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MAXIMALLY MAINTAINED INEQUALITY REVISITED: IRISH EDUCATIONAL MOBILITY IN COMPARATIVE PERSPECTIVE

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MAXIMALLY MAINTAINED INEQUALITY REVISITED: IRISH EDUCATIONAL STRATIFICATION IN COMPARATIVE PERSPECTIVE

The role of family background in educational selection is controversial in most modern nations – nowhere more so than in Ireland. Twenty-one years ago Greeney and Kelleher (1984) sparked a public debate when they concluded that Ireland had nearly achieved a desirable level of merit-based selection. Adrian Raftery and I (1985), Kathleen Lynch (1985), and Whelan and Whelan (1985) raised questions about their methods and the standard against which Ireland was to be judged. Raftery and I noted that as long as family background remained salient for Irish educational selection, one could not fairly describe the process as one based on merit.

A few years later Raftery and I returned to the question and found not only that family background mattered for educational selection in (then-)recent cohorts, but also that its effects had not changed over a fifty year period during which Ireland achieved political independence and undertook serious educational and economic development (Raftery and Hout 1993). To be sure secondary and post-secondary educational opportunity had expanded greatly, but class barriers kept pace with the expansion. We termed the persistence of intergenerational educational inequality "maximally maintained inequality" and proposed a rational-choice theory to explain how and why it might persist.

Subsequent research in many countries confirmed that Ireland is not alone in this pattern – which came to be known as "MMI." Variants of MMI appeared in 10 of 13 national studies compiled by Shavit and Blossfeld (1993). The nations that conformed to the MMI model varied considerably in educational structure and in the proportions advancing to the highest levels.

Britain, West Germany, Switzerland, Italy, Poland, Hungary, Czechoslovakia, Israel, Australia, and Taiwan all exhibited patterns consistent with MMI.[1] Research in the Philippines (Smith and Cheung 1986) and France (Vallet 1988) anticipated the formulation of the MMI hypothesis, and subsequent research has replicated the MMI pattern in Japan (Ishida 1994), Russia (Gerber and Hout 1995; Gerber 2000), Scotland (Gamoran 1996), and Spain (Salido 1998). Urban China offered an important exception (Zhou, Moen, and Tuma 1998). Shifting priorities of the communist government there raised, lowered, and even reversed class barriers to educational opportunity. The potential for revolutionary regimes to alter stratification patterns also emerged in Hungary for the first cohort educated under communist rule (Hanley and McKeever 1997).

While the MMI *pattern* turns out to be a very general (though not universal) one, researchers have had a difficult time measuring the *strength* of intergenerational associations. Most studies are designed to investigate the patterns of intergenerational inequality in just one country. Relatively little concern is ever given to the prospect of comparing the results with similar data from elsewhere. The International Social Survey Programme (ISSP) is an exception. Scholars and survey organizations in member nations replicate a common battery of questions – 60 in all – each year. The data are comparable except for the limits imposed by linguistic and institutional differences among nations. In 1999 the ISSP's theme was inequality. A total of 25 nation participated fully.[2] Thus, the 1999 ISSP inequality module offers the possibility to gain strictly comparable measures of how family

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[1] The exceptions were the United States, the Netherlands, and Sweden. Subsequent work has called the Israeli case into question.

[2] Austria, Bulgaria, and the United Kingdom also participated in most aspects of the 1999 ISSP, but these countries neglected to include the mandatory family background variables so their data cannot be used in this study. While 1999 was the preferred year for data collection, Hungary and Slovenia fielded it in 1998, several countries fielded the module in 2000, and two (Brazil and Slovakia) in 2001.

background affects educational attainment and to assess the extent of cross-national variation in those effects.

MMI does not predict that the effect of family background will have the same strength everywhere. It pertains to the persistence of specific class barriers to educational opportunity. Indeed, it is often the case, as it is in Ireland, that class affects earlier educational transitions more than it affects later ones. Completion of secondary education typically involves a greater class barrier than entry into post-secondary education entails. In some nations, the successful completion of a university degree is independent of family background – for those who get to university. Thus a nation's overall level of educational stratification – the sum of the class barriers particular to each transition – might decline over time if making the transition becomes universal. For example, a secondary education was optional in many nations sixty or seventy years ago. The class barrier between completion of primary and entry into secondary education was higher than the class barrier between completing secondary education and entering higher education, even then. Only when secondary education became universal did the high class barrier between primary and secondary education become irrelevant. MMI refers to the persistence over time of these transition-specific class barriers.

