



Review Article

Crowding in or Crowding Out? Economic Growth, Public and Private Investment in Kenya

Cyrus Mutuku^{1*} and Monica Kinyanjui²

Abstract

Kenya seeks to realize vision 2030 by growing the economy by 10% annually. However, this has not been realized in the last 7 years. Private and public investments are the main ingredients in driving the expected growth rates. However, both are under performing especially public investments given fiscal constraints and ballooning recurrent expenditure. It is essential to know whether the two investments are complementary or substitutes. Using a VAR model and annual time series data spanning 1960 to 2016, this study reveals that public investments crowds out private investments in the short run.

Keywords

Kenya; VAR; Private and public investments; Crowding out; Impulse response function

Introduction

The expected economic growth and development path for Kenya is outlined in Vision 2030, a long-term development blueprint for the country. The vision seeks to transform Kenya into an industrialized, middle-income country providing a high quality of life to all its citizens in a clean and secure environment. The Vision is anchored on three key pillars: economic; social; and political governance. The economic pillar aims to achieve an average economic growth rate of 10 per cent per annum and sustaining the same till 2030 GOK [1]. However, the realized annual economic growth rates are far below 10%. Economic growth rates have stagnated at 5.5% in 2016, 5.6% in 2015, 5.3% in 2014 and 5.8%, 4.5% and 6.1% in 2013, 2012 and 2011 respectively, KNBS [2]. In 2017, Kenya's GDP growth is projected to decelerate to 5.5%, according to the World Bank's Kenya Economic Update.

The envisioned economic growth is anchored on increase in private and public investment. Specifically, a private investment was expected to rise from 15.6% of GDP in 2006/07 to 22.9% in 2012/13, and to over 24% of GDP during the period 2020/21 to 2030 KIPPRA [3]. Notably, Kenya's Private sector investment has continued to perform below expectations, Mundia et al. [4]. The underperformance is explained by macroeconomics instability, internal and external economic shocks, Njuguna et al. and KIPPRA [3]. The sluggish growth in private investments in Kenya has further been amplified and exemplified by a marked slowdown in credit

growth to the private sector by 9% of GDP in 2016. At 4.3% of GDP in 2016, this remains well below 12%-15% required to sustain a robust private investment for economic growth, CBK & World Bank (2017). These decline in private credit extension and subsequent decline in private investments is more pronounce in major jobs creating sectors like agricultural sector (9.3% decline), Business services sector, (15.6% decline) and manufacturing sector (7.8% decline). Likely, public investment has permanently dragged below private the diming private investment.

On the other hand public borrowing is explosive as marked by 73 % growth in per capita debt over five years, from Sh34, 116 to Sh58, 859. Comparably, in the 2014/2015 financial year, external debt service charges almost quadrupled to Sh113 million up from Sh31.8 million in the fiscal year 2010/2011. By early 2017, debt to GDP ratio was 52.7%, 12.7% points above IMF's recommended benchmark for emerging countries.

The high debt servicing payments of 5% of the GDP is expected to affect other critical public expenditures in the national budget. An analytical perspective reveals that the debt is growing faster than the economy. Debt, whether for recurrent expenditure or public investment could have implication on economic performance and private investment. This study seeks to understand the relationship in public investment, private investment and economic growth in Kenya.

Explaining the golden and the lost decades in Kenya

Figure 1 shows historical evolution of government investment as percentage of GDP, private investment as percentage of GDP and economic growth. The highest economic growth rate of 22% was attained at 1970 which was accompanied by the highest private investment at 14.7% and public investment at 7.3%.

The annual average economic growth of 6.6% from 1963 to 1973 was driven by agricultural production enhancement policies enacted in the wake of independence. The agricultural sector grew by 4.7% annually during the same period, stimulated by government initiatives like redistributing estates, diffusing new crop strains, and opening new areas to cultivation. This period is known as the golden years in Kenya.

