THE IMPACT OF DOMESTIC SAVING AND FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH
EMPRICAL STUDY IN CASE OF YEMEN (1990-2012)

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Abstract

Purpose-   This research essentially aims to investigate the impacts of domestic saving (DS) and foreign direct investment (FDI) on economic growth in the Republic of Yemen since Yemeni reunification in 1990 using data during the period 1990-2013. This research was designed as a quantitative study and descriptive analytical method was followed.

Design/methodology/approach-) Secondary data was used to measure the variables to specify the effects of independent variables on the dependent variable. Data was collected from various internal and external resources. The collected data were analyzed by using **eviews** statistical package version 7 to explain the results of data. The analysis firstly tests unit roots for the DS, FDI and GDP by using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. Secondly assesses the equilibrium relationship between GDP and its probable determinants of DS and FDI through applicated Johansen and Juselius (1990) tests finally determine the causality direction between the variables employed Granger-causality tests.

findings The study results indicate that there is long run relationship between domestic savings and foreign direct investments with real income growth in Yemen. Foreign direct investment has statistical, significant, and inelastic effect on real income (-0.299) while domestic savings are not statistically significant in the long term coefficients. Error correction model exposes that Yemeni real income converges to its long term equilibrium level reasonably low at -0.01884% by the foreign direct investment and domestic savings contributions; however, this coefficient is statistically significant. Lastly, Granger causality tests illustrate that there is a bidirectional relationship between DS, FDI and economic growth. Savings is driven force but foreign direct investments are output. If savings and income increase, the foreign direct investments were attracted more. Also, this study has confirmed that saving is an income driven in Yemen.

Limitation of Study: That there is no accurate information about the previous years before the unity. So that the researcher ignores that information and start from unity country generated. Another limitation, is that focus only on Yemeni economy and the around circumstances with no concentrate on international variables because There is no significant impact on world economy as a result of economic fluctuation in Yemen. Also this research aims to study how to develop investment climate in Yemen as well as attract new FDI to Yemen.

Keywords: Domestic Saving, Foreign Direct Investment, Economic Growth .

إثر المدخرات المحلية والاستثمارات الأجنبية المباشرة على النمو الاقتصادي

دراسة تطبيقية على الاقتصاد اليمني (2012 – 1990)

الهدف من البحث ـ يهدف هذا البحث بشكل أساسي إلى دراسة تأثيرات الادخار المحلي (DS)والاستثمار الأجنبي المباشر (FDI) على النمو الاقتصادي في الجمهورية اليمنية منذ إعادة توحيد اليمن في عام 1990 باستخدام البيانات خلال الفترة 2013-1990.وقد تم تصميم هذا البحث كدراسة كمية وتم اتباع الطريقة الوصفية التحليلية.

التصميم والمنهجية ـ تم استخدام البيانات الثانوية لقياس المتغيرات لتحديد تأثيرات المتغيرات المستقلة على المتغير التابع. وقد تم جمع البيانات من مصادر مختلفة داخلية وخارجية. حيث تم تحليل البيانات التي تم جمعها باستخدام الحزمة الإحصائية Eviews الاصدار 7 لشرح نتائج البيانات. وقد تم أولا استخدام اختبارات جذور الوحدة unit roots tests للمدخرات المحلية DS والاستثمارات الأجنبية المباشرة FDI والناتج المحلي الإجمالي باستخدام اختبارات Dickey-Fuller (ADF) وPhillips-Perron (PP) المعززة. ثانياً تم تقييم علاقة التوازن بين الناتج المحلي الإجمالي ومحدداته المحتملة لـ DS و FDIمن خلال تطبيق اختبارات (1990) Johansen and Juselius، وأخيرا تم استخدام تحليل اتجاه السببية بين المتغيرات المستخدمة Granger-causality tests.

النتائج: تشير نتائج الدراسة إلى وجود علاقة طويلة الأمد بين المدخرات المحلية والاستثمارات الأجنبية المباشرة مع نمو الدخل الحقيقي في اليمن كما ان للاستثمارات الأجنبية المباشرة دلالة إحصائية كبيرة وغير مرنة على الدخل الحقيقي (-0.299) بينما المدخرات المحلية ليست ذات دلالة إحصائية في المعاملات طويلة الأجل. كما كشف نموذج تصحيح الأخطاء أن الدخل الحقيقي في اليمن يقترب من مستوى التوازن على المدى الطويل منخفضاً إلى حد معقول عند -0.01884٪ من خلال الاستثمار الأجنبي المباشر وبمساهمة المدخرات المحلية. ومع ذلك يعد هذا المعامل ذو دلالة إحصائية. وأخيرًا، توضح اختبارات Granger-causality tests. للسببية وجود علاقة ثنائية الاتجاه بين المدخرات المحلية DS والاستثمارات الأجنبية المباشرة FDI والنمو الاقتصادي. وتعد المدخرات المحلية DS هي القوة المحركة بينما الاستثمارات الأجنبية المباشرة ذات تأثير محدود. فكلما زاد الدخل والمدخرات المحلية DS كان ذلك مشجعا لجذب الاستثمارات الأجنبية المباشرة بشكل أكبر. كما أكدت هذه الدراسة أن الادخار هو قوة الدفع المحركة للنمو في اليمن.

حدود الدراسة: لا توجد معلومات دقيقة عن السنوات السابقة للوحدة. مما جعل الباحث يتجاهل هذه المعلومات ويبدأ من تاريخ ميلاد الوحدة اليمنية. وهناك قيد آخر، وهو التركيز فقط على الاقتصاد اليمني والظروف المحيطة به دون التركيز على المتغيرات الدولية لأنه لا يوجد تأثير يذكر على الاقتصاد العالمي نتيجة للتقلبات الاقتصادية في اليمن. كما يهدف هذا البحث إلى دراسة كيفية تطوير مناخ الاستثمار في اليمن بالإضافة إلى جذب الاستثمار الأجنبي المباشر إلى اليمن فقط.

INTRODUCTION:

1.1-Study background:

Economic growth ratio is a very important factor in nation's welfare and realizing progress in various life scopes, to achieve a high economic growth the strategist's planner think about financing strategic enterprises which return with high revenue and attract big employee's number to fulfill good economic growth and decrease unemployment.

There are many resources for financing like domestic saving that includes (household sector, private corporate sector, and public sector) and foreign direct investment (FDI) which includes (direct investment in new different infrastructure enterprises or purchase a large block of shares from existing organizations or inter in mining field like (oil and mental).

Economic growth is usually measured as the annual rate of growth in a country's gross domestic product (GDP). To increase (GDP) governments in all over the world seek to attract domestic saving to cover financial gap with less cost and invest it to realize revenue to domestic savers and generate job opportunities subsequently enhance local society income Aghion and Howitt (2009), .

Foreign direct investment (FDI) has gained a significant role for economic development of small developing economies with technology transfer, information transfer and human capital development (see among others Tang et al (2008), Batten and VO (2010) and Li and Liu (2005). These technologies and information can help developing countries to achieve fast results in economic growth and get it competitive advantages to penetrate markets successfully and also there is good benefit from original organisation reputation in marketing and products quality as well.

In human resources the capital of any developing economic needs to utilize from success experience, as well as organizing acquisition and leadership skills to perform process effectively and efficiently. High efficiency in achieving production process is reducing production cost, hence the effective training programmes is very important to avoid waste in raw materials and enhance output quality.

In Yemeni economy there is a low ratio of economic growth for several reasons but there are two main reasons responsible for low economic growth, the first one is political instability and the second is the financing gap between availability and demand from tough currency to cover infrastructure and develop enterprises.

This financing gap is the scope of this study and we focus on, with study and analysis to discover the opportunities which can assist in attract domestic saving and foreign direct investment (FDI), and reduce or avoid the barriers which prevent

the progress in economic growth, for example legislative barriers, lacking in infrastructure like electricity or transport weaknesses… etc. These reasons and others affect negatively the economic confidence and economical positioning of the country.

1.2 Problem Statement

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In Yemen,there is a declaration of economic growth, hence the governmental developing programmes needs huge financial resources which reach more than 17 billion US Dollar to cover the financing gap according to the planning ministry for the next seven years.

This financial gap is a difficult challenge facing Yemeni government, to demonstrate this challenge, it needs domestic investment and foreign direct investment to reduce negative effects for deceleration of economic growth and start in development.

These difficulties include and not limited to:

- There is no trust between Domestic savers and official financial system, because successful experience in the market is very limited and there are no real guarantees present to protect them against threats.
- Weakness in basic services like electricity, communication and other infrastructure services, this problem makes FDI scare away from Yemen and the ability to attract them is limited.
- Weak consciousness in importance of saving investment in domestic society, because of the media weaknesses promoting, high illiteracy ratio in society and government administrative and financial corruption.

- Lacking in foreign direct investment (FDI), there are many reasons but the main reasons are:
  - Political unrest.
  - Government administrative and financial corruption.
  - Lacking in infrastructure services.
- Incorrect view of mind about Yemen in the world wide because of terrorism, this reason is an additional reason making FDI go outside Yemen and think about investment in other countries.
- Legality obstacles and weakness security, the law in Yemen is not modern and there is no strong judgment to protect investor against authoritarians.

- There is no effective participation between local and international investors, there are no great corporates in Yemen and the majority of companies are family companies, hence they prefer to work alone and avoid any venture, because these companies have no independent management with any intervention from the owners, this effect in decision making and obstacle for innovation or inter new venture like international participations.
- Smuggling: pose a threat for domestic producer and investors and cause loss for government because the smugglers don't pay taxes and present products inexpensive or less than others, this causes loss for domestic producer and entrepreneurs, consequently these effects impact the whole economic negatively.

1.3 Objectives of the Study:

This study is investigating the relationship between economic growth with two variables domestic saving (DS) and foreign direct investment (FDI). The researcher formulates five objectives for this study as follows:-

- To examine the stationary relationship between DS and FDI with economic growth
- To investigate the equilibrium relationship between DS and FDI with economic growth in Yemen long-term.
- To find out the causality relationship between DS and FDI with economic growth in Yemen in the short and long-run.
- To explore if there is mutual relationship between FDI, DS and the effects.
- To discover the causality relationship between DS and FDI and economic growth.

1.4 Research Questions and Hypotheses

Research questions:

- What is the impact of domestic saving and foreign direct investments on economic growth in the long-term?
- Is there relationship between increasing in FDI, DS and gross domestic income?
- Do the DS and FDI play key role in driven economic growth in the long-term?

