O‘ZBEKISTONDA PULGA BO‘LGAN TALABNI MODELLASHTIRISH

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ANNOTATSIYA

Pulga bo‘lgan talabni o‘rganish makroiqtisodiy tahlilning muhim jihati hisoblanadi, chunki u jismoniy shaxslar va firmalarning pulni ushlab turish yoki sarflash bo‘yicha qaror qabul qilish jarayoniga oid xatti-harakatlari haqida tushuncha beradi.

Bu ish O‘zbekistonda pulga bo‘lgan talabni chuqur tahlil qilishga qaratilgan. Tadqiqotda daromadlar, foiz stavkalari, inflyatsiya va valyuta kurslari kabi pulga bo‘lgan talabning turli ko‘rsatkichlari o‘rganiladi. Tahlil, shuningdek, pulga bo‘lgan talabga ta’sir qiluvchi omillarni, jumladan, iqtisodiy o‘sish, moliyaviy rivojlanish va demografik o‘zgarishlarni ko‘rib chiqadi.

Kalit so‘zlar: *Pulga talab, Yalpi ichki mahsulot, Foiz stavkasi, Moliyaviy innovatsiya, ARDL model, statsionarlik.*

Ma’lumki pulga talab ko‘rsatkichlari hamda unga ta’sir etuvchi omillar vaqtli qator ma’lumotlaridan iborat. Vaqtli qatorlar bilan ishlashga mo‘ljallangan ko‘plab modellar statsionar o‘zgaruvchilar bilan ishlashga mo‘ljallangan. Shuning uchun ishni birinchi navbatda qatorlarni statsionarlikka tekshirishdan boshlash kerak. Qatorlarni statsionarlikka tekshirishning grafik hamda statistik metodlari mavjud. Statistikada o‘zgaruvchilarni statsionarlikka tekshirish uchun ADF (Augmented Dickey-Fuller) testidan foydalaniladi.

Agar ba'zi o'zgaruvchilar statsionar hamda ba'zi birinchi tartibli integratiyaga ega bo'lsa ARDL modellaridan foydalanish mumkin. ARDL modellar ikki qismdan tashkil topadi. AR qismi erksiz o'zgaruvchi o'zining oldingi davrdagi qiymatlari bilan bog'lanishini ifodalaydi. DL qismi esa erksiz o'zgaruvchilarning oldingi davrdagi qiymatlarini ham modelda qamrab oladi. Umumiy ma'noda $ARDL(p,q)$ model quyidagi ko'rinishga ega bo'ladi:

$$y_t = \alpha + \sum_{i=1}^{p} \beta_i y_{t-i} + \sum_{i=0}^{q} \gamma_i x_{t-i} + \varepsilon_t \qquad (1)$$

O'zbekistonda pulga talabni modellashtirishda O'zbekiston Respublikasi Markaziy Banki hamda O'zbekiston Respublikasi Statistika Qo'mitasi 2016-2022-yil ma'lumotlaridan foydalanildi. Modellashtirish uchun quyidagi ko'rsatkichlar tanlab olindi:

RM – Real pul massasi. Bu ko'rsatkich M2 pul aggregatidan inflyatsiyani chiqarib tashlash orqali hosil qilingan.

Y – daromad darajasi, R – real foiz stavkas, $FINO$ – moliyaviy innovatsiya (financial innovation), EX – valyuta kursi (exchange rate), TP – umumiy aholi soni (total population).

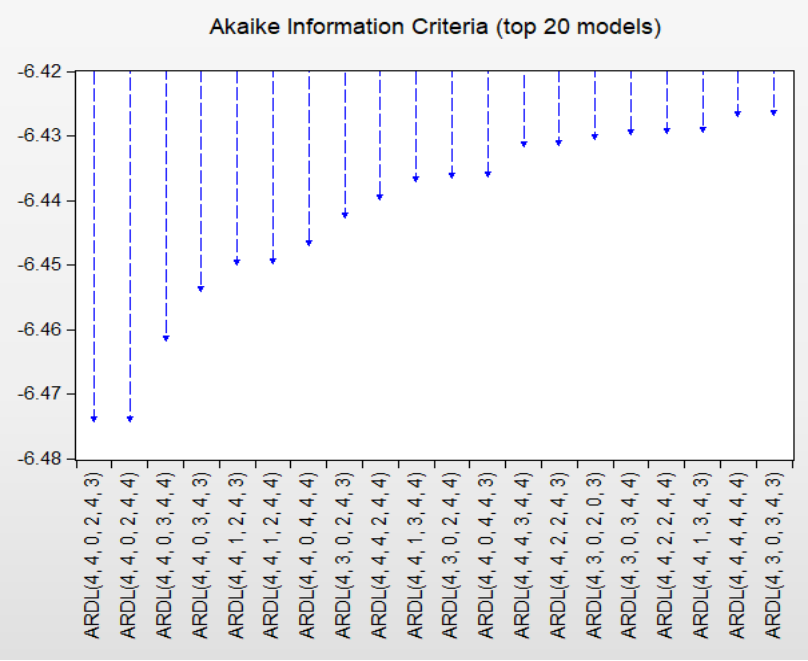
Tadqiqotda vaqtli qatorlardan foydalanilgani uchun modellashtirishni qatorlarni statsionarlikka tekshirishdan boshlash zarur. Quyidagi jadvalda O'zbekistonning 2013-2022-yilgi ma'lumotlari asosisa pulga talab va unga ta'sir qiluvchi omillar ADF testi natijalari keltirilgan:[1]

Jadval 1.

