Journal of Economics and Public Finance
ISSN 2377-1038 (Print) ISSN 2377-1046 (Online)
Vol. 4, No. 4, 2018
www.scholink.org/ojs/index.php/jepf

Original Paper

Fiscal Impact of Foreign Aid in Morocco: A Multivariate Cointegration Analysis

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Received: October 28, 2018 Accepted: November 9, 2018 Online Published: November 27, 2018
doi:10.22158/jepf.v4n4p378 URL: http://dx.doi.org/10.22158/jepf.v4n4p378

Abstract

The aim of this study is to evaluate the relationship between foreign aid and taxe revenue in Morocco by using the Error Correction Model Following the approach of Johansen to jointly capture the long-run relationship and short-run dynamics between aid and tax revenue. Other variables such as the shares of agriculture and industry in GDP, exports, imports and GDP are also included in the model. The results indicate that the direct effect of foreign aid on tax revenue is insignificant in the short term, but it becomes negative and significant in the long term.

Keywords

Tax revenue, foreign aid, VECM, Morocco

1. Introduction

Aid can be used in theory to improve tax collection, but it can also act as a deterrent to a country's tax system. In terms of official development assistance, OECD statistics put Morocco in the 7th place among beneficiary countries on the African continent, accounting for 4% of total ODA to Africa (Note 1). Indeed, since the early 1980's, the international community has devoted about $ 42.82 billion in official development assistance to Morocco (WDI, 2018), an average of $ 1.16 billion per year. On the other hand, tax revenues are estimated at 188958.24 MAD in 2016, or 18.6% of Moroccan GDP (Ministry of Economy and Finance of Morocco, 2018). The product of the VAT is the first source of financing in Morocco. Between 2008 and 2016, it accounted for 36.3% of all tax revenues instead of 27.5% over the period 2000-2007.

This study aims to identify the nature of the impact of aid on tax revenues in Morocco. This question is important because aid could fill the lack of resources, due to the insufficiency of the national resources, notably fiscal, and support the financing of the various public expenditures to promote an inclusive growth. Or else, it could discourage tax collection and/or hinder economic growth.

Our study is inspired from numerous studies of Gupta et al. (2004) and Morrissey et al. (2015), but we use in our analysis the Vector Error Correction Model (VECM) to jointly capture the long-run relationship and short-run dynamics between foreign aid and tax revenue in Morocco.

This work is organized as follows. The first step will be to review on the theoretical links existing between aid and tax revenue. Secondly, we will arrive at a simple methodology to identify the nature of the empirical link between different variables. This will allow us to draw useful information in terms of interrelations between variables and in terms of economic policy requirements, including aid and fiscal policies.

2. Literature Review

A significant number of economists and international organizations pay particular attention to the effects of aid on taxation in developing countries. For example, Benedek et al. (2012) find that aid has a negative impact on tax collection. Other studies, however, find that aid has a positive effect, including Clist and Morrissey (2011), Carter (2013) and Clist (2014). Ouattara (2006) even finds that the relationship is not significant. Thus, recipient countries can use the aid for purposes not envisaged by the donor (Morrissey, 2015).

2.1 Foreign Aid and Tax Revenue

Some authors believe that an increase in aid flows would reduce the government’s incentives to maintain or increase its fiscal effort.

Using a panel data set of 107 developing countries over the period 1970-2000 for their empirical analysis, Gupta et al. (2004) find a negative relationship between aid and tax revenues and argue that the composition of aid is important, with loans that must be repaid, encouraging collection, but discourages tax effort.

Benedek et al. (2012) support the existence of a negative relationship between aid and tax revenue using a dataset covering 118 countries for the period 1980-2009. Overall, the results show a negative association between official development assistance (ODA) and domestic tax revenue. For the authors, the composition of net ODA is important; ODA grants are associated with lower incomes, while ODA loans are not. Thus, they indicate that the impact of ODA donations on tax revenue seems to weaken over time. Also, the relationship between ODA donations and certain taxes (VAT, income taxes and excise taxes) is also negative, except in the case of trade taxes.

