Social Background, Credential Inflation and Educational Strategies

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abstract: The primary goal of this article is to examine the impact of credential inflation on educational attainment in twentieth-century United States. To do so, we create a measure of 'intergenerational credential inflation' (intergeneration inflation factor) and include it in regression models predicting educational transitions. Using the General Social Surveys of 1972–2000, we find that people are generally less likely to invest in schooling if its value is relatively low. An exception is the final transition to a postgraduate degree, where we find that when its value is low children of parents with postgraduate education are more likely to take it. This finding supports relative risk aversion theory, which assumes that the main goal of children is to avoid downward social class mobility. Perhaps most important, we find that credential inflation is particularly influential on transition probabilities if parents had made the same transition. This pattern is consistent with the information differential thesis that children are more informed about the value of education if their parents acquired it.

keywords: credential inflation ◆ educational inequality ◆ relative risk aversion ◆ social change ◆ social class ◆ social stratification ◆ transition models ◆ United States

Introduction

It is well known that educational attainment is largely affected by social background, particularly the social class and education of parents (Jencks et al., 1972: Sewell et al., 1976; Halsey et al., 1980). A large body of research also indicates that specific educational transitions can be differentiated by social background (Mare, 1980, 1981a; Shavit and Blossfeld, 1993). Less is known about the effects of macro-level conditions – such as credential inflation – on educational attainment generally and on separate educational transitions. There has been research examining the extent to which people are over-educated for the labour market (Clogg and Shockey, 1984; Boylan, 1993; Van der Ploeg, 1994; Groot and Maassen van den Brink, 2000; Wolbers et al., 2001), but these studies have not incorporated educational inequality. More importantly, the interaction between macro-level conditions and social background in constraining educational decisions has received no attention.

This lack of empirical research on the effects of macro-conditions on educational choices

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reflects that sociological theories regarding these issues are underdeveloped. Simply arguing that children of higher social classes achieve higher grades and levels of education provides only part of the story. For a more nuanced understanding of educational attainment, we need to construct and test theories about why children of different social origins might strive for particular educational levels, and whether different macro-conditions have different effects on the likelihood of making educational transitions for children from different social backgrounds.

Since the sociological study of educational inequality is motivated by the inequality of opportunities *caused* by education, it is important to consider the labour market value of credentials. This article accomplishes this by exploring the relationship between credential inflation, parental education and educational decisions. We have three goals: (1) to formulate a measure of credential inflation; (2) to assess the impact of credential inflation on educational transitions; and (3) to determine whether this impact differs according to the educational career of parents. Using General Social Survey (GSS) data from the United States collected across many cohorts characterized by varying levels of education rewards, we gain insight into the social inequalities of educational attainment net of credential inflation and educational expansion.

Credential inflation and educational strategies

A good starting point for understanding the strategies of children when deciding to pursue further education is the theory of 'relative risk aversion' first proposed by Boudon (1974), and later elaborated on by Breen and Goldthorpe (1997; Goldthorpe, 1996a; Breen, 2001). This theory argues that the decision to end formal education is based largely on a desire to avoid downward social class mobility. In fact, this desire is posited as the 'primary goal' of individuals when determining educational strategies. Simply put, children typically desire to achieve at least enough education to gain access to the social class of their parents.

Relative risk aversion sheds light on why, relative to working-class children, children of more advanced social classes are more ambitious and achieve higher levels of education (Keller and Zavalloni, 1964; Boudon, 1974; Gambetta, 1987; Goldthorpe, 1996a; Need and De Jong, 2001; Davies et al., 2002). At a relatively early point in their educational career, most working-class children have already met the goal of avoiding downward mobility. Middle-class children generally need to acquire much higher levels of education to achieve their parents' social class. Moreover, working-class children have fewer resources to finance education or to overcome potential earnings forgone during their years in school.

All else being equal, children should need only as much education as their parents to enter the same social class as their parents. If the values of education credentials are not constant over time, however, this simple relationship will not hold. If certain education credentials increase in value from one generation to the next, children will typically need less education than their parents did. Conversely, if the value of an education decreases, children are likely to need more education than their parents to achieve the same social class.[1]

A significant body of research indicates that education credentials have devalued during the twentieth century. This devaluation was largely caused by 'over-schooling', i.e. a vast expansion in educational attainment that was not equalled by an upgrading of the labour market (Burris, 1983; Clogg and Shockey, 1984; Brown, 1995; Groot and Maassen van den Brink, 2000). This process has implications for individual strategies of educational investment, especially if one prescribes to labour queue theory, which sees education as a relative good for which employers compete for employees with the highest credentials in order to reduce the costs of job training (Thurow, 1976; Hirsch, 1977). In an over-qualified labour market, employers will fill the 'highest' jobs with those who have the 'highest' qualifications. Since

over-schooling means that there are too many workers who are highly educated, some of these workers are necessarily allocated to 'mid-level' jobs. This process is repeated for those with mid-level qualifications, where, since there are not enough mid-level jobs, many are forced to compete for low-level jobs. It follows logically that this pattern has its most serious effects on the labour market opportunities of those with lower levels of education, thus widening the gap between educational levels in their occupational returns (Boylan, 1993; Van der Ploeg, 1994; Wolbers et al., 2001). If people wish to avoid downward mobility – as is implied by the mechanism of relative risk aversion – they need to achieve a higher level of education if its value decreases.[2]

Including the labour market value of credentials in the study of educational inequality provides further insight into educational stratification than has been known previously. Conventional theories can be used to explain the general pattern that children with highly educated parents attain higher educational levels than children of lower social backgrounds (see, for example, Jencks et al., 1972; Bourdieu and Passeron, 1990; Blossfeld and Shavit, 1993). On the other hand, only by incorporating the value of education can we specifically assess relative risk aversion theory. If relative risk aversion holds, we should see indirect evidence of it in the impact that credential inflation has on children's educational choices.

