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# Testing of the Existence of Baumol Cost Disease in Public Education Expenditures in Iran

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## Abstract

This paper analyzes the incentives to increase the cost of public education, including the effect of the "cost sickness" scheme. According to the theory, the salary paid to teachers can explain the significant increase in tuition costs. Bamol divides the economy into two leading non-progressive parts. The leading sector includes the part of economic activities in which technology is crystallized as innovations and the accumulation of capital in it by activating economies of scale provides the basis for increasing per capita production. In this sector, the increase in wages is proportional to the increase in productivity. On the other hand, there are activities in which the human role is prominent and productivity growth occurs only occasionally and accidentally. In terms of education, they are located in the non-leading sector. In non-leading industries, the wage rate increases in proportion to the higher wage rate in the leading sector to retain workers despite the low productivity growth similar to the effect (Samuelson-Balasa) and increases the unit cost of services in the non-leading sector. This increase in cost translates into an additional increase in the cost of education, and because the demand for education is unbearable, it continues to increase the general cost of education. The present study reviews the article on unbalanced macroeconomic growth and crisis in urban areas of Bamol and examines the increase in costs in the Iranian education sector using the Bamol model and ARDL method during the period (1360-1397). Long-term and short-term results show that not only is there no sick disease, but also an increase in wages to productivity reduces production costs in that sector and can lead to prosperity in this sector.

**Keyword:** Baumol cost Disease, Labor cost, Service sector, Public education, Productivity Growth.

**JEL Classification: E24, D24, J31, A20, I10.**

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## 1. Introduction

The Baumol disease explains the cost of increasing spending on education without a corresponding increase in productivity. According to this theory, productivity in this sector is constant while its costs increase. This is especially effective in demand, especially in markets with more elasticity. According to Baumol, productivity growth does not occur in areas where the human presence is prominent. Wonder (1977) using a dynamic model of receiving teachers' salaries is one of the important factors in providing and retaining teachers. According to the findings of Peter Dalton (2020), the main determinant of teachers' supply is relative and suggested wages. Darling Hammond (2000) in a study showed that teachers' salaries should be increased in order to hire and support skilled teachers. In this study, we intend to determine the factors that increase costs in the public education sector using an equation Understand regression from Baskha et al. (2014) article and available data from Iran. Does the increase in spending in the education sector reflect the increase in teachers' productivity?

### *1-1. Research Hypotheses*

The main hypothesis

The difference between the wage index and labor productivity has a significant effect on the share of education costs in GDP.

Sub-hypotheses

1. In the education sector, wages have increased by more than the productivity of the labor force, and this is evidence of the existence of a disease with a dull effect.

2. Macroeconomic variables such as inflation and per capita economic growth have significant effects on education costs.

## 2. Research model and method

*Territory place* of this research is limited to Iran and its purpose is to investigate the factors affecting the increase of educational costs in the public sector and to test the existence of low cost diseases in this sector. In terms of time, this study intends to investigate the existence of low-cost disease and other factors affecting the increase

in general education costs during the period 1981-2008. The data of this research is based on the base year of 2004.

$$lneducate = \alpha_0 + \alpha_1 * lnbaumol + \alpha_2 * lnGDPper + \alpha_3 * lninflation + DUM + u_t$$

This model is derived from research on Aging and Cost Disease Bamoul,s in Iranian health Sector. Quantitative data and information have been extracted from the website of the Central Bank and the National Statistics Center of Iran.

The variables remain at the level i (0) or the first-order difference i (1) and therefore we use the ARDL method to investigate the existence of short-term and long-term relationship in the model. The assumption of no long-term relationship between variables was rejected and therefore there is a long-term relationship. According to the results, the long-term coefficient of the variable with the coefficient is quite significant and the sign of the coefficient is different from the previous researches, which means that not only there is no variable disease, but also increasing wages to productivity reduces production costs in that sector. Has been and can be the background of prosperity in this sector. The variable coefficient of the imposed war is negative and significant and indicates that the existence of war causes the share of education expenditures in GDP to be allocated to war-related cases. To be given. The estimated error correction factor is -0.96, which means that in each period, about 96% of the dependent variable imbalances are eliminated and the model returns to the long-run equilibrium. That the proposed CUSUM and CUSUMQ diagrams are within the confidence interval, the null hypothesis that the coefficients are stable is accepted.