Using a new source of tax revenue data in an annual panel Morrissey et al. (2015) replicate some of the basic results of Gupta et al. (2004) and Benedek et al. (2012), namely that net aid has a negative coefficient on tax revenues. When disaggregating aid the authors cannot reproduce their results; they find a positive rather than negative effect of grants when significant, while loans are almost always insignificant.

Paul Clist (2014) re-studies the contribution of Benedek et al. (2012), and considers that the fears of negative effects of aid appear unjustified and can be explained by the inappropriate use of data or problems of endogeneity. In his view, aid has a relatively small, perhaps positive influence on domestic tax revenues. Thus, the results of the study by Benedek et al. (2012), which reports the differential effects of donations and loans on tax revenues, can not be replicated. In addition, they suffer from serious problems resulting from a dependent variable composed of several incompatible data sources and definitions.

Attila et al. (2009) tried to identify the impact of official development assistance on tax transition in developing countries. After having constructed qualitative indicators of fiscal transition and envisaged the mechanisms by which ODA affects the adoption of a tax transition reform, the authors used a nonlinear probability model for assess the probability of adoption of a tax transition reform and identify the effect of ODA. From this model, estimated from a sample of 106 developing countries over the period 1980-2005, ODA has a positive impact on the implementation of tax transition reforms.

2.2 Foreign Aid and Public Expenditures

One of the main channels through which foreign aid influences economic growth is its impact on the public expenditure of the recipient country. Numerous studies are concerned about whether expenditures in the sector to which aid is intended really increase according to the amount of aid. For example, does spending on the education sector increase with the amount that donors allocate to education? This concerns the composition of public expenditure.

A study by Ouattara (2006), using panel data series for foreign aid over the period 1980-2000, suggests that aid has a positive effect on public investment. The results also show that aid does not lead to an increase in non-development expenditures (wages, salaries and subsidies); but induces an increase in public spending on development (health and education). McGillivray and Morrissey (2001) focus on the fiscal behavior of the public sector. They argued that aid is associated with an increase in public spending. According to them, the distribution between the different categories of public expenditure varies from one country to another, but in principle all categories of public expenditure can increase.

McGillivray and Morrissey (2001) focus on the fiscal behavior of the public sector. They argued that aid tends to be associated with government spending increases in excess of the value of the aid. According to them, the distribution between the different categories of public expenditure varies from one country to another, but in principle all categories of public expenditure can increase. They find that aid can also have effects on tax effort and borrowing.

Celasun and Walliser (2008) suggest that the lack of predictability of aid flows has an asymmetrical impact on the composition of public expenditure. In the event of an unexpected fall in aid flows, governments are reducing investment, while an unexpected increase in aid flows tends to increase consumption. Thus, unpredictable aid flows tend to shift public spending from investment to consumption.

Some authors attribute the ineffectiveness of aid to fungibility, since aid funds are redirected from investment to public consumption. There are two elements to this argument. The first is that there is fungibility and, in particular, that capital expenditure increases by less than the amount of aid. The proof is strong if one limits oneself to categorical fungibility studies (World Bank, 1998). The second argument is that public consumption expenditure has a negative impact on growth (e.g., Burnside & Dollar, 1997). In this case, the distinction is usually made between productive expenditures and non-productive expenditures, with the assumption that only the first promote economic growth.

According to McGillivray and Morrissey (2001), fungibility studies have been granted too much attention; these are narrowly focussed on the composition of government spending, and are not sufficiently informative about fiscal behaviour. Fiscal response studies are of greater relevance, as they attempt to address the effects of aid on behaviour regarding total spending, tax revenue and borrowing.

3. Methodology

The methodological approach will first be to define the variables involved in the study, then to explain the instrument of analysis linked to the verification of the empirical relationship between foreign aid and tax revenue in Morocco.

3.1 Data and Variables

The choice of variables is based on existing literature of Gupta et al. (2004) and Morrissey et al. (2015). In fact, seven variables are defined for examining the empirical link between foreign aid and tax revenues. The dependent variable is the tax revenue as a percentage of GDP (Tax_R). Foreign aid (aid)represented here by the official development assistance, the level of income (*GDP*), the share of agriculture (*AGR*) in GDP, the share of industry (*IND*) and trade/GDP ratios for imports (*M*) and exports (*X*) are all included in the model.

