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Abstract

It is often suggested that vocational education and training (VET) could be key to cut youth unemployment. VET programmes may provide young people with specific professional qualifications that enable them to successfully compete in the labour market. However, despite the great emphasis placed by governments and other institutions on these programmes, VET appears to be far from reaching its full potential in many countries. One barrier preventing students from pursuing this type of education is the stigma associated with VET. This paper looks at the role of media in changing the negative social perceptions of VET. Specifically, it examines whether in Italy the growing popularity of the cooking television reality show MasterChef has led to an increase in the number of students willing to study for a vocational qualification in hospitality and catering. The empirical results show that an increase in the number of MasterChef's viewers is associated with a higher proportion of students willing to attend hospitality and catering schools. This finding suggests that popular television cooking series like MasterChef may be a vehicle through which the image and the attractiveness of VET can be improved.

Introduction

High youth unemployment is a topic of increasing concern throughout the world. It is at the top of the current policy agenda in Europe where the recent economic downturn has hit especially hard the employment prospects of young people. In the EU-28 unemployment rate among individuals aged 18 to 24 increased from 15.1 percent to 23.9 percent between the first quarter of 2008 and the first quarter of 2013. A high youth unemployment rate not only has a detrimental effect on a young person's life, but also on future economic growth (Hill and Rock 1990).

There is a large consensus among academics and policy-makers that vocational education and training (VET) could provide a means to tackle youth unemployment (Biavaschi et al. 2013). Countries such as Germany and Austria, with relatively high levels of participation in VET, have among the lowest rates of unemployment in the under 25s (Coughlan 2015). Vocational skills are in high demand. This is reflected by the great difficulty faced by employers around the world to fill skilled trade and technical positions (Manpower Group 2014). There will continue to be a strong demand for vocational education also in the future. Clifton et al. (2014) argue that in the UK a large number of jobs requiring VET qualifications will be created in sectors such as health and care. Additionally, jobs historically requiring a university degree (e.g. financial adviser and dental technician) are being increasingly filled by people with VET qualifications (Hodges 2014).

In light of the above considerations, it is important to boost participation in VET programmes in many countries (Chankseliani et al. 2016). However, a well-known barrier preventing students from choosing to pursue VET is the stigma associated with this decision (Subrahmanyam 2014). VET is often seen as a 'lower' form of education available to the less fortunate as opposed to academic programmes (Bourdieu and Passeron 1977). Many parents

encourage their children to choose an academic track, not a technical or professional track, after completing basic education. This is because VET is frequently perceived as providing access to 'inferior' and low paid jobs. VET is sometimes even considered a dead-end educational path (Meer 2007), failing to lead to employment. Furthermore, students can fear that the decision to enrol in a vocational pathway is almost irreversible given that there are limited opportunities to return to general/academic education (Lasonen and Gordon 2009).

This paper looks at the role played by media in changing the negative social perceptions of VET. Media may succeed in raising the profile of VET, therefore making it more attractive to adolescents. Specifically, this paper examines whether in Italy the growing popularity of the cooking television reality show MasterChef has led to an increase in the number of students willing to study for a vocational qualification in hospitality and catering. In Italy, as in many other countries, studying hospitality and catering is the starting point for those young people wishing to make cooking their profession. MasterChef offers the audience a view of the food industry where the prospect of a culinary career emerges as an attractive option while the negative aspects of it (e.g. long working hours, stress, bullying and strict discipline) appear to be overlooked (Tongchaiprasit and Ariyabuddhiphongs 2016; Meloury and Signal 2014). This may influence young viewers who tend to believe that the world portrayed by television represents an accurate depiction of the real world. Thanks to MasterChef and other television cooking shows, chefs have become celebrities. Young viewers may desire to become like them and follow their career path.

Additionally, given that MasterChef attracts large audiences, such a programme has the capacity to influence not only teenagers, but also their parents. MasterChef's success is likely to have raised the status of the cooking profession in the public eye and this may have the effect of persuading parents that working in the food industry is a good option for their children.

This paper attempts to separate the effect of MasterChef from the effect of other factors influencing the decision to study for a vocational qualification in hospitality and catering. In addition to controlling for several potential confounding variables, the use of panel data analysis (i.e. data are pooled across regions and years) permits the inclusion of region fixed effects and general year effects. While the latter account for time-varying determinants of the decision to attend hospitality and catering schools that are national in scope, the former control for factors that differ across regions but remain constant over years. Region-specific linear time trends are also added to the model in an attempt to account for confounding factors that vary within regions over time. In doing so, not only is the potential for omitted variable bias reduced (Ruhm 2007), but it is also possible to account for all the systematic factors affecting enrolment in hospitality and catering schools that are spuriously correlated with the release of MasterChef.