The considerations people make when investing in education may differ as they progress through educational transitions. In particular, the decision to acquire postgraduate training may be based on completely different considerations than transitions at other levels. As we shall show later, the additional value of postgraduate training past a college degree is generally limited, at least in terms of social class returns. Moreover, the costs of failure are high, since it is seen as a bad 'signal' to potential employers (Spence, 1973), in effect limiting initial and future job prospects. Studying at the postgraduate level also usually implies postponement of family transitions like marriage and having children (Marini, 1984; Blossfeld and Huinink, 1991). In the event of an unsuccessful completion of a graduate programme after years of study, this postponement would not be compensated by higher labour market returns (Becker, 1981). Given that the absolute gains are limited, investment in postgraduate studies is perhaps best seen, at least in economic terms, as reflecting a desire to secure one's relative position to their parents than investment in other educational levels reflects. In other words, the combined processes of credential inflation and relative risk aversion leading to a negative impact of the intergenerational value of education on making the transition to postgraduate education should be most evident at this transition.[3]

Although some authors are sceptical that children have much information on the value of schooling, and whether they use this information in educational decision-making (Manski and Wise, 1983; Manski, 1993), it is possible that there is an information differential based on parental education. The influence of credential inflation on educational decisions might differ, then, according to the education level of parents, with highly educated parents being better able to transmit accurate information about the value of education on the labour market (Collins, 1979; Manski and Wise, 1983; Gambetta, 1987; Erikson and Jonsson, 1996). More specifically, a parent who made the transition that their child is facing should be able to give more reliable information about the value of that education than parents who did not make the transition. In other words, the effects of credential inflation on educational decisions should be strongest for children whose parents made the transition that they are facing because they are more likely to have knowledge about the value of that education.

There is also good reason to believe that the interaction between the value of education and whether a parent made specific transitions will differ across transitions. At early transitions when a large majority remain in school, nearly all children will be provided with information about the value of acquiring that education. This might be particularly evident at the transition to complete high school, especially in recent decades, since most people understand that

it is difficult to find good employment without a high school diploma. On the other hand, when few people make a transition, and when the labour market rewards of that transition are relatively high, there may be an information differential between parents who made the transition and those who did not. In such cases the parents who made the transition have an advantage in determining the value of an education and thus are able to convey that message to their children. This should be the case especially for the transition to a college degree, where a considerable number of people end schooling beforehand, despite the greater returns than the other transitions (Pascarella and Terenzini, 1991; McCall, 2000; also see below).

The information differential we address has to do only with knowledge of the value of education. There are, of course, other types of information differentials not addressed here. For example, information concerning the difficulty of making a transition and the importance of intelligence and effort for success are also potentially important factors (Erikson and Jonsson, 1996; Breen, 1999). Breen (1999) argues that children of higher social origins (e.g. children of parents who made a transition) subscribe to the belief that effort is crucial, and may underestimate the relevance of intelligence. On the other hand, children of lower social origins (e.g. children of parents who did not make the transition) overestimate the relevance of intelligence and underestimate the relevance of effort. Thus, parents who made a transition can inform their children on the importance of effort in making a transition, while other parents may not be able to provide this information, thus discouraging their children from pursuing further education. Similarly, according to reproduction theories, information could be seen as a resource (cf. Teachman, 1987). Although important in explaining the general association between parent and children educational careers, these information differentials do not directly relate to our hypothesis on the information differential regarding the value of schooling.

Data and methods

Data

Data are taken from the pooled General Social Surveys (GSS) of 1972–2000 for two separate but related analyses. In the first analysis, we develop a measure that we term the Intergenerational Inflation Factor (IIF) to estimate the value of education. This analysis assesses the impact of education on social class for men born between 1900 and 1970 (ten 7-year birth cohorts; n = 14,204). We use only men for this analysis since, particularly for earlier cohorts, the investment in education was more strongly associated with labour market returns for men than for women.

In the second analysis, we incorporate the IIF into educational transition models. These models use information about both men and women aged 26 or over at the time of the survey. Since we are interested in the value of education for each generation compared to that of the parents' generation, this analysis is necessarily restricted to seven 7-year birth cohorts born between 1922 and 1970, giving an analytical sample size of 17,058 after missing cases were omitted.

Background variables

Education is coded into five categories: (1) primary education; (2) completed high school; (3) some post-secondary training; (4) completed four-year college; (5) and postgraduate training. This classification is used both for child's education and parents' education (we use the education level of the parent with the highest level).

Following from relative risk aversion theory, we focus on social class as our occupational outcome variable (Breen and Goldthorpe, 1997; Goldthorpe, 2000). An alternative outcome of significant interest is income. Unfortunately, however, income data are not available for all

years of the GSS. Nonetheless, as we shall show later, the relationship between education and social class, i.e. a negative trend in the effect of education over time, is similar to the relationship between education and earnings (e.g. Freeman, 1976; Hartog, 2000) and other occupational outcomes (e.g. Clogg and Shockey, 1984; Wolbers et al., 2001).[4] We would expect, then, that our findings regarding the impact of credential inflation on educational decisions would be similar regardless of the occupational outcome used.

Social class is measured using an adaptation of the CASMIN classification widely used in international social mobility research (e.g. Ganzeboom et al., 1989; Erikson and Goldthorpe, 1992; Ishida et al., 1995). We excluded farmers and the 'petty bourgeoisie' (self-employed with no or few employees) from the analysis so that the class variable can be ordered hierarchically.[5] For the same reason, we collapsed skilled manual workers, supervisors, technicians and routine non-manual workers into a single class. This results in four classes that are hierarchically ordered: (1) unskilled manual working class, (2) skilled manual, supervisors and routine non-manual workers, (3) lower managers and professionals, and (4) higher managers and professionals. Social class is used both for fathers in the educational transitions models and for respondents in measuring credential inflation.

Other demographic variables were included as controls in our models. These include race (non-white versus white), region (southern states versus other) and gender. Descriptive statistics for the background variables can be seen in Table 1.