Conspicuously, there is a notable slump in economic performance between 1974 and 1990 interrupted by a meager boom in 1986. The decline is explained by dwindle in agricultural sector growth coupled with a decline in world market price for coffee marking an end of coffee boom in 1990. Also, the global oil crisis in 1973, collapse of East Africa Cooperation and global economic recession marked the lost decade in Kenya.

Correspondingly, Kenya's inward-looking policy of import substitution and rising oil prices made Kenya's manufacturing sector uncompetitive as evident in the progressive shrink in private investment from 12.1% in 1971 to 6.5% in 1994. In addition, lack of export incentives, tight import controls, and foreign exchange controls made the domestic environment for investment even less attractive. From 1991 to 1993, growth in GDP stagnated, and agricultural production shrank at an annual rate of 3.9%.

*Corresponding author: Cyrus Mutuku, Department of Economics, University of Nairobi, Nairobi, Kenya, E-mail: mutukucmm@gmail.com

Received: December 11, 2017 Accepted: January 05, 2018 Published: January 12, 2018

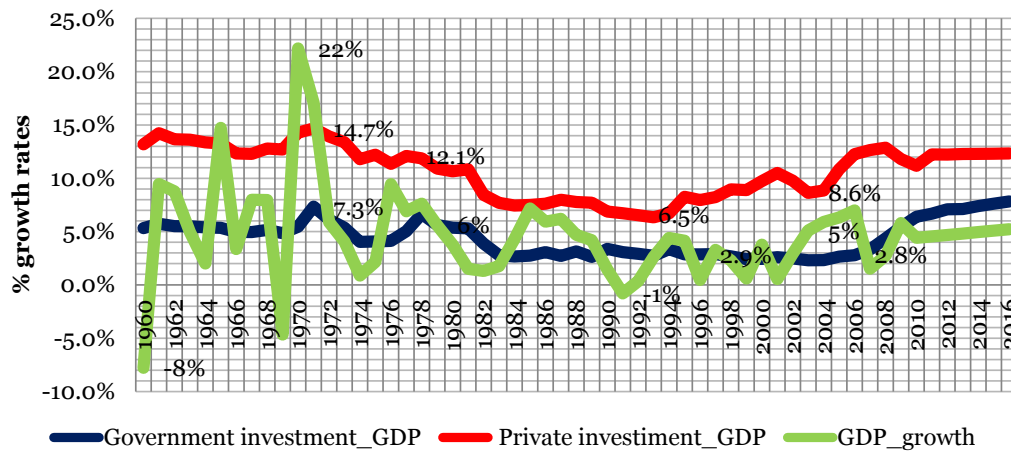


Figure 1: GDP growth, private and public investment trends.

Source: KIPPRA [3].

Macroeconomic instability exacerbated the contracting growth in economy especially inflation that reached a record 100% in August 1993. Although the government's budget deficit was over 10% of GDP, public investment stagnated at around 2.9% implying that most of expenditure was recurrent. Worse still, bilateral and multilateral donors suspended program aid to Kenya in 1991 leading to (-1%) growth.

Structural adjustment programmes (SAPs) implemented in 1993 marked the beginning of major policy reforms in Kenya. SAPs sought to foster market liberation, financial sector reforms, and government budgetary rationalization, privatization and civil service reforms, (Central Bureau of Statistics, 1997a and 1997b) [5]. Specifically Kenya eliminated exchange controls including restrictions on inward portfolio investments and removed all trade restrictions, except for a short list of a few products controlled for health, security and environmental reasons. The number of non-zero tariff rates reduced from seven to five, and the maximum tariff reduced from 62 percent in 1993/94 to 40 percent in 1995/96.

With the liberalization of the maize market in December 1993 and the petroleum market in October 1994, all price controls had been abolished. Steps were also taken to strengthen the financial system, including enhanced prudential supervision of commercial banks, the closure of financially unsound banks, and strict enforcement of statutory requirements of nonbank financial institutions (NBFIs), some of which were either transformed into banks or merged with existing banks [6]. Consequently, economic recovery characterized the period between 2002 to 2016 with an increase in private investment to 8.5% and economic growth at 5%. However, economic recovery was interrupted by 2007/2008 global financial crisis and accentuated by 2007 political instability. In the same period, there is a permanent displacement effect in public investment mostly driven by fiscal stimulus made to cushion the economy against external shocks.