## 3. Conclusion

Long-term and short-term results show that there is no Baumol disease in the Iranian education sector. The results of the study showed that the variable of Baumol is significant but its coefficient was negative. More attention can be paid to this section. This article calls for reforms in teachers' salaries and recommends an increase in salaries in the public education sector. Another recommendation of this research is price control and should be one of the strategies of any government.

**References**

Agenor, P. R., (2006). *Public Infrastructure and Growth: New Channels and Policy implications.* World Bank Policy Research Working Paper, 4064.

Almei, Z. & Nikbin, T., motameni, M., (2017). *The Return to Education in IRAN by Using Age Cohorts and Pseudo Panel Data Approach.* Journal of Applied Economics Studies in Iran, No. 6(22), Pp: 145-170. (In Persian).

Andersen, T. T., (2015). *Baumols Cost Disease and thesustainability of the Welfare state.* Economic Policy Research Unit, University of Copenhagen, ISSN 908-7745.

Barro, R., (1990). "Government Spending in a Simple Model of Endogenous Growth". *Journal of Political Economy*, No. 98(S5), Pp: 103-125.

Basakha, M., yavari, K., sadeghi, H., naseri, A. (2014). *Aging and Cost Disease Bamols in Iranian Health Sector*. Journal of Applied Economics Studies in Iran, No. 3(9), Pp: 169-187. (In Persian).

Bates, L. S., (2012). "Does the U.S. health care sector Suffer from Baumols cost Disease? Evidence from the 50 States". *Journal of Health Economics*, No. 32, Pp: 386-391.

Baumol, W. B., (1965). *On the Performing Arts: The Anatomy of Their Ecnomic Problems.* The American Economic Review, Vol. 55.

Baumol, W. F., (2012). *The Cost Disease: why computers Get cheaper and health Care doesnt.* Yale University Pres.

Baumol, W. W., (2013). *A Comparative analysis of education Costs and Outcomes: The united state vs.* other OECD countries. Economic of Education Review, 39.

Baumol, W., (1993). *Health Care, Education and cost Disease: A looming crisis for Public Choice.* Kluwer Academic Publishers, Public choice, 70.

Baumol, W., (1996). "Children of Performings Arts, The Economic Dilemma: the climbing costs of health care and educatin". *Journal of Cultural Economics*, Kluwer Publishers, No. 20, Pp: 183–206.

Becker, G., (1964). *Human Capital.* The National Bureau of Economic Research.

Bloom, D. K., (2018). "Health and Economic Growth". *Program on the Global Demography of aging at Harvard University Pgda Working Paper*, No. 153, Pp: 1-37.

Borge, L. H., (2017). *Cost disease in defense and Public administration: Baumol and politics.* Springer Science.

Bradford, D., (1969). *Balance on unbalanced Growth.* Zeitschrift fur Nationaloknomic.

Chapman, B., (2003). *Baumol disease: the pandamic that Never Was.* Gippsland Medical School.

Chen, X. M., (2014). "Disease or utopia? Testing Baumol in Education". *Economics letters*, Vol. 122, Issue 2, Pp: 220-223.

Colombier, C., (2017). *Unwanted side effects of Baumol Cost Disease on balancedbudget rule.* FIFO-institute for public Economics.

Cowen, T., (1996). "Why Do Not Believe in TheCost-Disease". *Journal of Cultural Economics*, No. 20 (3), Pp: 207–214.

Cutler, D., (2011). *Where are The Healthh Care Entrepreneurs?* National Bureau of Economic Research.

Dalton, P., (2006). *Handbook of Economics of Education.* Volume 2. london: Department of Economics, Royal Holloway.

Emadzadeh, Mostafa, (1382). *Economics of Education*. Isfahan: University Jihad. (In Persian).

Engel, E. W., (2015). *Fiscal Sustainability and cost Disease.* Preliminary and Very Incomplete Version.