Macro-level variables

Per cent at risk

In order to control for the effect of educational expansion, we include a measure of the percentage of students facing each transition in every cohort. The percentage at risk is 100 for people facing the first transition for every cohort, and drops for every subsequent transition, with a

Table 1 *Descriptive statistics for demographic variables*

	Proportion
Female	0.550
Non-white	0.141
Southern states	0.290
Highest education of parents	
Primary school	0.212
High school	0.475
Some post-secondary	0.115
Completed college	0.122
Postgraduate degree	0.076
Father's class	
Unskilled manual	0.319
Skilled manual/routine non-manual	0.387
Lower managers and professionals	0.058
Higher managers and professionals	0.244
Educational transitions completed (unconditional on previous transitions)	
Transition 1 (high school)	0.958
Transition 2 (some post-secondary)	0.522
Transition 3 (college degree)	0.321
Transition 4 (post-graduate degree)	0.129
No. of cases	17,058

varying rate across cohorts (see also Rijken, 1999; Sieben, 2001). If we estimated separate models for each cohort, the logit model without this variable would be appropriate to study educational inequality net of educational expansion (cf. Mare, 1981a). This variable is necessarily included, however, because we pool data from many cohorts in a single analysis.[6]

Intergenerational inflation factor

Previous measures of over-education have been developed (Eckhaus, 1964; Scoville, 1966; Clogg and Shockney, 1984), but they are not suitable for our analysis. Eckhaus (1964) and Scoville (1966) assess over-education according to whether people are above or below the mean level of education needed for an occupation. Clogg and Shockey (1984) classify people as over-educated if their education level is at least one standard deviation higher than the average in their occupation. These measures are only useful to show trends in over-education and not to accurately show the level of over-education.[7] It is therefore necessary to construct a new measure to assess the value of education.

We start by determining the value of education using four cumulative logit (proportional odds) models – one for each transition – with social class as the dependent variable (treated as a four-class ordered-category variable) and education level as the main explanatory variable.[8] These models take the following form:

$$\log\left(\frac{\pi_1 + \ldots + \pi_d}{\pi_{d+1} + \ldots + \pi_D}\right) = \alpha_j + \beta_1 EDUC + \beta_2 AGE + \sum_{K-1} \lambda_k COH + \sum_{K-1} \delta_k COH \times EDUC + \beta_3 RACE + \beta_4 REGION \quad (1)$$

where the π_1 to π_d are the probabilities of achieving a particular social class d compared to all social classes below it (with a total of $D = 4$ categories representing the four social classes, with category 1 being the 'highest' class and category 4 the 'lowest'); EDUC is a binary classification of educational level with different boundaries for the four separate models; and AGE is measured in years. In total, there are K birth cohorts COH, of which $K–1$ are included as dummy variables in the model. The resulting main effect of education level β_1 is an estimate of the value of education for the reference cohort. For cohort k the value of education can be computed by adding the δ term for the interaction of cohort k with education to the main effect of education β_1. The resulting terms, which we call ω_k, represent the cohort-specific education effects.[9]

The cohort-specific education effects, ω_k, are used to construct the IIF for each cohort and for each educational transition separately. The IIF is meant to approximate the ratio of the value of education achieved by respondents to the value of that education for the parents' generation. The formula for the IIF of the transition from $j–1$ to j for cohort k is as follows:

$$IIF_{jk} = \frac{\omega_{k-1_j}}{\left(\frac{\omega_{k-3_j} + \omega_{k-4_j}}{2}\right)} \quad (2)$$

Since individuals can only make informed educational choices on the basis of seen returns to education, they must look to the success of individuals going through the schooling system some years before them. Reflecting this mechanism, we use ω_{k-1}, (i.e. the estimate of the previous cohort) rather than ω_k, as the value of education for each respondent. In other words, the numerator of this equation represents children's 'perceived' value of education. The denominator of the equation represents the value of that same education a generation before.

Since we do not know the birth year of the parents, we use the average of two cohorts born roughly 21–28 years before the respondent. If IIF is lower than 1, this particular transition has lost in value compared to the parents' generation. If IIF is larger than 1, the transition has gained in value.

Transition models

Following from Mare (1980, 1981a) our main analysis employs educational transition models (see also Shavit and Blossfeld, 1993). We examine four educational transitions: (1) having at least high school, (2) having obtained at least some post-secondary training given completed high school, (3) having completed college given some post-secondary training, and (4) having entered postgraduate training given completed college.

We report a pooled analysis where all educational transitions are included in a single model. Each individual is represented in the data as many times as he or she faced a transition. In total, we study 47,774 transitions for 17,058 individuals.[10]

Our basic transition model takes the following form:

$$\log\left(\frac{p_j}{1-p_j}\right) = \alpha_j + \sum_{Z} \beta_z X_z + \sum_{E-1} \beta_e PEDUC + \sum_{C-1} \beta_c FCLASS + \lambda\, IIF_{jk} \qquad (3)$$

where p_j is the probability of making the transitions from education level *j–1* to education level *j*; a_j refers to the overall probability of making transition *j* if all other variables equal zero; *X* is a vector of demographic variables that are unrelated to parental background (gender, per cent at risk, ethnicity, region); *PEDUC* is a set of *E–1* dummy regressors representing parental education; *FCLASS* is a set of dummy regressors representing father's social class. Finally, IIF_{jk} is the intergenerational inflation factor for transition *j* and cohort *k*, and λ describes how IIF_{jk} affects the probability of making a transition. This baseline model is extended with two-way and three-way interactions between IIF_{jk}, transition, and whether parents made the transition.

Results

Educational expansion and credential inflation in the United States

Table 2 displays cross-classifications of education level by social class destination for ten 7-year cohorts from 1900 to 1970. Not surprisingly given the findings of others, educational expansion is evident (cf. Dresch, 1975; Hauser and Featherman, 1976; Smith, 1986). Of the earliest cohort, 20.6 per cent acquired at least some post-secondary training. This percentage increased to 58.2 for men born in the mid-1940s and decreased somewhat for later cohorts, possibly reflecting the truncation of unfinished school careers. It is also clear that educational expansion has affected occupations in all social classes (cf. Clogg and Shockey, 1984). For example, service class occupations have been increasingly filled with university graduates – of the cohort born in the period 1900 to 1907, only slightly more than 40 per cent had university degrees; of those born between 1964 and 1970, more than 70 per cent had university degrees. Perhaps most striking is the growing number of unskilled workers with university degrees. Of the early cohort, less than 1 per cent of unskilled workers had a university degree, but more than 10 per cent of the last cohort had university degrees.