Hypothesis of study:

According to problem statement and study question the researcher set four hypotheses in test to achieve research objectives as the following:

- DS and FDI have not stationary relationship with economic growth in Yemen.
- DS and FDI have not long-run equilibrium relationship with GDP.
- DS and FDI don't have causality relationship with gross domestic product

LITERATURE REVIEW:

2.2 Investment and growth:

Multi-purpose Investment in different sectors is becoming the optimal substitute, specifically, for the poor countries in natural resources, like oil or mineral. Investment provides countries good chance to realize acceptable growth ratio in the short-run and support host countries with new technologies, generate new jobs, attract foreign capital to invest, open new markets, but the most important benefit for investment is to increase GDP in the long-run subsequently realize high economic growth ratio. Investment is defined from two dimensions "economics and finance" in economics, investment is the accumulation of newly produced physical entities, such as factories, machinery, houses, and goods inventories. In finance, investment is the purchase of an asset or item with the hope that it will generate income or appreciate in the future and be sold at the higher price (http://en.wikipedia.org/wiki/Investment).The main factors which motivate economic growth are investments which are beneficial to increase the physical existing quality and human resources that increase the amount of these identical productive resources as well as to increase the whole productivity or specific resources, through innovation and technological improvement. FDI contribution to GDP growth rates as a vital instrument for economic development Todaro (1994). Developing and emerging economic governments seek to benefit from FDI not only by attracting funds but also modern technology and expert human resources to catalyst economic growth in different domains as well as to encourage exports, merchandise exchange between countries and open new markets in front of local products. In return of support FDI, government should have discipline policies for investment equilibrium between domestic investment and FDI to realize real robust growth in GDP, by facilitating and encouraging endogenous resources more than exogenous resources. Alfaro et al (2003) suggests that countries should balance between the policies targeted cost at attracting FDI versus those that strive to develop local circumstances. These two policies need not be incompatible. Better local circumstances not merely attract foreign firms but also allow host economies to increase the benefits of foreign investments.

Foreign companies can motivate the level of capital formation, encourage exports and generate foreign exchange (Aremu2003), as well as each public and private investment and public consumption has a long-term dynamic impact on economic growth (Bukhari et al 2007). By the capital investing contribution in public or private enterprise furthermore the public consumption to service or products is beneficial to encourage investment and activate economic growth.

2.3 Relationship between Domestic Saving, Foreign Direct Investment and Economic Growth

2.3.1. Saving investment and economic growth:

The first point for any economic growth study is the neoclassical growth model, which focuses on the role of capital accumulation. This model, constructed firstly by (Solow, 1956) and (Swan, 1956), they illustrate how economic policy can increase an economy's growth rate by encouraging people to save more "(Aghion and Howitt 2009)". However the model furthermore forecasts that growth increase can't continue forever. In the long term, the country's growth rate will return to the technological progress rate, this negative long-run consequence is the source of weakening marginal productivity. To avoid weakness in productivity countries strive to obtain the latest technology to enhance productivity and get competition advantages. The private saving rate has a direct and indirect impact on growth. The indirect impact is through the private investment rate. Consecutively, that growth has a positive impact on private saving rate. The impact range is determined by liquidity limitation. Thus, there is a constant cycle as growth provides saving, which further improves growth. Based on these findings, high saving rate is beneficial for economic growth in long-term, accordingly, the saving increase is a main factor on economic growth rate. Some others like (Salz 1999),(Zubaidi, et al, 2002), (Romm 2003) and (AbuAl-Foul 2010) confirms that there is a long-term relationship between real gross domestic product (GDP) and real gross domestic saving GDS, the higher growth rates of real GDP contribute to a higher growth of savings. As a result of the previous findings, we can say any increases in economic growth cause positive domestic saving by arise in gross domestic saving ratio and vice versa any deceleration in economic performance affects the gross domestic saving negatively. (Ciftcioglu and Begovic, 2010) based on Neo-classical model which forecast a positive effect of higher saving rate on economic growth, they investigate this theory using panel data analysis for a sample of Central and Eastern European countries. The results recommended

that domestic saving rate has exerted a statistically significant effect on growth rate of GDP over the sample period. They give the likelihood of adverse effects of recent global crisis and the policy responses to it on saving and, therefore, investment rates in most countries, they discuss and recommend specific growth-enhancing policies that purpose at increasing both growth rate of total factor productivity and rate of accumulation of stock of human capital. In the other way some studies focus on causality relation between saving and growth and the effects between each other like (Rasmidatta 2011) who proposed that the causality direct go from economic growth to domestic saving as well as that economic growth rate does matter lead to domestic savings growth rate. However (Sinha and Sinha 2007) found that economic growth created higher saving in several forms. Capital accumulation and investment lead to generate fast economic growth, especially, if the capital comes from endogenous or local resources. This kind of investment is more beneficial than other investments regarding increasing local investors wealth, improve human resources experts, distribute investment in all over country inverse foreign investment, social responsibility higher and better and risks taker is higher than foreign investment. As well as, majority of local investment in small and medium enterprise which needs more employees, subsequently develop local society life standard by enhance their income whereof effect directly in purchasing power and consumption. The ending results for enhancing purchasing power and consumption affects positively the GDP and economic growth. Saving and investment lead to economic growth which comes from the household sector. However, saving and investment of the sector collectively lead to economic growth and vice-versa (Jangili 2011). These results can be applicable on productive economies or on that economies which strive to raise growth ratio from unnatural resources like human resources or from industry development, while in the other countries like Arab States of the Gulf (GCC) which depended on natural resources (gas and oil), the country income source does play a significant role in determining the causality direction. The causality direction is from economic growth to domestic savings not from domestic saving to economic growth (Alomar 2013). On the other hand, saving growth plays a key role in preparation of investment climate regarding encouragement of local investment in infrastructure enterprises and its significance for accumulate capital with low cost for government and local firms in comparison with foreign resources as well as the benefit returned to local savers to invest again. Saving and growth are not merely positive interrelated, but their relationship is even stronger than the one among investment and growth (Gourinchas and Jeanne 2007). There

are great benefits from equilibrium between investment and growth for macroeconomic in long-run that the existence of a long-run equilibrium relationship between investment and economic growth, increasing in growth rates lead to a revitalization of the economy, increase employment opportunities and attract labor (Tawiri 2010). Real growth rate of GDP, gross domestic savings and cost of capital are significant determinants of investment. Similarly, real growth rate of GDP and gross fixed investment emerged as the significant determinants of savings. Also, economic liberalization policy has had positive impact on savings (Ben Obi et al 2012).However (Amusa and Busani, 2013) mentioned that domestic savings as an important aspect of growth in Botswana. In both the short and long run, domestic savings is positively and significantly related to growth. Specifically, this positive relationship is strongest in the long run. High growth in saving leads to growth in investment, both saving and investment arise have positive effect in economic growth in the long-run. Increasing in these variables reflect on economic status and society life standard by getting opportunities to establish strategic enterprises, create new jobs, enhance liquidity and improve investment climate for local investors and attract FDI, subsequently, realizing high economic growth ratio and economic stability.

2.3.2 Foreign direct investment (FDI) and economic growth:

Foreign direct investment is a significant resource for attracting capital, establishing strategic infrastructure enterprises and creating job opportunities fundamentally for weak economics as well as for transfer technology and open new markets for strong economies. One of the main benefits of foreign investment is job generation. FDI can influence directly or indirectly appointment in host countries. But the range to which Multinational Companies (MNCs) influence employment in host countries might contrast depending on the motivation or the type of FDI (UNECA 2006). (Borensztein et al 1998), Investigate the effect of foreign direct investment (FDI) on economic growth in a cross-country regression framework, used FDI flows data from industrial countries to 69 developing countries over the previous two decades. The results propose that FDI is a significant vehicle for the technology transfer, contributing relatively more to growth than domestic investment. Nonetheless, the greater productivity of FDI holds merely when the host country has minimum abilities of qualified human capital. Therefore, FDI contributes to economic growth only when a sufficient absorptive competence of the advanced technologies in the host country is available. Based on neo-classical growth models (the endogenous

growth models). FDI increases the size of investment and / or its competence, and leads consequently to the increase in long-run growth. The new endogenous growth models deem long run growth as a purpose of technological progress, and provide a framework in which FDI can enduringly increase the degree of growth in the host economy through technology transfer, diffusion, and extension effects (Reichert and Weinhold 2001).

(Srinivasan, et al2011),show long-term relationship among foreign direct investment and gross domestic product (GDP) of SAARC nations. Namely, Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka. The vector empirical results error correction model exhibit a long-term bidirectional causal connection between GDP and FDI for the selected SAARC nations excluding India. The test results show that there is a one-way long-run causal connection from GDP to FDI for India. To realize high growth ratio governments strive to open new market in new countries which need surplus products in their markets and encourage FDI to come and invest in different investment types. Exports and FDI stimulate growth in the long-run though in the short-run there is a bi-directional causal relationship among FDI and growth FDI that seems key factor for economic growth as well as Foreign capital inflow leads to growth in the exports (Metwally 2004 and Andraz 2010). FDI added value to host countries' economies via capital flow, experts, professional human resource and advanced technology. This value varies between sectors. in the primary sector FDI has a tendency to a negative result on growth, whereas investments in manufacturing sector have a positive effect (Alfaro 2003).While (Williams 2010) mentioned that there is endogenously connected relationship between FDI and growth as well as there is interaction between FDI and growth and vice versa. Political unrest effect in growth based on trend differently appears in various regions. the relationship between FDI flow and political status reflected directly not only on investment but also in the whole economic growth extent De Mello, (1997), Rodrik and Subramanian, (2008) and Lund (2010) observed that FDI effects in host economic in different forms, like capital inflow as well as advanced technology transfer and skills, managerial expertise furthermore starter new processing techniques moreover create new job opportunities in hosting countries, this type of effects on growth is significant. FDI is a significant vehicle for technology transfer, contributing relatively when the host country has a minimum level of competent human capital. Therefore, FDI contributes to economic growth only when adequate absorptive capability of the more to growth than domestic investment. However, the

