Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

TRiSS Working Paper Series

No. # TRiSS-WPS-04-2018

Version #

Paper title

Court Counsellor to Berlin Bohemian: Geography and Age in German Literary Production

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Date: 19th December 2019

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[1] Acknowledgements:

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Abstract. This article examines the 149 most important German writers of literature, born 1700 to 1900, in terms of geographic location, age and creative output. We find a marked tendency for creative writers to migrate to certain cities over the different periods, especially to Berlin post-unification in 1871. The links between creative output and age, show a well-established pattern, namely that peak output occurs between the ages of 25 and 40. Furthermore, migration tends to take place before or at the beginning of the most productive age span. In the case of the focal city for this study, Berlin, there is strong evidence of higher creative output for people who migrated there during their most productive ages. This is further established by comparing the output over time of a sample of young writers who moved to Berlin to a matched 'control' group who did not.

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1 Introduction

In this paper, we explore possible connections between age, migration, geographic location and creative literary output. The literature suggests that large vibrant cities tend to attract an inflow of creative workers because the milieu there is conducive to creative activity and face-to-face contact with, and learning from, other like-minded people (Gertler 2003 and Storper and Venables 2004). In the case of writers, large vibrant cities often also provide direct access to publishers and theatres, and most important perhaps job opportunities to supplement their generally meagre income from writing (Berman, 1983).

The current paper attempts to expand on this work by examining the birth location,

migration and creative output of 149 of the most important writers of German literature over more than two centuries (see full list in Table A1), using diagrams, regressions and permutation tests.[1] This builds on empirical work on the links between geographic location and creative output for visual artists and composers in Borowiecki (2013) and Hellmanzik (2010 and 2013); however, the influence of age on these links was not addressed previously. It is argued elsewhere in the literature that creative output and age have a strong link, with a marked peak for many creative workers approximately between the ages of 25 to 40 (Simonton, 1975 and Kanzawa, 2003). Importantly, we find that this time frame correlates with years spent in creative clusters.

The German literary market during the time frame in question shows two interesting characteristics. First, for most of the time, no single city is the dominant location for writers and the observed clusters exist only for a few years. This stands in contrast to the US, UK, and France with a clear dominance by New York, London, and Paris. Second, the job market for writers changed dramatically over the period in question, especially after German unification in 1871 (Parr and Schönert, 2010). Prior to this, writers mostly depended for employment and hence income on work in the Courts of the nobility, Goethe being employed for example as a counsellor, scattered around fragmented German lands at that time, or on private tuition and/or work in universities. After this earning an income from free-lance writing and/or work in the market place became possible, especially in Berlin, where a much more Bohemian lifestyle could be pursued.

This paper shows the very broad geographic spread of German writers prior to 1871, reflecting the diverse array of the political make-up of these lands, with nobility and courts of various forms of importance. It also though shows a marked tendency for creative writers to migrate to certain cities over the different periods, but especially to Berlin post the unification 1871, which coincides with the establishment of writing as a profession. They also show a well-established pattern, elsewhere, of the links between creative output and age, namely that peak output occurs between the ages of 25 and 40 for writers. Furthermore, it establishes that migration tends to take place before and at the beginning of the most productive age span, something not highlighted before in the literature.

In the case of the focal city for this study, Berlin, there is strong evidence of

[1] Some of the most important literary works in the 18th and 19th centuries were written in German, Goethe and Schiller perhaps being the stand-out authors. This trend continued into the 20th century, with nine Noble Prizes in Literature awarded to German language authors, including world-renowned writers such as Thomas Mann (1929), Hermann Hesse (1946) Heinrich Böll (1972), Günther Grass (1999) and Herta Müller (2009).

significantly higher creative output for people who migrated there in the most productive ages. We also compare the output over time of a sample of young writers who moved to Berlin relative to a 'control' group who did not. This shows a markedly higher output for those aged 25 to 35 who migrated to Berlin. .This would lend support also to the view that it was being in Berlin that led to a higher output as opposed to the argument that the most creative writers were simply attracted to the lifestyle there, with no boost to creative output resulting from such a move. The latter would mean that they would have produced the same higher average creative output even if they had not moved to Berlin. This of course is possible, but both a priori and on the evidence produced in this paper rather implausible. We cannot of course say though what would have happened to other writers had they gone to Berlin