We can better see the social class returns to education in Figure 1, which displays the log odds ratios from the four cumulative logit models for ten 7-year birth cohorts (see Equation 1). This figure provides evidence that the value of each education level has declined significantly over time. An exception is that high school education increased in value from the 1920s to the 1940s birth cohorts, after which time it declined rapidly. The steep rise in the value of a high

Table 2 *Intercohort change in distribution and allocation of education and social class (column percentages within cohorts)*

Educational level	Unskilled manual	Skilled manual, routine, non-manual	Lower managers and professionals	Higher managers and professionals	Total
Cohort 1 1900–07 (n = 484)					
Primary	68.9	45.4	16.7	16.8	45.2
High school (completed)	29.3	42.1	29.2	29.2	34.1
Some post-secondary	1.2	8.7	8.3	13.3	7.2
Completed college (4 years)	.6	2.2	20.8	20.4	6.8
Postgraduate		1.6	25.0	20.4	6.6
Total	100.0	100.0	100.0	100.0	100.0
Cohort 2 1908–14 (n = 754)					
Primary	56.0	34.6	10.9	11.6	34.5
High school (completed)	38.5	50.5	34.5	26.8	40.5
Some post-secondary	3.8	11.0	21.8	16.5	10.7
Completed college (4 years)	1.3	3.0	20.0	24.4	8.4
Postgraduate	.4	1.0	12.7	20.7	6.0
Total	100.0	100.0	100.0	100.0	100.0
Cohort 3 1915–21 (n = 1131)					
Primary	44.6	22.5	2.5	7.5	23.3
High school (completed)	49.7	56.8	32.9	29.4	46.9
Some post-secondary	4.8	12.0	17.7	14.0	11.0
Completed college (4 years)	1.0	7.1	24.1	24.5	10.8
Postgraduate		1.6	22.8	24.5	8.0
Total	100.0	100.0	100.0	100.0	100.0
Cohort 4 1922–28 (n = 1356)					
Primary	36.4	19.1	3.8	7.1	19.5
High school (completed)	53.6	55.1	31.1	22.9	44.8
Some post-secondary	7.2	14.8	17.0	15.8	13.2
Completed college (4 years)	1.9	9.2	18.9	26.5	12.3
Postgraduate	.8	1.8	29.2	27.7	10.1
Total	100.0	100.0	100.0	100.0	100.0
Cohort 5 1929–35 (n = 1284)					
Primary	33.3	13.4	3.1	3.3	14.3
High school (completed)	56.1	57.3	21.9	25.4	44.4
Some post-secondary	7.7	15.9	18.8	14.8	13.9
Completed college (4 years)	2.9	11.3	26.6	24.6	14.6
Postgraduate		2.1	29.7	32.0	12.9
Total	100.0	100.0	100.0	100.0	100.0
Cohort 6 1936–42 (n = 1494)					
Primary	21.6	7.1	.6	1.8	8.1
High school (completed)	67.1	54.7	17.8	19.3	42.7
Some post-secondary	7.0	23.7	19.0	14.8	16.7
Completed college (4 years)	3.2	10.0	31.0	29.9	16.8
Postgraduate	1.2	4.5	31.6	34.2	15.7
Total	100.0	100.0	100.0	100.0	100.0
Cohort 7 1943–49 (n = 2227)					
Primary	12.4	4.4	.7	.9	4.6
High school (completed)	64.4	47.8	12.5	15.0	37.1
Some post-secondary	15.1	25.5	19.8	13.6	19.2
Completed college (4 years)	6.6	17.0	34.0	33.1	21.7
Postgraduate	1.5	5.2	33.0	37.3	17.3
Total	100.0	100.0	100.0	100.0	100.0

continued

Table 2 *Continued*

Educational level	Unskilled manual	Skilled manual, routine, non-manual	Lower managers and professionals	Higher managers and professionals	Total
Cohort 8 1950–56 (n = 2371)					
Primary	5.4	2.0	.3	.2	2.3
High school (completed)	65.9	48.7	14.0	15.3	41.2
Some post-secondary	18.8	27.3	22.0	17.2	22.2
Completed college (4 years)	8.2	17.9	36.0	32.1	20.9
Postgraduate	1.6	4.2	27.7	35.2	13.4
Total	100.0	100.0	100.0	100.0	100.0
Cohort 9 1957–63 (n = 1918)					
Primary	3.2	1.5	.8	.2	1.6
High school (completed)	73.4	54.6	19.1	16.6	46.2
Some post-secondary	17.5	25.3	22.4	14.8	20.7
Completed college (4 years)	4.5	15.1	38.2	35.1	19.9
Postgraduate	1.3	3.4	19.5	33.3	11.6
Total	100.0	100.0	100.0	100.0	100.0
Cohort 10 1964–70 (n = 1185)					
Primary	2.5	1.3	.8		1.4
High school (completed)	66.2	44.6	17.4	12.6	42.5
Some post-secondary	20.6	33.2	20.5	20.2	26.3
Completed college (4 years)	9.8	16.1	44.7	39.3	21.2
Postgraduate	.9	4.8	16.7	27.9	8.6
Total	100.0	100.0	100.0	100.0	100.0

Source: General Social Surveys, 1972–2000 (men only).

school diploma can plausibly be explained by increased demands for qualifications due to the increased complexity of work in the shift from industrial to post-industrial society. The widening gap between the lines is most evident for the period after the 1940s birth cohorts, the cohorts that experienced most rapid educational expansion. Finally, the returns of a post-graduate education are almost indistinguishable from the returns of a first college degree throughout the period under study. On average, then, completing graduate school is no more likely to improve one's social class position than ending formal education after obtaining a college degree.

Figure 2 displays the intergenerational inflation factor of the four educational transitions. The reference line on the graph at IIF=1 represents where the value of the respondents' education is equal to what it was in the previous generation. For the most part, educational qualifications have gradually devalued from one generation to the next (IIF <1) but there are some exceptions. For example, high school education increased in value from the 1930s birth cohorts until the early 1950s birth cohorts (IIF >1), reaching a high for the mid-1940s cohorts. Having at least some college for the 1940s cohorts was also worth slightly more than it was for the previous generation. Moreover, for the last two cohorts the value of obtaining at least a college degree increased, perhaps reflecting that educational expansion has been less dramatic for younger cohorts because of incomplete careers (Hauser and Featherman, 1976; see also Table 2). We shall use this IIF measure in the transition models that follow.