higher productivity of FDI occurs when advanced technologies in host economy are available (E. Borenszteina et al 1998). Host economies can benefit from FDI features if they can succeed in foster effective policies to prepare investment climate and take FDI advantages. (Ndoricimpa 2009) examines the interrelationship among Foreign Direct Investment, exports and economic growth in COMESA Countries to evaluate the validity of "FDI-led exports", "Export-led growth" and "FDI-led growth" hypothesis in that region, he uses annual data for a panel of 16 COMESA Countries for the period 1983-2007, The results propose robust support for the "FDI-led exports" hypothesis, the "Export-led growth" hypothesis in addition to the "FDI-led growth" hypothesis. Therefore, in general, policies encouraging exports and attracting FDI in COMESA Countries are to encourage, promote and support economic growth in the region. (Eigbiremolen 2013) examines the concurrent interactions and responses to innovations or shocks among foreign direct investment (FDI) and real gross domestic product (RGDP) in addition to the nature of causality between both .Annual time series data from 1970-2012 in the analysis was used. The Johansen co-integration test classifies one co-integrating vector between the two core variables. The impulse response function analysis discloses that economic growth responds positively to a one standard deviation positive shock to FDI, showing a positive relationship. Nevertheless, the accretion in economic growth exhibits a changeable or up-and down direction throughout the periods under consideration. Further a one standard deviation positive innovation to economic growth reasons FDI to increase, showing a positive relationship as well. In terms of granger causality test result displays a unidirectional causal relationship among FDI and economic growth. Developed financial system is attracting element for FDI considering importance of financial system to facilitate banking treatment and arrange financial dealings and commercial exchange internationally with global partners this leads to fast economic growth in short and long-run. FDI inflows have positive impact on economic growth in the short-run and the long-run if the domestic financial system has realized an assured minimum-level development. Furthermore, better domestic financial circumstances not only encourage foreign companies to invest, but also allow maximizing foreign direct investment benefits (Khan 2007). FDI benefits to fill the domestic gap among revenue generated and spending in developing countries. Because many governments in developing countries are not efficient in generate enough revenue to cover expenditure requirements. (Helpman, Melitz and Yeaple 2004) examined the relationship between firm productivity and FDI. They highlighted that firms leading FDI are not only higher, but also more competent and productive than others

which produce for the local market or prefer to export (Adegbite and Ayadi 2010).Some studies discover varied effects for FDI in economic growth according to the invest sector like (Rahimov 2013) who finds that FDI has different impacts across sectors. For mining, quarrying and manufacturing sector there is a positive impact, whereas trade and financial intermediation sectors FDI negatively affect the economic growth. Whereas (Anita 2012) analysis determines that economy liberalizing and globalizing cause massive increase in foreign direct investments flows. Foreign direct investment (FDI) is generally apparent as an important source for accelerating financial development of developing countries. In the latest decades developing countries have changed their viewpoint towards FDI because it thought that FDI can contribute to the growth efforts of a country through decreasing saving.

2.3.3 Domestic Savings and Foreign direct investment:

Domestic saving and foreign direct investment represent the corner stone in economic growth in majority of developing and emerging economics especially those economics which are poor in natural resource like (oil and gas), they seek to invest local saving and attract FDI to face economic challenges and realize good economic growth ratio. Nowadays, the integration between domestic saving and FDI in all over the world is becoming preference for governments and investors displayed that foreign direct investment (FDI) and domestic savings (DS) are complementary; merging each other in a dynamic relationship relating to growth. The contribution of FDI is to complement domestic savings by providing foreign savings e.g. (Shahbaz et al, 2008 and Dupasquier and Osakwe 2005). (Taspınar 2011) investigate long run balance relationship between real income growth, foreign direct investment, and domestic savings in Turkey, which is one of the attractive investment environments for foreign financiers as a developing economy among the region countries. He used three types of employed analysis. First one, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were started to test unit roots of the FDI, DS and GDP. Second, (Johansen and Juselius 1990) tests were employed to measure the long-run equilibrium relationship between GDP and its probable determinants of DS and FDI. Lastly, Granger-causality tests were applied in order to identify the trend of causality between study variables. The results show relationship between foreign direct investments and domestic savings in Turkey in long run with real income growth. Foreign direct investment has positive, significant, and inelastic consequences, Turkey's real income

congregates to its long term equilibrium level by the contribution of foreign direct investment and domestic savings; but, it is important to note that foreign direct investments in Turkey are output and savings driven. Furthermore, those savings are income driven in Turkey. This study and others focus on domestic investment as a driven force for economic growth as well as the studies underestimate for FDI significance in economic growth as a vector in the short or long-run, but they also acknowledge that FDI is a main force effect in growth, nevertheless domestic investment is more significant for domestic economic growth. FDI was not the main driving force of economic growth in developing and developed countries. Successively from FDI to GDP only in the high income panel, it is possible that other factors such as domestic investment and exports were the main driving forces of economic growth (Grenaway et al, 2007) and Lund, 2010). (Verma 2008) investigates the short and the long-run interrelationships between savings, investment, foreign capital inflows and economic growth in India for the period 1950 to 2005. Firstly he tests for the short-run dynamic effects of savings and investment on growth (consistent with the Solow-Swan model) and the long-run effects of savings and investment on growth (in line with the endogenous AK models of growth). Secondly, the investigation is extended to examine the interrelationships between sectoral savings and investment and their roles in the growth process. The results refer to firstly, that neither savings nor investment ،including the three sectoral measures of savings and investment, have any positive impact on GDP growth in India. Secondly, foreign capital inflows is the only variable found to affect GDP growth, in the both the short and long-run. Third, only when gross savings and investment are disaggregated into the household, private corporate and public sectors. GDP growth is affecting household and private savings in the long-run; and GDP has a large effect on household investment in the long-run and public investment in the short-run.Fourth, foreign capital inflows are found to be negatively related to gross domestic savings, indicating a substitution effect between the two. FDI has positive influence on the economy although its contribution to GDP was very low within the period under review. As well as exposed that FDI, government tax revenue (GTR) and savings exerted positive but not significant impact, except savings, on GDP during the study epoch. Furthermore, FDI encourages the capital inflow, technical know-how and managerial capacity which can inspire domestic investment and hasten the pace of economic growth, Seeing the crucial role of FDI (Christopher 2012). FDI not always affect positively in host economies, sometimes the effects come negatively in some sectors as Al-Sadig (2013) explores the effects of FDI on domestic

investment in developing countries, using data from 121 developing and transition economies over the period 1990–2010, the results propose that FDI outflows impact on the rate of domestic investment was negative. This result focuses on domestic investment, but in economic growth the impact is positive. This study gets indicator that the FDI not positive in every case, hosting countries should strive to protect domestic investment by present some facilitates like exemption of domestic products from export taxes and provide domestic producer with cheap raw materials. The different sources of capital bank loans, bonds, portfolio equity capital, and FDI .etc. However FDI is the merely source that affects foreign savings, i-e that companies getting these savings start investment; the additional sources of capital are foreign savings that are used for investment via native firms. MNCs can affect investment in host countries directly through their private investment activities, and indirectly via influencing host country firms‟ investment. The direct contribution of foreign branches to host countries‟ whole investment is normally inspected by contrast investment of these branches agents by FDI inflows (UNCTAD 1999). Foreign direct investments have positive effect on economic growth and so does the domestic investment Fasanya (2012). Foreign capital inflow has an important positive impact on savings and investment and subsequently on the economic growth rate. As well as, the integration among foreign direct investment (FDI) and domestic investment was proven. Furthermore, investment has a strong positive influence on economic growth rate (Mohamed 2003) and Ghazali 2010). (Abaidoo 2012) Explore the dynamic causal relationship in key macroeconomic variables using aggregate data on Sub-Sahara of Africa spanning during the period 1977 to 2010. This study finds combined uni-directional causal relationship running from FDI and Gross Regional Savings growth to regional GDP growth. Empirical results further show extra uni-directional joint causal relationship stemming from GDP growth and Gross Regional Savings to growth in FDI inflow into the sub-region. (Katircioglu and Naraliyeva 2006) examine the long run equilibrium direction and relationship of causality among economic growth (real GDP growth), domestic savings (DS) and foreign direct investment (FDI) in Kazakhstan, co-integration results propose a long-term equilibrium relationship among both pair of the above variables excluding among DS and FDI. Granger causality examines results that propose unidirectional causations running from both DS and FDI to real GDP growth. Finally, while DS and FDI are not co-integrated, causality results propose bidirectional causality between them. Foreign capital inflows have positive influence on economic growth. Public investment and financial sector's development encourage economic growth (Shahbaz and Rahman,

2010). (Osinubi and Amaghionyeodiwe 2010), explored the importance and trend of the influence of foreign private investment on economic growth in Nigeria. They used Secondary data for the period 1970 to 2005. The results illustrate that Domestic Investment, Net Export growth and Foreign Private Investment Growth were positively linked to economic growth. In the case of (Lean and Tan 2011) they examine the relationship between FDI, DI and economic growth in Malaysia during the period 1970 to 2009, The results show that the FDI, DI and economic growth are co-integrated in the long term. As well as, FDI has positive influence on the economic growth; furthermore a growth of FDI will cause positive impact to the DI.

From the previous studies we obtain different results, some of them show positive impact between variables and others show negative impact. In the middle there are some studies show relative results. In this study the researcher tries to study the variables and examine the impacts of every variable on the main variable which is economic growth. In the next chapters there is a discussion and explanation for the results and comparison with previous results.

RESEARCH METHODOLOGY

3.2 Research Design

3.2.1 Type of Study

The nature of this study is hypothesis examination that explains the relationship between domestic saving and foreign direct investment in economic growth. This study was conducted through collected figures and annual data during the period 1990 to 2013 which is related the whole Yemeni economic indicators and concentrate on the data which is more linked to the study variables.

3.2.2 Source of data

The secondary data related to the relationship between domestic saving and foreign direct investment with economic growth was used in this research Data gathered from website of World Bank (2014), national information center, central bank of Yemen, general investment authority and ministry of finance reports (2011). GDP figures are in constant (2012) US$ and the other variables: FDI and DS are in % of GDP.