Thus a rough corollary – not strictly a derivation so much as a generalization in the spirit of the original theory – might be that the strength of the association between family background and educational attainment will be proportional to the prevalence of post-secondary education. As post-secondary education expands, we can expect the association between family background and educational attainment to weaken. That is the proposition under investigation in this paper. I will propose an appropriate statistical

model, fit it in each ISSP country, and assess the corollary in light of the results.

A Statistical Model of Educational Stratification

The original MMI was expressed in terms of Mare's (1980) model of educational transitions. Modifications by Mare (1993) and Lucas (2002) inform my work here. Consider educational achievement as ordered outcomes: complete primary, incomplete secondary, complete secondary, incomplete post-secondary, and complete post-secondary education. The odds on a favorable outcome – more versus less education – depend on family background. Under this revised model, the odds on a more versus less increase as background increases in a uniform proportion expressed in the following equation:

$$y_{ij} = \beta_{0j} + \beta_{1k}D_k + \beta_{2k}X_iD_k \qquad\qquad [1]$$

for persons i = 1,…,N_k, educational transitions j = 1,…,4, and countries k = 1,…,25; where D_k is a dummy variable equal to 1 for country k and 0 otherwise, and X_i is person i's family background. Note that β_{0j} does not vary by country – only by educational transition – while β_{1k} and β_{2k} vary by country but not by educational transition. I further generalize the model for this paper by breaking X_i into three components of family background, instead of forming a single index. Thus the revised model is:

$$y_{ij} = \beta_{0j} + \beta_{1k}D_k + \left(\beta_2 FaEd_i + \beta_3 MaEd_i + \beta_4 Books_i\right)\left(1 + \delta_k D_k\right) \qquad\qquad [2]$$

where *FaEd* refers to father's education, *MaEd* refers to mother's education, and *Books* refers to the number of books in respondent's home when she or he was growing up. Father's and mother's education is classified in seven levels – the five used for respondents plus "none" and "incomplete primary" to accommodate the educational experience of the parental generation for

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elderly respondents in some of the ISSP countries. Books were counted as 0 = "none", 1 = "1 or 2", 2 = "around 10", 3 = "around 20", 4 = "around 50", 5 = "around 100", 6 = "around 200", 7 = "around 500", and 8 = "1,000 or more". To identify the model, I set δ = 0 for Ireland, i.e., all countries' level of stratification is measured relative to stratification in Ireland. These three variables focus on the educational and cultural barriers to educational attainment (see Lynch and O'Riordan 1998). In nearly every nation, the effects of these aspects of family background exceed those of occupation and income (Fischer et al. 1996).

To allow for change across cohorts in the level of education and, perhaps, in the class barriers to achieving it, I include a two-parameter cohort effect:

$$y_{ij} = \beta_{0j} + \beta_{1k}D_k + (\beta_2 FaEd_i + \beta_3 MaEd_i + \beta_4 Books_i)(1 + \delta_k D_k + \phi_1 B_{1i} + \phi_2 B_{2i}) + \beta_5 B_{1i} + \beta_6 B_{2i} \tag{3}$$

where β_{1i} equals person i's year of birth minus 1950 and β_{2i} equals β_{1i} if β_{1i} is positive and equals 0 for cohorts born before 1950; β_{2i} allows the trend to change after 1950.

The countries are: Ireland, Norway, Sweden, Germany (entered as two nations – East and West – because most respondents were educated before reunification), and France from Northwestern Europe, Spain, Portugal, and Cyprus from Southern Europe, Hungary, the Czech Republic, Slovakia, Slovenia, Poland, Russia, and Latvia from Eastern Europe, and Australia, New Zealand, the United States, Canada, the Philippines, Israel, Japan, Chile, and Brazil from outside Europe. The questions were asked in the same order in each country and the wordings are as close as possible. The interviews are conducted face-to-face in some nations; others use self-completion. Some of the samples are better than others. The rich countries

except France and about half of the others use full probability sampling methods; France and about half of the lower income nations use quotas. In each nation I limited the analysis to persons aged 25 years and over in order to give all cohorts the chance to finish their educations, i.e., the 16-24 years olds in the samples might still be in school so their education reflects their education so far, not their ultimate educational attainment.