This paper provides results that are statistically significant and economically meaningful. A one percentage point increase in the proportion of people watching MasterChef is associated with an increase in the share of final year lower secondary school students willing to study at hospitality and catering schools of between 0.25 and 0.35 percentage points. For illustrative purposes, this would imply that if in 2015 an extra 19,005 people were watching MasterChef, the number of students applying for a place at hospitality and catering schools would be expected to increase by a figure between 116 and 162.

This paper begins with a brief description of theories outlining the mechanisms through which television influences young people's career and educational aspirations. Next, the MasterChef programme is described and a summary of the results of the existing research on the effects of this cooking television show is given. After that, the upper secondary education system in Italy is illustrated. The best educational path for young people willing to become chefs is outlined. Then, after explaining the methodology employed in this paper to estimate

the influence of MasterChef on students' decision to attend hospitality and catering schools, the data and the empirical results are presented and discussed. Finally, the main conclusions of the paper are offered.

The impact of television on adolescents' career choices

The question of whether or not television shapes beliefs, attitudes and values of young people has been debated in the literature for decades (Hartnagel et al. 1975; Halford et al. 2004; Smith and Foxcroft 2009). Several studies have examined the role of television in influencing adolescents' career choices. It is argued that television is an important source of educational and occupational information for teenagers and has the potential to introduce them to careers they may not have been previously considered (Hoffner et al. 2006). Jobs or careers of television characters may appeal to youths and serve as role models in the development of their occupational aspirations (King and Multon 1996).

Two main theories have been proposed to explain the mechanisms through which the television exerts an influence on the way young people develop work-related values and occupational aspirations: cultivation theory and wishful identification. These mechanisms should be thought of as complementary rather than competing. *Cultivation theory* (Gerbner et al. 1980 and 1994) states that persistent exposure to images on television will, over time, result into a shared view of the wold (Davis 2007). Heavy viewers of TV tend to believe that the world portrayed by television represents an accurate depiction of the real world. This means, for instance, that some jobs may appear on television to be more exciting and glamorous than they are in reality. *Wishful identification* is a psychological process through which a person desires or attempts to become like another person such as a media character (Feilitzen and Linne 1975; Hoffner 1996). Young viewers may identify with television characters whom they perceive to be attractive, successful, and admired by others. They may

vicariously participate in the characters' experiences during a programme (Cohen 2001). Individuals feel the necessity to connect with other individuals, and television helps them address this need. Over time, audience members become familiar with recurring characters on continuing series and often feel as they have a personal relationship with them. They may be worried about what will be happening in their lives and/or may develop a desire to become like them in significant ways (Giles 2002; Hoffner and Buchanan 2005).

Finally, although the media landscape has changed considerably in the last decade, it is important to note that adolescents continue to spend a lot of time viewing TV content and traditional TV still remains their primary device (Child Trends Databank 2014). However, an increasing number of teenagers use computers and handheld media device (e.g. iPods and cell phones) to watch television programmes.

MasterChef and the 'MasterChef effect'

MasterChef is a television reality show where amateur cooks compete for the title of MasterChef. In the series, participants have to pass several stages where they have to prepare tasty dishes in an attempt to impress judges. Contestants love cooking and often are able to transmit their passion to the viewers. Judges are famous chefs and leading international food entrepreneurs who mentor and motivate amateur cooks. The winner gets a money prize and publishes his/her own cookbook.

The original series of MasterChef began in 1990 on BBC television, UK. The format was first revamped in 2005 and again in 2009. This version of the show has had a tremendous success worldwide and it is currently produced in more than 40 countries. In Italy, the first season of MasterChef was shown primetime every week on Cielo from September to December 2011. After the success of the first season, three more seasons were made between 2012 and 2015. They were aired primetime every week on Sky Uno.

Though cooking shows have long been a feature of Italian television programming, MasterChef is different in several aspects. First, historically these shows have tended to display chefs showing how to create fabulous meals. Second, several of these cooking shows are aired at lunch time (e.g. Prova del Cuoco) when students are typically at school. Third, MasterChef is by far the most popular one attracting millions of viewers. As shown in Figure 1, with each new season, the number of people viewing MasterChef during an average minute[1] has significantly increased. In 2015, during season 4, MasterChef was watched by an average of more than 1.9 million people. While this show is popular especially among adults, it is watched by a lot of young people. For instance, seasons 2 and 3 of MasterChef were watched, on average, by 170,207 and 189,086 individuals aged between 8 and 19, respectively.

FIGURE 1 here

The term 'MasterChef effect' has become recognized as jargon that refers to the impact of this show on its viewers. Various pieces of evidence indicate that MasterChef has changed the way Australians view food. Research has concluded that 6 in every 10 viewers have made at least one dish featured on MasterChef Australia (Passport 2012). A study conducted by IBISWorld shows that Coles Supermarkets, which is a major sponsor of MasterChef Australia, has experienced a dramatic increase in sales of ingredients featured in the series. For instance, the sale of pink ling fish raised by more than 1400 percent the week after it was used on MasterChef and was then advertised in a Coles-promoted recipe (Miletic 2010). The supermarket chain also kept track of sales of red cabbage, which increased 86 percent, and pistachios, which increased by 125 percent after they were used on MasterChef (Miletic 2010). There is also recent evidence that this show has spurred the consumption of wild meat (Gressier 2016) and dairy spreads (Anderson 2015).