Effects of IIF on educational transitions

We now turn to the transition models seen in Table 3. These models assess the impact of social background and credential inflation on moving from one education level to the next highest

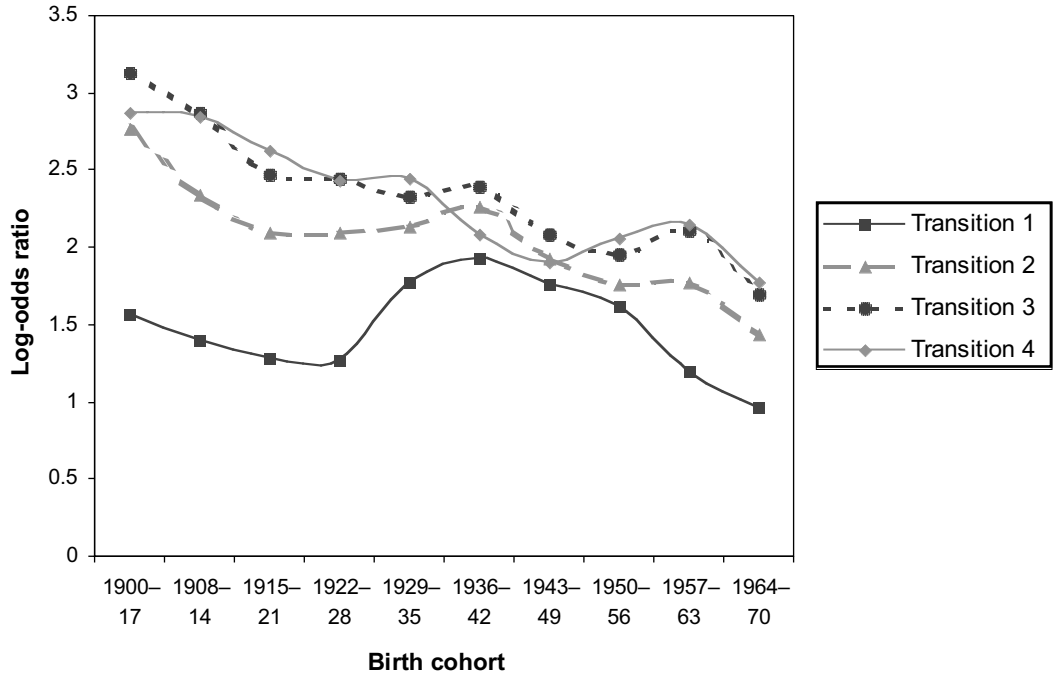

Figure 1 *Trends in the social class returns according to credentials.* (*Note*: Estimates are based on four separate cumulative logit models with social class regressed on four distinct binary classifications of education. Models are controlled for age, race and region. Men only. *Transition 1*: High school, *Transition 2*: Some post-secondary education, *Transition 3*: College degree, *Transition 4*: Some postgraduate training (smoothed lines).)

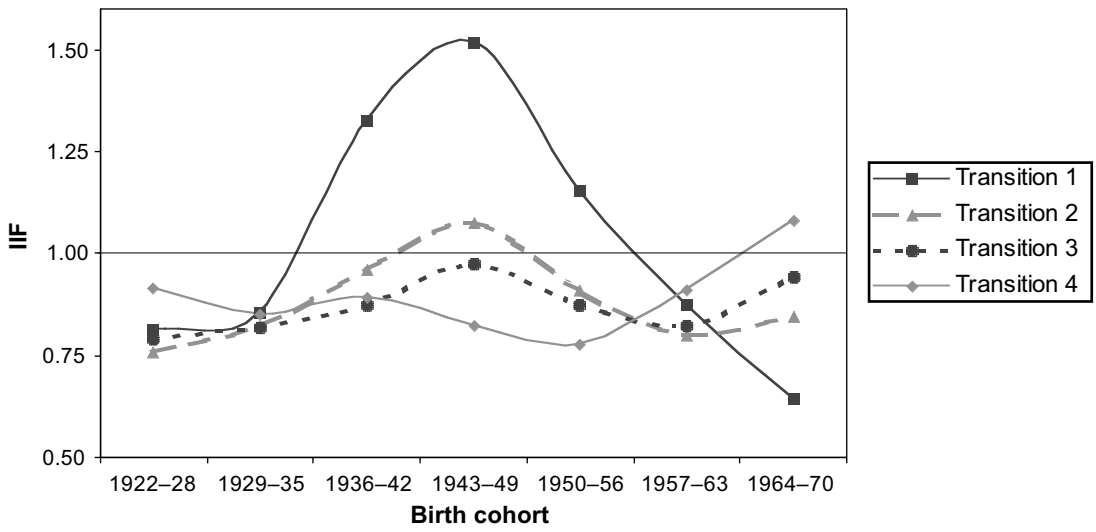

Figure 2 *Trends in the intergenerational inflation factor (IIF) for each educational transition.* (*Note*: *Transition 1*: High school, *Transition 2*: Some post-secondary education, *Transition 3*: College degree, *Transition 4*: Some postgraduate training (smoothed lines).)

Table 3 *Impact of social background and credential inflation on conditional transition probabilities (pooled transitions, logit models)*

	1		2		3	
Model	b	se	b	se	b	se
Constant	1.327***	0.235	1.387***	0.296	1.400***	0.297
Transition 1 (reference)	–	–	–	–	–	–
Transition 2 (T2)	–3.092***	0.048	–3.323***	0.224	–3.521***	0.235
Transition 3 (T3)	–2.923***	0.121	–1.942***	0.456	–1.807***	0.495
Transition 4 (T4)	–4.075***	0.108	–1.876***	0.351	–2.450***	0.394
Female	–0.313***	0.024	–0.303***	0.024	–0.303***	0.024
Percentage at risk	0.003	0.002	0.004	0.003	0.003	0.003
Non-white	0.034	0.036	0.033	0.036	0.033	0.036
South	–0.233***	0.027	–0.219***	0.027	–0.219***	0.027
Parents' education						
Primary (reference)	–	–	–	–	–	–
Completed high school	0.744***	0.036	0.463***	0.038	0.450***	0.038
Some post-secondary	1.219***	0.047	0.381***	0.057	0.364***	0.057
Completed college (4 years)	1.516***	0.048	0.639***	0.066	0.614***	0.066
Postgraduate level	2.015***	0.058	1.364***	0.092	1.336***	0.093
Father's class						
Unskilled manual (reference)	–	–	–	–	–	–
Skilled, routine non-manual	0.461***	0.031	0.436***	0.031	0.436***	0.031
Lower managers and professionals	0.688***	0.055	0.674***	0.056	0.675***	0.056
Higher managers and professionals	0.812***	0.037	0.789***	0.037	0.789***	0.037
Intergenerational Inflation Factor IIF	0.655***	0.098	0.158	0.141	0.145	0.141
IIF × T2			0.744***	0.218	0.991***	0.234
IIF × T3			–0.216	0.429	–0.345	0.481
IIF × T4			–1.366***	0.385	–0.667	0.440
IIF × Parents made transition			1.368***	0.083	1.443***	0.087
Parents made transition × T2			–0.017	0.090	0.987**	0.362
Parents made transition × T3			–0.922***	0.100	–1.502	0.768
Parents made transition × T4			–1.553***	0.124	0.621	0.697
IIF × Parents made transition × T2					–1.179**	0.405
IIF × Parents made transition × T3					0.598	0.873
IIF × Parents made transition × T4					–2.548**	0.792
–2LL	43386.28		42603.15		42584.03	
d.f.	16		23		26	
Nagelkerke's pseudo-R^2	0.397		0.413		0.414	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed).
Source: General Social Surveys 1972–2000, n = 47,774 (individuals × transitions faced).