Change in Ireland

The dramatic expansion of educational opportunity in Ireland is reflected in the comparison between persons born before and after 1950. Among Irish people born before 1950, 39% stopped at primary education and just 10% earned degrees (most of them born after 1940). Of the more recent cohort, just 6% stopped at the end of primary education, 34% continued beyond secondary, and 17% earned degrees. The change is statistically significant at conventional levels.

Table 1 about here

The question for this research is how much stratification we find in each of those cohorts. In Table 2 I estimate the stratification effects and test the MMI model at the same time by comparing two models of educational attainment. The MMI model, true to the MMI theory, has terms for the expansion of education between cohorts and one for each aspect of family background but constrains the effects of the family background variables so they do not vary across cohorts.[3] The change model allows the effect of family background to differ between cohorts.

Table 2 about here

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[3] The MMI model is a version of equation [3] for one country that has no interaction between family background and cohort (i.e., $\phi_1 = \phi_2 = 0$); the change model frees up these two parameters and allows them to take the value that comes closest to fitting the observed data.

The MMI model fits well, and the change model does not improve on it significantly. The $\phi_1 = \phi_2$ coefficients that measure change in the effects of family background on education are very small and statistically insignificant. In short, MMI continues to describe educational stratification in Ireland.

All three aspects of family background matter for educational achievement. Each parent's education contributes equally to educational success in the next generation. A one-level increase in either parent's education raises the respondent's odds of having more education by 54%. Increasing the number of books at home further increases the odds of continuing on in the educational system by another 54%. Probabilities are easier for most people to grasp than odds. A person who grew up with two parents who had just incomplete secondary educations had just a 56% probability of successfully completing secondary education. Raise one of the parents' educations to complete secondary and the chance rises to 66%;; if both have secondary diplomas, it goes up to 75%.[4] Similarly the probability of continued success in post-secondary education also rises with increased parental education; 39% of the offspring of two secondary-school graduates earned at least some post-secondary education compared with 78% of the offspring of two university graduates. Having books at home further advances educational opportunity no matter how much education the parents have. Of course, parents who are more educated have more books, but having books raises educational achievement, independent of the parents' educations. In the next section we will explore how these background effects for Ireland compare with effects in other nations.

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[4] These precise numbers apply to respondents from the younger cohort who had an average number of books at home; I also set the value of gender to the impossible one-half so as to neutralize the (insignificant) effect of gender.

The Comparative Analysis

Educational opportunity has expanded dramatically world-wide since the 1950s. Nations built schools, colleges, and universities at impressive rates, and in many countries private institutions compete with public ones to provide education. Nonetheless educational attainment varies widely across the ISSP countries. Figure 1 displays some of the variation, smoothed by a model.[5] Nations are arrayed according to their initial levels of education calibrated on an arbitrary scale that ranges from −5 to +5. Brazil is lowest initially and has the lowest national mean. The USA is highest initially and overall. Change across cohorts is positive in every nation; it ranges from a low of two points in several Eastern European nations to five points in Cyprus and Russia. Ireland is among the fastest rising nations, increasing 4.5 points from the 1920s cohort to the most recent one.

Figure 1 about here

In this environment of modest to dramatic increases in educational attainment, MMI predicts that social class barriers to education will fall in some nations. More precisely, stratification will abate in nations where the educational aspirations of elites are met – a point that Raftery and Hout (1993) called "saturation" (also see Whelan and Hannan 1999). Until saturation is reached, though, MMI predicts that the effect of family background on education will persist unchanged. Table 2 already showed that MMI describes educational stratification in Ireland. We turn, in Table 3, to the evidence about the rest of the ISSP nations.

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[5] The model is the full version of equation [3]. I will discuss it in detail when I get to the family background results. The data in Figure 1 refer to the three-way interaction of cohort, gender, and nation.