Additionally, in Australia spending at restaurants and cafes has also significantly increased as a result of MasterChef's success (Hargreaves 2011). This has led to a shortage of chefs, which is reflected by an increase in the number of cooks in Australia's skilled migration intake. Polites (2014) reports that in 2012-2013 cooks overtook, for the first time, accountants in the annual skilled migration intake.

There is also some evidence of the 'MasterChef effect' in the UK. Chefs have seen bookings for their restaurants soar up to 400 percent after a guest appearance on the BBC show (Thomas 2012). This is in line with the hypothesis that a chef with a good image increases diners' confidence in their purchases and reduces their perceived risks (Lin 2013; Tam 2008). MasterChef has also encouraged more British men to cook. In an attempt to improve their cooking skills, they report spending more on kitchen appliances after the show (Berrill 2012).

Hospitality and catering schools and the upper secondary school choice in Italy

The Italian educational system is divided into four cycles: pre-primary school, first educational cycle, second educational cycle and higher education.

Pre-primary school comprises two levels: kindergarten (for children from 0 to 3 years old) and nursery school (for children from 3 to 5 years old). However, children do not have to attend kindergarten or nursery school.

The first educational cycle is compulsory and includes primary and lower secondary education. This cycle takes 8 years: 5 years of primary education and 3 years of lower secondary school.

The second educational cycle is made up of the upper secondary school. On completion of lower secondary education, students, who are aged approximately 14, must choose the upper secondary school they want to attend. There are 3 main types of upper secondary schools: 1)

Academic-oriented Schools (Licei), which provide academic training to prepare students for higher education; 2) Technical Schools (Instituti Tecnici), which are designed to prepare students for technical occupations in the economic and technological fields; and 3) Vocational Schools (Instituti Professionali), which offer vocational training, and where classroom study is combined with practical experience. Each main type is divided into sub-types. Following the entry into force of Gelmini's reform in September 2010, there are 6 sub-types of Academic-oriented Schools, 11 sub-types of Technical Schools and 6 sub-types of Vocational Schools. The upper secondary school choice is mandatory for all students as school leaving age is 16. All sub-types of upper secondary schools last for 5 years.

Lower secondary school students are asked to decide which upper secondary school they want to attend about 5 months before completing the first educational cycle. Students can, in principle, apply for any school[2] and, provided there are sufficient places available, they may attend the school of their choice. Since February 2012, students can apply online and select the upper secondary school they want to go to. No information is given about the number of places available or whether the school is typically over or under subscribed. In addition to the preferred school, students can indicate up to two other schools they would like to attend. If a student is not accepted into his/her first school choice, his/her application will be considered by the other two schools. Admission criteria are set by the governing body of each school. Typically, siblings get priority as well as children living in the catchment area of the school.

The best educational path for students who aspire to become chefs is to attend the sub-type of Vocational schools that is specialised in hospitality and catering (*Istituto Professionale - Servizi per l'enogastronomia e l'ospitalità alberghiera)*. Although no formal qualification is required to become a chef, a vocational qualification in hospitality and catering helps students gain some of the skills and knowledge needed in the job. The programme offered by hospitality and catering schools comprises 2 two-year parts and 1 one-year part. These

schools give students the opportunity to acquire a mix of theoretical and practical skills (thanks to the combination of workplace-based apprenticeship with a classroom based education) that prepare them for entry-level positions as chefs. Furthermore, hospitality and catering schools tend to have links and collaborations with leading chefs associations and principal figures from the world of gastronomy. At the end of their studies, students are awarded the Professional Diploma in Hospitality and Catering (Tecnico dei Servizi della Ristorazione).

Attending hospitality and catering schools is an increasingly popular choice among Italian students. In 2014, these schools were the second most selected sub-type of upper secondary schools after scientific Academic-oriented schools (Licei Scientifici). In Italy, in 2015 there were 262 hospitality and catering schools and they were fairly evenly distributed across regions. In recent years, many of these schools have increased the number of places offered in an attempt to accommodate the higher demand.

Methodology, variables and data

This study employs a balanced panel dataset of 18 regions[3] covering the period from 2011 to 2015. Four seasons of MasterChef were broadcasted during this period, i.e. one each year. Timing may play an important role here. Students selected the upper secondary school they wished to attend shortly after the end of MasterChef or when this programme was still being broadcast[4]. This consideration is relevant as it may lead to a stronger influence of MasterChef on students' educational choice.

