Date: Wed, 09 Jun 1993 14:40:44 -0400 (EDT)
From: chamberl@ecgc.harvard.edu (Gary Chamberlain)
Subject: Wald Estimator
To: joshua@hujivms.BITNET
Cc: chamberl@ecgc.harvard.edu, guido@haavelmo.harvard.edu
Message-id: <01GZ6FBABKEQ9EDGUZ@HUSC3.HARVARD.EDU>
X-Envelope-to: joshua@hujivms.BITNET
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Gary 1

To: Joshua Angrist
From: Gary Chamberlain
Josh,

Our conversation over lunch made me curious about the properties of the Wald estimator in your QJE paper with Alan. I assume bivariate normality for the posterior distribution of the quarter-of-birth effects on ln(wkly. wage) and Education. (Your Table III has enough info except for the correlation between the wage and education residuals--I used .3.) Then I simulate the posterior distribution of the schooling coefficient. It is very close to being normal with the mean and standard deviation given in your Table III (1970 Census). So the asymptotics seem fine here.

The results are as follows:

```
>> J = 50000;
m1 = -.00898;
m2 = -.1256;
s1 = .00301;
s2 = .0155;
r = .3;
```

(next)

Paul B. Schools Me

Received: by HUJIVMS via SMTP(192.87.5.131) (HUyMail-V61);
Thu, 15 Jul 93 14:11:06 +0300
Received: from mailhost.rug.nl by HEARNVAX.nic.SURFnet.nl (PMDF V4.2-12 #3330)
id <01H0KMH0MZY8005NRF@HEARNVAX.nic.SURFnet.nl>; Thu, 15 Jul 1993 13:10:46 MET
Received: from charon.eco.rug.nl by mailhost.rug.nl with SMTP (PP); Thu,
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IPX id 100.930715131146.448; 15 Jul 93 13:12:03 +500
Date: 15 Jul 93 13:13:19 MET+1
From: Paul Bekker <BEKKER@eco.rug.nl>
Subject: IV
To: joshua@vms.huji.ac.il
Reply-to: P.A.Bekker@eco.rug.nl
Message-id: <MAILQUEUE-101.930715131319.352@ECO3>
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PAUL

Dear Josh,

Finishing the book on Identification took more time than anticipated. Now I am again working on IV-estimation.

First some remarks w.r.t your earlier e-mail. You mentioned that my alternative asymptotics are based on a bizarre sequence and that it is not clear what is actually approximated. Well, it really does not matter wether or not one considers the sequence bizarre. The point is that the exact distributions of IV and LIML are complicated and we want to use an approximation to these exact distributions to compare the estimators and to compute confidence intervals. Now if one can choose between two approximations and one knows (based on Monte Carlo simulations) that one approximation is closer to the exact distribution compared the other approximation it seems reasonable to choose this better approximation.

asymp. sequence of ref. distn

It is certainly not a sin to use many instruments. However, one should be careful when choosing the estimator. In the context of iid disturbances and observations from a single sample, the conventional IV- or 2SLS-estimator may have considerable bias if the number of instruments is large. Furthermore, the confidence intervals based on this estimator can have exact levels much lower than the nominal levels (eg 95 %). My paper gives an alternative that performs much better, where a large number of instruments is not a problem.

In The Monte Carlo part of my paper the model is first reduced to a canonical form, where the number of parameters is reduced while the set of possible distribution functions of the estimators is not affected. This is common practice (eg Phillips, Handbook of Econometrics). In that case the sample size is no longer a parameter, instead the relevant parameter is the 'concentration parameter' or the 'noncentrality parameter' which is a function of both the sample size and the quality of the instruments.

2SLS/LIML

Again w.r.t. a comparison of 2SLS and LIML: If the number of instruments is large, LIML will be more centered around the true value and the (alternative) confidence interval will be indeed close to a 95%- interval. The 2SLS may show considerable bias and its