level.[11] Model 1 is a baseline model containing only main effects. Nonetheless, there are a number of noteworthy observations. Parents' education and social class have the expected effect: children of more advantaged backgrounds have a higher probability of making a transition than other children. Also as expected, women have a lower chance of making an educational transition than men, and people from the southern states are disadvantaged independently of the composition of parental characteristics. Perhaps less intuitive, educational expansion (per cent at risk) has no effect on the probability of making a transition when the educational and occupational characteristics of parents are taken into account.[12]

More directly related to the main focus of this article, the intergenerational credential inflation has a positive effect on transition probabilities, implying that if education is worth less than for the parents' generation, people are less likely to acquire it. This finding contradicts the notion derived from the theory of relative risk aversion (Breen and Goldthorpe, 1997; Goldthorpe,

1996a, 2000; Breen, 2001) that education is a relative good necessary for the avoidance of downward mobility. From this model it seems that the 'job queue' is not the main mechanism explaining investments in education. As we shall see later, however, including interactions between IIF, parents' education and the individual transitions gives a different picture.

Model 2 includes three 2-way interactions.[13] First, interactions between IIF and transition number are included to test the impact of IIF across transitions. Second, an interaction between IIF and whether a parent made the same transition is included to test the information differential hypothesis that the labour market value of a particular level of education is more important to respondents if their parents completed this education. Third, interactions between transitions and whether parents made a transition are included.

We find some interesting results with respect to the differential impact of IIF across transitions. There is now a positive impact of the relative value of education only for the second transition. Thus, only for entering tertiary education do we find that if education is worth less than it was in the previous generation is it less attractive to invest in. Nonetheless, confirming our earlier speculations, this finding does not hold for the postgraduate transition where we find no significant effect of the IIF. More importantly, the relative value of education has a negative impact on the probability of making the transition to postgraduate education. Recall Figure 1, where we saw that the improvement in social class position from continuing past a college degree to a postgraduate education is generally limited. It seems sensible to suggest, then, that people are most likely to undertake postgraduate studies if it decreases their chances of downward mobility. If, however, such a high-risk trajectory is unnecessary to avoid downward mobility, people will finish their formal education beforehand. In other words, we have found some support for the theory of relative risk aversion with respect to the final transition to postgraduate education.

As expected from the information differential thesis, there is a strong positive interaction between the intergenerational value of education and whether parents made specific transitions. Respondents seem more likely to consider the value of an education when deciding to acquire it if their parents acquired the same level of education. This finding is especially interesting considering that we control for social class, meaning that this relationship is more likely related to an information differential due to parental experience with the education system than to other class-related resources (e.g. financial resources).

The findings regarding the interaction terms are also in agreement with previous research in the United States, showing that the impact of parental declines from one transition to the next (see, for example, Mare, 1980; Hout et al., 1993). There are generally two explanations for this: (1) As students grow older they are less influenced by their parents (the so-called 'life course' hypothesis); and (2) unmeasured characteristics (such as ability) that can affect transition probabilities may be unevenly distributed among parents of high and low educational levels (Mare, 1993).

Model 3 includes a three-way interaction between IIF, transition number and whether parents made a transition, allowing us to test for differences in information differentials across transitions. Because of their complexity, these results are best shown graphically. Figure 3 displays the fitted probabilities for students whose parents made the transition and students whose parents did not make the transition, according to the IIF for all four transitions.[14] We can clearly see that children are far more likely to make each transition if their parents had made it compared to if their parents had not made it. It is also clear that for the first three transitions the value of education has a positive effect on the probability of completing that transition for both groups, regardless of whether parents made the transition.

The most interesting findings from Model 3 relate to the changes in the information differential across transitions. We can see from Figure 3 that there is no discernible information differential at transitions one and two (i.e. the slopes of the two lines are virtually parallel),

