TRANSITION TO THE KNOWLEDGE ECONOMY AND THE NEW SKILL CLEAVAGE

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1. Introduction

In this paper we argue that the transition from a mostly Fordist industrial economy based on heavy use of workers in neither tail of the feasible skill distribution to a new knowledge economy based on heavy use of workers in the top half of the distribution has created a deep divide between old middle classes rooted in the Fordist economy – most with only secondary or upper secondary degrees – and new middle classes with college and post-graduate degrees. The transition to the knowledge economy, which can be broadly thought of as a progressive technological shock, has created barriers to mobility between the old and new middle classes given rise to a new cleavage which pitches the politics and values of the new economy against the old. The former is concentrated the rising cities and accompanied by economic openness and tolerance of alternative life styles, whereas the latter is relegated to a declining periphery with an emphasis on restoring the traditional family values and the pride and status of the old middle class. It is natural to see populist parties growing out of this cleavage, but our emphasis is on explaining the economic division itself and the values that it has given rise.

The rising cleavage between new and old middle classes is apparent in all advanced democracies, but its depth, we argue, varies by the extent to which national educational systems offer individuals opportunities for upskilling and give new generations broad access to higher education. Very briefly our claim is that educational systems that are conducive to a more equal distribution of income and facilitate inter- and intra-generational mobility limit the spread of populist values and parties. We also suggest that such values are much less prevalent in the major cities because these are hubs for the new knowledge economy, with the attendant concentration of location co-specific assets and fluid social networks. Indeed, we find in the cities the antithesis of populism, characterized by celebration of diversity and cosmopolitan values – from acceptance of immigrants to tolerance of non-conforming lifestyles. Contrary to the common view in the literature that such values

are orthogonal to materialist preferences we see them complementary to the decentralized urban economy.

We make one additional claim. Despite the rise of populism, policies promoting the knowledge economy continues to enjoy widespread backing. In part this is because populism is not primarily an attack on policies that promote growth and opportunity, but rather a reaction to being excluded from the benefits of the new economy. In part it is because restrictions on low-skill immigration, insofar as this is a consequence of populist sentiments, is largely irrelevant to the knowledge economy. Other policies associated with populism – especially trade protection, state restrictions on product market competition, and serious interference with lifestyle choices – are clearly antithetical to the knowledge economy, but they are unlikely to garner sustained majorities. This is because the new middle and upper-middle classes have a much more attractive alternative, which is to support policies that will ensure their continued inclusion in the stream of wealth created by the new economy. We count here not only those with higher education who are already benefitting from the new economy, but also those who might be at the periphery of that economy yet see their children benefiting from the expansion of higher education and new opportunities in the rising cities. For these "aspirational families" the prospect of upward intergenerational mobility quells support for populism.

We test our human capital argument on survey data for 16 advanced democracies pooled from multiple waves of the World Values Surveys. We combine these data with macro-level data on skill systems, and we also offer quasi-experimental evidence using compulsory school reforms in several European countries that produce as-if random cohort variation in years of schooling.

2. Theory: the political consequences of the transition to the knowledge economy[1]

2.1. A new cleavage

From the end of the Second World War and until the 1970s growth in advanced economies was propelled by Fordist mass production. Fordism developed out of the prewar large-scale, centralized manufacturing in mega factories, which relied on high-speed-throughput technologies and incremental innovation, an extensive division of labor, and a large number of mostly semi-skilled workers. Crucial to its operation the Fordist economy created strong complementarities in production arose between skilled and semi-skilled workers because Fordist mass production relied on both skilled and semiskilled workers in a continuous assembly-line production process where interruptions were costly and different skill groups were required to keep the process running (Wallerstein 1990; Iversen and Soskice 2010). Relying on a stable system of supply chains -- bolstered by large vertically integrated companies or interfirm coordination through powerful employer associations -- strong interdependencies also emerged between major cities and smaller "feeder towns", which combined with strong unions and relatively centralized wage bargaining to foster low levels of economic inequality.

The ICT revolution that has driven the transition to a new knowledge economy, on the other hand, has undermined cross-skill and interregional complementarities and greatly favors those with high skills while replacing those in occupations using intermediate skills and performing tasks than can easily be codified and replaced by computers (Autor and Dorn 2009; Goos and Manning 2009). Those with university

[1] This builds on Iversen and Soskice 2017 where the argument is laid out in greater detail (see especially Ch. 4).

education, on the other hand, perform non-routine tasks that are complements to the new ICT technology and to other highly-educated workers. At the bottom, unskilled workers performing non-routine jobs in low-end social and other services are largely unaffected by the new technologies, creating a "polarized" pattern with a "hollowed out" middle in terms of employment and wages.

The ICT revolution has also led to an across-the-board decentralization of decision-making in terms of both corporate strategy and employee autonomy, which has permitted the opening up of product markets across the advanced world in response to a radical geographical specialization of goods and services. Compared to the highly centralized, vertically integrated, and hierarchically organized companies of the Fordist era, the organization of companies in the knowledge economy are rooted in clusters of highly skilled workers working with complementary and often very specialized technologies in geographically confined spaces – in most instances co-terminal with the modern cities (Glaeser???). And just as decentralization enabled the transformation from the standardized goods and services of the Fordist world into dynamic and highly differentiated product markets, so it enabled better educated individuals to pursue non-standardized careers and combine and recombine their skills with other highly-educated workers.

Those with medium skills linked to the industrial economy lack this capacity and they are mostly detached from relevant social networks and skill clusters in the advancing cities. A majority of these workers have been pushed into "left behind communities", which have lost their former ties with the high-growth urban centers. Un-skilled workers in retail and personal services, on the other hand, continue to play a role in the urban economy, except for those who join the ranks of the truly disadvantaged "precariat". In either case they tend to have few ties, economic or social, to the old middle classes, and they are generally look down upon by these.

These changes could be counteracted through retraining of the existing semi-skilled labor force and through better educational opportunities for the children of the old middle classes, allowing for upward mobility. Yet available evidence suggests that the opposite is the case: there is a strong negative relationship between inequality and intergenerational mobility; what Krueger (2012) has dubbed the Great Gatsby Curve (GGC). This negative relationship appears to very general, at least among advanced democracies: it holds up in a cross section of advanced democracies, across American states, and across time in the US (intertemporal evidence is limited elsewhere) (see Corak 2013; Durlauf and Seshadri 2016).

One key mechanism generating the GGC is sorting of schools by economic class. As inequality grows and the educational premium rises, those with the financial means will move into the best school districts and drive up house valuations, pricing out people with lower incomes. Socioeconomic sorting is also likely to occur within schools as parents with greater resources, largely those with higher education and income, demand special accommodations and separate tracks for students with early academic promise – almost inevitably those from better-educated, higher-income family backgrounds. Indeed, sorting is likely to start even earlier in pre-primary education where the foundation is laid for future learning. We discuss these mechanisms, and their institutional correlates, in more detail below.

High inequality and low mobility in knowledge economy stands in contrast to the Fordist industrial economy where skilled and semi-skilled workers worked alongside each other and were also exposed to the same industry business cycles. Because the skill-distribution was more compressed, it was realistic for ambitious youth from the lower working class to acquire training and move up into the skilled ranks.
The “assembly-line logic” of work also applied to the organization of business where highly specialized plants were dependent on their suppliers and buyers, fostering economic integration between urban and rural areas. While the largest and most

advanced companies and assembly plants were concentrated in the urban centers, peripheral areas served as “feeder towns” for manufacturing inputs.

This pattern of cross-skill and cross-region integration induced a sense of common cause, which is captured in standard insurance models as a concern for downward movement (e.g., Baldwin 1990; Moene and Wallerstein 2001; Iversen and Soskice 2001; Rehm 2009; 2016), and in social mobility models as a possibility of upward movement (Okun 1975; Benabou and Ok 1998). While not putting an end to distributive conflict, clearly, both Social and Christian democratic parties could and did appeal to a universalist message of “we are all in the same boat”. Indeed, the Fordist economy attracted many adjectives in politics, culture, and academia that had unity as a common theme: social pacts, one-nation projects, class compromise, and even the end of class (see, e.g., Goldthorpe 1984). Most recently Scheve and Stasavage (2016) speak of an “implicit social contract” that they attribute to joint sacrifices in the Second World War (and other major wars), but which survived into the postwar period in large part, we would argue, because of propitious technological conditions for inclusiveness.

The rise of inequality and the decline of mobility associated with the end of Fordism and the emerging knowledge economy undermine all such notions of unity, and new distinct classes and preferences are crystallized in the process. While many in the new middle and upper-middle classes become unconcerned about downward mobility, the old middle classes increasingly see themselves as left out, in turn giving rise to a new set of values and political preferences. On the one hand, they demand redistribution from the educated middle and upper classes, who they cannot hope to join; on the other hand, they see no commonality with those at the very bottom who have not made the investments in basic education that they have. The poor are “lazy” or “undeserving” (often expressed with a racial tinge), even as the rich are “gaming” the system.