The rest of this paper is organized as follows. Section 2 lays out the arguments/theory for connections between age, migration, geographic location and creative literary output. In Section 3, we present the data and address some methodological issues raised in the paper. Sections 4 to 6 cover the main contributions of the paper, the diagrammatic and econometric analysis of the available data set. Section 4 illustrates the geographic spread and movement of German writers over time and age. In Section 5, we present estimates on links between location and creative output; while in Section 6 we focus on Berlin, the main city for this study. Section 6 concludes the paper.

2 Age, geography and creative output

There is substantial evidence that creative output is related to age (see Lehman, 1953, and Kanazawa, 2003). Several papers have been devoted specifically to age and literary creativity (see Simonton, 1975, and Galenson, 2005 and 2006), again showing a marked connectivity between age and creative output. Galenson (2005), using though just a sample of eleven poets, highlighted that the peak age for creative output depends on the type of poetry being written. In a similar vein he examined the lives of twelve novelists and reached the same conclusion, namely that peak age varies by genre of novel writers. Earlier though, Simonton (1975) used a much larger sample of literary writers, namely 420 'literary creators' drawn from different times and countries. His findings suggested that poetry is produced at a younger age but found no difference between different forms of prose. Kanazawa (2003) provides evidence on the connection between age and creativity drawing on various sources and covering several

creative activities, including authors.[2] The evidence shows a markedly similar pattern in terms of the age-creativity curve. This though was primarily for males, with much less marked peaks for females (although sample sizes were very small in all cases for females).

Given the evidence, what is of interest is the connection between age and migration of creative writers.[3] Is it the case that creative writers migrate most in the age spans when peak output might be expected? It could be argued that the fundamental sociopsychological processes which determine age of best creative output might also impact on willingness to migrate in search of greater opportunities in terms of creative stimulation and perhaps the financial means which would allow more time for creative writing. Or is it simply the case that those who migrated in their peak age for writing benefitted more from this experience than those who 'stayed at home'?

Why should there be benefits from migration to large centres of activity, especially for creative output? Storper, and Venables (2004) argue that large cities facilitate learning and are particularly attractive for highly-talented young people who have large potential returns from learning. Cities enjoy an advantage because of their economic and social diversity. This diversity, because it is highly packed into limited space, facilitates haphazard, serendipitous contact among people. And they argue that the diversity found in cosmopolitan cities facilitates 'creativity' because of the openness of their networks and the liberating force of resistance to hide-bound tradition.

The simple 'buzz' of such large centres then could lead to higher creative and other outputs. Individuals in a buzz environment interact and cooperate with other high ability people, are well placed to communicate complex ideas with them, and are highly motivated. In many buzz cities there is also cross-fertilization between sectorally-specialized networks. Publishing, theatre and writing for example have close interactions, something of importance for this paper. Different artistic activities and entertainment/ communications have strong crossover effects in their development of content. In the case of creative people in the arts, many of them must rely on part-time work to finance their lives and creative endeavours. Such employment opportunities will be much more available in big cities.

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2 Accominotti (2009) argues that peak age for creative output can be influenced by whether a creative worker is in a movement or not.

3 Why these patterns exist has been, addressed by psychologists, among others and is not directly relevant to the focus of this paper.

Highly dynamic and unplanned contact systems it could be argued then is why urban diversity is central to certain kinds of creativity because of the specific advantages of unplanned and haphazard, inter-network contact.