According to endogenous growth models private investments is the engine for economic growth and development [7-9]. For Kenya to achieve vision 2030 and create sustainable development, for growth and employment, the decline in private investments must be tamed. To induce private investment, monetary and fiscal policy makers need to know the relationship between private investment and public investment.

Lucidly, there is little empirical analysis linking macroeconomic variables to private investment [10]. Ghura et al. [11] and Oshikoya et al. [12] have used panel of African countries to explain determinants of private investments, however these studies are not specific to Kenya. Considering the significant contribution of private and public investments in achieving sustainable economic growth and vision 2030, this study therefore seeks to exhaustively ascertain the relationship private investments and deduce appropriate policy recommendations [13].

In the next section, the study explains the theoretical and empirical link between the variables.

Theoretical and Empirical link between economic growth, public and private investment

According to Afonso et al. [14] public investment can crowd in or out private investment. Firstly, financing public investment may imply more taxes or impose a higher demand for funds from the government in the capital markets, therefore fuelling upward pressure on interest rates. This would reduce the amount of savings available for private investors and decrease the expected rate of return of private capital, leading to a crowding-out effect on private investment. Secondly, public investment can create conducive environment for private investment, for instance, by providing or promoting relevant infrastructure for private sector to thrive. The existence of infrastructure facilities may increase the productivity of private investment, which can then take advantage of better overall infrastructures and potentially improved business conditions. This would result in having a crowding-in effect on private investment.

Several studies have been done on crowding in or out using VAR econometric approach. Voss et al. [15] estimates a VAR model with GDP, public investment, private investment, the real interest rate, and price deflators of private and public investment, for the US and Canada using annual data spanning 1947 to 1996. The results show that public investment crowd out private investment. In similar vein, Mittnik et al. [16] estimate a VAR with GDP, private investment, public investment and public consumption for six industrialized economies. Their results indicate that public investment tends to exert positive effects on GDP, and that there is no evidence of dominant

crowding-out effects. Similar findings are echoed in Perotti et al. [17] and Kamps et al. [18].

Byegon et al. [19] and Serven et al. [20] analyzes how public and private investment interact with each other in India, and reports evidence of crowding out in the short run and crowding in of private capital due to infrastructure investment in the long run. Erden et al. [21] analyzed the relative interaction of public and private investment in developing and developed economies and conclude that while public investment is complementary to private investment in developing countries, the effect is opposite in developed countries. The difference in these results is attributed to structural differences between the two types of economies: while public investment may provide the necessary infrastructure facilities in developing countries and hence boost private investment, in developed economies the public sector is already large and may compete with the private sector.

This study will employ VAR approach do determine the interaction between private and public investment in Kenya.

Model Specification

A 3 variable VAR model is represented as

$$X_t' = [\ln gdp_t \quad \ln g_inv_t \quad \ln p_inv_t]'$$

Where $\ln gdp$ is natural logarithm of gross domestic product, $\ln g_inv$ represents gross capital formation in public sector while $\ln p_inv$ is gross capital formation in public sector representing private investment. The benchmark reduced-form VAR is stated as: $X_t = \alpha_0 + \alpha_1 t + A(L)X_{t-1} + \varepsilon_t$. Thus the relation between the reduced form disturbances ε_t and the structural disturbances v_t takes the following form.

$$\begin{bmatrix} 1 & 0 & 0 \\ \alpha_{21} & 1 & 0 \\ \alpha_{31} & \alpha_{32} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_t^{G_inv} \\ \varepsilon_t^{P_inv} \\ \varepsilon_t^{gdp} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} v_t^{G_inv} \\ v_t^{P_inv} \\ v_t^{gdp} \end{bmatrix}$$

This recursive scheme entails that the ordering of the variables has important implications for the identification of the shocks. This particular ordering has the following implications: (i) government investment G_inv does not react contemporaneously to shocks from other variables in the system; (ii) private investment (P_inv) does not react contemporaneously to shocks originating from all factors except government investment.