The data are extracted from the World Development Indicator (WDI) of the World Bank database (2018). The data used are annual and cover the period from 1980 to 2016. The tool used to process this data is Eviews 6.0, a statistical software package used mainly for time series.

3.2 Model

The analysis estimates the standard tax structure equation (1) following Gupta et al. (2004) and Morrissey et al. (2015). Therefore,our model corresponds to the following specification:

$$Tax\_R = \beta_0 + \beta_1 GDP + \beta_2 AGR + \beta_3 IND + \beta_4 M + \beta_5 X + \beta_6 aid + \beta_7 aid^2 + \varepsilon \quad (1)$$

Our econometric study consists in testing a VECM model linking aid to tax revenue. This method allows us to reveal jointly the long run and short run relationships between variables**.**

4. Results

4.1 Unit Root Test

The examination of stationarity is aprerequisite before any treatment of the time series in order to avoid spurious regressions**.** It is therefore necessary to determine the order of integration of the time series using the Augmented Dickey Fuller test (ADF). This test is carried out under three possible model specifications, with constant and trend, with constant, and with no constant nor trend. We obtain the results summarized in the following table:

Table 1. ADF Unit Root Test Results

Variables	Model 1 (Note 2)		Model 2 (Note 3)		Model 3 (Note 4)		order of integration
	Level	First Difference	Level	First Difference	Level	First Difference	
Tax_R	-2.641778	-5.341841*	-1.189266	-5.424573*	0.887614	-5.360821*	I(1)
GDP	-3.072557	-4.887087*	0.026746	-5.033595*	0.703854	-4.091889*	I(1)
AGR	-4.530945*	-12.67677*	-2.027098	-12.75048*	-0.221298	-12.94606*	I(1)
IND	-3.614525*	-5.665848*	-2.140880	-6.629646*	-1.463557	-6.414503*	I(1)
M	-2.102692	-7.047671*	-1.149360	-7.033940*	0.526260	-7.075566*	I(1)
X	-2.930181	-7.665380*	-1.347705	-7.762239*	0.872857	-7.613006*	I(1)
aid	-1.187732	-4.808913*	-1.710095	-5.157902*	-1.443760	-5.167329*	I(1)
aid^2	-0.296425	-6.117460*	-2.309729	-0.381297	-2.790444*	-0.665231	I(1)

*Indicates that the coefficient is significant at 5% probability level.

Source: authors' calculations.

As shown in Table 1, the results imply that the variables in the model represent DS processes at the level. The tests applied to the first differences reject the null hypothesis of the unit root with the threshold of 5% (t-statistic > critical value). Since the first differences are stationary, the variables are integrated to the same order (I (1)), which means we can proceed to the Johansen's co integration.

4.1 Lag Selection

Determining the number of lags is an essential step because it gives us the average duration of response variables. The number of lags depends on the size of the selected sample. It significantly influences the estimation. The number of lags to be used for applying the Johansen test is determined by calculating the Akaike (AIC) and Schwarz (SC) information criteria for lags ranging from 1 to 3. There are other criteria to determine the optimal number of lags like the Hannan-Quin criterion and the Final Prediction Error, which are based on the same principle. The results are shown in the following table:

Table 2. Selecting the Number of Lags

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-437.5358	NA	33.28506	26.20799	26.56713	-26.33047
1	-276.3174	237.0858*	0.121183*	20.48926	23.72155*	21.59157
2	-205.8889	70.42855	0.164803	20.11111	26.21655	22.19324
3	-103.1792	54.37570	0.203692	17.89407*	26.81266	20.89603*

* indicates lag order selected by the criterion.

We find that the minimum of the Akaike criterion corresponds to p = 3 while the Schwarz criterion corresponds to p = 1. In order to complete our test, we will compare the FPE criteria, and HQ and the Log-Liklelihood. The results obtained in Table 2 indicate that the optimal number of lags to be retained is 1. Indeed, since this study uses a small sample, with annual long data, so selecting more lags would reduce the degrees of freedom. In fact, the optimal lag used is lag 1for the efficient results in terms of statistical significance in the vector equations, and the VECM estimates.