With these straightforward distributive interests come a set of complementary values, notably anti-immigration and anti-cosmopolitanism. Since it is difficult to move up in the system, immigrants are readily viewed as unwelcome competitors in what is perceived as a zero-sum game. Sometimes this competition is real. While the share of immigrants in an area is not a strong predictor of wages – in large part because most immigrants move in to satisfy rising demand in the cities -- the balance of the evidence suggests that there are some substitution effects among those with lower skills (Ottaviano and Peri 2012). Competition in labor markets may also spill over into competition for scarce resources like schools and welfare benefits. High-educated immigrants, on the other hand, mostly serve as complements to resident workers, allowing skill clusters to expand and thrive (Borjas 2013).

In Hochschild's (2016) striking metaphor of the social escalator, the old middle classes, especially male manual workers over 50, see immigrants as cutting in front of the line and getting a freeride on an urban escalator that they can no longer access. With disassociation from the successful cities also comes resentment of the educated urban classes and the values they represent. Many well-educated, high-income professionals who fled the cities in the 1970s and 1980s have returned, and the young college-educated now congregate in the urban centers in a process that economic geographers (following Ehrenhalt 2012) call the Great Inversion. They are all getting a ride on the urban socioeconomic escalator while the old middle classes look on from the left-behind communities.

The winners of the transition to the knowledge economy, on the other hand, naturally see their economic interests being bound up with an expansion of this economy. On non-economic matters the new middle classes take progressive stances that we see as rooted in objective economic circumstances. It is very difficult to have traditionalist views on gender, race, and sexuality and still thrive in a decentralized and fluid urban

economy where teamwork and freewheeling social interaction are essential; in contrast to the hierarchically organized production systems under Fordism where conformity is the norm. Being tolerant and open-minded is a condition for participating in the social networks that in today's economy intersects with decentralized production networks. Simply put, we see a cosmopolitan outlook as a complement to the urban knowledge economy.

Environmentalism may perhaps be viewed in a similar light. The ICT revolution created cleaner jobs, and the attendant rise of cities led to demand for clean air, green spaces, public transportation, and the sharing economy. Environmental regulation is synonymous with living in the modern urban economy, and there is certainly no sense in which such regulation is seen as anti-growth. For many in the old middle classes it is. Precisely because manufacturing (and commercial agriculture) is energy intensive with significant negative externalities, taxing or regulating the use of carbon-rich energy is seen as a way to accelerate industrial decline. Environmentalism and growth are opposed from this perspective.

2.2. National variation

The cleavages we have outlined are present in all advanced democracies, but this is true to different degrees. Inequality and mobility are negatively correlated, but countries are in different locations on the Great Gatsby curve. This matters for the extent to which the new versus old middle-class split has materialized. When inequality is high and mobility is low the constituencies for populism in the middle grow. When inequality is low and mobility is high, these constituencies tend to shrink -- even though some groups in the middle will still resemble the old middle class as defined above.

Because the new knowledge economy is based on highly skilled, mostly college-educated workers, a critical factor in explaining the degree of inequality and mobility is the distribution and acquisition of skills – in other words, the national system of training, education, and upskilling. Precisely because of the weak complementarities between low- and high-skilled workers in the knowledge economy, the distribution of skills becomes an all-important determinant of the distribution of income and intergenerational mobility (Nickell 2004). In this section we discuss several dimensions of the educational system that have been identified in the literature as important to securing equal educational opportunity and upward intergenerational mobility. We summarize these dimensions in a single index of educational equality of opportunity, which we will use in the subsequent empirical analysis to explain cross-national differences in populist values.

The first distinction is between countries where most education and training is through the formal/general educational system and countries that combine academic schooling with strong vocational training tracks (Estevez-Abe et al. 2001; Busemeyer and Trampusch 2012). A strong vocational training system offers those at the lower half of the academic ability distribution the opportunity to acquire valuable skills, and it is closely related to more coordinated wage-setting and a more compressed wage distribution. In addition, since these systems offer institutionalized school-to-work transitions, workers at the lower end of the ability distribution have strong incentives to work hard in school to get into the best vocational schools or apprenticeships. By contrast, in general skills systems such as the United States there tends to be a bifurcation of the high school population between those students who expect to go on to college and therefore have strong incentives to work hard to make it to the best schools and those who do not and expect to leave the formal educational system during or right after high school.

A second distinction is between early and late tracking of students. Tracking comes in two variants. In countries with strong vocational training systems some, notably Germany and Austria, divide students into vocational and academic tracks in primary school, at age 10-12, while in others, notably the Nordic countries but also the Netherlands, tracking does not begin until secondary school. In general-skills systems vocational tracks and therefore tracking is missing, but it is common to divide students by academic ability -- what OECD (2012a) calls “ability grouping” -- or for better schools to have academic admission standards (the two can substitute for each other). In all LMEs, including Ireland, more than 90 percent of schools differentiate by ability, although the age at which this occurs varies (see OECD 2012a, 57). Academic admissions standards are less common, but not exceptional (OECD 2012b, Table 2.11).

Tracking and ability grouping are consequential for intergenerational mobility. A large literature in sociology and labor economics shows that when students are divided into separate tracks at an early age, family class background becomes a strong determinant of the track that is chosen (Gamoran 2010; Ammermüller 2005). The explanation is that children from non-academic backgrounds tend to be academically weaker, and they are also typically expected to follow in the footsteps of their parents (by both parents and teachers). There is also evidence that early tracking by ability magnifies academic achievement gaps later in life (Hanushek and Woessmann 2006). Tracking, especially when it occurs early, is thus heavily class biased, undermining intergenerational mobility.

Third, sorting of students starts even before primary schooling. Heckman (2011) shows that pre-primary investment in skills – including cognitive, non-cognitive and socio-emotional skills -- improve the acquisition of skills and academic performance later in life. Like primary education, parents from working class backgrounds depend almost entirely on public provision of pre-primary education, and for this reason

spending on pre-primary education can help break class-inheritance in academic achievement later in life (Restuccia and Urratia, 2004; Blau and Currie 2006; Schuetz, Ursprung, and Woessmann 2008). Unlike primary education, there is a great deal of variation in how much governments spend on pre-primary education (we use OECD spending data to measure this).

Fourth, class differentiation in educational attainment is affected by differences in the quality of schools, which has multiple institutional sources. In centralized educational systems where most decisions about funding, curriculum, academic standards, teacher salaries, and so on, are set at the national level there is less scope for school quality to diverge, fostering greater equality across socioeconomic boundaries. Conversely, when there is considerable scope for local differentiation in funding, teacher salaries and curriculum, variation in school quality rises. Such variation is strongly reinforced by neighborhood segregation with high-income, high-educated families moving to the best school districts and bidding up housing prices (Gingrich and Ansell. 2014). Such sorting not only expands the local tax base for schools in good districts, it also raises quality in these districts through higher involvement of parents in their children's education (Durlauf 1996).

There is no straightforward way to capture class differentiation in school quality, but the OECD has created a useful measure of "social inclusion", which is calculated as the *between* secondary-school variance in the PISA index of the social, economic and cultural status of students (basically a measure of parents' class background), divided by the sum of the between-school and the within-school variance in students' socio-economic status (OECD, 2013). The greater the between-school portion of the variance, the greater the sorting of schools.

We do not have a similar measure of socioeconomic differentiation at the tertiary level, but we can use private spending (mostly individual) on higher education as a

rough proxy. A higher share of private schools and private funding matters because it creates financial barriers for low and middle income families to reach the best schools. Measured by the private share of tertiary educational spending, in LMEs it varies between 40 percent (UK) and 62 percent (the US), whereas most spending in CMEs is public, with Germany and the Netherlands being mild outliers at around 26 percent (OECD 2010, p. 233). Japan and Korea resemble the liberal group in this respect, and in fact have the highest shares in the whole sample with 66 and 73 percent private spending, respectively.

Finally, we consider the role of adult education and re-training. This is clearly a factor that is more important for intra- than inter-generational mobility, but is has become more important over time as the rate of technological change has accelerated, rendering many skills obsolete within a lifetime and placing a premium on workers' adaptability. For those with high resources and strong initial skills such adaptation is often feasible by using savings or borrowing to go back to school or enroll in adult training programs. At the lower end of the distribution, however, there are great financial barriers to this type of upskilling. Just like pre-primary education it depends critically on government subsidies. We try to capture this by the average share of participation in adult training and education programs among those with low initial skills, using OECD data (see Table 5.1. for specifics).

The multiple distinctions we have made in skill systems are summarized in Table 1. The indicators measure different dimensions of educational systems, at different levels of education, corresponding to each of the logics outlined above. The index of equal educational opportunity in the last column is a simple mean (after 0-1 standardization) of the seven indicators, and it is meant to capture the ease by which people can acquire new skills and, crucially, the ability of younger generations to escape their class background and be successful in the new knowledge economy. We will discuss the comparative patterns in the empirical section.