Technically, this amounts to estimating the reduced form, then computing the Cholesky factorization of the reduced form VAR covariance matrix. In other words, the relation between the reduced-form errors and the structural disturbance is given by the above matrix (Figure 2).

Preliminary Analysis

This section outlines some preliminary tests to gauge the fitness of the model run. All the variables were transformed to natural logarithms. After seasonal adjustment apart from repo rates; Macroeconomic time series variables mostly exhibit time variant moments. This can be confirmed through stationarity test. In testing for stationarity, this study employed the Augmented Dickey-Fuller (ADF) and Phillips Perron tests. ADF test was employed with intercept and lag length selected based on the SIC information criterion to ensure that the residuals are white noise. The decision criterion involves comparing the computed tau values with the Mackinnon critical values for rejection of a hypothesis of a unit root [22] (Table 1).

This test shows that all the variables are non-stationary in levels at 1 percent, 5 percent and 10 percent significance level. This means that the individual time series have a stochastic trend and do not revert to average or long run values after a shock strikes and the distributions has no constant mean and variance.

Test for co-integration

Since variables have unit root at levels, we tested for long run relationship using the Johansen and Juselius (1990) approach to establish the co-integrating vectors. Two test statistics are used to test the number of co-integrating vectors, based on the characteristic roots. For both trace and Eigen statistics, the null is at most r co-integrating vectors (Table 2).

Both the Eigen and Trace statistic rejects none co-integration hypothesis at 5 percent significance level for 1 co-integrating relationship. This reveals that there is enough statistical evidence for existence of a unique co-integrating vector for the set of variables in the VAR model.

The optimal lag length was selected based on comparison of the following information criteria which include Akaike information criterion (AIC) Schwarz information criterion (SC), Hannan-Quinn information (HQ) criterion, Final prediction error (FPE) and Sequential modified LR test statistic. Too many lags impact on degrees of freedom while few lags create the problem of serial correlation. Majority of the criteria indicate that the optimal lag length should be 4 (Table 3).

Estimation of impulse responses

The impulse response function shows that government investment significantly crowds out private investment with the effect significantly persisting for three years. Notably, shocks in economic performance do not significantly affect private investment. On the other hand, private investment crowds in government investment. This could be explained by the positive effect of private investment on economic performance translating into a larger tax base. A larger tax base relaxes government revenue constraint leading to more expenditure on investment. Similarly, government investment has a positive effect on economic growth with the persistent effect reaching 4 years. However, private investment effect on GDP is more delayed as compared to government investment implying that government projects have lesser gestation period.

Conclusion

The study established that government expenditure shocks lead to a decline in private investment confirming a crowding out effect. It implies that government financing of fiscal deficit through domestic borrowing has constraint private sector from accessing credit. Given that Kenya has adopted interest capping, the resultant credit rationing has seen commercial banks concentrate on funding public projects hence crippling private sector credit access. Secondly, the effect is augmented by the nature of commercial banks in developing countries given that they lend so little due to excessive market failure. Public projects become more viable. Consequently, the government needs to adjust its sheer scale of domestic borrowing and cap interest rates above the rate of return for government securities to increase economy's private sector lending capacity and encourage businesses in making capital investments. Finally, long term fiscal austerity measures should be considered to check the ballooning fiscal deficit.