4.2 Johansen Co-Integration Test

After determining the optimum lags (1 lag), we can then establish the number of equilibrium relations existing between the four variables. The Johansen co-integration test is performed on a system of seven variables (Tax_R, GDP, AGR, IND, M, X and aid). In order to carry out the test it is necessary to perform the Trace and the Maximum Eigenvalue tests synthesized in the following table:

Table 3. Johansen Co-Integration Test Results

Null hypothesis (H_0)	Trace test for the cointegrating rank			Results of H_0	Maximum-Eigenvalue test for the cointegrating rank			Results of H_0
	Eigenvalue	Trace statistic	Critical value at 5%		Eigenvalue	Max-Eigen statistic	Critical value at 5%	
None	0.822579	201.3581	159.5297	Rejected	0.822579	60.52314	52.36261	Rejected
At most 1	0.731617	149.8349	125.6154	Rejected	0.731617	46.03697	46.23142	Accepted
At most 2	0.664180	103.7980	95.75366	Rejected	0.664180	38.19130	40.07757	Accepted
At most 3	0.585526	65.60666	69.81889	Accepted	0.585526	30.82610	33.87687	Accepted
At most 4	0.343067	34.78056	47.85613	Accepted	0.343067	14.70604	27.58434	Accepted
Conclusion	Trace test indicates 3 cointegrating equations at the 0.05 level				Max-Eigen test indicates 1 cointegrating equation at the 0.05 level			

Source: authors' calculations.

The results of the trace and Maximum Eigenvalue tests show that there is indeed a cointegration between variables because the null hypothesis of absence of cointegration is rejected at the 5% level. Table 3 shows that the trace test indicates 3 cointegration equations (65.60666 < 69.81889) while the Max-Eigen test indicates 1 cointegration equation at the 5% threshold (46.03697 < 46.23142). We admit that there is one cointegration relation.

4.3 Model Estimation

The estimation of the VECM gives a negative and significant coefficient of Error correction term (-0.285) of the co-integration equation. This coefficient represents the speed of adjustment to long-run equilibrium (Table 4).

Table 4. Estimate of the Cointegration Vector

The coefficients of the long-term relationship								
Tax_R (-1)	GDP(-1)	AGR(-1)	IND(-1)	M(-1)	X(-1)	aid(-1)	aid ²(-1)	c
	-2.7510	-1.2071	0.6349	0.0934	-1.134	1.1231	-0.3734	
1.000000	[-1.222]	[-5.429]	[1.605]	[0.825]	[-4.85]	[1.105]	[-2.753]	30.88
The coefficients of error correction mechanism								
-0.2852	-0.0054	0.4097	-0.06965	-0.1252	0.0993	0.193	1.861	
[-3.4849]	[-0.775]	[2.5817]	[-0.6946]	[-0.361]	[0.537]	[1.819]	[2.315]	

Source: authors' calculations.

4.3.1 VECM Long Run Estimates

As Tax_R, GDP, AGR, IND, M, X, aid and aid ² are cointegrated, the long-run relationship may have the following form:

$$Tax\_R = 2.75*GDP + 1.21*AGR - 0.63*IND - 0.09*M + 1.13*X - 1.12\ aid + 0.37 aid^2 - 30.88 \quad (2)$$

In the long term, aid has a negative impact on tax revenue. Indeed, an increase of 1% of Official Development Assistance leads to a loss of approximately 1.12% of tax revenue. Similarly, the share of industry in GDP and import shave a negative effect on tax revenue in the long term. On the other hand, the results of our model show that GDP, the share of agriculture in economy and exports have a positive impact on tax revenue.

4.3.2 VECM Short Run Estimates

The multivariate analysis conclude that there is no significant relationship between aid and tax revenue in the short run and with one-year delay. Also, the error correction term is significantly negative and equal to -0.285, indicating that the variable of tax revenue adjusts at a rate of 28% relative to its equilibrium level following any shock from exogenous variables, and the shock is entirely reabsorbed after one year (Appendix A).

5. Discussion

The results of our study vary according to the two time horizons. In the short run, the direct effect of foreign aid on tax revenue is insignificant. However, in the long run, the effect becomes significant and negative.