Series	At Level	First Difference	Order of Integration
LOG_RM_M2	Not Stationary	Stationary	I(1)
LOG_RM_M1	Not Stationary	Not Stationary	-
LOG_RM_M0	Not Stationary	Not Stationary	-
LOG_GDP	Not Stationary	Stationary	I(1)
LOG_DR	Stationary	Stationary	I(1)
LOG_TP	Not Stationary	Stationary	I(1)
LOG_EX_PA	Not Stationary	Stationary	I(1)
LOG_FINO	Not Stationary	Stationary	I(1)

[1] Muallif hisob kitoblari

Jadval ma’lumotlaridan ma’lumki, model uchun tanlab olingan ozgaruvchilar birinchi tartibli integratsiyaga ega. Natijalar shuni ko‘rsatadiki modellashtirish uchun ARDL modeldan foydalanish mumkin. ARDL modellar omillar orasidagi qisqa muddatli bog‘lanishni aniqlash uchun foydalaniladi.



Rasm 2. ARDL model uchun AIC me’zoni natijalari.

Modelga kiritilishi zarur bo‘lgan laglar sonini aniqlash uchun AIC (Akaike Information Criteria), BIC (Bayesian Information Criteria), HQIC (Hannan-Quin Information Criteria) metodlaridan foydalanish mumkin. AIC me’zoni ekonometrikada hamda boshqa sohalarda ma’lum modellar orasidan optimalini tanlashda ishlatiladigan statistic o‘lchovdir. Bu me’zon 1974-yildan yaponiyalik statistikachi Hirotugu Akaike tomonidan taklif etilgan. AIC modelning ehtimollik funksiyasiga asoslangan bo‘lib, uni hatto modellar o‘rnatilmaganda ham hisoblash mumkin. AIC ko‘pincha vaqt seriyalarini tahlil qilish, regressiya tahlili va boshqa statistik modellashtirish dasturlarida qo‘llaniladi.[2] Tuzilgan modellar uchun AIC me’zoni baholari qanchaliik kichik bo‘lsa model shunchalik yaxshi hisoblanadi.

[2] “Information Criteria and Model Selection” by Christopher F. Baum in Journal of Economic Literature, Vol. 36, No. 2 (Jun., 1998), pp. 631-64.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOG_RM_M2(-1)	0.722073	0.088393	8.168934	0.0000
LOG_RM_M2(-2)	0.123116	0.104117	1.182478	0.2418
LOG_RM_M2(-3)	-0.083276	0.111351	-0.747872	0.4576
LOG_RM_M2(-4)	0.217874	0.091661	2.376960	0.0208
LOG_GDP	0.004538	0.010689	0.424571	0.6727
LOG_GDP(-1)	-0.004159	0.015574	-0.267032	0.7904
LOG_GDP(-2)	0.004753	0.015064	0.315483	0.7535
LOG_GDP(-3)	-0.054422	0.014204	-3.831522	0.0003
LOG_GDP(-4)	0.022142	0.012077	1.833430	0.0719
DR	-0.000937	0.000974	-0.961356	0.3404
LOG_EX	-0.063034	0.036921	-1.707279	0.0931
LOG_EX(-1)	0.323601	0.050224	6.443095	0.0000
LOG_EX(-2)	-0.291096	0.035752	-8.142077	0.0000
LOG_TP	-2.417065	3.543963	-0.682023	0.4979
LOG_TP(-1)	7.070563	6.221046	1.136555	0.2604
LOG_TP(-2)	-0.572517	6.498232	-0.088104	0.9301
LOG_TP(-3)	-12.89118	6.359814	-2.026974	0.0473
LOG_TP(-4)	9.552720	3.671023	2.602196	0.0117
FINO	0.002588	0.009247	0.279933	0.7805
FINO(-1)	0.000108	0.012530	0.008611	0.9932
FINO(-2)	-0.037466	0.013345	-2.807465	0.0068
FINO(-3)	0.038379	0.009371	4.095701	0.0001
C	-2.992657	1.084006	-2.760740	0.0077

R-squared	0.985618	Mean dependent var	4.754927
Adjusted R-squared	0.980162	S.D. dependent var	0.060039
S.E. of regression	0.008456	Akaike info criterion	-6.473943
Sum squared resid	0.004147	Schwarz criterion	-5.794038
Log likelihood	285.1947	Hannan-Quinn criter.	-6.201156
F-statistic	180.6708	Durbin-Watson stat	2.397208
Prob(F-statistic)	0.000000		

Rasm 3. ARDL model natijalari

2-rasmda ARDL model uchun AIC me’zoni natijalari keltirilgan. Grafikdan ko‘rish mumkinki erksiz o‘zgaruvchi uchun laglar soni 4 ta, yalpi ichki mahsulot uchun 4 ta, almashuniv kursi uchun 2 ta, aholi soni uchun 4 ta hamda moliyaviy innovatsiya uchun 3 taga teng bo‘lgan model uchun AIC me’zoni eng kichik qiymatga (-6.47) ega. Shuningdek bu model uchun BIC me’zoni qiymati -5.79 ni hamda HQIC me’zoni -6.20 ni tashkil qilgan.

Model natijalaridan ko‘rish mumkinki, pulga talabning hozirgi holati bir foizga o‘zgarsa o‘zining keying oydagi holatini 0.72 foizga oshishiga olib keladi. Ikkinchi hamda uchinchi tartibli laglar uchun t-statistika qiymatidan ko‘rish mumkinki, bu koeffitsiyentlar statistik jihatdan ahamiyatli emas. Shuningdek yalpi ichki mahsulot ko‘rsatkichi uchun faqat uchinchi tartibli lag Student t-statistika me’zoniga ko‘ra ishonchlidir.

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