A key feature of the Storper and Venables (2004) paper is they argue that the above effects result only from regular face-to-face contact, as opposed to one-off meetings. They argue that this is particularly important in environments where information is imperfect, rapidly changing, and not easily codified, key features of many creative activities, including that of writing. This is based on the ideas developed earlier by Gertler (2003) with his emphasis on the importance of tacit knowledge, in a way that can be applied even more so to creative writers, in terms of two distinct concepts. The first is that of awareness or consciousness. The tacit dimension of knowledge exists only in the background of our consciousness, thereby enabling us to focus our conscious attention on every day matters. The second idea he highlights pertains to communication difficulties through codified knowledge. The tacit component of knowledge defies codification and in some cases articulation in any direct way. Besides, there is a link between tacit knowledge and social context. It is argued that tacit knowledge can only be shared effectively between two or more people when they share a common social context, shared values, language and culture

All these interconnections would suggest that increased creative output could result from living in buzz cities, not hidebound by tradition or social mores but exposed to exciting new frontiers of knowledge and human experience. As Wojan et al (2007) argue, if 'a creative milieu does confer competitive advantages, then artists would have a strong incentive to move to the most creative places' and that 'it is more likely that Bohemians are able to realize their locational preferences, as they tend to be more footloose than other workers.' (p. 712)

Did the migration of creative writers in German take place and what is the evidence that this impacted in a positive way on the creative output of those living in 'buzz' cities. The data discussed below allows us in tentative ways to throw light on these issues.

3 Data and time periods

The key initial source was *Encyclopaedia Britannica.* It was using this source that the author selection was based. The data covered the writers born between 1500 and 1899, and: all those without any literary publication and/or born before 1700 were excluded, leaving 149 as the sample for this study. The key assumption here is that *Encyclopaedia Britannica* does in fact cover the most important writers in German over this period, living only though roughly within

the geographic area of 1900 Germany. From it we could get summary statistics such as date of birth and death, sometimes more.

Most biographical data used in this study though were got from *Deutsche Biographie*, where usually you are diverted to other sources. This then was supplemented where appropriate with data from 'literature.request.com'. The key biographic data sought related to the geographical location of each author in each year of their lives. For these purposes we assume that if a writer who is for example listed as living in Jena and the next entry is not for ten years later, say in Leipzig, resided in Jena for all the intervening period. Table A.1 provides the key data underlying the paper. Places of residence are only listed if in a different city, for a least three months, and in the case of long-term residences listed for three or more years.

Information on number of publications is available in *Deutsche Biographie*, by year, and this excludes newspaper articles and other non-literary categories. There is no quality adjustment though applied to this information. To supplement this then we consulted *Das Kindler Literatur Lexikon,* which lists just the most important works of each author and the year in which they took place.[4] Using these data is a useful robustness check on the analysis of the average number of publications for all authors.

It is important to understand that the general labour market context for writers changed considerably during the long period under review. The economic return on writing had always been of interest to writers. Lessing and Wieland wrote on the issue in 1772 and 1791 respectively (Berman, 1983). However, dependency on an income from literary production was considered as morally questionable by some leading authors of the time such as Goethe, Chamisso and Eichendorff, and, also, very difficult to achieve until the second half of the 19th century (Parr and Schönert 2010). Even a literary 'superstar' like Goethe, who was famous from a young age following the publication of *Werther*, worked as an adviser in the political administration of the Duke of Saxe-Weimar. In this way, writing could lead indirectly to an income as tutor, teacher, or counsellor but was of minor importance for direct income, such as royalties, until at least the 1830s.

Full-time writing became a more common profession only after the 1860s. Following a slow-down in publications after the 1848 revolution and an anti-liberal backslash, the number of books and periodicals tripled from the German unification in 1871 to the time before World War I, and with it, the number of bookstores and those employed by the literature industry (Berman 1983). In 1895, the German Empire had around 4,000 full-time writers, and 7,000 in

[4] There were entries here though only for about two-thirds of those in *Encyclopaedia Britannica*

1907. However, the great majority of writers had low incomes, despite enormous revenues from plays and novels for some writers. As such, writers in this period needed to supplement their income from other sources. But over the whole period under study it could be said that a significant shift took place from authors employed as private tutor or maybe court employee to in effect freelance 'Bohemians', especially those living in Berlin.