Table 5.1. Key indicators of skill systems

	Vocational training share[1)]	Age of tracking [2)]	Lower secondary schools with ability grouping[3]	Social inclusion of secondary schools[4)]	Private share of tertiary spending[5)]	Adult training opportunity[6)]	Pre-primary public spending[7)]	Index of equal opportunity[8)]
Australia	62	16	70	77	50	27	0.10	0.45
Austria	72	10	59	71	6	26	0.52	0.44
Belgium	69	12	37	72	10	31	0.93	0.59
Canada	5	16	65	83	43	42	n.a.	0.55
Denmark	48	`16	33	82	3	38	1.08	0.77
Finland	65	16	31	91	3	25	1.11	0.83
France	43	16	41	n.a.	17	n.a.	0.70	0.71
Germany	59	10	57	74	13	26	0.65	0.43
Ireland	2	15	62	80	22	32	0.14	0.43
Italy	25	14	61	76	26	14	0.45	0.37
Japan	24	15	81	78	65	20	0.11	0.27
Korea	28	14	79	78	73	21	0.40	0.28
Netherlands	68	12	89	82	26	42	0.37	0.49
New Zeal.	4	16	79	78	41	n.a.	0.73	0.39
Norway	60	16	40	91	4	50	1.82	0.95
Spain	43	16	32	75	25	26	0.62	0.58
Sweden	54	16	42	87	9	42	1.84	0.86
Switzerland	64	12	74	83	n.a.	n.a.	0.20	0.42
UK	42	16	64	79	40	35	0.33	0.52
US	0	16	64	74	62	37	0.42	0.36

Notes: [1)] Share of total upper secondary enrollment who are in vocational training programs. *Source*: OECD. 2008. Education at a Glance: Indicators, Table C1.1.. New Zealand, where data are missing, is based in data in Estevez-Abe et al. (2001) after adjusting for difference in averages. [2)] Source: OECD. 2012. Equity and Quality in Education: Supporting Disadvantaged Students and Schools, OECD Publishing, Table 2.2; [3)] This is the mean on the share of students in schools using ability grouping and the share of schools having ability criteria for admission (France is missing data on the first indicator and is based on the second only). Sources: OECD. 2012. *Equity and Quality in Education: Supporting Disadvantaged Students and School*s, OECD Publishing, Table 2.2., and OECD, PISA 2012 Database, Table 2.11.; [4)] OECD's index of social inclusion calculated as 100*(1-rho), where rho stands for the intra-class correlation of socio-economic status, i.e. the between-school variance in the PISA index of social, economic and cultural status of students, divided by the sum of the between-school variance in students' socio-economic status and the within-school variance in students' socio-economic status. *Source*: PISA, OECD. 2013. *Results: Excellence Through Equity: Giving Every Student the Chance to Succeed (volume II)*. OECD Publishing, Annex B1, Chapter 2, Table II.2.13a. Data are missing for France. [5)] Average of private share of spending on tertiary education, 1995-2013. Source: OECD, Education at a Glance 2014; 2016; [6)] The average share of participation in adult training and education programs among those with adult literacy scores below level 3 in the OECD Adult Literacy Survey. Source: OECD. 2012. Survey of Adult Skills (PIAAC), Table A5.7 (L); 7) OECD. 2016. Education at a Glance 2016 OECD Indicators, Table C2.3.

2.3. New materialism or postmaterialism?

Our argument owes much to Kitschelt's influential work on "right authoritarianism", which is conceptualized as a political-cultural response to the rise of "left libertarianism" -- itself a response to the postwar expansion of education, prosperity, and the welfare state (1994; 1995). Kitschelt's account, when compiled from multiple writings, is in fact a subtle interpretation of socioeconomic change that acknowledges the role of occupational experiences (including his distinction between "object processing" and "people processing") and economic organization (notably the extent of hierarchy), which indirectly point to the importance of the nature of capitalist production and technology (see Kitschelt 1994; 1995a,b; Kitschelt and Rehm 2014). Daily work experiences are part of a process of identity formation whereby, in the words of Oesch (2012, p. 3), "voters generalize from one important sphere of life (work) to another (politics)" (see also Kriesi and Pappas 2015, and Häusermann 2010).

Yet we do not view the "socio-cultural" dimension identified in this literature as orthogonal to distributive politics. Although distinct it is itself rooted in materialist interest, even if it is clearly separate from the old left-right dimension of social spending and redistribution. The new middle classes are broadly satisfied with policies that promote the advanced sectors – investment in education in particular -- and they naturally see cosmopolitan and tolerant attitudes, often combined with a concern for a clean environment, as complements to successful careers in the decentralized urban economy organized around social and economic networks with fluid boundaries. The old middle classes, by contrast, have been locked out of the new economy and they increasingly find that their children are as well. They blame globalization, immigrants, and the breakdown of the traditional family, which are reminders of their own loss of status, and they see elites as politically beholden to the new urban and educated classes. This division is orthogonal to the mid-century social, economic, and political integration of the middle and lower-middle classes,

held together by strong complementarities in production, but it is not "postmaterialist" (Inglehart 1971; 1990).

What we reject is thus the notion that the "new politics" of populism is a "cultural backlash" against the rise of "postmaterialism," as expounded by Inglehart and Norris (2017). They show that those voters who have populist predispositions on "cultural" issues like law and order, immigration, and multiculturalism also tend to vote for populist parties that are themselves identified by the same general set of issues (see also Bornschier 2010; Bustikova. 2014). This is not surprising, nor is it contrary to our political economy interpretation.[2] "Postmaterialists" and "populists" are rooted in different parts of the modern economy, and it is impossible to detach their values from this underlying economic reality. Cultural backlash as a phenomenon removed from the reality of the material world also cannot explain why populist values vary systematically across countries according to the structure of skill systems. Educational institutions matter because they are critical to the economic opportunities of the middle class and their children.

3. Evidence

We offer several pieces of evidence for our argument. First, we explore relationship between values and various indicators for education and economic position using

[2] For example, dependence on the welfare state are found to be negatively related, and rural residency positively related, to populism. Both are precisely as we would expect, but Inglehart and Norris take this as evidence *against* the economic perspective. They also treat education, gender, and age as "demographic controls", whereas we see them as critical in any definition of the old middle classes (which overall have less education, are older, and grew out of male-headed households). Also, while Inglehart and Norris interpret the robust effects of the cultural attitude variables (even after economic controls) as evidence in favor of the cultural interpretation, these variables are in our view *mechanisms* linking economic conditions to populist voting.

survey data from the World Values Survey (WVS). WVS contains several useful variables for measuring values and covers a broad range of advanced countries in Europe, North America, and East Asia. Four of the six waves, carried out in the period 1995-2012, include a substantial number of advanced democracies, and we pool all four waves when possible. Not all countries are included in all waves, but the following 16 are in at least one wave: Australia, Canada, Finland, France, Germany, Italy, Japan, South Korea, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, Great Britain, and United States. For the full sample, we have nearly 50,000 observations.

Second, we explore the macro-relationship between the prevalence of populist values in national electorates and the equality of educational opportunity as measured by the index developed in the previous section. We do this in a multi-level regression setup with all individual-level controls included, but it is particularly important here to emphasize the correlational nature of the evidence since we only have 16 country observations. Still, this is the most direct comparative test of the argument that institutionalized access to educational opportunity determines the share of the electorate who are susceptible to populist appeals. We are aware of no other evidence of this nature.

Finally, to address concerns that the observational evidence may not capture underlying causal effects we turn to natural experiments in the form of educational reforms that affected some students but not others in an essentially random manner. Again, it is our core contention that additional education gives people the tools they need to succeed in the new economy, and hence also good reasons to support policies that aim to advance the knowledge economy, as opposed to populist calls for putting the brakes on such policies. Expansion of compulsory education permits an as-if random assignment of education that enables us to make more confident claims about causality. Specifically, we use regressions discontinuity designs (RDD) on

suitable reforms in four countries to explain populist values. The results confirm the powerful role of educational attainment in the formation of political preferences.

3.1. Individual observational evidence

Identifying the new cleavage

A limitation of virtually all comparative opinion surveys is that they do not conceptualize distributive politics as a multidimensional concept. Instead, respondents are asked to express more or less support for redistribution or for government spending, as opposed to asking which groups should benefit from, or pay to, government policies. This is also true in the WVS, which asks whether incomes should be made more or less equal, whether governments should have primary responsibility to provide for people, and whether competition is good or harmful. These questions reflect, to some degree at least, the traditional left-right dimension as crystallized in the Fordist era, and we will use them to identify that "old politics" dimension.

A forth question about distribution is different. It asks whether poverty is the result of laziness or social injustice. We have argued that the old middle classes (in line with Cavaille and Trump, 2015) will be in favor of redistribution from the rich (as are the poor) but against redistribution towards the poor (as are the rich). Since the poor will presumably always be inclined to say that poverty is a problem of social justice, and higher-up groups will not, the item will be correlated with a traditional left-right dimension. But insofar as the old middle classes take distinct positions on "populist", noneconomic attitude variables, views on the poor will be correlated with this dimension as well. The old middle is in favor of redistribution, but not towards the poor.