In order to investigate whether the release of MasterChef has affected students' decision to study at hospitality and catering schools, the following model is estimated[5]:

$$y_{it} = \beta_o + \beta_1 Masterchefaudience_{it} + \beta_2 YUN_{it-1} + \beta_3' X_{it-1} + Y_t + R_i + \varepsilon_{it} \tag{1}$$

where the subscript i indexes regions and the subscript t indexes years. y_{it} is **the percentage of final year lower secondary school students choosing a hospitality and catering school as their preferred upper secondary school** out of all final year lower secondary school students. *Masterchefaudience*$_{it}$ denotes the **percentage of people watching MasterChef**[6] during an average minute out of the total viewing audience[7]. YUN_{it-1} refers to **youth unemployment rate** (the number of unemployed 18-24 year-olds divided by the youth labour force). It is a measure of general labour market prospects for young individuals. X_{it-1} is a vector comprising 3 different time-variant measures of labour market prospects for chefs and food service professionals[8]. These are:

1) **Percentage of workers in hospitality and catering**= workers employed in the hospitality and catering industry out of the total workers.

2) **Percentage of newly founded firms in hospitality and catering**= newly founded firms in the hospitality and catering industry out of the total newly founded firms.

3) **Percentage of seasonal workers that firms in hospitality and catering plan to recruit during next year**= Seasonal workers that firms in the hospitality and catering industry plan to recruit during next year out of the total seasonal workers who are planned to be recruited during next year.

Following the approach of previous studies (see, for instance, Edin and Holmlund 1993), all the measures of labour market prospects have been lagged one year. In other words, it is hypothesized that students' formation of their expectations of the labour market situation starts one year before they actually enrol.

While Y_t is a year-specific effect, R_i is a region-specific intercept. The year dummy variables pick up the impact of time-varying omitted determinants that are common across regions. For

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instance, following the success of MasterChef more food-related programmes have been broadcast by Italian television in recent years. The Italian version of Hell's Kitchen was, for example, aired across the entire country in 2014. The region intercepts, often referred to as fixed effects, account for unobserved characteristics that differ across regions but remain constant over time. For instance, historically, Italian regions have different levels of supply of tourism-related services such as hotels, restaurants and resorts. This could have led to persistent differences in the demand for vocational education in hospitality and catering across them. ε_{it} is the error term with the classical main assumptions[9].

β_1 is the coefficient of interest and measures the percentage point increase in the percentage of final year lower secondary school students willing to attend hospitality and catering schools attributable to a one percentage point increase in the percentage of people watching MasterChef. It captures the extent to which students have taken inspiration for studying hospitality and catering from MasterChef including the potential influence exerted by their parents, also triggered by the viewing of MasterChef.

Nevertheless, one problem with the estimates of equation (1) is that they do not account for confounding factors that change over time within regions except to the extent that these are picked up by our parsimonious set of time-variant covariates. In an attempt to address this issue, following the approach of Hinrichs (2012), a vector of region-specific linear time trends ($R_i *t$) is added to the model. In light of this, the following model is estimated:

$$y_{it} = \beta_o + \beta_1 Masterchefaudience_{it} + \beta_2 YUN_{it-1} + \beta_3 ' X_{it-1} + Y_t + R_i + R_i * t + \varepsilon_{it} \qquad (2)$$

An important advantage of the panel data method is that it makes use of both the time and cross-section dimensions of the data. Variation across units and over time is used to explain the outcome variable. Additionally, pooling is especially useful in situations where the

number of units is modest and the length of the time period is short (Zahariadis 1997). On the other hand, one disadvantage of our analysis is that aggregate (i.e. regional) data do not contain information on student age, gender and socio-economic background.

Data on the number of final year lower secondary school students who have chosen a hospitality and catering school as their preferred upper secondary school come from the Ministry of Education and Research (MIUR). Data on the total number of final year lower secondary school students are also from the MIUR.

The data source for unemployment rate for individuals aged between 18 and 24 is the Italian Institute of National Statistics (ISTAT).

Data on the number of people watching MasterChef during an average minute for seasons 1 to 4 are provided by Sky Italia.

Data on seasonal workers that firms in the hospitality and catering industry plan to recruit during next year out of the total seasonal workers who are planned to be recruited during next year are from the Excelsior database[10].

Data on the different measures of labour market prospects for chefs and food service professionals are from the Italian Federation of Restaurants, Bars and Hotels (FIPE).

Table 1 provides descriptive statistics for the all variables used in the analysis. It shows that there is sufficient cross sectional variation in the sample to justify the use of panel data techniques. For all the variables except one (i.e. percentage of seasonal workers that firms in hospitality and catering plan to recruit during next year), the standard deviation between regions in the 4 years under examination is higher than that observed within a region over the 4 years.