3.3 Republic of Yemen

Republic of Yemen is one of western Asia countries. It's one of the Arab peninsula's countries with a population of (24.5) million (central

statistical organization, 2012) which was established in 1990, after Yemeni unity between Yemen Arab Republic in the north and people's democratic republic of Yemen in the south. Yemen's neighbors and boundaries are Saudi Arabia, Oman, red sea, Arab sea and Indian Ocean. Yemen has an important position which oversees on the strait of Bab-el-Mandeb which is the road of 70 percent from world maritime trade and oil. The Yemeni economy is driven by service sector in particular wholesale and retail trade, restaurants and hotels. Extractive industries sector especially oil, gas and agriculture is very important sector it captures on 54% of employment in 1999, (World Bank 2014). Manufacturing sector, constructions, Transportation and storage sector are increasingly significant for the country economy. In 1995 Yemeni government started its economic reform programme to reduce government control on foreign investment and external commerce focusing on privatization and trade liberalization as well as open One-Stop Shop Services in General Investment Authority to combat bureaucracy and facilitate investors' dealings Al-Batuly et al (2011). Yemeni GDP is $ 31.40 billion, GDP per capita is $1145 and GDP growth is $ 7.82 in 2010, as well as exports are $7.05 billion and imports are $11.26 billion in 2012. National information center (NIC) Yemen. The public debt is 19.2 from GDP in 2012. Yemen Central Bank. (YCB)

3.3.1 Yemeni economic outlook

Yemen is a low income country that is extremely dependent on decreasing oil resources for revenue. Petroleum accounts for approximately 25% of GDP and 70% of government revenue (Dahan, Abdulkarim Ali 2012). As well as in the nineties decade, Yemeni economy has decline of Gross Domestic Product and changes because of contribution of the main sectors, such as industry and agriculture in GDP. Yemen's economy was exposed to many worsening factors, like civil war in 1994, influence on non-oil sectors and leads it to decline.

GDP Per Capita (Current US$)
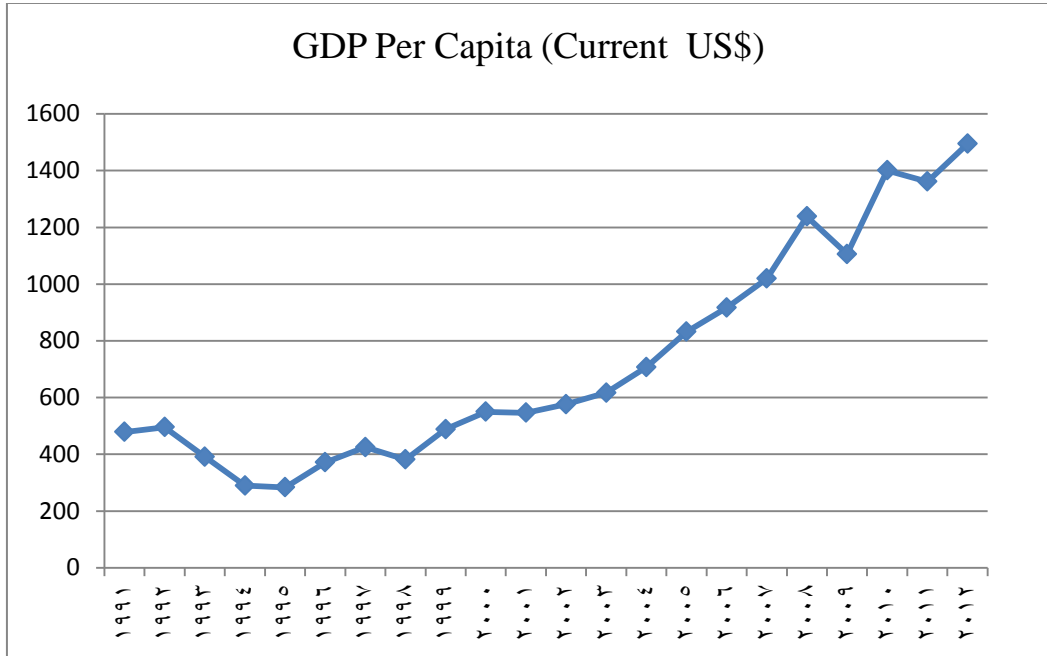
Source: world bank (2014).
Figure 3.1 Per Capita Incomes (USD) 1990-2012

These factors forced the GDP to decrease from US$ 6.5 billion in 1992 to US$ 4.2 billion in 1994and US$ 4.3 in 1995 respectively, (the US Dollar price was equal 172 YR in 2000). In 2000, Yemen's GDP was estimated at US$9.6 billion. GDP instability, accompanied with decadence in average per capita income, which declined from US$ 479 in 1990 to US$ 289.5 in 1994 and then to US$ 283.6 in 1995. With the individual annual income falling down, the inflation and unemployment rate raised the demand of basic merchandises, World Bank (2014) as shown in figure (3.2)

In 2003, government policy has been directed to Poverty Reduction Strategy Paper (PRSP) that purposes to reducing poverty via increased allocations to essential social services and the encouragement of more quick, broad-based growth. Conversely, PRSP progress reports demonstrate a lack of success in achieving PRSP stated objectives, with stagnant government expenditure shares allocated to elementary social services (most importantly health and education) Al-Batuly et al (2011).
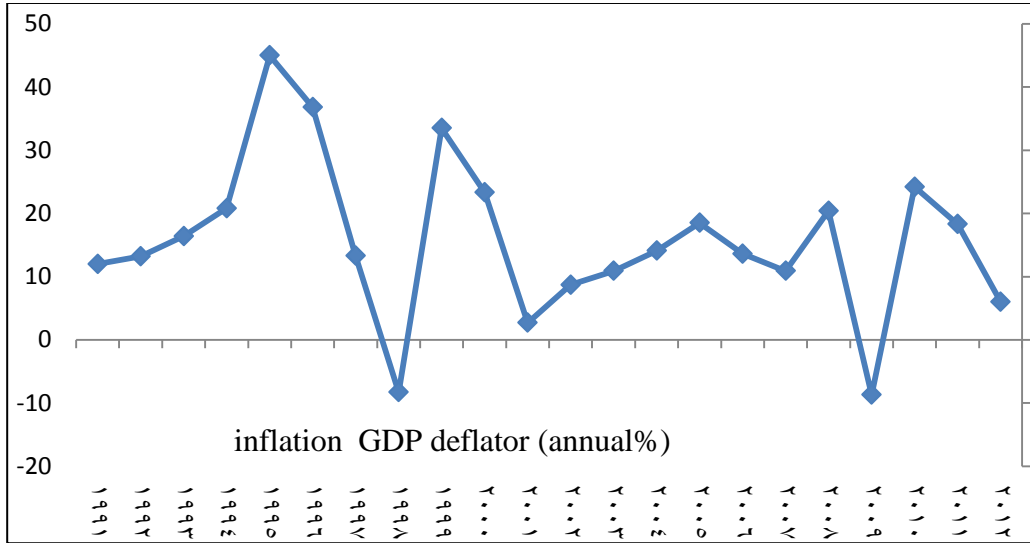
Source: World Bank (2014).
Figure 3.2 Inflation, (GDP) deflator (annual %) 1990-2012.

On the other hand Inflation since the beginning of 1990s was increased gradually but not safety Borders from 12% in 1991 to 20.8% in 1994 through the political crisis which come after unity and persists until civil war end in the same year. In 1995, inflation ratio in Yemen was fluctuated intensely to reach its highest point in 1995 which was 45% (World Bank, 2014). Inflation instability still have distinguished mark in Yemeni economy, in 1998 inflation drop to -8.3%, in 1999 increase to 33.5%. In 2001 it dropped again to 2.7. Unfortunately   this limit control of inflation was breakdown quickly after four years, it became 18.5% in 2005 and continued fluctuated until Arabic spring revolution come in 2011. In 2012 inflation decreased to 6%.

Investment in Yemen can be divided by sectors to five categories as follows:

- Industrial sector
- Agricultural sector
- Fishery sector
- Service sector
- Tourism sector

These five sectors form the Yemeni economic backbones as well as oil and gas which are control for government and international companies for oil and gas. So the general investment authority doesn't refer to in the investment report as an investment sector. Although oil and gas contribution in government income with high ratio as well as leads to positive impact in

Yemeni macroeconomics however, the biggest sector attract investments in yemen is an industry sector as shown in figure (3.3) which captures lion share in the years 2000-2007 with more than 74% from the whole investment capital it reaches around 3.74 billion US$. From 2008 to 2011 service sector arise as strong competitive sector with industrial sector. Service sector in 2010 and 2011 was the biggest investment sector it reached 604 and 686 million US$ successively. Decrease in industrial sector may belong to political unrest after last presidential election at the end of 2006, which leads to February revolution 2011 within Arabic spring uprisings. Which, affects that whole investment in the region countries especially in Yemen which is less investment attract.
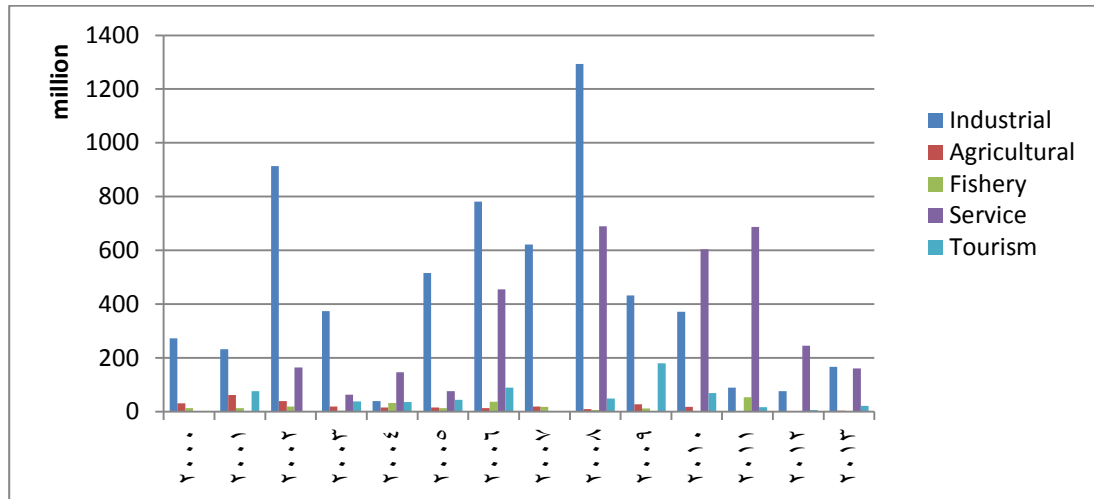

Source: General Investment Authority 2013
Figure 3.3 Gross Investment in Yemen by sectors. Million US$. 2000-2013