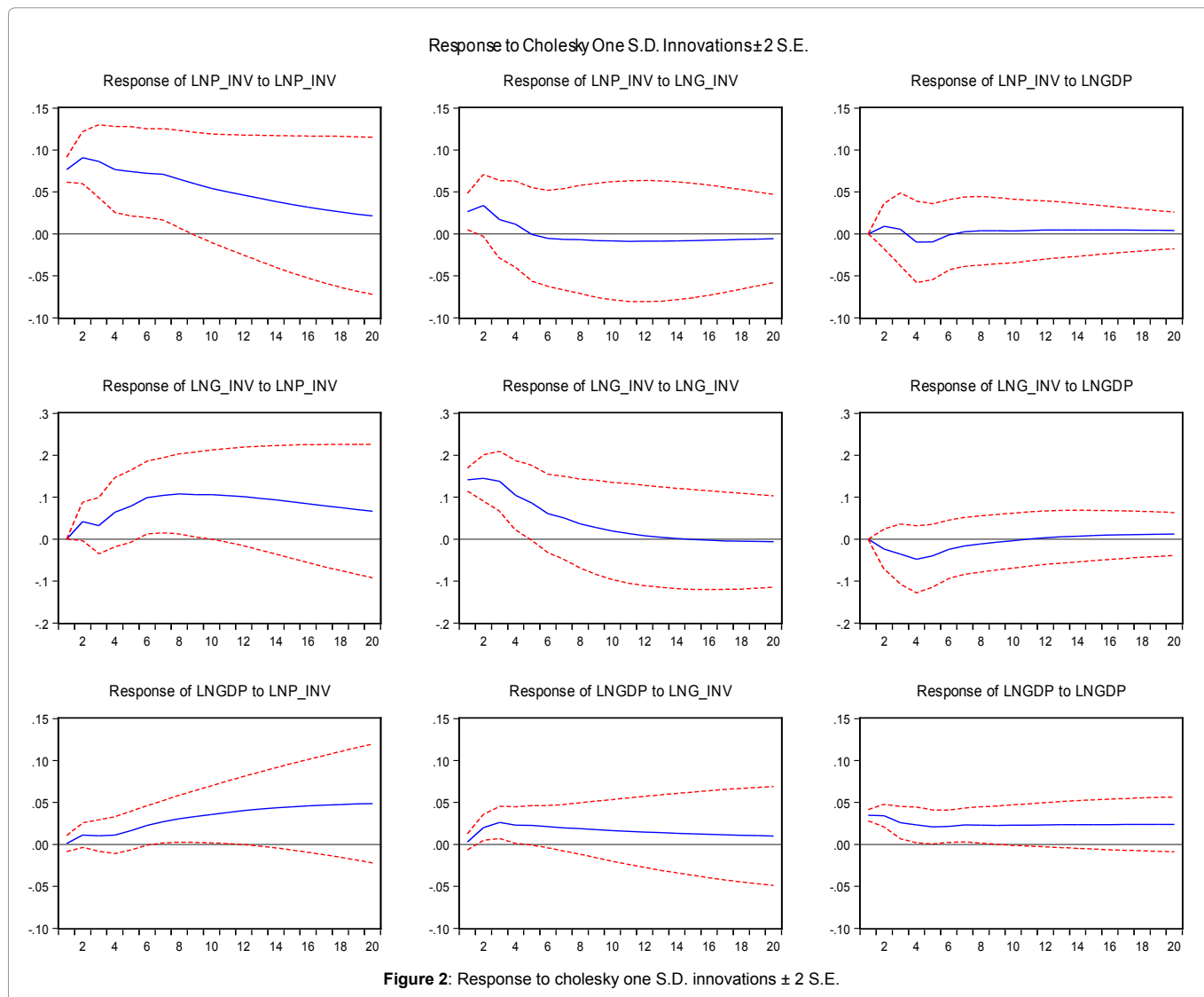


Table 1: Test for Unit roots results.

Unit root test with trend and intercept					
Variable	ADF		PP		Conclusion
	Level	1 st Difference	Level	1 st Difference	
ln_GDP	-2.5650***	-5.0894	-2.3738***	-6.2196	I(1)
ln_g_INV	-1.03173**	-3.7709	-0.6084**	-3.9612	I(1)
ln_p_INV	-1.03171**	-3.7709	-0.6084**	-3.9612	I(1)

***10percent, **5percent and *1percent significance levels
I(1) integrated of order one.

Table 2: Co-integration Rank Test (Trace).