TABLE 1 here

Results

Before presenting and discussing the estimates of the equations, it is important to check for multicollinearity in the explanatory variables. Specifically, one problem regards the possibility that there is a strong correlation between the various measures of labour market prospects included in the models. To address this issue, a test for multicollinearity is performed. The results, which are reported in Table 2, indicate that multicollinearity among variables is not a serious concern in this study. The values of the variable inflation factor (VIF) for the explanatory variables are less than or equal to 1.65, under the recommended cut point of 10 to rule out problems with multicollinearity (Hair et al. 1995).

TABLE 2 here

The results for equation (1) are reported in Column 1 of Table 3. The coefficient on the percentage of seasonal workers that firms in hospitality and catering plan to recruit during next year is positive and statistically significant at the 1 percent level. A higher proportion of workers to be employed in this industry provides a great incentive for students to enrol at hospitality and catering schools. The coefficients on the two other measures of labour market prospects for chefs and food service professionals have the expected positive sign and are statistically significant at the 10 percent level. The results suggest also that a higher youth unemployment rate discourages students from choosing to attend catering and hospitality schools. It is possible that the worsening of general labour market conditions may push students to plan to stay longer in education, and hence they may favour Academic-oriented Schools (those preparing for higher education) as opposed to Technical/Vocational Schools. Nevertheless, this effect is not statistically significant.

TABLE 3 here

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Moving on to the primary variable of interest of this study, the results provide evidence supporting the proposition that MasterChef influences the upper secondary school choice made by final year lower secondary school students. The coefficient on the **percentage of people watching MasterChef** is statistically significant and positive, implying that increased viewing of MasterChef is associated with a higher proportion of students willing to study at hospitality and catering schools. Specifically, an increase in the average proportion of people watching MasterChef of 1 percentage point is associated with an increase of 0.292 percentage point in the share of final year lower secondary school students choosing a hospitality and catering school as their preferred upper secondary school.

Though, as outlined earlier, there are plausible theoretical arguments for including a full set of year dummies in the model, they are not found to be jointly statistically significant at conventional levels (the result of the F-test is reported at the bottom of Column 1). In light of this, the equation is re-estimated without year dummies in order to preserve degrees of freedom. The new estimates are presented in Column 2 of Table 3. The estimated coefficient on the percentage of people watching MasterChef is still statistically significant at the 5 percent level, though its size becomes smaller than that reported in Column 1. Additionally, the coefficient on youth unemployment rate is now statistically significant.

Estimates of equation (2) are shown in Column 3 of Table 3. Both the magnitude and the standard error of the coefficient related to MasterChef's audience increase with the inclusion of region-specific time trends. However, it is important to note that this coefficient is still positive and statistically significant at conventional levels.

Next, the Hausman test is performed to test whether the fixed effects model is more appropriate than a random effects model. The null hypothesis of this test is that the preferred model is random effects (Hausman and Taylor 1981). This implies that region-specific effects

are uncorrelated with independent variables included in the model, and hence coefficient estimates from the two models should turn out not to be statistically different. The test statistic, distributed as a χ^2 with 22 degrees of freedom (i.e. the number of coefficients in the model), is equal to 50.56 (p-value=0.00). This strongly rejects the null hypothesis that the coefficients are not statistically significant across the two models and therefore indicates a violation of the random-effects assumption. This confirms that the fixed effect model is more appropriate in this analysis.

Following the the results of some diagnostic tests (see Appendix 1), it turns out that the fixed effect model reported in Column 3 is heteroscedastic. To deal with this problem, Reed and Ye (2011), given that N > T, suggest to use Huber-White robust standard errors. This model is therefore re-estimated, but this time Huber-White robust standard errors are computed. These estimates are presented in Column 4 of Table 3. When estimates are corrected for heteroscedasticity, the standard error of the majority of coefficients increases. This, for instance, affects the statistical significance of the parameter on the percentage of seasonal workers that firms in hospitality and catering plan to recruit during next year. However, this pattern does not occur with the coefficient on the percentage of people watching MasterChef given that its standard error slightly decreases (0.184 compared with 0.197).

The findings from the empirical analysis indicate that popular television cooking programmes like MasterChef are a relevant source of occupational information for teenagers and may inspire them to pursue a vocational qualification in hospitality and catering. This suggests that television programmes may be a vehicle through which the image and the attractiveness of VET can be improved. They may complement and supplement existing initiatives aimed at attracting teenagers to VET.

Concluding remarks

Young people are having major problems in entering the labour market in many countries around the world. In Europe, this issue has been exacerbated by the recent economic recession. Many academics and policy-makers argue that VET may be an effective tool in reducing unemployment among the youth and mitigate the negative influence triggered by the economic crisis on them. VET promotes a smooth and timely transition from school to work.

However, despite the great emphasis placed by governments and other institutions on VET, this type of education lags behind its full potential in many countries. One well-known barrier preventing students from enrolling in VET programmes is the stigma associated with them. VET is often regarded as a 'second-choice' education option giving access to jobs of lower status. Many parents discourage their children from studying VET because of this perception issue.