Table 3 presents the key coefficients from the model in equation [3].[6] They are the baseline effects of father's education, mother's education, and books at home, two terms to capture change across cohorts, and twenty-four terms to capture the cross-national variation in family background effects. As noted above the "rough corollary" of MMI predicts that these differences will be proportional to the prevalence of post-secondary education. Initially I listed the nations in order of ascending post-secondary enrollment – the proportion of each nation's sample that had at least some post-secondary education. That failed to reveal any pattern of interest so I redid the list first ranking the nations with at some form of market economy followed by the formerly socialist nations. Nearly all of the respondents from formerly socialist nations had left school during the socialist period, so I will refer to them as "socialist nations" from now on. Figure 2 displays the same data on the y-axis with post-secondary enrollment on the x-axis. The difference between the market and socialist economies is immediately evident and I will discuss it shortly.

Figure 2 about here

Table 3 about here

The results support MMI in market economies but not in socialist ones. The combined effect of the three family-background variables is, in the nations with market economies, about as strong as MMI predicts. Brazil, West Germany, Portugal, Spain, and Chile have lower post-secondary enrollments than Ireland; all but Chile also have stronger background effects (and the effect in Chile, though less, is not significantly less than in Ireland). Similarly all the nations below Ireland on the list are predicted to have a weaker effect of family background on education, and all but one of them

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[6] The full model fits 105 parameters. Most of them are irrelevant for present purposes, and 56 of them determine the patterns in Figure 1.

does. The exception is the Philippines. It is hard to say whether the effect of family background is too high or the estimate of post-secondary enrollment is too high for that nation; Philippine post-secondary enrollment is high for a country with such low GDP. The English-speaking nations of Canada, USA, New Zealand, and Australia all have slightly lower than expected family background effects, even for nations with very high post-secondary enrollment, but the deviations for these countries are not statistically significant.

There is no discernible link between post-secondary enrollment and the effect of family background for the socialist nations, though. Family background effects are weak in the two former Soviet nations – Russia and Latvia – as expected for nations with high post-secondary enrollment. But background effects are also weak in the former DDR (Eastern Germany), a nation with far lower post-secondary enrollment. The effects of family background are 25% less in Hungary, the Czech Republic, and Slovakia than in Ireland even though only 10% of adults in those nations continued their educations past the secondary level.[7]

The effect of family background on educational attainment decreased across cohorts, faster after 1950 than before. That result is inconsistent with a strong version of MMI. MMI predicts no decrease until saturation. Here we have evidence of decrease that cuts across nations and levels of education. But this finding might reflect the size of most ISSP samples. The project has enough statistical power to discern a small average decline but not enough to produce a reliable classification of nations as places where declines occurred and places where they did not. Nation-by-nation analysis produces many anomalies. If we took the results literally we would conclude that

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[7] It is an interesting sidebar to note that the Czech Republic and Slovakia are statistically identical in this analysis, considering that they were, in fact, just one nation when nearly all the respondents in the ISSP were educated.

stratification declined across cohorts in Norway but not Sweden, in the Czech Republic but not Hungary, Poland, or Slovakia. These variations seem more haphazard than patterned. Yet it also seems unlikely that the cohort trend is universal. Therefore I conclude that there is national variation in the trends but that the ISSP samples are too small to detect it.

There are some universals that could contribute to a weakening of educational stratification across cohorts. Almost every nation became saturated at the primary level, i.e., primary education is universal among middle-class families in cohorts born since 1960 (much earlier in the wealthier nations). Most nations are at or near saturation in secondary enrollment and a few in secondary completion. These universals would contribute to a downward trend.

The trends are weak, though significant. Reducing educational stratification at the rate of 0.5% per single-year cohort up until 1950 and then accelerating to 1.1% per year for subsequent cohorts, these trends, if they were to continue, would wipe out educational stratification by the time the cohort born in 2050 leaves university in seventy years or so. I offer this calculation as illustration of the modest pace of change implied by the results, not as my prediction about the future.

Conclusion

The focus of this volume is Ireland so it is appropriate to ask where Ireland ranks in relation to the educational stratification of other nations. Most students of social inequality in Ireland have concluded that the stratification and inequality of all sorts divide the country more sharply than in other countries (Hout and Hauser 1992; Whelan and Hannan 1995). Here with better comparative data on educational stratification than most previous researchers have had, I find confirmation of that impression. Ireland is among the ISSP nations with the highest associations of educational

achievement across the generations. Rapid educational expansion has accorded most young Irish people the opportunity for substantial upward mobility, but the system preserves the rank order among them to an extent found in few other nations. Nor is there any evidence that class barriers to educational advancement are diminishing.

