An Inquiry into Adoption Rates in Ireland

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The extension of econometrics to social theory is demonstrated by John Murnane's examination of the factors behind the declining adoption rates in Ireland since the 1970s. He looks at the changing social attitudes that have led to this fall and seeks to evaluate them using the classic technique of Ordinary Least Squares.

Introduction

Thirty years after it was passed in England, Wales and Northern Ireland, the Adoption Act (1952) was promulgated into Irish law. Initially Irish residents were slow on its uptake, but the practice of adoption peaked in 1967 when 97% of all non-marital births were adopted. Since this, however, various factors have resulted in significant changes in adoption practices. By 1997, 405 children were placed for adoption. The preliminary figure for 1998 is just 100.

> "*Never before has the adoption service faced such formidable challenge and pressure to change its institutionalised assumptions and conventional beliefs as it has in recent years. The impetus for change in the traditional structure of adoptive kinship came from ... demographic changes in adoptable infant and adoptive applicants, human rights and freedom of information legislation, recognition of adoptees rights, advances in biotechnology and changing social attitudes*".

The aim of this project is to see if by using regression analysis we can specify the explanatory variables that have influenced adoption rates and to explore the significance of these variables. Sachedeu gives a very concise view on why adoption practices face the current famine, but from an econometrics perspective it is not feasible to construct a model which incorporates these factors. For the sake of simplicity, I have chosen just two of the relevant variables to aid my study of adoption rates in Ireland.

Specification

With the aim of explaining the falling number of adoptions in Ireland between 1970 and 1995 I have chosen the following variables:

Dependant variable: Y

For the Y variable, variations in which I wish to explain, I am taking adoption orders placed from 1970 to 1995 inclusive. Records on adoption orders are available since 1953, and the statistics were obtained from the Irish adoption board in their 1997 annual report. There is very little chance of inaccurate data. All legal adoptions, whether through regional authorities or the judicial process, are recorded by the adoption board in its report.

Independent variables: X1 and X2

X1: The number of abortions carried out on Irish women in British clinics

Abortion and the law has always been a grey area. Abortion itself was not explicitly banned under the 1937 constitution, though a prohibition was implied. The 8th amendment to the Constitution in 1983 did just this but not as categorically as its

promoters had hoped, so that when the X-case came about in 1992 the Supreme Court made an unexpected decision. It overturned an injunction imposed by the High Court and permitted a 14-year-old rape victim to travel to England to have an abortion. This landmark decision was reached on the premise that continued pregnancy posed a serious risk to the life of the mother, as she was suicidal. As this precedent was set, it is now possible for a pregnant woman to have an abortion in Ireland if there is a real threat to her life.

Initially the accuracy of the statistics seemed a concern. They come directly from the clinics in England and in that sense are very reliable. But the problem lies in the fact that it is commonly noted that a substantial number of Irish women do not give their Irish address, which therefore leads to inaccurate data. Assuming that the percentage of women who give false addresses remains in or around the same level, then the workings of the regression will not be seriously affected. I expect that there will be a strong link between falling adoption rates and increasing abortions carried out on Irish women.

X2: The number of births outside marriage

As mentioned previously, in 1967 there were 1502 adoptions and 1548 births outside marriage. Holy Catholic Ireland did not recognise single parents - until 1981 the State officially referred to children born outside of marriage as "illegitimate", and by this stage births outside marriage outnumbered adoptions by 3 to 1. The increased social acceptance of births outside marriage was fought for tirelessly by groups like Cherish, who sought increased social welfare benefits and a legitimate social standing for single mothers. In a way, Ireland had found an alternative to the practice of adoption as more and more single women were rearing their children alone. I expect that this would suggest a reduction in the supply of children for adoption and that there would be a high correlation between the variables.

Estimation

There are various econometric methods that can be used to derive estimates of the parameters of economic and social science relationships from statistics. The Ordinary Least Squares model is a simple but effective method which offers satisfactory results to non-economic models. From the estimates I obtain I will construct a line of best fit based on the following regression model:

$$Yi = ß\ o + ß\ 1X1 + ß\ 2X2 + m\ 1$$

Where;

Y = variation in observed explanatory variable

ß o + ß 1X1 + ß 2X2 = systematic or explained variation

m 1 = random or unexplained variable

This method will yield a relationship between the variables by estimating the size and sign of ß o, ß 1 and ß 2.