This paper investigates whether media can unlock the potential of VET by changing the negative social perceptions associated with it. Specifically, this paper examines the extent to which in Italy the increasing popularity of the television cooking show MasterChef has led to an increase in the number of students willing to study for a vocational qualification in hospitality and catering. Jobs or careers of television characters may appeal to youths and serve as role models in the development of their occupational aspirations. MasterChef may provide an incentive to young people to pursue a vocational qualification in hospitality and catering as it gives the audience with a view of the food industry in which the prospect of a culinary career emerges as a fulfilling, exciting and challenging career option.

Using panel data methods and controlling for several potential confounding variables, this paper attempts to disentangle the effect of MasterChef from the effect of other determinants of the decision to attend hospitality and catering schools. The results provide evidence that

there is a relationship between MasterChef's audience and youth's increased interest in studying hospitality and catering. Specifically, the estimates indicate that a 1 percentage point increase in the proportion of people watching MasterChef leads to an increase in the share of students willing to study at hospitality and catering schools of between 0.25 and 0.35 percentage points. For illustrative purposes, this would imply that if in Italy in 2015 an extra 19,005 people were watching MasterChef, the number of students applying for a place at hospitality and catering schools would be expected to increase between 116 and 162.

The findings of this paper suggest that media, including television programmes, movies and radio shows, may help individuals see the vocational path as a serious option when they choose what type of education is best for them. There is already some evidence showing that media can contribute to making VET more attractive. For instance, Larsen et al. (2003), using a sample of nursing students from three different types of programmes (including diploma programmes) in North Carolina, find that 22 percent of them reported that their decision to become a nurse was driven by television and media. Media could be involved, together with education and training providers, students, companies and public authorities, in providing a positive communication about VET and its benefits. Therefore, there is the possibility for media to cooperate with these VET stakeholders in order to inform people about the wide range of VET opportunities available, improve the social standing of VET programmes and boost the employability of VET students.

Media may play a particularly significant role in allowing VET to undertake an image change. They may emphasize that VET-related professions provide individuals with the opportunity to be financially successful and work in an exciting, fun and dynamic environment. However, while it is important to highlight the advantages of VET-related professions, a realistic picture of what they entail, including some of their negative aspects,

needs to be given. VET students should know what to expect, so that they are prepared to address the problems associated with their future chosen profession.

One limitation of this study is the small sample size. Although the data represent almost the entire Italian population (98 percent), the number of observations included in the regressions is small and this makes standard errors regrettable large. Future studies should use more disaggregated data (e.g. city-level) over a longer period of time. Additional research should also be conducted on the 'diversion effect' of hospitality and catering schools. It would be interesting to investigate whether MasterChef draws students away from general/academic schools or from other types of vocational/technical schools. This is a relevant policy question since Academic-oriented school leavers are more likely to enrol at university and, conditional on enrolment, more likely to graduate than students completing other types of upper secondary schools are (Cottini 2005).

Disclosure statement

No potential conflict of interest was reported by the author.

NOTES

1. The number of viewers of a television programme during an average minute (i.e. average minute rating or AMR) is a well-known audience measure. However, one should note that this indicator underestimates the number of MasterChef viewers as people may also turn to internet to watch it or may record the show and watch it at a later date.

2. There is evidence that in Italy the upper secondary school choice is affected by parental education (Checchi and Flabbi 2006), lower secondary school final marks (Contini et al 2008) and teachers' advice (Argentin et al 2017).

3. Two regions (i.e. Trentino Alto Adige and Valle d'Aosta) are excluded from the analysis as in these regions the process through which students choose the upper secondary school they want to attend is different from that used in the rest of Italy.

4. In 2012 students selected their preferred upper secondary school about one month and half after the end of season 1 of MasterChef. As regards seasons 2, 3 and 4, this decision was taken when MasterChef was still being broadcast (approximately 2 months after the start of the series).

5. While this study uses a multiple regression analysis, an alternative methodology consists in conducting a survey where hospitality and catering students are asked to indicate the main factors that had driven their educational choice, including the influence exerted by television programmes such as MasterChef. However, given the difficulty of obtaining a sample that is nationally representative of the relevant student population, a disadvantage of this approach is

that results cannot be generalized. Another problem is that respondents are unlikely to be a random sample of all hospitality and catering students.

6. Although it would have been more appropriate to use a measure of MasterChef's audience specifically among adolescents, this information is unavailable at regional level. On the other hand, as already observed, one advantage of employing an aggregate audience indicator is that one may capture an important channel through which MasterChef may increase enrolment in hospitality and catering schools. Some parents watching this programme may encourage their children to become chefs. Parents may exert a significant influence on their children's educational choices, especially when these choices are required to be made relatively early in school life (Schnabel et al. 2002).