The "maximally maintained inequality" (MMI) model points to post-secondary enrollments as a key to reducing inequality of educational opportunity in the future – for Ireland and other nations. The huge expansion in Ireland in recent years has not brought the anticipated boost to equality of opportunity, however. That is because Ireland had very low post-secondary enrollment when it turned away from isolation and opened the economy in 1958. At that point even the middle classes had substantial unmet demand for higher education. The subsequent expansion and economic growth have not satisfied that demand either; they have probably fueled more of it, convincing the doubters that their children's futures depend on post-secondary education. Only when middle-class demand for higher education is met can we expect to see a reduction in Irish inequality of educational opportunity because only then will the working class be able to start catching up. When that will be is hard to say because no generation is satisfied with seeing their children merely achieve at their level – in all nations parents' expectations for their children's education tend to exceed their own achievements by at least one level (Breen and Goldthorpe 1999). Today's emphasis on technology and scientific education further fuel those tendencies.

The Irish experience and that of other nations indicates that educational expansion is a necessary but not sufficient condition for reducing class barriers to opportunity. Educational stratification works like a queue. The initial phases of educational expansion – first of some schooling, then of

secondary schooling, and, for the last 50 years post-secondary schooling – benefit the privileged families at the front of the queue. Then the benefits pass down the hierarchy. Most nations still have a great deal of unmet demand for both secondary and post-secondary education. The MMI model – and the results presented here – imply that inequality is here to stay.

It would be a mistake, however, to gainsay the possibilities of change. As Lynch and O'Riordan (1998) argue, highly centralized educational systems like Ireland's can move to counter the power of individual parents. But it has not happened yet in Ireland despite huge investments of public funds in the expansion. Nor has it happened in many Western European nations.

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Table 1. Education by Cohort: Ireland, 2000

Education	Man	Woman	Total
Primary	39%	6%	22%
Incomplete secondary	30%	32%	31%
Secondary diploma	17%	28%	23%
Some post-secondary	5%	17%	11%
Degree	10%	17%	13%
Total	100%	100%	100%
	(401)	(440)	(841)

Table 2. Two Models of Educational Change in Ireland

| Variable	Model	
	MMI	Change
Gender	.101	.093
(Woman = 1; Man = -1)	(.069)	(.070)
Cohort	.057	.093
	(.010)	(.037)
Cohort after 1950	-.018	-.024
	(.016)	(.060)
Woman x Cohort	.000	.001
	(.004)	(.004)
Father's education	.425	.431
	(.082)	(.090)
Mother's education	.432	.442
	(.089)	(.097)
Books at home	.373	.372
	(.043)	(.052)
Family background x Cohort		-.008
		(.008)
Family background x Cohort after 1950		.002
		(.012)
_cut (secondary)	2.782	2.833
	(.282)	(.476)
_cut (diploma)	4.883	4.970
	(.311)	(.501)
_cut (post-secondary)	6.400	6.470
	(.344)	(.522)
_cut (degree)	7.413	7.466
	(.366)	(.535)
Number of cases	841	841
Log-likelihood	-1,044.99	-1,042.88
Pseudo-R-square	.197	.198

Note: Coefficients represent change in overall educational attainment per unit increase in each independent variable per OLR model. Standard errors in parentheses.

Table 3. Effects of Family Background Variables on Educational Attainment by Nation