To measure other attitudes relevant to the new cleavage, the WVS offers a range of potential questions. Three of these are used across our four waves and in all our

countries: One asks whether the environment should be prioritized over growth; another whether homosexuality is justifiable; and a third whether natives should be favored over immigrants in allocating scarce jobs. We use factor analysis (principal component, varimax rotation) to determine whether these items belong to a distinct dimension when the four "old" economic policy items are also included. The results are shown in Table 2.

Because attitudes toward the poor were only gauged in one wave (Wave 3, 1995-98), including this item reduces the number of observations from approximately 50,000 to approximately 12,000. We therefore did the factor analysis both with and without this question and show the results separately in Table 2. Either way, only two dimensions are retained (those with eigenvalues greater than 1) and three items load highly on a traditional left-right economic dimension and three on a libertarian-populist dimension. Note that the poverty item exhibits an exceptional pattern because it loads moderately highly on *both* dimensions. This reflects, we believe, the two-dimensional nature of distributive politics, as we argued above, and the willingness of the old middle classes supporting both anti-poor and anti-libertarian positions.

Next we use the extracted factor loadings to create indices for the two dimensions, and we will employ the value dimension as the main dependent variable in the following analysis. Again, since each index created from the left and right panels in Table 2 are almost perfectly correlated (r=.954) we use the one identified in the right panel to maximize the number of observations. Higher values on the index signify more "populist" values, although we treat this as a measure of the distinctiveness of old middle-class values rather than a measure of any universally accepted concept of populism. Populist values is hypothesized to be a reflection of the underlying materialist cleavage, whereas populist politics takes distinct forms in different countries.

Table 2. Two dimensions of values in the electorate

	Including Views on the Poor			Excluding Views on the Poor		
Variable	**Factor 1 Populism Dimension**	**Factor 2 Economic Dimension**	**Uniqueness**	**Factor 1 Populism Dimension**	**Factor 2 Economic Dimension**	**Uniqueness**
Support Equality	-0.0465	0.6447	0.5821	0.1439	0.7287	0.4483
Government Responsibility	0.2069	0.704	0.4616	-0.1464	0.7493	0.4172
Competition is Good	0.0033	-0.4172	0.8259	-0.0601	-0.4615	0.7834
Homosexuality	-0.7476	0.0463	0.4389	0.7149	0.0424	0.4871
Immigration View	0.6987	0.1076	0.5003	-0.7202	0.0471	0.479
Protecting Environment	-0.3908	-0.1228	0.8322	0.5343	0.0157	0.7143
View: Poor is Lazy	0.428	-0.5565	0.5071			
Observations	12,211	12,211	12,211	49,783	49,783	49,783

On the independent side we seek to capture the division between the old and new middle classes using a range of indicators. The first is income, measured in deciles. The old middle classes are not poor but they have experienced a relative decline that typically puts them at the lower end of the distribution (this is the hollowing-out effect in the task-specific SBTC thesis). The same is true of education where the old middle classes typically have acquired some secondary education but lack the college degrees that would give them a foothold in the new economy. Gender is also important because the Fordist economy was dominated by male breadwinner households, which became hard to sustain as industrial employment dropped. Moving to two-earner households, or poor one-earner households, adversely affected the status of men in these families while making women more economically and politically independent (Iversen and Rosenbluth 2010).

We also try to capture location in the old economy by occupation. Manual workers with routine jobs have been particularly pressured by new technology and by the shift of demand upwards in the product chain to goods and services requiring higher education – professionals in particular. We distinguish between skilled and semi-skilled manual workers to see if the former might be less vulnerable on account of their higher skills. We also compare both groups to white-collar workers in lower-level non-manual occupations, mostly in low-skill personal and social services where lack of routination makes codification difficult. The last group consists of higher-educated professionals who are the main beneficiaries of the ICT revolution, with technology complementing complex nonroutine tasks.[3]

Crosscutting the occupation classes is self-employment. Self-employed tend to be pressured by taxation and regulation of business, as well as by competition from immigrants (say mom and pop stores in retail), and for these reasons we might expect them to harbor more "populist" sentiments. On the other hand, they do not align with the rural-city divide, and they are not in any obvious way hurt directly by new technology.

Finally, we consider the importance of the city-country divide by separating those living in rural areas and smaller towns from those living in the bigger cities. The measure is the size of the resident town of the respondent. Unfortunately, this variable is not available for France, Japan, or South Korea and we therefore run our regressions both with and without the urbanization variable.

In addition to these micro-level variables, we consider the effects of factors that promote educational opportunity and mobility, as recorded in Table 1 above. In

[3] Non-working married or co=habiting respondents were coded according to the occupation of their spouse.

egalitarian skill systems -- broadly construed to include educational institutions and complementary public policies -- workers are assisted in upgrading their skills, and children from working class backgrounds have better opportunities of acquiring an education that exceeds that of their parents. Higher mobility, as we have argued, are in turn expected to reduce the audience for populist appeals. We test this in a multi-level model that includes the equality of educational opportunity index as a macro-level regressor. This also allows us to explore the relationship between the index and the estimated country fixed effects, which make the cross-national patterns easy to visualize.

Results

Table 3. shows the results of the individual-level regressions. The first two columns are the results for the fixed effects model, with and without town size as an independent variable (since, again, this affects the number of observations). The effects are mostly as expected: older male manual workers with lower education – the main losers from the transition to the knowledge economy -- are far more likely to express populist values than younger female nonmanual workers with higher education. The difference between professionals and semi-skilled manual workers alone – keeping everything else constant – is about .2 on the value scale, which corresponds to nearly one quarter of a standard deviation on that scale. Living in a small town, especially when compared to living in a large city, significantly increases this difference as does lower income. Self-employed are, perhaps surprisingly, *less* likely to express populist values. These individual-level results are largely unchanged when we substitute the educational opportunity index for the fixed effects in models 3 and 4.

Table 3. Individual level regression results.

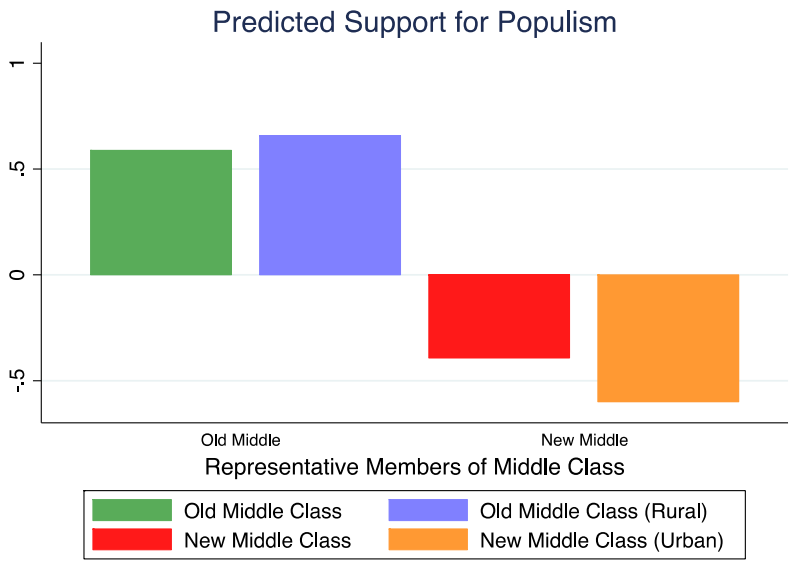
	Dependent Variable:			
	Populist Values			
Explanatory Variables	(1)	(2)	(3)	(4)
Age	0.007***	0.008***	0.005***	0.005***
	(0.001)	(0.001)	(0.000)	(0.000)
Gender (Male)	0.184***	0.166***	0.200***	0.204***
	(0.016)	(0.013)	(0.012)	(0.009)
Income	-0.026***	-0.024***	-0.024***	-0.037***
	(0.005)	(0.004)	(0.002)	(0.002)
City/Town Size	-0.040***		-0.044***	
	(0.004)		(0.002)	
Low-Level Education	0.540***	0.475***	0.581***	0.424***
	(0.029)	(0.034)	(0.017)	(0.014)
Middle-Level Education	0.338***	0.311***	0.349***	0.191***
	(0.024)	(0.024)	(0.013)	(0.010)
Unemployment (Binary)	0.055	0.059*	0.067***	0.058***
	(0.046)	(0.033)	(0.025)	(0.020)
(i) Managers and Supervisors	0.036	0.025	0.082***	0.111***
	(0.028)	(0.022)	(0.019)	(0.016)
(ii) Professionals	-0.082	-0.093**	0.015	-0.040*
	(0.052)	(0.040)	(0.028)	(0.024)
(iii) Lower Level White Collar	-0.027	-0.037	0.013	0.117***
	(0.047)	(0.032)	(0.030)	(0.024)
(iv) Skilled Manual Workers	0.087**	0.101***	0.174***	0.210***
	(0.035)	(0.026)	(0.021)	(0.018)
(v) Unskilled Manual Workers	0.095**	0.105***	0.196***	0.266***
	(0.040)	(0.038)	(0.044)	(0.037)
Self-Employed	-0.078***	-0.037*	-0.050**	0.128***
	(0.027)	(0.021)	(0.025)	(0.018)
Educational Opportunity			-1.304***	-1.766***
			(0.032)	(0.024)
Country-Year Fixed-Effects	✓	✓		
Constant	-0.225***	-0.518***	0.260***	0.522***
	(0.060)	(0.044)	(0.033)	(0.022)
Observations	25550	42800	25550	42800

Standard errors in parentheses
*p<0.10, **p<0.05, ***p<0.01 ** p<0.05

Notes: The reference group for the educational classes is higher (tertiary) education; reference group for the occupational classes is respondents who do not have or declare and occupation.