Filmer, D. H., (1998). "Health Policy in Poor Countries". *The World Bank Development Research Group Poverty and Human Resources*, No. 1874.

Grossman, M., (1972). "On concept of Health Capital and the Demand for Health". *The Journal of Political Economy is currently*, No. 80(2), Pp: 223–225.

Grossman, M., (1972). *The Demand for Health: A theorical and Emprical investigation.* National Bureau of Economic Research.

Group, W. B., (2017). *Education Public Expenditure Review.* International Bank for Reconstruction and Development.

Hanushek, E. A., (1995). "Who choose to teach (and why?)". *Economic Education review,* Vol. 14, No. 12 (June). Pp: 101-117.

Hartwig, J. H., (2017). *The Growth Disease at 50 Baumol after Oulton.* Chemnitz Economic Papers.

Hartwig, J., (2008). "What Drives health care expenditure? -Baumols model unbalanced Growth revisited". *Journal of Health Economics,* No. 27(3), Pp: 603-623.

Helibrun, J., (2011). "Baumol Disese". In: E. Elgar, *Ahand book Cultural Economics,* Second Edition.

Herrere, S., (2007). *Public Expenditure and Growth.* Policy Research Working Paper.

Iscan, T., (2009). "How much can Engel's law and Baumol's disease explain the rise of service employment in the United States". *The BE Journal of Macroeconomics,* No. 10(1), Pp:1–41.

Joseph, N. H., (1977). "Medical-care Expenditure: A Cross-National Survay". *The Journal Human Resources,* No. 12, Pp: 115–125.

Last, A. W., (2010). "Baumol's Cost-Disease, Efficiency, and Productivity in the Performing Arts: An Analysis of German Public Theaters". *Working Papr Series in Economics,* No. 173.

Maksimović, G. J. (2017). "Mangement of health care Expenditure by Soft Computing methodology". *Physica A,* Vol. 465, Pp: 370-373.

Meage, N. S., (2011). *Wages, Productivity and Emolyment: A review of theory and international data.* institute for employment Studies.

Molina, E. F., (2018). "Teach Classroom Obsevation Tool". *Policy Research Working Paper,* 8653.

Nordhaus, W., (2006). "*Baumol Disese A Macroeconomic Perspective*". (NBER Working Paper 12218). Cambridge, MA: National Bureau of Economic Research.

Nose, M., (2015). *Estimation of Drivers of Public Education Expenditure: Baumol's Effect Revisited.* International Monetary Fund, WP/15/178.

Oulton, N., (1999). *Must the Growth Rate Decline? Baumol Unbalanced Growth revisited.* Bank of Enlandresearch programme the service sector.

Pesaran, H., (2001). "Bounds testing approaches to the analysis of level relationships". *Journal of Applied Econometrics,* Volume 16, Issue 3 pp. 289-326.

Pomp, M. V., (2008). "Rising health spending, new medical technology and Baumol Effect". *CBC Discussion Paper,* No. 115, 34 pages.

Selmaj, M., (1962). "Health as an Investment". *The Journal of Poltical Economy* (University Chicago Press), Vol. 70, No. 5, Part 2, 414 pages.

Sidorkin, A., (2019). "Baumols Cost Diesease and Trinitarian Pedagogy". *Studis in Phiosophy Education,* Vol. 38, No. 6, Pp: 591-600.

Siniscalco, M. T., (2004). *Teacher Salaries.* Paper commissioned for the EFA global Monitoring Report.

Strauss, J., (1998). "Health, Nutritian, and Economic Development". *Journal Economic Literature,* Vol. XXX.VI, Pp: 766-817.

Syverson, C., (2010). What Determines Producivit. *National Bureau of Economic Research,* http://www.nber.org/papers/w15712.

Wouterse, B. H., (2013). "Modeling the relationship between health and health care expenditures using a latent Markov model". *Journal of Health Economics,* vol. 32(2), Pp: 423-439.

Yang, X., (2020). "Health expenditure, human capital, and economic growth:an empirical study of developing countries". *International Journal of Health Economics and Management,* No. 20(2), Pp: 163-176.