The analysis of the short-term parameters of our model shows that aid has no significant effect on tax revenues. Using four-year averaged panel data, Morrissey et al. (2014) also find no consistent robust relationship between aid, in total or disaggregated into grants and loans, and tax performance. Where they do find significant coefficients these are positive for net aid and for grants, whereas for loans they are generally negative (Morrisey et al., 2015).

We also note that aid has a negative impact on the share of agriculture in the economy in the short run. Also, the share of agriculture in GDP is significant with a negative effect in the short term. In fact, an increase of 1% of the share of agriculture is equivalent to decrease of 0.36% of tax revenue (Appendix A). These results can be interpreted by the fact that, in the short term, aid acts indirectly on the tax revenue through the channel of the share of agriculture in GDP. However, the impact of the share of agriculture becomes positive in the long term. Indeed, an increase of 1% of the share of agriculture in GDP is equivalent to an improvement of 1.21% of the tax revenues.

In the long term, the impact of aid on tax revenue is negative. In this case, the results show that an increase of 1% of foreign aid contributes to a decrease of 1.12% of tax revenue. This result is consistent with the findings of Gupta et al. (2004). The argument of this finding is that aid discourages tax collection because the security provided by «easy» revenue from donors reduces the urgency for collecting domestic revenue (Brautigam & Knack, 2004; Gupta et al., 2004). Morrisey et al. (2015) demonstrate that although they can replicate the negative coefficient on aid variables in a tax revenue regression that is often claimed to show that aid reduces tax effort.

Moreover, our model shows that foreign aid has no significant impact on GDP, imports and exports in Morocco. This should lead to a reflection on the need to reorient aid in order to optimize its impact on the tax revenue according to the nature of the Moroccan tax system.

6. Conclusion

The purpose of this study is to highlight the nature of the effect of aid on tax revenue in Morocco. We use a vector error correction model (VECM) to detect jointly the dynamics of short term (represented by the variables in first difference) and long term (represented by the variables in level). We find that there is no direct impact of aid on tax revenue in the short run but aid has a negative effect on the share of agriculture in the economy. Also, the share of agriculture in GDP is significant with a negative effect in the short term. We may admet that through the channel of the share of agriculture in GDP that aid influences negatively the tax revenue in the short term.

In the long term, the results suggest that foreign aid has a negative impact on tax revenue. Also, we find that raising the share of agriculture in GDP increases the tax revenues.

It must be noted that the quality of data and statistical tools play a determining role in the relevance of the results. According to Morrissey et al. (2015), one of the major challenges to the empirical analysis of the relationship between aid and tax revenues is the quality and availability of data, in particular that of general government and tax revenues.

The negative impact of aid in the long-term will raise the question of the quality of transmission channels. This leads us to reflect on the presence of other variables and transmission channels such as the link between aid and the fiscal space in Morocco.

References

Attila, G., Chambas, G., & Combes, J.-L. (2009). *Aide publique au développement et transition fiscale*. Halshs-00554343. Retrieved from https://www.halshs.archives-ouvertes.fr/halshs-00554343/document

Benedek, D., Crivelli, E., Gupta, S., & Muthoora, P. (2012). *Foreign Aid and Revenue: Still a Crowding Out Effect*? International Monetary Fund. WP/12/186. Retrieved from http://www.citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.296.6263&rep=rep1&type=pdf

Bräutigam, A., & Knack, S. (2004). Foreign Aid, Institutions, and Governance in Sub-Saharan Africa. *Economic Development and Cultural Change*, *52*(2), 255-285. https://doi.org/10.1086/380592

Burnside, C., & Dollar, D. (1997). *Aid, policies and growth*. The World Bank. Retrieved from http://www.documents.worldbank.org/curated/en/698901468739531893/pdf/multi-page.pdf

Carter, P. (2013). Does Foreign Aid Displace Domestic Taxation? *Journal of Globalization and Development*, *4*.

Celasun, O., & Walliser, J. (2008). Predictability of aid: Do fickle donors undermine aid effectiveness? *Economic Policy*, *23*(55). 545-594. https://doi.org/10.1111/j.1468-0327.2008.00206.x

Clist, P. (2014). *Foreign Aid and Domestic Taxation: Multiple Sources, One Conclusion*. University of East Anglia (UEA)- School of Political, Social and International Studies, ICTD Working Paper 20. Retrieved from https://www.papers.ssrn.com/sol3/papers.cfm?abstract_id=2496448

Gupta, S., Clemens, B., Pivovarsky, A., & Tiongson, E. (2004). *Foreign Aid and Revenue Response: Does the Composition of Aid Matter*? International Monetary Fund. IMF Working Paper 03/176.