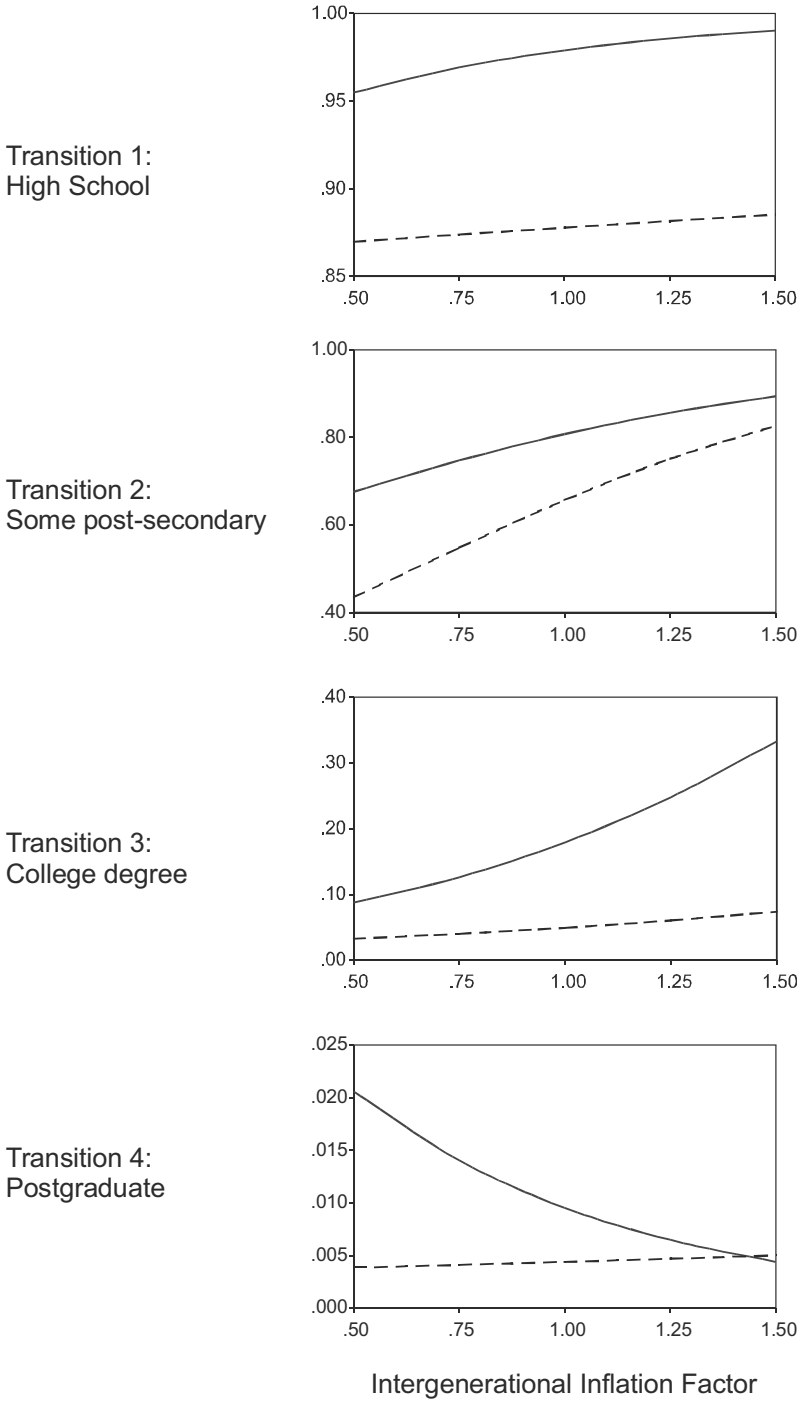

Figure 3 *Fitted probabilities of completing educational transitions according to the value of education (measured by IIF).* (*Note*: Probabilities are for the average person and are conditional on making the previous transition. The solid lines are for those whose parents made the transition; the broken lines represent the relationship for people whose parents did not make the transition. Note that the vertical scales of the graphs (probabilities) differ.)

but the pattern changes dramatically for the third and fourth transitions. Perhaps most important, by the third transition (i.e. college degree) the value of education has a much stronger effect for those children whose parents acquired the same level of education than for those whose parents had less education. This supports our speculation that children get best parental advice on the value of schooling – or at least pay most attention to it – at the transition to a college degree. The fact that very few make this transition produces a larger gap in information than for the previous transitions. As a result, parents who have acquired college degrees can provide their children with better information on their value, influencing the decision to continue schooling or not.

Another noteworthy finding is that this relationship changes for the fourth transition (i.e. postgraduate qualifications). At this point, the value of education apparently has no impact on children of parents who did not make that transition. On the other hand, there is a strong negative effect of the value of education on the probability of making the transition for those children whose parents made the transition. The greater the value of postgraduate qualifications, the less likely those with parents who have this qualification are of making it. This is highly suggestive that children of parents who obtained a graduate degree are more likely to consider the relative pay-off for a graduate degree compared to a bachelor's degree when the value of education has increased. What is most remarkable in this figure, however, is that children whose parents did not make a particular transition seem to be virtually unaware of – or at least unaffected by – the value of that education for all but the secondary school level.

Discussion and conclusion

Our analysis consisted of two parts. We began by assessing credential inflation in the United States, finding that most levels of education have generally lost value in terms of social class outcomes during the twentieth century. There has also been a widening gap in social class returns between educational levels from the 1940s onwards: despite a decrease in values for all qualification levels, the relative advantage of higher educational levels has increased, particularly since the 1940s. These findings are consistent with labour queue theory, which states that an increase in over-schooling leads to relative advantages of the better educated (e.g. Thurow, 1976; Hirsch, 1977; Wolbers et al. 2001).

We then constructed a measure – we call it the 'intergenerational inflation factor' (IIF) – to compare the labour market value of specific educational transitions for each generation compared to the parents' generation. We included this measure in models predicting educational transitions to test the mechanism of 'relative risk aversion', which holds that children invest in education to avoid downward class mobility (Breen and Goldthorpe, 1997; Goldthorpe, 2000). According to this theory, if a level of education declines in value compared to the parents' generation, children should be more likely to invest in this level of education to maintain their relative position in society. At the very least, our results contradict this theory for the second and third transitions (i.e. into tertiary education and completion of university), where we found that children were more likely to invest in education if it increased in value. For the first transition (high school completion) we found no evidence of any effect of the value of schooling. Only for the last transition (postgraduate degree) did we find support for the theory of relative risk aversion.

We further showed that the value of education is particularly influential on children's propensity to stay in school at a specific branching point if their parents made the same transition. This finding can be explained by an information differential, between parents who completed a transition and those who did not, regarding the value of education (cf. Erikson and Jonsson, 1996). It implies that information about the labour market influences the cost–benefit calculation concerning educational decisions. We found most support for this

information differential hypothesis for the transition to a college degree. We have two explanations for this: (1) most people end schooling at this transition, so the information differential can make a difference, and (2) parental information about college education is strongly in favour of staying in education rather than leaving because its value is very high. We also showed, however, that the effect was in the opposite direction for the postgraduate studies transition.

Why, then, are there differential effects of the value of education across transitions? We provide a simple explanation. For the first three transitions, additional schooling is generally regarded as beneficial to one's career prospects. It follows from human capital theory that, if education is worth less, people are less likely to invest in it (Freeman, 1976; Mare, 1981b; Becker, 1993). Additionally, if education is worth less, it becomes less attractive as an investment to avoid downward mobility. In such cases, other ways of transmitting inequality, such as class-related personality characteristics and social skills (Goldthorpe, 1996b; Arrow et al., 2000; Breen and Goldthorpe, 2001) could take effect. Similarly, within education, the field of study or the quality of educational institutions may play a role (Hirsch, 1977; Davies and Guppy, 1997; Van de Werfhorst, 2002).