3.3.2 Domestic Savings in Yemen

Savings may be defined as a decision to consume now or later for improved future. The purpose of savings is wealth growth; enhance living standards and economically a better With system assistance of World Bank has succeeded to fulfill significant and measurable results like increase in banking sector capital from US$ 20 million in 1994 to US$ 574 million at the end of 2010, on an average annual growth rate of 491%.The total deposits increased from 50 billion YR at the end of 1994 to 1,518 billion YR at the end of 2010, on an average annual growth rate of 25% Qatinah (2012). Saving has increased from 93million US$ in 1995 to 2.4Billion US$ in 2010 World Bank (2014). As observed in figure (3.4). Considering GDP % the period from 1999 to 2005, domestic saving achieve highest ratio 16.4 GDP%

in 1999, the top grade in 2000 domestic saving reached to 26.3% of GDP as shown in figure (3.4).


gross demestic saving (%OF GDP)
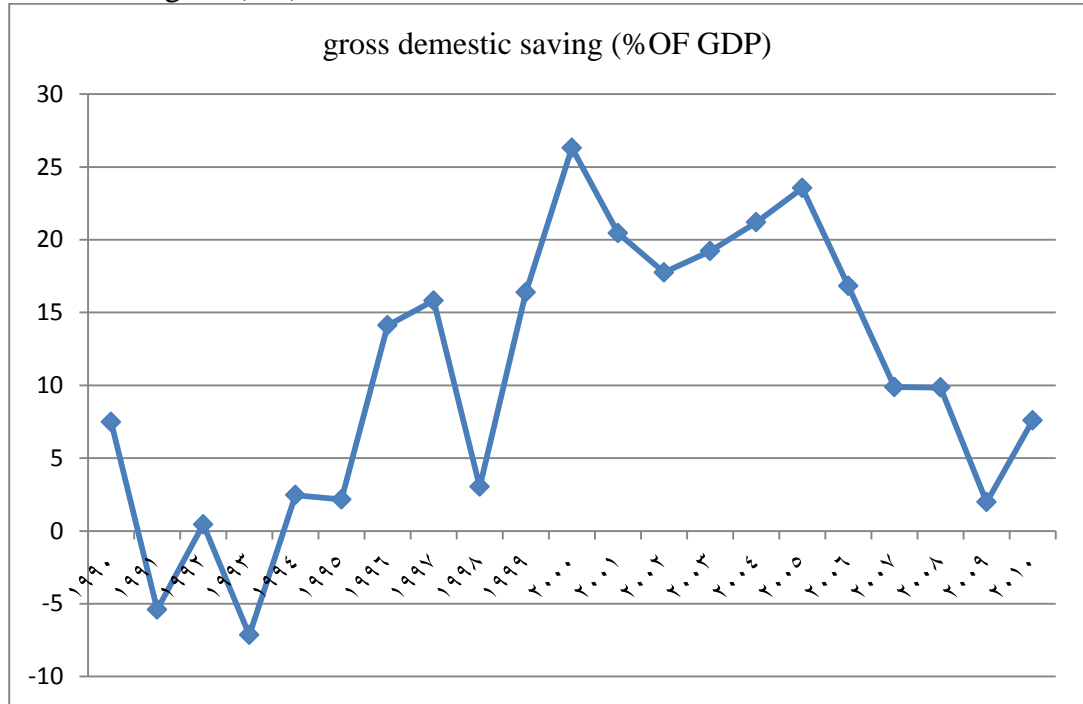
Source: world Bank (2014).

Figure 3.4 Domestic Savings in Yemen (% of GDP) 1990-2010.

Based on Bulletins of Government Finance Statistics (2005, 2012) in 2003 and 2004 public and private saving are increased at convergence level. In 2005 private saving goes on increase also but the public saving was increased faster as shown in figure (3.5).

In 2006 the increase direction started to change to private saving interest, as well as in 2007 and 2008 private saving was increased more and more in contrast with public saving which was decreased sharply.

in 2009 private and public saving decreased with varied grades, private saving has limited loss in comparison with the worse decrease degree which occur for public saving.
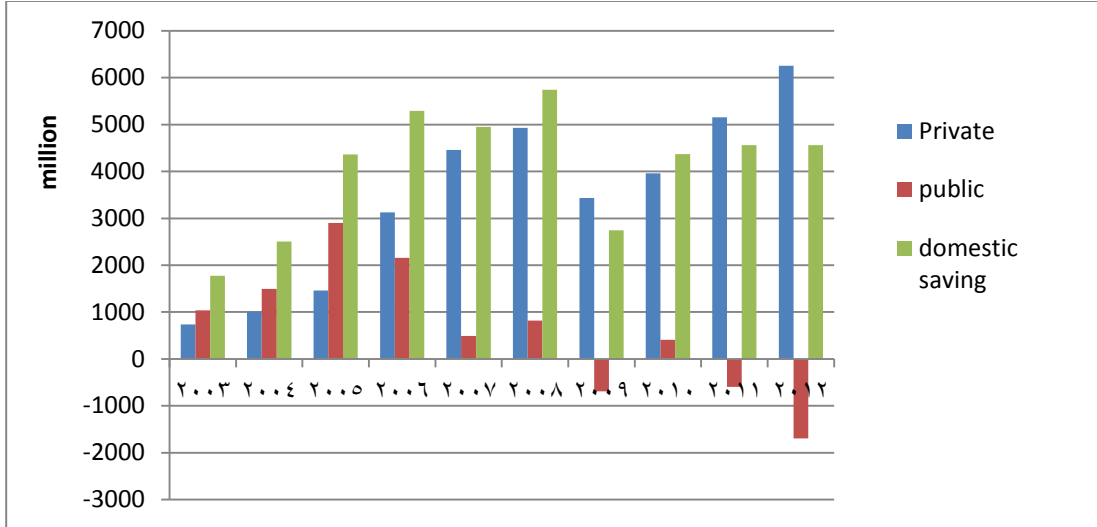
Source Bulletins of Government Finance Statistics (2005,2012)
Figure3.5 Domestic saving, Public and private saving 2003-2012

In 2010 Yemeni central bank increased the interest rate to 20% this
increasing in interest rate encouraged private saving to get increased as
similar as public saving increase as well.
In 2011 the climax period of Arabic's spring revolutions public saving got
affected negatively and go back to decrease, on the opposite trend private
saving benefited from revolution and realized increase, this could belong to
saver fear from the ambiguity of the future for economy status.
In 2012 the same situation continued increase in private saving and decrease
in public saving.

3.3.3 Foreign Direct Investments in Yemen

Yemen has a unique geographic position between two continents Asia
and Africa as well as overlooking on one of most important strait in the
world (Bab-el-Mandeb).Unfortunately, Yemeni successive government did
not achieve real penetrate to benefit from these natural characteristics and
competition advantages especially in attraction of the foreign direct
investment. This insufficiency attributed to numerous reasons such as
legislative obstacles, economic instability, and lack in basic infrastructure,
there is no stock exchange, shortage in professional human resources and
decline of income standard Atef (2012) FDI in yemen not exeed 17 percent
from GDP as shown in figure (3.6).

FDI net inflow (% GDP)
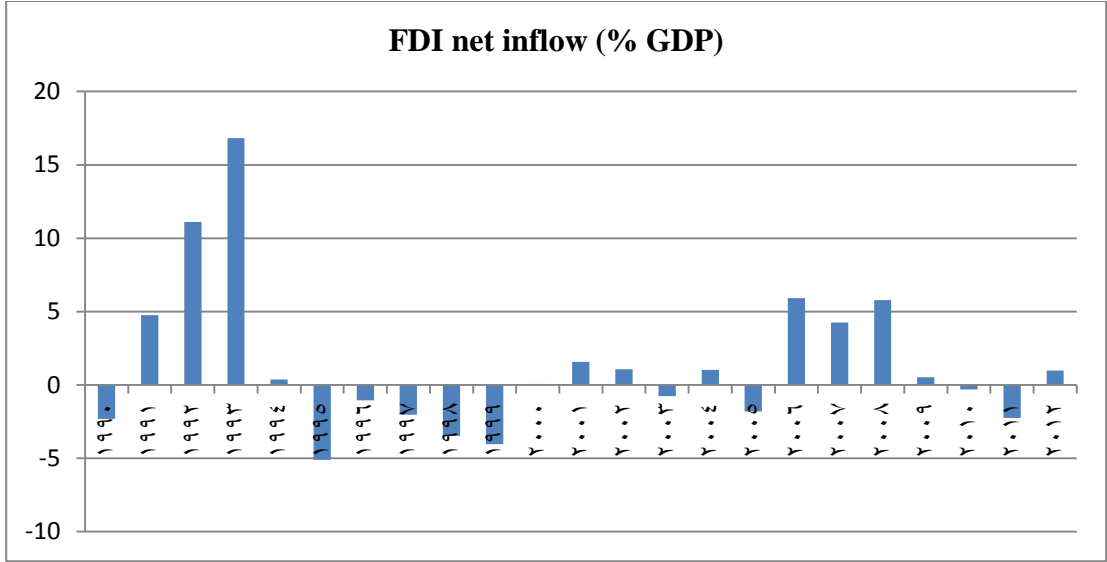
Source: World Bank (2014).