To get a better sense of magnitudes, Figure 2 illustrates the differences in populist values between what we might think of as a typical representative of the old middle classes and a typical representative of the new middle classes. We define the former as an employed male semi-skilled manual worker with low education and an income in the fourth decile; we define the latter as an employed female professional with high education and an income in the sixth decile. We separate out city versus small town residence because the distinction between large cities and small towns perhaps best captures the difference between the old and new economy.

Figure 2. The difference in populist values between the old and new middle class



Conceptualized this way we see a large gulf in the propensity to express libertarian versus populist values. The predicted populism value for the old middle class "representative" is .6, while for the new middle class representative it is -.4. The scale varies from -2 to +2 and the difference of 1 is equivalent to one standard deviation. This gap in preferences is notably greater than on the economic left-right dimension identified in the factor analysis. Here the difference between the two groups is equivalent to one third of a standard deviation on the dependent variable. So, while the left-right division that defined the Fordist economy only elicit modest disagreement, the new libertarian-populist division distinctive of the post-Fordist economic is quite sharp. Still, it is notable that on matters of redistribution and spending the new middle classes are to the *right* of the old. They may be social progressives, but they are not keen on promoting equality. Given that they are well positioned in the new economy, with better incomes and skills in higher demand, they have no reason to be.

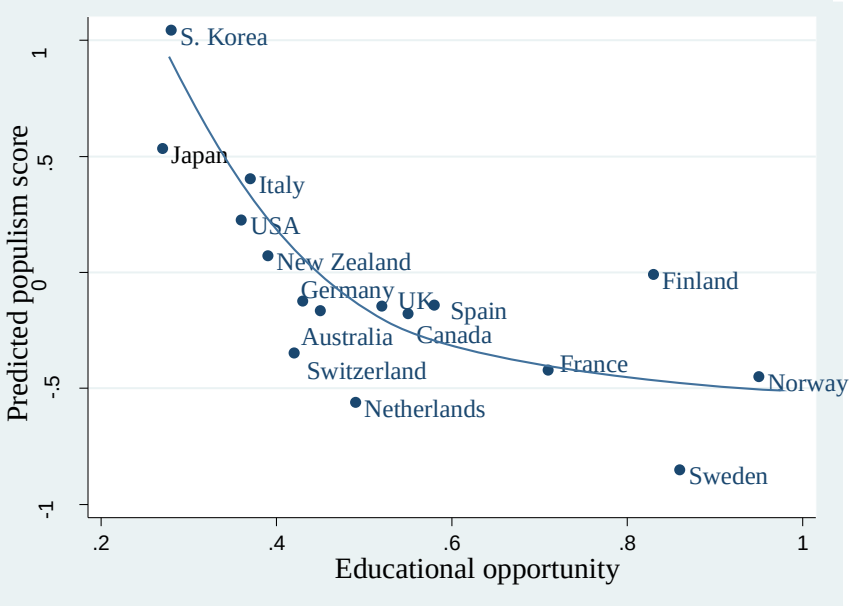
The result underlines that the division between old and new middle classes is closely related to economic position; a conclusion that is reinforced by considering the effect of urbanization. Distinguishing between people living in small towns versus large cities raises the gap by about 40 percent (although this is based on a smaller sample). As we argued above, the urban-rural split is a major new cleavage brought about by strong agglomeration effects and the decline in the importance of smaller towns as "feeders" for the urban economy.

3.2. Cross-national variance

It is important to note that the individual-level estimates are average within-country differences. However, *more than half* the total explained variance is *between* countries, and we have argued that this variance is related to the educational system; in particular to how conducive the system is to intra- and inter-generational mobility.

Cross-national differences are in fact closely correlated to our educational opportunity index, as illustrated in Figure 3 which shows the relationship between the index and predicted values of populism controlling for all individual-level differences. We see that the Nordic countries are found in the bottom-right with good educational opportunities across the academic ability distribution, low class barriers to higher education, good adult retraining options, and correspondingly low levels of populist values (although Finland is something of an outlier). At the other end we find Japan and South Korea, with the US and other liberal market economies not far behind. Especially in the East Asian cases this may seem surprising -- but only because we usually measure populism by the strength of populist parties, not populist values. The latter are quite pervasive in these countries, precisely as we should expect. A country like Norway, by contrast, with a significant populist party actually exhibits comparatively low levels of populist sentiments.

Figure 3. Educational opportunity and populist values.



There a few other cases where the educational opportunity scores may raise concerns. Britain, for example, show a proportion of upper secondary students in vocational training that is probably too high if "vocational" is to have the same meaning across countries. France also gets a suspiciously high opportunity score. Here the likely reason is that information is missing on two indicators, social inclusion and adult education, where France is likely to score at the lower end (but, again, we have no comparative data). Still, the overall pattern is strongly supportive of our argument that equality of opportunity in the educational system, by fostering both intra- and inter-generational mobility, undermines the spread of populism and expands the size of the electorate supporting the knowledge economy.

Of course, there are many potential confounders, but it is hard to think of any with a more clearly specified micro-logic (consistent with our other evidence). The most obvious candidate would be GDP per capita, but while it has a borderline statistically significant negative effect (not shown) it has no effect on the finding for educational opportunity. Other potentially confounding variables such as occupational structure are already controlled for at the individual level, and we can confirm this by including industrial employment shares as a macro-variable; it has no effect. No other argument we are aware of explains the cross-national pattern.

In concluding this section we would like to draw attention to the remarkable fact that countries with relatively weak populist sentiments are ones often noted for having strong populist parties, and vice versa. The most obvious explanation for this fact is that countries with the most permissive electoral rules, and hence low barriers to new party formation, also tend to have the most open and publicly funded educational systems, while the opposite is true for liberal market economies with majoritarian institutions (Iversen and Stephens 2008; Iversen and Soskice 2010). In the East Asian cases something else may be going on. These are countries with strict controls on

immigration, public censure of homosexuality (which is illegal), weak equal treatment legislation, punitive criminal law systems, and lax environmental standards. There is simply little room for new parties to challenge established parties on these issues; it is populism without (overtly) populist parties. The challenges to the status quo in these countries tend to come from urban, cosmopolitan politicians such as the popular (woman) governor of Tokyo, Yuriko Koike. Even so, there may still be a lot of unrealized discontent among the old middle classes because cultural closure does not provide real solutions to their economic grievances. As some observers of the Trump presidency suspect, populist policies do not necessarily help populist constituencies; an intriguing fact.

More generally, we think the close connection between educational institutions and populism is robust evidence that populism is not simply a cultural reaction to the rise of "sociocultural elites". It reflects a socioeconomic encapsulation of the old middle classes that make them lash out against the symbols of the new economy; an economy they and their children feel they have been left out of. A real solution would be a broadening of opportunity -- from public preprimary schools, vocational training, integrated school districts, centralized allocation of school funding, subsidized university education, and more resources for adult training and retraining. These are of course policies that could also help advance the knowledge economy, and that is precisely the point. If elites on the left and right want to effectively confront the rise of populism it is by opening the educational system to the middle and lower middle classes. The old middle classes may switch their support in response. They are not against progress, but they are cynical, often rightly so, about who this progress will benefit.

3.3. Quasi-experimental evidence

The transition to the knowledge economy has been accompanied by a series of educational reforms in the postwar period. Some of these reforms have increased the

number of years of compulsory schooling; in most instances by a year (from 8 to 9, 9 to 10, or 10 to 11 years) or in one case by two years (from 8 to 10 years for France's 1967 reform). The compulsory nature of these reforms offers an interesting opportunity to identify the causal effect of education since the cohort of students who was just young enough to be affected can be compared to the cohort of students who was just too old. If students complied, as most did, this amounts to a nearly randomized assignment of an additional year of schooling since there is nothing systematic that separates the slightly younger cohort from the slightly older. Such quasi-experimental design has also been used by labor economists to identify the causal effects of schooling on wages and employment (see Angrist and Krueger 1991, Acemoglu and Angrist 2000, Card 2001). Cavaille and Marshall (2017) apply the same logic to examine the causal effects of compulsory education reform on immigration attitudes, and we use it here to examine the effect on populist values.