The main literary movement of the time often correspond to specific locations. The first major movement in the 18th century literature was the Enlightenment. The most eminent writers of the time being Herder, Gottsched and Lessing, the former two linked to Kőnigsberg and the latter two to Leipzig. The end of the century also witnessed the *Sturm und Drang* and the Weimar Classic period, its main literary exponents being Goethe and Schiller, and the beginning of the Romantic Period in Jena, Heidelberg, and Berlin. The last two movements continued into the 19th century, preceding the *Biedermeier*, *Junges Deutschland* in the first half and Realism and Naturalism in the second of the 19th century. While this study only includes writers born before 1900, many of them of course did most of their work in the early 20th century. German Modernism, especially, Expressionism emerged in this time, with its greatest exponent perhaps being Kafka, and when Thomas Mann and Hermann Hesse also emerged as major writers.

4 Location, age and migration

Geographic location

Figure 1 uses author years (number of authors by number of years spent in each location) for those aged between 18 and 50 (the most productive years, see later) for different centres, pre-German unification in 1871 and post 1871. The picture for the pre-1871 period shows Berlin as the main centre by far, but with many other clusters also, reflecting perhaps the fact that Germany consisted of multiple smaller states/municipalities. Berlin though dominated as a location in the 19th century, especially post 1871. By the first half of the 20th century, only Berlin and Munich remained as major centres for writers. Berlin had in this period more than twice as many writer-years as Munich, and Munich in turn had more than five-times as the next highest centre. The unification of Germany in 1871 therefore had a very marked impact on the geographic distribution of prominent writers.

Figure 1: Years of writers aged 18 to 50 per location

These broad patterns are picked up in a different way in Figure 2. The plots show the number of adult writers per city cluster. Figure 2 (a) shows writers in circles with a radius of 60km. Naumburg importantly contains the cities Weimar, Jena, and Leipzig. Maulbronn contains Stuttgart, Tübingen, and Heidelberg. Figure 2 (b) shows writers per category: major cities, small university cities, cities outside modern Germany and Poland, and other known locations within Germany/Poland. Looking first at Figure 2 (a), up to 1800 Maulbronn and Naumburg had the biggest number of writers-years, but after this the larger cities began to dominate, especially Berlin, and to a lesser extent Munich. The total for Berlin after 1825 reached its first peak, with though a large drop in the 1850s and 1860s. The latter may have arisen as the circle of writers around Tieck came to an end. Besides, Berlin and Prussia in general may have become less attractive for writers, as they turned regressive after the failed democratic and liberal reforms movement of 1848. Moreover, prior to this the King of Prussia had been a major employer of writers, something that may have ended also after 1848. The main thing of interest for later purposes is the dominance of Berlin after 1871 and up to the Third Reich when the number of writers there plummeted.

Figure 2(b) portrays a similar broad 'story' but shows categories instead of geographic areas, namely large cities, university town, cities outside modern-day Germany and Poland, and other locations. There was always a significant number of writers living outside modern-day Germany and Poland, but the large jump in the 1930s reflects the mass exodus to other countries following the formation of the Third Reich. It also highlights again, up to the 1930s, the dominance of the two largest cities, Berlin and Munich after 1800.

Figure 2: Location by year by agglomerations and city type

Figure 3 is like Figure 2 except location by age is being examined as opposed to by year. The dominance of Berlin as can be seen is particularly marked for the ages 25 to 55, Prior to age 25 there is little gap between the numbers in Berlin and the other cities examined. Thus, it appears that there is a marked age effect to the Berlin dominance, something that does not apply in the case of Munich. Figure 4 confirms the marked age distribution of those who moved (migrated), with the highest share of those migrating taking place between the ages of 20 and 35. This applies whether they were born prior to after 1840, but with a slightly higher age profile for those born post 1840.

Figure 3: Location by age and by agglomeration and city type

Figure 4: Age of Movers

Features of those who migrated

The patterns above indicate that substantial migration of creative writers to cities took place. Looked at another way, in the 18th century, each author on average stayed short-term (more than six months) in 5.9 different locations, dropping to 5.1 in the 19th century. Looking at long-term stays (three + years), writers on average in the 18th century lived in 3.8 cities, this dropping to 3.2 in the 19th century. Maybe with greater ease of travel in the 19th century staying away long term was not as necessary as in the 18th century. In both centuries though there was remarkable mobility, especially at a time when even a trip of 100km was a major undertaking.