Figure3.6 Foreign Direct Investment Inflows (% of GDP) 1990-2012)

The previous reasons make Yemen not good attracting country for FDI as well as frequent political unrest since reunifying country. The first three years after unity from (1991-1993) as the figure (3.6) display there is increase in FDI which reached 16% of GDP, This indicator belongs the optimism after unity. In 1995 government started its economic reform programme but the effects on investment come late, the appreciable results observed from (2006-2008) FDI was increased better because the relatively political stability and enhancing in the macroeconomic indicator as a result of reform programme it reached to 5.9% in 2006 and 5.7 in 2008, then the indicator goes down to -2.2 % in 2011 during the revolution of Arab spring in yemen and other Arabic countries world bank (2014) as shown in figure (3.7).
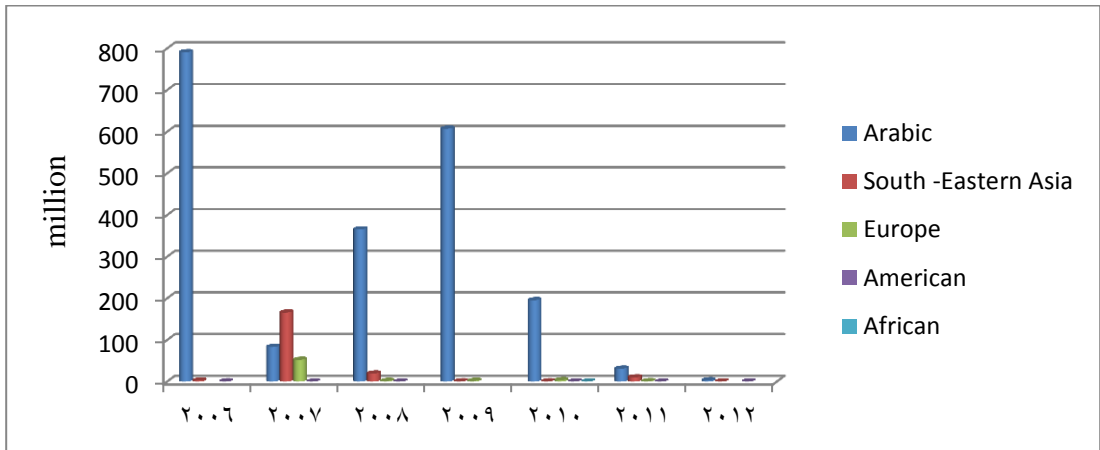
Source: National Information Center – Yemen- statistical year's book (various issue)
Figure 3.7 FDI inflows to Yemen by regions with million US$

The region countries are the biggest supplier of FDI specially (GCC) countries mostly (Saudi Arabia and Emirates) from 2006 to 2012 (GCC) countries investments in Yemen have been increased trend and FDI by (GCC) reached around 790 million US$, the second biggest FDI supplier to Yemen is south and south eastern Asia mostly from India, china and Malaysia which is around 160 million US$. Europe comes in the third grade with 52 million US$, America and Africa have low ratio investment in Yemen in contrast with GCC countries, National Information Center – Yemen (2012). In 2011and 2012 that observed FDI fell down to the minimum extent, this decline happened as a result of the Arabic spring revolutions in the region countries in general, especially Yemen's revolution caused political unrest and confidence weakness in economy, these reasons force FDI to scare away.

DATA ANALYSIS AND RESULTS

4.2 methodology

To study the research variables three analysis types were applied. The first one is Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were started to test unit roots for the DS, FDI and GDP. The second is Johansen and Juselius (1990) tests were used to evaluate the long-term relationship of equilibrium among GDP and its probable determinants of DS and FDI. Finally, Granger-causality tests were employed to identify the direction of causality between the study variables.

4.2.1 Model specification and empirical methodology

To determine the real income in the countries, there are numerous theoretical and empirical researches conducted to realize this objective, by using different econometric analyses. This study proposes that DS and FDI might be determining of GDP in the case of Yemen. Consequently, the practical relationship in this research can be displayed as follows (See Katırcıoglu and Naraliyeva, 2006):

GDP = f (DS, FDI)   (1)

Where real income (GDP): is a function of, domestic savings (DS) and foreign direct investment (FDI).

The functional relationships in equation (1) can be explained in logarithmic form in the following model to gain growth impact as cited previous:

$$In\ GDP_t\ = \beta_0 + \beta_1\ ln\ FDI_t + \beta_2\ ln\ DS_t + \varepsilon_t$$
(2)

Where at period t, lnGDP is the natural real income , in FDI is the natural log of the foreign direct investment variable; in DS is the natural log of domestic savings; and e is the error term. The coefficients of b_1 and b_2 provide us elasticity of FDI and DS variables consecutively in the long term period (Katırcıoglu, 2010).

4.2.2 Unit Root Tests

ADF and PP Unit Root Tests are conducted to determine the probable co-integration and integration level between variables (Dickey and Fuller 1981; Phillips and Perron 1988). ADF and PP measures are applied to test the series stationary in this research. The PP procedures are employed to search for unit roots which are a substitute to ADF unit root test and calculate a remaining variance that is robust to auto-correlation Katırcıoglu, (2009).

Enders (1995) recommends that first must test for unit roots from the most general model (by including tendency and intercept). That is,

$$\Delta y_t = a_0 + \lambda y_{t-1} + a_2 t + \sum_{i=2}^{p} \beta_j\ \Delta y_{t-i-1} + \epsilon_t$$
(3)

Where y is the variable, t = trend; a = intercept; εt = Gaussian white noise and p = the lag level. to ensure that the errors are white noise, it is better to select the number of lags "p" in the dependent variable by using the Akaike Information Criteria (AIC) or some other substitute tests for optimum lag (Katırcıoglu et al., 2007). The attendance of the additional estimates parameters cause problem and lead to reduce freedom grades and test power.

The ADF and PP tests concentrate on t-statistics and t-tests for λ. The null hypothesis in ADF and PP tests together is non-stationary Series. Rejecting of this null hypothesis means that the coefficient is significantly different from zero. If series is non-stationary at level (we accept Ho), as well as the first difference was getting to make it stationary. If series is stationary, in this case it is called I (0); but if it is non-stationary, it is called I(1). Moreover, some problems may face researchers in rejecting the null hypothesis, it belong to unknown data generating process. Therefore, researchers should be start with unit root tests from the most general model which includes intercept and trend (Doldado, Jenkinson and Sosvilla-Rivero, 1990). If the drift and tendency is denied unsuitably, the test power can be reduced to very low stages and even to zero (Campbell and Perron, 1991). Enders (1995) circumstances that reduced power can make the researcher conclude the unit root process with incorrect results about the unit roots presence.

The PP test generate correction to the t-statistic of the coefficient from the AR (1) regression to account for the sequential correlation in ε_t (Katırcıoglu et al, 2007). The correction is nonparametric subsequently researcher uses an estimation of the spectrum of γ coefficient at frequency zero and this is robust to heteroscedasticty and unknown form autocorrelation. The prevalent method is the Newey-West heteroscedasticty autocorrelation consistent estimate as follows:

$$\omega^2 = y_0 + 2\sum_{j=1}^{q}\left(1 - \frac{1}{q+1}\right)y_j \qquad (4)$$

$$y_j = \frac{1}{T}\sum_{t=j+1}^{T}\tilde{\varepsilon}_t\,\tilde{\varepsilon}_{t-j} \qquad (5)$$

Where q is the truncation lag, γ_j is the covariance of estimated residuals j-lag apart and T is the sample size. The PP t-statistic is computed as:

$$t_{pp} = \left(\frac{y_0^{\frac{1}{2}}t_b}{\omega}\right) - \frac{(\omega^2 - y_0)Tsb}{2\omega\hat{\sigma}} \qquad (6)$$

Where tb, sb are the t-statistic and standard error of β and σ is the standard error of the test regression.

4.2.3 Co-integration Tests:

When the determination of the integration order for variables, co-integration between variables must be tested and the long-run equilibrium relationship validity should be recognized. In this study, trace test of the Johansen method was used to test the co-integration which proposes that series must be in the same instruction of integration, I(1) or I(2) if they are not I(0). The Johansen trace test helps to recognize the number of co-integrating vectors (or relationships) among variables. At a minimum one co-integrating vector is required to have co-integration between variables. The Johansen trace test is more dependable than the maximum eigen value test for co-integration (see Katırcıoglu et al., 2007).

The Johansen (1988) and Johansen and Juselius (1990) method allows researcher to estimate co-integrating vectors among the set of regressors and a dependent variable as well as it is a contemporary method to avoid the arise problems from Engel and Granger (1987) methodology[2]. The Johansen methodology[1] can be shows as follows VAR model:

$$X_t = \prod_1 X_{t-1} + \cdots + \prod_k X_{t-k} + \mu + e_t \qquad (for\ t = 1, \dots . T)$$
(7)

Where X_t, X_{t-1}, …, X_{t-K} are level vectors and lagged values of P variables respectively which are $I(1)$ in the model; $\prod_1, \dots, \prod_K$ are coefficient matrices with (PXP) dimensions, μ is an intercept vector[2]; and e_t is a vector of random errors (Katırcıoglu et al., 2007). The lagged number values are determined by supposition that error terms are not auto-correlated. The $\prod$ rank is the number of co-integrating vectors (i.e. r) which is determined by testing whether its Eigen values (λi) are statistically significant. Johansen (1988) and Johansen and Juselius (1990) suggest that using the Eigen values is for calculation of trace statistics[3] (Katırcıoglu et al., 2007). The trace statistic $(\lambda trace)$ can be calculated by the following formula[4]:

$$\lambda_{trace} = -T \sum Ln(1 - \lambda_i), i =$$
$$r + 1, \dots, n - 1\ \text{and the null hypotheses are} : \qquad (8)$$

$$
\begin{array}{ll}
H_0: v = 0 & H_1: v \geq 1 \\
H_0: v \leq 1 & H_1: v \geq 2 \\
H_0: v \leq 2 & H_1: v \geq 3 \\
\end{array}
$$

---

[1] -Refer to Kremers et al. (1992) and Gonzalo (1994) for their views about problems faced from the

Engel and Granger (1987) tests as compared with Johansen and Juselius (1990) approach.

[2] - μ is a vector of $I(0)$ series that also stands for dummies. This ensures that error term by et are white noise.

[3] - Critical values in the present study are obtained from the work of Osterwald-Lenum (1992).

[4] -At the beginning steps, the null hypothesis was tested that there is no co-integrating vector. If it is rejected, the alternative

hypothesis (i.e. v £1, …, v £ n) are to be tested after then. If v=0 cannot be rejected, this suggest no co-integrating

relationship between regressors and dependent variable.

4.2.4 Error Correction Model:

There is a supposition that the real income in equation (2) may not immediately regulate to its long-term equilibrium level following a change in any of its determinants (See also Katırcıoglu, 2010). Therefore, the discrepancy among short-run and long-run income levels can be examined by the following error correction model:

$$\Delta In\,GDP_t = \beta_0 + \sum_{i=1}^{n}\beta_1 \Delta InGDP_{t-j} + \sum_{i=0}^{n}\beta_2\,\Delta InFDI_{t-j} + \sum_{i=0}^{n}\beta_3\,\Delta InDS_{t-j}$$
$$+ \beta_4\varepsilon_{t-1} + u_t \quad (9)$$

where Δ shows a change in the GDP, FDI and DS variables and ε_{t-1} is the one period lagged error correction term (ECT), which is captured from equation (2) (Katırcıoglu,

2010). The ECT in equation (9) displays how fast the disequilibrium among the short-run and the long-run values of dependent variable is eliminated each period. The expected sign of ECT is negative (Katırcıoglu, 2010).

4.2.5 Granger Causality Tests

Granger causality tests were employed in this study to evaluate the direction of causality between the variables. Granger causality tests are run by using the Vector Error Correction (VEC) framework if there is co-integration relationship (Katırcıoglu et al., 2007). When there is co-integrating vector in the related model, the simple Granger's causality tests under the VAR method cannot be undertaken.