| Variable	Coefficient	Robust s.e.
Baseline		
Father's education	.370	.023
Mother's education	.326	.022
Books at home	.485	.028
Change across cohorts		
Cohort	-.005	.002
Cohort after 1950	-.006	.002
Differences among nations		
Brazil	.399	.098
West Germany	.048	.100
Portugal	.246	.078
Chile	-.026	.065
Spain	.247	.074
Ireland	.000	---
Sweden	-.205	.068
Philippines	.029	.073
New Zealand	-.423	.064
Cyprus	-.092	.070
Australia	-.346	.070
Japan	-.349	.064
France	-.177	.067
Canada	-.386	.072
Norway	-.158	.069
Israel	-.170	.067
USA	-.442	.062
Czech Republic	-.228	.064
Hungary	-.272	.066
East Germany	-.463	.094
Slovakia	-.308	.070
Poland	-.152	.072
Slovenia	.001	.075
Latvia	-.532	.067
Russia	-.374	.068
Number of cases	25,896	
Log-likelihood	-31,697.53	
Pseudo R-square	.214	
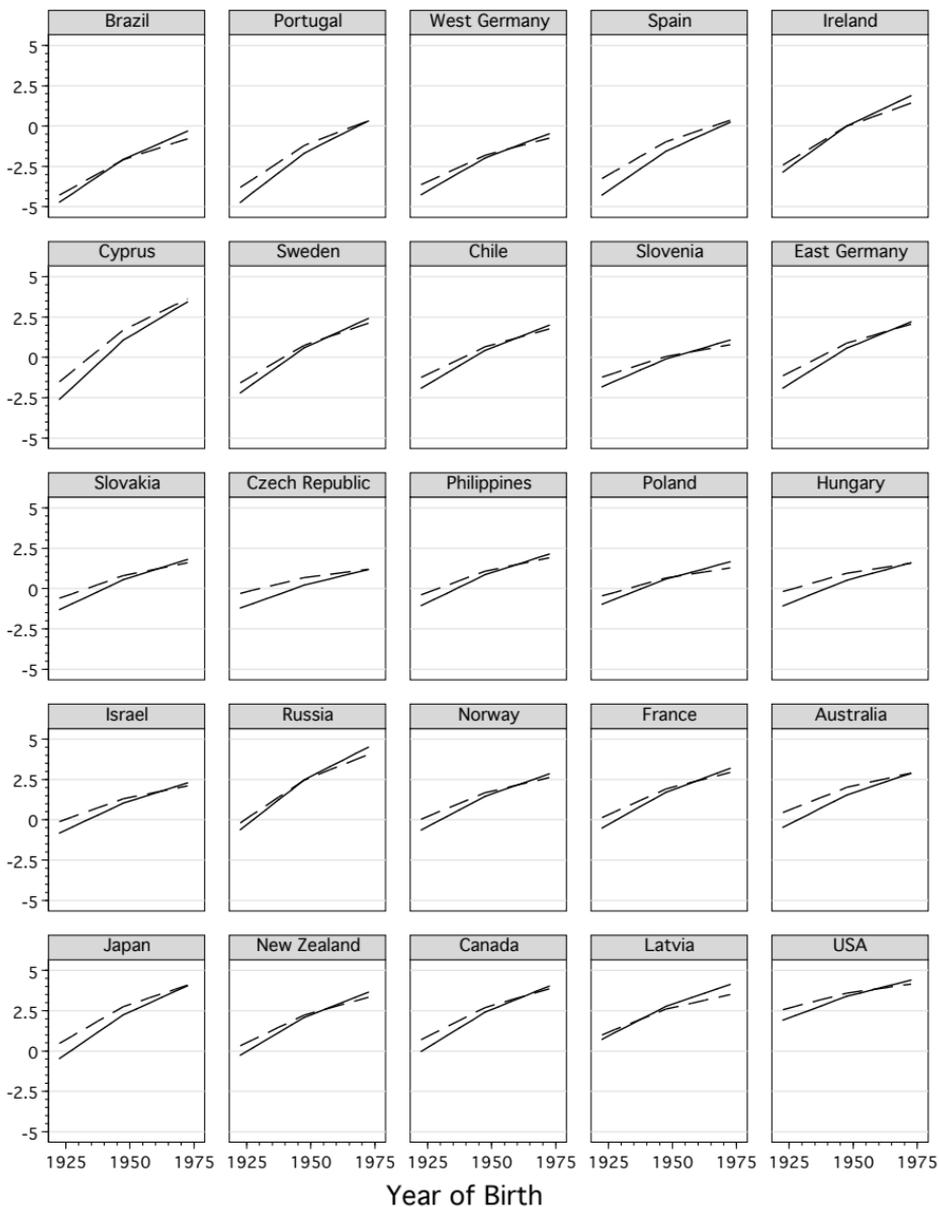
Graphs by Nation
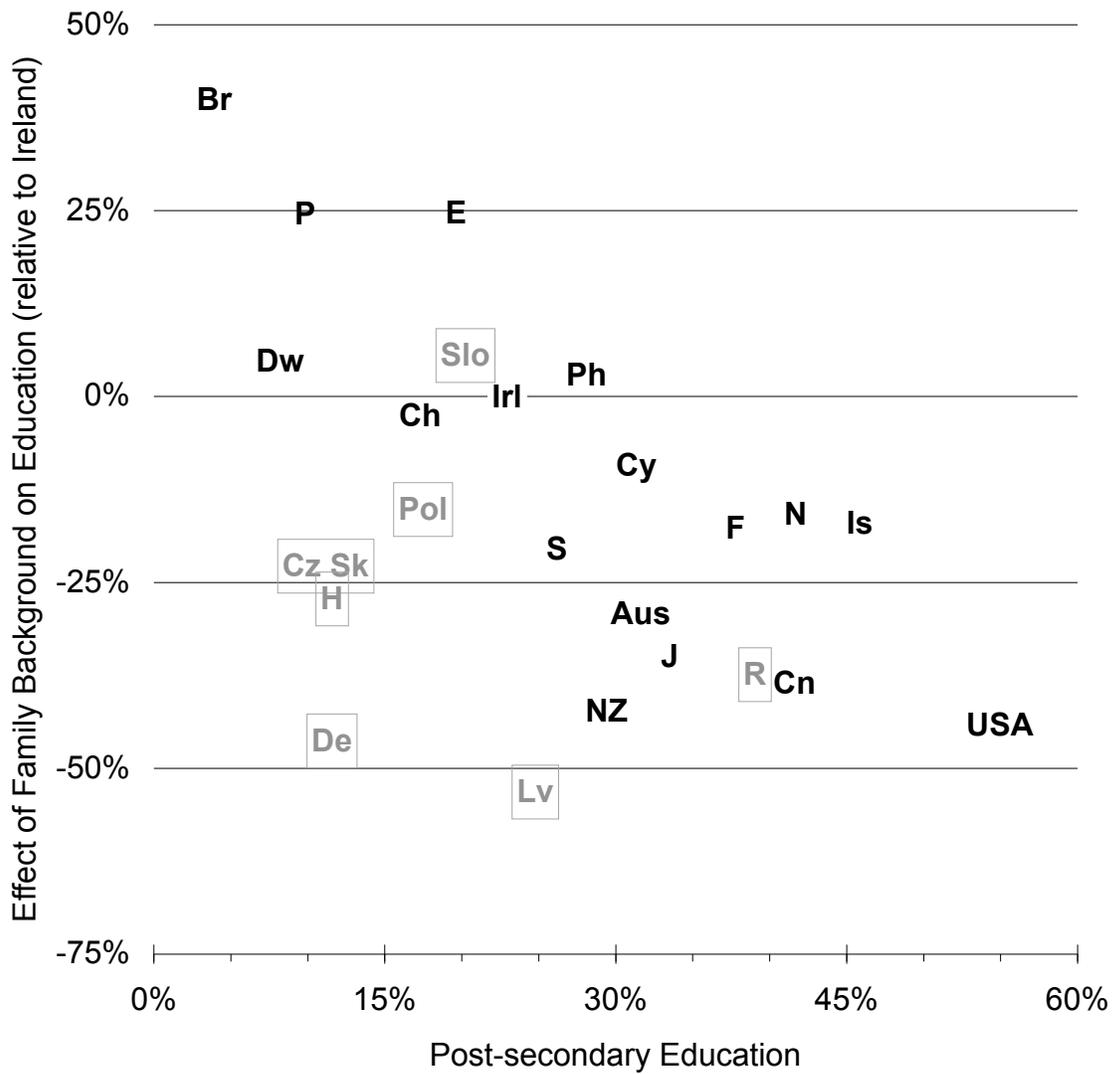
Figure 2. Family Background Effect (compared to Ireland) by Percentage Attaining Post-secondary Education

Key: Aus=Australia, Br=Brazil, Ch=Chile, Cn=Canada, Cy=Cyprus, Cz=Czech Republic, De=East Germany, Dw=West Germany, E=Spain, F=France, H=Hungary, Irl=Ireland, Is=Israel, J=Japan, Lv=Latvia, N=Norway, NZ=New Zealand, P=Portugal, Ph=Philippines, PL=Poland, R=Russia, S=Sweden, Slo=Slovenia, Sk=Slovakia, US=United States.