Table 1 examines some features associated with a writer's geographic movement and location. It shows logit and quasi-Poisson regressions for five outcomes, namely a writer's move in a given year t, the distance of this move, how far they live from their birthplace in year t, how far they live from the next author in the sample, and whether they live in Berlin in the year. These outcomes are linked to the age of the writer, the year, individual fixed effects, and a series of covariates in year t-1, the later shown in Table 1 (see Equation 1). The predicted probability to move by age is shown in Figure 4.

Equation 1 (plus explanation)

Table 1: Features of writers who migrated

Looking at the first column, we see that the odds of writers living in Berlin to move are significantly lower at 43 percent, exp (-0.848), of the odds of writers residing elsewhere. The geographic distance to the closest other writer has no significant effect on moving. Also, publications overall and recent publication activity have no significant influence; however, the cumulative sum of major publications is associated with a significantly lower probability to move. Taken together, we find that writers tend to move young, aged between 15 and 30, they do not live in Berlin and move before their major publication output.)). On the other hand, the distance of the moves is not influenced in any clear way by the factors studied (Column (2). Past publications have also a very weak relation to the distance to the next author and how far away writers live from their birthplace and whether they live in Berlin. Not using individual fixed effects, we see that the eight women in the sample resided in Berlin much more often than male writers.

5 Creative Output; econometric/diagrammatic analysis

Age/creativity charts

Creative output is related to age and this effect needs to be netted out before examining the impact of location on creative output. The problem as always is how to measure creative output. The data do allow us to use the *mean* of listed publications per annum for all 149 authors, a reasonable proxy for average creative output for each year. Using this crude measure, we plot two potentially interesting charts.

The first looks at creative output by age. Figure 5 (a) confirms what is known already in relation to other creative workers, namely that the creativity chart has a clear peak plateau between the ages of 25 to 40 years. As can be seen, there is a dramatic rise between the ages of 20 and 30 and that this is maintained until age 40 or over. Creativity after this, declines, but is still at a high level until aged 65 at least, with output up to age 80+. It is important to remember again that it is the plot of the average number of publications per author living by age, aggregated over all authors and at different times, that is being measured here and hence is probably much more reliable than the plot for a single author.

Figure 5: Age and productivity

Given the importance of the creativity measure, an alternative indicator is used in Figure 5(b), namely the average age at which the main publications of each author appeared, thereby being a measure of 'peak' creativity in a sense. The patterns in both charts are similar, with the main publication occurring at a slightly higher age than for the total publications chart. The width of the confidence intervals in some cases is very wide, a reflection of the low number of observations in these years, namely though only for authors aged over 75 years.

Age, location and creativity

Figure 6(a) outlines the creative output of writers by age, for Berlin and for those who never moved there. The Berlin group consists of two groups, those born or moved there before age 20, and those who moved after age 20. The contrast between these two is striking, especially for those aged 25 to 40, the peak ages for creativity. For the 'movers, the average creativity not only peaks, but does so at a level which is much higher than for those who did not move there at all or lived there during their childhood. After age 40 there is no discernible difference. The average productivity of the movers declined after age 40 whereas for the non-movers if anything it increased for two or more decades.

Figure 6: Berlin: age and productivity

The confidence intervals in Figure 6(a) are derived from LOESS regressions of age on publications (span=0.4). As can be seen, the output for the movers is significantly higher than for the non-movers, aged 25 to 40, the peak years for creativity. There is no significant difference though outside these years. Besides, using the Kindler data, Table 6(b) portrays a less conclusive picture, although there is again a clear extra bounce for movers during the most productive ages.

Table 2 shows estimates for the relation between publication activity and location using the four main geographic areas shown in Figure 2, Berlin, Naumburg, Munich, and Maulbronn. We do not see a strong relation between location and publications overall, or over an individual writer's life span (Column 2). On the other hand, if we focus on young writers aged between 20 and 40, we see that this group is significantly more productive in Berlin. However, this effect does neither rely on proximity to another author, nor the overall number of authors living nearby (Column 4). This might explain why we see no publication effect of clusters in small towns such as Weimar and Jena (Naumburg).[5] However, any long-term effect would be less visible given the short average time span per writer in those places. Again, main publications, listed in the Kindler encyclopaedia, have a much weaker relation with location.