McGillivray, M., & Morrissey, O. (2001). *A Review of Evidence on the Fiscal Effects of Aid*. Centre for Research in Economic Development and International Trade, University of Nottingham. Retrieved from https://www.nottingham.ac.uk/credit/documents/papers/01-13.pdf

Morrissey, O. (2015). Aid and Government Fiscal Behavior: Assessing Recent Evidence. *World Development*, *69*, 98-105. https://doi.org/10.1016/j.worlddev.2013.12.008

Ouattara, B. (2006). Foreign aid and government fiscal behaviour in developing countries: Panel data evidence. *Economic Modelling*, *23*(3), 506-514. https://doi.org/10.1016/j.econmod.2006.02.001

World Bank. (1998). *Assessing Aid: What Works, What Does not, and Why*. Retrieved from http://www.documents.worldbank.org/curated/en/612481468764422935/Assessing-aid-what-works-what-doesnt-and-why

Notes

Note 1. OCDE. (2018). *Development aid at a glance statistics by region, Africa*. Retrieved from http://www.oecd.org/dac/financing-sustainable-development/

Note 2. ADF with Constant and Linear Trend.

Note 3. ADF with Constant.

Note 4. ADF with no constant nor trend.

Appendix A

Vector Error Correction Estimates

Vector Error Correction Estimates								
Included observations: 35 after adjustments								
Standard errors in ( ) & t-statistics in [ ]								
Cointegrating Eq:	CointEq1							
TAX_R(-1)	1.000000							
GDP(-1)	-2.751031							
	(2.25019)							
	[-1.22258]							
AGR(-1)	-1.207120							
	(0.22236)							
	[-5.42878]							
IND(-1)	0.634886							
	(0.39562)							
	[1.60477]							
M(-1)	0.093454							
	(0.11331)							
	[0.82480]							
X(-1)	-1.134263							
	(0.23392)							
	[-4.84899]							
AID(-1)	1.123104							
	(1.01596)							
	[1.10546]							
AID2(-1)	-0.373435							
	(0.13566)							
	[-2.75282]							
@TREND(80)	0.271807							
	(0.15848)							
	[1.71509]							
C	30.87898							
Error Correction:	D(TAX_R)	D(GDP)	D(AGR)	D(IND)	D(M)	D(X)	D(AID)	D(AID2)
CointEq1	-0.285217	-0.005421	0.409674	-0.069658	-0.125257	0.099306	0.192841	1.860874
	(0.08184)	(0.00699)	(0.15868)	(0.10043)	(0.34737)	(0.18473)	(0.10600)	(0.80381)
	[-3.48490]	[-0.77554]	[2.58170]	[-0.69363]	[-0.36059]	[0.53757]	[1.81928]	[2.31506]
D(TAX_R(-1))	-0.070330	-0.009730	-0.087171	-0.014398	-0.700903	-0.787854	-0.251291	-1.935019
	(0.20012)	(0.01709)	(0.38801)	(0.24555)	(0.84936)	(0.45169)	(0.25918)	(1.96544)
	[-0.35144]	[-0.56930]	[-0.22466]	[-0.05864]	[-0.82521]	[-1.74424]	[-0.96955]	[-0.98452]