Postgraduate education fits less well into this framework. The labour market benefits associated with postgraduate training are somewhat obscure (Pascarella and Terenzini, 1991), and the risks are relatively high. Parents who made this transition are aware of these risks and perhaps discourage their children from pursuing postgraduate education unless it is necessary to avoid downward mobility. In other words, class position is more likely to be secured at the previous transition when education has a higher value. Furthermore, there are only limited opportunities of upward mobility for this group because of a ceiling effect. These two factors together suggest that the 'primary goal' of avoiding downward mobility largely explains investments in postgraduate training.

Of course, this finding should not go without qualifications. Firstly, because of the ceiling effect we might expect the IIF to have different impacts on the probability of entering postgraduate education depending on the type of postgraduate education. For many occupations, for example physicians and lawyers, the level of education required to achieve them has remained fairly constant. As a result, children of people with such high-level occupations might be likely to pursue the necessary qualifications to achieve these jobs regardless of whether the class returns have decreased. Although outside the bounds of this article, this speculation is interesting enough to deserve further research.

Secondly, this article provides only an indirect test of the impact of information differentials resulting from parental education background with respect to the value of education. A direct test of relative risk aversion would include direct measures of how much parents know about the value of education and whether they pass this information on to their children. Unfortunately, there are no suitable over time data that contain this information, which means that it could not be included in models containing information about the changing value of education. Nonetheless, although we do not have a direct test of the underlying mechanism, we are confident that we have tapped the consequences of these mechanisms.

The implications of these findings are quite clear. Our model shows that information differentials play an important role in explaining educational stratification, particularly at the higher levels of education. If the value of education varies across time, as it does in most Western societies, parents who made a transition to college or higher are advantaged in terms of providing accurate judgements of the value of that education and can advise their children accordingly. This information differential between social groups serves to establish and maintain social inequality. One way to reduce educational stratification would be to increase public knowledge of the benefits of higher education. If all children had the same quality of information at their disposal, this could plausibly reduce educational inequality. The likelihood

of investing in schooling would still depend on the value of education, but to a degree more like that for children whose parents made a transition than for those whose parents did not.

A second related implication of the findings concerns the wider issue of meritocracy (Arrow et al., 2000). Our findings on the information differentials between social groups suggest that, in as far as education is an indication of one's merits, access to merit-enhancing attributes is unevenly distributed across groups of different information levels. Thus, although our results are not conclusive about this because our data did not contain a measure of ability, social groups seem to differ in their educational attainment not only because of 'meritocratic' factors, but also according to available information. It is widely known that social networks and class-related personality characteristics aid access to good jobs, and disproportionately benefit children of the higher social strata (e.g. Breen and Goldthorpe, 2001). In other words, providing information to the wider public may enhance investments in higher education for children whose parents have lower education, but it is less clear how this would affect their final position in the social class structure. If employers do select largely on non-education based characteristics, educational policy is unlikely to have the desired effect.

Notes

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1. It could be argued that if education is worth more than for the parents' generation, children will not stop at the point where they have avoided downward mobility, but rather strive for the 'second goal' of upward mobility (Goldthorpe, 2000). In the more frequently observed case of a negative trend in the effects of education, however, more education is needed (*ceteris paribus*) to avoid downward mobility.
2. We do not claim that children directly assess the relative value of education at the time they are considering acquiring with the value of that same education during the time when their parents' generation acquired it. Still, even if we assume that people evaluate only the educational value of their own cohort for reaching a certain occupational level (or, to be more precise, of those who left school immediately before them), according to the mechanisms of relative risk aversion we would still expect children to reach for higher levels of education if its value has decreased compared to their parents' generation.
3. A similar argument has been put forward by Garnier et al. (1989), who claim that the cost–benefit evaluation is more important for students entering selective schooling systems than mass schooling systems. Analogously, postgraduate courses are more highly selective than lower levels of schooling.
4. This finding is indirectly derived from Clogg and Shockey (1984) and Hartog (2000) from the fact that over-education increased and, on average, overschooled years had lower wage returns than required years of schooling.
5. This omission is acceptable in studying trends in educational inequality, since education is of limited importance in the 'mobility strategy' for children of farmers and of self-employed people (Ishida et al., 1995; Goldthorpe, 2000).
6. Another advantage of including 'per cent at risk' is that it is a time-varying covariate and thus varies across transitions. Cameron and Heckman (1998) argue that the standard educational transition model – which allows only for the error terms to vary across transitions – produces biased differential effects across transitions for time-invariant variables. In other words, the model unrealistically assumes that people make decisions sequentially only as they move from one transition to the next, i.e. they do not look further ahead than the transition to be taken. Lucas (2001) argues, however, that including a time-covariate in the transition model limits this bias.
7. A more detailed critique of previous measures of over-education can be seen in Halaby (1994).
8. More details about cumulative logit models are given in Agresti (1990).

9. Using the pooled data and modelling the changing value of education over cohorts with interaction terms is equivalent to constraining the cut-points separating the underlying latent social class categories to be equal across cohorts. In other words, this model gives a consistent metric for class returns over time, thus ensuring that the education effects are comparable.
10. Although not reported here, we also analysed transitions separately, finding substantively similar results. The results from these models are available from the authors upon request.
11. Separate analyses for men and women showed almost no differences in the effects of our central variables. The only noteworthy difference was that the IIF had a stronger effect on transition 2 for men than for women. The overwhelming similarities in results suggested presentation of the more parsimonious pooled data results. Results from the separate analyses for men and women are available from the authors upon request.
12. A model excluding parental characteristics showed a positive impact of 'per cent at risk' on transition probabilities. Thus, the increasing likelihood of making a transition is largely due to changing distributions in social origins (cf. Mare, 1979).
13. Including the three two-way interactions separately confirms the results shown here.
14. The fitted probabilities were calculated with all other variables (i.e. those not included in the three-way interaction) set to their means, which means that they apply to the 'typical' person. See Fox (1987) for more information on how to construct these graphs, also referred to as effect displays.

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