Table 2: Productivity and clusters

Figure 6 refers to age and location, but not year of location. As such, the movers to Berlin aged 25 to 40 included those who moved there over a very long period, especially in the two periods identified earlier in Figure 2. Given the importance of the Berlin effect, the next section examines in more detail the output of a cohort on young writers who moved to Berlin, to elucidate more the 'mechanics' behind this observed productivity bounce.

6 Berlin 'bounce': using a control group

Any influence of a writer's location on creative output is unlikely to be confined to the current year. To detect mid-term and long-term effects it might be helpful to compare creative output of individuals over time. Table 3 shows publication differences for young writers when in

[5] There is also the belief held by some German language scholars that when the small cities in Naumberg were in their heyday, the dominant presence of Goethe might have had a negative impact on the creative output of others thereby ending up with no overall positive effect. This argument arose in conversation with Mary Cosgrove, Professor of Germanic Studies, Trinity College Dublin. For a similar argument in relation to the golfer Tiger Woods, see Brown (2011).

Berlin. It distinguishes between the first three years in Berlin, year four to six, year seven to nine and the years after. This shows an increase in publications after six years in Berlin overall and within an individual author's publication record. No effect though is observed for Kindler publications. Therefore, the location of a writer may have a smaller or less immediate impact on their major contributions.

Table 3: Productivity of young writers and time in Berlin

However, to dig deeper we need to go beyond this regression analysis. Any Berlin effect seems to be confined to the years between 25 and 40 and to those who moved there. Therefore, we restrict the further empirical assessment to the eleven writers who moved to Berlin aged between 25 and 35. There are further reasons for doing this. First, a clear effect of life in Berlin on productivity, through the 'buzz' effects discussed earlier, is more likely to be observed before the writer is established. Second, the higher average productivity during these years makes it more likely to observe any potential effect given the already low publication average. Third, excluding moves before 25, on the other hand, gives us the chance to compare some pre-move publication activity.

The Berlin authors are different in their observed characteristics from other writers. Most glaringly, the median year for them spent in Berlin is 1881, almost 60 years later than the median year for all writers who never lived in Berlin. We, therefore, construct a specific comparison set to study literary productivity of the eleven writers who move to Berlin, our 'Berlin treatment' group. From five years before to ten years after the move, each year is matched with a weighted average of years of writers who never lived in Berlin. These 'control' years are restricted such that, first, both authors have the same age and, second, treatment and control year are no more than ten years apart. Finally, we average each treatment year's control years with weights summing up to one. The weights are inversely related to the time distance between matching and matched year and to the difference in the sum of publications at the age of the Berlin move.

The empirical evaluation of the matched set is based on difference-in-differences regressions and permutation tests. The difference-in-differences regressions are shown yearly and for five-year aggregates, in Figure 7. Overall, this shows a clear difference in publications between writers who moved to Berlin and their matched 'control'.

The placebo tests assess the variation in the publication difference between the group of writers who moved to Berlin and writers of the same age around the same time, who never

lived in Berlin: the 'Berlin treatment' group and its control. First, we assess the probability of observing a productivity boost after five years as extreme as the one observed for the Berlin authors. For this, we pick eleven authors (the size of the 'Berlin treatment' group), who never lived in Berlin. Then, we assign the years spent in Berlin by the treatment group to these eleven. For instance, Fritz Mauthner's years in Berlin from 27 to 56 are assigned to Jean Paul who never lived there permanently. After that, we match these writers with other writers who never lived in Berlin in the same way as for the real Berlin authors before. Next, we repeat this selection and matching process 2,000 times to understand the possible range of random publication differences due to picking a sample of fourteen writers. Finally, we repeat the exercise with all fifty-five combinations possible with picking nine out of the Berlin authors to assess the variation within the actual treatment group.

