.01

Standard errors in parentheses. I control for the following individual covariates: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

A.14 Gender Views

Another plausible explanation for the positive impact of television on the employment probabilities of mothers is that the new digital television content may have changed individuals' perceptions about the role of women in the labour market. This is unlikely because television content did not change much during the digital transition. Nevertheless, columns 1–2 of Table A.15 test for this hypothesis. I estimate the baseline model using as dependent variable the opinions of individuals about the following statements: (i) "husbands and wives must earn money", and (ii) "the role of husbands is to earn income, the one of wives is to take care of the household", respectively. These outcome variables take a value between 1 (strongly disagrees with the statement) and 5 (strongly agrees). As shown, the digital transition does not change the opinions of individuals regarding gender equality.

Table A.15: Gender Views

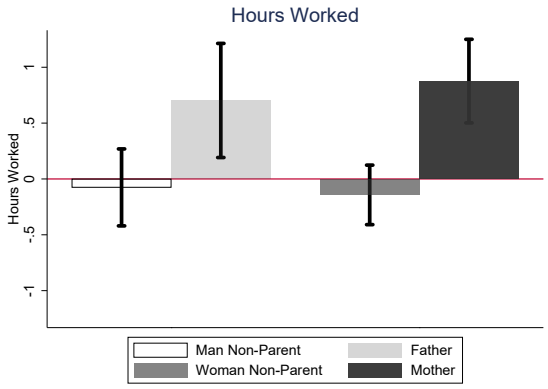
	Who Should Work?	
	Men & Women	Only Men
DT	0.014	-0.003
	(0.015)	(0.016)
Individual Covariates	Yes	Yes
LSOA Dummies	Yes	Yes
Year Dummies	Yes	Yes
Observations	54,696	54,737

* p<0.10, ** p<0.05, *** p<0.01
Standard errors in parentheses. I control for the following individual covariates: gender, a third-order polynomial in age, ethnicity, level of qualification, marital status, and the number of household members. I cluster standard errors at the LSOA level.

A.15 Number of Hours Worked

This paper studies whether the digital transition has an impact on employment probabilities. It is also relevant to examine whether television changes the intensive margin of the labour supply. To do so, I estimate a specification similar to the baseline one but that controls for parental status and its interaction with the digital transition variable. I use the number of hours worked per week as dependent variable. As shown in Figure A.7, the digital transition increases working hours for mothers and fathers but has no impact for non-parents.

Figure A.7: Number of Hours Worked

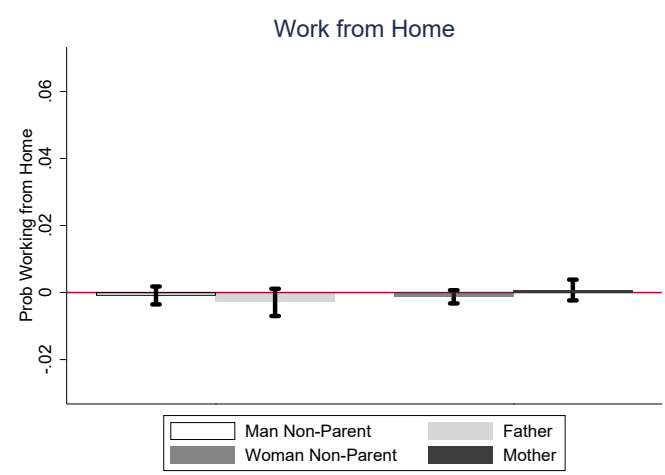


The figure examines whether the impact of television on working hours is heterogeneous in parental status and gender.

A.16 Work from Home

This subsection studies whether the digital transition has an impact on the probability of adults working from home, and examines heterogeneity in the previous effect by parental status and gender. I estimate an equation similar to the baseline model but that controls for parental status and its interaction with the switchover variable, separately by gender. Figure A.8 shows that the digital transition has no impact on the probability of individuals working from home, independently of their parental status and gender.

Figure A.8: Work from Home



The figure examines the impact of television on the probability of working from home, and investigates heterogeneity in the previous effect by parental status and gender.