There are five European cases of compulsory school reforms in the postwar period: Britain (1947 and 1972), France (1967), Netherlands (1974), and Sweden (1965).[4] In all cases the public system already allowed students to take the additional year of education (or more), which the reform made obligatory. Many took advantage, and the reforms therefore only affected those who had no intention to stay in school.[5]

[4] In one case, Denmark, compulsory schooling was increased from 7 to 9 years in 1972, but a major school reform in 1958 had already required schools to offer 9 years of schooling to all, and by the time of the 1972 reform almost all students took advantage (Gjerløff 2014). Essentially the reform codified already established behavior.

[5] Note that this eliminates concerns about "selection into treatment". Such selection effects arise if students, or their parents, who are not subject to the reform nevertheless seek to get included, but since students were already allowed to stay in school for an additional year there was no need to try to game the system. Indeed, if there is a concern it would be that student affected were those disinclined to stay in school and therefore missing attributes that we might otherwise attribute to the better-educated – they would, in a word, be "untreatable." This would bias our results toward zero.

Our regression results for years of schooling indicate that on average about one half of all students were affected by the reforms. This underscores the modest effects of the reforms – essentially equivalent to one half year of secondary schooling in most cases -- and it presents a challenge because we need a large number of observations around a fairly narrow band around the time of reform to be able to detect significant causal effects. The World Values Surveys simply do not offer sufficient power for this purpose.[6]

Instead, we turn to the European Social Surveys (ESS), which increases our number of observations nearly six-fold. This is sufficient to establish significant treatment effects of the reforms on years of schooling and, as we will see, also on political attitudes.[7] We pool all 7 rounds of the European Social Surveys (ESS), conducted every two years from 2002 to 2014. While our observational analysis using WVS data includes a sample of 16 countries, our quasi-experimental analysis includes only the four countries that adopted compulsory schooling reforms. In spite of the smaller country sample, we have around 55,000 observations in the pooled ESS data.

To explore the effect of education on attitudes we followed the same procedure as in our observational analysis of the WWS data by first identifying the salient dimensions of voter attitudes. We tried to match the issue items that went into the factor analysis of the WVS data, but the options are different and more limited in ESS. The economic dimension is consequently proxied by a widely used survey item (also used in WVS), namely degree of support for redistribution,[8] while the value

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[6] In none of the cases is there a significant effect of reforms on years of schooling in the WVS, although the estimate is in the same direction and of a similar magnitude as in the data we do use.

[7] In the Appendix we have included a graph that illustrates the discontinuity.

[8] The support for equality question gauges agreement with the statement, "The government should take measures to reduce differences in income levels," measured on a scale of 1 (Agree strongly) to 5 (Disagree strongly). There was no comparable

dimension is captured by two of the four variables from the WVS analysis: opposition to immigration and homosexuality.[9] Using the same principal component procedure as above, these items unambiguously belong to a separate populist dimension.[10]

To identify the causal effect of compulsory education on attitudes, we use two complementary regression discontinuity designs (RDDs) to exploit the exogenous variation created by this series of school leaving age reforms. First, we estimate a local linear "sharp" regression discontinuity where everyone subject to the reform are assumed to be affected. This is not an unreasonable assumption for the countries included here because students who skip schools, as well as their parents, would have been contacted by authorities and encouraged, and sometimes compelled, to attend school. In the case of Britain's 1947 reform, for example, the reform intended to bolster the Education Act of 1936 which, although it raised the school leaving age, allowed for various forms of exemptions (e.g., permitting parents with employment

question about competition in ESS. For support for equality and for homosexuality, 4 (Agree) and 5 (Agree Strongly) are coded as 1 after we reversed the scale. For immigration view, all the non-neutral response categories (6-10) are coded as 1.

[9] The question about homosexuality gauges agreement with the statement, "Gay men and lesbians should be free to live their own life as they wish," also measured on a scale from 1 to 5. For negative view of immigration, we use the question, "Is [country] made a worse or better place to live by people coming to live here from other countries?", measured from 0 (worse) to 10 (better). We reverse the scale so that 5 reflects strong agreement for the first two questions and 10 reflects "made worse" in the last. WVS also contains a question about the environment, responses on this question load on both dimensions, and more strongly on the economic dimension, probably reflecting that it has been largely subsumed into the left-right axis of party competition in these four countries (see Kitschelt 1994). For this reason, it is not helpful in distinguishing a distinct populist dimension.

[10] Following Cavaillé and Marshall (2017), we recoded all outcome variables as binary variables to enhance comparability across countries and waves, given that the five reforms are pooled.

certificates for their children to exempt them from attending school). These exemptions were disallowed (Marshall 2016).

The sharp discontinuity design essentially compares student cohorts just young enough to be affected by the reforms to those just old enough to evade the effect. Following Cavaillé and Marshall (2017), we create a forcing variable that captures the difference between respondent birth year and the birth year of the first affected cohort. Hence our treatment for respondent *i* from cohort *c* in country *j* is defined as follows:

$$Reform_{i,c,j} = \begin{cases} 1 & \text{if } birth\ year_{c,j} - birth\ year\ first\ affected_{c,j} > 0 \\ 0 & \text{if } birth\ year_{c,j} - birth\ year\ first\ affected_{c,j} \leq 0 \end{cases}$$

We estimate the local average treatment effect of the set of compulsory education reforms using a triangular kernel and optimal bandwidth proposed by Calonico, Cattaneo, and Titiunik (2014).[11] The main identification assumption is that there is continuity in all other baseline covariates across all cohorts around the cut point. Any serious violation of this assumption is unlikely, since even if parents could have predicted the reforms it would not affect their incentives to sort into treatment or control. [12]

[11] The authors propose a modification to the bandwidth discussed in Imbens and Kalyanaraman (2012) that follows a second-order plug-in rule with two distinct features. First, the preliminary bandwidths used in the construction of the estimators are also consistent estimators of the corresponding population MSE-optimal bandwidths. Second, this bandwidth choice accounts for finite-sample performance considerations (see CCT (2014) for more). The CCT bandwidth essentially involves flexible control of trends across each cohort *separately* for a set of cohorts on either side of the discontinuity, and higher weights are assigned to cohorts closest to the discontinuity (Cavaillé and Marshall 2017).

[12] An exception is if anticipated reforms would change competition in the labor market in such a way as to put those with a year less schooling at a competitive disadvantage that they would otherwise not encounter. If such an effect is anticipated, this would attenuate any discontinuity (and hence the effects we find).

Since some students would have remained in school regardless of the reform, not all were necessarily *compelled* by the reform to do so (Marshall 2016). In other words, the reforms may not perfectly determine treatment exposure, but it still creates a discontinuity in the *probability* of treatment. To allow for such a probabilistic interpretation, we also used a "fuzzy" regression discontinuity design, in which education reforms is treated as an instrument for increasing the probability of receiving an additional year(s) of schooling. The inclusion of an instrument in the "fuzzy" RD design highlights two additional identification assumptions beyond the continuity one for the reduced form RD estimates we discussed. First, the reforms should not decrease the completed years of education for any student (monotonicity). Second, the reforms should not change the nature of schooling, but rather only affect populism through the channel of increased years of education (exclusion restriction). While the assumption of monotonicity is intuitively likely to hold, the exclusion restriction may not. We discuss the exclusion restriction further below and provide tests for it in the Appendix.

As it turns out, the results from either RD approach are virtually identical. They are presented in Table 5.[13] We find that an additional year of education does indeed reduce expressions of populist values. The effect (-0.07) is virtually identical to simply regressing populism on years of education. And as Appendix A.2.4 shows, this effect on populist values holds even with the inclusion of a series of controls (i.e., age, gender, household income, employment status, and urban size). This gives confidence that the results for education reported in the observational results above

[13] Calonico, Cattaneo, Farrell, and Titiunik (2017) also released a new update to the rdrobust package in Stata that no longer supports the IK, CCT, and CV bandwidth choices, but rather proposes a bandwidth choice (*mserd*) that they claim is an upgrade of both the IK and CCT implementations of the MSE-optimal bandwidth. We ran our main estimations featured in Table 5, using this new bandwidth, and our main results are even more significant.

are not spurious but capture an underlying causal effect. The magnitude of this effect is also substantively significant. If we assume that the effect of years of schooling on populism is linear, and the observed relationship is in fact virtually linear in the data[14], then a standard deviation change in schooling (3.9 years) would have an effect that is equivalent to one quarter (.24) of a standard deviation on the populism scale; a very large effect indeed from a single variable. The Appendix provides a graphical analysis of these discontinuity effects.