The regression

$$Yi = 1558.3 - 0.00733X1 - 0.10897X2$$

Independent Variables	Parameter Estimates	T-statistic [probability]

Constant C	1158.3	25.5114 [.000]
X1	-0.007333	-0.20958 [.836]
X2	-0.10897	-6.6550 [.000]

R^2=0.87896

Correlation Coefficient

The correlation coefficient, R^2, is a measure of the relationship between Y, X1 and X2 and takes on values of between 1 (for perfect linear relationship) and 0 (for a no relationship). The correlation coefficient does not provide any information regarding the direction of causality, but social science theory would support the case that increasing abortions and births outside marriage lead to falling adoption rates, and not the other way around. On first inspection, it looks as if the model has very high explanatory powers. But on further consideration, I regressed X1 onto X2, and obtained an R^2 of 0.72289. There is high significance to this figure, as it says that a substantial amount (but not excessive) of the 0.87926 figure comes from multicollinearity. This suggests that the two X variables are affected by similar factors, and in this case makes perfect social science sense, as both abortions and births outside marriage represent changing social attitudes. To measure the influence of X1 and X2 separately, I regressed Y on X1 and X2 individually. The results show that increasing births outside of marriage have a more significant affect than abortions on adoptions.

Independent variable	Parameter Estimates	T-Statistic
Constant C	1600.1	15.7268
X1	-.20531	-6.6572

R^2=.64870

Independent variable	Parameter Estimate	T-Statistic
Constant C	1551.1	31.4936
X2	-011189	-13.2473

R^2=.87969

T-statistic

The t-statistic measures the ratio of the estimate to the standard error; "an estimate of a parameter is statistically significant if the t-statistic associated with it causes us to reject, at a particular significance level, the hypothesis test". From the multiple regression, it was found that X2 was significant at both the 10% and 5% levels, while X1 was found to be not significant at either level. This suggests that increasing births outside of marriage are more significant in explaining falling adoption rates than the number of abortions.

F-statistic

The F-statistic indicates whether all the variables in the equation together are significant. Knowing that the levels of R^2 and the F-statistic are closely linked, I expected the F statistics to be reasonably large. The actual figure was 84.2716 and is statistically significant to a level of 10% and 5%, but not to 1%. This means that abortion rates and extra-marital births as explanatory variables are jointly significant.

Durbin-Watson

The Durbin-Watson test is a popular and straightforward procedure for testing for serial correlation; it measures if each observation is statistically dependent on the previous terms e.g. if previous prices have been lower than the next year's prices have a higher probability of being low. In the model the Durbin-Watson figure is 1.150 as I have 26 observations and 2 variables the critical values for the model are:

$$dl = 1.224 \text{ and } du=1.553$$

If my D-W statistic was greater than 1.553 then there would be no evidence of serial correlation and if it was in-between the two values then the evidence of it would be inconclusive. But as it is below the critical lower figure then there is definite autocorrelation of the disturbance terms. This is not an unusual occurrence in time-series data but results in two negative consequences: firstly, least squares estimators lose the desirability of being efficient or asymptotically efficient and secondly, conventional expressions of variances of the OLS become biased.

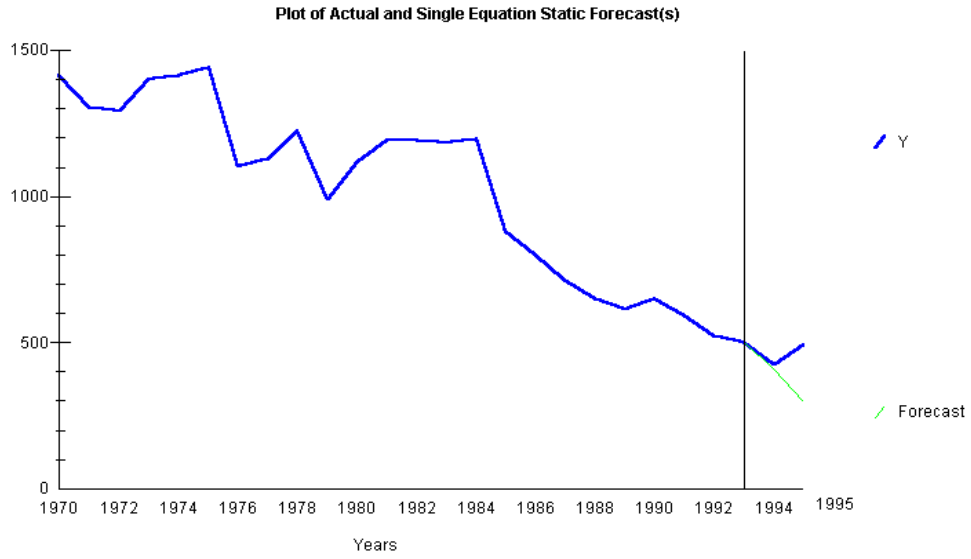
Forecasting power of the model

A desirable quality of any econometrics project is good forecasting capabilies. In this instance I ran the model from 1970 to 1993 and got it to predict the figures for the next two years. In doing so, Microfit gave the following predictions:

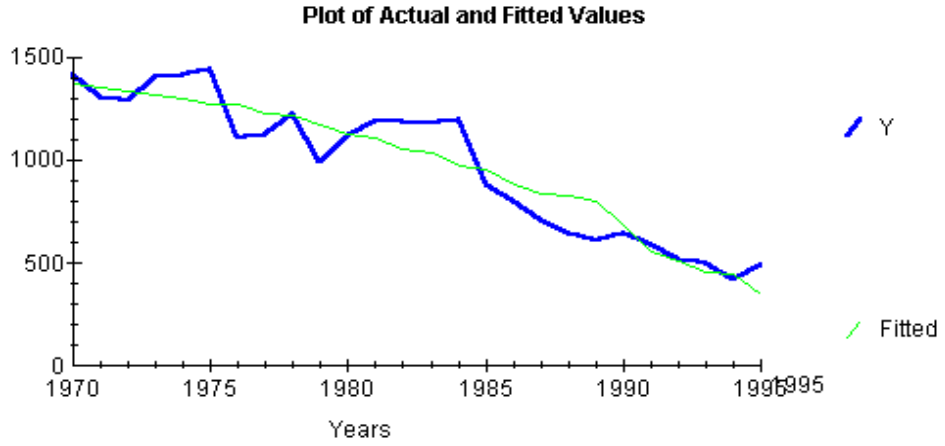
	1994	**1995**
Projected	405	300
Actual	424	490

In 1994 the model predicted quite accurately the number of adoption orders, but it was significantly wrong in 1995. However, it needs to be borne in mind that 1995 was one of the few years when adoption rates actually increased.

Comparison of forecasted and actual values



Evaluation of the model



Koutsoyiannis rates econometric models by several criteria, and in order to estimate the plausibility of my model I will apply this criteria to my model.

· *Theoretical plausibility*: This model fits this criteria as it makes sound social science sense. It is very plausible that changes in the numbers of single mothers and of abortion rates influence adoption rates.

· *Explanatory ability*: To fit this criteria the model should be able to explain the observations of the actual world, and I feel that this project does this, as it is consistent with the social science theory.

· *Forecasting ability*: This model fails here. It predicted that adoption rates would stabilise in 1994 which was correct but it was substantially wrong in 1995.

· *Simplicity*: To fit the final criteria a model should represent the relationships in question with maximum simplicity. By using just two explanatory variables, and also noting that these reflect changing social attitudes, the model remained simple but effective.

Conclusion

Overall, the model generally came up with the results I expected, although on reflection I am not convinced that the X1 and X2 variables account for nearly 90% of the reason that adoption rates have falling so drastically in the last 30 years. When I ran the same regression over the period of 1970–1980, I found a correlation coefficient of just 0.53188. If the model was accurate then the correlation coefficient should have had a higher value over this period. As mentioned by Sachedeu, there are many other significant factors that intuitively account for more than 10% of the reduction in adoption uptake. The Adoption Board itself highlights two significant factors in its most recent annual report. The first is that the Adoption Board is still largely run under a system devised in 1952, and has resulted in shortfalls and inconsistencies in the system which alter its efficiency and only serve to slow up the process. The second fault highlighted in the report is that legislation on adoption in Ireland consists of six pieces of legislation which affect adoption and this has resulted in a lack of continuity and efficiency. Kevin Cooney of the Adopted Peoples Association highlighted the relative increases in the lone parent allowance as a dominant factor in explaining the changes. Another article in the same paper points to the adverse publicity that adoption procedures have got over the last few decades. Finally, the Adoption Board itself points to the fact that parents who adopt from countries like Romania go through less rigorous screening than in Ireland. All of the above factors are under-represented in the model.

There are many influences on the number of adoption orders made each year, and this project made reference to just some of those. Adoption is first and foremost a service for children and any change in policies must consider the welfare of these children as its prime objective.

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