Granger (1988) argues that the concerning relationship among Granger causality and co-integration. Co-integration is about the relationship of long-run equilibrium. Though, VECM was used to recognize the causality between two variables for the short term period. Furthermore, VECM is used to measure the rapidity of short-run values method aimed long-run equilibrium values.

Granger's theory suggests that error correction models are required to supplement the simple causality tests with the EC instrument and are composed of the residuals from the original co-integration models to test for the causality. Error correction can be appearing in the following equations:

$$\Delta InY_t = C_0 + \sum_{i=1}^{k} \beta_i \, \Delta In \, Y_{t-i} + \sum_{i=1}^{k} a_i \, \Delta InX_{t-i} + \varphi_i ECT_{t-1} + u_t \qquad (10)$$

$$\Delta InX_t = C_0 + \sum_{i=1}^{k} \gamma_i \, \Delta InX_{t-i} + \sum_{i=1}^{k} \varsigma_i \, \Delta In \, Y_{t-i} + \emptyset_i \, ECT_{t-1} + \varepsilon_t \qquad (11)$$

Where Y and X are consideration series, and φ_i and ϕ_i are the ECT_{t-1} coefficients that means the error correction term in both models, Δ indicates first difference of the variables. In equation (10), X (independent variable) Granger causes Y (dependent variable) if φ_i is statistically significant. In equation (11), Y (independent variable) Granger causes X (dependent variable) if ϕ_i is statistically significant. F-statistic is employed to test the joint null hypothesis of α_i, $\varsigma_i = 0$, and t test is used to estimate the error correction coefficient significance.

4.3 Study results

4.3.1 Unit Root Test for Stationarity:

The first step in this analysis concerns the stationarity of the variables. By using the ADF and PP tests to examine the unit roots at their level forms and first differences.

Table 4. 1 ADF and PP Approaches for Unit Roots Statistics (Level)

Statistics (Level)	In GDP	Lag	ln FDI	Lag	ln DS	Lag
τ_T (ADF)	0.9500	1	0.0120	2	0.0001	0
$\tau\mu$ (ADF)	1.0000	1	0.3501	3	0.0022	0
τ (ADF)	1.0000	1	0.0841	3	0.0001	0
Statistics (Level)	In GDP	Bandwidth	ln FDI	Bandwidth	ln DS	Bandwidth
τ_T (PP)	0.9673	1.0	0.1328	2.0	0.0003	2.0
$T\mu$(PP)	1.0000	2.0	0.0364	2.0	0.0016	3.0
τ (PP)	1.0000	1.0	0.0053	2.0	0.0001	3.0
Results	NON(ST)		NON(ST)		(ST)	

Table 4. 2 ADF and PP Approaches for Unit Roots Statistics (First Difference)

ADF and PP Approaches for Unit Roots						
Statistics (First Difference)	Δln GDP	lag	Δln FDI	lag	Δln DS	Lag
τ_T (ADF)	0.0038*	(1)	0.0054*	(2)	0.0000	(0)
$\tau\mu$ (ADF)	0.7245	(2)	0.0007*	(2)	0.0000	(0)
τ (ADF)	0.6878	(2)	0.0000	(2)	0.0001*	(0)
	Δln GDP	Bandwidth	Δln FDI	Bandwidth	Δln DS	Bandwidth
τ_T (PP)	0.0000	(9.0)	0.0018*	(0.0)	0.0000	(20.0)
Tμ(PP)	0.0002*	(3.0)	0.0002*	(0.0)	0.0000	(9.0)
τ (PP)	0.0002*	(3.0)	0.0000	(0.0)	0.0001*	(4.0)
Results	(ST)		(ST)		(ST)	

The unit root data results are obtainable in Tables 4.1 and 4.2: shows the hypothesis which assumed the variables FDI, DS, and GDP unit root non-stationary is rejected at the 1% significance level to some extent; on the other hand unit root cannot be rejected when first difference is used. The result in all series exists. Therefore the result allows the possibility of a co-integrating relationship among variables.

Note:

GDP shows real gross domestic product; FDI is the foreign direct investment inflows; DS is the domestic savings. All of the sequences are logarithmic. τ_T means the most general model with an intercept and trend; $\tau\mu$ is the most general model with an intercept but without trend; τ is the one without intercept and without trend. Numbers in parentheses are optimal lags in the case of ADF test (AIC). In the case of PP test, numbers in parentheses shows Newey-West Bandwidth (Bartlett-Kernel). Unit root tests were done from the most general to the most restricted model as also proposed by Enders (1995). *, ** and *** shows the rejection of the null hypothesis at alpha 1 percent, 5 percent and 10 percent respectively. Tests were conducted by E-VIEWS 7.0.

4.3.2 Co-integration Analysis

The co-integration test is implemented to examine the long-run equilibrium relationships among the three variables DS, FDI and GDP. co-integration test can run only for those variables that are non-stationary at levels. Thus, co-integration would be searched between real GDP, DS and FDI. Test results include three hypotheses. First, the null hypothesis which conditions that there are no co-integrating vectors between variables, the second, alternative hypothesis conditions that the number of co-integrating vectors are less than or equal to one. And the third is that vectors are at most two.

The Johansen co-integration test results indicate the existence of two co-integrating vectors at 1 per cent and 5 per cent significance levels, respectively (i.e., the null hypotheses of no co-integration is rejected for rank of zero and less than or equal to (2). This means that there long-run relationship existence between the three variables.

Table 4. 3 Johansen Test for Co-integration

Hypothesized	Trace Test					Maximum Eigenvalue test				
No. of CE(s)	Eigenvalue	Trace Statistic	0.01 Critical Value	0.05 Critical Value	Prob.**	Eigenvalue	Max-Eigen Statistic	0.01 Critical Value	0.05 Critical Value	Prob.**
None*	0.687415	31.67852	35.45817	29.79707	0.0300	0.687415	24.42043	25.86121	21.13162	0.0166
At most 1	0.281525	7.258088	19.93711	15.49471	0.5478	0.281525	6.943102	18.52001	14.26460	0.4959
At most 2	0.014887	0.314986	6.634897	3.841466	0.5746	0.014887	0.314986	6.634897	3.841466	0.5746

Note:

Trace test indicates 1 co-integrating equation(s) at the 5% level as * indicate rejection of the hypothesis at the 5% level.

Error Correction Model		continue	
Co-integrating Eq:	CointEq1	**Continue**	
		Co-integrating Eq:	CointEq1
Y_GDP(-1)	1.000000		
X1_FDI(-1)	-0.299442	D(X2_DS(-1))	0.040219
	(0.04759)		(0.11535)
	[-6.29188]		[0.34868]
X2_DS(-1)	-4.529688	D(X2_DS(-2))	0.062735
	(0.25905)		(0.09942)*
	[-17.4859]		[0.63099]
C	-1.07E+10	D(X2_DS(-3))	-0.008367
			(0.05329)*
Error Correction:	D(Y_GDP)		[-0.15701]
CointEq1	-0.018846		
	(0.02352)**		
	[-0.80112]		
		C	7.26E+08
D(Y_GDP(-1))	-0.386756		(8.5E+08)
	(0.24068)		[0.85298]
	[-1.60692]	R-squared	0.823949
		Adj. R-squared	0.603886
D(Y_GDP(-2))	0.228419	Sum sq. resids	1.60E+19
	(0.24776)	S.E. equation	1.41E+09
	[0.92192]	F-statistic	3.744144
		Log likelihood	-419.0623
D(Y_GDP(-3))	0.946497	Akaike AIC	45.26971
	(0.37101)	Schwarz SC	45.81649
	[2.55114]	Mean dependent	1.59E+09
		S.D. dependent	2.25E+09

D(X1_FDI(-1))	-0.005481	
	(0.01044)**	Determinant resid covariance (dof adj.)
	[-0.52489]	Determinant resid covariance
		Log likelihood
		Akaike information criterion
D(X1_FDI(-2))	0.002534	Schwarz criterion
	(0.00911)*	
	[0.27818]	
D(X1_FDI(-3))	-0.025597	
	(0.00942)*	
	[-2.71589]	

4.3.3 The Error Correction Model (ECM)

*, ** and *** represent the statistical significant at alpha 1 percent, 5 percent and 10

percent respectively

Based on co-integration results, there is long-run relationship between variables; the next step is estimation of sort-run relationship between study variables DS, FDI and GDP. In this research several lag levels were experiment until 3. Short term coefficients can be seen in table 4.4. Short term coefficients of FDI are statistically significant at all α levels. As well as, short term coefficients of DS are statistically significant in overall but only at lag 1 short term effect of DS on GDP is statistically significant at $\alpha=0.01$. If there is an increase in DS by 1%, GDP of Yemen decreases by 0.0402% in the short term. Table 4.4 shows that ECT is -0.018846%, negative, and statistically significant at $\alpha=0.05$. -0.018846 shows that short run values of GDP meet to its long run equilibrium level by -0.018846% haste of modification every year by the contribution of FDI and DS.

from level equation table we can observe, when FDI increases by 1%, GDP decreases by 0.299% in long run and it is statistically significant at $\alpha=0.10$. On the other hand, when there is an increase in DS by 1%, GDP decreases by 4.529% in the long term however it is not statistically significant.

4.3.4 Granger Causality Tests

The finally test is Granger causality test is employed to investigate causal relationships between each pair of variables in the research. Table 4.5 gives results for the study variables. Granger (1988) proposes the co-integration there should be at least one direction of causality: unidirectional or bidirectional. To determine if there is relationship or no by using F-Statistic value from table information of granger causality test and compare it with the F- Tabletes which equal (0.99).the null hypotheses reject if the F-statistics value is more than F-Tabletes value.