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.407612	40.64298	35.01090	0.0113
At most 1	0.144045	11.84533	18.39771	0.3206
At most 2	0.058077	3.290748	3.841466	0.0697

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**Mackinnon-Haug-Michelis (1999) p-values

Table 3: VAR Lag Order Selection Criteria.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-130.6769	NA	0.002088	5.179880	5.329975	5.237423
1	-8.446471	220.9550	3.52e-05	1.094095	1.844573*	1.381811*
2	2.044698	17.35078	4.40e-05	1.305973	2.656834	1.823861
3	17.32110	22.91460	4.66e-05	1.333804	3.285048	2.081865
4	55.76286	51.74852*	2.08e-05*	0.470659*	3.022286	1.448893
5	64.78221	10.75384	2.99e-05	0.739146	3.891155	1.947552

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

References

- Gok (2012) Government sessional paper No. 10 of 2012 on Kenya Vision 2030, Kenya.
- KNBS (2016) Kenya Economic survey, Kenya.
- KIPPRA (2017) Kenya Economic Report, Kenya.
- Mundia RK (2014) Analysis of determinants of private investments in Kenya, University of Nairobi, Kenya.
- National Development Plan 1997-2001 Nairobi (1996) Central Bureau of statistics 1997a 1997b, Kenya.
- Karingi SN, Siriwardana M (2001) Structural Adjustment Policies and the Kenyan Economy: A Computable General Equilibrium Model Analysis. Afr Dev Rev 13: 24-45.
- Sala-i-Martin X (1997) I just run two million Regressions. Am Econ Rev 87: 178-183.
- Frankel JA, Romer D (1999) Does Trade Cause Growth? Am Econ Rev 89: 379-399.
- Amanja M, Morrissey O (2005) Foreign aid, Investment and economic growth in Kenya. A time series approach, University of Nottingham, UK.
- <https://thesis.eur.nl/pub/17354/>
- Ghura D, B Goodwin (2000) Determinants of Private Investment: A Cross Regional Empirical Investigation. App Econ 32: 1819-1829.
- Oshikoya TW (1994) Macroeconomic Determinants of Domestic Private Investment in Africa: An Empirical Analysis. Econ devel cultural change 42: 573-596.
- Ndung'u N, Thugge K, Otieno O (2011) Unlocking the future potential for Kenya: The Vision 2030, Kenya.
- Afonso, António, St. Aubyn, Miguel (2008) Macroeconomic rates of return of public and private investment: crowding-in and crowding-out effects. ECB Working Paper 77: 21-39.
- Voss G (2002) Public and private investment in the United States and Canada. Economic Modelling 19: 641-664.
- Mitnik S, Neumann T (2001) Dynamic effects of public investment: Vector autoregression evidence from six industrialized countries. Empirical Economics 26: 429-446.
- Perotti R (2004) Public investment: another (different) look. IGIER, Working Paper 277.
- Kamps C (2004) The dynamic effects of public capital: VAR evidence for 22 OECD countries. Intern Tax Public Fin 12: 533-558.
- Byegon IK (2009) Determinants of private investments in Kenya, University of Nairobi, Kenya.
- Serven L (1999) Does Public Capital Crowd Out Private Capital? Evidence from India, South Asia.
- Erden L, RG Holcombe (2005) The Effects of Public Investment on Private Investment in Developing Economies. Public Fin Rev 33: 575-602.

- Juma M (2014) The effect of macroeconomic variables on growth in real estimate investments in Kenya. University of Nairobi, Kenya.

Author Affiliation

Top

¹Kenya Revenue Authority, University of Nairobi, Kenya

²PHD student, JKUAT, Taita Taveta University, Kenya

Submit your next manuscript and get advantages of SciTechnol submissions

- ❖ 80 Journals
- ❖ 21 Day rapid review process
- ❖ 3000 Editorial team
- ❖ 5 Million readers
- ❖ More than 5000 
- ❖ Quality and quick review processing through Editorial Manager System

Submit your next manuscript at • www.scitechnol.com/submission