D(GDP(-1))	1.864405	0.472925	3.345444	0.778929	0.292722	-0.741635	1.787444	18.11387
	(2.00704)	(0.17141)	(3.89139)	(2.46271)	(8.51840)	(4.53008)	(2.59940)	(19.7118)
	[0.92893]	[2.75902]	[0.85970]	[0.31629]	[0.03436]	[-0.16371]	[0.68764]	[0.91894]
D(AGR(-1))	**-0.358837**	-0.014968	-0.311908	-0.069758	-0.272126	-0.440700	0.078912	0.837061
	(0.10388)	(0.00887)	(0.20141)	(0.12746)	(0.44089)	(0.23447)	(0.13454)	(1.02024)
	[-3.45434]	[-1.68715]	[-1.54863]	[-0.54727]	[-0.61722]	[-1.87958]	[0.58654]	[0.82046]
D(IND(-1))	-0.396068	-0.023897	-0.015381	-0.320229	-0.935306	-0.984801	-0.189650	-1.723537
	(0.19722)	(0.01684)	(0.38238)	(0.24200)	(0.83705)	(0.44514)	(0.25543)	(1.93695)
	[-2.00826]	[-1.41880]	[-0.04022]	[-1.32329]	[-1.11738]	[-2.21233]	[-0.74249]	[-0.88982]
D(M(-1))	-0.036824	0.004058	-0.010999	-0.049831	-0.194808	-0.129414	0.161490	1.118185
	(0.07103)	(0.00607)	(0.13773)	(0.08716)	(0.30149)	(0.16033)	(0.09200)	(0.69765)
	[-0.51839]	[0.66895]	[-0.07986]	[-0.57171]	[-0.64616]	[-0.80717]	[1.75535]	[1.60279]
D(X(-1))	0.084938	0.000553	0.175626	-0.032153	0.662273	0.226544	0.076972	0.938173
	(0.11165)	(0.00954)	(0.21648)	(0.13700)	(0.47389)	(0.25201)	(0.14461)	(1.09659)
	[0.76073]	[0.05794]	[0.81127]	[-0.23469]	[1.39753]	[0.89894]	[0.53228]	[0.85554]
D(AID(-1))	0.067200	-0.166813	**-1.017418**	0.332189	0.559890	2.388582	-0.166121	0.205390
	(0.81538)	(0.06964)	(1.58092)	(1.00050)	(3.46069)	(1.84039)	(1.05603)	(8.00813)
	[0.08241]	[-2.39544]	[-0.64356]	[0.33202]	[0.16179]	[1.29786]	[-0.15731]	[0.02565]
D(AID2(-1))	-0.040808	0.023729	0.271907	-0.086587	-0.154104	-0.346670	0.002646	-0.147065
	(0.10367)	(0.00885)	(0.20099)	(0.12720)	(0.43998)	(0.23398)	(0.13426)	(1.01813)
	[-0.39365]	[2.68017]	[1.35282]	[-0.68071]	[-0.35025]	[-1.48161]	[0.01971]	[-0.14445]
C	0.012938	0.026641	-0.088392	-0.201977	0.067124	0.379450	-0.271720	-2.386950
	(0.17988)	(0.01536)	(0.34877)	(0.22072)	(0.76348)	(0.40602)	(0.23298)	(1.76670)
	[0.07192]	[1.73412]	[-0.25344]	[-0.91506]	[0.08792]	[0.93457]	[-1.16630]	[-1.35108]
R-squared	0.504726	0.476839	0.638546	0.410755	0.165026	0.431682	0.310755	0.360685
Adj. R-squared	0.326427	0.288502	0.508422	0.198626	-0.135565	0.227088	0.062627	0.130531
Sum sq. resids	18.83497	0.137381	70.80441	28.35816	339.2872	95.95400	31.59338	1816.786
S.E. equation	0.867985	0.074130	1.682907	1.065048	3.683950	1.959122	1.124160	8.524754
F-statistic	2.830788	2.531831	4.907228	1.936350	0.549005	2.109943	1.252399	1.567149
Log likelihood	-38.81927	47.29313	-61.99288	-45.98027	-89.41408	-67.31196	-47.87084	-118.7787
Akaike AIC	2.789673	-2.131036	4.113879	3.198873	5.680805	4.417827	3.306905	7.358782
Schwarz SC	3.234058	-1.686651	4.558264	3.643258	6.125190	4.862212	3.751290	7.803167
Mean dependent	0.178747	0.050345	0.034962	-0.146312	0.294622	0.343803	-0.117372	-0.941950
S.D. dependent	1.057597	0.087883	2.400292	1.189739	3.457067	2.228417	1.161106	9.142287
Determinant resid covariance (dof adj.)		0.044926						
Determinant resid covariance		0.003044						
Log likelihood		-295.8986						
Akaike information criterion		21.99421						
Schwarz criterion		25.94923						