Table 4. 5 Results of Granger causality test between FDI, DS and GDP

The direction of the relationship	F-Statistic	-F Tabletes	Probability	Lags	Results	Relation Result
FDI and GDP	4.84709	0.99	0.0311**	5	cause	bidirectional
GDP and FDI	0.47384	0.99	0.7859*	5	no	unidirectional
DS and GDP	1.32061	0.99	0.3554	5	cause	bidirectional
GDP and DS	8.86675	0.99	0.0061*	5	cause	bidirectional
DS and FDI	1.68495	0.99	0.2558	5	cause	bidirectional
FDI and DS	0.74749	0.99	0.6129	5	no	unidirectional
FDI and GDP	2.54511	0.99	0.1925	6	cause	bidirectional
GDP and FDI	1.28815	0.99	0.4211	6	cause	bidirectional
DS and GDP	1.25628	0.99	0.4311	6	cause	bidirectional
GDP and DS	9.30532	0.99	0.0245**	6	cause	bidirectional
DS and FDI	1.13728	0.99	0.4716	6	cause	bidirectional
FDI and DS	0.88967	0.99	0.5731	6	no	unidirectional
FDI and GDP	2.99865	0.99	0.4183	7	cause	bidirectional
GDP and FDI	6.88105	0.99	0.2857	7	cause	bidirectional
DS and GDP	2.54247	0.99	0.4495	7	cause	bidirectional
GDP and DS	10.0645	0.99	0.2382	7	cause	bidirectional
DS and FDI	20.3225	0.99	0.1692	7	cause	bidirectional
FDI and DS	0.65007	0.99	0.7452	7	No	unidirectional

Note:

*, ** and *** represent probability values at 5, 6 and 7 lag levels respectively.

In the econometrics literature, several methods are employed for optimal lag selection. For example, Akaike Information (AIC), Schwartz Information Criterion (SIC) and Hsiao's (1979) sequential process. In order to make sure that the results are not sensitive to the optimum lag length choice, Pindyck and Rubinheld (1991) illustrate that it

is better to do the test with different lag structures. In this study, alternative lag prefer to experiment lengths from 1 to 7. Then the numbers of observations are acceptable.

The Granger causality test results show that Domestic saving and foreign direct investment cause economic growth in Yemen. In other words there is bidirectional causal relationship between FDI and DS with economic growth. Nonetheless, the independent variables DS and FDI have not causality relationship between each other in case of Yemen. This means there is unidirectional causal relationship between DS and FDI; the results also show that DS is the more effect than FDI on economic growth in Yemen because infrastructure weaknesses as well as legal obstacles furthermore political unrest which play key role in discourage FDI to inter Yemeni market strongly. But in fact the two variables DS and FDI play positive role on economic growth in Yemen, finally

DISCUSSION AND CONCLUSION

Summary results of the hypothesis testing		
	Hypothesis	Result
1	DS and FDI have not stationary relationship with economic growth in Yemen in the long-term.	Rejected
2	DS and FDI have not long-run equilibrium relationship with GDP.	Rejected
3	DS and FDI don't have causality relationship with gross domestic product	Rejected

- **Objective 1: To examine the stationary relationship between DS and FDI with economic growth**

There is no stationary relationship between domestic saving and foreign direct investment with economic growth in the long term. Depending on the unit root non-stationary analysis results, the null hypothesis rejected at the 1% significance level to some extent refer tables 4.1 and 4.2.

This means that there is positive relationship between domestic saving and foreign direct investment with economic growth in case of Yemen in the long-term, in other word DS and FDI play key role in economic growth as well as the increasing in DS and FDI leads to increase in GDP subsequently enhance macroeconomic performance in the long-run.

This finding is parallel to the study which conducted by Baidoo (2012) which indicates that the three variables are not stationary at the first level however, First difference of the variables was found to be stationary, when time series data are found for the three variables. And also the results is in parallel to the result of Shahbaz and Rahman (2010) which provides dissimilar order of

integration for variables i.e. I(1) / I(0). This means that there is no stationarity between variables.

All finding support the null hypothesis reject consequently, that there are positives influences between DS and FDI on economic growth in case of Yemen.

- **Objective 2: To investigate the equilibrium relationship between DS and FDI with economic growth in Yemen long-term**.

There is equilibrium relationship between domestic saving and foreign direct investment with economic growth in the long-term. the co-integration test results show that there is two co-integrating vectors at 1 percent and 5 percent significance ranks, respectively (the null hypotheses of no co-integration is rejected for rank of zero and less than or equal to two (refer table4.3).

This means that economic growth in Yemen was affected by domestic saving and foreign direct investment whether increase or decrease if the two variables change in both or alone there is effect on economic growth according to the status change. Logically if the change go towards increase there is positive effects and vice versa.

This finding is parallel to the research which conducted by Taspınar (2011) which highlight long term equilibrium between variables and there is reasonably contribution of foreign direct investment and domestic savings in economic growth. The low Co-integration in this study is belong to the weakness in infrastructure which motivate economic growth as well as the purchasing power which may impacts negatively on growth level.

This finding is also parallel to the research which conducted by Jangili (2011) which refer to that the domestic saving is the lead force for economic growth and there is significant importance for foreign direct investment but with the lower degree. In this study the effects ratio is lower it may happen because the difference between the domestic markets size, the market here is smaller. And also the there is no stock market to attract more savings as well as the investment low in not attracted in contrast with Indian market which study was conducted.

- **Objective 3: To find out the causality relationship between DS and FDI with economic growth in Yemen in the short -run.**

The results of Short-terms coefficients can be observed in the table 4.4.there are Short term FDI coefficients statistically significant at all α levels. further, DS short term coefficients are statistically significant in overall but merely at lag 1 DS short term effect on GDP is statistically significant at α=0.01. If there is 1%, increase in DS the change in GDP of Yemen is decreases by 0.0402% in the short term.

This means that there are short-run impacts of domestic saving and foreign direct investment on economic growth with low ratio, therefore the effects of DS and FDI not limited to the long-term but also there is statistical significance in the short-term. These results indicate the importance of the two variables on the economic growth.

This results is parallel to the study conducted by Tawiri(2010) which indicate that there the existence of a causal relationship in the short terms between domestic saving investment and growth , the low correlation in this study is belong to the weakness in whole economy in yemen subsequently shortage in

domestic saving in contrast with strong economies. Also the results of the study is parallel to study conducted by Khan**(2007)** which indicate that there is positive impact for FDI inflows on economic growth in the short-run.

As observed from all results DS and FDI have short-run significant relationship with economic growth, this means that there is a direct impact on macroeconomic in yemen, accordingly Yemeni government should focus on benefit from investment and try to create attractive motivation for both investment resources internal and external by developing infrastructure and modifying investment law to be more encourage and attractive.

- **Objective 4: To discover the causality relationship between DS and FDI with economic growth.**

    There is bidirectional relationship between domestic saving and foreign direct investment with economic growth in Yemen in the long term.

    This means that any increase in domestic saving and foreign direct investment affect positively in economic growth and the opposite if there is decreases in DS and FDI this affects negatively the economic growth.

    This results is parallel to the research conducted by Andraz(2010) which indicate that there significant bi-directional relationship between FDI and economic growth in short and long-run, the low correlation here in this research refer to the economic weakness and the political unrest and also the lacking in main infrastructure.

    Also the result is in parallel to the Mohan(2006) study which indicate the bidirectional relationship between the DS and economic growth, the high correlation in that study is refer to the high growth ratio and economics strength in the countries which studied in contrast with yemeni economy.

    The results indicate also the driven force for economic growth in Yemen is domestic savings and the FDI is output. Depending on this finding government should focus on attract domestic saving by develop financial system and give domestic savers more motivation and guarantees. These motivations and guaranties are proposed to encourage surplus welfare investment in local market and deposit their money in the banks to invest and obtain profits.

- **Objective 5: To explore if there is mutual relationship between FDI, DS and the effects.**

    There is no mutual relationship between domestic saving and foreign direct investment; this means that their unidirectional relationship between DS and FDI with the dependent variable economic growth.

    This means that there is no significant impact between DS and FDI each other but they effect on economic. In other word every independent variable impact on dependent variable but with no impact on other independent variable

    This results is parallel to the research which conducted by Katircioglu and Naraliyeva (2006) which indicate that there a long-run equilibrium relationship

between each pair of the variables DS with economic growth and FDI with economic growth except between DS and FDI there is no effect, in this research the impact is more clear it may happen because the limited in FDI inflow to the market and the growth essentially depend on domestic saving.

This relationship means that there is a unidirectional effect on economic growth from DS and FDI but there is no effect between DS and FDI on each other.

This finding is good for hosting country, if there are any problems or lacking in foreign direct investment the impact on domestic saving is low and DS can replace FDI. But there are some challenges related to transfer technology and monetary availability. Unfortunately in case of Yemen the market is only import consume market not export and productive market. Accordingly, Yemeni government must have strategic plan to change from importer to exporter and form consumer to productive. Because the importer and consumer economy is still weak and the national income depend on natural resources like oil and gas or taxes, in case of Yemen there are no enough taxes to cover public expenditure. As well as poverty is still in high levels is belonging to lacking in public income.

5.6 Recommendation for Future Research:

This research had provided some idea regarding the relationship between domestic saving, foreign direct investment and economic growth in Yemen; therefore, it would be helpful for future research to consider the following suggestions:

- Future researches may advantage from longer period of time if they can gather new information. Through study the relationship between DS, FDI and economic growth more widely. As well as compare results between Yemeni regions before Yemeni reunification to discover strength and avoid weakness.
- Expand the study into international variables like world financial crisis and trend international investment to enhance the consistency of results.
- Future studies can focus on participation investment weather among government and private sectors inside the country or participation between domestic and foreign investors to realize mutual benefits and reduces risks.
- Future research can focus on discover new suggestion to develop infrastructures as well as reduce security and legal obstacles to enhance investment environment and attract more investments in different economy scopes.

5.7 Conclusion:

This study was conducted to investigate the influences of domestic saving and foreign direct investments on economic growth in short and long-term in case of Yemen. Quantitative research method had been used in this research and the annual figures and official financial reports in Yemen and in the international organisation like World Bank and international monetary fund was gathered to examine the research hypotheses and questions of this study. The study results suggest that DS and FDI have equilibrium relationship in the long-run with real income subsequently economic growth, as well as DS and FDI are income determinant in republic of Yemen. On the other hand, the long-run model illustrate that FDI has statistically significant, nevertheless the effect on economic growth inelastic in case of Yemen in the long-term period, though in the level equation the

DS coefficient is not statistically significant. In terms of error correction model the real income in Yemen meet its long-run equilibrium level at -0.01884% accelerate of adjustment the FDI and DS contribution, which can be expected as low meeting economics, but as expected this ratio is negative and statistically significant. In granger causality test for long term the changes in real income and domestic saving is more than change in foreign direct investment. Based on this finding the FDI in Yemen are output and saving is driven. Finally, the study results show that their bidirectional relationship between DS and FDI with economic growth and unidirectional relationship between DS and FDI.

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