Figure 7: Move to Berlin and productivity (group average and placebos)

Figure 6 shows the average of the eleven writers before and after moving to Berlin in black, and the averages of 2,000 placebo groups in grey. The left plot shows the difference between the treated mover group and their control group for the real Berlin group and the 2,000 placebo groups. This shows a jump in mean publication per year after the move of these eleven writers to Berlin. The increase seems to be stable at 0.5 additional publications per year; the variation increases. The difference, in absolute terms, to the control group and the difference-in-differences is higher than for any placebo group. The right plot shows direct publication means without using a control group, again for the actual Berlin group and the 2,000 placebo groups. Out of the placebo groups 7 or 0.35 percent have a higher average productivity after the 'move' to Berlin or a higher absolute difference before and after the move. These groups are plotted in red. Taken together, this indicates an increase in publications after moving to Berlin that is significantly higher than the publication output and the variation over time of comparable groups of authors who never lived in Berlin.

Figure 8: Move to Berlin and productivity (group re-combinations)

For a more complete picture we show in Figure 8 publication means of subgroups of writers who move to Berlin to assess the within-group variation. All groups have a positive difference over the post-move time and for most individual years. However, we see again that the variance increases over time as the number of writers in Berlin decreases.

Figure 9 confirms the observed effects and shows aggregated differences. The left plot shows boxplots for writers who moved to Berlin, aggregated for the five years before and the ten years after the move in black; the equivalent for the matched control group is shown in grey. The right plot shows estimates from a linear difference-in differences regression without the placebo groups. Neither plot shows a significant difference between treatment and control group before the move; the difference after the move sum up to five publications during the first years after the move or half a publication per year.

Figure 9: Move to Berlin and productivity (aggregated)

7 Concluding Comments

The contributions of this paper are three-fold. First, using newly constructed data, the historical geographic dispersion of prominent authors writing in German, and living in modern-day Germany and Poland at the time, has been identified and quantified, pointing to a marked concentration on one city, namely Berlin, in the period after the formation of the German empire in 1871. This applies whether number of publications, author years or number of authors are used and arose largely from extensive internal migration, short term and long term, within these German speaking lands. Second, the links between age and creativity were explored, showing as with many similar studies a marked peak in productivity of creative writers in the age group 25 to 40. This applied using two measures of average productivity, namely average number of books produced by all authors over time and using the just the most important publication of each author. Third, these two effects were combined, to examine the impact of living in Berlin on creative output, taking account of age of authors located there.

While the number of observations for such a long period is small, nonetheless using these data a clear bounce in average creative output was observed particularly for authors aged 25 to 35. Moreover, this effect was confirmed when the creative output over time of a small number of young authors who moved to Berlin was analysed in some detail and compared to that of a control group who never moved to Berlin. What is particularly interesting is that the gap between the two widened with increasing years spent in Berlin, over ten years there. The more difficult question to answer is why this effect is observed, and especially in relation to the younger age group.

In the earlier period of dominance of Berlin, the migration of authors could have been mainly due to the impact of the Prussian Kings attracting more writers to Berlin, providing them with relatively secure employment. And once gathered there some of the effects of cities on creative output outlined earlier came into force. On the other hand, post 1871 Berlin certainly fitted the definition of 'buzz' city outlined earlier. As one observer on the Berlin scene then stated, the 'increasing tempo in both communication and travel left people feeling ever more hectic and nervous, but at the same time it made for an exciting time of unparalleled inventiveness' (Schnurr, 2011). In a similar vein another argues that 'located at the epicentre of some of modern Europe's most significant and turbulent events, Berlin has long held a magnetic attraction for writers. From 19th century authors recording the city's dramatic transition from Prussian Hauptstadt to German capital after 1871 and the modernist intellectuals of the Weimar period' (Sullivan and Kreuger, 2016).

As always though, caveats apply to most applied economics research. Is the data set sufficiently rich to test for a creativity effect? Is there an identification problem and what if it cannot be addressed.? Have all other factors been accounted for? Bearing these caveats in mind, it does nonetheless seem that there is a clear impact on creative output from moving in Berlin, especially for those aged 25 to 35 years.

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