Table 5. The effects of compulsory educational reforms on populism and support for equality

	Years of Schooling LLR	Populist Values LLR	Populist Values LLR IV	Support for Equality LLR	Support for Equality LLR IV
	(1)	(2)	(3)	(4)	(5)
Pooled Education Reforms	0.490***	-0.069*		-0.026*	
	[0.137]	[0.037]		[0.014]	
Years of Schooling			-0.129*		-0.056*
			[0.070]		[0.032]
Observations	17,928	13,919	15,655	21,611	21,472
Kernel Type	Triangular	Triangular	Triangular	Triangular	Triangular
BW Type	CCT	CCT	CCT	CCT	CCT
Conventional p-value	0.000	0.045	0.059	0.073	0.070
BW Loc. Poly. (h)	9.170	7.981	8.027	11.158	11.088
BW Bias (b)	14.496	13.352	13.357	16.766	16.630
Standard errors in parentheses					
* p<0.10, ** p<0.05, *** p<0.01					

It should be emphasized that while differences across cohorts can be attributed to a causal effect of education, the RDD approach cannot help us identify the specific

[14] We show this with a simple lowess graph in Figure A2 in the Appendix.

mechanisms. We have argued that the effect goes through higher wages, better employment opportunities, urban residence, and even expectations about the educational opportunities of children – essentially any improvement in the ability of an individual's, or in his or her family's ability, to thrive in the new economy. The weights of these mechanisms do not concern us here. But we *would* like to exclude the possibility that the effect is due to the values transmitted directly as a result of the content of additional schooling – essentially the idea that the extra time is spend on learning libertarian values. We believe the nature of the reforms makes this implausible. These added just one year of compulsory schooling and did not require students to change schools or teachers (except for a small number of retirements), and in most cases also did not cause any changes in the composition of peers. The key addition was new knowledge – better language skills, more advanced math and science, and better analytical skills -- not a new set of values.[15]

We would also like to exclude the possibility of peer group effects later in life. As Cavaillé and Marshall (2017) note, there would be a violation of the exclusion restriction if the reforms, in altering the peer group, creates peer group effects that cause others to marry or have children earlier. We test for potential violations in Table A.2.1 in the Appendix. The results show that the reform did not affect important life choices, such as marriage and divorce and the choice to have children. Although there is no definitive test of the exclusion restriction, these estimations check for the most probable channels through which exclusion could be violated.

[15] For more details on the ways in which the reform did not affect the nature of schooling, but only operates through increasing education years, see Appendix A.1 in Cavaillé and Marshall (2017). The authors do note that Sweden is the exception here, because the reform also integrated the student population by changing the tracking system. We also run our estimations excluding Sweden, and our results are robust.

Finally, we ran a series of robustness checks to confirm the validity of our findings. First, we examine whether the causal effect of education on populist values is sensitive to variation in bandwidth and in kernel specification. As shown in Figure A.2.2 in the Appendix, the negative effect of an additional year(s) of schooling on populist values holds across all bandwidth between 2 and 15 and also for a rectangular kernel.[16] Second, we run a placebo test, using an alternative reform that is coded for ten years earlier. As the results in Table A.2.3 demonstrate, the placebo reform has no effect on our outcomes of interest. This placebo test indicates that our findings are not simply reflective of pre-treatment trends or of institutional or social changes that co-vary with our independent variable; the reforms create a discontinuity in only the education years of the actual reform year.

Consistent with our materialist interpretation, and results from the observational data, we show in the last two columns of Table 5 above that the additional year of education *reduced* support for redistribution. This confirms the results in Marshall (2016) and echoes standard political economy arguments that education increases earnings and reduces exposure to risks, hence also the demand for redistribution (Iversen and Soskice 2001). The fact that more education reduces support for *both* redistribution *and* populism shows that education is not simply instilling more left-leaning attitudes in students. Instead, preferences line up with a human capital approach to explaining interests in the new economy.

4. Conclusion

The Brexit vote and the rise of Trump are the most dramatic manifestations of a realignment of electoral politics in advanced democracies. In this paper we have

[16] In contrast to a triangular kernel, a rectangular kernel increases the weight attached to estimates that are farther from the discontinuity.

argued that underpinning this realignment is a new socioeconomic cleavage produced by the transition away from a Fordist economy to the knowledge economy. In the Fordist economy interests across skill and income groups were linked by complementarities in production, correlated risks of unemployment, and considerable scope for both up- and downward mobility. There was distributive conflict, but it was muted by cross-class interdependencies. The ICT revolution unraveled these interdependencies and created a disjuncture between an old middle class, which was increasingly marginalized by technological change, and a new educated middle class that thrived. The consequence of what we have called middle class encapsulation was to create a greater preference gap between both the old middle class and those above, and between the old middle class and those below. This is manifested as populism in a set of beliefs and values that seek to exclude the poor and immigrants form the welfare state while rejecting the diversity and libertarian values associated with the rising cities, and indeed endorsed by the new educated middle classes.

Since populism is a reaction to the rise of the knowledge economy, it is pertinent to ask if it is also a threat to it. Is this a fundamental realignment that will undermine the long-standing peaceful coexistence between democracy and capitalism? We think not.

There are three main reasons for this. First, policy demands associated with populism are on the whole compatible with a prospering knowledge economy. The anger and resentment among the old middle classes are directed at the poor and low-skill immigrants, who do not play a large role in this economy. They are also directed at the cities and cosmopolitan elites, but policy demands are mostly diffuse and symbolic. We do believe that the homophobic, sexist, and generally intolerant views associated with populism are incompatible with the way modern cities work. But rarely are such policies adopted and implemented in a manner that seriously interfere

with the live-and-let-live ethos of modern urban life. The same is generally true of more radical proposals to restrict international trade. Trade liberalization has been revisited politically, but on the whole open world trade has not been seriously threatened. It is true that Brexit was a blow to the principle of a Europe without borders, but few seriously thinks that the UK will shut its borders to trade and investment with the EU, or vice versa. Trump has yet to introduce any serious barriers to trade.

This brings us to the second reason: populists do not make up a majority. Over time, support for populist parties has risen, but nowhere have these parties make up more than a quarter of the vote, and the mean performance is no better than 10-15 percent (depending on the sample). There is an obvious explanation for this, which is that so many people have benefitted from the knowledge economy and the opportunities it offers; especially among younger generations. More than 42 percent of 25-35 year olds today graduate with a tertiary degree in the OECD (compared to 26 percent among 55-64 year olds), and the far majority of those who do not still acquire a higher secondary degree and can expect their own children to go to university. Almost 80 percent of the working-age population in contemporary OECD countries have at least a higher secondary degree (OECD, Education at a Glance 2016); a sharp increase from the first three postwar decades. For most of these people, and for a substantial proportion of older generations, supporting policies that promote the knowledge economy make sense. Advanced economies are based on highly-skilled workers and these economies consequently tend to produce their own constituencies.

Finally, and closely, populism can be readily undermined by public policies designed to open up educational opportunities for more people. We see this very clearly in the data. Where barriers to good education and upskilling are low -- starting all the way back in preschool and continuing right through college and adult education -- populist values are decidedly less prevalent. Access to good education and

opportunity for upskilling later in life are of course themselves policies that depend on political majority coalitions. But where such majorities are threatened by populist backlash, elites, who are invariably dependent on the knowledge economy, have a strong incentive to broaden the coalition to ensure that it survives and thrives. In this sense we see the rise of populism is a signal to elites that they must widen access to education; a healthy democratic mechanism. Indeed we can perhaps see such an opening-up of opportunity as a third-order policy change (following Hall 1993) in response to populism, designed to sustain advanced democratic capitalism.

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Appendix A1: Graphical Analysis of Discontinuities

Table A1.1 Graphical Analysis of the Effect of Compulsory Education on Populism

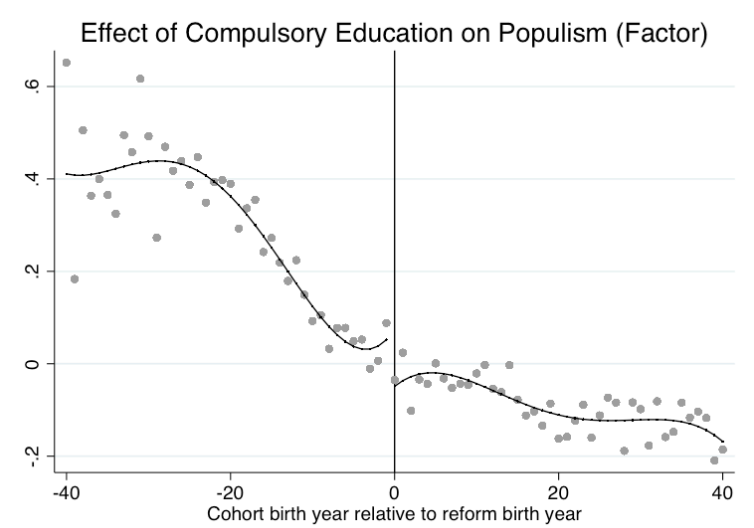


Table A1.2 Graphical Analysis of the Effect of Compulsory Education on Support for Equality