7. The total viewing audience is made up by individuals aged 4 or over.

8. Unfortunately, it has not been possible to include any earnings measure among the indicators for labour market prospects for chefs and food service professionals as, to the best of the author's knowledge, there are no available data. Data on wages are available for people recently completing the 3 different types of upper secondary schools. A survey conducted by Almadiploma (https://www.almadiploma.it) shows that in 2014 in Italy the average monthly wage of individuals with Vocational qualifications one year after completing their studies was 1,022 euro. The corresponding figures for individuals with Technical qualifications and Academic-oriented School leavers were 954 euro and 920 euro, respectively. However, as observed by Pizzigolotto (2017), the earnings premium associated with VET qualifications is only found for young people. The early advantage in wages turns into a later disadvantage with respect to individuals with general/academic education.

9. $E(\varepsilon_{it}) = 0$; $E(\varepsilon^2_{it}) = \sigma^2$; and $E(\varepsilon_i, \varepsilon_j) = 0$, that is mean zero, constant variance and zero covariance. In light of these assumptions, it is well-known that the OLS (Ordinary Least Squares) estimator is the best linear unbiased estimator.

10. The Excelsior database is maintained by Unioncamere Nazionale, which is the Union of the Italian Chambers of Commerce. It can be accessed at http://excelsior.unioncamere.net/xt/geoChooser/scegli-archivio.php.

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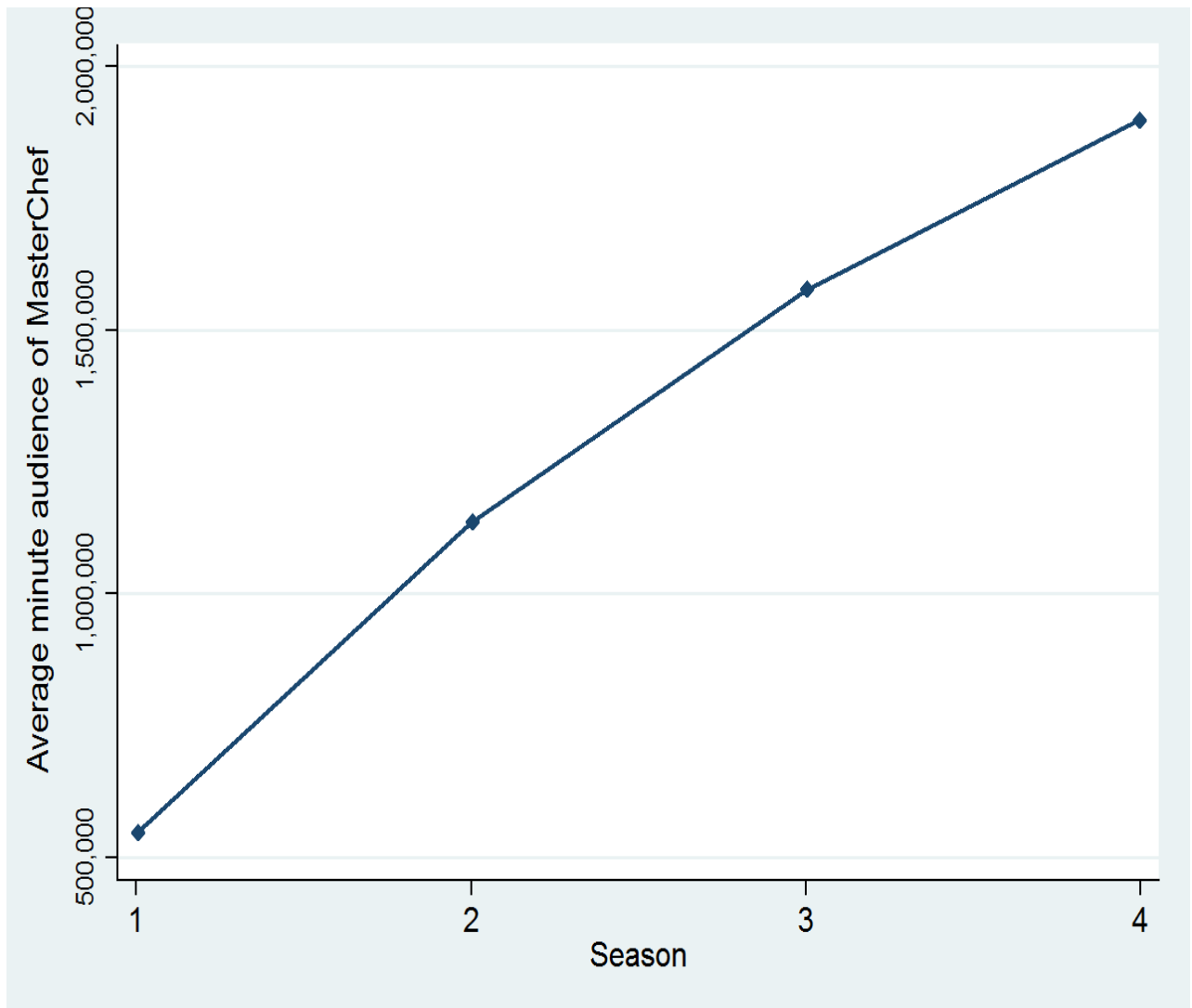Figure 1: MasterChef's audience in seasons 1 to 4