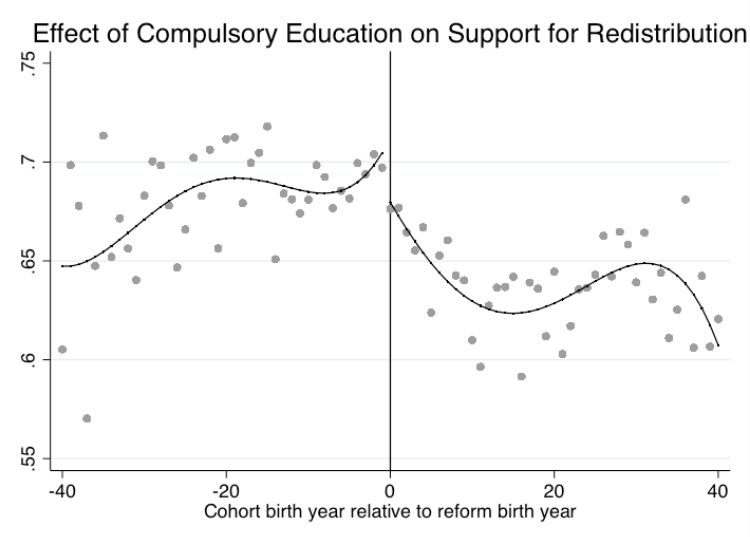
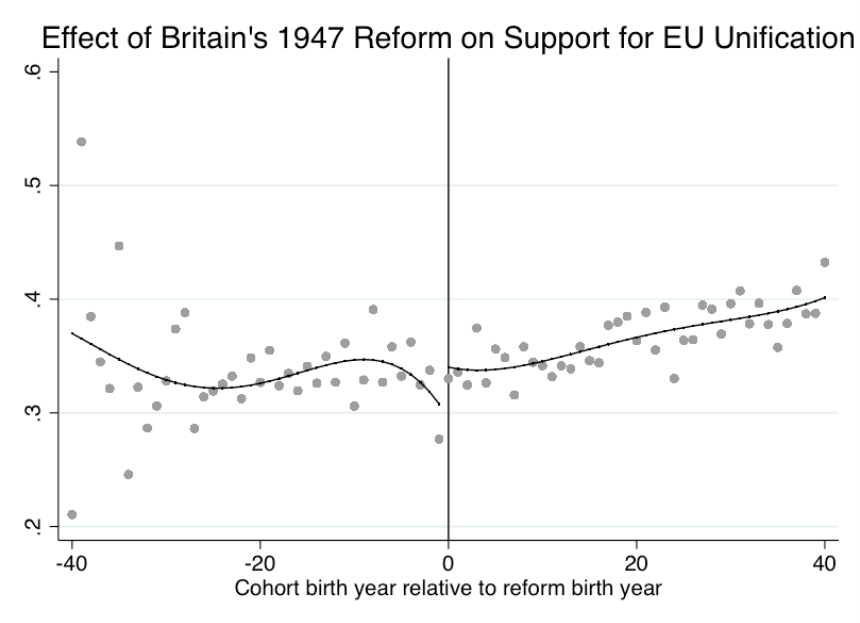
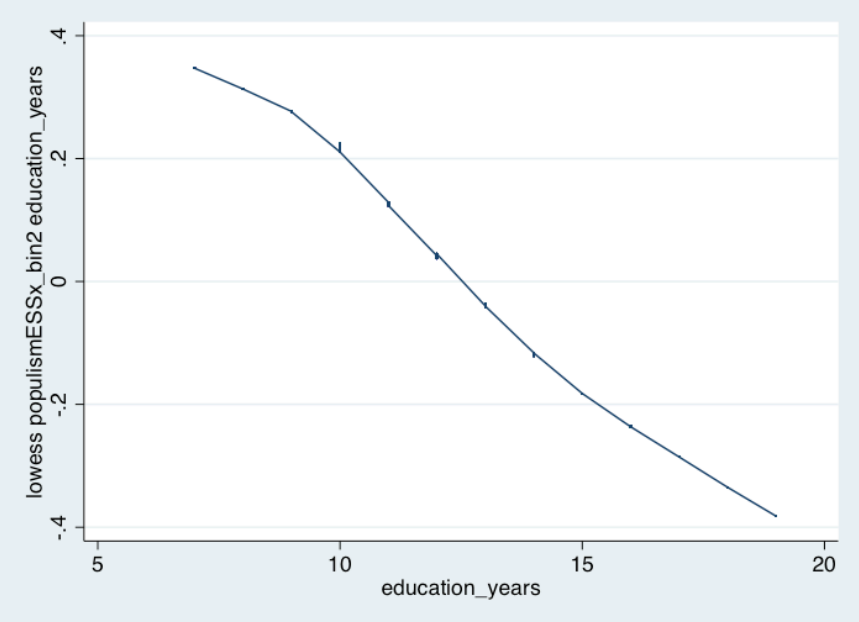


Table A1.3 Graphical Analysis of the Effect of Britain's 1947 Reform on Support for EU Unification



Appendix A2: Lowess estimate of the relationship between years of education and populism



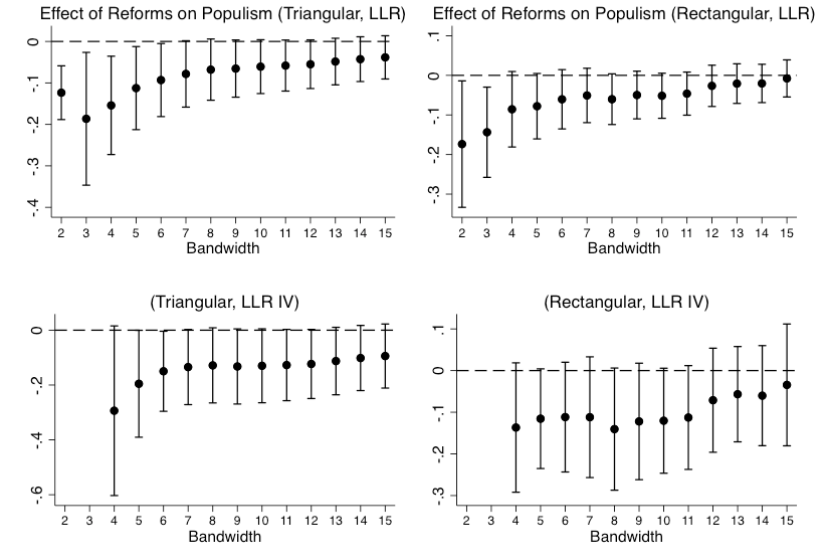
Appendix A.3: Robustness Checks

Table A3.1 Exclusion Restriction Violation Test

	Never Married	Ever Divorced	Ever Have Children	Children at Home
	(1)	(2)	(3)	(4)
Pooled Education Reforms	-0.002 [0.015]	-0.017 [0.012]	-0.010 [0.022]	0.002 [0.022]
Observations	14556	23607	10717	10728
Robust 95% CI	[-.04 ; .03]	[-.04 ; .02]	[-.05 ; .05]	[-.06 ; .04]
Kernel Type	Triangular	Triangular	Triangular	Triangular
BW Type	CCT	CCT	CCT	CCT
Conventional p-value	0.898	0.161	0.663	0.943
BW Loc. Poly. (h)	10.571	17.297	5.845	5.409
BW Bias (b)	16.584	27.639	13.334	14.376

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Figure A3.2 RD Estimates Sensitivity to Bandwidth and Kernel Specification



Notes: Triangular and rectangular reflects choice of kernel. Bars indicate 95% confidence intervals for robust standard errors.

Table A3.3 Placebo Test using Alternative Reform (Ten Years Earlier)

	Years of Schooling LLR	Populist Values LLR	Populist Values LLR IV	Support for Equality LLR	Support for Equality LLR IV
	(1)	(1)	(2)	(3)	(4)
Pooled Education Reforms	-0.129	-0.044		0.016	
	[0.133]	[0.034]		[0.015]	
Years of Schooling			0.593		-0.142
			[1.399]		[0.196]
Observations	20,296	18,460	18,336	18,858	18,726
Kernel Type	Triangular	Triangular	Triangular	Triangular	Triangular
BW Type	CCT	CCT	CCT	CCT	CCT
Conventional p-value	0.333	0.196	0.672	0.285	0.467
BW Loc. Poly. (h)	12.044	11.314	11.135	11.094	11.185
BW Bias (b)	21.768	19.908	19.737	16.982	17.110
Standard errors in parentheses					
* p<0.10, ** p<0.05, *** p<0.01					

Appendix A3.4 Robustness to the Inclusion of Controls

	Years of Schooling LLR	Populist Values LLR	Populist Values LLR IV	Support for Equality LLR	Support for Equality LLR IV
	(1)	(2)	(3)	(4)	(5)
Pooled Education Reforms	0.522***	-0.081*		-0.020	
	[0.157]	[0.042]		[0.015]	
Years of Schooling			-0.132*		-0.055
			[0.079]		[0.039]
Observations	44,832	43,856	43,692	44,605	44,427
Kernel Type	Triangular	Triangular	Triangular	Triangular	Triangular
BW Type	mserd	mserd	mserd	mserd	mserd
Robust p-value	0.001	0.056	0.094	0.166	0.153
BW Loc. Poly. (h)	7.556	6.834	8.106	11.769	8.909
BW Bias (b)	14.586	13.636	19.289	22.667	17.933
Standard errors in parentheses					
* p<0.10, ** p<0.05, *** p<0.01					

Appendix A.2.4: Robustness of results to the inclusion of a series of controls (i.e., age, gender, household income, employment status, and urban size).