Table 1: Descriptive statistics

Variable		Mean	St. Deviation
Percentage of students choosing a hospitality and catering schools as their preferred upper secondary school	Overall Between Within	0.085	0.022 0.021 0.008
Average percentage of people watching MasterChef	Overall Between Within	0.021	0.016 0.012 0.011
Percentage of workers in hospitality and catering	Overall Between Within	0.065	0.013 0.013 0.003
Percentage of newly founded firms in hospitality and catering	Overall Between Within	0.046	0.010 0.010 0.004
Percentage of seasonal workers that firms in hospitality and catering plan to recruit during next year	Overall Between Within	0.072	0.027 0.018 0.020
Youth unemployment rate	Overall Between Within	0.383	0.110 0.094 0.060

Notes:
N (number of total observations) =72
N (number of cross-sectional units, i.e. regions) =18
T (number of years, i.e. seasons of MasterChef) =4

Table 2: Test for multicollinearity

Variable	VIF	Tolerance	R-squared
Average percentage of people watching MasterChef	1.06	0.94	0.06
Percentage of workers in hospitality and catering	1.65	0.60	0.39
Percentage of newly founded firms in hospitality and catering	1.24	0.81	0.19
Percentage of seasonal workers that firms in hospitality and catering plan to recruit during next year	1.12	0.89	0.11
Youth unemployment rate	1.36	0.74	0.26

Table 3: Panel data estimates of the relationship between MasterChef's audience and willingness to attend hospitality and catering schools among final year lower secondary school students

	(1)	(2)	(3)	(4)
Constant	-0.004	0.022	0.030	0.030
	(0.035)	(0.027)	(0.048)	(0.060)
Average percentage of people watching MasterChef	0.292**	0.249**	0.354*	0.354*
	(0.137)	(0.125)	(0.197)	(0.184)
Percentage of workers in hospitality and catering (t-1)	0.968*	0.756	0.246	0.246
	(0.500)	(0.469)	(0.827)	(0.810)
Percentage of newly founded firms in hospitality and catering (t-1)	0.699*	0.617*	0.934*	0.934*
	(0.370)	(0.327)	(0.521)	(0.684)
Percentage of seasonal workers that firms in hospitality and catering plan to recruit during next year (t-1)	0.141***	0.136***	0.138***	0.169
	(0.049)	(0.048)	(0.060)	(0.157)
Youth unemployment rate (t-1)	-0.065	-0.075**	-0.041	-0.041
	(0.040)	(0.029)	(0.048)	(0.075)
Year dummies-reference is 2011				
2012	0.006			
	(0.007)			
2013	0.004			
	(0.004)			
2014	0.005			
	(0.003)			
Region fixed effect	Yes	Yes	Yes	Yes
Region specific time trends	No	No	Yes	Yes
Joint significance of year dummies (F-test) p-value	0.75 0.47			
Observations	72	72	72	72

Notes:

Standard errors are in parentheses. The dependent variable is the percentage of students choosing a hospitality and catering school as their preferred upper secondary school. In Column 4 Huber-White robust standard errors are computed.

*** denotes statistical significance at 1 percent level
** denotes statistical significance at 5 percent level
*denotes statistical significance at 10 percent level

Appendix 1: Diagnostic tests

Despite the suitability of the fixed effect regression model, a number of statistical properties are investigated as pooling data across regions and years may generate several estimation issues. To start with, potential cross-sectional dependence (also called contemporaneous correlation) is checked using the Pesaran Cross-Dependence test (CD). This test, which is asymptotically distributed as a standard normal and efficient even in panels with small samples where the time dimension is short (Pesaran 2004), verifies whether residuals are correlated across regions. The result indicates that the null hypothesis of no cross-sectional dependence cannot be rejected (p-value=0.24). Second, the assumption of homoscedasticity may be violated in pooled cross-sectional times series regressions because of the structure of the data. As observed by Stimson (1985), size differences between units (here, regions) may induce heteroscedasticity. To check if heteroscedasticity is present, a modified Wald statistic for groupwise heteroscedasticity in the residuals of the fixed effect regression model is computed (Greene 2000). The result of the test indicates that there is variation in the variance of the error terms (groupwise heteroscedasticity) as the null hypothesis can be rejected with a p-value of less than 1 percent. Third, in pooled data where the number of cross-sectional units is greater than the number of time periods (i.e. $N > T$), as is the case in this piece of research, autocorrelation may be present. However, the Wooldridge test for autocorrelation in panel data (Wooldridge 2002) results in a p-value of 29 percent, failing to reject the null hypothesis and concluding that there is no first-order serial correlation.